

# The health of Queenslanders

# 2016

Report of the Chief Health Officer Queensland



*The health of Queenslanders 2016.*  
*Report of the Chief Health Officer Queensland*

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**For further information:**

Manager, Epidemiology  
Preventive Health Branch  
Prevention Division  
Department of Health, Queensland

Email: [Population\\_Epidemiology@health.qld.gov.au](mailto:Population_Epidemiology@health.qld.gov.au)

# About this report

This is the sixth report of Queensland's Chief Health Officer. *The health of Queenslanders* series began in 2006 and is released every two years. The report has three objectives:

- to provide a public assessment of the health status of the population
- to be a reference document for health practitioners in Queensland
- to inform strategic policy and planning within Queensland Health.

This report and all others in the series, including resources are available at [www.health.qld.gov.au/cho\\_report](http://www.health.qld.gov.au/cho_report)

Printed copies of the report are disseminated to key decision makers in the Queensland health sector—copies are available on request.

## Companion documents and resources:

- Printed booklet—profiles selected indicators for Hospital and Health Services (HHSs)
- Enhanced online release—includes data visualisation for HHSs
- Factsheets released or in development—include diabetes facts and figures, key statistics for Indigenous Queenslanders, selected statistics about cardiovascular disease and cancer
- Statistical tables—data used to inform the Chief Health Officer report for HHSs and primary health networks (PHNs)
- Statistical methods—described in *Methods for reporting population health status*<sup>1</sup>

## Acknowledgements

### Advisory group:

*Department of Health* – Chief Health Officer Dr Jeannette Young (Chair), Kaye Pulsford, Liz Drake, Terri Price, Dr Mark Brown, Robert Hoge, Daniel Williamson, Dr David Rosengren, Margaret Bright (Editor)

*Queensland Hospital and Health Services* – Dr Jill Newland, Terry Mehan, Adrian Pennington, Professor Paul Thomas, Dr Lorraine Ferguson, Dr Paul Alexander, Dr Robert Stable

*Heart Foundation of Queensland* – Rachelle Foreman

*Diabetes Australia, Queensland* – Michelle Trute

*The health of Queenslanders 2016* was prepared by Epidemiology, Preventive Health Branch, Prevention Division, with advice and assistance from others in Queensland Health and other government departments and agencies in Queensland.

### Editor, epidemiology manager and principal writer:

Margaret Bright

**Section writers:** Susan Clemens (alcohol), Noore Alam (physical activity), Lucy Stanley (social risks), Cancer Screening Unit (cancer screening), Office of Chief Dental Officer (oral health), Communicable Diseases Branch (immunisation), Health Protection Branch (environmental risks)

**Science/style communication:** Bron Robinson

**Additional resources (HHS booklet, data visualisation, factsheets, online messaging):** Lucy Stanley, Tim Roselli, Bonnie Macfarlane

**Analysis:** Barbara Waters, Richard Bean

**Data provision and review:** Preventive Health Branch, Statistical Services Branch, Aboriginal and Torres Strait Islander Health Branch, Communicable Disease Branch, Policy and Planning Branch, Health Protection Branch, Funding Strategy Unit, Healthcare Improvement Unit, Health Economics and Purchasing Unit, Queensland Cancer Control Analysis Team, Queensland Ambulance Service/Turning Point, Mental Health, Alcohol and Other Drugs Branch, Office of the Chief Dental Officer, Queensland Government Statistician's Office

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# From the Chief Health Officer

I am pleased to report good news about the health of Queenslanders in 2016. Not only do we enjoy good health by global standards, but we are also seeing significant improvements in healthy behaviours—smoking rates are continuing to decline, adults have become more active and rates of childhood and adult obesity are stabilising. All these factors are having a positive effect on the health of Queenslanders and are contributing to our 2026 goal to promote wellbeing and advance good health.

This sixth report in the series brings together the latest data and evidence about the health issues of our day. For the first time we have incorporated information on the health impact of interpersonal and domestic violence. We need to expose the facts and provide the right kind of support to those affected. Ultimately we want to prevent it. Violence has become a worrying element in our society, affecting individuals, families, workplaces and communities. Alcohol is often implicated—a reminder of the widespread social impacts of alcohol misuse.

There have been small but meaningful improvements in the health of Indigenous Queenslanders over the past decade—the life expectancy gap appears to have narrowed by one year and declining death rates for diabetes, injuries and cardiovascular disease in particular, are contributing to better outcomes. However, large disparities remain. While smoking rates are more than double those of non-Indigenous Queenslanders and maternal smoking rates more than triple, health outcomes will be compromised. Tobacco smoking has diminished a little for Indigenous Queenslanders in some communities but the decreases are not widespread. We need to do more to address this problem and its debilitating outcomes such as lung cancer and chronic respiratory disease. It is essential to maintain the focus and investment on improving health outcomes for Indigenous Queenslanders if these issues are to be addressed.

Each year on average, about one in five Queenslanders is being admitted to a Queensland hospital and this is growing. Our health systems are under pressure—hospital admissions are growing by an additional 70,000 every year and emergency department presentations by an additional 50,000 each year. This trend is unsustainable. The solution lies in enhanced management in the primary healthcare setting, more effective coordination within the health sector and innovative use of technology. This report includes new information on the patterns of healthcare use across the state which I hope will be used to inform strategies to address these pressures.



Being healthy and doing what we can to protect our health is vitally important—I know this is a priority for many Queenslanders. Good health brings benefits—it improves life satisfaction and allows people to enjoy a productive, active lifestyle. A healthier population will reduce health system pressures. The Queensland Government is investing \$27 million over four years to assist people at higher risk of chronic disease to embark on a health changing journey to reduce their disease risk and live longer, healthier lives. This is just the beginning of that journey, and I hope to see very positive change over the next four years as a result of this investment.

I look forward to working with the people of Queensland to achieve a healthier future for all.

A handwritten signature in blue ink that reads "Jeannette Young".

**Dr Jeannette Young**  
*Chief Health Officer Queensland*

November 2016

# At a glance

This sixth report of Queensland's Chief Health Officer captures a broad range of information at state and regional level about the health status of Queenslanders. It identifies key causes of health burden, how these are changing and opportunities to improve the health of the population.

The suite of products and resources includes:

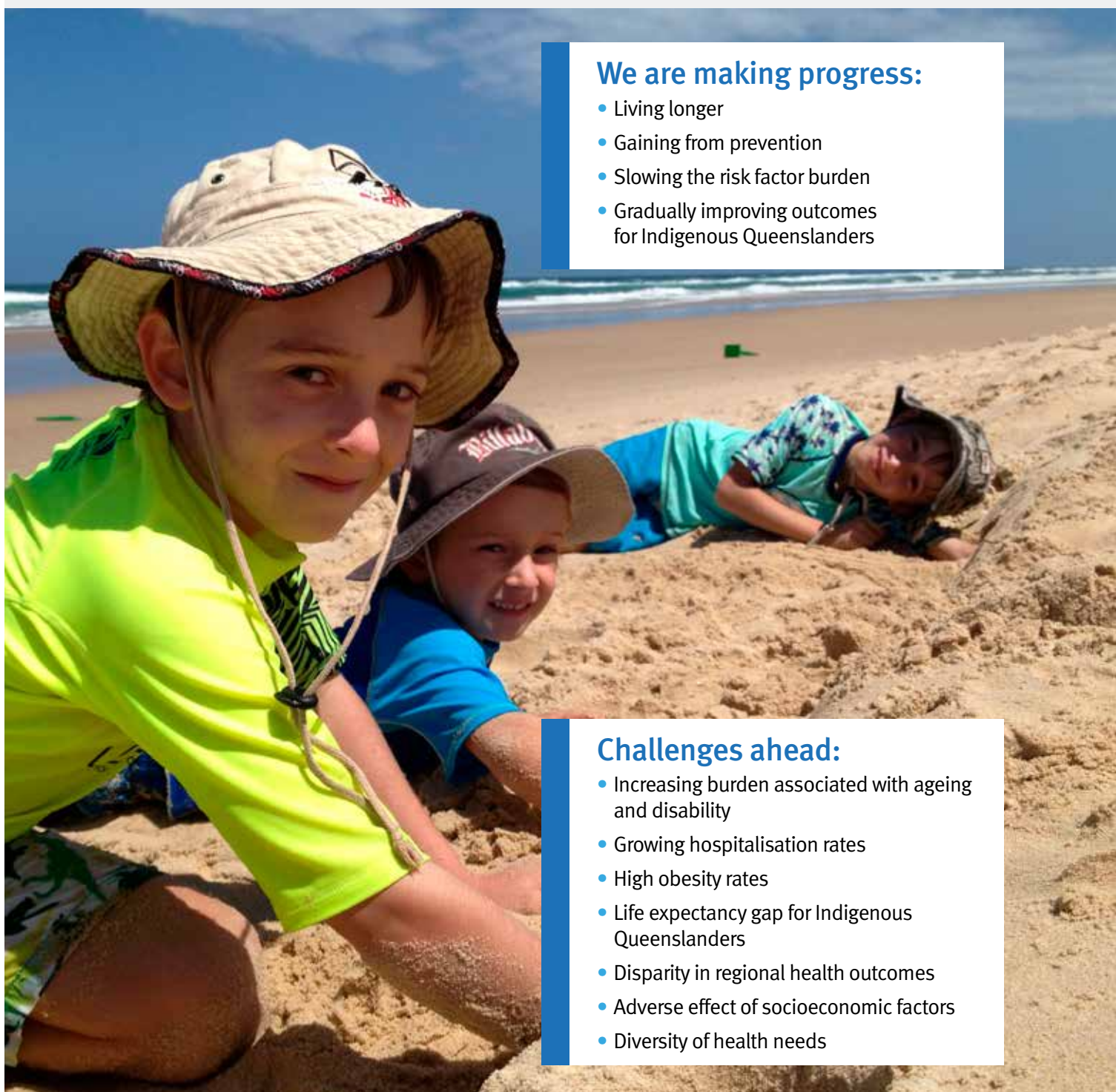
- The report—printed and online
- A summary booklet for Hospital and Health Services—printed and online
- Digital visualisations and messages—online
- Statistical tables—online
- Factsheets—online

## We are making progress:

- Living longer
- Gaining from prevention
- Slowing the risk factor burden
- Gradually improving outcomes for Indigenous Queenslanders

## Challenges ahead:

- Increasing burden associated with ageing and disability
- Growing hospitalisation rates
- High obesity rates
- Life expectancy gap for Indigenous Queenslanders
- Disparity in regional health outcomes
- Adverse effect of socioeconomic factors
- Diversity of health needs



## Where are we now—what has changed?

- We are living longer—a gain of about two years in the past decade. More than 74% of females and 61% of males are likely to live into their 80s.
- We are holding our own in national and international health rankings based on headline measures including life expectancy.
- We have healthier lifestyles—we are smoking less and there are fewer deaths due to second-hand smoke, largely due to more smoke-free environments. We have become more active and body weight appears to be stabilising.
- Death rates have declined for many of the major conditions. More than 80% of the decrease in all-cause death rates was in lifestyle related conditions.
- We have made modest gains in outcomes for Indigenous Queenslanders—death rates for diabetes, injury and coronary heart disease are declining and the life expectancy gap has diminished by one year over a five-year period.
- Hospital admission rates are increasing—resulting in an additional 70,000 admissions each year. In 2013–14, 1 in 5 Queenslanders was admitted to a Queensland hospital.
- About half the annual increase in hospitalisations over a decade was due to population growth and one-third to higher admission rates independent of other factors. Ageing accounted for one-twelfth.
- Hospitalisations for reasons not primarily associated with a disease diagnosis, such as treatments, procedures, tests, symptoms and signs, have increased rapidly, accounting for one-third of all admissions and close to 40% of the increase over a decade.
- Hospitalisations for conditions of ageing and those with high disability burden have increased across the whole state—musculoskeletal conditions, neurological disorders, diseases of eyes, and mental and substance use disorders.
- Hospitalisation rates for lifestyle related chronic conditions have reduced in many parts of Queensland.

## What do we spend?

- \$32.1 billion was spent on health (including hospitals, pharmaceuticals, GPs and other services) in 2013–14, an average of \$6319 per person in Queensland.
- The largest component of Queensland Government spending is for health—29% of the 2016–17 budget.
- Most of our healthcare spending is on hospitals—about two-thirds in 2013–14. Hospital expenditure in Queensland has increased by about 88% over a decade, more than triple that of population increase. The average annual cost for each admitted patient was \$12,516.
- Per capita health spending for Indigenous Queenslanders is 2.2 times non-Indigenous spending, consistent with the relative disease burden.

## Where will we be in 2026 and what could we achieve?

- There will be 0.9 million more people living in Queensland (taking the population to 5.7 million) and of the increase, one-third (34%) will be aged 65 years and older.
- Hospital system pressures are likely to increase, resulting in a potential 0.6 million extra emergency department presentations and 1.2 million extra hospital admissions.
- The disability burden will continue to increase as the population ages, driving demand across all health services.
- Continued and sustained improvement in health outcomes for Indigenous Queenslanders, including narrowing the life expectancy gap, is achievable with continued investment in prevention, early diagnosis and access to treatment.
- Ongoing effective investment in prevention strategies to achieve healthier lifestyles will generate benefits to individuals, their families, the health system and the economy.

# Abbreviations

<b>ABS</b>	Australian Bureau of Statistics
<b>AIHW</b>	Australian Institute of Health and Welfare
<b>ARIA</b>	Accessibility/Remoteness Index of Australia
<b>BMI</b>	body mass index
<b>CI</b>	confidence interval
<b>COPD</b>	chronic obstructive pulmonary disease
<b>DALY</b>	disability adjusted life year
<b>GDP</b>	gross domestic product
<b>ICD</b>	International Classification of Diseases
<b>NHMRC</b>	National Health and Medical Research Council
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>PPH</b>	potentially preventable hospitalisation
<b>WHO</b>	World Health Organization
<b>YLD</b>	years of life lost due to disability
<b>YLL</b>	years of life lost due to premature mortality



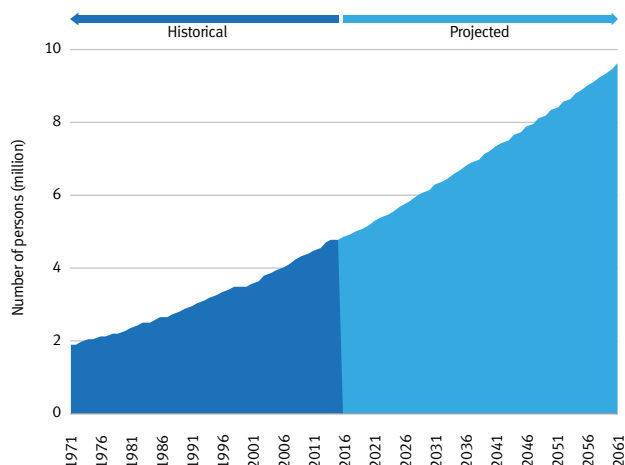
# Key trends



- Monitoring the health of Queenslanders is fundamental to the provision of evidence-based services in Queensland to improve health status.
- Six key trends are featured in this chapter (Figure 1):
  - The population is growing: a 25% increase in the past decade and a projected further increase of 50% by 2026, taking the current population of 4.9 million to an estimated 5.7 million.
  - The number of hospitalisations is increasing: by about 70% in the past 11 years resulting in an average increase of about 70,000 hospitalisations per year. Almost half of this was due to population growth, one-third to increasing admission rates (independent of demographic factors). Less than one-tenth was due to ageing.
  - Death rates are declining: at least 80% of the improvement is due to reduction in rates of death for lifestyle related chronic diseases. Effective prevention strategies have contributed to this decline—smoking reduction, screening for cancer, earlier diagnosis, rising levels of physical activity and improved management of cardiovascular disease.
  - Obesity rates are steadying: up to 2010, adult obesity increased by about 3% per year but since then there is no evidence of further increase. Nevertheless, in 2014–15, 30% of adults were obese by measurement and two-thirds were overweight or obese. Childhood obesity has plateaued at less than 10%, although 1 in 4 children is overweight or obese.
  - Smoking is continuing to decline: despite earlier concerns of a levelling off, daily smoking is continuing to decline and is now at 12%. It has halved since 1998.
  - Gains are being achieved in the health of Indigenous Queenslanders: the life expectancy gap has diminished by about one year over a five-year period, the risk of death before 50 years of age has declined as have death rates for cardiovascular disease, diabetes and injury—greater gains than have been achieved for non-Indigenous people. Assuming that these trends continue and other improvements are made, a further narrowing of the life expectancy gap is likely.
- This chapter also reports on a broad range of population health indicators with data from 2007 to the most recent year available (Table 1). The full table from 2000, including the data for males and females, is released online. More detailed information on these progress indicators is reported in other chapters and in the statistical tables (described on page i).
- Previous reports of the Queensland Chief Health Officer have included health information on culturally and linguistically diverse populations, gay, lesbian, bisexual and transgender people, and prisoners. This is a shorter report and readers are referred to the earlier reports, which are available online, for such information.
- Throughout this report, differences between population groups and trends over time are only reported if they meet requirements for statistical significance, unless otherwise noted.<sup>1</sup>

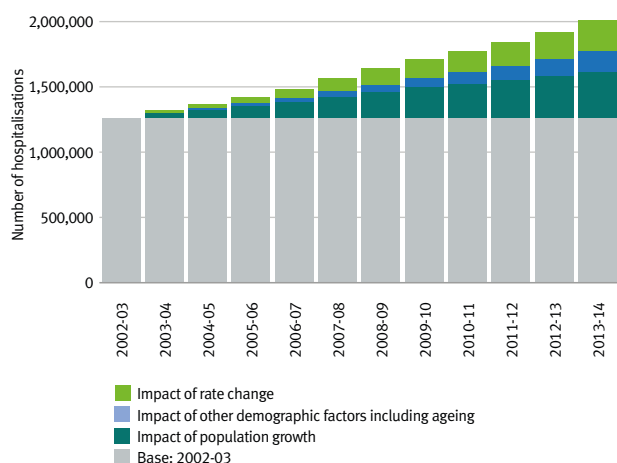
Figure 1: Six key indicators of progress, Queensland

a. Population growth



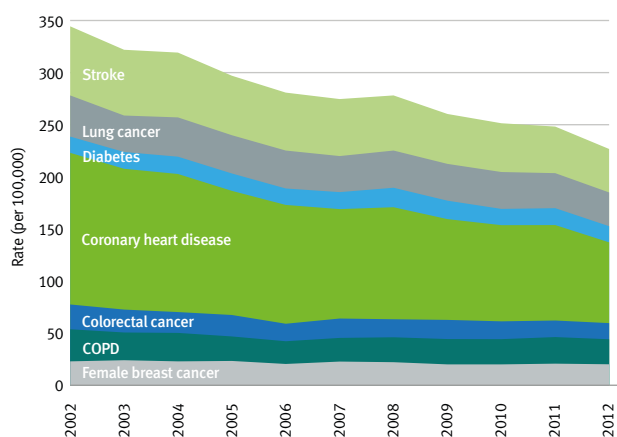
- In 2016 there were an estimated 4.9 million people in Queensland (4.8 million in 2015).
- The population has doubled over the 33 years since 1983.
- The population is projected to reach 5.7 million by 2026, an 18% increase in 10 years.
- In 1983, females outnumbered males—101 females for every 100 males. In 1998, there were equal numbers of males and females and in 2040, males will outnumber females—102 males for every 100 females.
- The Indigenous Queensland population is projected to increase from about 203,000 in 2014 to 271,000 in 2026—a 34% increase over this period.

b. Causes of increasing number of hospitalisations



- There were about 70,000 additional hospitalisations each year on average between 2002–03 and 2013–14, ranging from about 55,000 increase per year in 2002–03 to 90,000 increase per year in 2013–14.
- Population growth was the leading contributor to the increase over the past 11 years, accounting for 46% of the growth.
- Increasing rates of hospital admissions, independent of demographic factors, accounted for a third (31%) of the growth.
- Ageing was the smallest contributor to the growth, accounting for less than one-tenth (8%) of total.
- The remaining 14% was due to the interaction between these factors.

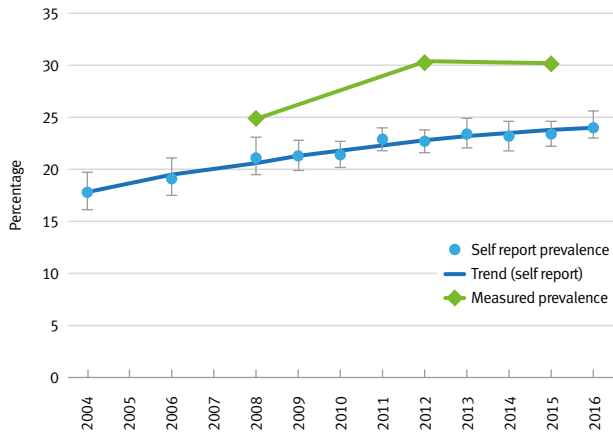
c. Death rate reduction: lifestyle related chronic conditions



- Death rates for seven lifestyle related chronic conditions have decreased over the past decade.
- In 2012, there were 3636 fewer deaths due to these seven conditions than in 2002 as a result of rate reduction, although demographic effects such as a larger and older population resulted in 3319 more deaths. The net effect was 221 fewer.
- Lifestyle related chronic conditions accounted for more than 80% of the decline in all-cause death rates between 2002 and 2012.

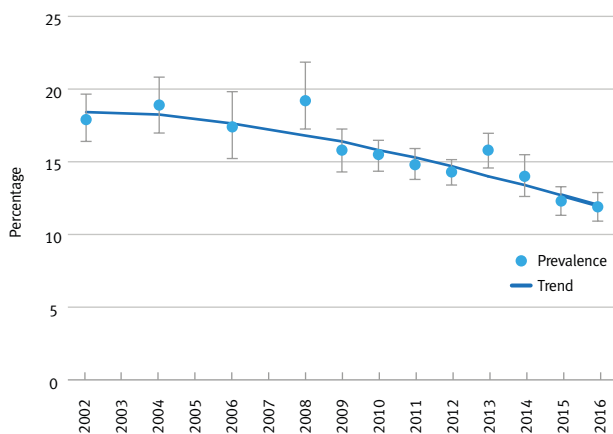
Figure 1: Six key indicators of progress, Queensland (continued)

d. Obesity is plateauing



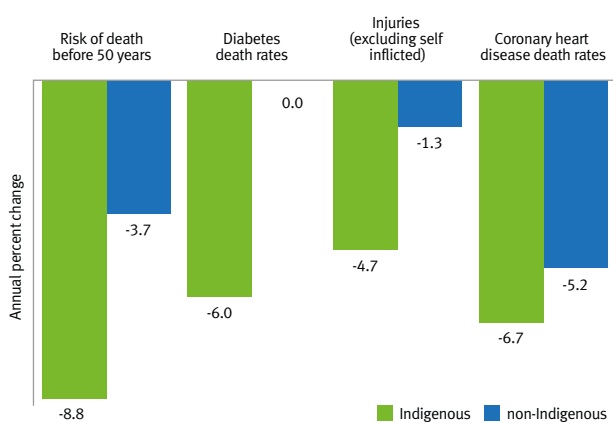
- The prevalence of adult obesity has not changed since 2011, based on data from self report or physical measurement.
- Between 2004 and 2011, self reported prevalence increased from 19% to 23% (an increase of 3.1% per year) but has slowed since then, with no further increase apparent.
- The earliest Queensland estimate was in 1993 where 9% of adults were obese by self report.
- Childhood obesity is also plateauing.
- The pattern of change in Queensland is also evident nationally.
- In 2014–15, 30% of adults and 7% of children were obese by measurement.

e. Smoking is continuing to decline



- Smoking has been steadily declining in Queensland and nationally for several decades.
- In 2016, 12% of adult Queenslanders smoked daily, down from about 25% in 1998.
- Since 2009, the smoking rate has decreased by 3.9% per year.
- The rate of decline in smoking since 1998 in Queensland was similar to the national decline and was evident in all states and territories.
- Indigenous Queenslanders are 2.5 times as likely to smoke daily as non-Indigenous. There has been a decline in smoking among Indigenous Australians in urban areas since 2002, but not for those in remote areas.

f. Gains for Indigenous Queenslanders



Improvement in death outcomes for Indigenous Queenslanders has contributed to a narrowing in the life expectancy gap. For example:

- The risk of dying before 50 years of age for Indigenous Queenslanders has decreased—the decrease being more than double that for non-Indigenous over a decade.
- There has been a substantial reduction in diabetes death rates—with no change for non-Indigenous Queenslanders. These gains have largely been achieved for those aged 50 years and older.
- Similarly, large reductions in injury death rates have been achieved and this was evident for those aged 15–49 years.

Annual change in death rates between 2002 and 2011

Population	Units	Age group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total population – estimated resident	'000	0–85+	4,111.0	4,219.5	4,328.8	4,404.7	4,476.8	4,562.7	4,648.1	4,722.4	4,779.4	
Queensland – proportion of Australia	%	0–85+	19.7	19.9	20.0	20.0	20.0	20.1	20.1	20.1	20.1	
Queensland – by remoteness												
Major cities	'000	0–85+	2,525.5	2,596.8	2,669.1	2,720.6	2,769.9	2,830.5	2,889.0	2,933.7	2,981.3	
Inner regional	'000	0–85+	843.3	863.1	884.3	898.0	910.3	927.5	944.2	956.1	964.1	
Outer regional	'000	0–85+	611.0	626.6	641.3	651.0	660.0	672.2	684.6	691.3	695.2	
Remote	'000	0–85+	75.8	76.8	77.2	77.5	78.1	79.2	79.8	79.5	79.3	
Very remote	'000	0–85+	55.4	56.2	56.9	57.6	58.4	58.9	59.2	59.4	59.0	
Indigenous Queenslanders												
Estimated Resident Population	'000	0–85+	170.7	175.3	180.0	184.6	189.0	193.5	198.2	203.0		
Proportion of Queensland population	%	0–85+	4.2	4.2	4.2	4.2	4.2	4.2	4.3	4.3		
Proportion of Australian Indigenous population	%	0–85+	27.7	27.9	28.0	28.1	28.2	28.3	28.4	28.5		
Births												
Births	no.		60,244	61,401	62,051	62,032	62,181	63,727	63,172	63,819		
Infants	'000	<1	57.9	61.0	62.2	61.8	60.2	61.8	63.4	62.1	62.6	
Young children	'000	1–4	216.1	226.4	236.9	242.4	244.2	247.8	251.0	254.8	255.7	
Children	'000	5–17	733.9	742.5	751.3	757.9	768.2	779.4	790.7	800.9	809.4	
Young adults	'000	18–29	686.1	714.9	747.0	762.7	770.8	781.1	789.4	804.1	806.7	
Adults	'000	30–64	1,915.6	1,958.2	1,995.9	2,022.7	2,053.6	2,083.4	2,117.4	2,140.7	2,158.7	
Older people	'000	65–74	273.3	283.9	298.5	314.7	330.6	352.4	371.5	386.5	402.9	
Elderly	'000	75+	228.1	232.5	237.0	242.5	249.1	256.8	264.8	273.3	283.4	
Children	%	0–17	24.5	24.4	24.3	24.1	24.0	23.9	23.8	23.7	23.6	
Young people	%	18–29	16.7	16.9	17.3	17.3	17.2	17.1	17.0	17.0	16.9	
Adults	%	30–64	46.6	46.4	46.1	45.9	45.9	45.7	45.6	45.3	45.2	
Older people	%	65–74	6.6	6.7	6.9	7.1	7.4	7.7	8.0	8.2	8.4	
Elderly	%	75+	5.5	5.5	5.5	5.5	5.6	5.6	5.7	5.8	5.9	
Headline indicators												
Life expectancy – males	years	at birth	78.9	78.9	79.1	79.4	79.5	79.5	79.6	79.9		
Life expectancy – females	years	at birth	83.6	83.7	83.8	83.9	84.1	84.0	84.1	84.2		
Indigenous life expectancy – males	years	at birth	67.1*				68.7					
Indigenous life expectancy – females	years	at birth	72.7*				74.4					
Non-Indigenous life expectancy – males	years	at birth	78.8*				79.4					
Non-Indigenous life expectancy – females	years	at birth	82.7*				83.0					
*2005-2007												
Perinatal mortality rate – per 1,000 births	rate		10.3	9.6	11.1	10.6	9.8	10.3	9.8	9.9		
Median age at death	years		79.8	80.2	79.9	80.3	80.3	80.6	80.3	80.8		
2005-07 2006-08 2007-09 2008-10 2009-11 2010-12 2011-13 2012-14 2013-15 2014-16												
Infant mortality rate – per 1,000 live births	rate		5.1	5.1	5.1	5.2	5.1	4.8	4.5	4.5		
Indigenous people	rate		9.1	7.9	7.6	8.8	8.4	6.9	6.5	6.1		
Non-Indigenous people	rate		4.8	4.7	4.7	4.7	4.7	4.4	4.2	4.1		
Hospitalisations												
All causes	no.	0–85+	1,561,654	1,644,807	1,712,801	1,766,310	1,842,892	1,917,193	2,006,799			
	rate	0–85+	37,752	38,673	39,162	39,445	40,234	40,809	41,732			
Potentially preventable hospitalisations	no.	0–85+	141,740	143,688	149,831	Change in PPH definition, not comparable to subsequent data						
	%	0–85+	9.1	8.7	8.7							
	rate	0–85+	3,381	3,327	3,353							
Potentially preventable hospitalisations	no.	0–85+	Change in PPH definition, no longer comparable to previous data			114,037	118,016	127,919	131,909			
	%	0–85+				6.5	6.4	6.7	6.6			
	rate	0–85+				2,555	2,584	2,729	2,745			
Coronary heart disease	rate	0–85+	805	747	690	701	698	673	660			
Stroke	rate	0–85+	243	244	242	247	246	251	245			
COPD	rate	0–85+	273	285	274	278	280	287	265			
Asthma	rate	0–85+	166	152	177	160	161	170	157			
Road transport injury	rate	0–85+	264	273	249	229	239	266	279			
Falls	rate	0–85+	678	726	719	739	742	798	842			
Falls	rate	65+	2,453	2,593	2,636	2,815	2,844	3,108	3,206			
Cancer incidence												
All cancers	no.	0–85+	22,236	23,281	23,921	24,191	24,881	25,974	26,335			
	rate	0–85+	531	541	540	530	530	537	530			
Female breast cancer	rate	0–85+	114	124	123	124	121	127	130			
Target age group for screening	rate	50–69	286	310	310	309	295	306	313			
Cervical cancer – female	rate	0–85+	6.9	7.1	7.6	8.3	7.6	9.0	8.0			
Target age group for screening	rate	20–69	9.4	9.7	10.4	11.0	10.9	12.0	11.3			
Prostate cancer – male	rate	0–85+	185	188	186	168	174	171	163			
Lung cancer	rate	0–85+	47	49	48	48	45	45	45			
Colorectal cancer	rate	0–85+	68	67	64	65	64	62	59			
Melanoma	rate	0–85+	66	69	70	69	71	73	76			

Table 1: Population health indicators (persons), Queensland, 2007–2016

Disease prevalence	Unit	Age group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Diabetes and high blood sugar												
Self report	%	18+			7.7	7.8	9.9	8.6	9.2	9.7		
Blood measurement	%	18+					5.0					
Communicable disease notifications	Unit	Age group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Foodborne pathogens	no.	0–85+	6,996	7,154	7,260	7,997	8,718	8,602	8,213	12,697	15,312	
Chlamydia	no.	0–85+	12,696	15,002	16,377	19,046	18,339	18,655	19,199	20,988	20,995	
Infectious syphilis	no.	0–85+	258	200	192	228	341	388	324	394	563	
HIV	no.	0–85+	165	166	182	204	194	206	184	245	203	
Dengue	no.	0–85+	119	230	1,026	288	186	243	489	394	285	
Hendra	no.	0–85+	0	2	1	0	0	0	0	0	0	
Influenza – lab confirmed	no.	0–85+	4,576	3,703	18,318	3,223	10,407	16,927	5,508	17,898	28,057	
Pertussis	no.	0–85+	1,535	2,278	6,212	8,220	8,986	7,559	3,800	1,398	1,861	
Measles	no.	0–85+	4	11	32	14	17	4	53	72	21	
Tuberculosis	no.	0–85+	136	132	168	186	221	174	155	166	183	
Immunisation	Unit	Age group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Childhood vaccination rates – March quarter	%	1 year	90.8	91.2	91.2	91.5	92.1	91.4	92.3	90.7	92.4	
	%	2 years	91.3	92.5	92.2	91.6	92.4	93.1	92.6	93.5	90.2	
	%	6 years	87.2									
	%	5 years		80.6	80.9	82.2	89.7	90.7	91.9	92.8	92.4	
Reporting changed to 5 years from March 2008												
Deaths	Unit	Age group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All causes	no.	0–85+	26,024	26,421	26,150	26,659	27,794	27,791				
	rate	0–85+	626	617	592	584	590	570				
Premature deaths – all causes	no.	0–74	9,836	9,876	10,095	10,126	10,592	10,223				
	%	0–74	37.9	37.4	38.6	38.0	38.1	36.8				
	rate	0–74	250	243	240	233	236	220				
Avoidable deaths	no.	0–74	5,194	5,270	5,350	5,275	5,692	5,309				
	rate	0–74	133	130	128	122	128	115				
All causes	rate	0–85+	626	617	592	584	590	570				
Coronary heart disease	rate	0–85+	105	107	97	92	92	80				
Stroke	rate	0–85+	55	53	48	47	45	43				
Heart failure	rate	0–85+	13	11	9	10	9	10				
All cancers	rate	0–85+	178	185	184	183	177	178				
Female breast cancer	rate	0–85+	23	22	20	20	21	20				
Target age group for screening	rate	50–69	48	47	44	41	39	48				
Cervical cancer – female	rate	0–85+	2	2	2	2	2	2				
Target age group for screening	rate	20–69	2	2	2	2	2	2				
Prostate cancer – male	rate	0–85+	34	34	33	35	35	33				
Lung cancer	rate	0–85+	35	36	35	35	34	34				
Colorectal cancer	rate	0–85+	19	17	18	17	16	16				
Melanoma	rate	0–85+	7	8	7	8	7	7				
Diabetes	rate	0–85+	16	19	18	16	16	17				
Suicide	rate	0–85+	12	13	12	13	15	12				
Asthma	rate	0–85+	2	2	2	1	2	1				
COPD	rate	0–85+	23	24	24	24	25	25				
Road transport deaths	rate	0–85+	9	8	8	6	7	6				
Falls	rate	0–85+	9	8	8	9	10	9				
Falls in older people	rate	65+	60	57	59	62	68	67				
Protective factor prevalence	Unit	Age group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Breastfed at discharge* – total	%	newborn	89.5	89.6	90.6	91.3	91.9	92.0	92.6	92.5		
Indigenous infants	%	newborn	84.6	82.8	84.7	86.0	85.1	85.7				
Non-Indigenous infants	%	newborn	89.7	90.0	90.9	91.6	92.4	92.4				
<i>* Indicator changed to breastfeeding in 24 hours prior to discharge in 2007</i>												
5 or more antenatal visits – total	%		93.3	93.2	93.3	93.5	94.6	94.6	94.2	94.4		
Indigenous women	%		78.1	77.5	77.8	77.7	83.4	84.4	84.0	84.4		
Non-Indigenous women	%		94.2	94.1	94.2	94.5	95.4	95.3	94.8	95.1		
Excellent, very good or good health	%	18+	85.3	83.3	84.6		84.0	83.0			83.6	83.7
Very good or good quality of life	%	18+	88.4	88.7	90.6		89.5	90.9			90.2	89.5
Very satisfied or satisfied with health	%	18+	81.2	78.2	79.1		77.5	79.8			79.8	78.5
Healthy weight – self report	%	18+		45.5	44.7	44.4	42.6	42.3	41.2	42.2	42.3	41.0
Healthy and underweight in children – proxy report	%	5–17			74.0		75.2		72.3	75.9	76.8	74.2
Healthy and underweight – measured	%	18+		39.2			35.1			36.3		
Healthy and underweight in children – measured	%	5–17		73.3			72.5			73.2		
Sufficient physical activity ( $\geq$ 150mins & $\times$ 4 sessions)	%	18–75		53.4	55.5	53.5	56.1	55.1	58.0	58.8	57.5	61.3
Active every day of previous week	%	5–17					44.0		40.6	39.2	39.3	44.5
Participated in organised sport in previous week	%	5–17			63.1		54.4		66.0			
Participated in organised sport in previous year	%	5–17									72.4	73.8
Mean daily fruit intake	serves	18+	1.7	1.8	1.9	1.8	1.6	1.8	1.8	1.9	1.8	1.8
Mean daily vegetable intake	serves	18+	2.5	2.5	2.5	2.6	2.4	2.4	2.4	2.5	2.4	2.4

Protective factor prevalence (continued)	Unit	Age group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mean daily fruit intake	servings	5–17			2.0		1.9		2.0	2.0	2.0	2.2
Mean daily vegetable intake	servings	5–17			2.1		2.1		2.2	2.2	2.0	2.0
2013 Dietary Guidelines												
Adequate fruit intake – adults	%	18+							55.7	58.3	56.8	57.3
Adequate fruit intake – children	%	5–17							65.0	66.7	67.7	70.0
Adequate vegetable intake – adults	%	18+							7.1	9.1	7.6	6.8
Adequate vegetable intake – children	%	5–17							6.3	6.2	3.7	3.7
2003 Dietary Guidelines												
Adequate fruit intake – adults	%	18+	52.6	54.6	57.1	57.4	50.3	53.7	55.7	58.3	56.8	57.3
Adequate fruit intake – children	%	5–17			69.4		59.6		61.0	62.6	63.1	65.1
Adequate vegetable intake – adults	%	18+	8.9	9.4	10.1	11.3	9.1	9.7	8.8	10.3	9.5	8.3
Adequate vegetable intake – children	%	5–17			34.5		29.2		33.5	33.7	26.4	29.4
Any 3 of 5 sun safe behaviours – summer	%	18+				56.5	52.0	52.6			56.2	58.4
BreastScreen Queensland participation	%	50–69	57.6			57.9		57.8		57.6		
Pap smear screening participation – females	%	20–69	59.5			55.0		55.5		56.0		
Bowel screening participation	%	50,55,65				37.4		32.2				
Bowel screening participation	%	50,55,60,65								36.5		
Risk factor prevalence												
Low maternal age – females	%	<20 years	5.5	5.7	5.5	5.5	5.1	5.0	4.7	4.3		
Low birth weight – total	%		6.8	6.8	7.1	6.9	6.9	7.1	7.0	7.0		
Indigenous people	%		12.1	10.9	11.6	12.1	12.0	8.2	12.0	11.0		
Non-Indigenous people	%		6.5	6.5	6.8	6.6	6.6	6.8	7.0	6.7		
Smoking during pregnancy	%		19.7	19.3	18.7	17.2	16.0	15.2	14.2	13.1		
Indigenous people	%		52.9	52.9	52.8	53.2	49.7	48.5	47.5	45.0		
Non-Indigenous people	%		17.9	17.3	16.7	15.0	13.9	13.0	12.0	11.0		
Self rated fair or poor health	%	18+	14.7	16.7	15.4		16.0	17.0			16.4	16.3
Psychological distress – high/very high risk	%	18+		15.2	12.0		13.6					
Smoke daily	%	18+		19.2	15.8	15.5	14.8	14.3	15.8	14.0	12.3	11.9
Alcohol consumption												
Lifetime risk	%	18+				22.9	22.7	21.1	20.5	18.9	22.4	21.1
Single occasion risk – weekly	%	18+				16.4	15.9	15.3	15.1	13.9	15.0	14.4
Single occasion risk – at least monthly	%	18+				32.1	34.8	29.6	30.7	29.1	31.9	30.9
Illicit drugs – used in previous 12 months	%	14+	13.7			15.1			15.5			
Underweight – self report	%	18+		3.1	3.1	2.8	2.8	2.5	3.3	2.6	2.3	2.4
Overweight – self report	%	18+		33.4	34.1	34.2	34.5	35.0	35.3	34.7	34.3	34.6
Obese – self report	%	18+		21.1	21.3	21.4	22.9	22.7	23.4	23.2	23.4	24.4
Overweight and obese – self report	%	18+		54.5	55.3	55.6	57.4	57.7	58.8	57.8	57.7	59.0
Overweight – measured	%	18+		35.9				34.5			33.4	
Obese – measured	%	18+		24.9				30.4			30.2	
Overweight and obese – measured	%	18+		60.8				64.9			63.6	
Overweight – proxy report	%	5–17			16.4		16.7		17.4	16.4	16.7	17.8
Obese – proxy report	%	5–17			9.5		8.1		10.2	7.7	6.5	8.0
Overweight and obese – proxy report	%	5–17			26.0		24.8		27.7	24.1	23.2	25.8
Overweight – measured	%	5–17		17.9				18.2			19.2	
Obese – measured	%	5–17		8.8				9.3			7.2	
Overweight or obese – measured	%	5–17		26.7				27.5			26.2	
2013 Dietary Guidelines												
Inadequate fruit intake – adults	%	18+							44.3	41.7	43.2	42.7
Inadequate fruit intake – children	%	5–17							35.0	33.3	32.3	30.0
Inadequate vegetable intake – adults	%	18+							92.9	90.9	92.4	93.2
Inadequate vegetable intake – children	%	5–17							93.7	93.8	96.3	96.3
2003 Dietary Guidelines												
Inadequate fruit intake – adults	%	18+	47.4	45.4	42.9	42.6	49.7	46.3	44.3	41.7	43.2	42.7
Inadequate fruit intake – children	%	5–17			30.6		40.4		39.0	37.4	36.9	34.9
Inadequate vegetable intake – adults	%	18+	91.1	90.6	89.9	88.7	90.9	90.3	91.2	89.7	90.5	91.7
Inadequate vegetable intake – children	%	5–17			65.5		70.8		66.5	66.3	73.6	70.6
Takeaway food once a week or more	%	18+		41.2	36.9		33.7	24.3		29.8		
Takeaway food once a week or more	%	5–17			45.5		47.6			45.4	47.8	47.5
Inactive	%	18–75		11.2	11.7	11.9	9.7	10.7	9.7	9.4	10.0	9.3
Insufficient physical activity	%	18–75		35.4	32.8	34.6	34.2	34.2	32.4	31.8	32.5	29.4
Sedentary – sitting 7 hours/day, 7 days/week	%	18–65			13.1			12.1				
Exceeds recommended daily screen time*	%	5–17			22.2		43.3		33.9	32.5	37.8	
* Small screen viewing for entertainment												
Sunburnt in previous 12 months	%	18+			50.9	52.4	51.6	52.3	54.3	51.6	55.8	
Sunburnt in previous 12 months	%	5–17							54.4	64.0		

\* Queensland asked the Commonwealth Department of Health to remove 47 facilities (Primary Health Care Centres and Outpatient Clinics) from the declared hospital list, taking effect at 1 July 2014. While episodes of care at these facilities were still collected in the QHAPDC for 2014/15, data provision was not mandatory and hence data may not be comparable with preceding years. Thus the records from these facilities have not been reported to ensure comparability over time.

# Queensland's population



- Demographic factors have a large impact on health and on the demand for and delivery of health services. This chapter provides a summary of key demographic factors likely to influence the health needs of the population now, and in the future.
- There were 4.779 million Queenslanders in 2015 and 4.853 million forecast for 2016.
- Most of Queensland (90% of the land mass) is classified as remote or very remote, with population densities of less than five persons per sq. km. Almost all the population (97%) is clustered in the coastal and hinterland towns and the south east.
- The population has grown at the rate of about 86,000 persons per year over the past decade and is projected to increase by about 94,000 per year for the next 20 years.
- Two-thirds of the 2.0 million projected increase in the state population over the next 20 years is likely to occur in four HHSs: Metro South, Metro North, West Moreton and Gold Coast.
- About 1 in 8 Queenslanders was aged 65 years or older in 2014, with the proportion forecast to increase to 1 in 5 by 2036. This will be a considerable driver of future health needs.
- Ageing, that is, an increasing proportion of older people is evident in all HHSs—those with the greatest relative change are West Moreton, Torres and Cape, Central Queensland, and Townsville.
- About 60% of the 695,000 state increase in older people over the next 20 years will occur in the four HHSs with the largest number of older people in 2014: Metro South, Metro North, Gold Coast and Sunshine Coast.
- Overseas migrants currently make up about 32% of the most recent annual increase in Queensland's population with an increasing proportion coming from Asia.
- There were about 200,000 Indigenous Queenslanders in 2014, 4.3% of the state population. One-quarter of the Indigenous Queensland population live in two HHSs: Cairns and Hinterland, and Metro South.
- Diversity is evident in many characteristics of the Queensland population including residential location, education, employment, cultural background, sexual orientation, country of birth, and household and family characteristics.

## Growing

There were an estimated 4.779 million Queensland residents in June 2015, comprising 20% of the Australian population of 23.781 million.<sup>2</sup> The 2016 population is forecast to be 4.853 million.<sup>3</sup>

The Queensland population has doubled over the past 26 years (from 2.3 million in 1981) and is projected to double again over the next 46 years (to 9.6 million in 2061).<sup>2</sup>

Over the past decade, the population has increased by about 86,000 people on average each year (Figure 2a). Peak growth occurred in 2008 and 2009 with an increase of close to 110,000 per year. Since then growth has slowed to less than 80,000 per year between 2010 and 2012 and to 59,000 per year in 2013 and 2014.<sup>2</sup> However, over the longer term, population growth is projected to recover, with an additional 94,000 people each year on average from 2016 until 2036 when the total Queensland population is estimated to be 6.8 million.<sup>3</sup>

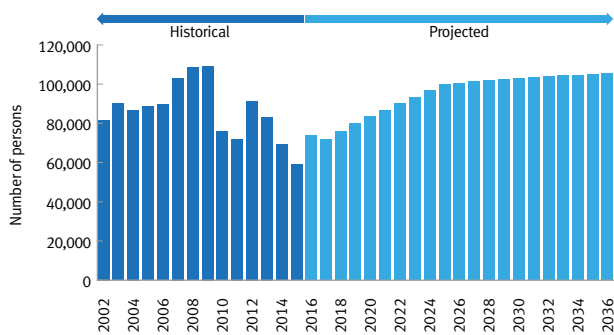
Compared to other states, between 2002 and 2015, Queensland’s population growth of 31% was second highest after Western Australia (34%).<sup>2</sup> Nationally the population increased by 22%, with Victoria, Northern Territory and the Australian Capital Territory growing at a similar rate, and the remaining states growing more slowly (9–16%).

Continued population growth is projected for the regional and coastal HHSs, with 20% of the state increase between 2014 and 2026 projected to be in Metro South, followed by 18% in Metro North, 15% in Gold Coast and 13% in West Moreton (Figure 2b).<sup>3</sup> The greatest absolute growth is projected to occur in Metro South HHS, increasing by one-fifth, from a population of 1.1 million to 1.3 million in 2026. However, the West Moreton population is projected to grow by 50% over the next 10 years from about 260,000 people in 2014 to about 400,000 in 2026—the greatest relative increase (Figure 2c). Other HHSs with a strong growth outlook are Gold Coast and Sunshine Coast, with both projected to grow by at least 25% over 10 years.

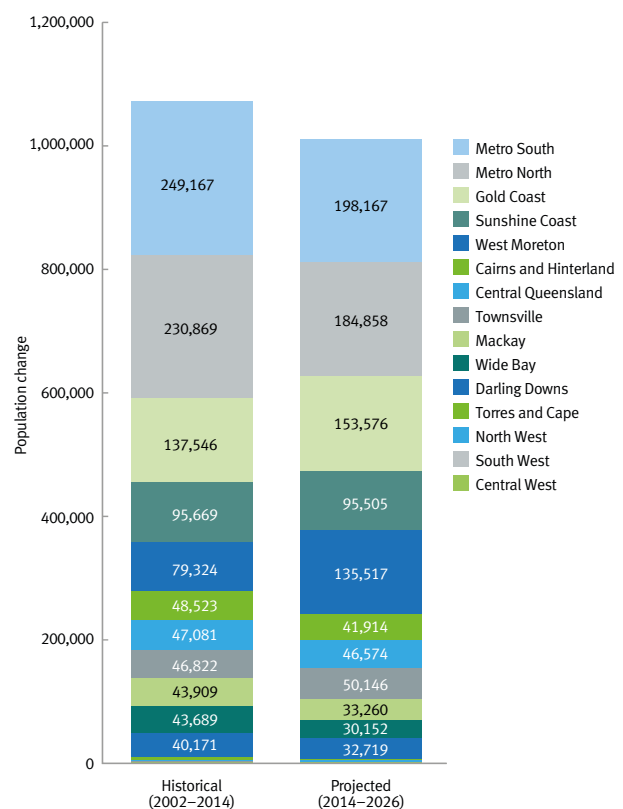
The northern and western HHSs each have populations of about 30,000 people (with the exception of Central West with 12,000 people)—change in these small HHSs has little impact on overall state patterns (Figure 2b).<sup>3</sup> Nevertheless, the population of North West, and Torres and Cape, is projected to increase by about 7–10% (about 2500 increase in each) over the next 10 years, South West by 2% (about 600 people), while a small decline is projected for Central West (about 400 fewer people).

Figure 2: Population change, Queensland<sup>2,3</sup>

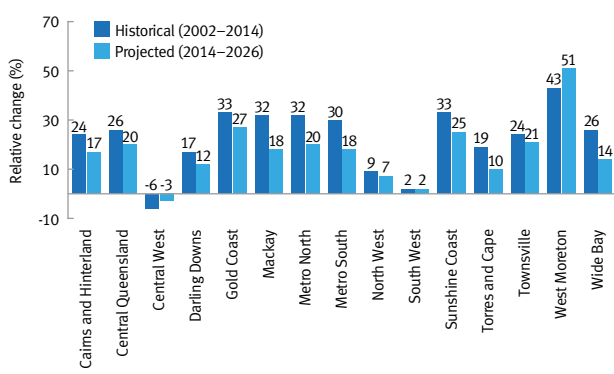
### a. Annual increase, 2002–2036, Queensland



### b. Change in total population by HHS, 2002–2026



### c. Relative growth in total population by HHS, 2002–2026





## Ageing

In 2015, there were 686,237 Queenslanders aged 65 years and older, 14% of the total population.<sup>2</sup>

The proportion of older persons has increased steadily—in 2000 about 1 in 10 was aged 65 years and older and is projected to reach 1 in 5 by 2036.<sup>2,3</sup> The annual increase in the number of older people is accelerating and projected to reach about 39,000 per year by 2036 (Figure 3a).

Those HHSs with the largest populations of older people are Metro South (20% of the state population in 2014), Metro North (19%), Gold Coast (13%) and Sunshine Coast (11%).

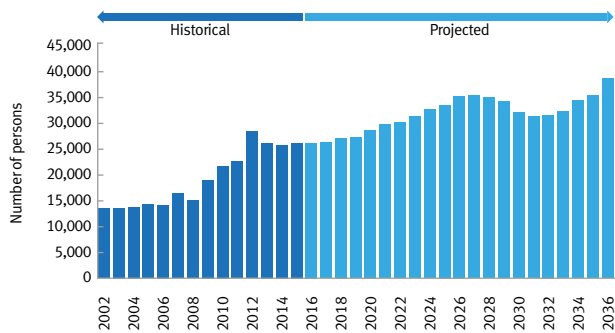
Population ageing, that is, an increasing proportion of older people, is evident across the state (Figure 3c). HHSs with the greatest relative increase in the number of older people between 2014 and 2026 are Torres and Cape (projected to double), West Moreton (projected to grow by 81%), Central Queensland and North West (projected to increase by around two-thirds) and numerous other HHSs growing by at least 50% (Figure 3c).<sup>3</sup>

The number of older people in Queensland is projected to increase by a total of 354,000 between 2014 and 2026.<sup>3</sup> One-fifth of this increase will occur in Metro South HHS (about 70,000 more older people), 18% will be in Metro North (an extra 65,000), 12% in Gold Coast (about 44,000), and 11% in Sunshine Coast (an extra 38,000) (Figure 3b).

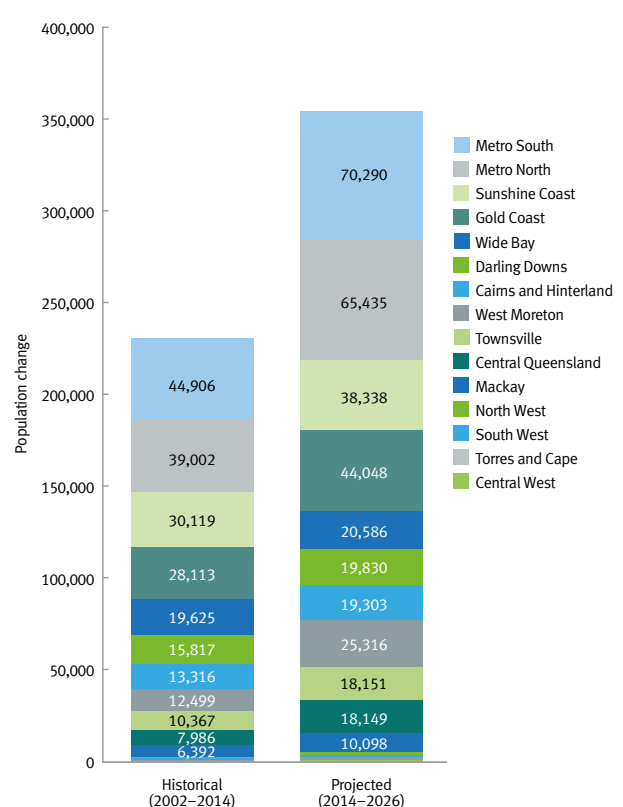
The northern and western HHSs each had fewer than 4000 older people in their 2014 populations and although an increase is projected for Torres and Cape (at least doubling) and North West (growing by two-thirds) change in these HHSs has little impact on overall state patterns (Figure 3b).<sup>3</sup>

Figure 3: Population change, people aged 65 years and older, 2002–2036, Queensland<sup>2</sup>

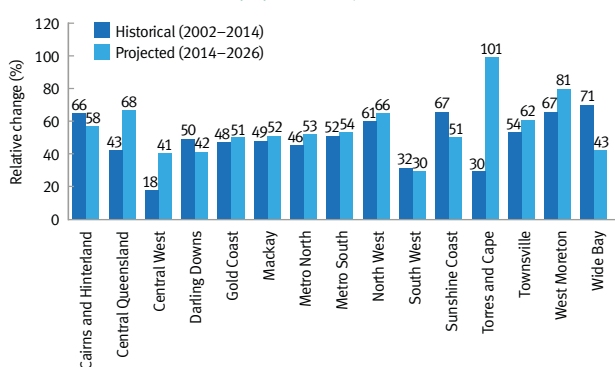
a. Annual increase, 2002–2036, Queensland



b. Change in older population by HHS, 2002–2026



c. Relative growth in older population by HHS, 2002–2026



## Diversifying

Overseas migration is a major contributor to population growth in Queensland, comprising 44% of annual increase over the past five years although declining in recent years (Figure 4a). In 2015<sup>2</sup>:

- Net overseas migration added 19,076 individuals to the Queensland population, 32% of total growth.
- Natural increase (births minus deaths) added 33,436 individuals, 57% of total growth.
- Interstate migration contributed 6417 persons, 11% to total population growth.

In the 2011 census, 22% (about 890,000 persons) were born overseas, 26% of whom had arrived between 2006 and 2011 (classified as recent arrivals).<sup>4</sup> About half of recent arrivals were born in English speaking countries with the proportion from the Asian geographical region increasing from 30% in 2006 to a peak of 41% in 2009. Over the same period, the percentage of persons who reported being from other major global geographical regions remained relatively stable.

The estimated resident population of Indigenous Queenslanders in 2014 was 203,045.<sup>5</sup> This was 4.3% of the state population. The Indigenous Queensland population varied by HHS (Figure 4b):

- Cairns and Hinterland had the largest population (31,172) followed by Metro South (26,275)
- Torres and Cape had the largest proportion (67%) followed by North West (26%).

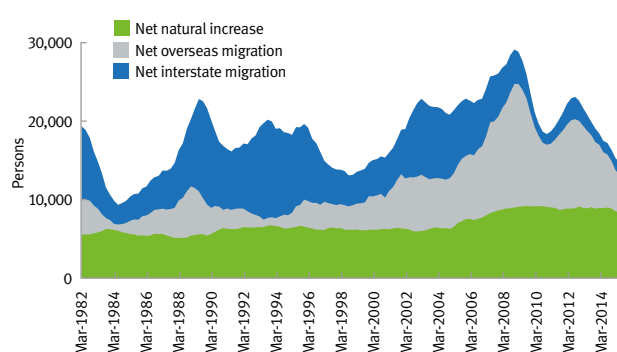
Compared to other jurisdictions, Queensland had the second largest proportion of the Australian Indigenous population (29%) after New South Wales (31%), the greatest proportion living outside the capital city (73%) and the youngest population with 38% aged 0–14 years (median age 20 years).<sup>6</sup>

Selected indicators of cultural and sociodemographic diversity within Queensland include<sup>7</sup>:

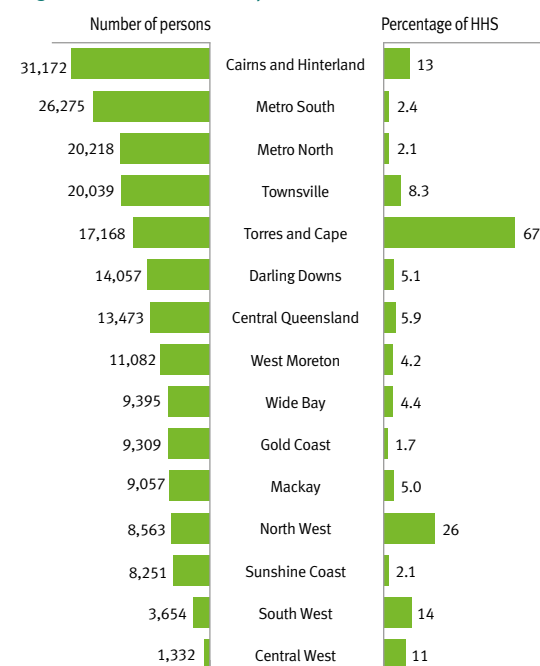
- 3% live in remote and very remote areas
- 20% live in areas of socioeconomic disadvantage
- 22% were born overseas
- 12% of households speak two or more non-English languages
- 13% have low education (of those aged 15 years or older and are no longer at school or left before year 10)
- about 2700 permanent settlers arrived under the Humanitarian Program including refugees and humanitarian and onshore arrivals in 2013–14<sup>8</sup>
- 6.4% were unemployed (15 years or older, January 2016)<sup>9</sup>
- 16% of family households are one-parent (82% of these are female single parents)
- 7300 adults were prisoners in 2015<sup>10</sup>
- 3% of Australian adults identify as gay, lesbian, bisexual or transgender.<sup>11</sup>

Figure 4: Population diversity, Queensland<sup>4</sup>

### a. Components of growth 1981–2015



### b. Indigenous Queenslanders by HHS, 2014<sup>5</sup>



## Data sources and methods: demography

The two major data sources for this chapter were:

- ABS: Estimated resident population and census<sup>2</sup>
- Queensland Government population projections<sup>3</sup>

All data sources are cited.

### For further information:

Statistical tables online (page 1)

# Burden of disease and injury



The latest burden of disease and injury study\* for Australia was released in 2016. It was undertaken by the Australian Institute of Health and Welfare<sup>12</sup>, with data for Queensland in 2011 as follows:

- Total disease burden (DALYs): cancers, cardiovascular disease, mental disorders and musculoskeletal conditions caused the most health loss.
- Fatal burden (YLL): cancers, cardiovascular disease and injuries caused the greatest years of life lost.
- Disability burden (YLD): mental disorders, musculoskeletal disorders and respiratory conditions caused the greatest loss in healthy life.

Risk factors contributed to health loss:

- 44% of deaths and 31% of the total burden of disease for Australia (DALYs) was due to the joint effect of behavioural, metabolic and environmental risks.
- The leading risks were tobacco smoking, dietary factors combined, high body mass, risky alcohol consumption and physical inactivity.

The 2011 Australian study included an analysis for Indigenous Australians with limited data currently available for Queensland<sup>14</sup>:

- The Indigenous Queensland burden was 2.2 times the non-Indigenous burden based on DALY rates.

- The leading broad causes of total burden (DALYs) for Indigenous Queenslanders were mental and substance use disorders, injuries and cardiovascular disease.
- Risk factors accounted for 37% of the total burden of disease for Indigenous Australians with tobacco, alcohol and high body mass the largest causes.

A global study for 2013 was released in 2015<sup>13</sup> and showed that the health of Australians was among the best in the world. Australia was:

- within the top 10 of 188 countries worldwide for life expectancy
- a leader in all cause death rates, having improved over the past 23 years
- fourth among OECD countries for average YLL rate ranking for top 10 causes.

However, based on the global assessment, Australia did not rank so highly on disability burden compared with the 34 OECD countries being:

- close to the bottom for all cause YLD rates
- lower in health adjusted life expectancy ranking, due to the relatively high loss of healthy years, and having slipped in ranking over the 23 years since 1990.

**Burden of disease = years of life lost + years lost to disability**  
**DALYs = YLL + YLD**

### \* Methodological caveat:

Burden of disease is a complex methodology to assess total health loss. It considers premature fatal outcomes as well as loss of healthy life (disability) and expresses both in a single metric, the disability adjusted life year (DALY). Outputs from these studies are subject to methodological change, multiple assumptions and varying data sources and, as such, results may vary between studies. As a result, there is some divergence in results for Australia between the 2013 Global Burden of Disease study and the 2011 Australian Burden of Disease Study.

## Queensland

The most recent burden of disease and injury study undertaken in Australia was released in 2016—the Australian Burden of Disease Study (2011 data).<sup>12</sup> It was conducted by the Australian Institute of Health and Welfare (AIHW) and adopted the methodologies of the Global Burden of Disease study<sup>13</sup> and used the most recent detailed prevalence estimates specific to Australia. The first release included limited state level outputs as well as an analysis for Indigenous Australians. The following results are for the total Queensland population unless otherwise noted.

In 2011, the total disease burden (DALYs) was fairly evenly split between fatal outcomes (51% YLL) and disability burden (49% YLD).<sup>12</sup> The Australian male burden rate was 28% higher than the female rate with males experiencing 54% of total burden.

**Total disease burden (DALYs):** Cancer was the leading broad cause of total burden (17%) in 2011, followed by cardiovascular disease (14%), mental disorders (12%) and musculoskeletal conditions (12%), together accounting for over half the total burden.<sup>12</sup> For Australia, the greatest relative increase in the age-adjusted burden rate between 2003 and 2011 was for neurological conditions (20% increase) and the greatest decrease was for cardiovascular disease and for infectious conditions (30% decrease).

The five leading specific causes of disease burden in 2011 were coronary heart disease (7.8%), COPD (3.8%), lung cancer (3.4%), back pain and problems (3.4%) and suicide and self inflicted injuries (3.3%).<sup>12</sup> This excludes residual categories such as other musculoskeletal problems (4.6%).

**Premature death burden:** The three largest specific causes of premature death (YLL) in Queensland in 2011 were coronary heart disease (12%), lung cancer (6.5%), and suicide and self inflicted injuries (6.4%).<sup>12</sup>

**Disability burden:** The three largest specific causes of disability (YLD) in Queensland in 2011 were back pain and problems (6.9%), anxiety disorders (5.9%) and depressive disorders (5.2%). This excludes the residual category of other musculoskeletal (9.0%).<sup>12</sup>

**Risk factors:** An estimated 31% of the total burden of disease and injury in Australia in 2011 was due to the joint effect of 29 modifiable risk factors.<sup>12</sup> Data for Queensland is not currently available.

The five leading causes were tobacco smoking (9.0% of DALYs), joint effect of dietary risks (7.2%), high body mass (5.5%), risky alcohol consumption (5.1%) and physical inactivity (5.0%) (Table 2). The impact of these risks is described in more detail in the relevant sections of Chapter 8, commencing on page 57. The combined effect of the 29 risk factors resulted in 64,992 deaths of Australians in 2011, 44% of all deaths (estimated to be about 13,000 Queenslanders). The joint effect of risk factors explained about 20% of the disability burden, with smoking the leading cause.

### Socioeconomic and remoteness differences:

Socioeconomic disadvantage accounted for 21% of the total burden in Australia in 2011.<sup>12</sup> The age adjusted DALY rate in disadvantaged areas was 50% higher than the rate in advantaged areas. The greatest relative difference between socioeconomic groups was endocrine diseases (including diabetes), however, the greatest absolute difference was due to mental and substance use disorders.

Remoteness accounted for 4.2% of the burden in Australia in 2011.<sup>12</sup> This included DALYs excess as a result of higher burden rates for those Australians living outside a major city. The disease group with the greatest relative difference in DALY rates between remote areas and cities was kidney and urinary disease, although the largest contributors to the absolute difference were cardiovascular diseases and injuries.

Table 2: Leading risk factors: by DALYs, death and YLDs, Australia 2011

Rank	Deaths		YLD		DALY	
	Risk factor	%	Risk factor	%	Risk factor	%
1	Tobacco use	12.8	Tobacco use	4.3	Tobacco use	9.0
2	All dietary risks (joint effect)	12.1	Alcohol use	4.0	All dietary risks (joint effect)	7.2
3	Blood pressure	9.9	All dietary risks (joint effect)	2.9	High body mass	5.5
4	High body mass	7.9	High body mass	2.9	Alcohol use	5.1
5	Physical inactivity	7.8	Occupational exposures and hazards	2.6	Physical inactivity	5.0
6	Alcohol use	4.5	High blood plasma glucose	2.3	Blood pressure	4.9
7	High blood plasma glucose	3.7	Physical inactivity	2.1	High blood plasma glucose	2.7
8	High cholesterol	3.5	Blood pressure	2.0	High cholesterol	2.4
9	Drug use	1.3	Drug use	1.3	Occupational exposures and hazards	2.0
10	Occupational exposures and hazards	1.0	High cholesterol	1.0	Drug use	1.8
	<b>All risk factors (joint effect)</b>	<b>44.3</b>	<b>All risk factors (joint effect)</b>	<b>19.5</b>	<b>All risk factors (joint effect)</b>	<b>31.5</b>

## Indigenous Queenslanders

As part of the Australian Burden of Disease Study 2011, the AIHW produced estimates for the Indigenous Australian population.<sup>14</sup> While the state-level data is limited, it does include critical information to assist in policy and planning within Queensland to improve the health of Indigenous Queenslanders.

**Total disease burden:** Mental and substance use disorders were the leading broad cause of total burden (DALYs) for Indigenous Queenslanders in 2011 (21%), followed by injuries (13%), cardiovascular disease (11%), cancers (9.6%) and musculoskeletal conditions (7.2%) (Figure 5a).<sup>14</sup> After adjustments were made for age differences, the burden rate for Indigenous Queenslanders in 2011 was 2.2 times that of non-Indigenous Queenslanders. The age profile for burden of disease varied markedly (Figure 5b).

Due to small numbers, Indigenous jurisdictional estimates are available at the broad cause level only. For Indigenous Australians the five leading specific causes in 2011 were coronary heart disease (7%), suicide and self inflicted injuries (5%), anxiety disorders (4%), alcohol use disorders (4%), and diabetes (4%).

**Premature death burden:** The three largest broad causes of premature death (YLL) for Indigenous Queenslanders in 2011 were injuries (22%), cardiovascular disease (19%) and cancers (18.2%).<sup>14</sup> The Indigenous Queensland fatal burden rate was 2.4 times the non-Indigenous rate.

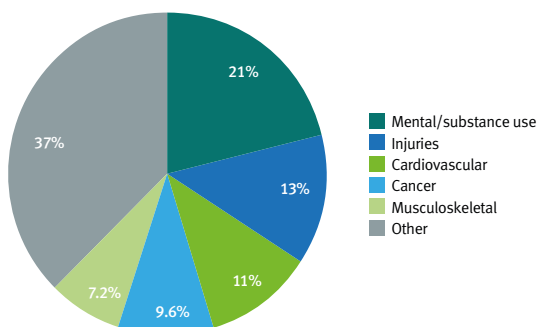
**Disability burden:** The three broad causes of disability (YLD) in 2011 were mental and substance use disorders (41%), musculoskeletal (14%) and respiratory conditions (11%).<sup>14</sup> The Indigenous Queensland disability burden rate for all causes was 90% higher than the non-Indigenous rate.

**Trends:** The age adjusted burden rate for Indigenous Australians decreased by 5% between 2003 and 2011 (10% non-Indigenous Australians). This was driven by the decrease in fatal burden (11% decrease, 16% decrease for non-Indigenous), while the disability burden increased by 4% (4% decrease for non-Indigenous). Improvement in cardiovascular disease burden was the largest contributor to the net change in burden rate between 2003 and 2011 (76%), followed by infectious diseases (20%), while the increased cancer and injury burden had biggest negative impact on the change (-13% and -9%).

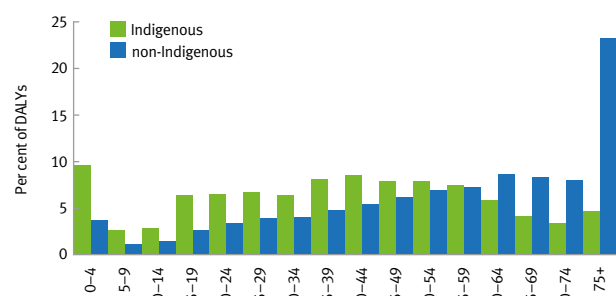
**Risk factors:** An estimated 37% of the total burden of disease and injury for Indigenous Australians in 2011 was due to the joint effect of 13 modifiable risk factors.<sup>14</sup> Tobacco use was the largest single contributing risk factor at 12%, followed by alcohol use (8.3%) and high body mass (8.2%).

Figure 5: Burden of disease indicators for Indigenous Queenslanders, 2011<sup>14</sup>

a. Indigenous burden distribution by broad cause



b. Burden distribution by age group



## Australia and international rankings

Australia was ranked highly for death and DALY metrics based on the 2013 global burden of disease study that compared 188 countries for 306 disease causes and 79 risks.<sup>13</sup>

Specifically, in 2013 Australia was ranked<sup>13</sup>:

- 5th highest male life expectancy at 79.7 years among 34 OECD countries (9th among 188 countries)
- 7th highest female life expectancy at 84.0 years among OECD countries (11th among 188 countries)
- 4th lowest all cause male death rates in 2013 among OECD countries, up from 8th in 1990
- 7th lowest all cause female death rates in 2013 among OECD countries, no change from 1990
- equal 4th best with Sweden among OECD countries for average rank for the leading causes of fatal burden (YLLs) where Japan had the best average ranking (Figure 6a).

However, the disability burden is high and Australia does not rank well among the 34 OECD countries<sup>13</sup>:

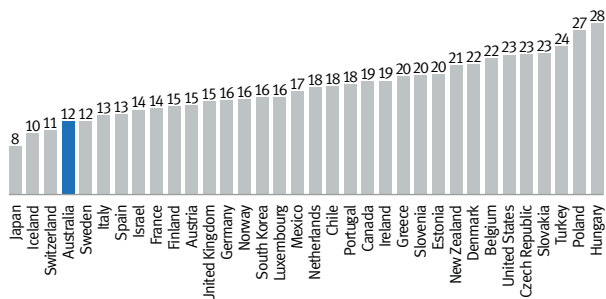
- 31st lowest all cause male YLD rates in 2013, down from 28th in 1990

- 33rd lowest all cause female YLD rates in 2013, no change in rank from 1990
- lowest (that is, worst) among OECD countries for average rank among 10 top causes of disability burden (YLD) where Japan had the best average ranking (Figure 6b)
- as a result of the disability burden, for health adjusted life expectancy Australia was ranked:
  - 11th highest for males in 2013, down from 10th position in 1990
  - 19th highest for females in 2013, down from 13th in 1990.

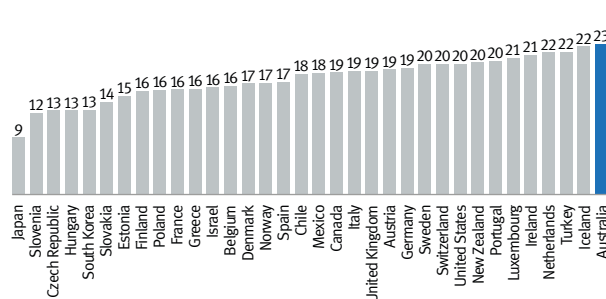
Rising disability burden is evident in many of the developed nations<sup>15,16</sup> and also in Australia—based on the global study for Australia a 51% increase in YLD since 1990 compared to 3% increase for fatal burden (YLL). Much of the increase was associated with ageing, and after adjustment ageing and population growth, the increases were 9% and 6% respectively. The greatest contributor to the increase in disability burden was musculoskeletal disorders, followed by mental and substance use disorders, neurological disorders and diabetes, endocrine and blood disorders (Table 3).

Figure 6: Average rank for 10 leading causes\* of disease burden, OECD countries, 2013<sup>13</sup>

a. Fatal burden: YLL



b. Disability burden: YLD



\*Australia's top 10 causes of burden.

Table 3: Change in disability burden between 1990 and 2013 based on global assessment, Australia<sup>13</sup>

All level 2 causes	1990	2013	Change (YLD)	% of total YLD
Musculoskeletal disorders	505,599	763,793	258,194	24%
Mental and substance use disorders	512,659	723,465	210,806	19%
Other non-communicable diseases	296,068	440,701	144,633	13%
Neurological disorders	206,384	337,169	130,785	12%
Diabetes, urogenital, blood, and endocrine diseases	132,250	252,474	120,224	11%
Chronic respiratory diseases	154,647	234,430	79,783	7%
Cardiovascular diseases	43,001	96,838	53,837	5%
Neoplasms	31,787	59,255	27,468	3%
Digestive diseases	27,128	51,086	23,957	2%
Neonatal disorders	19,840	40,608	20,768	2%
Unintentional injuries	86,400	103,645	17,245	2%
Nutritional deficiencies	58,276	71,662	13,387	1%
Other communicable, maternal, neonatal, and nutritional diseases	5,712	7,486	1,775	0%
Diarrhoea, lower respiratory, and other common infectious diseases	10,784	11,990	1,206	0%
Maternal disorders	611	685	74	0%
Self-harm and interpersonal violence	2,001	2,067	66	0%
Neglected tropical diseases and malaria	214	265	51	0%
Cirrhosis	747	794	47	0%
Forces of nature, war, and legal intervention	0	0	0	0%
HIV/AIDS and tuberculosis	1,933	1,650	-283	0%
Transport injuries	35,180	26,120	-9,060	-1%
<b>Total</b>	<b>2,131,221</b>	<b>3,226,183</b>	<b>1,094,963</b>	<b>100%</b>

# Lifetime health



- Life expectancy continues to increase in Queensland although annual gains are slowing.
- The life expectancy gap between Indigenous and non-Indigenous Queenslanders has diminished slightly. The latest estimate is a gap of about 10 years.
- About one-third of the life expectancy gains in Australia in the past 23 years were for years lived in ill-health, also described as health disability.
- A good start to life begins before conception: it is influenced by the mother's health and wellbeing, as well as good antenatal care during the pregnancy, safe delivery at full term, initiation and continued breastfeeding, good nutrition during the early years and a nurturing, secure environment.
- Birth and long-term health outcomes are compromised for some infants—about 22% of women are obese at conception, 13% of women smoke during pregnancy, 9% of infants are born preterm, 19% are at the riskier ends of the birth weight spectrum (7% are low birth weight, 12% high birth weight), 93% receive breast milk at discharge but only 29% are exclusively breastfed to four months although about 32% still receive some breast milk at 12 months. Indigenous infants, those of teenage mothers and those from socioeconomically disadvantaged areas experience a higher level of risk than others.
- The majority of adult Queenslanders experience good health and wellbeing, and Australia ranks among the top 10 countries for life satisfaction and happiness worldwide, however, mental health problems are quite prevalent and diminish the wellbeing of some.
- Despite self-assessing their health to be good, many Queenslanders experience some level of disability or ill-health and even relatively minor conditions add to health system pressures.
- Globally, the disability burden is increasing with disorders of ageing and disability becoming increasingly prominent—musculoskeletal conditions, neurological disorders, mental health disorders including dementia and substance use disorders, diabetes and sense organ disorders.
- Australia's high life expectancy ranking among the OECD carries with it a relatively high disability burden, resulting in social and economic impacts including growing health system pressures.
- There is a high risk of Queensland adults being diagnosed with a chronic disease as they age: the lifetime risk of a cancer diagnosis is about 1 in 3, for cardiovascular disease about 1 in 3 for males and 1 in 5 for females, for diabetes 1 in 3, and for chronic respiratory conditions 1 in 4.
- Lifestyle and metabolic factors substantially increase the risk of a person developing a chronic disease. Action to improve healthy lifestyles, reduce weight and manage metabolic risks is key to a longer, healthier life.

## Living longer

For Queenslanders life expectancy at birth continues to increase and reflects declining death rates at all ages. In 2014, life expectancy was 79.9 years for males and 84.2 years for females, an increase of 2.1 years and 1.3 years respectively over the previous decade.<sup>17</sup>

Life expectancy gains are slowing, with average annual gains of just 0.1 years over the past four years, for both males and females (Figure 7). Opportunities to improve life expectancy through reduction of early deaths are described on page 29.

Life expectancy in Queensland was a little lower than national: 0.4 years less for males and 0.2 years less for females in 2014.<sup>17</sup> Compared to other Australian jurisdictions, Queensland had the third lowest life expectancy at birth for both males and females.

Life expectancy in Australia continues to be among the highest in the world (Figure 8). Among OECD countries in 2013, Australian males were ranked fifth highest—1.1 years behind highest ranked Iceland.<sup>18</sup> Australian females were ranked eighth highest—2.4 years behind highest ranked Japan.

Queensland’s Indigenous population also experienced gains in life expectancy at birth (Table 4). Between 2005–2007

The life expectancy at birth was 79.9 years for males and 84.2 years for females in 2014. There is a 10-year gap for Indigenous Queenslanders.

and 2010–2012 life expectancy for Indigenous Queensland males increased by 1.6 years, and females by 1.7 years. This outpaced improvements in non-Indigenous life expectancy which saw a 0.6 year improvement for males and 0.3 years for females in Queensland. Consequently, there has been a modest narrowing of the life expectancy gap to around 10 years between Queensland’s Indigenous and non-Indigenous populations—10.8 years for males and 8.6 years for females in 2010–12.

Life expectancy for Indigenous Queenslanders was higher than that of Indigenous Australians in 2010–2012, 1.3 years higher for males and 2.1 years for females (Table 4). The life expectancy gap in Queensland was smaller than the national gap: by about two years in 2010–2012.

Figure 7: Life expectancy at birth, Queensland 2003–2014<sup>17</sup>

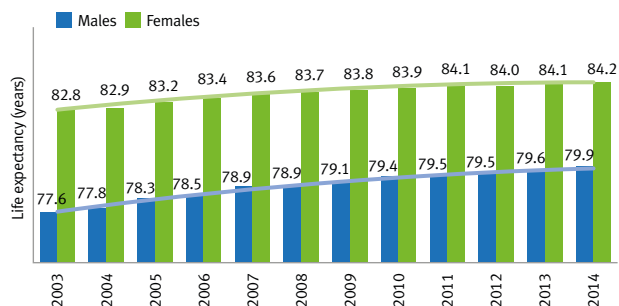
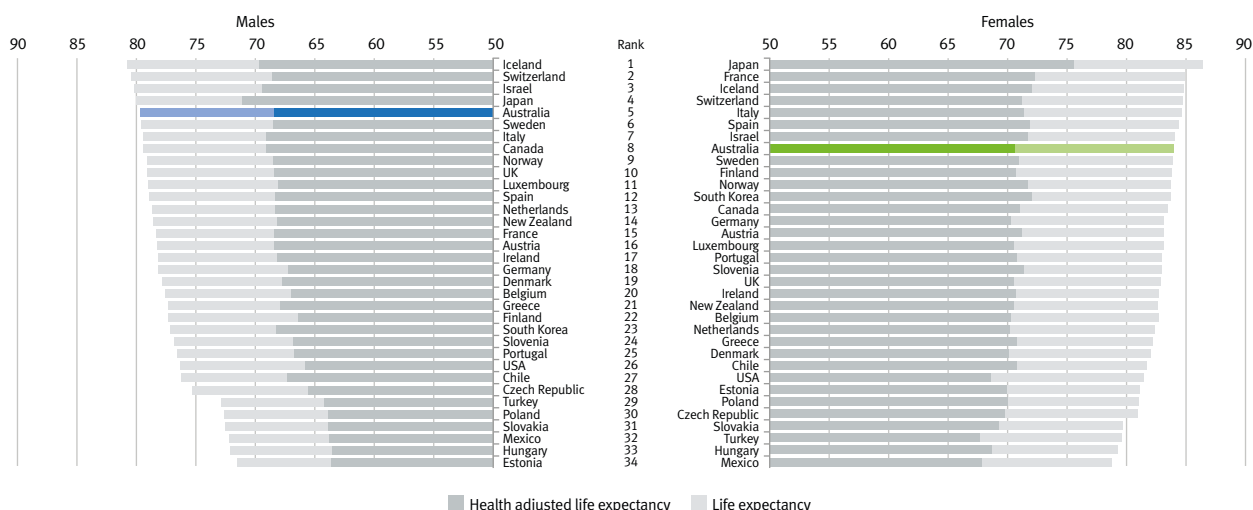


Table 4: Life expectancy by Indigenous status and sex, Queensland and Australia<sup>19</sup>

	non-Indigenous		Indigenous		Difference	
	2005–2007	2010–2012	2005–2007	2010–2012	2005–2007	2010–2012
<b>Queensland</b>						
Males	78.8	79.4	67.1	68.7	11.8	10.8
Females	82.7	83.0	72.7	74.4	10.0	8.6
<b>Australia</b>						
Males	78.9	79.9	65.7	67.4	13.1	12.5
Females	82.7	83.2	71.7	72.3	11.0	10.9
<b>Queensland compared to Australia</b>						
Males	-0.1	-0.5	1.4	1.3	-1.3	-1.7
Females	0.0	-0.2	1.0	2.1	-1.0	-2.3

Figure 8: Life expectancy and HALE, OECD countries 2013<sup>18</sup>





## Getting a healthy start

Most Queensland children are healthy and have a healthy start in life, but not all. Those who do not, are more likely to be infants from socioeconomically disadvantaged backgrounds and those born to teenagers and Indigenous Queenslander mothers. The family and community environment into which a child is born has an effect on that child's physical, social, and psychological growth and their future outcomes.<sup>20</sup>

Delivery by caesarean section has increased by 50% over 17 years.

### Birth statistics

In 2014, there were 63,819 infants born to 62,807 mothers in Queensland, where 6% of mothers were Indigenous Queenslander women (3911 women).<sup>21</sup> Queensland women have an average of just under two children during their reproductive life: in 2014 the fertility rate was 1.91 for all women and 2.41 for Indigenous Queenslanders.<sup>22</sup> The reproductive rate was 0.92, which means that there are insufficient births in Queensland to fully replenish the population. The number of births increased by 35% over the past decade, and, while the crude birth rate has fluctuated at about 14 births per 1000 people, there was no significant trend (Figure 9).

More than half the deliveries in 2014 were vaginal without instruments (35,859, 56%), one-third were by caesarean section (21,530, 34%) and the remaining 10% involved the use of forceps and vacuum (6427).<sup>21</sup> The proportion of deliveries by caesarean section has increased by 50% over 17 years.

About 1 in 4 deliveries in 2014 was in private hospitals (28%), 71% were in public hospitals, and 93 infants were home births.<sup>21</sup> Of the public hospital deliveries,

nine facilities delivered more than 2000 infants in 2014: Mater Mothers' (8.8% of total deliveries), Gold Coast (7.0%), Royal Brisbane and Women's (6.2%), Logan (5.4%), Ipswich (4.5%), and 3–4% each at Cairns, Townsville, Nambour and Caboolture hospitals. Of the 75 facilities recording a birth in 2014, six facilities delivered between 1000 and 2000 infants, 21 delivered between 100 and 1000 infants, and 39 delivered fewer than 100 infants.

There were 278 deaths of infants in the first year of life in 2014 (see pages 25 and 26). Maternal deaths are released nationally—over the five-year period from 2008 to 2012 in Queensland there were 13 deaths directly associated with pregnancy and an additional 12 deaths indirectly related to pregnancy.<sup>23</sup>

### Characteristics of a healthy start

A healthy start to life is typified by:

- being born at full term at appropriate weight for age
- having good maternal health, that is, being in the healthy weight range at conception, having a healthy diet (not smoking, not drinking alcohol) and maintaining healthy blood levels of iron, iodine and folate, as well as receiving appropriate support during pregnancy
- following the infant nutrition guidelines, that is, for the infant to be exclusively breastfed for the first six months (and continued breastfeeding to 12 months), and not introducing the child to solid food until four to six months
- protecting the child from infectious diseases by maintaining the immunisation schedule and vaccinating the mother against whooping cough during pregnancy
- supporting parents to provide a safe, nurturing environment for the infant.

Figure 9: Births: number per year and crude birth rate, Queensland, 2003 to 2014<sup>21</sup>

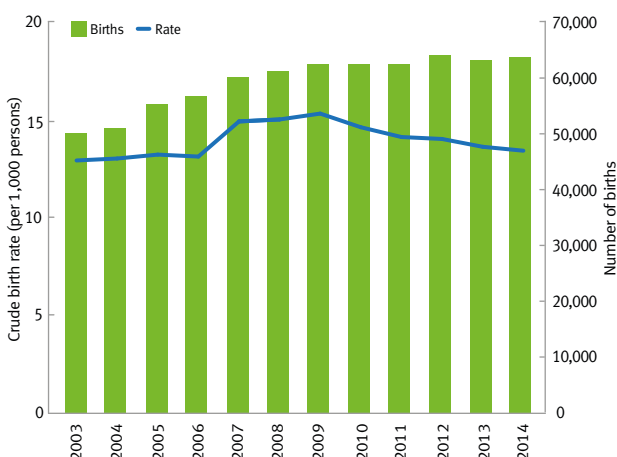
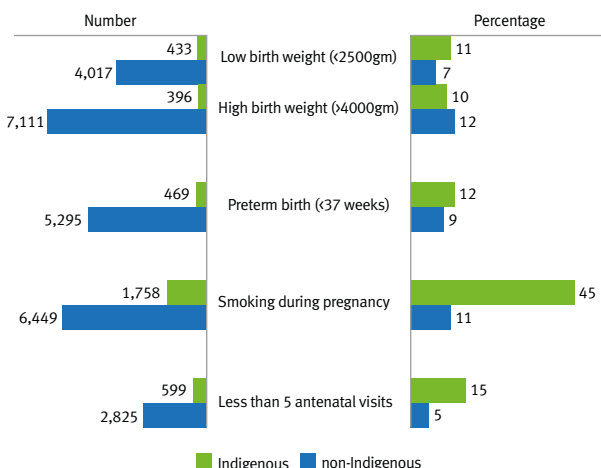


Figure 10: Prevalence of maternal and infant indicators, number and percentage by Indigenous status, Queensland, 2014<sup>21</sup>



### Risks at delivery

In 2014, 202 infants were born alive but died in the first 28 days—defined as neonatal deaths. While some of the causes are difficult to address and in some cases the death was unavoidable, it is estimated that 24% were exclusively due to prematurity, 5% to inadequate antenatal care and 3% to maternal obesity.<sup>24</sup>

In 2014, of the 5765 preterm births<sup>21</sup> about 400 (7%) were exclusively due to antepartum haemorrhage, 350 (6%) to primiparity (the birth was a first for the mother), 290 (5%) to pre-eclampsia, 230 (4%) to having had a previous caesarean section, 170 (3%) to not attending the recommended antenatal care visits (five or more), 170 (3%) to smoking after 20 weeks gestation, and 170 (3%) to socioeconomic disadvantage.<sup>24</sup> The increased risk for Indigenous Queenslander women independent of other factors accounted for 85 preterm births (1.5%). Smoking after 20 weeks gestation and not attending the recommended antenatal care visits accounted for about 13% of the 469 preterm births in Indigenous Queenslander women in 2014. Mitigating these risks is an important factor in reducing preterm births and low birth weight and therefore reducing the likelihood of neonatal death as well as protecting the infant for lifelong health.

Maternal obesity has a number of adverse effects at delivery. In Queensland in 2008, obese women at conception were 30% more likely to have a post-partum haemorrhage than healthy weight women, 2.9 times more likely to develop gestational hypertension and 2.6 times more likely to have gestational diabetes.<sup>25</sup> High rates of obesity are also likely to impact on infant health outcomes in the future.

One-third of infants are breastfed to 12 months.

### Risks to long-term health

Not only do some factors pose an immediate risk to infants at delivery, they potentially have long-term consequences for the health of infants as they grow and develop. Selected risks (Figure 10)<sup>21</sup>:

- Birth weight: 7% of infants weighed less than 2500gm at birth and 12% were 4000gm or greater, a total of 11,957 infants were at the riskier ends of the birth weight spectrum in 2014. For Indigenous Queenslander infants, 11% were low birth weight and 10% high birth weight, a total of 829 infants at risk. To address the increasing burden of childhood obesity (that begins before birth), the UK has set a recommended maximum of no more than 11% of infants above the 90th percentile.<sup>26,27</sup> In Queensland in 2014, under the UK recommendation, about 500 live born infants, of at least 32 weeks gestation, were overweight at birth.

- Preterm birth: 5765 infants were born before 37 weeks (9% of total in 2014). For Indigenous Queenslander infants 469 or 12% were delivered prior to 37 weeks.
- Maternal weight at conception: 16,792 (27%) were overweight and 14,016 were obese (22%), which was typical of all women in the reproductive age range in 2014.
- Smoking during pregnancy: 8207 or 13% of all mothers smoked at some time during pregnancy in 2014, rates were higher for Indigenous Queenslander mothers, (45% of total or 1758) than non-Indigenous (11% or 6449 mothers). Of those who smoked at all during pregnancy, 1 in 7 or 16% was smoking more than 10 cigarettes per day and 87% were provided with advice about quitting, with neither varying by Indigenous status.
- Alcohol: in 2013, 15% of Australian women fully abstained from alcohol during their pregnancy.<sup>28</sup> Of those who had consumed some alcohol, 1 in 12 (7%) drank more than five drinks per day at any time.
- Teenage mothers: 2702 or 4.3% were under 20 years of age at delivery in 2014.
- Underlying medical conditions of Queensland mothers in 2014: thyroid disorder (2.6%), depressive disorder (2.4%), asthma (2.1%), anaemia (1.4%), substance use (0.8%), pre-existing diabetes (0.7%).
- Breastfeeding and starting solid food:
  - In the 24 hours prior to discharge in 2014, 93% of infants had received some breast milk (78% exclusively had breast milk), 8% received infant formula only. The infants of teenage mothers were twice as likely to have only received infant formula (14% compared to 7% of mothers aged 20 years and older).
  - During the first two years in 2014, 96% of infants had ever been breastfed, 29% were exclusively breastfed to four months of age and 32% received some breast milk at 12 months, and 36% of infants had been introduced to solid food at four months of age in 2014.<sup>29</sup>
- Immunisation: In 2014, 92% of Queensland infants were fully immunised at one year of age (page 109). In 2015, 37% of pregnant women reported being vaccinated against whooping cough and 26% against influenza.
- Antenatal care: In 2014, 3424 women (5.4% of total) made fewer than five antenatal visits during their pregnancy, and of these 599 were Indigenous Queenslander mothers (15% compared with 5% of non-Indigenous mothers). A very small number of women (1072 or 2% of total) made their first visit in the third trimester of their pregnancy while 155 (0.3%) had no antenatal visits. About two-thirds made their first antenatal visit in the first trimester (67%) and one-third in the second trimester (30%).

Birth statistics for regional areas of Queensland are available from the statistical tables online (see page i for details).

## Health and wellbeing

Most Queenslanders are satisfied with their health and report a good quality of life.<sup>30</sup> Young people, adult females, those living in socioeconomically advantaged areas and city dwellers generally report better health and quality of life than others.<sup>31</sup>

Self-assessed health and wellbeing reveals illness and unhealthy lifestyles:

- Adults with long-term chronic conditions were more likely to report poorer health and wellbeing. In 2011–12, adults with a heart condition were 4 times more likely to report poor health than those without such a condition and those with diabetes 3 times more likely than those without.<sup>32</sup> Adults with mental and behavioural disorders, arthritis, back pain, deafness or asthma were about twice as likely as those without these conditions to report poor health.

In 2015, with each additional chronic disease risk factor, there was a 60–70% reduction in quality of life, self-rated health and satisfaction with health, irrespective of age, sex and other sociodemographic factors.<sup>33</sup> Specifically, obese adults were twice as likely as those of healthy weight to report poorer health.<sup>34</sup> Daily smokers were 86% more likely to report fair or poor health than non-daily smokers, insufficiently active adults were 90% more likely, sedentary adults were twice as likely, and those who consumed insufficient fruit daily were 30% more likely to report fair or poor health than others.

- Adults living in socioeconomically disadvantaged areas were 2.5 times more likely to report poor health than those in advantaged areas, independent of all other factors in 2012.<sup>35</sup>

The emotional and psychological health of the individual and their social health are critical to the experience of wellbeing and lifetime resilience, particularly during periods of stress including natural disasters.<sup>35</sup> Selected protective measures include:

- Individual wellbeing (Queensland adults)
  - 92% reported they had control over the decisions that affected their life in 2011<sup>36</sup>
  - 67% had experienced low psychological distress in the previous month in 2014–15<sup>37</sup>
  - Australia was ranked 9th of 157 countries for life satisfaction, happiness and wellbeing.<sup>38</sup>
- Community and social wellbeing (Queensland adults in 2011)<sup>36</sup>
  - 84% believed people in their neighbourhood were willing to help each other
  - 95% liked living in their neighbourhood and did not want to move
  - 76% expressed trust in the people of their community.

## Mental health and suicide

Good mental health is fundamental to the wellbeing of individuals, their families and the population as a whole. In 2011–12, the Queensland prevalence of mental and behavioural problems that had lasted at least six months:

- was similar to the national prevalence (both 14%)<sup>39</sup>
- increased by 3.4% per year over a decade compared to 2.8% per year nationally
- had an impact on daily life—1 in 3 Australians with a mental health problem (31%) reported having time away from work or study in the previous 12 months, more than twice that of all Australians (13%)<sup>40</sup>
- three-quarters of Australians with mental and behavioural problems reported taking medication for the problem with anti-depressants, tablets for anxiety and sleeping tablets used most commonly.<sup>40</sup>

Population health surveys can underestimate the impact of mental health problems in the community. Attendance data from Queensland Ambulance Service provides insight into frontline care associated with suicide and self-harm in four separate months over four quarters during 2013<sup>41</sup>:

- Of the 143 reported but unconfirmed suicide attendances, 79% were males, 62% were non-metropolitan, median age was 44 years, alcohol was involved in 5% of cases and drugs in 25%, 40% reported a prior mental health problem, very few had a history of suicide attempts (7%).
- Of the 2331 attendances for suicide attempt, 63% were females, median age was 32 years, 52% were non-metropolitan, 78% reported a prior mental health problem, 28% had a history of suicide attempts, alcohol was involved in 30% and drugs in 75%, very few had a linkage to mental health services (6%).
- Of the 2679 attendances for suicide ideation, 50% were males, median age was 33 years, 49% were non-metropolitan, 78% reported a prior mental health problem, 20% had previously attempted suicide, alcohol was involved in 23% of cases and drugs in 16%, very few had a linkage to mental health or other services (8%).

Information on mental health issues in Queensland including suicide prevention is available from Queensland Government websites.<sup>42,43</sup>

The majority of Queenslanders experience good health and wellbeing, and Australia was ranked among the top 10 countries worldwide in 2013–15.

## Living with disability

While the goal for the average Queenslander may be to live a long healthy life, recent research shows about 15% of our life is lived in a state of ill-health and disability (Figure 11).<sup>18</sup> In 2013, males were losing 11.3 years of life to ill-health, females 13.4 years, with healthy life expectancy 68.4 years for Australian males and 70.6 years for females (Figure 8, page 16). Since 1990, about 30% of the life expectancy gains for Australians (5.8 years for males and 3.8 years for females), were years lived in ill-health.

30% of the life expectancy gains in Australia in the past 23 years have been for years lived in ill-health.

Illness and injury are the most common major life events experienced by people. In a 12-month period, about 1 in 12 Australians reported they themselves had experienced a serious illness or injury and an additional 1 in 7 reported that a close relative or family member had done so.<sup>44</sup> Over 10 years, 1 in 4 people reported serious illness or injury in their family and 1 in 3 reported the death of a family member.

The majority of Queenslanders live with some level of disability or illness, with more than three-quarters (79%) reporting a long-term condition which had lasted at least six months in 2014–15.<sup>37</sup> Almost half (45%) reported three or more conditions. The most commonly reported were:

- sight problems—about 1 in 2 (31% long sighted, 24% short sighted)
- back pain and associated problems—about 1 in 6 (17%)
- hayfever and related allergic conditions—about 1 in 6 (17%)
- arthritis—about 1 in 7 (13%)
- deafness—1 in 8 (12%)
- ongoing problems resulting from injury—1 in 10 (11%)<sup>39</sup>
- severe chronic bodily pain—1 in 10 (9%).<sup>39</sup>

All disabilities, whether short-term acute episodes such as hayfever, or long-term chronic problems like arthritis, have an impact on the wellbeing of the individual, increase demand for health services and medications, and constrain productivity with increased related costs. Burgeoning health budgets reflect the pressure of expanding treatment options for a growing and ageing population.

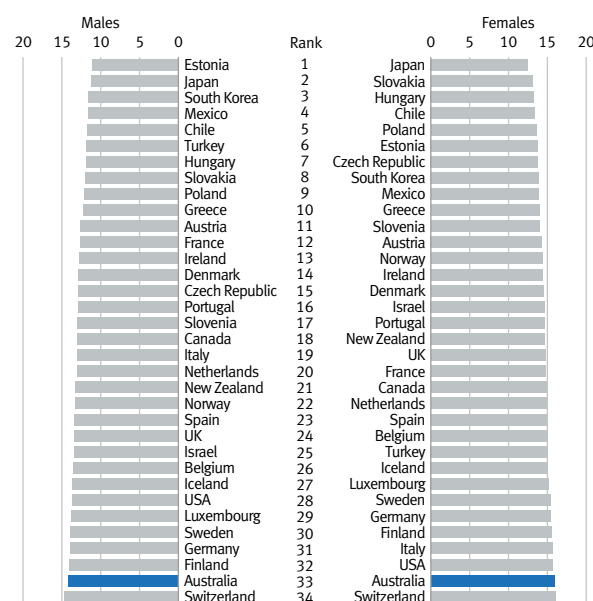
The population health burden is changing, moving away from death outcomes and towards disabling conditions such as musculoskeletal disorders, nervous system disorders, mental disorders including dementia and substance use disorders, diabetes, vision loss and hearing loss.<sup>18</sup> The prevalence of these conditions often rises sharply with age, and as people survive

into their 70s and 80s, the amount of time spent with these disorders increases, as does the treatment required.

While Australia is a leader in life expectancy rankings, the disability burden places us in a second tier position within OECD countries—in 2013, the proportion of life lost to ill-health and disability was second highest after Switzerland (Figure 11, Figure 6b page 14). The disability burden is increasing worldwide particularly among developed countries. Among the very highly developed nations, Japan was an outsider, having achieved high life expectancy and long healthy lives (Figure 11, Figure 8 page 16). Why is this so? Higher-level health spending is not the reason, as per capita spending in Japan is similar to Australia. Growth in total health expenditure in Japan over a decade is the lowest of the OECD countries (27%). In contrast, Australian expenditure more than doubled in the same period (page 56).<sup>45</sup> Achieving a long healthy life for the Japanese has come about through a long-term strategic agenda which included implementation of primary and secondary preventive community public health measures and reduction in health inequalities through educational opportunities and universal healthcare.<sup>46</sup>

Global commentators note that ‘with each passing year, the shift towards disabilities will be more evident. Action to develop preventive, curative and ameliorative strategies to address this burden is needed’.<sup>18</sup> Furthermore, traditional information sources such as registries, death records and hospitalisation databases used to monitor health outcomes, do not adequately explain the impact of such conditions—improved data and monitoring are required.

Figure 11: Loss of healthy life (percentage of life expectancy) by OECD country and sex, 2013<sup>18</sup>



## Developing disease

The pattern of disease development is dependent on many factors, among them exposure to environmental and infectious agents, genetic predisposition, ageing, the impact of lifestyle choices, exposure to metabolic risk factors, as well as many unknown determinants. Chronic diseases are major contributors to the society burden of ill-health. The death burden associated with these diseases is described in Chapter 5, the impact on the hospital system in Chapter 6 and risk factors in Chapter 8.

Primary healthcare is usually the first point of contact for the individual in the diagnosis and treatment of diseases and health problems. In Queensland there was one GP (full time equivalent) for every 672 people in 2014–15, somewhat better than the national average of one for every 717 people.<sup>47</sup>

In 2014, there were 22.3 million GP consultations in Queensland.<sup>48</sup> This approximated to 4.6 visits per person (5.3 for females, 4.0 for males) and for those aged 75 years and older there were 23 visits per person. This was similar to national rates with an average of 4.7 visits per person overall and 22 visits per older person. There has been greater growth in the number and rate of presentations to a GP in Queensland than nationally over the past 12 years. Between 2002 and 2014, total visits in Queensland increased by 39%, and the rate increased by 12%, where the national increase was 27% and the rate increase 8%.

### Prevalence of common diseases

**Chronic disease:** Many different illnesses and health conditions are classified under the broad heading of chronic disease. Although there is no single definition, they generally include cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. However, increasingly, the chronic conditions of ageing such as musculoskeletal and neurological disorders are becoming important.<sup>18</sup> Prevalence data for chronic diseases is limited: where a disease is a notifiable condition such as cancer, relevant registers are used to report prevalence, otherwise self report survey data is used.

Based on a self-reported survey in 2014–15, the prevalence of selected chronic diseases was<sup>37</sup>:

- asthma—about 1 in 10 (11% of the population)
- hypertension—1 in 10 (10%)
- heart, stroke or vascular condition—1 in 20 (5.5%)
- diabetes (blood measurement in 2011–12)—1 in 20 (5% and by self report 9%)
- osteoporosis—1 in 33 (3.1%)
- COPD—1 in 40 (2.8%)
- kidney disease—1 in 125 (0.7%).

In 2014–15, 41% of Queensland adults reported having at least one of the following chronic diseases: arthritis, asthma, cancer, COPD, diabetes or a disease of the circulatory system.<sup>49</sup> Of these, 25% reported one chronic disease, 11% two and 5% three or more.

For cancer, 1 in 25 or 4% of the population (195,903 persons) was living with a cancer diagnosis in 2012 (having been diagnosed between 1988 and 2012 and still living with the disease at the end of 2012).<sup>50</sup>

**Asthma and hypertension are the most prevalent chronic diseases, each affecting about 1 in 10 Queenslanders.**

**Communicable diseases:** Communicable diseases are relatively common and are a significant public health priority in Queensland. There were over 92,000 communicable diseases reported in Queensland during 2015—about one notification per 52 Queenslanders.<sup>51</sup> The proportions of all notified cases by disease groups were:

- Influenza 30%
- Sexually transmissible infections 27%
- Gastrointestinal diseases 17%
- Vaccine preventable diseases (including invasive diseases) 11%
- Mosquito-borne diseases 7%
- Blood-borne viruses 4%
- Mycobacterial diseases 1.5% (of which 0.2% were tuberculosis)
- Zoonotic diseases 1%.

### Risk of diagnosis of a chronic disease

#### Cancer

- Over a lifetime, a Queensland male has a 39% risk of being diagnosed with cancer (2009–2013), and a female, 28% risk.<sup>52</sup> This means that 4 in 10 males are likely to be diagnosed with cancer over a lifetime compared with 3 in 10 females.
- In 2013, 26,335 persons (1 in 177 or 0.6% of the population) were diagnosed with a new cancer (14,748 males and 11,587 females).<sup>52</sup>
- The most common cancers diagnosed in Queensland in 2013 were<sup>52</sup>:
  - for males: prostate, melanoma, colorectal and lung (combined, 62% of all new cases)
  - for females: breast, melanoma, colorectal and lung (combined, 60% of all new cases).

- The all-cancer incidence rate for Indigenous Queenslanders was similar to the non-Indigenous rate in 2011–2012, while the mortality rate was 32% higher. There are, however, variations by cancer type.
- The incidence rate in Queensland was 10% higher than national in 2009 (54% higher for melanoma, 12% for lung cancer, 9% for prostate cancer, 8% for breast cancer and 5% for colorectal cancer).<sup>53</sup>
- Survival rates at five years for specific cancers vary (2009–2013)—all cancers (70%), female breast (91%), prostate (93%), melanoma (93%), colorectal (69%) and lung (males 19% and females 14%).
- 32% of all new cancers diagnosed in Australia in 2010 were due to 13 risk factors, largely related to unhealthy lifestyles, with tobacco the leading cause (13%), followed by exposure to solar radiation (6.2%), inadequate diet (6.1%) and overweight and obesity (3.4%).<sup>54</sup>

#### Other chronic diseases

Lifetime risk of diagnosis was based on research data from Australian and international studies:

- Cardiovascular disease for males 1 in 3 (35%), for females 1 in 5 (19%)<sup>55</sup>
- Diabetes 1 in 3 (30%)<sup>56</sup>
- COPD 1 in 4 (28%).<sup>57</sup>

#### Avoiding chronic illness

Some individuals have a higher risk of developing a chronic disease because of their age, genetic predisposition and family history, weight, cholesterol and blood pressure levels, drinking and eating patterns, levels of activity and other factors. There are many risk calculators available to the public to enable them to assess their personal risk of disease development.

The evidence to inform these risk assessments is expanding, as are the conditions and diseases of interest. For example, there is growing interest and investment in understanding the individual's risk of developing Alzheimer's disease<sup>58</sup> and other dementias.<sup>59</sup>

Lifestyle and metabolic factors can raise the risk of developing a chronic disease:

- Lifetime risk of cardiovascular disease is increased by 92% among men with diabetes, by 47% among men with high blood pressure and by 19% in obese men.<sup>55</sup> However, for men with none of the above risk factors, the likelihood of developing a cardiovascular disease is reduced by up to 85%. For women, having diabetes increases the lifetime risk of cardiovascular disease threefold, high blood pressure increases the risk by 50%, while obesity has little impact. Being free of the known cardiovascular risk factors reduces by half the likelihood of disease development.
- After adjustment for other co-morbidities, the risk of a cardiovascular event was 31% higher for those with depressive symptoms.<sup>60</sup> Risk was attenuated after adjusting for physical activity and other lifestyle factors.
- Lifetime risk of diabetes is increased threefold for those who were obese at 18 years of age, compared with those of healthy weight, and this was similar for males and females.<sup>61</sup>
- Lifetime risk of lung cancer for non-smoker males was 0.2%, increasing to 6% for former smokers, 16% for current smokers and 24% for heavy smokers (more than five cigarettes per day).<sup>62</sup> For women, the risk increased from 0.4% in non-smokers to 19% in heavy smokers.
- Exposure to passive smoking increases the risk of lung cancer, with non-smokers having 20% to 30% higher risk of developing lung cancer as a result of passive exposure.<sup>63</sup>

#### Data sources and methods: lifetime health

The information presented in this chapter is largely for the Queensland population. The 2014 Chief Health Officer report included similar indicators and reported for sociodemographic populations and geographical regions including HHSs. A number of the indicators in this chapter are not available for sub-state reporting. Data sources included:

- ABS publications: life tables, National Health Survey
- Global Burden of Disease including life expectancy

- OECD statistics online
- Queensland Health datasets: perinatal data collection, preventive health telephone surveys
- AIHW Australian Burden of Disease Study
- Determining lifetime risk of developing disease was limited by research studies, generally assessed at 75 years.

#### For further information:

- The health of Queenslanders, 2014<sup>31</sup> (and earlier reports)
- ABS publications
- AIHW disease specific publications

# Death and dying



- Cancers and cardiovascular diseases are the leading broad causes of death in Queensland, followed by respiratory conditions and injuries.
- The majority of deaths (60%) occur in people aged 75 years and older—40% are premature.
- Indigenous Queenslanders were four times as likely to die before 50 years of age as non-Indigenous Queenslanders—37% died before 50 years compared with 8.7% of non-Indigenous.
- Injuries are the third largest broad cause of premature death (after cancer and cardiovascular disease) and second largest cause of years of potential life lost (after cancer).
- Low birth weight and prematurity contributed to 24% of perinatal deaths.
- Self-harm and suicide were leading causes of death in children, young people and adults up to 50 years of age, and about 80% were males.
- One-third of all deaths are due to lifestyle related chronic conditions. The prominence of these deaths increases with age from less than 1 in 20 among young adults (15–29 years) to a quarter in 30–49 year olds, rising to about half the deaths of those aged 75 years and older.
- Death rates are decreasing for the major conditions, indicative of the benefits of prevention, screening, early diagnosis and effective treatment.
- Risk of premature death from a lifestyle related chronic condition has decreased by 23% over a decade—attributed to a steady decrease in smoking rates, improved levels of physical activity, improved monitoring of blood pressure and lipids as well as earlier diagnosis and treatment of cardiovascular disease.
- There are many opportunities to reduce early deaths and improve end of life experience which will contribute to longer life expectancy, fewer years lived in ill-health, reduced costs and greater social wellbeing.
- There is substantial variation in death outcomes across the regions, with better outcomes in the more populous HHSs. The northern and western HHSs generally have poorer outcomes, but improvement is evident with declining death rates particularly for lifestyle related conditions.
- Queensland is a middle ranking state for the major causes of death, although generally 5–10% higher than national rates. Australia performs well in international rankings.

## Causes of death

This section uses the most recent year of death available: 2014 for state level reporting<sup>64</sup> and 2012 for trends, sociodemographic and regional deaths (2011 for Indigenous Queenslanders and trends). Limitations apply as described on page 32.

There were 28,704 deaths in 2014 and the leading broad causes were<sup>64</sup>:

- malignant cancers—8712 deaths or 30% of total
- circulatory/cardiovascular diseases—8330 deaths or 29% of total
- respiratory conditions—2372 deaths or 8% of total
- injuries—1930 deaths or 7% of total.

These four broad cause groups accounted for three-quarters of all deaths and contributed to the leading specific causes (Figure 12, Table 5). The number of cancer deaths exceeded those due to cardiovascular disease for the first time in 2013, reflecting the substantial gains that have been achieved in preventing and treating cardiovascular diseases over past decades.

Premature deaths are defined in this report as those that occur in a person aged less than 75 years. Of the 10,223 premature deaths in 2012, the leading broad causes were:

- malignant cancers—4359 deaths or 43% of total
- cardiovascular diseases—1909 deaths or 19% of total
- injuries—1310 deaths or 13% of total.

These three groups caused three-quarters of all premature deaths.

Cancers were the leading cause of death in 2014 and the leading cause of potential years lost.

There were 5309 deaths due to potentially avoidable conditions in 2012. These are deaths that are defined nationally, as occurring in persons aged 0–74 years from conditions that are potentially preventable in the context of the current health system, through individualised care or through treatment in an existing primary or hospital care setting.<sup>65</sup> In 2012, 52% of all premature deaths were avoidable.

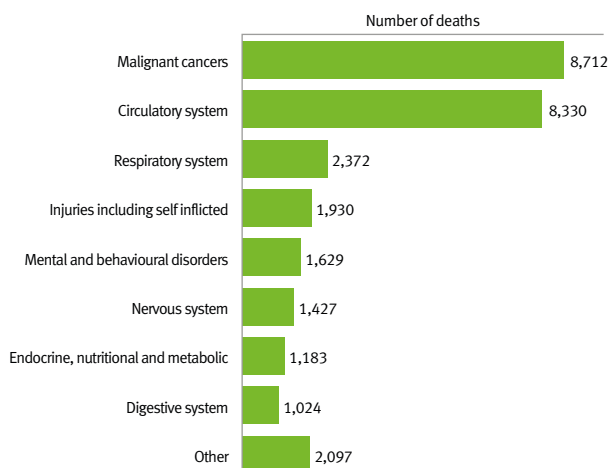
Lifestyle related chronic conditions: a number of chronic conditions have a high association with risk factors such as obesity, smoking, physical inactivity and poor nutrition. Harmful alcohol consumption has a greater impact on the development of mental health conditions and injuries—it was not included in this category although it is reported on page 84. The seven largest causes of lifestyle related chronic disease burden are coronary heart disease, stroke, diabetes, COPD, lung cancer, colorectal cancer and breast cancer.

In 2012, there were 11,207 deaths due to lifestyle related chronic conditions, 40% of all deaths. These deaths rarely occur in people aged under 50 years—97% occurred in those aged 50 years and older and two-thirds in those aged 75 years and older. While these deaths are related to lifestyle factors, they are also prominent diseases of ageing.

Considering potential years of life lost, that is, the number of deaths adjusted for the age at which they occurred, the largest cause in 2014 was malignant cancers with 69,960 years of life lost, followed by injuries with 48,821 and cardiovascular conditions with 29,140 years lost.<sup>64</sup>

Figure 12: Causes of death, Queensland 2014<sup>64</sup>

### a. Broad causes



### b. Specific causes

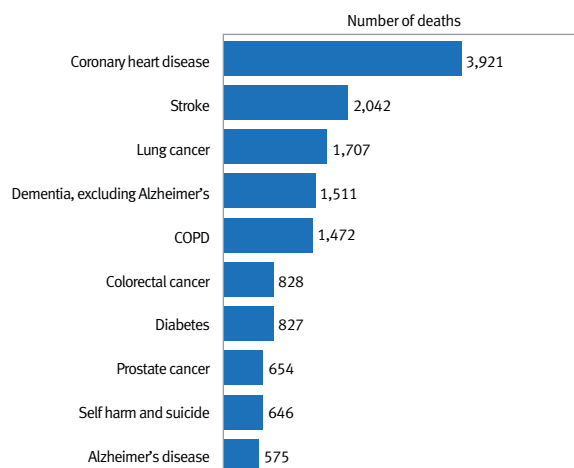




Table 5: Broad cause disease groups: selected indicators<sup>64</sup>

Disease group	Number of deaths 2014			Rate trend*		Leading specific causes	Number of deaths 2014
	persons	males	females	Av. pa	Total		
All causes	28,704	15,087	13,617	-2%	-15%		
Malignant cancers	8,712	5,057	3,655	-1%	-8%	Lung Colorectal Prostate Female breast	1,707 828 654 513
Circulatory	8,330	4,033	4,297	-4%	-34%	Coronary heart disease Stroke	3,921 2,042
Respiratory system	2,372	1,274	1,098	-2%	-17%	COPD Influenza and pneumonia	1,472 411
Injury	1,930	1,269	661	–	–	Intentional self-harm Falls Transport injuries	646 355 267
Mental and behavioural disorders	1,629	599	1,030	8%	121%	Dementias Alcohol related disorders	1,564 41
Nervous system	1,427	711	716	2%	21%	Alzheimer's disease Parkinson's disease	575 336
Endocrine, nutritional and metabolic	1,183	600	583	–	–	Diabetes Metabolic disorders	827 243
Digestive system	1,024	556	468	-1%	-11%	Other intestinal diseases Alcoholic liver disease	288 196
Genitourinary system	571	253	318	-2%	-17%	Renal failure Other urinary diseases	309 181
Musculoskeletal	231	81	150	–	–	Arthropathies Systemic connective tissue Bone density and structure	91 52 46

– no change \*2002 to 2012

## Dying early

Of the 28,704 deaths of Queenslanders in 2014 (Figure 13a):

- 3% occurred in people aged under 30 years—1% occurred in the first year of life, 0.3% occurred in 1–14 year olds and 1.5% in 15–29 year olds.
- 18% occurred in people aged between 30 and 64 years—5% occurred in 30–49 year olds and 13% in 50–64 year olds.
- 80% occurred in people aged 65 years and older—7% in 65–74 year olds, 26% in 75–84 year olds and 37% in persons aged 85 years and older.

**One-third of premature deaths are due to lifestyle related chronic diseases.**

Males were about 65% more likely to die prematurely than females—in 2012 of the 10,223 premature deaths, 6370 or 62% were males. The causes of early death are largely related to preventable causes. Of premature deaths, in 2012:

- About 1 in 3 (38% or 3860) was due to lifestyle related chronic conditions including:
  - coronary heart disease (1013 deaths)
  - lung cancer (993 deaths)
  - COPD (412 deaths)
  - stroke (387 deaths)
  - colorectal cancer (387 deaths)
  - breast cancer (384 deaths)
  - diabetes (284 deaths)
- 1 in 13 (7.6%, 777 deaths) was due to unintentional injury including 263 road transport deaths
- 1 in 20 (5%, 508 deaths) was due to self-harm and suicide.

### Premature deaths by age group

#### Infants (first year of life)

In 2014, there were 432 fetal deaths in Queensland (stillborn infants), a further 202 neonatal deaths (live born infants who died in the first 28 days), a total of 634 perinatal deaths.<sup>17</sup> Coding of fetal and neonatal deaths may vary between jurisdictions, limiting comparability of data.<sup>66</sup> Of the perinatal deaths in Queensland in 2014:

- 28% were due to unspecified causes (177 deaths)
- 27% to congenital malformations and chromosomal abnormalities (174 deaths)
- 24% to low birth weight and prematurity (150 deaths).

There were 278 deaths of live born infants in the first year of life in 2014, where the majority (73%), died in the neonatal period (202 deaths) with 76 infants dying between one and 12 months.<sup>17</sup>

The main reasons for the infant deaths were<sup>64</sup>:

- 23% complications of pregnancy and maternal factors (63 deaths)
- 13% ill-defined and unknown causes (37 deaths)
- 10% low birth weight and prematurity (29 deaths).

#### Children (1–14 years)

There were 89 deaths of children aged 1–14 years in 2014<sup>64</sup> with:

- 7 due to brain cancers and other cancers of the central nervous system
- 7 due to road transport injury where the child was in the car
- 6 due to accidental drowning or submersion
- 5 due to intentional self-harm
- 5 due to congenital problems associated with circulatory system.

#### Young people (15–29 years)

There were 475 deaths of young people in 2012, and about two-thirds were young males (337 compared to 138 females) with:

- 125 due to self-harm or suicide (about 75% were males)
- 102 due to road transport accidents (78% were males) with another 88 for other injuries
- 34 due to accidental poisoning from a noxious substance (alcohol or drugs).

Lifestyle related chronic conditions accounted for 24 deaths or 5% of all deaths in this age group.

#### Working age adults (30–64 years)

There were 4835 deaths of working age adults in 2012, two-thirds were for males (2991) and one-third for females (1844), with:

- 489 due to coronary heart disease
- 450 due to injuries including 134 due to road transport
- 440 due to lung cancer
- 334 due to self-harm or suicide.

Lifestyle related chronic conditions accounted for 1770 deaths or 37% of all deaths in this age group.

#### Older adults (65–74 years)

There were 4532 deaths of older people in 2012, and two-thirds were for males (2838 compared to 1694 females) with:

- 520 due to coronary heart disease
- 552 due to lung cancer
- 283 due to COPD.

Lifestyle related chronic conditions accounted for 2064 deaths or 46% of all deaths in this age group.

### Dying in later years

There were 18,048 deaths of older people (75 years and older) in 2014, accounting for 63% of all deaths.<sup>64</sup> More than half the deaths in this age group were for females (9608 compared to 8440 males).

Many people die in hospital—about two-thirds of those aged 65–74 years in 2014, however, that proportion declines in older age groups to about 40% of those aged over 85 years.

Lifestyle related chronic conditions accounted for 41% of deaths in this age group for both males and females. Of the 7344 lifestyle related deaths in 2012:

- 3066 were due to coronary heart disease (17% of total deaths in this age group)

- 1760 were due to stroke (10% of total)
- 798 were due to COPD (4.4% of total)
- 654 were due to lung cancer (3.6% of total).

### Deaths of Indigenous Queenslanders

In 2014, there were 688 deaths of Indigenous Queenslanders.<sup>17</sup> The death rate was 54% higher than the non-Indigenous rate. The leading causes were largely preventable:

- coronary heart disease (83 deaths)—rates were 50% higher than non-Indigenous
- diabetes (57 deaths)—rates were 5.2 times non-Indigenous

- chronic lower respiratory disease (45 deaths)—rates were 2.9 times non-Indigenous
- lung cancer (43 deaths)—rates were 1.7 times non-Indigenous
- self-harm and suicide (38 deaths)—rates were 1.6 times non-Indigenous.

Indigenous Queenslanders were more likely to die at an earlier age than non-Indigenous. The proportion who died before 50 years in 2010–2011 by cause was:

- all causes—37% compared with 8.3% for non-Indigenous
- coronary heart disease—30% compared with 2.6% for non-Indigenous
- diabetes—19% compared with 2.6% for non-Indigenous
- lung cancer—7.4% compared with 3.4% for non-Indigenous
- COPD—3.5% compared with 1.0% for non-Indigenous
- self-harm and suicide—95% compared with 62% for non-Indigenous.

The greatest reduction in death rates over a decade was for young males (15–29 years).

### Median age of death

The median age of death in 2014 was 80.8 years, with males dying 6.8 years earlier than females (77.4 and 84.2 years respectively).<sup>17</sup> There has been a 1.9-year gain in median age of death since 2004 in Queensland, less than the national gain but greater than Tasmania (1.4 years) or Western Australia (1.7 years). Median age of death is an important indicator of health outcomes. This is particularly evident in the 21-year difference in median age of death between Indigenous Queenslanders and non-Indigenous in 2014.<sup>17</sup> Median age of death data for sociodemographic groups, including Indigenous Queenslanders, and the regions are reported in the statistical tables online (page i for details).

## Major trends

### All causes

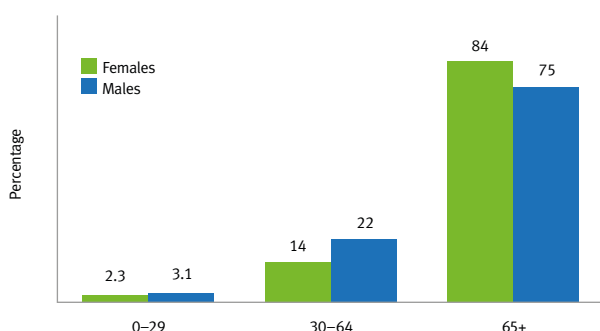
The death rate due to all causes declined by 1.6% per year (a 15% decrease since 2002) while the number of deaths increased by 1.8% per year (20% over the period). Rates are usually adjusted for changing age patterns over time, however, if age patterns are discounted, the number of deaths per year has remained steady at 6 deaths per 1000 people. In 2003 there were about 24,000 deaths per year, increasing to about 28,000 in 2012. Male death rate decline was slightly greater than female rate decline (1.8% compared with 1.5% per year).

### Changing pattern of age related deaths

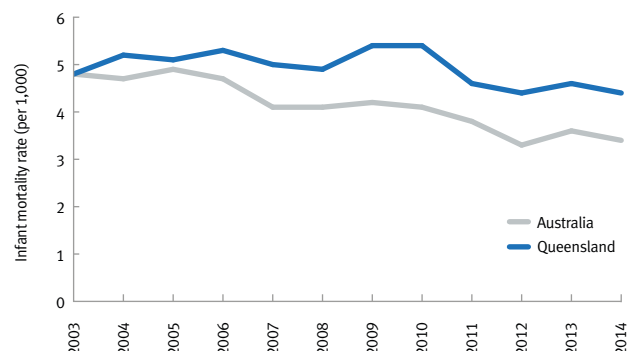
- **Premature deaths:** The death rate for persons aged 0–74 years decreased by 2.1% per year over the past decade with greater decline for males (2.3%) than females (1.8%). Gains were not evident for all age groups. Since 2002:
  - the infant mortality rate decreased by 1.2% per year (Figure 13b)
  - for children (0–14 years) the death rate has not changed (with no sex differences)
  - for young people (15–29 years) the death rate decreased by 2.9% per year, due to declining death rates for young males (3.6% per year), there being no change to the female rate
  - for 30–49 year olds, the death rate decreased marginally by 1.6% (males 1.9%, females 1.1%)
  - for 50–74 year olds, the death rate decreased by 2.2% per year (similar for males and females).
- **Deaths in older people:** The death rate for persons aged 75 years and older decreased by 1.3% per year over the past decade, with similar improvements for older males and females.

Figure 13: Death related indicators, Queensland

a. Death by age and sex, 2014<sup>64</sup>



b. Infant mortality trends<sup>17</sup>



### Changing pattern of major causes

Death rate decline is evident for many of the major conditions, with some variation by sex. Over the period 2002 to 2012, the following changes were evident:

Declining rates (per year):

- influenza and pneumonia 7.9%
- coronary heart disease 5.3%
- stroke 4.3%
- colorectal cancer 3.4%
- road transport injury 3.0%
- avoidable deaths 2.8%
- male COPD 2.0%
- male lung cancer 2.0%
- female breast cancer 1.5%
- male injury excluding self inflicted (premature only) 1.5%

No change in rates:

- female lung cancer
- prostate cancer
- melanoma
- diabetes
- falls in females 65+years
- female COPD
- asthma
- cervical cancer
- injuries excluding self inflicted

Increasing rates (per year)

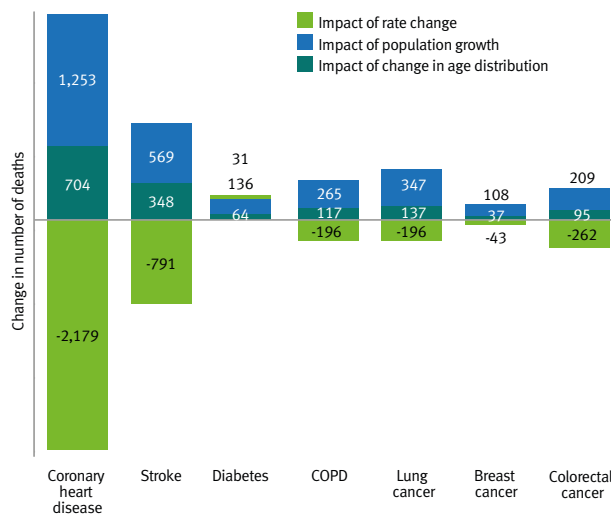
- falls in males 65+ years 2.0%

The suicide rate increased by 1.6% per year between 2006 and 2014—it changed very little between 2006 and 2011, and since then has increased.

Rates of death due to lifestyle related chronic conditions decreased by 3.8% per year over the past decade for both males and females (Figure 1c, page 2)—there was a similar decline in rates among persons 0–74 years. In 2012, as a result of rate decline, there were 3636 fewer deaths than expected, and after taking into account the impact of ageing and population growth and interactions between these factors (which resulted in 3319 more deaths), there was a net reduction of 221. The major contributors to this decline were reductions in coronary heart disease and stroke (Figure 14).

**For Indigenous Queenslanders, the annual risk of dying before 50 years of age has decreased by 24% over the past decade.**

Figure 14: Change in number of deaths due to lifestyle related chronic conditions between 2002 and 2012, Queensland



### Changing pattern of death rate inequality

#### Indigenous Queenslanders

The pattern of change for Indigenous Queenslanders shows some improvements, with all cause death rates decreasing by 3.3% per year between 2002 and 2011. Considering early deaths, that is deaths of Indigenous Queenslanders aged 0–50 years, the death rate decline was greater at 3.9% per year. There were no upward trends in any of the major reportable conditions:

Declining rates (per year):

- coronary heart disease 6.7%
- diabetes 6.0%
- injuries excluding self inflicted 4.7%
- lifestyle related chronic conditions 4.6%

No change in rates:

- lung cancer
- stroke
- COPD

*Note: For a number of conditions there were too few deaths to undertake trend analysis*

#### Socioeconomic status

The changes in death rate reduction between 2006 and 2012 varied by area or quintile of socioeconomic advantage/disadvantage with no pattern evident.

#### Remoteness

The changes in death rate reduction between 2006 and 2012 varied by remoteness area with no consistent pattern evident.

## Risk of death

About 1 in 4 Queenslanders die before the age of 75 years, that is, the lifetime risk of dying prematurely for any reason or cause was 23% in 2010–11, with the risk having decreased by 14% since 2002–03.<sup>1</sup>

For Indigenous Queenslanders in 2011 the risk of dying before 50 years of age was double that of non-Indigenous (8.8% compared with 3.7%).<sup>1</sup> However, there have been strong gains in death rate reduction for Indigenous Queenslanders with the risk of death before 50 years of age decreasing by 24% in the past decade, compared with a 10% decrease for non-Indigenous.

### Risk of dying from cancer

By age 75 years, the risk of a Queensland male dying from cancer was 1 in 9, and for a Queensland female, 1 in 12 (2007–2011).<sup>1</sup> This means that about 11% of Queensland males are likely to die from cancer by age 75 years and about 8% of Queensland females. As people move into their 80s their risk of cancer death increases—22% of males and 15% of females are likely to die from cancer by age 85. Males generally have a higher lifetime risk of death for the leading cancers than females.

### Risk of dying from cardiovascular disease

The risk of a Queensland male dying from cardiovascular disease before the age of 75 years was 7% increasing to 19% by age 85 years (2007–2011).<sup>1</sup> For females, the risk of dying before 75 years was 4%, rising to 15% by age 85 years. The annual risk of death has decreased in the past decade, from one cardiovascular disease death for every 400 people in 2002 to one per 500 people in 2011.

### Risk of dying from a lifestyle related chronic condition

Many of the major causes of death are preventable and rates of death for lifestyle related chronic conditions are decreasing. For Queenslanders, there was a 9% risk of dying from a lifestyle related chronic condition before the age of 75 years, increasing to 23% by age 85 years (2007–2011).<sup>1</sup> The risk of dying prematurely has decreased by 23% over a decade and is on track to achieve the WHO voluntary global target of a 25% relative reduction in risk of premature death from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases between 2010 and 2025.<sup>67</sup>

### Risk of death from other conditions

The lifetime risk of dying before age 75 years (2007–2011) from other selected conditions was low<sup>1</sup>:

- for injury—2.4% or 1 in 40 (3.4% for males, 1.3% for females)
- for respiratory conditions—1.6% or 1 in 60 (similar for males and females)
- for diabetes—less than 1% or 1 in 157 (0.8% for males, 0.5% for females).

### Opportunities to reduce early deaths and improve outcomes

The prevention of early deaths is dependent on identifying the causes and nature of these deaths. While some deaths are difficult to avoid, many of the causes of premature deaths are avoidable.

The death of a person, whether an infant, child, young person, or older person, causes distress, grief and often bewilderment. The younger the person is at death, and the more random and preventable the cause, the greater the distress of family and friends, often affecting them for the rest of their life.

Reducing early deaths will therefore provide intangible benefits to families and the community. It will reduce costs to society through welfare and associated inputs, and improve productivity. Ultimately, every early death averted will improve life expectancy and the younger the age of the death, the greater the effect on life expectancy.

### Reducing the number of early deaths

The greatest opportunities to reduce early deaths in Queensland includes (Figure 15).

- Preventable infant deaths: 24% of the 634 perinatal deaths were due to prematurity or low birth weight. Many factors that increase the risk of a preterm birth or neonatal death are modifiable. They include the maternal factors of gestational diabetes, hypertension, obesity and smoking during pregnancy, and inadequate antenatal care.
- Self-harm and suicide are prevalent and affect children, adolescents and young adults alike. The social and economic impact of suicide is substantial and the circumstances surrounding the death can be particularly difficult for family and friends. In 2014, there were 646 deaths due to self-harm and suicide—488 were for males and three-quarters (72%) were for people under 55 years of age.<sup>64</sup>

The risk of a Queenslanders dying prematurely of a lifestyle related chronic condition has decreased by 23% in a decade.

- Injuries were the second largest cause of potential years of life lost, evidence of the number of deaths from injury and the relatively young age at which they occur. Road transport accidents affect children (including driveway run overs) and young people (over half of road transport deaths were for people under 40 years of age).
- Cancer is the largest cause of premature death. The aetiology of cancers varies, and while 32% are preventable<sup>54</sup>, such as lung cancer, others are not. Continued pressure on smoking prevention and other lifestyle factors, screening and early diagnosis and treatment will improve outcomes.
- Lifestyle related conditions such as coronary heart disease, stroke, COPD, diabetes and some cancers (such as lung, colorectal and breast), are partially preventable through improved lifestyles. Substantial gains in death rates have been achieved over recent decades from smoking rate reduction and improved cardiovascular risk awareness and treatments.
- High rates of early deaths of Indigenous Queenslanders are indicative of ongoing disadvantage, but small steady gains are being achieved for some conditions including coronary heart disease and diabetes (page 4).

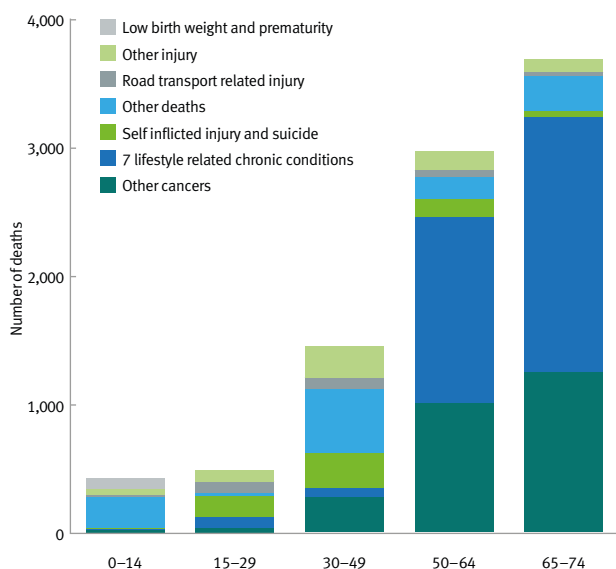
### Improving end of life experience

Better death related outcomes are achieved not only by preventing the death, but also by improving the quality of the end of life experience.

In Queensland in 2013–14, about 14,700 people died in Queensland hospitals—53% of deaths of Queensland residents in that year. Research shows that most Australians would prefer to be cared for and die in their own home, rather than in a hospital, hospice or nursing home.<sup>68</sup> In this respect Indigenous Australians are particularly vulnerable, given their earlier onset of disease, hospitalisation and death and their strong cultural and spiritual connections to country.<sup>69</sup> To address this complex situation, there needs to be an open appraisal of the inevitability of death and discussion about how the quality of the time remaining can be improved, rather than prolonged at any cost.<sup>70</sup> Providing patients with the support and range of services to meet these needs is a challenge for health systems.

An important consideration in end of life planning for an individual is advance care planning. This is a process whereby people make decisions about future healthcare choices in consultation with clinicians, family members and important others.<sup>71</sup> It aims to ensure patients' wishes are respected if they lose the capacity to make those decisions themselves. The process is increasingly relevant in a health system that has capacity to prolong life often with little gain. At least 50% of all deaths in Australia are clinically expected because of the advanced stage of disease.<sup>72</sup> Furthermore, up to a quarter of health budgets are spent on inpatient care during the last 18 months of life without any real prospect of extending overall survival or improving quality of life.<sup>73</sup>

Figure 15: Number of premature deaths by age group and cause, Queensland 2011



### Selected highlights from the regions

Death related outcomes vary within regional Queensland. This section includes a comparison of the rates and trends in the major causes of death for HHSs. More information is provided in the HHS booklet and in the statistical tables released online as described on page i.

#### All cause deaths by Indigenous status

The all cause death rate varied between HHSs in 2009–2011 and this was particularly evident for Indigenous Queenslanders (Figure 16).

In five HHSs the Indigenous Queensland death rate was about 40–100% higher than the non-Indigenous rate (North West, Townsville, West Moreton, Cairns and Hinterland, Metro South), while in nine others, there was no difference (South West, Gold Coast, Darling Downs, Central Queensland, Mackay, Metro North, Sunshine Coast, Wide Bay, Torres and Cape). Central West could not be assessed due to the small number of deaths.

#### Deaths due to cancer

Cancer death rates varied by about 20% between HHSs in 2010–2012 with highest age adjusted rates in Mackay and lowest in Gold Coast (Figure 17).

There has been little change in all-cancer death rates over the past 10 years (2002–2012), with a modest 8% decrease across the state. For four of the 15 HHSs, death rates declined by between 10% and 15%: Cairns and Hinterland, Gold Coast, Metro North and Townsville. For the remainder there was no significant change.

#### Deaths due to cardiovascular disease

Death rates for cardiovascular disease varied by about 65% between HHSs in 2010–2012. The highest age adjusted rates were in South West and lowest in Sunshine Coast (Figure 17).

Substantial gains have been achieved in cardiovascular disease with death rate decline evident across the state (by 34% over a decade) and in the majority of the HHSs (by about 20% to 40%). Although North West HHS had high rates, there has been a strong downward trend over the past 10 years. Sunshine Coast is also achieving strong decline. A very small number of HHSs had no change—those with small populations and also Mackay.

#### Deaths due to injury

Injury death rates (excluding suicide and self inflicted injuries) varied across the HHSs in 2010–2012 with the highest age adjusted rate in South West and North West which were both about 70% higher than Metro North (Figure 17).

There has been no gain in injury death rates in the past 10 years—not for Queensland or any HHS.

Figure 16: All cause deaths by Indigenous status, by HHS, Queensland 2009–2011

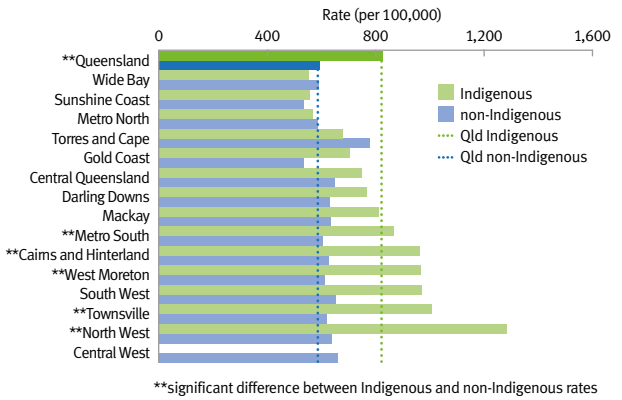
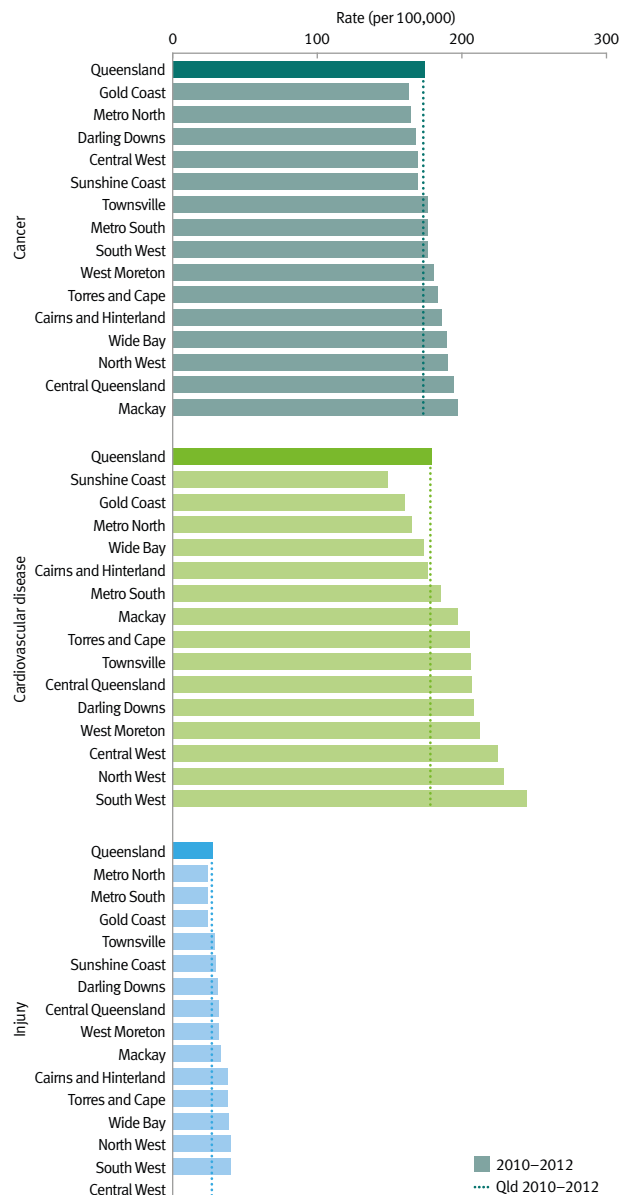


Figure 17: Cancer, cardiovascular and injury deaths: rates and trends, by HHS, Queensland 2010–2012



## National and international comparisons

Queensland is a middle ranking state among the Australian jurisdictions for death outcomes, and rates are often 5–10% higher than national (Table 6).

There was some variability however:

- The infant mortality rate in Queensland was 29% higher than the national rate in 2014, and over the past decade 20% higher (Figure 13b). The difference is evident in both Indigenous Queensland rates and non-Indigenous rates.<sup>17</sup> Jurisdictional comparisons are subject to limitations due to variable coding of fetal and neonatal deaths which may also affect infant mortality rate assessments. Based on the perinatal data collection, the Queensland perinatal death rate did not differ from national in 2013.<sup>66</sup>
- The all-cancer death rate in Queensland was similar to national although for melanoma and prostate cancer, Queensland was higher than national and highest of the jurisdictions.<sup>64</sup>

- For falls, the Queensland death rate was 8% lower than national, but ranked in the middle among the jurisdictions.<sup>64</sup>

Australia performs very well internationally for death outcomes (Table 6). For example, in 2010, among OECD countries, Australia was<sup>74</sup>:

- in the top 10 for all-cause deaths, cardiovascular disease including stroke.
- middle ranking for a number of diseases including coronary heart disease, COPD and falls.
- in the bottom 10 countries for prostate cancer and melanoma.

There are limitations in international comparisons that have been described elsewhere<sup>75</sup>, although among OECD countries these limitations rarely prevent comparability.

Death indicator (rate)	Queensland compared to (2014) <sup>64,17</sup> :		Australian ranking (2010) <sup>74</sup>
	National	Interstate ranking	International (OECD)
Median age of death	1.1 years earlier	equal 5 of 8	
Infant mortality	28% higher	2 highest of 8	
Indigenous infant mortality	17% higher	3 highest of 5	
All causes (standardised)	3% higher	4 highest of 8	2 lowest of 33
All causes (crude)	6% lower	5 highest of 8	
Avoidable deaths	7% higher	3 highest of 8	
Cardiovascular disease	5% higher	4 highest of 8	7 lowest of 33
Coronary heart disease	9% higher	2 highest of 8	18 lowest of 33
Stroke	8% higher	3 highest of 8	8 lowest of 33
All cancers	similar	4 highest of 8	13 lowest of 33
Lung cancer	6% higher	3 highest of 8	10 lowest of 33
Melanoma	34% higher	1 highest of 8	32 lowest of 33
Breast cancer	7% lower	6 highest of 8	12 lowest of 33
Prostate cancer	13% higher	1 highest of 8	24 lowest of 33
Colorectal cancer	6% higher	3 highest of 8	8 lowest of 33
COPD	9% higher	3 highest of 8	18 lowest of 32
Transport injury	14% higher	4 highest of 8	16 lowest of 33
Falls	8% lower	4 highest of 8	15 lowest of 33
Suicide	14% higher	4 highest of 8	

## Data sources and methods: deaths

In this chapter, deaths were reported from two sources:

- ABS Cause of death file: based on year of registration (2014 data only)<sup>64</sup> 2014 deaths are subject to revision.
- Queensland Register of Births, Deaths and Marriages (data obtained by Queensland Health) for reporting up to 2012 and based on year of death. Indigenous Queensland data was largely reported to 2011.

For standardised rates, the reference population was Australia 2001.

Deaths of Queensland residents in Queensland or interstate were included, but not deaths that occurred overseas. All death data is reported according to the underlying cause.

Trend analysis was undertaken using Poisson regression methods.<sup>1</sup>

Deaths based on socioeconomic quintiles were generated from the Index of Socioeconomic Advantage/Disadvantage where areas were population weighted.<sup>76</sup>

Remoteness was determined using the Accessibility/Remoteness Index of Australia (ARIA+).<sup>77</sup>

Lifetime risk of death was calculated for the most recent five-year period available at the time of analysis, with the methodology described.<sup>1</sup>

The most recent complete set of death data for OECD reporting was 2010.<sup>74</sup>

### For further information:

- The health of Queenslanders, 2014<sup>31</sup> (and earlier reports in the series)
- Methods for reporting population health status 2016.<sup>1</sup>
- ABS publications: Cause of death, Deaths
- Statistical tables online (page i)



# The changing hospital burden



- In Queensland in 2013–14, public and private hospitals provided:
  - 10.5 million occasions of service
  - 2.0 million admitted patient episodes of care resulting in 5.7 million patient days.
- One in five Queenslanders was admitted to a public or private hospital in 2013–14.
- Hospitalisations (public and private) are increasing—for admitted patient episodes by about 70,000 per year (107,000 patient days per year). Presentations to emergency care are increasing by about 50,000 per year.
- Population growth accounted for almost half the annual increase in admitted patient hospitalisations for all causes, with one-third due to increased rates of admission independent of demographic change. Ageing accounted for less than one-tenth and the remainder was due to the interaction between these factors.
- The largest causes of hospitalisation were for a wide range of reasons not principally associated with a disease diagnosis—treatments, investigations, specific procedures, symptoms and signs, together accounting for one-third of total hospitalisations and more than one-third of the annual increase in admissions and patient days over the past 11 years.
- Chronic conditions of ageing and those with greater disability burden such as musculoskeletal conditions, nervous system diseases, mental disorders (including dementia and substance use disorders), diabetes and sense organ disorders, were the second largest broad category, accounting for more than a quarter of hospitalisations. Increasing admission rates for these conditions, independent of demographic factors, was the dominant cause of the increase, substantially adding to health system pressures.
- Serious infectious diseases accounted for about one-twelfth of all hospitalisations—the crude rate increased by 18% over the past decade, with the number of hospitalisations increasing by about 50%, largely driven by population growth.
- Lifestyle related chronic conditions were the cause of 4% of hospitalisations. The admission rate for these conditions decreased over the past 11 years, independent of demographic change, demonstrating gains achieved from smoking rate reduction and improved treatment and management of cardiovascular conditions. Gains were evident in all but one HHS (Wide Bay).
- At least 1 in 15 hospitalisations could have been treated in a primary healthcare setting rather than in a hospital, based on nationally defined criteria for potentially preventable hospitalisations.
- There was substantial variation in hospitalisation rates and their underlying causes in the HHSs. Although three-quarters of the state increase in hospitalisations over the past 12 years occurred in the four most populous HHSs of the south east, the greatest relative increase was in Wide Bay.
- West Moreton HHS and Mackay HHS had the smallest increase in hospitalisation rates for all causes and for a number of major disease groups. West Moreton was the only HHS with a decline in rates for children and young people and Mackay the only HHS where rates for age-related chronic conditions declined.

## Headline hospital statistics

### Public and private hospitals

There were 169 public hospitals (165 acute and 4 psychiatric) and 108 private hospitals (52 free standing day hospitals and 56 others) in Queensland in 2013–14, a total of 277, representing 20% of Australia's hospitals, consistent with population share.<sup>78</sup>

### Admitted and non-admitted patients

A person presenting to a hospital for care may receive treatment as a non-admitted patient or be admitted:

- Non-admitted patients receive services through emergency departments, outpatient clinics and a range of other services.
- Admission to hospital is a formal process, and follows a decision made by a medical officer that a patient needs to be admitted for appropriate management or treatment of their condition, or for appropriate care or assessment of needs. A 'separation' is the technical term used to refer to the episode of admitted patient care. In this report separations are referred to as 'admissions' or 'hospitalisations'.

In 2013–14, in Queensland hospitals there were:

- 10,450,560 occasions of care for non-admitted services<sup>79</sup>
  - 3,090,556 were for outpatient care, a decrease of 3.3% per year since 2009–10, in contrast to a national increase of 2.5% per year. Three-quarters of the occasions of service were for other medical, surgical and diagnostic causes.
  - 1,830,138 were for emergency care. Occasions of service increased by 3.8% per year since 2009–10, higher than the national increase of 2.6% per year.
  - 5,529,866 were for other non-admitted services including pathology, pharmacy, community health and radiology. The number of such services decreased by 1.9% per year since 2009–10, in contrast to a national increase of 3.2% per year.
- 2,071,130 admitted patient episodes of care (Queensland residents and visitors), 52% occurring in public hospitals.<sup>80</sup> The number of episodes increased by 4.0% per year since 2009–10, higher than the national increase of 3.3%.

### Admissions and patient days

An admission to hospital may be for same day care (about 60%), or involve an overnight or longer stay (about 40%). The number of patient days is a measure of patient admissions and length of stay.

Of the 2.1 million admissions in 2013–14, 842,087 were for overnight episodes and 1,229,043 were for same day episodes.<sup>80</sup>

In 2013–14, there were 5,591,017 patient days in Queensland, an annual increase of 1.9% per year since 2009–10 and higher than the national increase of 1.4% per year.

The average length of stay in 2013–14 was 2.7 days (2.9 nationally), a decrease from 3.2 days in 2002–03. Excluding same day admissions, the average stay was 5.2 days (5.5 nationally).

### Principal diagnosis and other diagnoses

When a patient is admitted to hospital the principal diagnosis associated with their treatment and care is identified in their patient record along with multiple other diagnoses related to the episode. It is common when reporting on causes and trends in hospitalisations to use the principal diagnosis although other diagnoses provide useful information about disease patterns. Principal diagnosis was used in this chapter and in the national assessment of health expenditure based on cause group in Chapter 7.

### Classifying diseases

There are a number of ways of classifying and grouping the underlying causes of a hospitalisation. Diagnosis related groups (DRGs) are more commonly used in hospital and system reports. However, the international classification of diseases (ICD) is used in health status reporting because it has a highly detailed hierarchical structure and provides continuity with other data sources such as death registers and expenditure reporting. There are 21 'Chapters' in the ICD classification system.<sup>81</sup> The ICD Chapters and their subcategories are used throughout the Chief Health Officer report.

Emergency department presentations are increasing by 50,000 per year on average and admissions by 70,000.

## Major causes for admitted patients

There were 2,008,341 hospitalisations (for 909,124 unique patients) of Queensland residents in Queensland in 2013–14. This includes admissions (acute episodes of care) to public and private hospitals (not for interstate or overseas visitors), but does not include presentations to emergency department or outpatient clinics and services. This section focuses on admitted patient episodes of care, referred to as ‘hospitalisations’ or ‘admissions’. A short summary of emergency department presentations is included (page 36). A visual diagram of hospitalisations by cause is available online (page i for details).

The four largest causes of hospital admission in 2013–14 based on ICD Chapters and together accounting for 50% of hospitalisations and 41% of patient days are listed below<sup>82</sup> (Figure 18):

- Factors influencing health status and contact with health services accounted for 25% of hospitalisations and 20% of patient days in 2013–14. These are admissions not attributed to a primary disease diagnosis, although it is likely a number of diseases may be noted in the record as being associated with the admission. They include hospitalisations for examinations, investigations and observations. The largest single reason was care involving renal dialysis. The Chapter also includes hospitalisations for chemotherapy and rehabilitation (cardiac, alcohol, drug, other).
- Digestive system diseases accounted for 10% of hospitalisations and 7.4% of patient days. The largest cause in this Chapter was dental conditions, followed by hernia, gastro-intestinal reflux and gall stone.
- Symptoms, signs and abnormal findings accounted for 7.6% of hospitalisations and 4.9% of patient days. This is another Chapter where the primary diagnosis was not attributed to a disease. Some of the major causes within this Chapter were pain in throat and chest, abdominal pain, collapse and fainting.
- Injuries accounted for 6.9% of hospitalisations in 2013–14 and 8.6% of patient days. This Chapter including injuries that were intentional (such as self-harm and suicide) as well as unintentional (such road transport accident), and also poisonings and toxic effect. The most common type of injury was fractures of upper and lower limbs and the most common cause was falls.

## Leading specific causes for admitted patients

The 10 leading specific causes of hospitalisation (excluding childbirth) in 2013–14 accounted for 29% of hospitalisations and included:

- care involving renal dialysis (11% of total hospitalisations, 228,187 hospitalisations—16% were for Indigenous Queenslanders)
- chemotherapy (4.2% of total or 84,796)
- injuries to upper and lower limbs (2.9% or 57,346)
- cataracts (2.3% of total or 45,256)
- pain in throat and chest (1.9% or 37,461)
- abdominal and pelvic pain (1.6% or 33,125)
- malignant melanomas and neoplasms of skin (1.4% or 27,387)
- injuries to head and neck (1.3% of total or 25,102)
- complications of medical and surgical care (1.2% or 24,180)
- adjustment and management of drug delivery or implanted devices (1.1% or 21,135).

Care involving dialysis was the leading cause of hospitalisation and patient days in 2013–14.

Some of these leading specific causes of hospitalisation are for same day admissions, and as such do not fully reflect overall burden of service delivery. Patient days is a measure which reflects both the number of hospitalisations and the length of stay. There were about 5.6 million patient days in 2013–14. The 10 leading causes in Queensland public and private hospitals, excluding childbirth, were:

- care involving renal dialysis (4.4% of total patient days)
- injuries to upper and lower limbs (3.4%)
- complications of medical and surgical care (2.1%)
- chemotherapy (1.6%)
- COPD (1.3%)
- heart failure (1.3%)
- pneumonia, organism unspecified (1.1%)
- injuries to thorax, abdomen, back, spine and pelvis (1.1%)
- injuries to head and neck (1.1%).

## Selected cause groups for admitted patients

To help identify the patterns and trends in hospitalisations a small number of cause groups were created based on aggregations of ICD Chapters and selected conditions.

- Renal dialysis.** This is the leading cause of hospitalisation, accounting for 11% of all admissions and 4.4% of patient days in 2013–14. Admissions for renal dialysis are typified by a relatively small number of persons admitted frequently—in one year (2013–14) on average, each dialysis patient was admitted 86 times. Admission practice varies within Queensland, limiting sub-state comparisons.
- Selected lifestyle related chronic conditions.** This group includes six selected chronic conditions, all influenced to some degree by lifestyle related risk factors: coronary heart disease, stroke, COPD, lung cancer, breast cancer and colorectal cancer. Diabetes was excluded from the group, due to coding complexities over the past decade that have limited the reliability of trend reporting. Renal dialysis was not included (although about 30% is due to diabetes), because it has unique care characteristics and is addressed as a separate group (above). The six selected lifestyle related conditions are particularly important because they are leading causes of death and are the focus of population preventive strategies (Figure 12, page 24). In 2013–14, these six conditions accounted for 4% of all hospitalisations and 6% of total patient days.
- Chronic conditions of ageing and disability.** This group includes the ICD Chapters for musculoskeletal conditions, nervous system disorders, eye conditions, ear conditions and mental disorders. While there are

many conditions within these Chapters that affect younger people, most are strongly associated with age. Dementia is classified in the ICD as a mental disorder as are substance use disorders. This group of conditions has been identified as an increasingly significant cause of disability burden in Australia and among similarly developed nations (page 14). Chronic conditions of ageing and disability accounted for 17% of hospitalisations in 2013–14 and 19% of patient days.

- Infectious diseases.** This group includes a wide range of conditions which all have an underlying infectious aetiology and are described as serious infectious diseases, increasingly recognised as important causes of disease burden.<sup>83,84</sup> In 2013–14, 53% of infectious disease hospitalisations were due to acute respiratory tract infections, enteric symptoms, skin infections and gastrointestinal tract infections.<sup>85</sup> They accounted for 9% of all hospitalisations and 10% of total patient days in 2013–14.

## Emergency department presentations

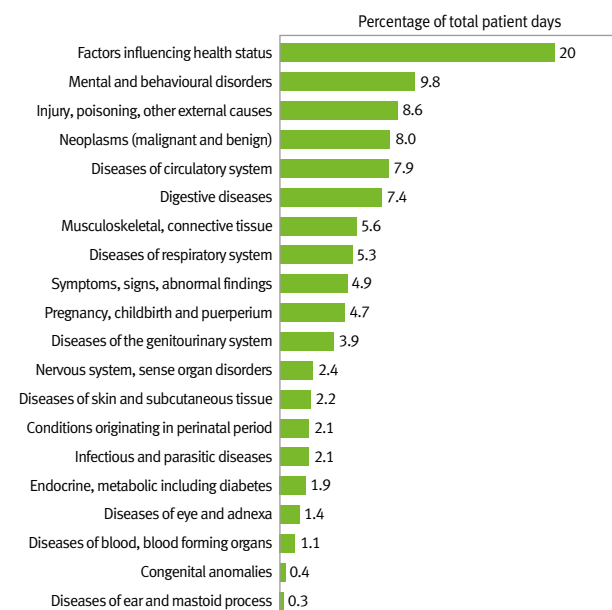
In 2013–14, 1.8 million occasions of emergency service were provided in public hospitals in Queensland. The number of occasions of service has increased by an average of 3.8% per year since 2009–10, higher than the national increase of 2.6% per year.<sup>79</sup> In 2014–15, there were 1.4 million presentations to emergency departments in Queensland, having increased by about 50,000 per year since 2008. If the current upward trend prevails, there will be about 0.6 million more presentations in 2026 than 2014–15, reaching a total of 2 million.

Figure 18: Hospitalisations and patient days by ICD Chapter, public and private hospitals, Queensland 2013–14

### a. Hospitalisations



### b. Patient days



## Trends in admissions and underlying pressures

### Overall growth

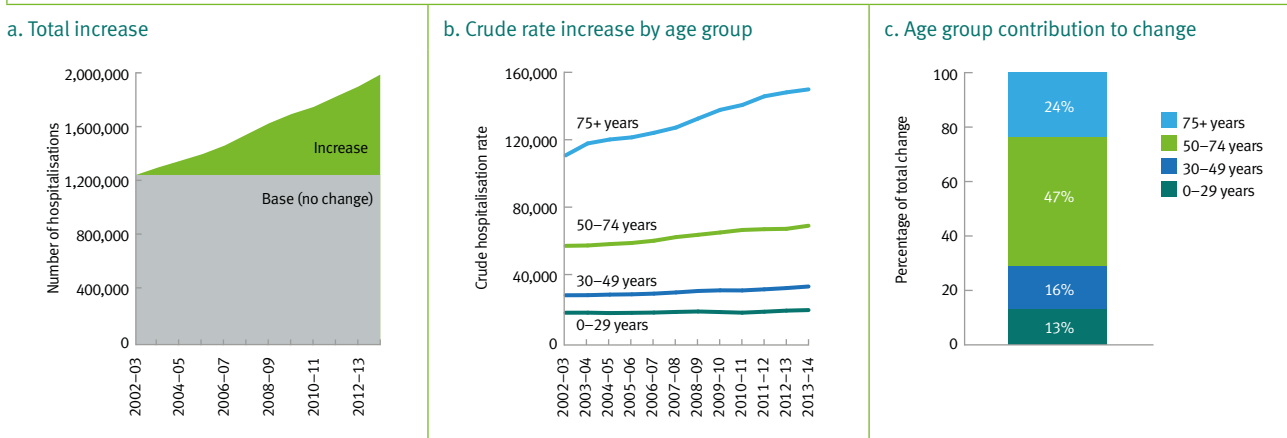
There were about 750,000 more admissions in Queensland hospitals in 2013–14 than in 2002–03, an average increase of 68,000 each year (Figure 19a). The total number of hospitalisations has increased since 2002–03 by almost 70%, and the number of hospitalisations (episodes of care) per admitted person has increased by 9% in seven years, from 2.1 episodes per person in 2007–08 to 2.5 in 2014–15.

Hospitalisations for older people (75 years and older) have increased dramatically. Eleven years ago, there was one hospitalisation for every older person

in Queensland—this has now increased to about 1.5 hospitalisations for every older person (Figure 19b). However, about half the state increase in hospitalisations occurred in the age group 50–74 years (47%), due to increasing rates of hospitalisation and the size and growth of the population (Figure 19c).

Increasing rates of admission accounted for one-third of the average yearly increase in hospitalisations—**independent of demographic change.**

Figure 19: All-cause hospitalisation trends by age group, Queensland



### Underlying causes

The three major drivers of the increase in hospitalisations are: population growth, population ageing, and changing rates of admission.

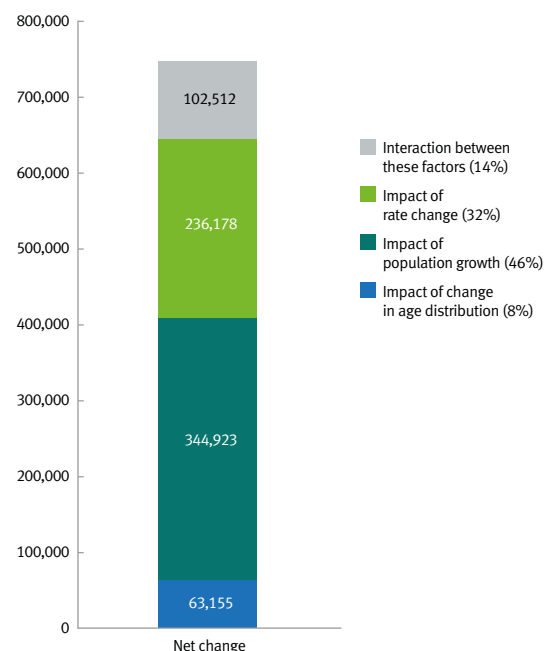
Partitioning the increasing number of hospitalisations according to these factors provides insight into how future change can be managed and modified. The methodology for doing so is based on international methods and described in the methods report (page i for details).<sup>1,86</sup>

Of the 750,000 increase in hospitalisations in Queensland in 2013–14 (Figure 20):

- 46% was due to population growth
- 32% was due to higher admission rates
- 8% was due to ageing
- 14% was due to the interaction between these factors.

While demographic factors are important drivers of growing health system pressures, about one-third of the increase is due to higher rates of admission—the most modifiable factor for constraining pressure. Achieving constraint will require a focus on the population groups that are contributing most to change (50–74 year olds) and those for whom admission rates are increasing the most (75 years and older).

Figure 20: Underlying causes of increase in hospitalisations in 2013–14 compared to 2002–03, Queensland



### Changing patterns

The 10 major contributing causes of the average annual increase of about 68,000 hospitalisations per year (107,000 patient days) over the past 11 years, based on ICD Chapters were (Figure 21):

- factors influencing health status including investigations, examinations and tests (28% of total)
- symptoms, signs and abnormal findings (11%)
- injury, poisoning and other external causes (7.4%)
- diseases of the musculoskeletal system (6.0%)
- digestive system diseases (5.9%)
- mental and behavioural disorders (5.0%)
- nervous system and sense organ disorders (4.7%)
- diseases of eye and adnexa (4.6%)
- genitourinary disorders (4.2%).

### Pattern of sociodemographic change

In 2013–14, of the 2 million admitted patient episodes:

- 47% were for males
- 53% were for females
- 5% were for Indigenous Queenslanders
- 95% were for non-Indigenous Queenslanders

- 18% were for infants, children and young people aged 0–29 years
- 44% were for adults aged 30–64 years
- 38% were for older people aged 65 years and older
- 62% were for people living in major cities
- 36% were for people living in regional areas (inner and outer)
- 2.5% were for people living in remote and very remote areas
- 22% were for people living in most disadvantaged areas
- 18% were for people living in most advantaged areas.

Over the past 11 years, trends in age adjusted hospitalisation rates (Figure 22):

- did not differ by sex
- were greater for older people than younger
- did not differ by area of socioeconomic status
- did not differ by Indigenous status, although crude rate change was about 50% higher for Indigenous Queenslanders
- were higher in major cities than in remote and very remote areas.

Figure 21: Increase in number of hospitalisations per year between 2002–03 and 2013–14, by ICD Chapter, Queensland

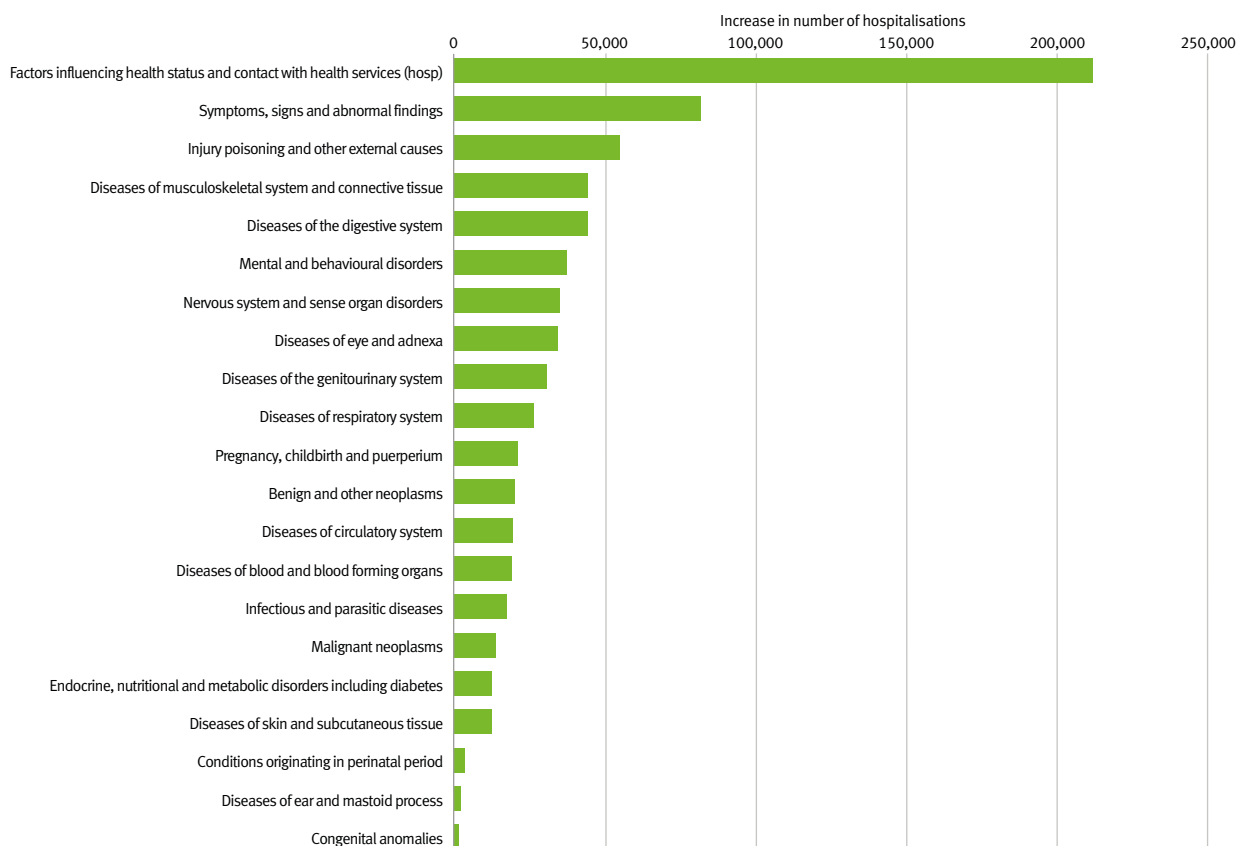
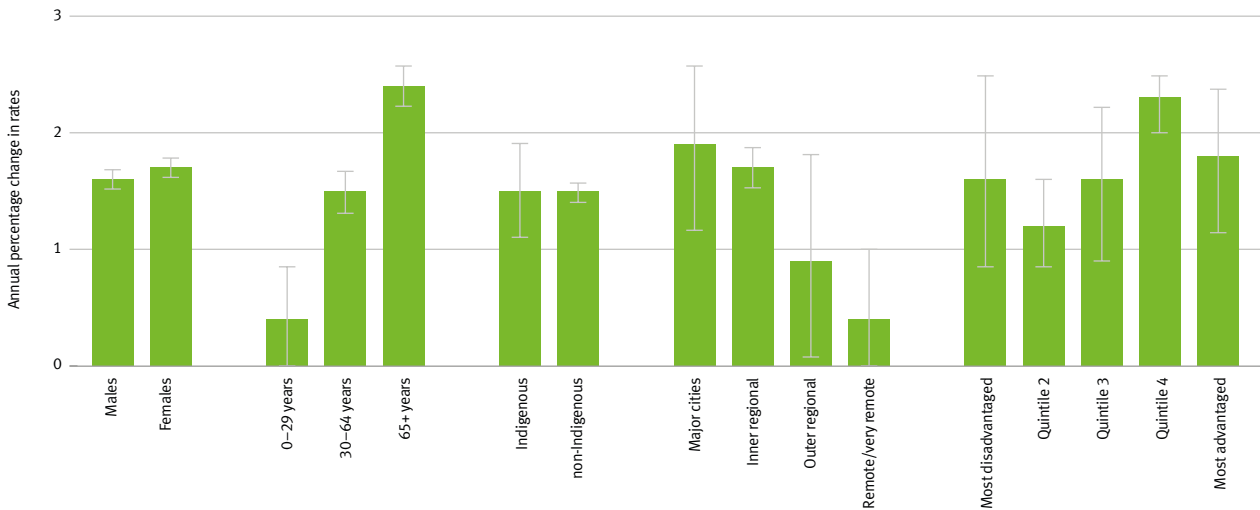


Figure 22: Change in age standardised hospitalisation rates between 2002–03 and 2013–14, by sociodemographic characteristics, Queensland



Note: Socioeconomic and remoteness trends were assessed between 2006–07 and 2011–12

### Trends in selected specific groups by underlying causes

The underlying causes and magnitude of change in hospitalisations varied by selected specific cause.

#### Renal dialysis

There were 109,836 more hospitalisations for renal dialysis in 2013–14 than 11 years earlier accounting for 13% of the state increase, where:

- admission rate increase was the major component of change (43%) resulting in 47,558 more hospitalisations
- population growth accounted for 29% of the increase (32,358 more hospitalisations)
- ageing accounted for 8% of the increase (9218 more hospitalisations)
- the interaction between the factors accounted for 19% of the increase (20,702 hospitalisations).

There were about 110,000 more patient days for renal dialysis in 2013–14 than 11 years earlier, accounting for 8% of the state increase. Changes in admission practice are likely to have contributed to the increase, for example, patients being admitted for treatment rather than treated in an outpatient setting.

#### Injuries (excluding self harm and suicide)

There were 53,568 more hospitalisations for injuries in 2013–14 than 11 years earlier (Figure 18) accounting for 7% of the state increase where:

- population growth accounted for 44% of the increase (23,373 more hospitalisations)
- increasing admission rates accounted for 37% resulting in 20,032 more hospitalisations

- ageing accounted for 3% of the increase (1724 more hospitalisations)
- the interaction between the factors accounted for 16% of the increase.

There were about 132,000 more patient days for injuries in 2013–14 than 11 years earlier, accounting for 10% of the state increase.

#### Infectious diseases

There were 56,982 more hospitalisations for infectious diseases in 2013–14 than 11 years earlier, and 126,473 patient days. Infectious diseases caused 8% of the state increase in hospitalisations where:

- population growth accounted for 56% of the increase (32,185 more hospitalisations)
- admission rate increase accounted for 26% resulting in 15,087 more hospitalisations
- ageing accounted for 6% of the increase (3606 more hospitalisations)
- the interaction between the factors caused 11%.

The five leading infectious causes, which accounted for 64% of the increase, were skin infections (18%), enteric symptoms (13%), urinary tract infections (12%), acute lower respiratory tract infections (11%) and chronic lower respiratory tract infections (10%). Two-thirds of the increase in patient days was for skin infections (22%), urinary tract infections (14%), post-operative infections (12%), septicaemia (10%) and chronic lower respiratory tract infections (9%).

The age profile of hospitalisations for infectious diseases is U-shaped—a peak in young children, and rising again in older age groups. The increase in hospitalisations over the past 11 years was skewed towards the elderly, with 17% of the hospitalisation increase and 22% of the increase in patient days for people aged 80 years and older—a disproportionate share as this age group represented 3% of the population. While there was an increase in infectious disease hospitalisations and patient days between 2002–03 and 2013–14 the average length of stay across all infectious diseases decreased with few exceptions—stays for viral hepatitis increased from 1.7 days to 2.9, and stays for other bacterial infections increased from 5.0 to 6.3 days.

#### Lifestyle related chronic conditions

There were 10,468 more hospitalisations for six lifestyle related conditions in 2013–14 than 11 years earlier accounting for 1.2% of the state increase where:

- population growth caused an increase of 17,095 hospitalisations
- ageing caused a net increase of 4040 hospitalisations after adjustment for interactions
- admission rates decreased, resulting in 10,666 fewer hospitalisations (7755 fewer for coronary heart disease, 605 fewer for lung cancer, 423 fewer for stroke, 370 fewer for COPD, 177 fewer for breast cancer, 84 fewer for colorectal cancer).

There was a decline in the number of patient days (46,000 fewer in 2013–14 than 2002–03), because the rate of admission decreased and there were shorter stays.

#### Chronic conditions of ageing and disability

There were 153,910 more hospitalisations for chronic conditions related to ageing and disability in 2013–14 than 11 years earlier accounting for 21% of the state increase where:

- admission rate increase was the major component (45%) resulting in 69,601 more hospitalisations
- population growth accounted for 32% of the increase (49,075 more hospitalisations)
- ageing accounted for 5%, causing an increase of 7754 hospitalisations
- the remaining 18% was due to the interaction between these three factors.

There were about 288,000 more patient days for conditions of ageing in 2013–14 than 11 years earlier, accounting for 22% of the state increase.

Declining rates of admission for lifestyle related chronic conditions and shorter stays resulted in about 46,000 fewer patient days in 2013–14 than 11 years earlier.

#### Dental conditions

There were 4982 more hospitalisations (net) for dental conditions in 2013–14 than 11 years earlier accounting for 1.3% of the state increase where:

- population growth resulted in 6031 more hospitalisations
- admission rate decrease and changing age structure resulted in 1049 fewer hospitalisations.

There were about 27,300 hospitalisations per year on average for dental conditions over the past three years and one-fifth of these were for dental caries. While 17% of dental conditions are for children aged 0–9 years, for dental caries about 60% are for children in this age group—61% in 2013–14 (about 20% for 0–4 year olds and 40% for 5–9 year olds).

Admission rates for dental caries have declined over the past decade and resulted in about 430 fewer hospitalisations for dental caries in 2013–14 than 11 years earlier, despite the impact of population growth. The introduction of fluoride in water supply systems may have contributed to this change. Access to services may also be a factor.

#### Hospitalisations associated with preventable causes

Hospitalisations can be prevented by improved lifestyles and/or treatment in a primary healthcare setting.

#### Hospitalisations associated with lifestyle related risk factors

Many chronic diseases have common lifestyle related risk factors. A healthier population would see a reduction in these risks and reduced pressure on the health system through lower rates of chronic disease. Hospitalisations for leading risk factors are summarised below and also reported in Chapter 8.

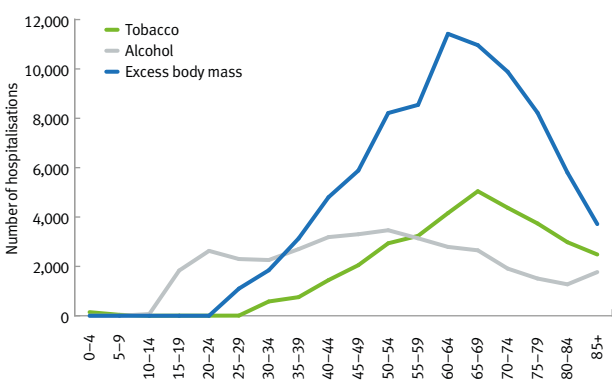
- Overweight and obesity (excess body mass) accounted for about 83,500 hospitalisations in 2013–14 (4.0% of total—4.9% for males and 3.2% for females).<sup>87</sup> More than half the hospitalisations were associated with diabetes-related renal dialysis (55%), followed by coronary heart disease, stroke and other cardiovascular diseases (33%) (Figure 49, page 81). When adjusted for the frequency of repeat admission for dialysis, about 2% of patients accounted for 55% of hospitalisations due to excess body mass. The age-adjusted hospitalisation rate for high body mass was steady over the latest five-year period, (2010–11 to 2014–15) while the rate of patient days decreased by 13%. With renal dialysis excluded from the estimation, the proportion of hospitalisations due to excess body mass was 1.8%.



- Tobacco smoking accounted for about 34,000 hospitalisations in 2013–14, 1.6% of total.<sup>87</sup> The male burden was higher than the female (2.1% compared with 1.3%). Almost one-third of the hospitalisations were for COPD (30%) followed by coronary heart disease (17%) and lung cancer (10%), although a range of other cardiovascular diseases accounted for 19% (Figure 40b, page 60). The age-adjusted rate for patient days due to smoking-related conditions decreased by 17% over the past five years.
- Alcohol was associated with about 37,000 hospitalisations in 2013–14, 1.8% of total (2.4% for males, 1.3% for females).<sup>87</sup> The leading causes of the attributable burden were alcohol dependence and harmful use (38% of hospitalisations due to alcohol), falls (12%) and other unintentional injuries (14%) coronary heart disease (4%) and suicide and self-harm (4%), together accounting for over 70% of the total (Figure 55, page 90). The age-adjusted hospitalisation rate for alcohol related conditions was steady over the past five years as was the rate for patient days.

For tobacco, and overweight and obesity, the number of hospitalisations increased with age and peaked in the age range 60 to 69 years (Figure 23). For alcohol, the hospital burden increased from 15–19 years with about 2000 hospitalisations for each five-year age group up to about 60 years of age. More information on sociodemographic characteristics is reported in Chapter 8.

Figure 23: Hospitalisations due to selected risk factors by age, Queensland, 2013–14<sup>87</sup>



### Hospitalisations that could have been treated in the primary healthcare sector

Potentially preventable hospitalisations (PPHs) are admissions that were avoidable through preventive care and early disease management, usually delivered in an ambulatory setting—primary health care, GPs or community health centres. They are defined nationally and have been identified as a national healthcare performance indicator.<sup>88</sup>

In 2013–14, 6.6% of all hospitalisations (132,000) were potentially preventable based on the national definition that only includes diabetes as a principal cause. Of these, 50% were due to acute conditions, 46% for chronic conditions and 4% for vaccine preventable conditions. The five leading specific causes in 2013–14 were kidney and urinary tract infections (13%), cellulitis (11%), COPD (10%), dental conditions (9%) and congestive heart failure (8%). The Queensland Health definition includes all hospitalisations for diabetes, and in 2013–14 using this definition, 7.7% of all hospitalisations (154,825) were potentially preventable—and the leading causes were diabetes complications (25%), kidney and urinary tract infections (11%), cellulitis (9%), COPD (9%), dental conditions (8%) and congestive heart failure (6%).

**1 in 15 hospitalisations could have been treated in a primary care setting.**

Characteristics of PPHs (\*Queensland definition):

- Trend: the proportion of PPHs has not changed over the past four years in Queensland, nor has the age-standardised rate. In contrast, the all-cause hospitalisation rate increased by 6% in this period.
- Age profile: More than half the PPHs were either for young children (0–9 years, 13%) or older people (65 years and older, 42%) in the two years 2012–13 to 2013–14.
- Socioeconomic differences: PPH rates\* in disadvantaged areas were 90% higher than advantaged areas over the past two years.
- Remoteness: PPH rates\* were higher outside major cities: 12% higher in regional areas, 17% higher in remote areas and 76% higher in very remote areas.
- Indigenous Queenslanders: PPH rates\* were 2.6 times the non-Indigenous rates.
- HHSs: nine of the 16 HHSs had higher PPH rates\* than the state average (from about double to 7% higher), and four were lower (5–9% lower). Data is included in the HHS booklet—page i for details.
- National and jurisdictional: rates in Queensland were 14% higher than national in 2013–14 and second highest after Northern Territory.<sup>47</sup>

## Selected highlights from the regions

This section includes a selection of patterns and underlying causes of change among the HHSs. It will inform a broader understanding of where there has been success in constraining growth in hospitalisations and where growth has increased pressure on the health system.

Small populations often result in unstable patterns so information for four HHSs should be interpreted with caution (South West and Central West in particular, and also North West and Torres and Cape). There are other data limitations when assessing patterns and change in hospitalisations, as described on page 46. This section includes a ranking of HHSs based on age adjusted rates and crude rates. Crude rates (the number of cases per capita) have been included because they more accurately reflect ‘on the ground’ pressures and

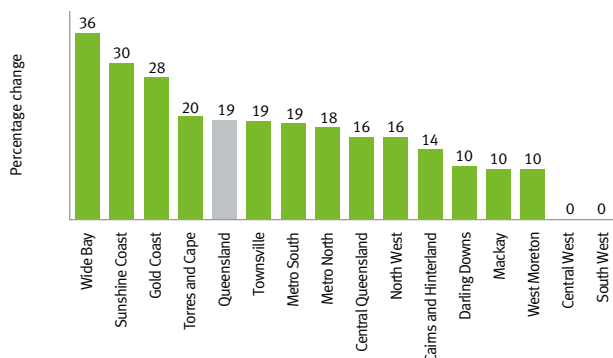
patterns and are therefore more useful for healthcare planning. Hospitalisations for the ICD Chapter ‘Factors influencing health status and contact with health services’ was not assessed for HHSs because of variation in admission practices.

### Which HHSs have changed the most?

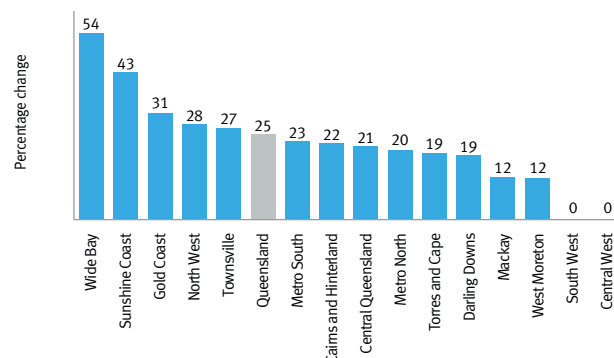
There has been a significant increase in crude and age adjusted hospitalisation rates in 13 of the 15 HHSs over the past 11 years (Figure 24). The greatest relative increase was in Wide Bay, Sunshine Coast and Gold Coast. Excluding Central West and South West (where rates did not change), the smallest relative crude rate change was in West Moreton and Mackay and, after age adjustment, also Darling Downs.

Figure 24: Change in all-cause hospitalisation rates (0-85+ years) between 2002–03 and 2013–14, by HHS, Queensland

a. Age standardised rate change



b. Crude rate change



### Which HHSs have contributed most to statewide increase?

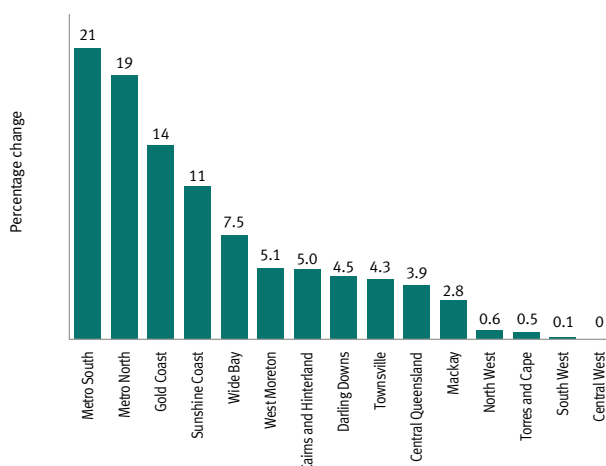
Increasing hospitalisations in the four most populous HHSs accounted for 65% of the statewide increase of 68,000 hospitalisations per year: Metro South (21%), Metro North (19%), Gold Coast (14%) and Sunshine Coast (11%) (Figure 25).

The increase associated with these four HHSs (65%) was consistent with population share (63%). Wide Bay, however, accounted for more of the state increase in hospitalisations (7.5%) than would be expected based on population (4.1% of total). Local knowledge will help to explain why the increase was greater than expected based on population change.

### Has the increase occurred across all age groups?

Hospitalisations are increasing more rapidly for older people than younger across most HHSs, with higher admission rates an important cause.

Figure 25: Contribution to statewide increase in hospitalisations for all causes (0-85+ years) between 2002–03 and 2013–14, by HHS, Queensland



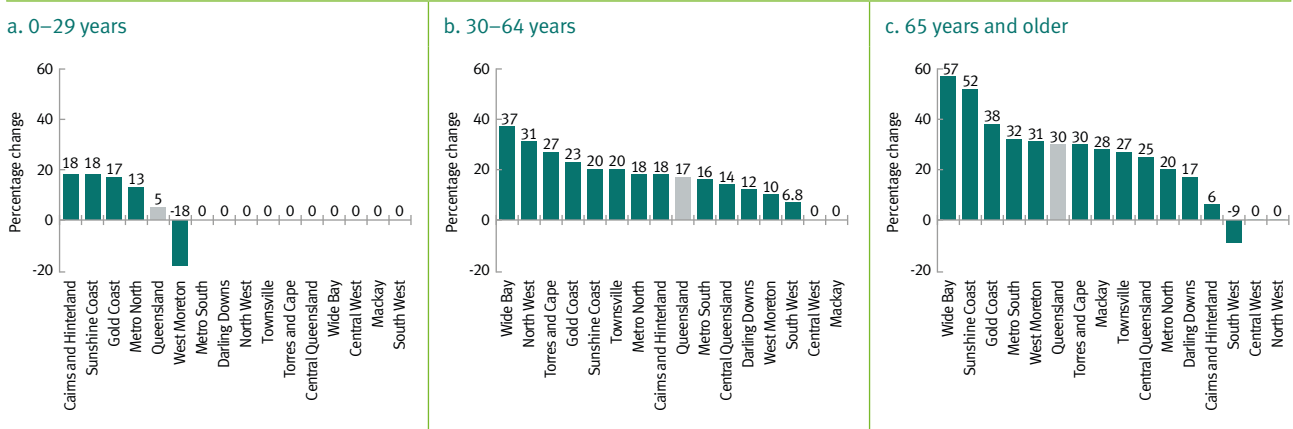
**Children and young people** (Figure 26a): hospitalisation rates for 0–29 year olds increased statewide by 5% over 11 years. Four HHSs had a larger increase than the state, while many were unchanged. The decrease in hospitalisation rates in West Moreton was noteworthy—possibly resulting from initiatives to improve the health and wellbeing of children and young people in West Moreton, and/or by providing services outside the hospital system to meet the needs of this population.

**Working-age people** (Figure 26b): hospitalisation rates for 30–64 year olds increased statewide by 17% over 11 years.

in 11 years. Except for two (Central West and Mackay) there was an upward trend in all HHSs, the greatest relative change occurring in Wide Bay, North West, and Torres and Cape. West Moreton had a relatively smaller increase.

**Older people** (Figure 26c): hospitalisation rates for those aged 65 years and older increased statewide by 30% in 11 years. Except for three HHSs (Central West, North West and South West), there was an upward trend in all HHSs with the greatest relative change occurring in Wide Bay, Sunshine Coast and Gold Coast.

Figure 26: Change in all-cause hospitalisation rates between 2002–03 and 2013–14, by HHS and age group, Queensland



**What are the drivers of change?**

The underlying drivers of the increase in hospitalisations due to all causes over the past 11 years varied by HHS (Figure 27).

- Population growth was a dominant factor in many HHSs, accounting for more than 50% of the increase in West Moreton, Mackay and Metro North.
- Admission rate increase was dominant in Wide Bay.
- Admission rate increase and population growth were equally important drivers in Gold Coast, Sunshine Coast and Torres and Cape.
- Ageing had greater impact in South West, Darling Downs and Cairns and Hinterland than other HHSs although it had little impact overall.

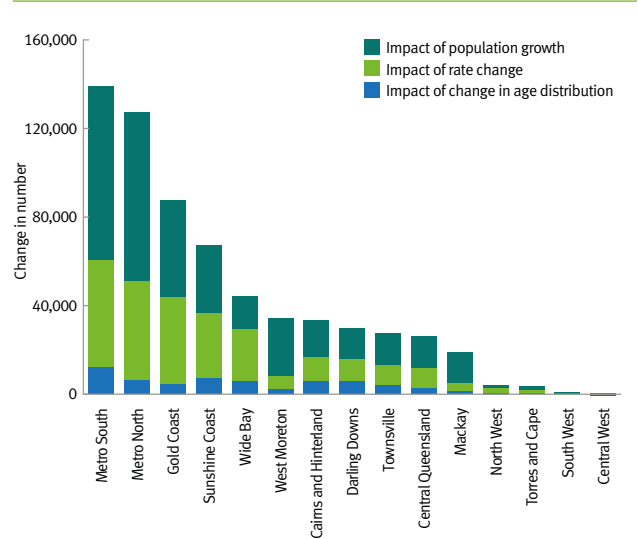
Unlike demographic factors which are difficult to modify, changes due to admission rates are an opportunity to manage future pressures. The relatively small increase in admission rates in Mackay and West Moreton could be explained in three ways:

- these areas have a healthier population with fewer health needs
- non-hospital health services may have been provided, avoiding the need for hospitalisation

- the admission guidelines or access may differ in these HHSs.

Local knowledge will help to explain these patterns.

Figure 27: Underlying causes of change in all-cause hospitalisations between 2002–03 and 2013–14, by HHS, Queensland



The impact of the interaction between the three factors is not displayed (it accounted for about 15% of the increase).

### Are gains being achieved in lifestyle related chronic conditions?

Statewide, the hospitalisation rate for lifestyle related conditions has decreased due to a reduction in smoking, improved early diagnosis and treatment of cardiovascular disease including better management of metabolic risk factors, and rising levels of physical activity. Although demographic factors (principally population growth and, to a much lesser degree, ageing) have caused the number of hospitalisations to increase in 11 of 15 HHSs, the pressure on hospitals has been substantially reduced by falling admission rates (Figure 28a). Three HHSs had insufficient cases to report statistical difference (Torres and Cape, South West and Central West). Wide Bay HHS reversed the state trend, with the admission rate driving up the hospital burden, combined with a growing, ageing population.

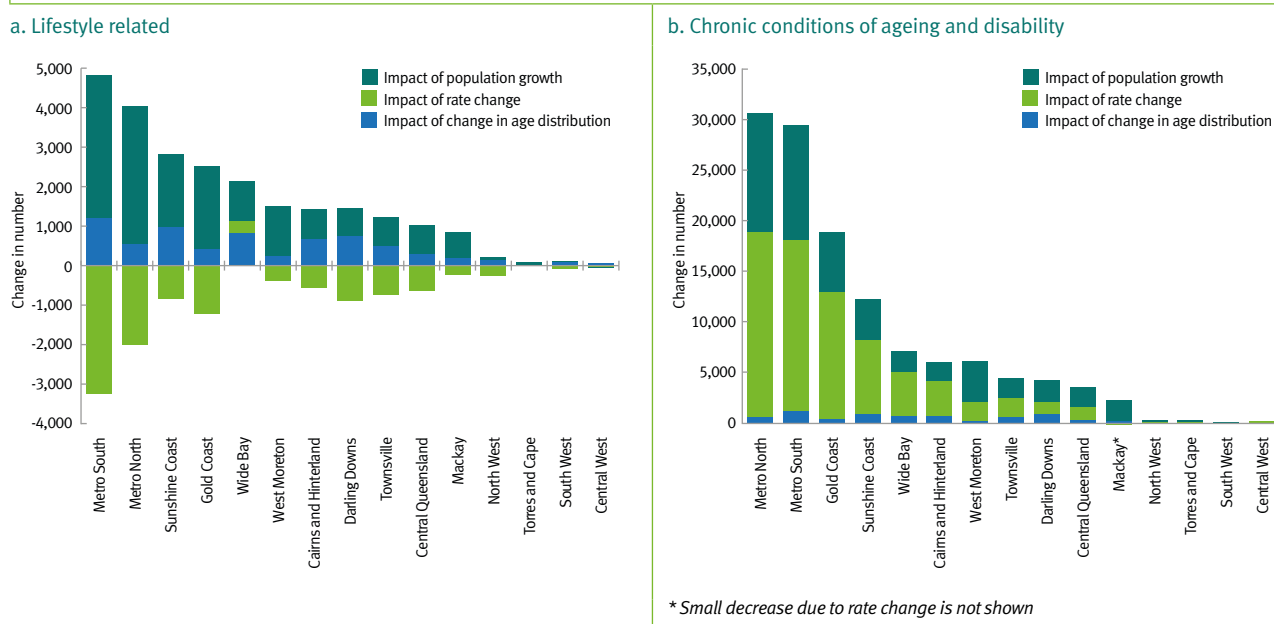
This data would suggest that improved lifestyles have the power to reduce the demand for hospital services and that further gains are possible. It shows that continued effort in Wide Bay would achieve such outcomes. However, in all HHSs the number of hospitalisations for lifestyle related chronic conditions is relatively small and while further gains can be achieved, addressing these conditions alone will not address the broader challenges arising from higher admission rates across all causes and specifically the conditions of ageing and disability.

### What is the impact of age and disability related chronic conditions?

Chronic conditions associated with ageing (and an increasing disability burden) were a major contributor to the steady increase in hospitalisations in Queensland over the past 11 years. The following patterns were evident among the HHSs.

- Hospitalisations for these conditions increased in all HHSs with two-thirds of the state increase in the high population HHSs (Metro South, Metro North, Gold Coast and Sunshine Coast) (Figure 28b).
- Increasing admission rates for chronic conditions of ageing were the dominant driver of increase in six HHSs (Metro North, Metro South, Gold Coast, Sunshine Coast, Wide Bay, and Cairns and Hinterland).
- For four HHSs (Darling Downs, West Moreton, Mackay and Central Queensland) population growth was the dominant influence, followed by admission rate increase.
- Mackay was the only HHS with declining admission rates, decreasing the overall burden by 9%, while the increase in hospitalisations was driven largely by population growth.

Figure 28: Underlying causes of change in hospitalisations for chronic conditions between 2002–03 and 2013–14, by HHS, Queensland



The impact of the interaction between the three factors is not displayed (it accounted for about 10–20% of the increase).

### Hospitalisations for symptoms, signs and abnormal findings

The crude hospitalisation rate for symptoms, signs and abnormal findings increased by 66% between 2002–03 and 2013–14, and by 58% after adjustment for the changing age distribution. Rate increase was evident in all but four HHSs with the greatest relative increase in Wide Bay and Gold Coast (Figure 29a). These two HHSs also had the highest rates of hospitalisation, noting high rates across most HHSs. Changing admission practice may have contributed to rate increase.

### Hospitalisations for infectious diseases

The crude hospitalisation rate for infectious diseases increased by 18% over the past 11 years (by 14% after adjusting for ageing). Rate change was evident in seven HHSs with the greatest relative increase in Wide Bay, followed by Cairns and Hinterland, Gold Coast, Sunshine Coast, and Metro North (Figure 29b). The highest rates of hospitalisation were, however, in the remote HHSs of Torres and Cape, North West, Central West and South West. The lowest rates were in Mackay and Townsville.

### Hospitalisations for injury (excluding self harm)

The crude hospitalisation rate for injuries increased by 25% between 2002–03 and 2013–14. Rate change was evident in nine HHSs with the greatest relative increase in Sunshine Coast, followed by Gold Coast, Townsville, Metro South, Metro North and Cairns (Figure 29c). Rate decline was evident in Mackay and Central West.

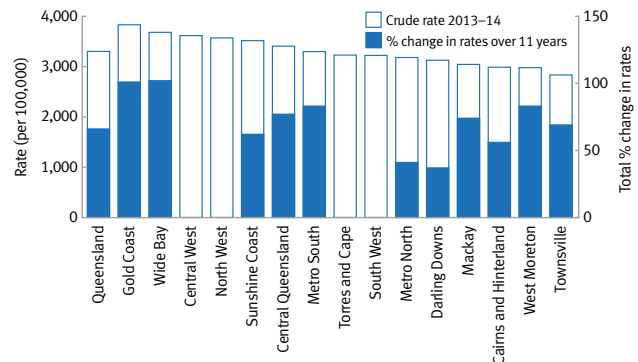
The highest rates were in the remote HHSs of Central West, South West, and Torres and Cape. Over the past 11 years either rates did not change in these areas or they declined.

### Hospitalisations for dental caries in children aged 0–9 years

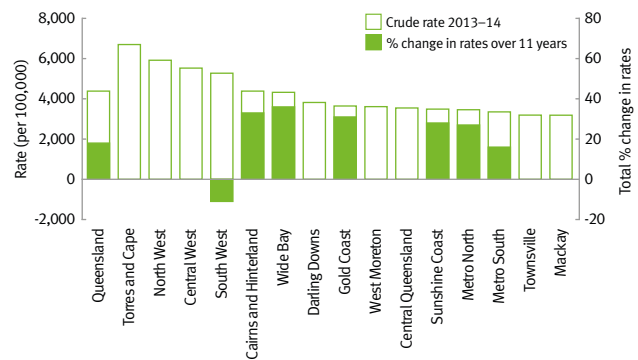
The crude hospitalisation rate for dental caries decreased by 22% between 2002–03 and 2013–14. Rate increase was evident in one HHS—North West increased by 81% (Figure 29d). Rates decreased in five HHSs—West Moreton, Mackay, Metro South, Townsville and Cairns and Hinterland, with no change in the remainder. Seven HHSs had higher hospitalisation rates than the state, from 23% higher in Central Queensland to 3.3 times the state average in North West. Four HHSs had lower rates—Metro North (15% lower), Metro South (34% lower), Townsville (38% lower) and Cairns and Hinterland (46% lower).

Figure 29: Hospitalisations for selected conditions: crude rates and trend 2002–03 and 2013–14, by HHS, Queensland

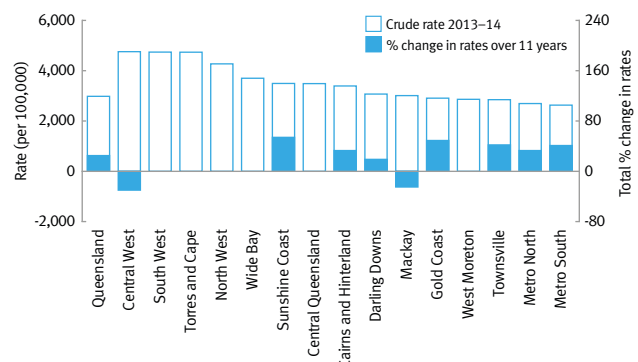
#### a. Symptoms, signs and abnormal findings hospitalisations



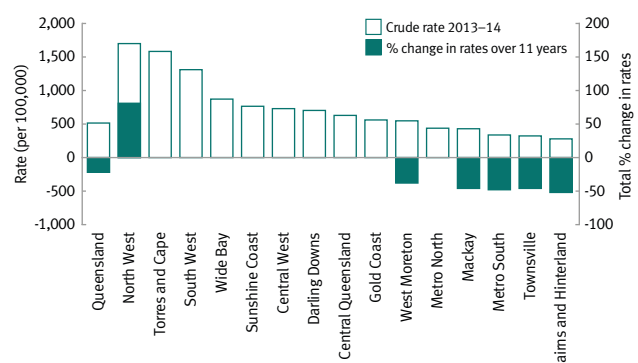
#### b. Infectious disease hospitalisations



#### c. Injury hospitalisations



#### d. Dental caries hospitalisations in 0–9 year olds



## National comparisons

Variation in the way data on hospital services is collected may limit the comparability of regional and jurisdictional reporting and comparisons over time. Taking into account these limitations, selected indicators for national and jurisdictional comparison have been compiled (Table 7).

Provision of services in Queensland was generally higher per head of population than nationally<sup>78</sup>:

- 12% higher for non-admitted services in 2013–14
- 9% higher for admitted services.

Average length of stay in private hospitals in Queensland was similar to the national average and for public hospitals, shorter than the national average. As a result, patient days per head of population in Queensland was similar to national.<sup>80</sup>

Within the OECD, Australia was a middle ranking country for overnight hospitalisation rates: twelfth highest of 28 countries.<sup>80</sup>

**Table 7: Hospitalisations, interstate, national and international comparisons<sup>78-80</sup>**

Indicator (crude rate)	Queensland compared to (2013–14)	
	National	Interstate ranking
<b>Occasions of service</b>	11% higher	3 highest of 4
<b>Emergency services</b>	42% higher	2 highest of 7
<b>Outpatient services</b>	7% higher	5 highest of 7
<b>Admitted patients</b>		
<b>Separation rate</b>	9% higher	1 highest of 5
<b>Same day rate</b>	10% higher	2 highest of 5
<b>Overnight rate</b>	7% higher	1 highest of 5
<i>Patient day rate</i>	4% higher	1 highest of 5
<b>Average length of stay (acute hospitals)</b>		
<i>Public hospitals</i>	0.3 days less	7 highest of 8
<i>Private hospitals</i>	same	2 highest of 5
<b>Patient days</b>	same	3 highest of 5
<b>Age standardised rates</b>		
<i>Potentially preventable hospitalisations</i>	12% higher	2 highest of 8
<i>Asthma</i>	6% lower	5 highest of 8
<i>COPD</i>	11% higher	2 highest of 8

## Data sources and methods: hospitalisations

In this chapter, hospitalisations were derived from two sources:

- Queensland Hospital Admitted Patient Data Collection
- AIHW reports on Australian hospital statistics.<sup>78-80</sup>

The terms ‘hospitalisation’ or ‘admission’ have been used to refer to an admitted patient episode of care, also known as a separation.

Although there are national standards for data on hospital services, variation remains: this includes variation in coding and reporting as well as variation in admission and treatment guidelines and procedures. This report does not identify all such caveats although major limitations are noted (for example in relation to diabetes coding). In addition, readers should refer to national reports on hospital statistics for jurisdictional limitations.

Hospitalisations were reported by principal diagnosis, unless noted otherwise. Two definitions were used to report PPHs, the national definition and the Queensland Health definition. Refer to the *Methods for reporting health status* for information.<sup>1</sup>

Data for 2014–15 was generally not used in this report although the data was available at the time. This decision was based on a substantial increase in admissions for certain procedures and treatments, principally chemotherapy and endoscopies, and a similar decrease in outpatient presentations, suggesting a change in admission practice in some Queensland hospitals.<sup>89</sup>

The methodology for partitioning the causes of increase in hospitalisations, that is, demographic factors and rate change, is described in the companion document, *Methods for reporting health status*.<sup>1</sup>

For standardised rates, the reference population was Australia 2001.

This section uses crude and age adjusted rates to rank and compare HHSs —the rationale for doing is documented.<sup>1</sup>

Trends were based on statistical significance using Poisson regression methods.<sup>1</sup>

Hospitalisations based on socioeconomic quintiles were generated from the 2006 Index of Socioeconomic Advantage/Disadvantage where areas were population weighted.<sup>76</sup>

Remoteness was determined using the Accessibility/Remoteness Index of Australia (ARIA+).<sup>77</sup>

### For further information:

- The health of Queenslanders, 2014 (and earlier reports in the series)
- *Methods for reporting population health status 2016*<sup>1</sup>
- AIHW publications: Australian hospital statistics<sup>78-80</sup>
- Statistical tables online (page i)

# The cost of delivering health



- \$32.1 billion was spent on health in Queensland in 2013–14, an average of \$6319 per person.
- Health is the largest component of Queensland Government expenditure, accounting for 29% of the 2016–17 state budget.
- About two-thirds (69%) of health expenditure (including hospitals and primary and community care) was funded by government: 40% from the Australian Government and 30% from the Queensland Government.
- 40% of total health spending was for hospitals: 30% for public, 10% for private—a total of \$11.8 billion in 2013–14 with average annual cost of \$12,516 per person admitted in that year.
- Spending on hospitals in Queensland increased by about 88% over 10 years, more than triple the rate of population increase (about 26%).
- Per capita spending on health in Queensland increased by 51% in a decade, a real increase of about \$200 per year per person.
- More than one-tenth of hospital spending in Queensland was for cardiovascular disease (11% in 2012–13). Injuries (9%), endocrine, nutritional and metabolic conditions (9%), digestive diseases (9%) and mental disorders (7%) were also leading causes.
- Disease group expenditure patterns on admitted patient care in Queensland were very similar to national spending.
- 75% of total health spending is for people under the age of 75 years, although per capita spending increases with age. About 10% of public hospital costs is associated with treating people in the last year of life.
- Per capita spending on health for Indigenous Queenslanders by the Queensland Government was 2.2 times that for non-Indigenous, and is consistent with the higher burden of disease. Across Australia considering all sources, per capita spending on health was 47% higher for Indigenous Australians than non-Indigenous.
- Australian health spending is close to the OECD median (per capita and proportion of GDP), and has remained in a similar position over the past decade.

## Health system expenditure

A total of \$32.1 billion was spent on health in Queensland in 2013–14.<sup>90</sup> The amount reflects spending from all sources, including federal and state governments. Expenditure in Queensland was 20.8% of Australian health expenditure (\$154.6 billion), reasonably consistent with Queensland’s population share (20.1% in December 2015).

The Queensland Government spent \$12.1 billion on health in 2013–14 and the budget for 2015–16 was \$14.2 billion.<sup>91</sup> As such, it is the largest component of projected state government expenditure (29% of the 2016–17 budget) followed by education (24%).<sup>92</sup>

Per capita spending in Queensland (\$6319 per person) was similar to national spending in 2013–14 and third highest of the jurisdictions (Figure 30a).

Health spending accounted for 32% of state government tax revenue in Queensland in 2013, with the proportion steadily increasing over the past decade from 18% in 2004.<sup>90</sup> Nationally, as a proportion of Australian Government tax revenue, health spending has been steady at about 25% over the past five years having increased from an average of 20% in the five years up to the global financial crisis in 2008.

Nationally, spending on health accounted for 9.8% of GDP in 2013–14, an increase of 1.0 percentage point over 10 years.<sup>90</sup> While health expenditure grew at the rate of 5% per year in this period, GDP grew more slowly, 2.8% per year. Annual growth in health spending has fluctuated over the past decade with some slowing evident. The same is true for growth in GDP.

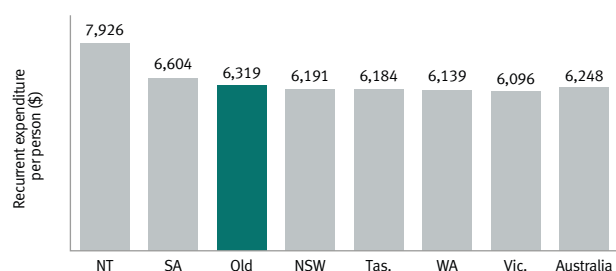
## Who pays?

Governments are responsible for the greater proportion of health spending. In Queensland in 2013–14, 69% of total health expenditure (recurrent and capital) was by the Australian and Queensland governments (Table 8).<sup>90</sup> Health insurance funds were the source of 8%, individuals 16% and the remaining 7% was from other sources. The distribution of source funding was very similar across Australia.

One-third of hospital expenditure in Queensland in 2013–14 (36%) was funded by the Australian Government, 41% was from state funds and 24% from non-government sources and entities.<sup>90</sup> For public hospitals, about half the expenditure (53%) was state government funded, 36% from Australian Government and 10% from non-government sources. For private hospitals, two-thirds (65%) of expenditure was from non-government sources, one-third (34%) from the Australian Government and 2% from state government.

Figure 30: Per capita recurrent health expenditure by jurisdiction

a. 2013–14



b. Total change between 2003–04 and 2013–14 (constant prices)

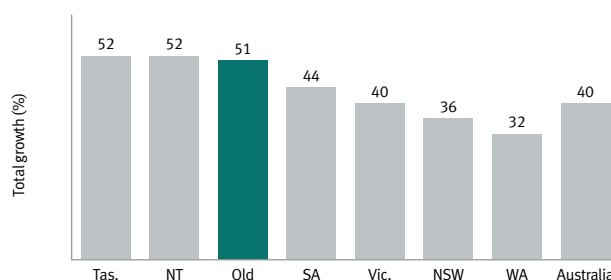


Table 8: Health expenditure by source of funding, Queensland, 2013–14<sup>90</sup>

	\$m	% of total
<b>Government</b>	<b>22,255</b>	<b>69.3</b>
Australian	12,774	39.8
State/territory and local	9,480	29.5
<b>Non-government</b>	<b>9,860</b>	<b>30.7</b>
Individuals	5,023	15.6
Health insurance funds	2,613	8.1
Other	2,224	6.9
<b>Total</b>	<b>32,115</b>	<b>100.0</b>



### Selected trends

Total healthcare spending increased by 5% per year nationally between 2003–04 and 2013–14, based on constant prices—this represents real growth in spending.<sup>90</sup> There was stronger growth in the first half of this decade (5.8% per year) than the latter half (4.2% per year).

Per capita recurrent spending in Queensland increased by 51% over 10 years (from \$4325 per person in 2003–04 to \$6319 in 2013–14), based on constant prices—an increase in real terms of about \$200 per person per year on average. The increase in Queensland was 26% higher than the national average increase, and along with Tasmania and Northern Territory, one of the highest in the nation (Figure 30b).

The relative increase in health spending over the past decade was largely driven by increase in volume of goods and services provided, rather than an increase in price for delivery.<sup>90</sup> This was evident in the 2.9% increase per year in the value of the volume supplied compared to the 1.5% per year increase in price nationally. It is also supported by an independent assessment which identified an increase in the scope and volume of services, rather than population growth or ageing as a key driver of budget pressures.<sup>93</sup> In Queensland over the past six years, there has been a 9% increase in the number of admissions per patient—from 2.05 admissions per unique patient in 2009–10 to 2.56 in 2014–15.

**Per capita spending on health in Queensland increased by 51% in a decade, about \$200 more per year per person.**

### How was the health dollar spent?

Of the \$32.1 billion spent on health in Queensland in 2013–14, the vast majority (92%) was recurrent spending—\$29.6 billion—whereas \$2.5 billion was capital expenditure.<sup>90</sup>

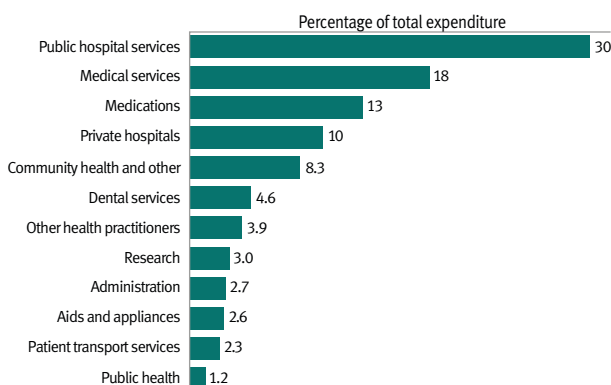
The largest component of recurrent health spending in Queensland was for hospital services: 40% or \$11.8 billion in 2013–14 where 30% was on public hospitals and 10% on private hospitals (Figure 31). In 2013–14, there were 942,810 unique patients (Queensland residents and visitors) in Queensland hospitals—the average cost of providing hospital services was \$12,516 for every person who had been hospitalised in that year. Spending on primary healthcare accounted for a little over one-third (38%) and about one-fifth (22%) was for other services including patient transport, aids and appliances, administration and research (Figure 30).

Total spending on hospitals increased in Queensland by 88% in constant prices over the 10 years up to 2013–14. The contribution from non-government sources almost doubled in this period (98% increase), followed by a 69% increase in state funding, while Australian Government funding of hospitals increased by 46% (Figure 32).<sup>94</sup> In this period, the Queensland population grew by 26%.

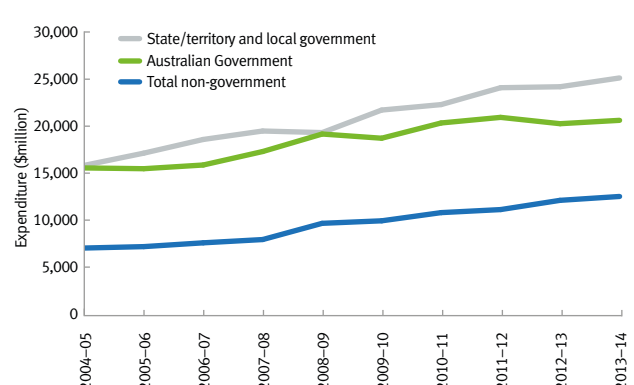
Nationally, spending on primary healthcare, which includes general practice, community health and allied health services, increased by about 60% between 2002–03 and 2012–13 and about 28% in the past five years.<sup>94</sup> The ‘out of pocket’ component funded by individuals increased nationally by 75% between 2002–03 and 2012–13.

Spending on public health included immunisation and screening programs and comprised 1.2% of total national recurrent expenditure in 2013–14. This does not include all spending on prevention. Growth in public health expenditure since 2003–04 was lowest of all areas of expenditure at 1.1% per year nationally, compared with 5.0% per year for total recurrent expenditure.

**Figure 31: Recurrent spending on health goods and services, Queensland 2013–14<sup>90</sup>**



**Figure 32: Trends in hospital funding by source, Australia<sup>94</sup>**



## Cost by disease group

The most comprehensive report on health spending categorised by disease groups was in 2008–09 (Table 9).<sup>95</sup> Since then, the methodology for attributing the cost to disease groups has changed. Data for 2012–13 is not comparable with the earlier analysis.<sup>96</sup> The new methodology which includes expenditure on admitted patient care allocated across most recorded diagnoses, has been undertaken only for admitted patient data (Figure 33). This has not yet been completed for the cost of pharmaceuticals or out of hospital medical costs. It is likely that the pattern of spending will have changed since 2008–09, so caution should be exercised when interpreting this earlier data—which has been retained until an update is publically available (late 2016), at which time the online version of this report will be updated.

**Admitted patient care:** More than one-third of the cost of admitted patient services in Queensland in 2012–13 was due to four causes: cardiovascular disease (12%), injuries (11%), endocrine, nutritional and metabolic diseases (8.8%) and digestive system disorders (8.5%) (Figure 33). Mental and behavioural disorders (7.2%) and musculoskeletal conditions (7.1%) were also leading causes. Spending in Queensland differed very little from national spending on admitted patient services.

Cardiovascular disease was the leading cause of admitted patient hospital spending in Queensland and nationally.

**Out of hospital medical services:** In 2008–09, 28% of costs associated with out of hospital medical care in Australia was for other contact with the health system, that is, for causes not principally coded to a disease (Table 9).<sup>95</sup> This is consistent with the leading causes of presentation to general practitioners—problems of a general nature, check-ups, immunisations, hypertension, upper respiratory tract infections and depression.<sup>97</sup> The second largest cause of out-of-hospital expenditure was musculoskeletal conditions (10%) followed by cardiovascular disease (9.7%).

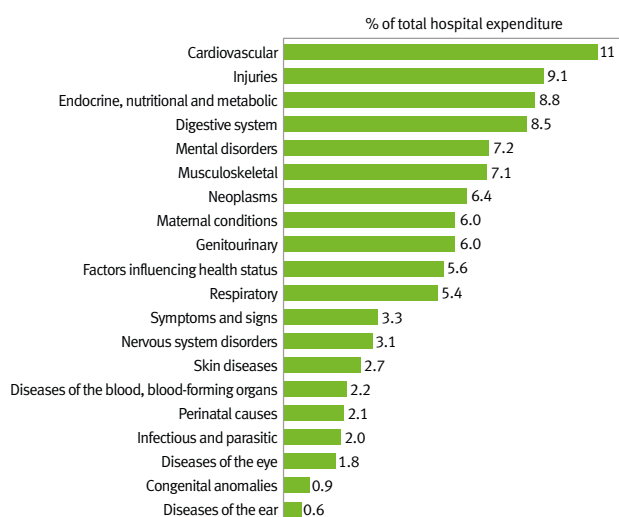
**Prescription pharmaceuticals:** In 2008–09, one-sixth of the cost of prescription pharmaceuticals was for cardiovascular disease (16%).<sup>95</sup> Other leading causes of expenditure were other contact with the health system (12%), endocrine, nutritional and metabolic disorders (11%) and mental health conditions (10%).

The mode of spending varied by disease group, and details from the 2008–09 national assessment for the largest categories follow.<sup>95</sup> This data is based on principal diagnosis.

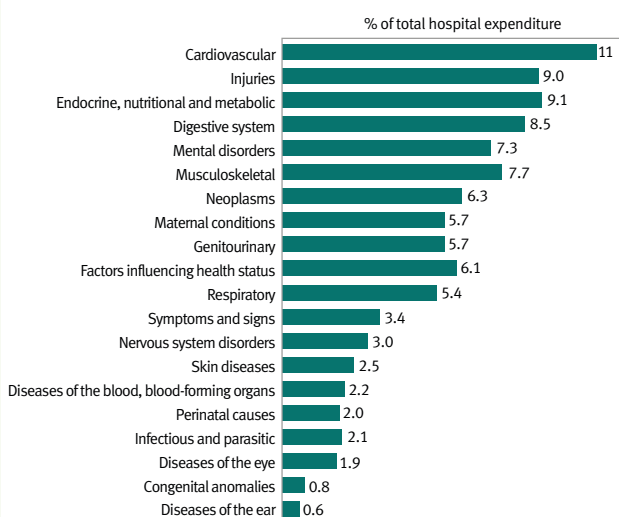
- Other contact with the health system:** This was the largest cause of recurrent, allocated health system expenditure in Australia in 2008–09 (14%). It includes a number of reasons not principally coded to a disease, treatments such as care for dialysis, investigations, tests and admissions for causes that did not principally result in a disease diagnosis, such as admission for pain and other symptoms. These are leading causes of hospitalisation as discussed on page 35 and result in substantial hospital costs and out-of-hospital medical services (Table 9).

Figure 33: Estimates of hospital expenditure by disease group, 2012–13<sup>96</sup>

### a. Queensland



### b. Australia



- Cardiovascular disease:** One-tenth of health national spending was for cardiovascular disease in 2008–09 (10%) (Table 9).<sup>95</sup> It was the second largest cause of admitted patient expenditure, the third largest for out-of-hospital medical services and the largest cause of spending on prescription pharmaceuticals. Costs associated with admitted patient hospitalisations were the largest component of spending on cardiovascular disease. The relatively large spending on prescription pharmaceuticals, however, presents an opportunity to manage and prevent the severity of disease through lifestyle management, such as monitoring and treating high blood pressure, losing weight, increasing physical activity and improving diet, specifically reducing salt intake.
- Oral health:** This was the third largest cause of recurrent, allocated health system expenditure in Australia in 2008–09 accounting for 9.7% of spending.<sup>95</sup> This was almost entirely associated with the cost of services provided outside the hospital system, that is, private dental services (Table 9). Dental conditions occasionally need to be treated in hospitals, however, the total cost is relatively low. Nevertheless, many of the reasons for treatment were avoidable. For example, hospitalisations for dental caries in young children are largely preventable with improved dental hygiene, a healthier diet and the protective effect of fluoride treatment.
- Mental disorders:** This group of conditions accounted for 8.6% of recurrent, allocated expenditure in Australia in 2008–09, the third largest disease specific cause nationally (Table 9). Mental disorders are treated

in a number of settings including hospitals, general practice, and community—this is reflected in costs. One in four dollars is spent on community services—a feature unique to these conditions. It is likely that in future, mental health services will increasingly be provided outside the traditional hospital setting.

- Musculoskeletal conditions:** These conditions accounted for 7.6% of national spending on health (recurrent, allocated expenditure) in 2008–09.<sup>95</sup> The majority of costs arose from admitted patient services (55%) although musculoskeletal conditions are a leading cause of disease-specific, out-of-hospital expenses nationally (Table 9). Musculoskeletal conditions are increasingly contributing to health system pressures (page 38) and are likely to become more so as the population ages.
- Injuries:** These are a leading cause of hospitalisation and accounted for 7.0% of recurrent, allocated health system expenditure in Australia in 2008–09 (Table 9). Admitted patient services accounted for 79% of total injury related expenditure, and 18% was for out-of-hospital medical services. One in 10 Australians report a long-term health impact from an injury (page 20), which is reflected in the economic burden of out-of-hospital medical services.
- Neoplasms (cancers):** Cancer accounted for 6.7% of recurrent, allocated health system expenditure in Australia in 2008–09.<sup>95</sup> Admitted patient care accounted for the majority of costs (74%), followed by prescription pharmaceuticals (11%), out-of-hospital medical services (9%) and public health screening programs (7%) (Table 9).

Table 9: Estimates of recurrent expenditure allocated to disease group and cause, Australia 2008–09<sup>95</sup>

Disease group	Total \$million	% of total	% of total disease group spending due to				
			Hospital admissions	Out-of-hospital medical	Prescription pharmaceuticals	Dental and optometrical services	Community and public health
Other contact with health system	10,544	14	45	42	12	0	0
Cardiovascular	7,741	10	58	20	22	0	0
Oral health	7,176	9.7	3.7	1.4	0.3	95	0
Mental disorders	6,375	8.6	42	14	17	0	27
Musculoskeletal	5,671	7.6	55	29	16	0	0
Injuries	5,184	7.0	79	18	2.8	0	0
Neoplasms	4,949	6.7	74	8.5	11	0	6.8
Respiratory	4,588	6.2	52	29	18	0	0
Digestive system	4,076	5.5	69	13	17	0	0
Genitourinary	3,453	4.7	65	27	8.1	0	0
Nervous system disorders	3,387	4.6	44	25	23	8	0
Endocrine, nutritional and metabolic	2,634	3.5	31	23	46	0	0
Maternal conditions	2,514	3.4	97	2.1	0.4	0	0
Infectious and parasitic	1,654	2.2	51	34	15	0	0
Skin diseases	1,597	2.2	42	36	23	0	0
Diabetes mellitus	1,521	2.0	43	24	33	0	0
Neonatal causes	770	1.0	100	0.5	0	0	0
Congenital anomalies	411	0.6	92	7.2	0.9	0	0
<b>Total allocated recurrent expenditure</b>	<b>74,245</b>	<b>100</b>	<b>52</b>	<b>21</b>	<b>14</b>	<b>10</b>	<b>2.8</b>

## Spending over the life course

The cost of delivering health services varies over the life course (Figure 34). While highest per capita spending was for people aged 85 years and older, total spending in this age group was relatively small.

In 2008–09 nationally (Figure 34a):

- Almost half of total allocated expenditure was for 55–84 year-olds (47%)
- One-third was for 25–54 year olds (32%)
- Spending for children and young people (0–24 years) accounted for 13%
- Spending for those aged 85 years and older accounted for 7% of total expenditure.

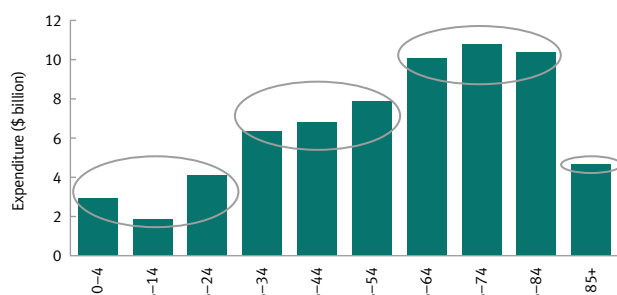
75% of national health expenditure is for people younger than 75 years of age.

Per capita spending (Figure 34b):

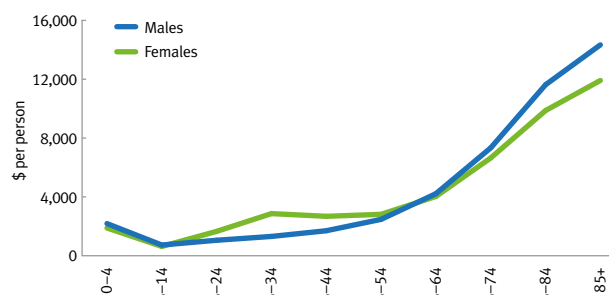
- was lowest for children aged 5–14 years—less than \$1000 per person.
- for young children and infants (0–4 year olds)—was about \$2000 per person,
- was about 80% higher for females during the child-bearing years (\$2408 per female aged 15–44 years), compared to males of a similar age (\$1352)
- increased steadily for males and females from about 55 years of age
- peaked in older people (85 years and older)—\$14,339 per male and \$11,918 per female.

Figure 34: Estimates of allocated health expenditure by age group, Australia 2008–09<sup>95</sup>

a. Total expenditure by age group



b. Per capita spending by age group



## End of life spending

Care of people in the period close to their death is an important part of hospital service delivery, as about half of all deaths occur in hospital in Queensland.<sup>98</sup> In the period 2008–2010, patients who died in hospital had spent an average of 26.4 days in hospital over the previous six months.<sup>99</sup>

About one-tenth (9.8%) of public hospital expenditure in Queensland was for people in their last year of life in 2010.<sup>100</sup> This was similar to spending in three other states with comparable data (NSW, WA and SA). Considering the last five years of life, the average expenditure was 20% of total public hospital costs. End of life expenditure is rising faster than health inflation. However, as per capita cost of end of life care decreases in older age groups, the impact of ageing on rising health costs may not be as great as may be anticipated. For example, in NSW in 2002–03, the highest per capita spending in the last year of life was for people aged 65–74 years (\$17,927) and spending decreased with age to \$7028 for those aged 95 years and older.<sup>101</sup>

The cost of end of life care for treating cancer in public hospitals in the 12 months prior to death in 2010 was greater than for other causes; \$26,303, compared to \$18,151 for organ failure, \$15,504 for neurodegenerative conditions, \$14,462 for sudden death and \$10,763 for frailty.<sup>100</sup> Furthermore, there was substantial variation in the distribution of resources. For those who died of frailty, 10% of patients consumed about 65% of resources, whereas for cancer the resource allocation was more even.

In a European study in 1997, it was conservatively estimated that a quarter of a lifetime's expenditure on the health of an individual was spent in the last 18 months of life. It was noted that the last period of life (any life, at any age) was usually marked by illness that could not be cured or controlled.<sup>73</sup> Thus, cost of health service delivery is not necessarily a function of age, rather the stage of life and treatments throughout life and in the period close to death, regardless of age. This is evident in the pattern of health spending in Australia in 2013–14, where three-quarters of the health budget was for people aged under 75 years.

### Health costs in future

Total health and residential aged care expenditure nationally was projected to almost triple in the 30-year period between 2002–03 and 2032–33, from \$85 billion to \$246 billion.<sup>102</sup> More recent projections by disease group are not available. The projected causes of change up to 2032–33 were (Figure 35):

- An increase in the volume of services per treated case was projected to account for half the increase.
- Two demographic factors, population ageing (23%) and absolute population increase (21%), is projected to account for most of the remaining 50%.
- Non-demographic factors, including health price inflation and an increasing proportion of cases previously untreated now treated, will account for a very small proportion of the total increase.
- On current trajectories, disease rate decline was projected to save the health system \$2.3 billion over a 30-year period. Rate decline was projected for some of the main disease groups such as cardiovascular disease, injuries, cancer and sense organ disorders, but not for others.

The projected increase in volume of services per treated case is indicative of increasing rates of presentations, hospital admissions and treatments as documented in Chapter 6, page 37 and following. This is a prominent driver of future health system pressures and is increasingly becoming the focus of strategic discussions.<sup>103</sup>

Almost half the projected increase in health spending over the next 30 years is for more frequent treatments, with the remainder due to population increase and ageing.

The number of prevalent diabetes cases was projected to triple, resulting in a five-fold increase in expenditure in the 30 years between 2002–03 and 2032–33, the largest single cause of anticipated proportional increase in expenditure (Figure 36a). However, ‘other causes’, followed by neurological, respiratory and cardiovascular disease will be the larger contributors to the projected increase in this period (Figure 36b).

Figure 35: Projected change in health expenditure by disease group, Australia, 2002–03 to 2032–33<sup>102</sup>

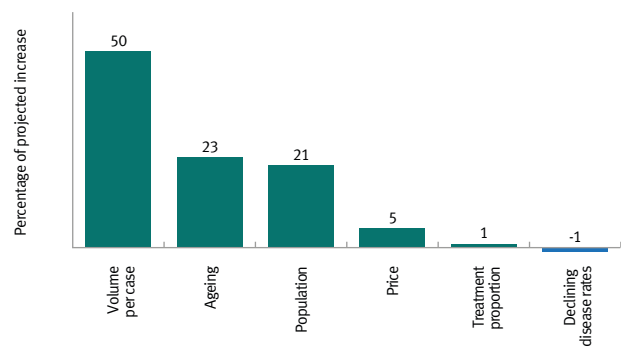
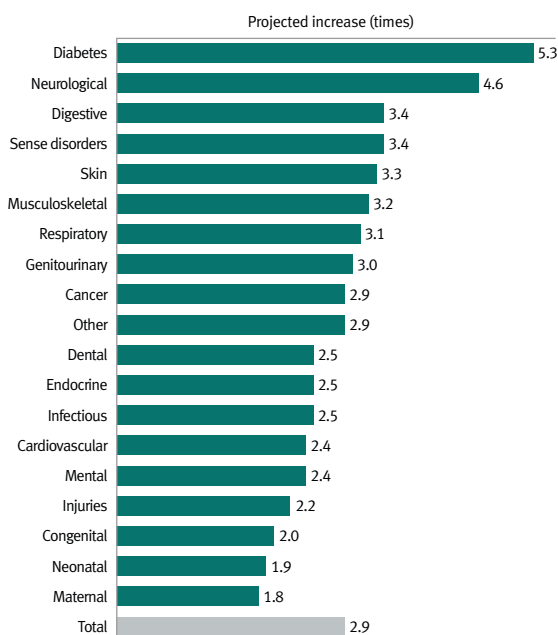
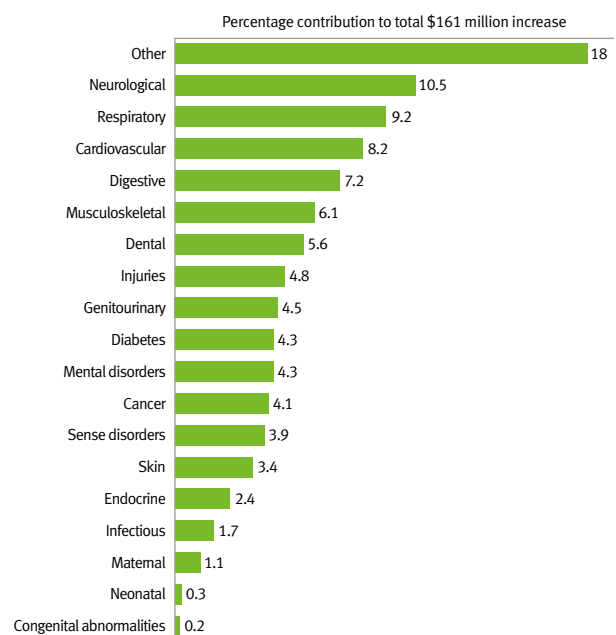


Figure 36: Projected change in health expenditure by disease group, Australia, 2002–03 to 2032–33<sup>102</sup>

a. Relative increase by disease group



b. Contribution to total increase



## Cost of unhealthy lifestyles

Assessing the economic impact of health risk factors involves complex analysis and, as a result, information is generally sparse and only available for national assessments. Furthermore, the methodologies for assessment vary, limiting the comparability of findings. For example, the most recent analysis for obesity was released in 2015 based on 2011–12 data.<sup>104</sup> This contrasts with a combined report assessing economic impact of tobacco, alcohol and illicit drug use which was released in 2008 based on 2004–05 data.<sup>105</sup> Separately and using a different methodology, the economic impact of a range of risk factors including physical inactivity and fruit and vegetable consumption was assessed in 2008.<sup>106,107</sup>

**Unhealthy lifestyles are a bigger cost to the wider economy than to the health sector.**

### Financial costs

Risk factors affect the individual directly through disease development, resulting in costs associated with GP and specialist visits, tests and investigations, hospital admissions and pharmaceuticals for management and treatment. These are the health system impacts. However, a person diagnosed with a condition may have a diminished ability to participate in the workforce, resulting in productivity losses. Some behavioural risk factors are associated with road transport injuries (for example, risky alcohol consumption) while others contribute to crime (for example, illicit drug use). Members of a household may be affected when a family member develops a preventable disease, sometimes requiring welfare and other support as a result. These are all quantifiable financial costs.

### Health system impacts

The financial impact of many risk factors is greater outside the health system than within (Table 10). For example, of the total financial cost of tobacco, 3% was associated with health system impacts in 2004–05, the remainder was associated with lost production. In the same analysis, 18% of the financial cost of risky alcohol consumption and 3% of illicit drug use costs were associated with the health sector where the major costs were associated with lost production, crime and road transport losses.

In contrast, and using a different assessment methodology, 44% of the financial cost of obesity in 2014–15 was associated with health system impacts, 44% was associated with loss of tax revenue and other impacts, while 12% was associated with productivity losses (Table 10). Insufficient fruit and vegetable consumption was assessed to have a greater impact on the health system (77%) than on production losses. The reverse was true for physical activity (37% of total costs associated with the health system).

### Productivity and other impacts

There are a number of costs associated with risk factors, including productivity impacts, tax foregone, impact of government subsidies and other payments. For example, obese Australian adults were 17% more likely to have been absent from work than non-obese in 2005,<sup>108</sup> and in 2014–15, 54% of productivity losses was associated with ‘presenteeism’, that is, diminished performance at work. Productivity losses due to tobacco were estimated to be \$5.7 billion, for alcohol \$3.6 billion and for illicit drug use \$1.6 billion in 2004–05.<sup>105</sup>

Table 10: Estimated expenditure (\$ million) by selected risk factor, Australia

Risk	Adult obesity	Smoking	Risky alcohol	Illicit drug use	Physical inactivity	Insufficient fruit and vegetables
Year of estimate	2011–12*	2004–05	2004–05	2004–05	2008	2008
Health system expenditure	3,809	318	1,977	202	672	206
Total production costs					1,135	63
Productivity losses	1,021	5,749	3,579	1,623		
Home production losses		9,843	1,571	496		
Other (e.g. tax revenue lost)	3,771					
Crime			1,612	3,841		
Road transport injury			2,202	528		
<b>Total financial costs</b>	<b>8,600</b>	<b>12,036</b>	<b>10,830</b>	<b>6,915</b>	<b>1,807</b>	<b>269</b>
<b>% of financial costs due to health system</b>	<b>44</b>	<b>3</b>	<b>18</b>	<b>3</b>	<b>37</b>	<b>77</b>
Intangible/loss of wellbeing/loss of life	47,400	19,460	4,489	1,275		
<b>Total cost</b>	<b>56,000</b>	<b>31,486</b>	<b>15,318</b>	<b>8,190</b>		

\* estimated to 2014–15 dollars

### Intangible costs and loss of wellbeing impacts

Risk factors reduce the individual's experience of wellbeing. In 2012, with each additional chronic disease risk factor (daily smoking, obesity, physical inactivity, low fruit and vegetable consumption, and lifetime risky alcohol consumption), there was a 70% reduction in quality of life, self rated health and satisfaction with health, irrespective of age, sex and other sociodemographic variables.<sup>109</sup>

Assessment of the economic impact of loss of wellbeing in the population associated with higher level of individual risk is complex, but equally, it is important that where possible it is quantified. One approach uses the burden of disease generated DALY metric and the value of a statistical life to assess the cost.<sup>110</sup> For obesity, loss of individual wellbeing was estimated to be \$47.4 billion nationally in 2011–12.<sup>104</sup> The intangible cost of loss of life due to tobacco smoking was assessed to be \$19.5 billion in 2004–05, and similarly for risky alcohol consumption, \$4.5 billion and for illicit drug use, \$1.3 billion (Table 10).<sup>105</sup>

### Expenditure on health for Indigenous Australians

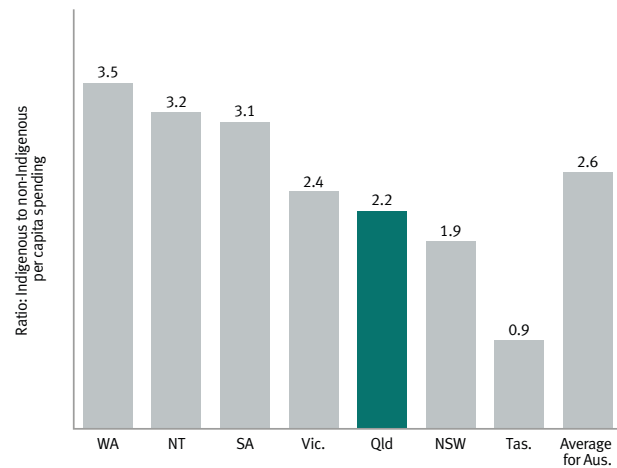
In 2011–12, 3.7% of national recurrent health expenditure was for Indigenous Australians, somewhat greater than the population share of 2.5%<sup>111</sup>, with higher spending reflecting a higher burden of ill-health and early death.

Average per capita spending for Indigenous Australians in 2011–12 was 47% higher than for non-Indigenous: \$7995 compared with \$5437.<sup>111</sup>

Per capita spending by the state government on health for Indigenous Queenslanders was 2.2 times non-Indigenous spending, lower than the average for all state governments and third lowest of the states and territories (Figure 37).<sup>111</sup> Per capita spending was, however, consistent with the relative burden of disease for Indigenous Queenslanders (2.2 times the non-Indigenous burden of disease rate, page 13).

The pattern of delivery of health services for Indigenous Australians differs from non-Indigenous, with relatively higher per capita spending on community services (5.9 times), public health services (3.3) and hospitals (2.2).<sup>112</sup> Spending on research and health administration did not differ as much (1.4 and 1.6 times respectively).

Figure 37: Per capita spending by state and territory governments on health by Indigenous status 2010–11<sup>111</sup>



Less than half the total recurrent health expenditure could be allocated to a disease group (41%) in 2011–12.<sup>112</sup>

The following information therefore reflects access and delivery issues as well as being a measure of disease burden. Per capita recurrent expenditure for Indigenous Australians compared to non-Indigenous was:

- communicable diseases, maternal, neonatal and nutritional conditions, 2.3 times
- chronic (non-communicable) diseases, 1.3 times
- injuries, 1.5 times.

Selected conditions with substantially higher per capita spending for Indigenous Australians compared to non-Indigenous included:<sup>112</sup>

- acute respiratory infections 3.1 times
- infectious and parasitic diseases 2.4
- neonatal causes 3.3
- type 2 diabetes 3.9
- alcohol dependence and other harm 4.0
- rheumatic heart disease 4.1
- care involving dialysis: nephritis and nephrosis 5.8
- intentional injuries 6.5.

Per capita state government spending for Indigenous Queenslanders is 2.2 times non-Indigenous spending, consistent with the disease burden.

## International comparisons

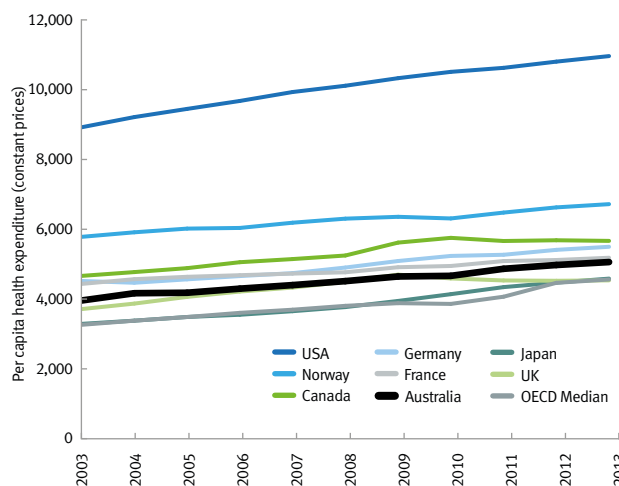
Of the 34 OECD countries, Australia had the tenth largest expenditure on health compared to GDP in 2013, 9.7%, compared to 17% for the US, and was slightly above the OECD median of 9.3%.<sup>45</sup> Australian health spending as a proportion of GDP has been closely tracking the OECD median over the past decade.

Australia had the ninth highest per capita spending on health in 2013, less than half that spent per person in the US (A\$5060 compared to A\$10,963) (Figure 38).<sup>90</sup>

The increase in per capita spending on health in Australia (based on current prices) was typical of the average OECD country increase between 2000 and 2012: 2.1-fold increase compared to 2.2-fold.<sup>113</sup> The lowest per capita increase in this period was for Japan (27% increase) and the highest was Turkey (8-fold increase).

Based on real growth in per capita spending, Australia compares favourably with selected OECD countries (Figure 38).<sup>45</sup>

Figure 38: Trend in per capita spending on health (constant prices), selected OECD countries<sup>45</sup>



Note: Insufficient data to report for New Zealand

## Data sources and methods: expenditure

In this chapter, national and state health expenditure data was primarily derived from the Australian Institute of Health and Welfare reports which are cited and a selection listed below.

Expenditure data includes spending on:

- health goods such as medications, health aids and appliances
- health services such as hospital, dental and medical services
- public health activities including immunisation and screening
- other activities that support health systems such as research and administration.

Capital consumption or depreciation is included as part of recurrent expenditure. Investment in new buildings is included as capital expenditure.

Data sources include:

- Australian Government spending (Commonwealth payments to states and territories, Medicare benefit payments, pharmaceutical benefit payments, Department of Veterans Affairs payments, other payments such as healthcare agreements, partnership agreements)
- State and territory funding (health department spending minus federal payments)
- Non-government spending (private hospital spending, health insurance funds, individual, out-of-pocket spending, workers compensation, third-party motor vehicle insurance payments).

Data are reported in current prices (that is, without adjustment for inflation), and constant prices (adjusted for inflationary effects).

OECD comparisons are based on online statistics release and cited. The year with the latest complete release was selected for reporting.

### For further information:

- AIHW. Health expenditure Australia 2013–14
- AIHW. Health expenditure Australia 2012–13: analysis by sector
- AIHW. Australia's health 2012
- AIHW. Expenditure on health for Aboriginal and Torres Strait Islander people 2010–11
- PwC. Weighing the cost of obesity: a case for action. 2015
- Collins and Lapsley. The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004–05 Australian Government, Canberra; 2008
- OECD.Stat: Health expenditure and financing



# Risk and protective factors



- In 2011, 44% of deaths in Australia and 31% of the burden of disease and injury was associated with behavioural, metabolic and environmental risk factors.
- Being a smoke-free state is becoming an achievable target with further declines in daily smoking evident. In 2016, 1 in 8 adult Queenslanders was smoking daily and less than 2% of tobacco related deaths were due to second-hand smoke in 2013. About 1 in 8 women smoked at some time during their pregnancy in 2014.
- Healthy eating is a challenge—more than one-third of the energy intake of Queenslanders is derived from food that provides little or no nutritional benefit and is costing the average consumer over half their food spending. Small gains are being achieved in infant nutrition—an increase in breastfeeding to 12 months, later introduction of solid foods and lower consumption of sugary drinks.
- Two-thirds of Queensland adults are either overweight or obese and about one-quarter of children. Although the prevalence has steadied in recent years, strategies to address this excess weight are essential to improving the health and wellbeing of the population over the longer term.
- One-fifth of adults were consuming alcohol at lifetime risky levels—prevalence is higher among males with about one-third drinking at this level. Harms from excess alcohol are an ongoing challenge, contributing to a culture of violence and the impact on children and families is sometimes hidden.
- Less than half of Queensland children are active every day and about 60% of adults were sufficiently active for health benefit. Sedentary lifestyles are common: more than one-third of children exceed the recommended maximum screen time and one-eighth of adults are sedentary every day.
- Metabolic factors are leading risks for cardiovascular disease: about one-quarter of adults have high blood pressure and almost one-third have high cholesterol, with many more taking medication to reduce their known risk.
- About 1 in 7 Queenslanders aged 14 years and older had used an illicit drug in the previous 12 months. Patterns of use change over time with an increase in the use of ‘ice’ (crystal meth) resulting in a 15-fold increase in hospitalisations over the past five years.
- Early detection of cancer is critical to controlling disease progression, yet only about half of Queensland women in the target age range are participating in the cervical screening program (56%) and a similar proportion in the BreastScreen Queensland program (58%). One-third of invited participants completed the bowel screening test.
- About 1 in 20 cancers in Australia is due to solar radiation and Queenslanders are at risk through high exposure: 1 in 2 (adults and children) was sunburnt in the previous 12 months and very few (about 1 in 20 in summer) ‘protect themselves in five ways’ as recommended in the guidelines.
- Dental decay is largely avoidable but still about half of 5–10 year olds had decay experience in their primary teeth and one-third of 6–14 year olds in their permanent teeth. There are about 3000 hospitalisations each year for dental caries in 0–9 year olds.
- Immunisation rates are at an all-time high with over 90% of children fully vaccinated at the relevant milestones. About one-third of pregnant women reported being vaccinated for whooping cough in 2015.
- Awareness about the extent of domestic and family violence in the community is growing—1 in 6 Australian adult women had experienced violence in their lifetime and 1 in 20 in the previous 12 months.
- Environmental factors contribute to health loss—this includes unsafe food practices and production, unsafe water and chemical and other exposures.

# Smoking

Tobacco smoking is still a leading cause of preventable death and disease in Queensland and a significant contributor to health inequalities, despite a substantial reduction in the smoking rate over the past two to three decades.

Two-thirds of deaths in current smokers can be directly attributed to smoking.<sup>114</sup> Tobacco is highly addictive and smoking reduction strategies focus on preventing the uptake and increasing the quit rate.



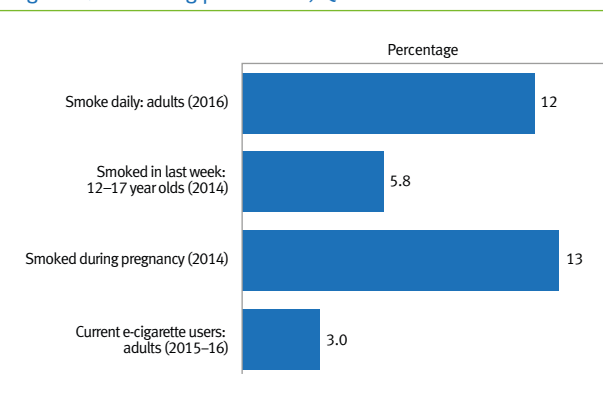
In 2016, 1 in 8 Queensland adults smoked daily, a 50% reduction in prevalence since 1998. The decline in smoking rates in Queensland over this period was similar to national decline.

Most smokers take up the habit during their teenage years, and it is evident that the relatively rapid decline in youth smoking in the past decade means uptake is diminishing. A high proportion of older men report being an ex-smoker—evidence that quitting is also contributing to better outcomes. The benefit for males can be seen in declining death rates for lung cancer and COPD where there was little improvement for women. In addition, there has been a reduction in environmental exposure with the proportion of tobacco related deaths in Australia due to second-hand smoke more than halving over the past two decades, and now at 2%.

Smoking contributes to health inequality because it has such a profound effect on health and increases the risk of early death. There were about 8000 infants born in 2014 whose long-term outcomes were compromised as a consequence of maternal smoking during pregnancy. The high Indigenous Queensland smoking rate is a significant contributor to the 10-year life expectancy gap. There is a socioeconomic gap in health outcomes, in part because smoking prevalence in disadvantaged areas was about three times that of advantaged areas and rates of maternal smoking over five times greater.

Smoking reduction strategies in Queensland are designed to protect people from the harmful effects of tobacco smoke. They focus on three areas: creating smoke-free environments to reduce exposure to second-hand smoke, empowering smokers to quit, and discouraging the take-up of the habit.

Figure 39: Smoking prevalence, Queensland



### Key statistics:

- About 450,000 adults were daily smokers in 2016: 250,000 males and 200,000 females.
- 49,000 Indigenous Queensland adult smokers smoked daily in 2012–13.
- 21,000 secondary students (12–17 year olds) had smoked in the previous week in 2014.
- 8200 women had smoked at some time during their pregnancy in 2014 (6400 non-Indigenous and 1800 Indigenous Queensland women).
- 110,000 adults were current e-cigarette users in 2015–16.
- 200,000 children were living in a household with a current smoker in 2015–16.
- About 3700 deaths in 2011 were due to smoking and 2% of these were due to second-hand smoke alone.
- 800,000 adults reported being frequently exposed to second-hand smoke in public places.

While smoking reduction in recent decades demonstrates the power of prevention, it is not yet true that ‘nobody smokes here anymore’. It will be a challenge to maintain and build on the gains already achieved. Every year, there is a new generation of potential smokers and new products to encourage people to smoke, such as e-cigarettes. Exposure to role models who smoke, such as parents, contributes to normalising of this behaviour and perpetuates a new generation of smokers. More effort is needed to address maternal smoking—particularly among teenagers and Indigenous Queensland women.

# Smoking

## What is the prevalence?

In 2016, 12% of adults smoked tobacco cigarettes daily (Table 11, Figure 39).

- The average age of first full cigarette among Queenslanders aged 14 years and older was 16.2 years in 2013.<sup>115</sup>
- 3.0% of adults were regular e-cigarette users in 2015–16 and of current smokers, 18% had used an e-cigarette in the previous 12 months.<sup>116</sup>
- One in 8 women (13%) smoked at some time during their pregnancy in 2014 and of these 16% were smoking more than 10 cigarettes a day.<sup>21</sup>
- One in 5 adults (22%) reported being frequently exposed to second-hand smoke in public places in 2015.<sup>117</sup>
- One in 4 children (27%) lived in a household with a current smoker in 2015–16.<sup>118</sup>

Smoking rates in disadvantaged areas were 3 times those of advantaged areas and maternal smoking rates were more than 5 times greater.

## Is it the same for everyone?

The number and prevalence of daily smokers by sociodemographic groups is presented in Figure 42, page 65.

### Sex

Male smoking rates were 29% higher than female rates in 2016 (Table 11) although in 2015 they were similar. Males started smoking one year earlier than females in 2013 (15.7 years compared with 16.7 for females).<sup>115</sup> They were more likely to be a current non-daily smoker than females (5.4% compared with 2.5%) and were 20% more likely to be an ex-smoker (32% compared with 26%) in 2016 (Table 11).

Teenage girls and boys (12–17 years) were equally likely to have smoked in the previous week in 2014 (5.1% compared with 6.6%).<sup>119</sup> Similarly, there was no difference in daily smoking prevalence among young adult females and males (9% compared with 11% respectively among 18–24 year olds) (Table 11).

### Age

In 2016, daily smoking rates were highest in the age range 35–54 years with male rates peaking at 35–44 years and females at 45–54 years (Table 11). The cycles in uptake and quitting are evident in the age profile—about half the males aged 65 years and older were ex-smokers while 60% of women aged 65 years and older had never smoked and this was similar for young women, with about two-thirds of those aged 18–34 having never smoked.

Young teenagers experiment with smoking. In 2014, 1 in 50 school children aged 12–13 years (1.7%) reported having smoked in the previous week, increasing to 1 in 8 among students aged 16–17 years (13%).<sup>119</sup> Furthermore, 8% of teenagers (14–19 years) reported smoking daily.<sup>115</sup> Among secondary school students (12–17 years), 11% had tried e-cigarettes, and of these, 1 in 6 had used them in the previous four weeks in 2014.<sup>119</sup>

Teenagers were more than twice as likely to smoke during pregnancy as older women, 30% compared with 12% in 2014.

### Socioeconomic status

Rates of daily smoking were about 3 times higher among adults living in socioeconomically disadvantaged areas than those in advantaged areas in 2016: 17% compared with 6% (Table 11). Not only were adults in advantaged areas less likely to be daily smokers, they were 26% more likely to have never smoked although equally as likely to be an ex-smoker.

Smoking rates were about 3 times higher among adults with trade, diploma and certificate qualifications than tertiary degrees (14% compared with 5.4% in 2016), and about double in unemployed than employed persons (22% compared with 11% in 2016) (Figure 42).

Children living in socioeconomically disadvantaged areas were 2.5 times more likely to be living in a household with a smoker than those in advantaged areas (40% compared with 16% in 2015–16).<sup>118</sup>

The rate of maternal smoking was 5.6 times higher in socioeconomically disadvantaged areas than advantaged areas in 2014 (24% compared with 4.3%).<sup>21</sup> Two-thirds of women who smoked during pregnancy (about 5200 women) were from areas of greater disadvantage.

# Smoking

## Remoteness

Rates of daily smoking were higher outside major cities, varying from about 30–40% higher in regional and remote areas in 2016 (Table 11). Among school students (12–17 years), rates of weekly smoking were similar in south east Queensland to those in the rest of the state. Children living in remote areas were 30% more likely to be living in a household with a smoker than those in cities (32% compared with 25% in 2015–16).<sup>118</sup>

## Indigenous Queenslanders

In 2012–13, 45% of Indigenous Queensland adult smokers smoked daily.<sup>120,121</sup> After adjusting for age differences the Indigenous Queensland rate was 2.5 times the non-Indigenous rate.

Young Indigenous Australians (15–17 years) were about 5 times more likely to smoke daily than non-Indigenous young people of a similar age (18% compared with 3.9% in 2012–13).<sup>120,121</sup>

**Indigenous Queensland smoking rates were 2.5 times non-Indigenous rates.**

Indigenous Queensland women were about 4 times as likely to have smoked during their pregnancy as non-Indigenous women: 45% compared with 11% in 2014.

Among Indigenous Queensland women, smoking during pregnancy did not differ by age: 45% among teenagers and 45% among older women in 2014 while for non-Indigenous women the difference was large: 26% compared to 10% respectively (Figure 40a).

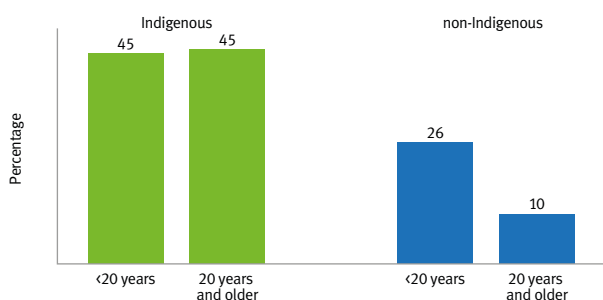
There has been a decrease in the smoking rates among Indigenous Australians since 2001, however, the decrease was about half that achieved for non-Indigenous Australians (13% compared with 28%).<sup>120</sup> Furthermore, the small gains were only evident for Indigenous Australians living in non-remote areas, with no change for those living in remote areas. It is not surprising therefore that there has been little change in Indigenous Queensland death rates for smoking related chronic conditions such as lung cancer and COPD over the past decade (page 28).

## Regional Queensland

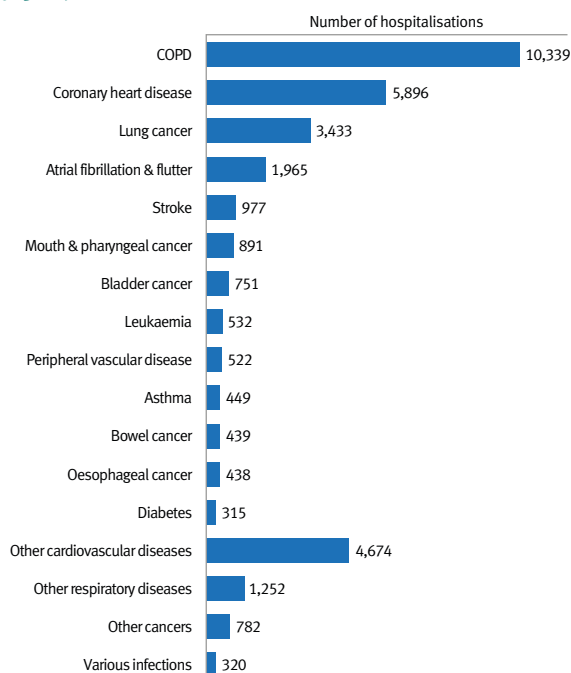
Adult smoking rates varied from 10% in Sunshine Coast to 22% in South West HHS in 2015–16.<sup>122</sup> Compared to the state average, the smoking rate was 78% higher in South West, 76% higher in Torres and Cape, 61% higher in North West, about 36% higher in Central Queensland, Central West and Wide Bay and 27% higher in Cairns and Hinterland and in Townsville. More information on HHS differentials is available in the HHS booklet and the statistical tables online (page i for details).

**Figure 40: Selected smoking indicators, Queensland**

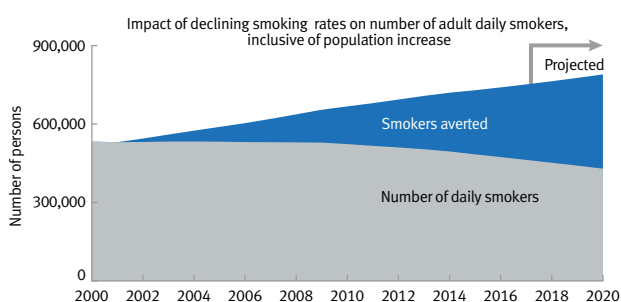
a. Smoking during pregnancy by age and Indigenous status 2014.<sup>21</sup>



b. Number of hospitalisations due to tobacco smoking, Queensland 2013–14.<sup>87</sup>



c. Trends in smoking



# Smoking

## How do we compare?

### National

Smoking rates in Queensland have been higher than national rates in all but one survey (2010) over recent decades.<sup>123</sup> In 2013, the Queensland rate was 18% higher than national and third highest of the jurisdictions after Northern Territory and Tasmania (Table 24, page 116).<sup>115</sup>

### International

Australia was ranked fourth lowest of 35 OECD countries for daily smoking in persons 15 years and older in 2014 (or nearest year), where Mexico was lowest, followed by Sweden and the US.<sup>124</sup>

Smoking prevalence declined globally by 28% between 1980 and 2012, and in the same period, Australian prevalence declined by 55%.<sup>125</sup> The number of cigarettes per smoker per day varied widely across countries and did not correlate with prevalence.

## What are the trends?

The rate of daily smoking is declining. It has halved since 1998 and decreased by 3.9% per year between 2009 and 2016.<sup>126</sup>

The rate of decline in smoking between 2002 and 2016<sup>127</sup>:

- was evident for both males and females and both were declining at a similar rate
- was greatest for young people (18–29 years), less pronounced for 44–65 year olds and with no change in rates for those aged 65 years and older.
- did not differ by sex for young Queenslanders— the rate of decline was similar for young males and females aged 18–29 years
- did not differ between cities and regional and remote areas.

Smoking rates are declining for young females and young males alike.

Between 2004 and 2016, adult smoking rates declined in both advantaged and disadvantaged areas. There was greater decline in advantaged areas (5.1% per year) than disadvantaged areas (2.3% per year), although not significantly different.<sup>127</sup> The downward trend in disadvantaged areas was driven predominantly by a decrease in smoking rates among women (3.1% per year decrease), there being no change in male smoking rates from similar areas. This would suggest that in future, without concerted action to address smoking rates among males in disadvantaged areas, the socioeconomic gap may widen.

Nationally, between 2008 and 2014 there was a decline in weekly smoking among secondary students aged 12–17.<sup>128</sup> There was insufficient data to confirm this trend for Queensland.

The number of smokers is related to the smoking rate and underlying population dynamics. Despite rate decline, the number of smokers has remained steady at about 500,000 over the past decade, although with future sustained decline and lower rate of population change, the absolute number of smokers in Queensland will decrease, approaching an estimated 420,000 by 2020 based on trend (Figure 40c). In 2016, there were 270,000 fewer smokers than there would have been had the rate not changed since 2001.

The decline in rates of daily smoking in Queenslanders aged 14 years and older between 1998 and 2013 was similar to national: a 43% decline in Queensland and 45% nationally.<sup>123</sup> The greatest decline was in Australian Capital Territory (63% over the 15 years) and the least in the Northern Territory (36%).

Between 2010 and 2014, there was a 27% decrease in prevalence of smoking during pregnancy for non-Indigenous women, and a 14% decrease for Indigenous Queensland women.

## What are the impacts?

### Burden of disease:

In 2011, of the risk factors, smoking was the leading cause of disease burden in Australia, accounting for 9% of total DALYs (Table 2, page 12).<sup>12</sup> Three-quarters of the smoking burden (76%) was associated with fatal outcomes (YLL) and one-quarter (24%) with disability (YLD). Data for Queensland is not currently available.

Lung cancer and COPD were the leading disease outcomes resulting from tobacco smoking, together accounting for 60% of DALYs due to tobacco smoking in Australia in 2011. This was followed by coronary heart disease (12%), stroke (3.9%) and 23% to a number of other diseases.<sup>12</sup>

# Smoking

## Life expectancy

Life expectancy for smokers is at least 10 years shorter than for non-smokers.<sup>114</sup> Variation in smoking rates explains a substantial proportion of the difference in life expectancy among populations. Eliminating smoking altogether would lead to improvements.<sup>129</sup> The two-year gain in Australia over the past decade (2.3 years for males and 1.6 years for females) would have increased to 3.1 years for males and 2.3 years for females if nobody smoked.<sup>130</sup>

The impact of smoking on the life expectancy of Indigenous and non-Indigenous Australians in the Northern Territory has been assessed.<sup>131</sup> Smoking was the second largest contributor, accounting for 14–24% of the Indigenous life expectancy gap, after socioeconomic disadvantage (42–54%). Obesity accounted for 9–17%, alcohol for 1–7%. Assault and pollution were minor contributors—combined accounting for 1–5%. Jointly, these risks accounted for 60–70% of the gap in the Northern Territory based on data from 1986 to 2005.

## Deaths

In 2011, smoking accounted for 18,762 deaths in Australia (13% of all deaths) and an estimated 3700 were Queenslanders (Table 2, page 12).<sup>12</sup> Of the risk factors, it was the leading cause of death. Based on a global assessment for Australia<sup>13</sup>, there has been a halving in the proportion of tobacco related deaths due to second-hand smoke since 1990 and is now at 2% in Australia and 5% globally.<sup>13</sup> This reduction demonstrates the benefit of environmental change through legislation and policies for smoke-free public places.

**1 in 8 deaths was due to smoking in 2011.**

## Disability and hospitalisation

Of the risk factors, smoking was the largest cause of loss of healthy years in Australia in 2011, causing 4.3% of YLD burden (Table 2, page 12).<sup>13</sup> Data for Queensland is not currently available.

In 2013–14 there were about 34,000 hospitalisations due to smoking in Queensland, 1.6% of the 2 million hospitalisations for all causes in that year.<sup>87</sup> Of these, almost one-third was for COPD (30%) and a similar proportion for coronary heart disease and lung cancer (30%) (Figure 40b). Additional information on hospitalisations due to smoking is reported on page 41 (Figure 23).

## Expenditure

The most recent national assessment of the cost of tobacco smoking was in 2004–05<sup>105</sup> (also discussed on page 54). Expenditure data for Queensland is not available. However, based on Queensland's share of the Australian population, in 2004–05, the financial cost of tobacco smoking to the Queensland economy was estimated at \$2.4 billion, with \$0.06 billion spent on healthcare and \$1.15 billion on lost production in the workplace. That is, of the tangible or financial costs, 3% was spent in the health system and 97% was associated with lost production and impact on household finances. Intangible losses associated with early deaths were assessed at \$3.9 billion, taking the total cost of smoking to Queensland society in 2004–05 to \$6.3 billion.

## *The battle is not over yet: challenges in becoming smoke-free*

Smoking reduction in Australia demonstrates the success of a multi-strategy approach to address a toxic problem. Achieving change at a population level depends on implementation of a broad range of strategies sustained over time and at a depth to affect local and target populations. Success in Queensland is providing evidence that reducing advertising, display and promotion of tobacco products does influence the uptake and maintenance of smoking<sup>132</sup> and that environmental change is critical to becoming smoke-free.

The Queensland Government's tobacco laws include comprehensive smoking bans for indoor and outdoor public places. Since 2010, it has been illegal to smoke in private vehicles carrying children aged under 16 years (Figure 41) and in 2011, the display of tobacco products in retail stores was banned.<sup>133</sup>

In 2016, laws to ban smoking in early childhood education centres, public transport waiting areas, underage sporting events and other public places were passed. These laws are intended to reduce the public's exposure to environmental tobacco smoke, contribute to a culture that supports smokers attempting to quit, and discourage young people from taking up the habit.

# Smoking

However, while the gains in Queensland have been substantial—fewer deaths for smoking related conditions, fewer hospitalisations and improved outcomes—the battle is not over yet. There are challenges ahead.

- Young teenagers are still taking up the habit and they claim it is relatively easy to obtain cigarettes (even though it is illegal to sell to a minor):
  - In 2014, 21,000 or 5.8% of 12–17 year olds had smoked at least once in the previous week and although the majority were confident they wouldn't still be smoking in 12 months (91%), about 700 (3.4%) said they thought it likely or even certain that they would be.<sup>119</sup>
  - About 1 in 5 teenagers (17%) said it would be easy for them to buy cigarettes and almost 1 in 2 (44%) said they could easily get someone else to buy for them.<sup>119</sup>
  - Young people are experimenting with e-cigarettes: 37% of current users in 2015–16 were aged under 30 years.<sup>116</sup>
- People are still being exposed to second-hand smoke in public places, although the 2016 legislation to extend the bans on smoking will help reduce such exposure.
  - 800,000 adults reported being frequently exposed to smoke in public places: 22% of Queensland adults in 2015 and, as high as 30% in some local government areas.<sup>117</sup>
  - Exposure was independent of smoking status— affecting non-smokers and smokers alike.
- A minority are resistant to smoking bans.
  - An overwhelming majority of Queensland adults supported extending the smoking bans, with 94% supporting bans in early childhood education centres, 80% at public transport waiting areas, and 72% at outdoor sporting venues.<sup>117</sup>
  - Statewide, about 1 in 10 adults opposed smoking bans—12% opposed bans in adult education centres, 10% in outdoor sporting venues and outdoor pedestrian malls, 8% in public transport waiting areas, and 3% opposing bans in childcare centres.<sup>117</sup>
- There are high rates of smoking in some population groups.
  - Recognised high prevalence groups include Indigenous Queenslanders, teenagers who smoke during pregnancy, low socioeconomic groups and those living in regional and remote areas.
  - Interventions to address these specific groups are a feature of current strategies and investments.
  - The evidence is that smoking rate reduction is occurring in these target groups, as described on page 61, however, the gap is not closing and there is a risk it may widen.
- e-cigarettes: are they a way into smoking, a way out, or just another way of continuing to smoke?
  - Of the 3.0% of adults who were e-cigarette users in 2015–16 (110,000 persons), two-thirds (66%) were current tobacco cigarette users, that is, they smoke both.<sup>116</sup>
  - 10,000 adults were regular e-cigarette users but had never smoked tobacco. They are the new users, comprising 9% of all e-cigarette users.
  - For every two people who have tried e-cigarettes, there is another who has become a current user.
- Parents who smoke normalise smoking behaviour among children and young people.
  - Children who grew up in a household with a smoker were 4 times more likely to become a daily smoker by 18–24 years than those who did not.<sup>33</sup> One-quarter of Queensland children (200,000) were living in a household with a smoker in 2015–16.
  - e-cigarette use was 3 times higher in people who had grown up in a household with a smoker than those who did not.<sup>116</sup>

One child in four is living in a household with a smoker.

# Smoking

Figure 41: Legislative milestones and trends in adult smoking rates, Queensland

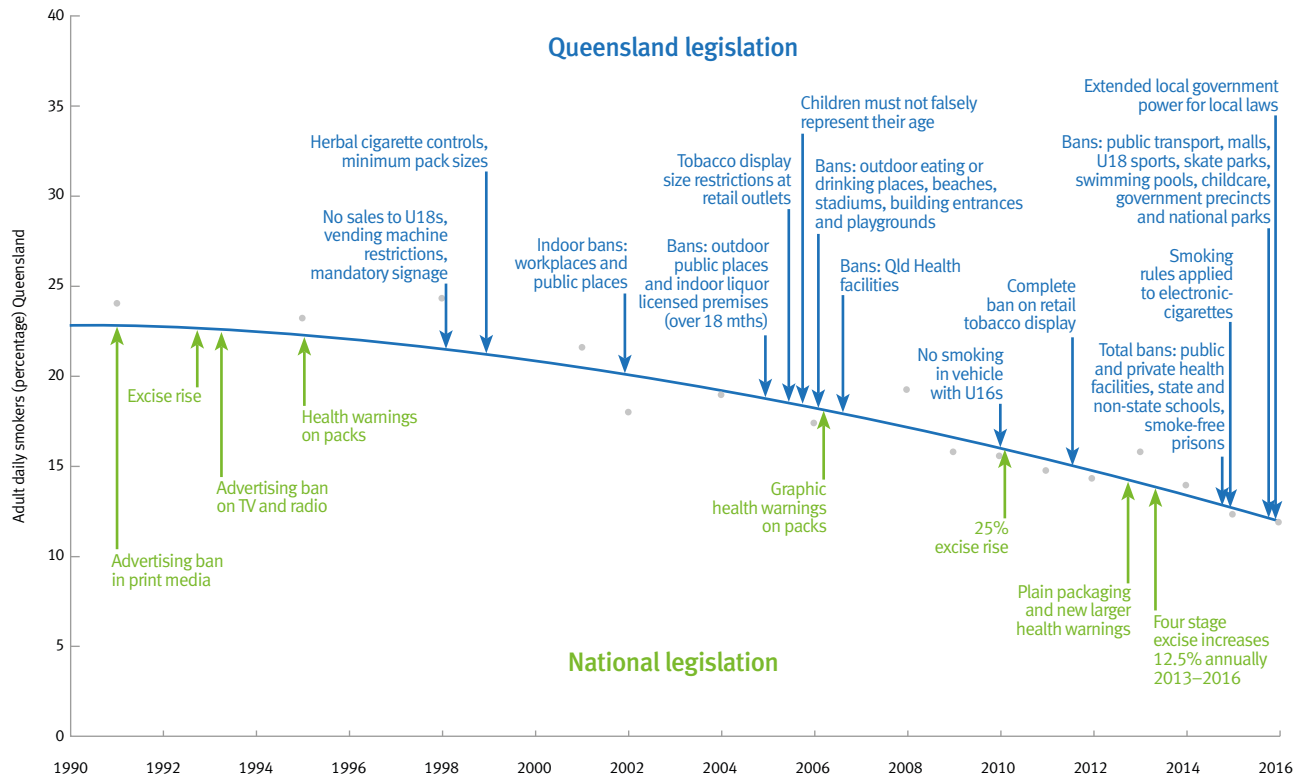


Table 11: Smoking prevalence, adults, percentage (95% CI), Queensland, 2016<sup>134</sup>

		Current daily	Current – not daily	Ex-smoker	Never smoked
18+ years	Persons	11.9 (11.1–12.8)	3.9 (3.3–4.6)	28.9 (27.7–30.1)	55.3 (53.9–56.6)
	Males	13.5 (12.2–14.9)	5.4 (4.4–6.6)	31.6 (29.8–33.5)	49.5 (47.4–51.7)
	Females	10.5 (9.4–11.6)	2.5 (2.0–3.1)	26.3 (24.8–27.8)	60.8 (59.1–62.5)
Persons	18–24 years	10.0 (7.1–13.8)	7.6 (4.9–11.6)	10.3 (7.1–14.7)	72.1 (66.4–77.2)
	25–34 years	13.9 (11.6–16.5)	7.1 (5.3–9.4)	20.4 (17.6–23.6)	58.7 (55.0–62.3)
	35–44 years	14.9 (12.8–17.3)	3.5 (2.6–4.9)	26.4 (23.7–29.2)	55.2 (52.0–58.3)
	45–54 years	14.5 (12.7–16.5)	2.5 (1.8–3.5)	32.6 (29.9–35.5)	50.4 (47.4–53.4)
	55–64 years	12.3 (10.6–14.3)	2.7 (1.9–3.9)	37.0 (34.5–39.7)	47.9 (45.2–50.7)
	65–74 years	6.6 (5.5–8.0)	1.2 (0.8–1.9)	42.2 (39.6–44.7)	50.0 (47.4–52.6)
	75+ years	3.7 (2.6–5.1)	n/a	38.7 (35.4–42.1)	57.1 (53.7–60.4)
Males	18–24 years	11.0 (7.0–16.8)	*11.1 (6.4–18.4)	*10.2 (5.7–17.7)	67.7 (58.7–75.5)
	25–34 years	14.7 (11.3–18.8)	10.2 (7.1–14.3)	20.4 (16.0–25.7)	54.7 (49.0–60.4)
	35–44 years	17.2 (13.8–21.1)	4.7 (3.0–7.2)	25.7 (21.9–30.1)	52.4 (47.5–57.2)
	45–54 years	15.0 (12.4–18.0)	3.1 (2.0–4.7)	30.2 (26.2–34.4)	51.8 (47.3–56.2)
	55–64 years	15.1 (12.3–18.3)	*3.1 (1.8–5.4)	43.8 (39.8–47.9)	38.0 (34.0–42.1)
	65–74 years	8.0 (6.2–10.3)	*1.8 (1.0–3.2)	52.1 (48.2–56.0)	38.0 (34.3–41.9)
	75+ years	*3.6 (2.1–5.9)	n/a	53.7 (48.3–59.0)	41.9 (36.7–47.3)
Females	18–24 years	*9.0 (5.3–14.7)	*4.3 (2.2–8.5)	10.4 (6.4–16.3)	76.3 (68.8–82.5)
	25–34 years	13.0 (10.1–16.6)	3.9 (2.5–6.0)	20.4 (17.1–24.1)	62.7 (58.1–67.1)
	35–44 years	12.6 (10.2–15.5)	2.4 (1.6–3.7)	27.1 (23.6–30.9)	58.0 (53.9–62.0)
	45–54 years	14.0 (11.6–16.8)	*2.1 (1.2–3.5)	34.8 (31.1–38.8)	49.1 (45.1–53.1)
	55–64 years	9.4 (7.7–11.5)	2.3 (1.4–3.5)	29.9 (26.8–33.2)	58.4 (54.9–61.8)
	65–74 years	5.3 (3.9–7.2)	*0.7 (0.4–1.4)	32.8 (29.6–36.1)	61.2 (57.7–64.5)
	75+ years	3.7 (2.4–5.9)	n/a	26.2 (22.6–30.1)	69.8 (65.7–73.6)
Socioeconomic status	Disadvantaged	16.7 (14.7–18.8)	3.7 (2.8–4.9)	28.2 (26.0–30.6)	51.4 (48.6–54.1)
	Quintile 2	14.8 (13.0–16.9)	3.6 (2.6–4.9)	31.9 (29.6–34.4)	49.6 (46.9–52.3)
	Quintile 3	11.8 (10.1–13.7)	3.7 (2.8–5.0)	32.0 (29.5–34.7)	52.5 (49.6–55.3)
	Quintile 4	10.8 (8.8–13.1)	4.4 (3.0–6.5)	27.6 (25.0–30.4)	57.2 (53.9–60.4)
	Advantaged	6.1 (4.7–8.0)	4.0 (2.6–6.2)	24.9 (22.0–28.0)	65.0 (61.4–68.3)
Remoteness	Major cities	10.6 (9.4–11.8)	4.3 (3.4–5.3)	28.0 (26.4–29.7)	57.2 (55.2–59.1)
	Inner regional	13.7 (11.9–15.6)	3.9 (3.0–5.0)	29.8 (27.7–31.9)	52.7 (50.2–55.1)
	Outer regional	14.5 (12.6–16.6)	2.5 (1.9–3.3)	30.6 (28.1–33.2)	52.5 (49.6–55.4)
	Remote/very remote	14.7 (12.4–17.4)	3.9 (2.8–5.5)	31.4 (27.8–35.3)	55.3 (45.1–65.1)

\* Estimate has a relative standard error of 25% to 50% and should be used with caution. n/a not available for publication.

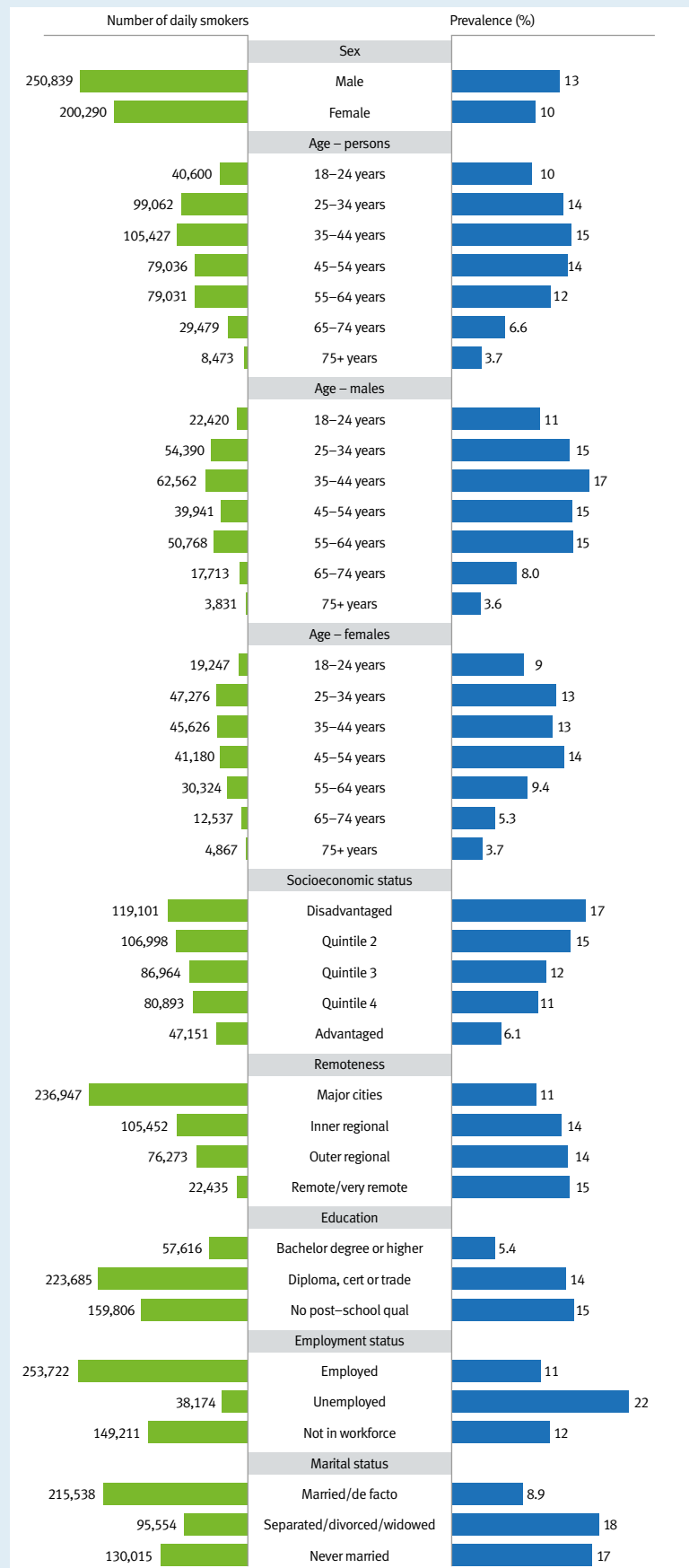


# Smoking

Figure 42: A sociodemographic profile of the ‘at risk’ population: daily smokers<sup>134</sup>

In 2016, about 450,000 Queensland adults were daily smokers.

- Over half the adult smokers (56%) were males, about 250,000 adults.
- The majority of adult smokers (82%) were aged between 25 and 64 years (360,000 people). Of these, about 200,000 were aged 25–44 years.
- About half the adult smokers (51%) lived in the two most disadvantaged quintiles (about 230,000 people).
- Three-quarters of adult smokers (78%) lived in a major city or inner regional area (about 340,000 people). About 20,000 smokers lived in remote and very remote areas.
- Half the adult smokers (51%) had a diploma or trade qualification (about 240,000), and 1 in 3 (36%) had no post-school qualification (about 160,000 people).
- More than half the adult smokers were employed (58% or about 250,000 people).
- One in 12 adult smokers was unemployed (9% or about 40,000 people).
- About half the adult smokers (49%) were married or in a de facto relationship (about 216,000 people).



# Food and nutrition

Good nutrition is necessary to maintain healthy weight, mental and physical health, resistance to infection, quality of life, and protection against chronic disease, disability and premature death.<sup>135</sup>



Queenslanders have access to a wide range of mostly Australian grown produce and a rich diversity of healthy and safe food from which to choose for their enjoyment, sustenance and good health. Despite this abundance, many are not consuming the recommended amounts of fruit and vegetables necessary for good health—only about half eat sufficient fruit and one-tenth eat sufficient vegetables. In contrast, they are spending about half their household food budget on foods that provide little or no nutritional benefit.

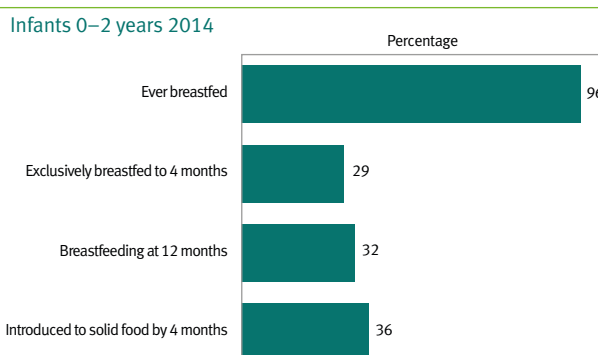
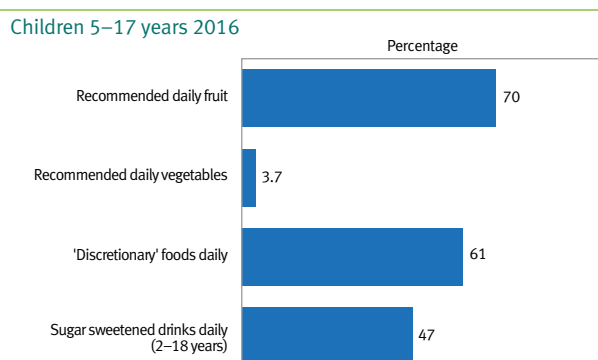
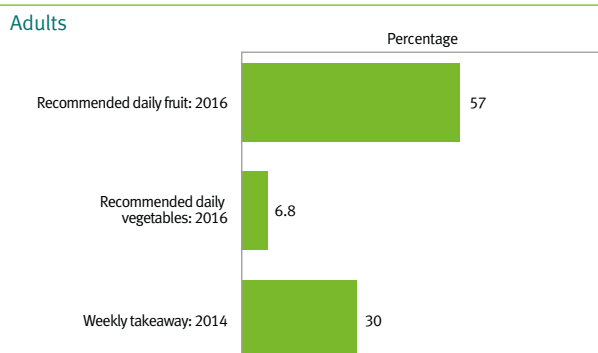
Over the past decade there have been small gains in infant nutrition—more infants are receiving some breastmilk over the first 12 months, fewer young infants are being introduced to solid foods too early, consumption of sweetened drinks is decreasing for both infants and young children and, as recommended, the introduction of cow’s milk is being delayed. However, rates of exclusive breastfeeding to four months have not changed.

Adult eating patterns have varied very little over the past decade with a small decline in vegetable consumption and small increase in fruit consumption. Consumption of branded fast food takeaway is declining, and consumption of sweetened drinks has declined nationally over the past 20 years, mostly among teenagers and children. Although this is an encouraging trend, reducing the now high rates of obesity and preventing dental caries in children will require greater reduction in consumption of energy-dense foods and drinks.

Increased consumption of healthy food will benefit individuals and households as well as the economy through a stimulus to the local horticultural industries to meet daily fruit and vegetable needs, and productivity will be improved with improved health of workers.

While individuals make lifestyle and daily food choices, there are population level consequences that affect the health system and society through higher rates of illness and early death. Changing the food environment of communities, workplaces, health facilities, schools and sporting clubs to support people to make better choices is necessary. Governments, private industries, communities and families alike, will all need to work together to make Queensland a healthier place.

Figure 43: Prevalence of selected nutrition indicators, Queensland



Key statistics:

- In 2016, an estimated
  - 1.6 million adults and 0.25 million children were not meeting recommendations for fruit consumption
  - 3.5 million adults and 0.79 million children were not meeting recommendations for vegetable consumption.
- 37% of energy intake was from discretionary foods, that is foods with little or no nutritional value (2011–12). One in four of food dollars was spent on takeaway food and restaurant meals in 2014.
- While almost all infants received breast milk at birth in 2014, by four months of age, only about a quarter were being exclusively breastfed. However, about one-third were still receiving breastmilk at 12 months.

# Food and nutrition

The measurement and monitoring of food and drink consumption in this section is based on multiple indicators including those derived from the 2013 *Australian dietary guidelines*<sup>136</sup> (Table 12), the *Headline indicators for children’s health, development and wellbeing*<sup>137</sup> and others from various data collections which are cited. For a few indicators, definitions vary depending on the data collection, for example, the term discretionary food is used with several meanings. It is explained in the text and defined on page 118.

### What is the prevalence?

- Recommended daily fruit consumption in 2016 (Figure 43)<sup>134</sup>
  - 57% of adults
  - 70% of children
- Recommended daily vegetable consumption in 2016 (Figure 43)<sup>134</sup>
  - 6.8% of adults
  - 3.7% of children
- Discretionary food intake (defined by ABS), percentage of total energy in 2011–12<sup>138</sup>
  - 37% for all persons 2 years and older
  - 41% for children 2–18 years
  - 36% for persons 19 years and older
- Takeaway food, weekly consumption
  - 30% of adults in 2014<sup>139</sup>
  - 48% of children in 2016<sup>134</sup>

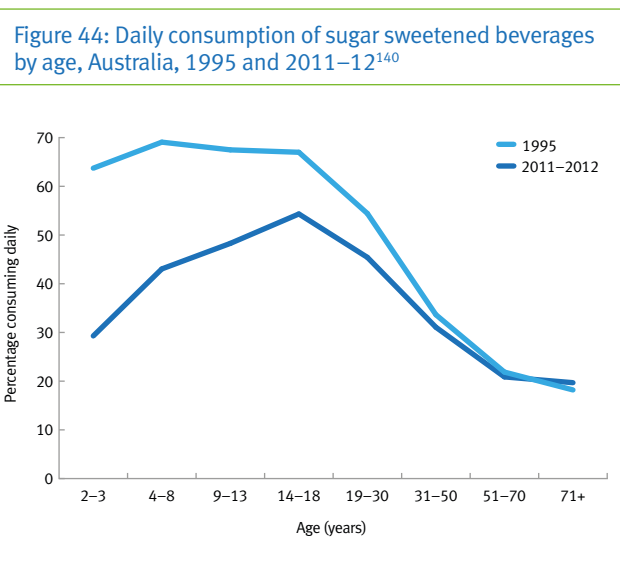
- Biscuits, cakes, chips, snacks and confectionary consumption in children in 2016<sup>134</sup>
  - 15% eat savoury biscuits daily (65% weekly)
  - 7% eat salty snacks daily (63% weekly)
  - 20% eat sweet biscuits, cakes, muffins and similar foods daily (73% weekly)
  - 5% eat confectionary, including chocolate and lollies daily (63% weekly)

Two-thirds (61%) of children were consuming one or more of these ‘discretionary’ foods daily and 97% weekly—this definition of discretionary foods was based on the Queensland Health data collection.<sup>134</sup>

- Sugar sweetened drink consumption in the previous 24 hours in 2011–12<sup>49</sup>
  - 51% of children (2–18 years)
  - 33% of adults (aged 19 years and older)
- Salt
  - 26% very often added salt during cooking in 2011–12 (2 years and older)<sup>138</sup>
  - 16% very often added salt at the table in 2011–12 (2 years and older): 8.8% for 2–18 year olds, 18% for adults 19 years and older<sup>138</sup>

**Table 12: Australian dietary guidelines 2013<sup>136</sup>**

Age group (years)	Recommended daily serves		
	fruit	vegetables	
		Males and females	Males
2–3	1	2.5	2.5
4–8	1.5	4.5	4.5
9–11	2	5	5
12–13	2	5.5	5
14–18	2	5.5	5
19–50	2	6	5
51–70	2	5.5	5
71+ years	2	5	5
Pregnant	2		5
Breastfeeding	2		7.5



# Food and nutrition

## Is it the same for everyone?

### Sex

Compared to females, adult males were:

- 16% less likely to consume the recommended daily serves of fruit in 2016 (Table 14)
- 76% less likely to consume the recommended daily serves of vegetables in 2016 (Table 14)
- 44% more likely to consume sugar sweetened drinks in 2011–12<sup>49</sup>
- deriving 11% more energy from discretionary foods in 2011–12.<sup>138</sup>

For children in 2016, boys were 9% less likely to consume recommended daily serves of fruit but there was no difference between girls and boys for (Table 13):

- recommended daily vegetable consumption
- weekly takeaway consumption
- daily consumption of at least one of the following 'discretionary' foods: cakes, biscuits, snacks and confectionary
- consumption of sugar sweetened drinks.<sup>49</sup>

### Age

- There was little variation in daily fruit and vegetable consumption in adults in 2016 although younger adults tended to report lower fruit consumption (Table 14). Fruit consumption was higher in younger children than older, but differed very little for vegetables (Table 13).
- Peak consumption of sugar sweetened drinks was in the age range 9–30 years for males with about half consuming such drinks in the 24 hours prior to survey in 2011–12.<sup>49</sup> There was a similar but more modest peak for young females. The consumption patterns of Queenslanders were similar those of Australians although data for Queensland is not displayed (Figure 44).
- The age pattern of discretionary food intake as a proportion of total energy mimicked the sweetened beverage pattern in 2011–12. Nevertheless, about one-third of the energy intake of 2–3 year olds was from discretionary foods, rising to 40% among 4–13 year olds.
- Younger adults were more likely to consume takeaway food weekly. Prevalence was more than double in those aged 18–34 years (40–48%) compared to those aged 55 years and older (up to 18%) in 2014.<sup>139</sup> Teenagers (16–17 years) were 33% more likely to consume takeaway food weekly than were younger children (5–7 years) (Table 13).
- Among children, daily consumption of 'discretionary' foods varied and generally younger children consumed more often than older in 2016 (Table 13).

### Socioeconomic status

Compared to adults in disadvantaged areas, those in advantaged areas were:

- 14% more likely to consume the recommended daily serves of fruit in 2016 (Table 14)
- equally likely to consume recommended daily serves of vegetables in 2016 (Table 14)
- equally likely to consume takeaway food weekly in 2014<sup>139</sup>
- 19% less likely to consume sugar sweetened beverages daily in 2011–12 (national data).<sup>140</sup>

Children in advantaged areas did not differ from those in disadvantaged areas in 2016 for (Table 13):

- recommended daily fruit consumption
- recommended daily vegetable consumption
- weekly takeaway consumption
- daily consumption of at least one of the following 'discretionary' foods: cakes, biscuits, snacks and confectionary.

### Remoteness

Compared to adults in regional and remote areas, those in major cities were:

- equally likely to consume recommended serves of fruit in 2016 (Table 14)
- equally likely to consume recommended serves of vegetables in 2016 (Table 14)
- twice as likely to consume takeaway food weekly as those in remote and very remote areas in 2014.<sup>31</sup>

For children in 2016, there was no difference between cities, regional areas and remote areas for fruit and vegetable consumption, weekly takeaway consumption or daily consumption of 'discretionary' foods such as cakes, biscuits, snacks and confectionary (Table 13).

# Food and nutrition

## Indigenous Queenslanders

In 2012–13<sup>121</sup>:

- 41% of Indigenous Queenslander adults consumed the recommended serves of fruit per day and 4.2% consumed the recommended serves of vegetables per day in 2012–13.<sup>31</sup> Fruit consumption among Indigenous Queenslanders was about 12% lower than for non-Indigenous adults after adjusting for age differences but did not differ for vegetable consumption. Consumption patterns for Indigenous Queenslanders did not differ from Indigenous Australians.
- 68% of Indigenous Queenslander children consumed the recommended serves of fruit per day and 8.9% consumed the recommended serves of vegetables.<sup>31</sup> Fruit and vegetable consumption of Indigenous Queensland children did not differ from non-Indigenous children or Australian Indigenous children.
- The prevalence of daily sugar sweetened drink consumption among Indigenous Australians aged 2 years and older in 2012–13 was about 50% higher than among non-Indigenous: 50% compared with 34%. Peak consumption was for those aged 4–30 years with about 60% of young Indigenous Australians consuming sugar sweetened drinks daily.

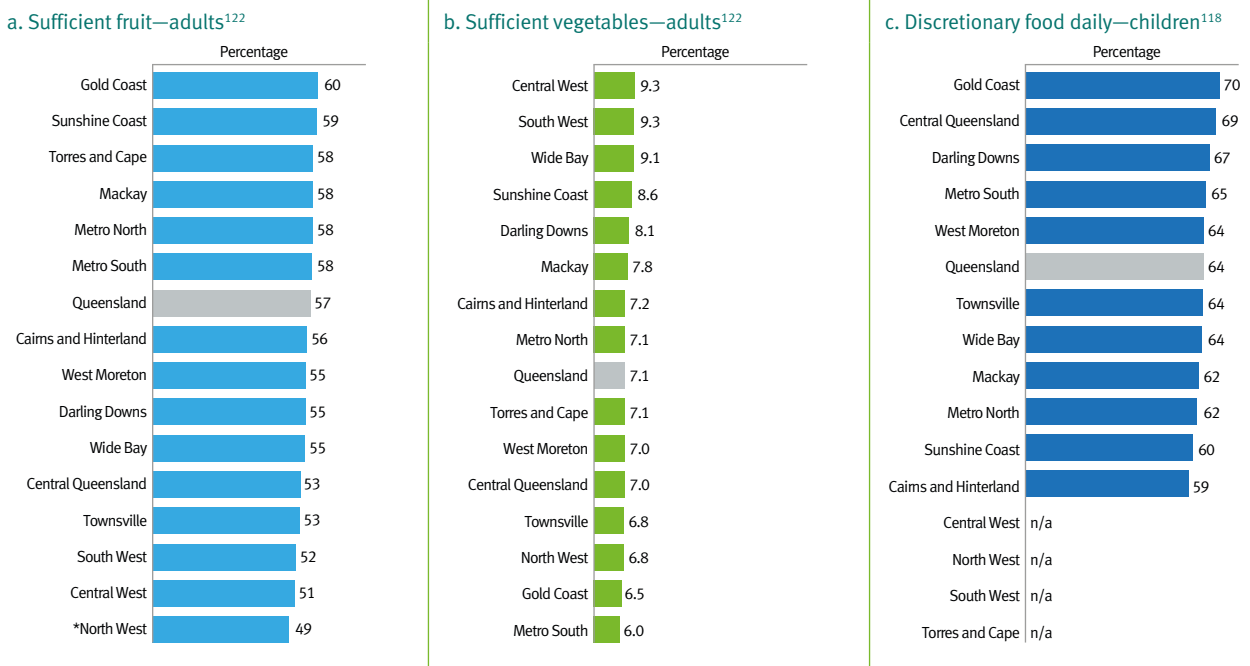
## Regional Queensland

For adults in 2015–16, the prevalence of recommended fruit consumption in North West HHS was 14% lower than the state average but did not differ for the remaining HHSs (Figure 45a).<sup>122</sup> The prevalence of recommended vegetable consumption was low across all HHSs, and none differed from the state average (Figure 45b). Other nutrition indicators are not available for HHSs.

For children in 2015–16, there were no differences between HHSs and the state average, or between HHSs<sup>122</sup> for:

- recommended daily fruit consumption
- recommended daily vegetable consumption
- daily consumption of ‘discretionary’ foods (Figure 45c).

Figure 45: Food consumption by HHS, adults and children, Queensland, 2015–16



\* Lower than Qld n/a not available for publication Confidence intervals available from statistical tables online

# Food and nutrition

## Infant nutrition

In 2014, 96% of infants aged 0–2 years had ever been breastfed where exclusive breastfeeding was initiated for 92%.<sup>29</sup> At discharge from hospital in 2014, 78% of newborn infants had received only breast milk in the previous 24 hours, 8% had received only infant formula, and 15% had received both. It is recommended that infants are breastfed exclusively to around six months with continued breastfeeding to 12 months and beyond, and that solid food is introduced around four to six months. Cow's milk should not be introduced before 12 months of age. Considering these recommendations<sup>136</sup> and the national indicators<sup>137</sup>, in 2014<sup>29</sup>:

- 29% of infants were exclusively breastfed to four months of age and 5% to six months
- 64% were receiving some breast milk at six months
- 32% were receiving some breast milk at 12 months
- 36% of infants had been introduced to solid or semi-solid food by four months: 22% consuming daily
- 7% of infants were consuming cow's milk at 10 months of age.

Women with higher education were more likely to breastfeed exclusively to four months (women with a bachelor degree were 64% more likely than those without), as were women living in advantaged areas (80% more likely than those living in disadvantaged areas) and non-smokers (72% more likely than smokers).<sup>29</sup>

There are some signs of improvement in infant nutrition.<sup>29</sup> While the proportion of infants exclusively breastfed to four months did not change between 2008 and 2014, the proportion receiving some breast milk at each month in the first year has increased—from 33% in 2003 to 48% in 2014 at nine months of age, and from 17% in 2003 to 32% at 12 months. This was mirrored by a decrease in the proportion of children receiving formula at each month over the first year. There was a decrease in the proportion receiving solid food daily at four months of age, from 59% in 2003 to 22% in 2014. In 2003, 35% of infants consumed cow's milk at 10 months of age, and only 7% in 2014. In 2003, about three times as many infants were consuming sweetened drinks than in 2014: 38% compared with 12% at 12 months of age and 61% compared with 26% at two years of age.

**1 in 3 infants was being breastfed at 12 months of age.**

## How do we compare?

### National

Adults: Fruit and vegetable consumption in Queensland did not differ from national in 2014–15.<sup>37</sup> The Queensland prevalence of recommended fruit consumption was second highest among the jurisdictions (after Western Australia) and third highest for vegetables (after Tasmania and Western Australia) (Table 24, page 116).

Children: Fruit and vegetable consumption in Queensland did not differ from national in 2014–15.<sup>37</sup> Queensland was ranked 4th highest for recommended serves of fruit daily and for vegetables, 6th highest.

Infants: Exclusive breastfeeding at four months of age in Queensland was lowest of all jurisdictions but did not differ from national prevalence in 2011.<sup>141,142</sup>

The proportion of energy derived from discretionary foods was 5% higher among Queenslanders aged 2 years and older than nationally in 2011–12 (37% compared with 35%).<sup>138</sup>

The prevalence of daily sugar sweetened drink consumption in Queenslanders aged 2–18 years and adults aged 19 years and older did not differ from national consumption in 2011–12 (51% in Queensland compared with 49% nationally for children, 33% compared to 36% respectively for adults).<sup>49</sup>

### International

For daily fruit and daily vegetable consumption, Australia performed very well. In 2014 (or nearest year), of 31 OECD countries, Australian adults aged 15 years and older had the highest proportion consuming fruit daily and the second highest daily vegetable consumption (behind Korea).<sup>143</sup>

Among 22 European countries, in recent years, exclusive breastfeeding at six months of age varied from less than 1% to 37%.<sup>144</sup> Australian prevalence in 2010 was at the lower end of this range as was Queensland's (2.1% and 1.8% respectively).

## What are the trends?

Between 2005 and 2016 there was a small increase in the proportion of adults consuming two serves of fruit per day (0.9% per year).<sup>127</sup> This was evident for males and females alike. There were age group differences—consumption increased by 2.1% per year for younger adults (18–44 years), but did not change for older people (45 years and older). The rate of change in daily consumption did not differ between adults in socioeconomically advantaged and disadvantaged areas.

# Food and nutrition

Vegetable consumption declined slightly over this period based on mean daily serves.<sup>126</sup> Very few adults consume the general recommendation of five serves of vegetables daily (there is some variation in age group recommendations: Table 12)—less than 1 in 10—however, about 40% consume three or more serves per day. Between 2005 and 2010 there was a 1.8% per year decrease in the proportion of adults consuming three or more serves per day, and since then there has been no change.<sup>127</sup> This pattern of change was evident for males and females alike. There were, however, age group differences—consumption was steady for younger adults (18–44 years), whereas for older adults it decreased by 2.8% per year. There were also socioeconomic differences, with consumption falling for adults from disadvantaged areas (by 3.1% per year), and remaining steady for those in advantaged areas.

About 40% of adults consume at least 3 serves of vegetables daily but 7% meet recommendations.

Between 2001 and 2014, there was a 38% decrease in the weekly consumption of takeaway food among Queensland adults, where this assessment was based on recognised fast food chains.<sup>31</sup> Decreasing consumption was evident for males and females, all age groups and across the socioeconomic gradient.

Daily consumption of sugar sweetened drinks decreased nationally between 1995 and 2011–12, from 43% to 34% of persons aged 2 years and older (Figure 44).<sup>140</sup> This was largely due to decreases in cordial consumption, particularly among children (from 35% in 1995 to 11% in 2011–12). Overall, the greatest decrease in sugar sweetened drink consumption was among very young children with the prevalence in 2–3 year olds more than halving over the 16 years, from 64% to 30%.

There is insufficient data to report more broadly on nutrition trends for Queensland children.

## What are the impacts?

### Burden of disease

The joint effect of all dietary factors accounted for 7.2% of total DALYs in Australia in 2011 (Table 2, page 12).<sup>12</sup> These factors when combined were the second largest cause of disease burden in Australia.

The individual impact of dietary risks included (proportions cannot be summed as the risk factors share joint effects): diet low in fruit (2.0%), diet low in vegetables (1.4%), diet high in processed meats (1.4%), low in nuts and seeds (1.4%), low in whole grains (1.1%) low in fibre (1.0%), and other dietary risks including high saturated fat, low omega-3 fatty acids, high in sweetened beverages, high sodium, low milk, high red meat and low calcium (each contributing less than 1% to attributable DALYs).

The main disease outcomes associated with poor diet were cardiovascular conditions (35%), endocrine disease (33%) and cancers (7%). A diet low in fruit contributed to coronary heart disease (47% of attributable DALYs), stroke (29%), lung cancer (14%) and the remaining 11% was for cancers of the oesophagus, mouth and larynx.<sup>12</sup> The burden due to a diet low in vegetables was associated with coronary heart disease (55%) and stroke (38%) and cancers of the mouth and larynx (7%).

### Deaths

In 2011, dietary risks (combined) accounted for 17,771 deaths in Australia (12% of all deaths), and an estimated 3500 were Queenslanders (Table 2, page 12).<sup>12</sup>

Dietary factors combined were the second largest risk for disease burden in Australia in 2011.

### Disability and hospitalisation

Dietary risks (combined) caused 2.9% of YLD burden in Australia in 2011 (Table 2, page 12).<sup>12</sup> Data for Queensland is not currently available. High body mass contributed a similar proportion.

There were about 8000 hospitalisations for conditions that resulted from low fruit and vegetable consumption in Queensland in 2013–14, 0.8% of all hospitalisations.<sup>87</sup> These episodes resulted in about 33,000 patient days with coronary heart disease and stroke accounting for about 90% (Figure 46a). The highest crude hospitalisation rates for low fruit and vegetable consumption were in Wide Bay HHS and the lowest in Metro South (Figure 46b).

### Expenditure

In 2008, it was estimated that inadequate fruit and vegetable consumption resulted in \$206 million in health sector costs nationally, and \$63 million in production losses.<sup>107</sup> Based on population share, this was a total of \$53.8 million in Queensland, where 77% or \$41.2 million was associated with costs to the health sector. More recent data is not available.

## Food and nutrition

### *Promoting healthy eating*

Too few Queenslanders eat a healthy diet—for many people, one-third of their energy intake is derived from food that provides little nutritional benefit and is costing the average consumer over half (58%) their food spending.<sup>145</sup> Addressing the over-consumption of energy-dense foods and drinks, and under-consumption of fruits, vegetables and wholegrain foods is a challenge and the focus of current initiatives in Queensland.

Unhealthy eating contributes to chronic illnesses such as obesity, cardiovascular disease, diabetes, some cancers and tooth decay. Most Queenslanders do not eat the minimum serves recommended from the five food groups and fruit and vegetable intake has changed very little in this state for over a decade.<sup>127,146</sup> More than half of children and adults and up to three-quarters of 9–18 year olds derive over 10% of their total daily energy from free sugars (defined on page 118) found in food and beverages such as soft drinks, confectionery, cakes and biscuits.<sup>147</sup>

Excess consumption of sweetened drinks not only contributes to weight gain, which leads to higher risk of obesity and development of chronic diseases, particularly diabetes, it also increases the risk of tooth decay. Each year there are about 3000 hospitalisations for dental caries in young Queensland children (page 45). These are preventable through good oral hygiene, access to fluoride to protect the teeth, access to regular dental care and a healthy diet—which includes avoiding sticky and sweet foods and drinks.

There are some positive signs that people are heeding dietary advice and reducing their intake of discretionary foods—for example, there has been a decrease in sugar-sweetened drinks, especially among 2–3 year olds. The significant reduction in the proportion of infants given solid foods by four months of age and cow's milk at 10 months of age is also positive and an indication that messages about appropriate infant feeding are having an impact.

There are substantial benefits from improved food choices.

- Queenslanders will lower their disease risk, experience a greater sense of wellbeing and be more productive at home and at work.
- The pressure on the health sector will be reduced.
- The economy will benefit from improved productivity, and consumer demand will stimulate the horticultural industries. If all Queenslanders were to meet recommendations for daily consumption, an extra 1000 metric tonnes of vegetables are needed in Queensland every day, and extra 100 metric tonnes of fruit every day.

Increased consumption of healthy food and less of discretionary food could deliver substantial gains in health and wellbeing. In addition, lifting the rates of breastfeeding during the first six months of infancy would result in significant health benefits and lead to a lower risk of child obesity.<sup>148</sup> However, the challenge for the consumer is in making healthy food choices in an environment where cheap, convenient and tasty food and drinks high in fat, sugar and salt are readily available. The environment within which food and drink choices are made shapes food preferences and to a large extent determines food purchases. Queenslanders are more likely to adopt and maintain changes to their diets if the environment supports healthier eating.

Governments, industries and communities all have a role in empowering families and individuals and creating environments that make it easier to eat a healthy diet. Actions that can be taken in Queensland to improve diets include:

- increasing the availability of healthy food and drinks and reducing the availability of less healthy choices in places such as schools, workplaces and sporting clubs
- communicating good nutrition advice to parents and carers and building capacity in children's settings such as outside school hours care services and childcare centres
- providing more nutrition information at point-of-purchase
- empowering individuals with the knowledge and cooking skills to eat healthy food
- enabling maternity and child health services to support families to improve nutrition during pregnancy, infancy and childhood
- raising awareness of chronic disease risk with individuals through health checks in the community and providing early intervention through telephone counselling and support
- prioritising actions so that people and communities with the greatest need have early opportunities to benefit.



# Food and nutrition

Figure 46: Hospitalisations due to low fruit and vegetable consumption, Queensland, 2013–14<sup>87</sup>

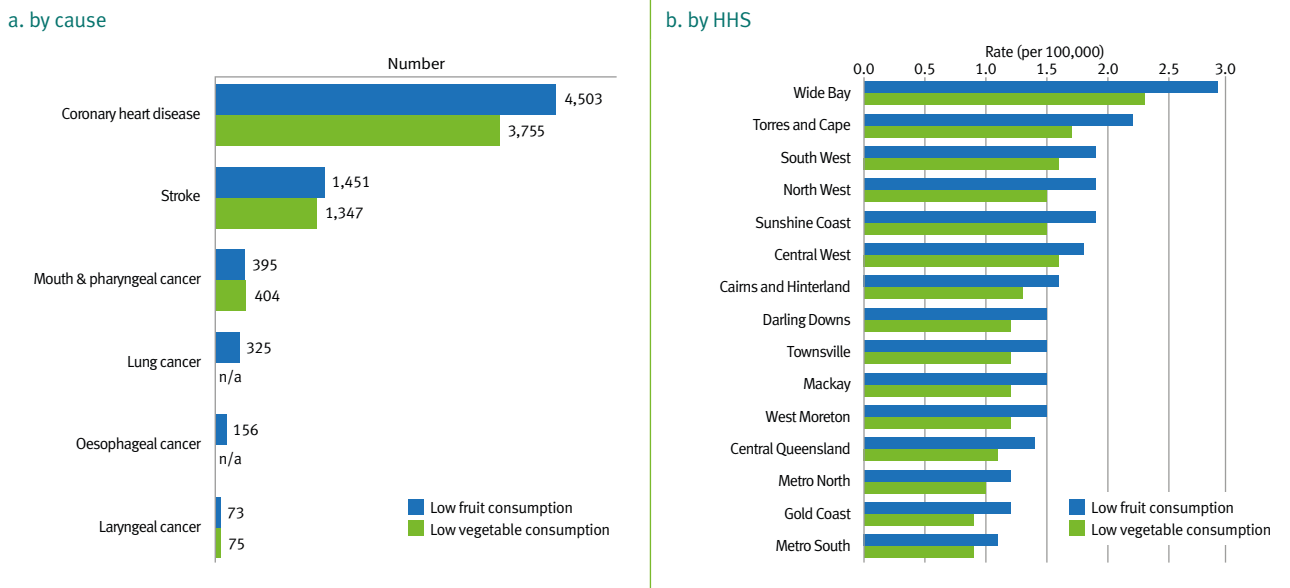


Table 13: Nutrition indicators, children, percentage (95% CI), Queensland, 2016<sup>134</sup>

		Recommended daily serves		Weekly takeaway	Discretionary <sup>a</sup> food daily
		fruit	vegetables		
5–17 years	Persons	70.0 (67.8–72.1)	3.7 (3.0–4.7)	47.5 (45.1–49.9)	61.2 (58.8–63.5)
	Males	66.7 (63.5–69.7)	2.8 (2.0–4.0)	49.3 (45.9–52.6)	63.6 (60.4–66.8)
	Females	73.5 (70.5–76.3)	4.7 (3.5–6.3)	45.5 (42.1–49.0)	58.5 (55.1–61.9)
Persons	5–7 years	83.7 (79.8–86.9)	*2.9 (1.7–4.8)	43.9 (39.1–48.8)	61.2 (56.4–65.8)
	8–11 years	73.8 (69.7–77.6)	3.7 (2.5–5.4)	42.6 (38.2–47.3)	67.0 (62.7–71.1)
	12–15 years	61.8 (57.7–65.7)	4.3 (2.9–6.4)	49.7 (45.6–53.9)	60.0 (55.8–64.0)
	16–17 years	57.4 (51.4–63.2)	*4.0 (2.3–7.0)	58.2 (52.1–64.1)	51.5 (45.3–57.7)
Males	5–7 years	82.6 (77.0–87.1)	n/a	44.1 (37.5–50.9)	64.6 (58.0–70.6)
	8–11 years	68.7 (62.5–74.3)	*3.3 (1.9–5.8)	44.3 (38.0–50.8)	70.4 (64.4–75.8)
	12–15 years	59.4 (53.6–65.0)	*3.1 (1.6–6.0)	50.6 (44.8–56.4)	60.8 (54.8–66.4)
	16–17 years	52.0 (43.7–60.2)	n/a	65.0 (56.9–72.3)	54.3 (45.9–62.4)
Females	5–7 years	84.8 (79.1–89.1)	*4.3 (2.3–7.9)	43.7 (36.8–50.8)	57.7 (50.5–64.5)
	8–11 years	79.1 (73.5–83.8)	*4.0 (2.3–6.9)	40.9 (34.6–47.5)	63.4 (57.0–69.4)
	12–15 years	64.4 (58.6–69.7)	5.6 (3.4–9.1)	48.8 (42.9–54.8)	59.2 (53.3–64.9)
	16–17 years	63.0 (54.5–70.7)	*5.0 (2.4–10.0)	51.2 (42.1–60.2)	48.6 (39.6–57.7)
Socioeconomic status	Most disadvantaged	70.8 (65.7–75.3)	*3.3 (1.8–6.0)	42.9 (37.6–48.2)	62.7 (57.4–67.7)
	Quintile 2	71.0 (66.5–75.1)	5.3 (3.6–7.8)	49.8 (44.7–54.9)	58.8 (53.6–63.7)
	Quintile 3	70.3 (65.3–74.9)	*3.2 (1.9–5.2)	53.9 (48.5–59.1)	63.6 (58.4–68.6)
	Quintile 4	66.6 (61.5–71.4)	*4.2 (2.5–6.8)	45.7 (40.4–51.1)	60.4 (55.1–65.5)
	Most advantaged	72.0 (66.8–76.6)	*2.7 (1.5–4.7)	44.7 (39.2–50.2)	60.8 (55.2–66.0)
Remoteness	Major cities	72.2 (69.0–75.1)	2.8 (2.0–4.0)	48.0 (44.6–51.5)	61.5 (58.1–64.9)
	Inner regional	66.7 (62.6–70.6)	5.3 (3.7–7.7)	46.6 (42.2–51.0)	60.2 (55.8–64.5)
	Outer regional	66.4 (61.8–70.7)	4.3 (2.7–6.7)	48.7 (44.0–53.5)	60.3 (55.6–64.8)
	Remote/very remote	74.0 (61.5–83.5)	n/a	38.0 (25.7–52.1)	65.2 (52.0–76.4)

<sup>a</sup> at least one serve of cakes, biscuits, snacks, confectionary food. n/a not available for publication.

\* Estimate has a relative standard error of 25% to 50% and should be used with caution.

## Food and nutrition

		Recommended daily serves		
		fruit	vegetables	fruit and vegetables
18+ years	Persons	57.3 (55.9–58.7)	6.8 (6.2–7.4)	5.3 (4.8–5.9)
	Male	52.2 (50.0–54.3)	2.6 (2.1–3.3)	2.0 (1.5–2.6)
	Female	62.3 (60.5–64.1)	10.8 (9.8–11.9)	8.5 (7.6–9.5)
Persons	18–24 years	54.9 (48.6–61.1)	*4.6 (2.7–7.6)	*4.1 (2.3–7.1)
	25–34 years	56.2 (52.4–59.9)	5.5 (4.1–7.4)	4.3 (3.1–6.0)
	35–44 years	53.8 (50.5–56.9)	6.9 (5.5–8.5)	4.8 (3.7–6.2)
	45–54 years	56.4 (53.4–59.3)	7.0 (5.6–8.6)	5.2 (4.0–6.7)
	55–64 years	57.8 (55.1–60.5)	7.7 (6.5–9.2)	6.3 (5.2–7.6)
	65–74 years	63.7 (61.2–66.1)	8.3 (7.0–9.9)	6.9 (5.7–8.3)
	75+ years	64.4 (61.0–67.6)	7.8 (6.2–9.7)	6.5 (5.1–8.3)
Males	18–24 years	52.9 (43.6–61.9)	n/a	n/a
	25–34 years	52.3 (46.5–57.9)	*1.6 (0.7–3.3)	n/a
	35–44 years	49.8 (44.9–54.6)	*1.9 (1.0–3.8)	*1.7 (0.8–3.6)
	45–54 years	53.3 (48.8–57.7)	*2.4 (1.3–4.6)	*1.7 (0.7–3.9)
	55–64 years	49.5 (45.4–53.7)	3.7 (2.4–5.5)	2.9 (1.8–4.5)
	65–74 years	54.5 (50.6–58.3)	3.4 (2.3–5.1)	2.4 (1.5–3.9)
	75+ years	59.1 (53.7–64.3)	*4.2 (2.5–6.8)	*3.1 (1.8–5.2)
Females	18–24 years	56.8 (48.1–65.1)	*6.4 (3.5–11.4)	*5.8 (3.1–10.8)
	25–34 years	60.2 (55.3–64.8)	9.5 (6.9–13.0)	7.8 (5.5–10.9)
	35–44 years	57.8 (53.6–61.8)	11.9 (9.5–14.8)	7.9 (6.1–10.3)
	45–54 years	59.3 (55.3–63.1)	11.1 (8.9–13.7)	8.4 (6.5–10.7)
	55–64 years	66.4 (63.0–69.7)	12.0 (10.0–14.3)	9.8 (8.0–12.0)
	65–74 years	72.3 (69.1–75.3)	12.9 (10.8–15.5)	11.1 (9.1–13.5)
	75+ years	68.7 (64.5–72.6)	10.8 (8.3–13.8)	9.4 (7.0–12.3)
Socioeconomic status	Disadvantaged	53.4 (50.6–56.1)	6.0 (4.9–7.3)	4.6 (3.7–5.8)
	Quintile 2	57.1 (54.4–59.7)	7.9 (6.6–9.5)	6.7 (5.5–8.3)
	Quintile 3	56.6 (53.8–59.4)	7.5 (6.2–9.0)	5.8 (4.7–7.2)
	Quintile 4	58.0 (54.6–61.4)	6.1 (4.8–7.7)	4.2 (3.2–5.5)
	Advantaged	61.1 (57.3–64.7)	6.3 (5.0–7.9)	5.1 (4.0–6.7)
Remoteness	Major cities	58.0 (56.0–60.0)	6.6 (5.7–7.5)	5.2 (4.4–6.0)
	Inner regional	56.3 (53.8–58.7)	7.6 (6.4–8.9)	6.2 (5.2–7.3)
	Outer regional	56.5 (53.6–59.4)	6.1 (5.0–7.5)	4.7 (3.8–5.9)
	Remote/very remote	54.3 (50.0–58.5)	7.5 (6.1–9.2)	5.2 (4.1–6.7)

\* Estimate has a relative standard error of 25% to 50% and should be used with caution. n/a not available for publication.

# Overweight and obesity

Rates of obesity in the population have been increasing for several decades and are recognised as a major public health issue. The challenge of unhealthy weight gain is not confined to Queensland or Australia, but is a global problem.

However, in recent years there has been a steadying in rates of obesity in Queensland adults and children. This is encouraging. It is consistent with national trends and is evident in data collected by self report as well as by measured height and weight.

The problem of high rates of obesity remains. About 1 in 14 Queensland children was obese in 2016, compared with about 1 in 50 some 30 years ago. For adults, 3 in 10 are obese compared with about 1 in 10 in the early 90s.

The slowing of obesity in Queensland and nationally is consistent with global patterns among similarly developed nations. Global commentators have identified potentially successful strategic responses to rising rates of obesity, but action to reverse the trend has not yet been realised.<sup>149</sup> More locally, there has been slow societal change including a greater awareness of the issue than a decade ago and increasing emphasis on obesity prevention in government policies. Furthermore, the food industry is beginning to respond to a demand for and expectation of healthy food choices<sup>150-152</sup>, and the fitness industry is flourishing.<sup>153,154</sup>

Queensland adults are very aware of weight gain. They know they would be healthier if they lost weight and that their lifestyles could be improved. About a quarter said they had gained weight in the previous 12 months and more than two-thirds have taken action to either maintain or lose weight. When asked how much they thought they needed to lose, the average adult said about 11kg. In fact, all those who were overweight or obese would need to lose 15kg on average.

The challenge ahead is to maintain downward pressure on obesity and to continue to invest in those programs and initiatives that are showing benefit. With almost two-thirds of the population overweight or obese, changing norms and culture about body weight may take years to achieve. The success in reducing smoking is a result of sustained, multi-dimensional strategies focussed on removing a toxic risk. In contrast, overweight and obesity are due to over consumption where eating is natural, normal and necessary. An active lifestyle also plays a part in maintaining a healthy weight.

Continued investment is needed to promote the benefits of maintaining a healthy weight, and to support people within their homes and communities to prevent weight gain and to lose weight through healthy food choices and greater physical activity. The food industry needs

Table 15: Measured overweight and obesity, Queensland

Prevalence (%)	children 2014–15	adults 2014–15
Healthy/under weight	74	36
Overweight	19	33
Obese	7	30
Overweight or obese	26	64

#### Key statistics:

- In 2016, an estimated 1.1 million adults were obese and 1.2 million were overweight based on 2014–15 measured prevalence.
- In 2016, an estimated 59,000 children were obese and 158,000 were overweight based on 2014–15 measured prevalence.
- Rates of adult obesity in Queensland have not changed since 2011, consistent with national trends.
- Childhood obesity has not changed since 2007–08 consistent with national trends.
- For adult obesity in 2014–15, Queensland prevalence was similar to national and second highest among the jurisdictions.
- Childhood obesity in Queensland did not differ from national and was fourth highest among the jurisdictions.
- 44,000 Indigenous Queenslanders adults were obese in 2012–13 and 33,500 overweight.



to play a part and already we are seeing some signs of change. Queensland's new menu labelling legislation will help people to make more informed choices when eating out of the home. Infancy and childhood patterns have a large impact on future outcomes so promoting a healthy start to life and building patterns for lifelong health are paramount.

# Overweight and obesity

The reporting of overweight and obesity is based on body mass index (BMI). BMI is calculated by dividing a person's weight in kilograms by their height in metres squared. It categorises people into underweight, healthy weight, overweight, or obese for height. Height and weight data is recorded by physical measurement or by self report.

## What is the prevalence?

- Obese
  - 30% of adults and 7% of children by measurement in 2014–15<sup>37</sup>
  - 24% of adults and 8% of children by self report or proxy report in 2016<sup>118</sup>
- Overweight
  - 33% of adults and 19% of children by measurement in 2014–15<sup>37</sup>
  - 35% of adults and 18% of children by self report or proxy report in 2016<sup>118</sup>
- Overweight or obese
  - 64% of adults and 26% of children by measurement in 2014–15<sup>37</sup>
  - 59% of adults and 26% of children by self report or proxy report in 2016.<sup>118</sup>

Two-thirds of adults and one-quarter of children are either overweight or obese.

## Is it the same for everyone?

The number and prevalence of obese adults by sociodemographic groups is presented in Figure 50, page 82.

### Sex

Adult males were less likely to be a healthy weight than females in 2016 (30% less likely) (Table 17). This is mainly due to their 52% higher prevalence of self reported overweight where obesity prevalence was similar. By measurement in 2014–15, the average adult Queensland male weighed 88.4kg and was 176.7cm tall, while the average adult female weighed 72.4kg and was 162.7cm.<sup>49</sup> Based on self report in 2015–16, the average male weighed 87.0kg and was 178.0cm tall, while the average female was 70.6kg and 164.2cm.<sup>118</sup>

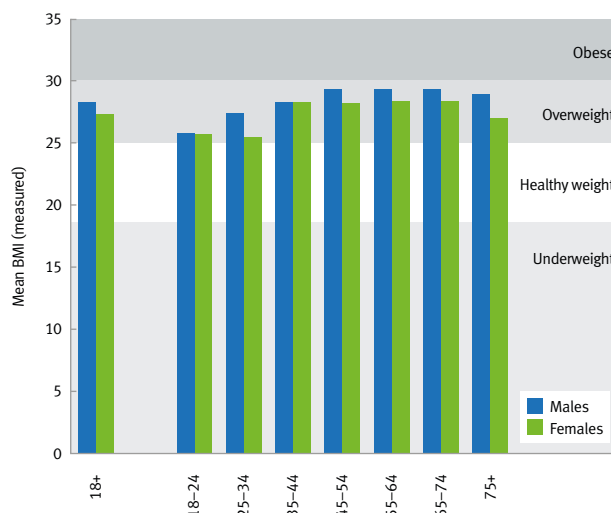
For children, based on proxy reporting, the prevalence of obesity did not differ between boys and girls in 2016, nor did the combined category of overweight and obesity (Table 18). By measurement in 2014–15 there was no difference between girls and boys for any of the weight categories (Table 16).<sup>37</sup>

### Age

There is a steady increase in the prevalence of overweight and obesity with age from the teenage years onwards, although decreasing among those aged 75 years and older (Table 17). Obesity prevalence in adults aged 45–54 years was double that of 18–24 year olds in 2016. In 2014–15, the average adult was overweight, independent of sex or age group, based on measured data (Figure 47).<sup>49</sup> The average younger female (18–34 years) was closest to the healthy weight range, and the average male aged 45–74 years was closest to the obese range.

The prevalence of childhood obesity did not vary by age in 2016, and nor did the combined category of overweight and obesity (Table 18). Measured data showed no clear pattern.

Figure 47: Mean BMI of the average Queensland adult by age group and sex, Queensland 2014–15<sup>49</sup>



The average adult Queenslanders is overweight.

# Overweight and obesity

## Socioeconomic status

The prevalence of self reported adult obesity in disadvantaged areas was about 76% higher than in advantaged areas in 2016, but did not differ for overweight (Table 17). For overweight and obesity combined, there was a 20% difference. The average adult female in disadvantaged areas was 5.2kg heavier (based on self report) than her counterpart in advantaged areas in 2015–16, with a 1cm difference in average height.<sup>118</sup> Adult males in disadvantaged areas were 2.6kg heavier and 1cm shorter than those in advantaged areas.

There was no difference in the prevalence of childhood obesity or the combined category of childhood overweight and obesity between disadvantaged and advantaged areas in 2016 (Table 18).

## Remoteness

The prevalence of self reported adult obesity in areas outside major cities, varied from 22% higher in outer regional areas to 36% higher in remote and very remote areas. Overweight prevalence did not differ, while the combined category of overweight and obesity was between about 10% and 16% higher (Table 17). There was no difference in the average height, however, the average adult female in remote and very remote areas was 4.5kg heavier than her counterpart in major cities in 2015–16 and for males there was a 2.2kg difference with similar height.<sup>118</sup>

There was no difference in the prevalence of childhood obesity or in the combined category of overweight and obesity between remote areas and major cities in 2016 (Table 18).

## Indigenous Queenslanders

In 2012–13, more than two-thirds (70%) of Indigenous Queensland adults were measured as overweight or obese—30% were overweight and 40% were obese.<sup>121</sup> The Queensland prevalence did not differ from the national prevalence for those aged 15 years and older (66% overweight or obese) and was third highest of

the states and territories after New South Wales and Western Australia.<sup>155</sup>

Compared to non-Indigenous adults and after adjusting for age differences, Indigenous Queenslanders were 39% more likely to be obese and 25% less likely to be healthy weight by measurement (12% more likely to be overweight or obese).<sup>121</sup>

For Indigenous Queensland children (5–17 years) in 2012–13, 30% were measured as overweight or obese, 17% were overweight and 13% were obese.<sup>121</sup> The prevalence did not differ from non-Indigenous Queensland children (27% were overweight or obese in 2012–13) or Indigenous Australian children (33% were overweight or obese).

## Regional Queensland

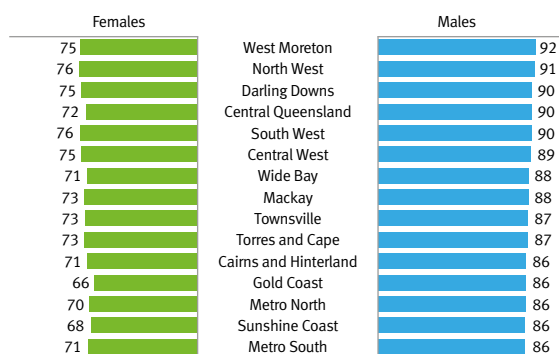
In 2015–16, six HHSs had a higher prevalence of self reported adult obesity than the state, varying from 20% higher in Central Queensland to 62% higher in North West.<sup>122</sup> Metro North, Sunshine Coast and Gold Coast had lower prevalence, 14%, 19% and 31% respectively. More information on HHS differentials is available in the HHS booklet and the statistical tables online (page i for details).

Among HHSs the average weight of adults varied by 8.5kg while height varied by less than 2cm in 2015–16.<sup>118</sup> The highest mean weight for males was in West Moreton and for females in North West (Figure 48a). There was greater variation among females (9.6kg difference between highest and lowest) than males (6.2kg). The average adult was overweight across all HHSs, and in some instances (specific age groups, sex and HHSs or local government areas) the average adult was obese.<sup>156</sup>

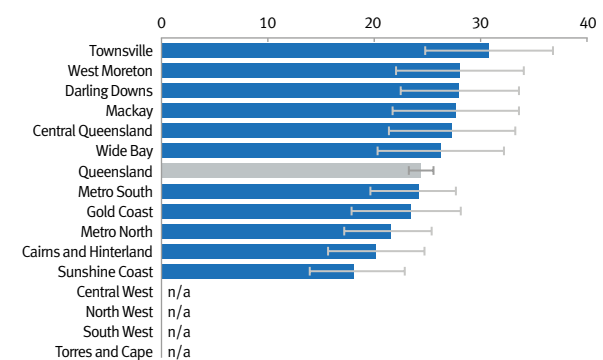
Childhood obesity rates did not differ between HHSs in 2015–16 and although the prevalence of overweight and obesity combined varied markedly, none of the HHSs differed significantly from the state average (Figure 48b).<sup>122</sup>

Figure 48: Weight status by HHS, Queensland 2015–16

### a. Mean adult weight (kg)<sup>118</sup>



### b. Percentage of overweight or obese children<sup>122</sup>



n/a not available for publication

# Overweight and obesity

## How do we compare?

### National

In 2014–15, by measurement (Table 16)<sup>37</sup>, the prevalence of Queensland adult:

- obesity did not differ from national and was second highest of the jurisdictions
- overweight did not differ from national and was lowest of the jurisdictions
- overweight and obesity combined did not differ from national and was fifth highest of the jurisdictions.<sup>157</sup>

In 2014–15, by measurement (Table 16)<sup>37</sup>, the prevalence of Queensland childhood:

- obesity did not differ from national and was fourth highest of the jurisdictions
- overweight did not differ from national and was fourth highest of the jurisdictions
- overweight and obesity did not differ from national and was fifth highest of the jurisdictions.<sup>157</sup>

The prevalence of obesity in Queensland children and adults was similar to national prevalence in 2014–15.

### International

Internationally, the prevalence of adult obesity in Australia was third highest among 34 OECD countries in 2014 for males and eighth for females.<sup>158</sup> The US had the highest prevalence for males and Turkey the highest for females. The Australian prevalence of obesity was about 24% higher than the OECD average (for both men and women).

For children in 2013, using the most recent estimates of overweight and obesity for OECD countries, Australian girls were ranked equal 10th highest among 33 OECD countries and boys were equal 19th highest.<sup>159</sup> The prevalence among Australian girls was 9% higher than the OECD average and boys were 9% lower.

## What are the trends?

By measurement, there was no change in the prevalence of obesity or overweight between 2011–12 and 2014–15 for Queensland adults or nationally, although in the three years up to 2011–12, obesity rates increased by 22% for Queensland and by 12% nationally (Table 16).

The prevalence of adult self reported<sup>126</sup>:

- obesity has not changed since 2011, although between 2004 and 2010 it increased by 3.1% per year (Figure 1d, page 3). The pattern of change over this period was similar for males and females, and across age groups, areas of socioeconomic status and remoteness.<sup>127</sup>
- overweight has not changed since 2004
- overweight and obesity combined has increased by 1.1% per year since 2004.

There has been no change in childhood obesity since 2007–08.

By measurement, there was no change in the prevalence of childhood obesity or overweight between 2007–08 and 2014–15 for Queensland children or nationally (Table 16). Over the long term (the earliest estimates were in 1985), there had been a steady increase in childhood obesity nationally (noting the limited data to track change, particularly for Queensland).<sup>160</sup>

On the assumption that overweight and obesity prevalence remains at current levels, in 2020, based on the most recent Queensland Government population projections<sup>3</sup> there will be a total of 2.7 million overweight or obese Queenslanders (2.5 million adults and 0.2 million children) and by 2026, 3 million (2.8 million adults and 0.3 million children).

An assessment of global trends and patterns of overweight and obesity was released in 2016.<sup>158</sup> It included estimates of adult BMI in 200 countries between 1975 and 2014. The ranking of Australian males in this period changed very little, varying from fourth highest obesity to fifth highest and more recently third highest among OECD countries. Australian females have moved from about 18th or 19th position in the early 70s to eighth highest in 2014.

The rate of increase in adult obesity for Australian males over this period was about the same as the OECD average, whereas for Australian females, the rate of increase was substantially greater than the OECD average. All OECD countries experienced rising rates of obesity, with some of the greatest increases (relatively) among those countries with the lowest absolute levels, that is, Japan and Korea.<sup>158</sup>

Almost one-fifth of the world's obese adults (118 million) lived in just six high-income English-speaking countries in 2014—Australia, Canada, Ireland, New Zealand, the UK and the US. More than one-quarter (50 million) of the world's severely obese people also lived in these countries.<sup>158</sup>

# Overweight and obesity

## What are the impacts?

### Burden of disease

High body mass accounted for 5.5% of DALYs in Australia in 2011.<sup>12</sup> It was the third largest cause of disease burden of the risk factors, after smoking and the combined effect of all dietary factors (Table 2, page 12). Queensland data is not currently available.

High body mass affects the total disease burden through its impact on coronary heart disease (accounting for 33% of attributable DALYs), diabetes (21%), stroke (9%), chronic kidney disease (7%) and other diseases (30%).<sup>12</sup> The majority of the total burden in Australia in 2011 was associated with premature mortality (74% YLL) with 26% due to disability (YLD).

High body mass is a global issue and was the third largest cause of disease burden in 2013, where high blood pressure was the leading cause, followed by smoking.<sup>161</sup>

About two-thirds of adults with type 2 diabetes are likely to be obese.

### Life expectancy

Obesity reduces life expectancy and there are many studies which have quantified its impact.<sup>162</sup> However, it has become evident that over the past three decades while obesity has been increasing, life expectancy has also increased, not decreased as had been predicted.<sup>163</sup> There are reasons for this contradictory outcome, including more effective treatment and management of obesity related diseases, as well as improvement in other risks, causing people to lead longer, but less healthy lives.<sup>164,165,166</sup> This reflects a decoupling of risk factor prevalence from impact as recently reported for New Zealand.<sup>167</sup> Gains in the management of blood pressure and cholesterol over recent decades in Australia, for example, are helping to mitigate the cardiovascular effects of the obesity epidemic.<sup>164</sup> It may also be that the negative effect of obesity on life expectancy will occur in the future.<sup>166</sup>

### Deaths

In 2011, for Australia, high body mass accounted for 11,564 deaths (7.9% of all deaths) and an estimated 2300 were Queenslanders (Table 2, page 12).<sup>12</sup> An international study in 2016 estimated that for Australia, 1 in 6 premature deaths could be avoided if all those who were currently overweight or obese were within the healthy weight range.<sup>168</sup>

### Disability and hospitalisation

High body mass caused 2.9% of YLD burden in Australia in 2011 (Table 2, page 12).<sup>12</sup> Data for Queensland is not currently available.

Obesity reduces health and wellbeing, with obese adults more than twice as likely to report poorer health as healthy weight adults in 2011–12.<sup>34</sup> They were about 3 times as likely to be dissatisfied with their health and twice as likely to report poor quality of life.

Obesity increases the risk of chronic disease, particularly diabetes (page 22). In 2011–12, those Queensland adults who had been measured as obese were about 4 times as likely to also have diabetes (based on blood measurement) as those who were not obese—the prevalence of diabetes was 11% among obese adults compared with 2.6% in non-obese adults.<sup>31,169</sup> Thus, although about 90% of obese adults did not have diabetes at the time of the survey in 2011–12, of those adults with diabetes (and about 87% of these had type 2), almost two-thirds were obese.

In 2013–14 there were about 83,500 hospitalisations due to high body mass in Queensland, 4.0% of the two million hospitalisations for all causes in that year.<sup>87</sup> More than half (55%) were associated with diabetes-related renal dialysis (Figure 49). Additional information on hospitalisations is reported on page 40 and in statistical tables online (page i for more details).

### Expenditure

The financial cost of obesity is high and was estimated in 2015 at \$8.6 billion nationally (about \$1.72 billion in Queensland) (Table 10, page 54).<sup>104</sup> Of this, 44% was due to health system costs (\$0.76 billion in Queensland), 40% to tax foregone (\$0.75 billion), 12% to productivity losses including absenteeism (\$0.20 billion), and 4% to government subsidies. The impact of loss of wellbeing and early death was assessed at \$47.4 billion nationally (\$9.5 billion in Queensland) taking the total cost of obesity in Queensland in 2015 to \$11.2 billion.

1 in 12 deaths was due to obesity in 2011.

# Overweight and obesity

## *Weight gain—attitudes, patterns of change and beliefs*

Avoiding weight gain is a challenge for many Queenslanders and over the past decade the average Queenslanders has gained a kilogram every three to four years.<sup>31</sup>

In 2014, about 1 in 4 adults (23%) reported that they had gained weight in the previous year.<sup>170</sup> Young people were more likely to do so than older adults: 40% of young people aged 18–24 years reported weight gain compared to less than 20% among those aged 55 years and older. Over the period 2002–2013, on average young males gained 1.1kg per year between the ages of 18 and 28 and young females 0.7kg per year on average, where those aged 30 years and older had gained 62gm for males and 151gm for females.<sup>31</sup>

Two-thirds of adults have taken action to either lose weight or to prevent weight gain in the past 12 months.

Self-perceptions about weight status are not always accurate. In 2014, about 1 in 2 adults (53%) considered themselves to be an ‘acceptable’ weight.<sup>170</sup> Of those, the majority (63%) were a healthy weight (based on height and weight). About 10% of healthy weight adults considered they were overweight, when they were not. Conversely there were a number of people who thought they were an ‘acceptable’ weight when they were not based on their height and weight: 44% of overweight adults and 13% of those who were obese.

Queenslanders are aware that their lifestyle choices are not necessarily healthy: fewer than 1 in 2 (43%) reported a very healthy lifestyle.<sup>170</sup> Even among healthy weight adults, only 50% described their lifestyle as very healthy as did 45% of those who were overweight and 25% of those who were obese. There are opportunities to build on this self assessment to reduce health risk and improve quality of life.

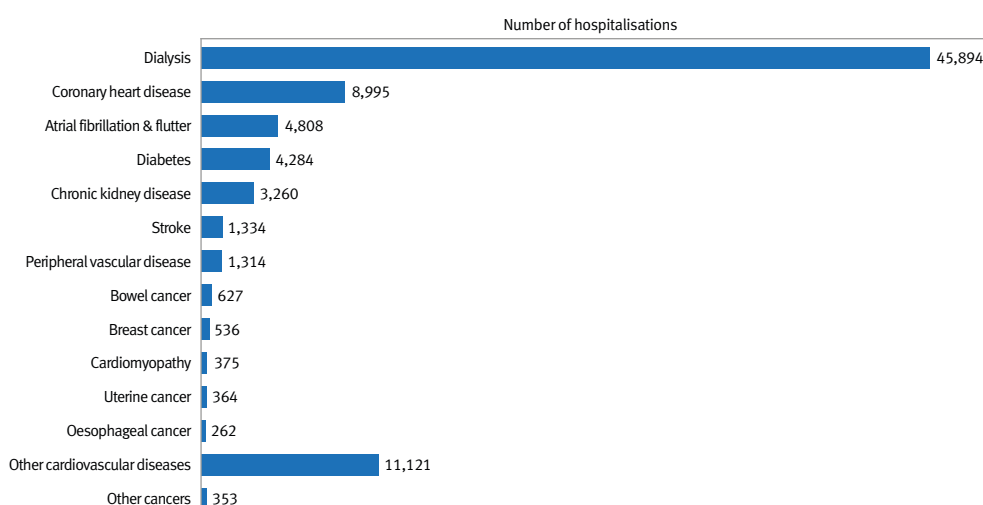
Believing that weight loss would improve one’s health is fundamental to taking action to do so. While 55% of all adults thought that weight loss would make them healthier, this varied by weight status and not everyone was of that view.<sup>170</sup> About 33% of overweight adults reported that weight loss would not make them healthier as did 11% of obese adults.

Many Queenslanders have been trying to lose weight: 47% of adults in 2014, with more females than males (52% compared with 41%).<sup>170</sup> Those who were overweight were more likely to have tried to lose weight than those who were in the healthy weight range (54% compared 34%) as were those who were obese (63%). Overall, two-thirds (67%) of adult Queenslanders had taken action in 2014 to either maintain their weight or lose weight in the previous 12 months. Their strategies for doing so involved reducing their portion size (45%), and increasing physical activity (40%). Females were more likely than males to reduce their portion size (36% more likely) and also to increase physical activity (26% more likely). Adults who believed there was benefit from weight loss were more likely to actively manage their weight than those who did not hold this belief (79% compared with 52%).

Among adults who held the view that they would be healthier if they lost weight, the average amount they wanted to lose was 11kg.<sup>170</sup> Obese adults considered they needed to lose more, 19kg on average, while those who were overweight considered they needed to lose 8kg. Healthy weight adults had lower expectations of weight loss, 5kg on average. If the reported height and weight of each individual were used to assess the amount of weight they needed to lose to reach the healthy weight range, the challenge was much greater—if everyone were to lose sufficient weight to reach the healthy weight range, the total weight loss for Queensland adults would be 35.5 million kg or 35,500 metric tonnes. To achieve this, all adults who were overweight and obese would need to lose, on average 15kg.



## Overweight and obesity

Figure 49: Hospitalisations for high body mass by cause, Queensland 2013–14<sup>87</sup>Table 16: Measured BMI, children and adults by jurisdiction, percentage (95% CI), by year and sex<sup>37,171,172</sup>

	Children		Adults	
	Queensland	Australia	Queensland	Australia
<b>Persons by year</b>				
<b>2014–15</b>				
Underweight/normal	73.7 (68.7–78.7)	72.4 (70.1–74.7)	36.3 (34.2–38.4)	36.6 (35.6–37.6)
Overweight	19.2 (15.2–23.2)	20.2 (18.2–22.2)	33.4 (31.4–35.4)	35.5 (34.6–36.4)
Obese	7.2 (4.4–10.0)	7.4 (6.1–8.7)	30.2 (27.8–32.6)	27.9 (26.9–28.9)
Overweight/obese	26.2 (21.9–30.5)	27.4 (25.2–29.6)	63.6 (61.5–65.7)	63.4 (62.4–64.4)
<b>2011–12</b>				
Underweight/normal	71.6 (66.5–76.7)	74.7 (72.4–77.0)	35.1 (33.2–37.0)	37.2 (36.3–38.1)
Overweight	18.5 (14.0–23.0)	17.7 (15.7–19.7)	34.5 (32.7–36.3)	35.3 (34.6–36.0)
Obese	9.9 (6.5–13.3)	7.6 (6.3–8.9)	30.4 (28.8–32.0)	27.5 (25.7–28.3)
Overweight/obese	28.4 (23.4–33.4)	25.3 (23.1–27.7)	64.9 (63.0–66.8)	62.8 (61.9–63.1)
<b>2007–08</b>				
Underweight/normal	73.3 (67.3–79.3)	75.3 (72.5–78.1)	39.2 (36.5–41.9)	38.8
Overweight	17.9 (12.7–23.1)	17.2 (15.1–19.3)	35.9 (33.4–38.4)	36.7 (35.5–37.9)
Obese	8.8 (4.8–12.8)	7.5 (5.8–9.2)	24.9 (22.4–27.4)	24.6 (23.5–25.7)
Overweight/obese	26.7	24.7	60.8 (58.1–63.5)	61.2 (60.2–62.2)
<b>2014–15 by sex</b>				
<b>Males</b>				
Underweight/normal	72.8	71.6	29.4 (26.0–32.8)	29.3
Overweight	18.3 (13.2–23.4)	21.9 (19.4–24.4)	38.4 (35.1–41.7)	42.4 (41.0–43.8)
Obese	7.4 (4.1–10.7)	6.6 (4.9–8.3)	31.9 (28.3–35.5)	28.4 (26.9–29.9)
Overweight/Obese	26.9 (21.4–32.4)	28.4 (25.5–31.3)	70.7 (67.3–74.1)	70.8 (69.2–72.4)
<b>Females</b>				
Underweight/normal	72.6	73.2	43.2 (40.7–45.7)	43.8
Overweight	19.3 (13.1–25.5)	18.2 (15.5–20.9)	28.6 (26.2–31.0)	28.8 (27.6–30.0)
Obese	7.1 (2.1–12.1)	8.2 (6.2–10.2)	28.4 (25.6–31.2)	27.4 (26.1–28.7)
Overweight/Obese	27.2 (19.8–34.6)	26.6 (23.3–29.9)	56.6 (54.1–59.1)	56.3 (55.0–57.6)

Note: Confidence intervals were not available for all estimates

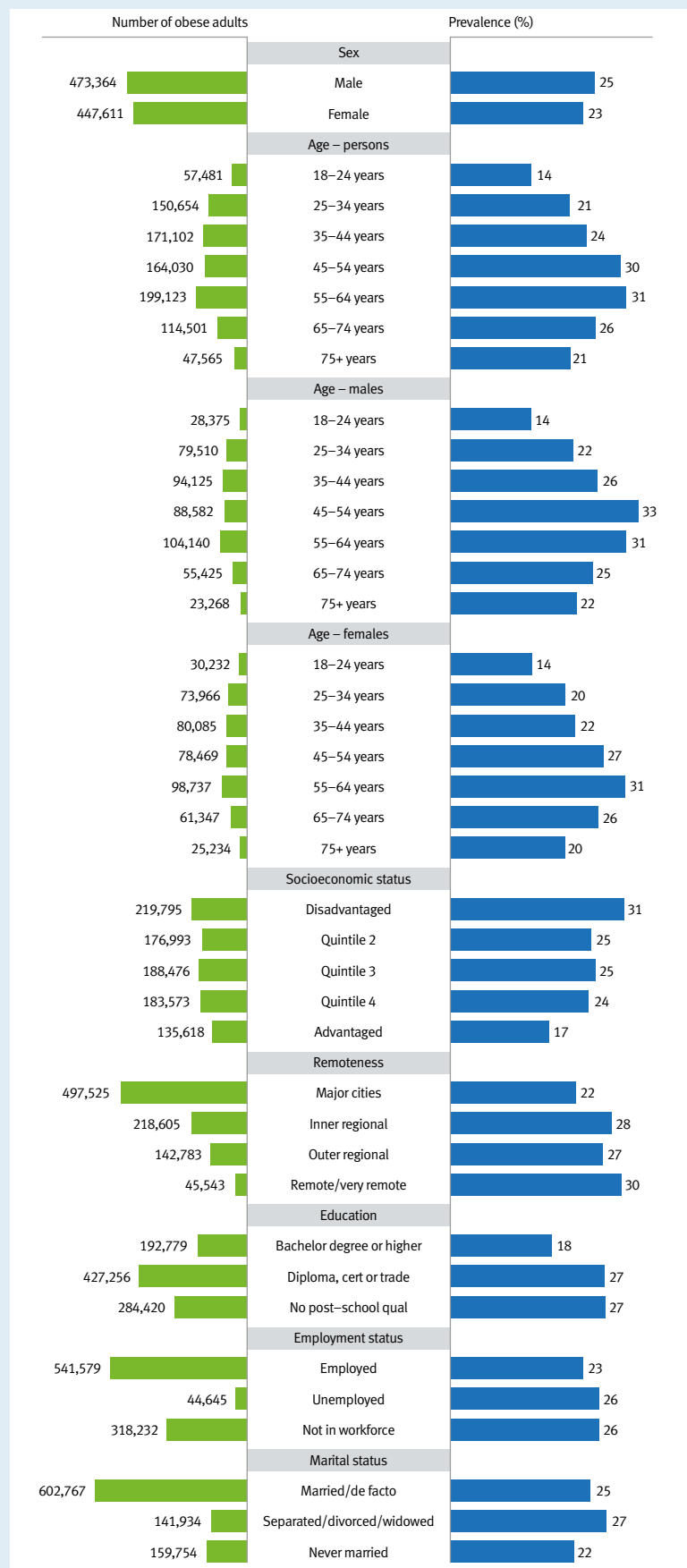
# Overweight and obesity

Figure 50: A sociodemographic profile of the ‘at risk’ population: obese adults<sup>134</sup>

Based on self reported height and weight\* in 2016, about 900,000 Queensland adults were obese.

- Just over half the obese adults (52%) were males, about 470,000.
- About three-quarters of obese adults (74%) were aged between 25 and 64 years (more than 680,000 people).
- 1 in 4 obese adults (24%) lived in the most disadvantaged quintile (about 220,000 people lived in quintile 1).
- Over half the obese adults (54%) lived in major cities (about 500,000 people).
- About half of obese adults (46%) had a trade qualification, diploma or certificate (about 430,000 people).
- Over half the obese adults (60%) were employed (about 540,000 people).
- Two-thirds of obese adults (65%) were married or in a de facto relationship (about 600,000 people).

\* This analysis was based on self reported BMI rather than measured BMI because measured data does not include sociodemographic characteristics. As such it will be an underestimate of the true number of overweight and obese adults.



## Overweight and obesity

Table 17: Self reported BMI, adults, percentage (95% CI), Queensland, 2016<sup>134</sup>

		Healthy weight	Overweight	Obese	Overweight/obese
18+ years	Persons	38.5 (37.1–39.9)	34.6 (33.3–36.0)	24.4 (23.2–25.6)	59.0 (57.6–60.4)
	Males	31.8 (29.8–33.9)	41.8 (39.8–43.9)	25.4 (23.6–27.2)	67.2 (65.1–69.3)
	Females	45.2 (43.4–47.1)	27.5 (25.9–29.1)	23.4 (21.9–25.0)	50.8 (49.0–52.7)
Persons	18–24 years	54.3 (47.8–60.6)	27.1 (21.7–33.1)	14.2 (10.0–19.9)	41.3 (35.0–47.8)
	25–34 years	43.1 (39.4–46.9)	32.5 (29.1–36.1)	20.9 (18.0–24.1)	53.4 (49.6–57.1)
	35–44 years	39.1 (35.9–42.3)	35.0 (32.0–38.1)	23.9 (21.2–26.7)	58.9 (55.6–62.1)
	45–54 years	32.9 (30.1–35.8)	35.9 (33.0–38.9)	30.0 (27.3–32.8)	65.9 (62.9–68.7)
	55–64 years	31.3 (28.7–33.9)	36.2 (33.6–39.0)	30.9 (28.4–33.4)	67.1 (64.5–69.7)
	65–74 years	32.2 (29.8–34.7)	40.5 (37.9–43.1)	25.5 (23.4–27.8)	66.0 (63.5–68.5)
	75+ years	40.9 (37.6–44.4)	34.6 (31.4–37.9)	21.1 (18.3–24.1)	55.7 (52.5–59.1)
Males	18–24 years	49.0 (39.7–58.4)	36.3 (27.9–45.7)	*14.2 (8.3–23.2)	50.5 (41.1–59.8)
	25–34 years	38.0 (32.5–43.8)	38.8 (33.5–44.4)	21.6 (17.2–26.6)	60.4 (54.6–65.9)
	35–44 years	29.3 (24.9–34.2)	43.9 (39.1–48.8)	25.8 (21.8–30.2)	69.6 (64.8–74.1)
	45–54 years	23.1 (19.5–27.1)	43.6 (39.2–48.2)	33.1 (29.0–37.5)	76.7 (72.7–80.3)
	55–64 years	25.8 (22.2–29.8)	42.5 (38.4–46.7)	30.9 (27.4–34.8)	73.5 (69.5–77.1)
	65–74 years	26.5 (23.2–30.2)	47.3 (43.4–51.2)	25.1 (22.0–28.5)	72.3 (68.6–75.8)
	75+ years	38.0 (32.9–43.4)	37.8 (32.8–43.0)	22.1 (17.9–27.0)	59.9 (54.6–65.1)
Females	18–24 years	59.4 (50.5–67.7)	18.1 (12.3–25.9)	14.2 (8.8–22.2)	32.4 (24.6–41.3)
	25–34 years	48.4 (43.5–53.3)	26.0 (21.8–30.6)	20.1 (16.5–24.4)	46.1 (41.3–51.1)
	35–44 years	49.1 (44.8–53.3)	25.9 (22.6–29.5)	21.9 (18.6–25.7)	47.8 (43.6–52.1)
	45–54 years	42.1 (38.1–46.3)	28.6 (25.1–32.5)	27.0 (23.6–30.7)	55.6 (51.5–59.7)
	55–64 years	37.1 (33.7–40.7)	29.5 (26.3–32.9)	30.8 (27.6–34.2)	60.3 (56.7–63.8)
	65–74 years	37.6 (34.2–41.1)	34.0 (30.7–37.5)	26.0 (23.1–29.1)	60.0 (56.5–63.4)
	75+ years	43.5 (39.0–48.0)	31.8 (27.8–36.1)	20.2 (16.7–24.2)	52.0 (47.5–56.5)
Socioeconomic status	Disadvantaged	33.7 (31.0–36.5)	32.1 (29.5–34.7)	30.6 (28.1–33.1)	62.6 (59.7–65.4)
	Quintile 2	36.2 (33.6–38.9)	36.8 (34.2–39.4)	24.8 (22.7–27.0)	61.6 (58.9–64.2)
	Quintile 3	37.3 (34.6–40.2)	35.4 (32.7–38.2)	25.5 (23.0–28.1)	60.9 (58.0–63.7)
	Quintile 4	38.8 (35.5–42.2)	34.3 (31.2–37.6)	24.3 (21.4–27.4)	58.6 (55.2–61.9)
	Advantaged	45.9 (42.2–49.7)	34.7 (31.2–38.3)	17.4 (14.8–20.4)	52.1 (48.3–55.8)
Remoteness	Major cities	40.5 (38.5–42.5)	35.0 (33.2–37.0)	22.0 (20.4–23.8)	57.1 (55.1–59.1)
	Inner regional	35.8 (33.4–38.4)	33.6 (31.4–36.0)	28.4 (26.3–30.7)	62.1 (59.5–64.5)
	Outer regional	36.5 (33.6–39.5)	33.9 (31.3–36.7)	26.8 (24.4–29.4)	60.8 (57.8–63.7)
	Remote/very remote	29.9 (26.3–33.8)	36.2 (32.1–40.5)	30.0 (26.4–33.9)	66.2 (61.7–70.5)

\* Estimate has a relative standard error of 25% to 50% and should be used with caution.

Table 18: Proxy reported BMI, children, percentage (95% CI), Queensland, 2016<sup>134</sup>

		Healthy weight/ underweight	Overweight	Obese	Overweight/obese
5–17 years	Persons	74.2 (72.0–76.4)	17.8 (16.0–19.7)	8.0 (6.6–9.6)	25.8 (23.6–28.0)
	Males	73.7 (70.6–76.7)	18.0 (15.6–20.8)	8.2 (6.4–10.5)	26.3 (23.3–29.4)
	Females	74.8 (71.5–77.8)	17.5 (15.0–20.4)	7.7 (5.8–10.2)	25.2 (22.2–28.5)
Persons	5–7 years	74.9 (69.9–79.3)	14.0 (10.8–18.0)	11.1 (7.9–15.5)	25.1 (20.7–30.1)
	8–11 years	69.0 (64.5–73.2)	22.5 (18.8–26.7)	8.4 (6.2–11.3)	31.0 (26.8–35.5)
	12–15 years	76.1 (72.4–79.5)	17.7 (14.7–21.1)	6.2 (4.5–8.4)	23.9 (20.5–27.6)
	16–17 years	79.6 (73.7–84.4)	14.5 (11.0–19.0)	*5.9 (2.9–11.8)	20.4 (15.6–26.3)
Males	5–7 years	74.3 (66.8–80.5)	12.2 (8.3–17.6)	13.6 (8.5–20.9)	25.7 (19.5–33.2)
	8–11 years	71.2 (64.9–76.7)	20.8 (16.0–26.7)	8.0 (5.3–11.9)	28.8 (23.3–35.1)
	12–15 years	74.2 (68.8–78.9)	18.9 (14.8–23.9)	6.8 (4.5–10.2)	25.8 (21.1–31.2)
	16–17 years	76.9 (69.4–83.0)	19.6 (13.8–27.0)	*3.5 (1.9–6.4)	23.1 (17.0–30.6)
Females	5–7 years	75.5 (68.6–81.3)	16.0 (11.3–22.1)	8.5 (5.2–13.7)	24.5 (18.7–31.4)
	8–11 years	66.8 (60.2–72.9)	24.3 (19.0–30.6)	8.8 (5.6–13.7)	33.2 (27.1–39.8)
	12–15 years	78.2 (72.9–82.8)	16.3 (12.3–21.2)	5.5 (3.4–8.8)	21.8 (17.2–27.1)
	16–17 years	82.4 (72.4–89.3)	9.2 (6.0–14.1)	*8.4 (3.1–20.8)	17.6 (10.7–27.6)
Socioeconomic status	Disadvantaged	69.5 (64.1–74.4)	19.3 (15.2–24.1)	11.2 (8.1–15.2)	30.5 (25.6–35.9)
	Quintile 2	71.5 (66.2–76.2)	18.9 (15.2–23.2)	9.6 (6.4–14.3)	28.5 (23.8–33.8)
	Quintile 3	77.1 (72.3–81.3)	15.9 (12.4–20.2)	7.0 (4.7–10.3)	22.9 (18.7–27.7)
	Quintile 4	75.5 (70.3–80.0)	18.2 (14.4–22.7)	*6.3 (3.8–10.4)	24.5 (20.0–29.7)
	Advantaged	76.1 (70.8–80.7)	17.1 (13.2–21.8)	6.8 (4.4–10.5)	23.9 (19.3–29.2)
Remoteness	Major cities	77.2 (74.0–80.1)	15.4 (13.0–18.1)	7.4 (5.6–9.7)	22.8 (19.9–26.0)
	Inner regional	70.3 (65.8–74.5)	20.5 (17.1–24.4)	9.2 (6.4–13.0)	29.7 (25.5–34.2)
	Outer regional	70.4 (65.6–74.8)	21.7 (17.8–26.2)	7.9 (5.6–10.9)	29.6 (25.2–34.4)
	Remote/very remote	68.7 (54.7–79.9)	*21.8 (12.5–35.2)	n/a	31.3 (20.1–45.3)

\* Estimate has a relative standard error of 25% to 50% and should be used with caution. n/a not available for publication.

# Alcohol consumption

Alcohol is widely used in Australian society and many people consume at levels that pose little or no risk to health. However, about 1 in 5 adults are consuming at risky levels. High risk consumption is contributing to a range of social harms including violence, some of which is hidden—1 in 5 Australian children are affected by others’ drinking.

National guidelines have been set to reduce health risks from drinking alcohol.<sup>173</sup> They have identified disease risk arising from lifetime drinking patterns, and risk associated with excess consumption on a single occasion that can lead to more immediate outcomes such as road traffic injuries, violence, falls and drowning.

Alcohol consumption is substantially higher in males than in females, in fact about three-quarters of risky drinkers are males. It is not just young males consuming at this risky level, it is a problem for men into their late 60s and 70s. Queenslanders in remote areas have higher consumption patterns, but there are no socioeconomic differences. Although alcohol misuse is contributing to harms in a number of Aboriginal communities, on average, Indigenous Queenslanders do not have a higher prevalence of risky consumption.

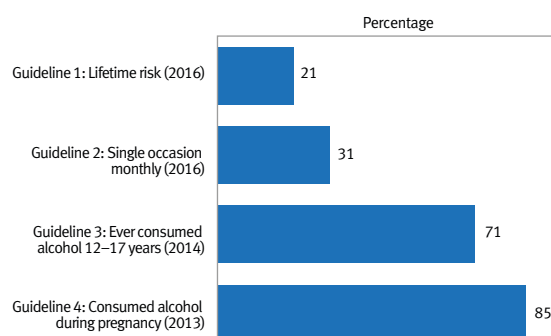
Patterns of consumption are changing. Fewer young Queensland males are drinking at risky levels, but for older males, consumption is increasing—in 2016, for the first time the prevalence of risky consumption among young males and older males was similar. Nationally, there has been a decline in per capita consumption in recent years, the average age of first full serve of alcohol has increased slightly and the prevalence of both lifetime risk and single occasion risk has dropped a little.

There is growing concern about the social and health system impacts of alcohol misuse. It was recently assessed as the fourth largest cause of disease and injury burden in Australia and the second largest cause of disability burden. This assessment did not include the wider social impacts.

Alcohol plays a role in some cases of domestic violence and associated homicides. It is impacting on frontline services such as nursing and medical staff, ambulance officers and police. In response to the growing awareness and concern about this issue, strategies and policies to counter its impact are being developed.

Within the health sector, it is difficult to accurately quantify the number of patients whose admission and care in acute treatment settings is wholly or partially alcohol-related. This is because medical information in different settings is collected and coded for different purposes than those that are primarily related to the immediate care need of the individual. For example, health information recorded at an accident scene is

Figure 51: Alcohol consumption, Queensland



### Key statistics

- 780,000 adults exceeded the guideline for lifetime risky drinking in 2016, and 590,000 were males.
- 1,150,000 adults exceeded the guideline for single occasion risky drinking (at least monthly) in 2016, and 790,000 were males.
- 160,000 young adults aged 14–17 years had consumed alcohol in 2013.
- The average age of first serve of alcohol was 15.7 years in 2013.
- 62,000 secondary students (12–17 year olds) had consumed alcohol in the previous week in 2014.



different from information recorded in hospital. As a patient transitions, for example, from ambulance to emergency department to hospital, important information regarding contributing causes to the current health event are not always captured.

Nevertheless, about 6% of ambulance call-outs were associated with alcohol, and in three-quarters of these, the patient was intoxicated. The impact in emergency departments is not fully quantified but is increasingly recognised as a problem.

# Alcohol consumption

The measurement and monitoring of alcohol consumption is based on the 2009 National Health and Medical Research Council (NHMRC) guidelines.<sup>173</sup> A standard drink is defined as any drink containing 10gm of alcohol.

## What is the prevalence?

Based on the national guidelines (Figure 51, Figure 52):

- Lifetime risk—21% of adults exceeded the guideline in 2016
- Single occasion risk—31% of adults exceeded the guideline at least monthly in 2016
- Alcohol consumption among school students aged 12–17 years (Guideline 3)<sup>119</sup>
  - 17% of students consumed alcohol in the previous seven days in 2014
  - of the 19% who had consumed alcohol in the previous 12 months, more than half (56%) had consumed more than four drinks in the previous four weeks.
- Pregnancy (Guideline 4):
  - 15% of Australian women fully abstained from alcohol during their pregnancy in 2013.<sup>28</sup>
  - Of those who had consumed alcohol, 33% consumed small amounts relatively infrequently (one or two drinks on any occasion and doing so less often than once a month) while others drank at higher levels: 7% drank more than five drinks per day at any time.

Figure 52: Australian guidelines to reduce health risks from drinking alcohol, 2009<sup>173</sup>

<b>Guideline 1: lifetime risk</b>
Healthy men and women
<i>No more than 2 standard drinks on any one day</i>
<b>Guideline 2: single occasion risk</b>
Healthy men and women
<i>No more than 4 standard drinks on a single occasion</i>
<b>Guideline 3: risks for adolescents</b>
Children and young people under 18 years of age
<i>Not drinking is the safest option</i>
<b>Guideline 4: risks to fetus and breastfeeding baby</b>
Pregnant and breastfeeding women
<i>Not drinking is the safest option</i>

## Is it the same for everyone?

The number and prevalence of risky drinking by sociodemographic groups is presented in Figure 56, page 91.

### Sex

- Adult males were 2–3 times more likely than females to drink at risky levels in 2016 (Table 19):
  - lifetime risk: 32% compared with 11% for females
  - single occasion risk on a monthly basis: 43% compared to 20% for females.
- Among school students in 2014, boys and girls were equally likely to have ever had an alcoholic drink, to have had one in the previous 12 months or in the previous seven days.<sup>119</sup>

### Age

- Lifetime risky alcohol consumption varied very little by age for adult males in 2016—with about 1 in 3 exceeding the guidelines in young adulthood and into their 70s. Exceeding the single occasion risk at least monthly decreased with age from over half of 18–24 year old males doing so to about one-third of those in their 70s (Table 19).
- Women were less likely to exceed the risky drinking guidelines (about 1 in 10 for lifetime risk and 1 in 4 for single occasion risk), and their drinking patterns decreased markedly with age.
- Among school students, age was associated with increased consumption of alcohol. The prevalence of having had an alcoholic drink in the previous 12 months increased from 28% among 12–13 year olds to 49% among 14–15 year olds and 75% among 16–17 year olds. The pattern was more pronounced for consumption in the previous seven days—6% among 12–13 year olds, 14% among 14–15 year olds, and 36% among 16–17 year olds.<sup>119</sup>

### Socioeconomic status

There was no difference in risky alcohol consumption among adults in socioeconomically advantaged and disadvantaged areas whether drinking at lifetime risk or single occasion risk in 2016 (Table 19).

### Remoteness

In 2016, adults living in outer regional and remote and very remote areas were more likely to exceed the lifetime risky guidelines than those in major cities (about 40% higher prevalence) but there was no difference for at least monthly single occasion risk (Table 19).

# Alcohol consumption

## Indigenous Queenslanders

Lifetime risky drinking among Indigenous Queenslanders did not differ from non-Indigenous adults. Due to their younger age profile Indigenous Queenslanders were more likely to have exceeded single occasion risk guidelines (59% versus 46%). However, after adjusting for age, there was no difference in consumption between non-Indigenous and Indigenous Queenslanders for lifetime risk or yearly single occasion risk in 2012–13.<sup>120</sup> A similar pattern was evident nationally—Indigenous Australians were about 15% more likely to exceed the single occasion risk guideline than non-Indigenous adults.<sup>155</sup>

Indigenous Queenslanders did not differ from Indigenous Australians for either of the alcohol consumption measures. Some communities do however, have high levels of risky drinking that are contributing to social harms including violence.<sup>174</sup>

## Regional Queensland

In 2015–16:<sup>122</sup>

- lifetime risky alcohol consumption was higher than the state average for six HHSs—53% higher for Central West, 37% for North West, 34% for Mackay, 32% for South West, 18% for Cairns and Hinterland and 15% for Sunshine Coast. Darling Downs was 31% lower.
- single occasion risky consumption (at least monthly) was higher than the state average in six HHSs—45% higher in North West and about 20% higher for Mackay, Central West, South West, Cairns and Hinterland and Central Queensland. It was 15% lower in Darling Downs.

More information is available in the HHS booklet (page i for details).

Risky alcohol consumption is decreasing for young males but increasing for older males.

## How do we compare?

### National

In 2013<sup>115</sup>:

- lifetime risky drinking in Queensland was 12% higher than national (21% compared with 19%) and was fourth highest among states and territories (Table 24, page 116).
- single occasion (monthly) risky drinking in Queensland was similar to national (29% compared with 27%) and was sixth highest among the states and territories.

### International

Australia had the 16th highest per capita consumption of alcohol (persons 15 years and older) among 35 OECD countries in 2014 (or nearest year).<sup>143</sup> In 2010, based on WHO assessment, Australia was ranked 20th highest per capita consumption among 190 countries (12.2 litres per person)—males were ranked 22nd highest (17.3 litres per person) and females 11th highest (7.2 litres per person).

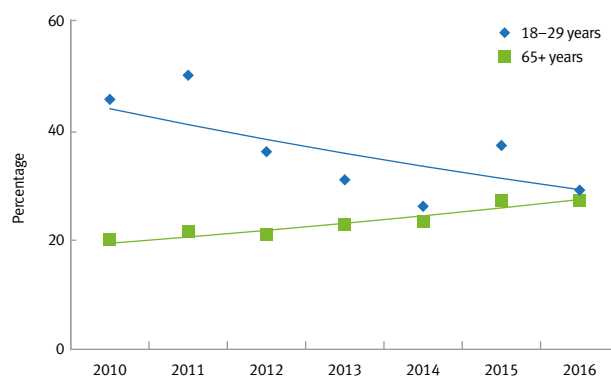
## What are the trends?

Between 2010 and 2016, lifetime risky alcohol consumption remained stable for Queensland adults.<sup>127</sup> There was, however, change for several sociodemographic groups. The prevalence of lifetime risky consumption (Figure 53):

- decreased by 6.6% per year for young males (18–29 years)
- increased by 5.9% per year for older males (65 years and older).

The decrease in consumption for young males was evident across the state. Similar changes were evident for females but the change in prevalence was very low.

Figure 53: Trends in prevalence of risky alcohol consumption by age group, adult males, Queensland



# Alcohol consumption

National changes in drinking patterns were evident between 2010 and 2013. Among Australian adults<sup>175</sup>:

- lifetime risky drinking decreased by 11%
- monthly single occasion risky drinking decreased by 9%
- abstinence increased by 10%
- average age of first serve of alcohol among persons 14 years and older was 17.2 years in 2013, compared with 17.0 years in 2010.

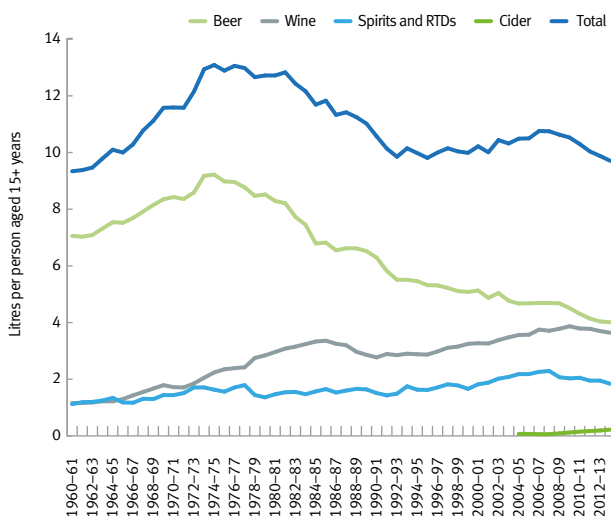
Together, these may signal early signs of change in the Australian drinking culture.

In 2013–14, a total of 184 litres of pure alcohol was available for consumption in Australia, a 1% decrease from the peak volume recorded in 2009–10.<sup>176</sup> Per capita consumption decreased by 26% over the 40 years, from 13.1 litres per person in 1974–75 to 9.7 litres in 2013–14 (Figure 54).

There has been change in drinking preferences nationally (Queensland data is not available):

- Beer consumption peaked in 1974–75 and has since decreased by 57% to 4.0 litres of pure alcohol per person in 2013–14.
- Wine consumption peaked in 2009–10 decreasing by 6% to 3.6 litres in 2013–14.
- Spirits and ready to drink spirits peaked in 2007–08 decreasing by 20% to 1.8 litres in 2013–14
- Cider consumption has tripled since official statistics were first recorded in 2004–05 from 0.07 litres to 0.22 litres in 2013–14.<sup>176</sup>

**Figure 54: Trends in apparent consumption of pure alcohol by beverage type, Australia 1960–14<sup>176</sup>**



## What are the impacts?

### Burden of disease:

Of the risk factors in 2011, alcohol was the fourth largest cause of disease burden in Australia, accounting for 5.1% of total DALYs (Table 2, page 12).<sup>12</sup> Overall, males experienced 71% of the burden due to alcohol. Data for Queensland is not currently available.

The four leading health outcomes associated with alcohol and accounting for over half the DALY burden were alcohol-use disorders (29%), suicide and self inflicted injuries (11%), coronary heart disease (7%) and road transport injuries (6%).

The impact of alcohol on the disease burden differed by age. Injuries contributed to over 50% of the alcohol burden between the ages of 20 and 29 years. Mental and substance use disorders made up over 40% of the burden up to 45 years. Cardiovascular effects increase with age and were the major outcome of risky alcohol consumption in older age groups.

### Deaths

In 2011, alcohol accounted for 6570 deaths in Australia (4.5% of all deaths) and an estimated 1300 were Queenslanders (Table 2, page 12).<sup>12</sup>

### Disability

Alcohol was the second largest cause of loss of healthy years in Australia in 2011 causing 4.0% of YLD burden (Table 2, page 12).<sup>12</sup> Data for Queensland is not currently available.

### Expenditure

The most recent national assessment of the costs of alcohol use was in 2004–05 (also discussed on page 54).<sup>105</sup> Based on Queensland's share of the Australian population, in 2004–05 the financial cost of alcohol consumption to the Queensland economy was \$2.17 billion, with \$0.4 billion spent on healthcare, \$0.72 billion in productivity losses including absenteeism, \$0.31 billion in home production losses, \$0.32 billion in crime and \$0.44 billion in road transport injuries. Health system costs were 18% of the tangible or financial costs. Intangible losses associated with early death and loss of wellbeing were assessed at \$0.9 billion taking the total cost of excess alcohol to Queensland society in 2004–05 to \$3.06 billion.

**More than 80% of the financial costs associated with alcohol occurred outside the health system.**

# Alcohol consumption

## *Alcohol: the health system and society*

The harmful impact of alcohol misuse is evident in society as well as in the health sector. It is sometimes associated with violence, and there is growing awareness regarding the harms that are occurring in homes, families, workplaces and in the community. This section includes data from a range of sources to provide some insight into the wider impact of alcohol misuse.

Data to describe alcohol misuse is limited in quality, completeness and accuracy and is unlikely to fully capture the scope and scale of the issue. For example, data on social impacts are incomplete because violence, particularly in the home, remains a sensitive issue and is consequently subject to under reporting. Emergency department databases reflect the priority of assessing and treating the presenting problem rather than documenting its cause. Sophisticated coding techniques are required to capture the impact of alcohol in ambulance data—the need for improved quality and the importance of this database is becoming increasingly apparent. Admitted patient hospitalisation data can be used to assess the scale of impact using population attributable fractions, which are subject to diagnosis criteria that capture, for example, both the cause and the outcome for injuries but not for chronic conditions. It is nevertheless evident that excessive alcohol consumption, including intoxication, has a substantial impact on society and across the continuum of health services. This snapshot will help to inform more comprehensive assessments in future.

### Health system impacts:

#### 1. Ambulance service attendances

In 2015, based on data from two separate months (March and June), the Queensland Ambulance Service attended about 3400 call-outs per month involving alcohol—over two-thirds of the patients were intoxicated (71%).<sup>177</sup> This was equivalent to about 41,000 attendances a year, and represented about 5.9% of all attendances.

In March and June of 2015, of the alcohol related attendances:

- 37% were for metropolitan areas (a similar proportion for patients who were intoxicated)
- 60% were for males (similar for intoxicated patients)
- 74% were aged 18–54 years (similar for intoxicated patients)
- 80% were transported to hospital (similar for intoxicated patients)—about 32,800 attendances
- 38% of attendances occurred over a 30-hour period (6pm Friday to 6am Saturday, 6pm Saturday to 6am Sunday and 6pm to midnight Sunday).

#### 2. Emergency department presentations

In 2014, there were 11,200 presentations of persons to emergency departments of Queensland hospitals that were flagged as ‘alcohol related’.<sup>178</sup> This is far fewer than the number that had been transported to a hospital by the Queensland Ambulance Service in the same year (about 32,800)—about one-third of the expected number. As described above, coding of alcohol in emergency department data is recognised as incomplete and/or potentially inaccurate, which means the scale of the problem is not fully understood.

In 2015, based on data from the Queensland emergency department database, and recognising the data limitations, details of alcohol related presentations were:

- 0.8% (about 11,200) of the 1.4 million emergency department presentations across the state
- 5% were admitted to hospital, 26% were admitted to a short stay or similar unit, 5% did not wait or left after treatment commenced, 63% were treated and discharged
- 62% were males
- 84% were for people aged 15–54 years and although peak rates were among the young (15–24 years), the overall burden was generally evenly spread across this age range
- 14% were Indigenous Queenslanders—about 3 times more than expected based on population share
- a slightly higher proportion of presentations for non-Indigenous people were females (39%) compared with 35% for Indigenous Queenslanders
- among the HHSs average rates of alcohol related presentations in 2013–2015 were substantially higher than the state average in North West (70% higher), Metro North and Cairns and Hinterland (both about 60% higher) and Townsville (30% higher). Differences between HHSs may be due to higher prevalence of alcohol consumption and intoxication in the population, the characteristics of the hospital catchment or a greater propensity to report, or a combination of all. Caution should therefore be exercised when interpreting this data.

1 in 5 Australian children and adults are affected by the drinking of others—these are some of the hidden harms.



# Alcohol consumption

## 3. Admitted patients

In a single year (2013–14), there were about 37,000 hospitalisations due to alcohol consumption in Queensland—about 1.8% of the 2 million hospitalisations for all causes in that year.<sup>87</sup> This does not equate to individual patients, rather to the sum of the contributing diagnoses. Alcohol has a greater impact on acute outcomes than on the development of chronic disease as is evident from the causes of the hospitalisations (Figure 55):

- 38% was for alcohol dependence and harmful use
- 14% for other unintentional injuries
- 12% for falls
- 7% transport accidents
- 4% coronary heart disease
- 4% for suicide and self inflicted injuries
- 3% for homicide and violence.

Additional information on hospitalisations due to alcohol use is reported on page 41.

### Social impacts: harms to others

Alcohol use, particularly consumption at high levels and high frequency, is a significant contributor to violence, both in private dwellings and public spaces. In 2008, about 1 in 5 adults (17%) and 1 in 5 children (22%) were reported to have been affected by others' drinking—these impacts are often described as the 'hidden harms' of alcohol.<sup>179</sup> Findings for Australia from an international study identified that 1 in 3 incidents of partner violence in the previous 12 months was alcohol-related (35%), that is, women reported their partner was drinking alcohol when the violence occurred.<sup>180</sup> Furthermore, women whose partners got drunk a couple of times a month or more often, experienced higher levels of violence than those whose partners got drunk less often.

National surveys of alcohol use and victimisation provide further evidence of the impact of alcohol-related violence. In 2013, 1 in 4 (26%) Queenslanders aged 14 years and older was a victim of alcohol-related violence (national rate was also 26%)<sup>115</sup>:

- Females were at least twice as likely as males to experience alcohol-related violence:
  - in their own home (36% compared with 19%).
  - by a current or former partner (30% compared with 12%).
- Females were 3 times as likely as males to experience intimidation and fear from a partner under the influence of alcohol (27% compared with 8%).
- Conversely, males were more than 3 times as likely as females to experience alcohol-related physical violence at a pub or club (44% compared 12%) and 60% as likely on the street (38% compared 23%).
- The violence experienced by males was more likely to result in serious injuries than that experienced by females (61% compared with 34%).
- About 1 in 3 younger people (aged 18–39 years) experienced violence by someone under the influence of alcohol—higher prevalence than any other age group.

Alcohol was associated with about one-third (37%) of homicides in Australia in 2010–2012.<sup>181</sup> For domestic homicides:

- 32% of victims were affected by alcohol
- 38% of offenders were affected by alcohol.

These data are likely to underestimate the role of alcohol, particularly among offenders, because of difficulty in testing for alcohol use at the time the crime was committed.

The relationship between alcohol and violent relationships is complex. While alcohol is seen as contributing factor to the increased likelihood of domestic violence, it should be viewed with other influences such as personal characteristics and circumstances, environmental and situation factors and social and/or cultural cues. It should not be considered the singular reason for domestic violence.<sup>182</sup>

# Alcohol consumption

**Table 19: Alcohol consumption, adults, percentage (95% CI), Queensland, 2016<sup>134</sup>**

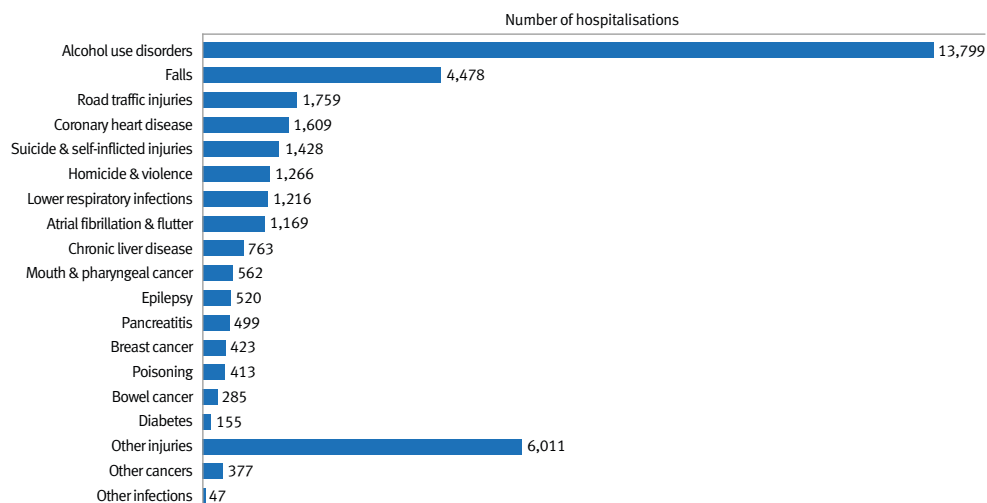
		Abstainers	Lifetime risky drinking	Single occasion risky drinking at least monthly	Single occasion risky drinking at least weekly
18+ years	Persons	18.2 (17.1–19.3)	21.1 (20.0–22.3)	30.9 (29.6–32.3)	14.4 (13.4–15.4)
	Males	15.5 (13.9–17.1)	31.5 (29.6–33.5)	42.6 (40.5–44.7)	22.2 (20.6–24.0)
	Females	20.8 (19.4–22.3)	11.0 (9.8–12.2)	19.5 (18.0–21.2)	6.7 (5.7–7.8)
Persons	18–24 years	14.7 (10.5–20.1)	21.3 (16.8–26.6)	46.2 (40.1–52.5)	16.7 (12.6–21.6)
	25–34 years	15.2 (12.5–18.4)	22.4 (19.4–25.8)	40.6 (36.9–44.3)	16.4 (13.7–19.5)
	35–44 years	15.0 (12.8–17.4)	23.3 (20.8–26.1)	35.1 (32.1–38.3)	17.1 (14.9–19.6)
	45–54 years	16.6 (14.4–19.0)	22.0 (19.7–24.4)	28.1 (25.6–30.8)	14.9 (13.0–17.0)
	55–64 years	17.7 (15.8–19.8)	21.2 (19.1–23.4)	25.2 (22.9–27.7)	13.3 (11.6–15.2)
	65–74 years	24.3 (22.1–26.6)	20.3 (18.2–22.5)	18.6 (16.6–20.7)	11.0 (9.4–12.8)
	75+ years	36.5 (33.2–39.8)	9.2 (7.5–11.4)	7.3 (5.8–9.1)	3.9 (2.9–5.3)
Males	18–24 years	17.4 (10.6–27.1)	29.6 (22.3–38.1)	53.7 (44.4–62.8)	22.8 (16.4–30.7)
	25–34 years	13.1 (9.3–18.1)	34.2 (29.1–39.7)	54.8 (49.0–60.4)	25.5 (20.9–30.7)
	35–44 years	12.8 (9.9–16.4)	33.1 (28.8–37.7)	46.5 (41.7–51.4)	25.2 (21.3–29.5)
	45–54 years	15.6 (12.7–19.2)	32.4 (28.5–36.5)	37.5 (33.4–41.7)	23.3 (19.9–26.9)
	55–64 years	13.5 (10.9–16.5)	31.6 (28.1–35.4)	39.0 (35.1–43.1)	21.0 (18.1–24.3)
	65–74 years	19.2 (16.3–22.5)	32.2 (28.7–35.9)	31.5 (28.0–35.2)	19.4 (16.6–22.7)
	75+ years	27.1 (22.4–32.3)	16.7 (13.2–20.8)	13.1 (10.1–16.6)	7.4 (5.4–10.2)
Females	18–24 years	12.1 (7.8–18.1)	13.3 (8.5–20.3)	39.1 (31.1–47.6)	*10.9 (6.5–17.7)
	25–34 years	17.5 (14.0–21.6)	10.4 (7.7–13.9)	26.0 (22.0–30.6)	7.0 (4.7–10.4)
	35–44 years	17.2 (14.2–20.7)	13.5 (11.0–16.4)	23.7 (20.4–27.4)	8.9 (7.0–11.4)
	45–54 years	17.4 (14.4–20.8)	12.5 (10.1–15.4)	19.7 (16.7–23.0)	7.3 (5.5–9.6)
	55–64 years	22.2 (19.4–25.2)	10.2 (8.4–12.4)	10.7 (8.7–13.1)	5.2 (3.8–7.1)
	65–74 years	29.1 (26.0–32.3)	9.1 (7.2–11.6)	6.4 (4.9–8.4)	3.1 (2.0–4.7)
	75+ years	44.3 (40.0–48.7)	3.1 (1.9–4.9)	*2.5 (1.4–4.2)	*1.0 (0.5–2.2)
Socioeconomic status	Disadvantaged	25.0 (22.6–27.7)	21.1 (18.9–23.4)	29.3 (26.8–32.0)	14.6 (12.7–16.7)
	Quintile 2	19.5 (17.5–21.7)	22.7 (20.5–25.0)	31.4 (28.9–34.0)	15.0 (13.2–17.0)
	Quintile 3	16.5 (14.6–18.6)	22.1 (19.9–24.5)	33.0 (30.2–35.8)	15.8 (13.9–18.0)
	Quintile 4	15.5 (13.2–18.0)	20.1 (17.5–23.0)	31.3 (28.2–34.7)	14.1 (11.8–16.8)
	Advantaged	14.7 (12.2–17.7)	19.7 (16.9–22.7)	29.4 (26.0–33.1)	12.4 (10.0–15.2)
Remoteness	Major cities	18.1 (16.6–19.7)	19.3 (17.8–20.9)	30.0 (28.1–32.0)	13.2 (11.8–14.6)
	Inner regional	18.1 (16.4–19.9)	21.9 (19.8–24.1)	29.9 (27.5–32.3)	14.8 (12.9–16.8)
	Outer regional	17.8 (15.5–20.2)	26.2 (23.7–28.8)	34.8 (32.0–37.7)	17.7 (15.6–20.0)
	Remote/very remote	21.5 (17.6–26.1)	26.6 (23.3–30.2)	35.8 (31.9–39.8)	18.2 (15.6–21.2)

\* Estimate has a relative standard error of 25% to 50% and should be used with caution.

Note 1: Low risk drinking has not been included, and neither has more than monthly single occasion risky drinking.

Note 2: Single occasion risky drinking at least monthly also includes at least weekly drinking.

**Figure 55: Number of hospitalisations due to alcohol consumption, Queensland 2013–14<sup>87</sup>**

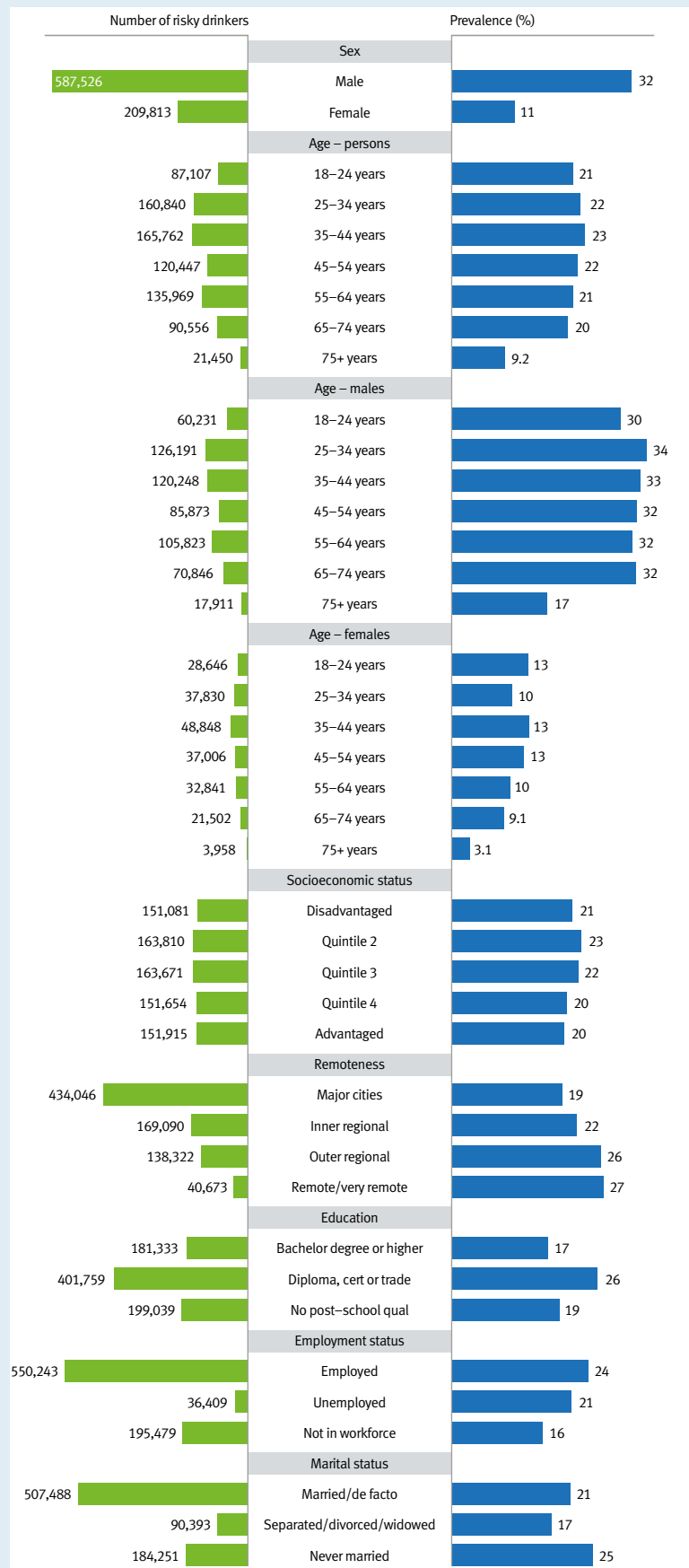


# Alcohol consumption

Figure 56: A sociodemographic profile of the ‘at risk’ population: lifetime risky drinkers<sup>134</sup>

In 2016, about 800,000 Queensland adults were drinking at lifetime risk.

- Three-quarters of risky drinkers (74%) were males, about 590,000.
- The majority of risky drinkers (86%) were aged between 18 and 64 years (about 700,000 people) and about 70% of these were males.
- Risky consumption varied very little across areas of socioeconomic advantage or disadvantage.
- More than half the risky drinkers (55%) lived in a major city (about 430,000 people). About 1 in 20 (about 40,000) lived in remote and very remote areas of Queensland.
- Almost 1 in 2 risky drinkers (45%) had a diploma, trade or certificate qualification (about 400,000 people) and 1 in 4 had no post-school qualifications (about 200,000 adults).
- About three-quarters of risky drinkers (70%) were employed (about 550,000 people).
- One in 20 adult risky drinkers was unemployed (5% or about 40,000 people).
- About two-thirds of adult risky drinkers (65%) were married or in a de facto relationship (about 510,000 people).



# Physical activity

Regular physical activity reduces the risk of cardiovascular disease, type 2 diabetes, some cancers, and depression. It improves wellbeing and helps in weight maintenance.

Over the past decade, adults have become more physically active and this has contributed to the reduction in death rates for coronary heart disease, stroke and colorectal cancer (page 28). There has been greater change in some population groups than others—for example there has been a substantial increase in physical activity of adults in disadvantaged areas that is not so evident for those in advantaged areas.

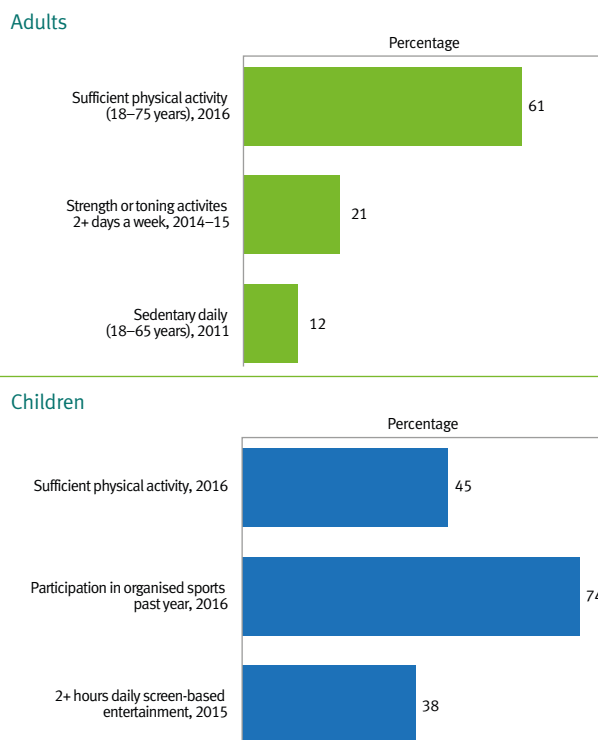
The amount of vigorous activity achieved each week by males from disadvantaged areas has doubled, as has the amount of time spent walking by both males and females from disadvantaged areas. The socioeconomic gap is narrowing mainly driven by male trends. It is possible that environmental change and accessibility have played a role in the positive changes evident in Queensland in recent years.

However, Queensland adults are still less active than other Australians on multiple measures— about 5–10% less, based on latest national estimates. Queensland children in contrast were more active than children nationally.

Changes are needed to counter the sedentariness and inactivity of modern lifestyles. While the national physical activity guidelines focus on achieving a minimum for health benefit, there are many gains to be achieved with even small increases in activity. This is often described as incidental activity and it could involve regular walking for shopping, for getting from place to place, going to work and for recreational purposes. The US Surgeon General has issued a call to take action to promote walking and walkable communities. People of all ages and abilities can participate in walking and there are no financial impediments. However, we need safe, secure environments to support this activity and while some areas of Queensland have made progress in this area, more can be achieved.

The foundations of good health are established in childhood. It is evident that many young children in Queensland are active in differing ways although just under half are meeting the national recommended minimum of one hour of activity every day. Furthermore, as children grow and develop the proportion meeting the guidelines decreases, with about 1 in 5 doing so by the time they reach 16–17 years, and, at the same time the amount of screen time increases substantially. During the teenage years, there is a clear pattern emerging of diminishing activity and increasing sedentariness. This is a concern to parents, as it is for the health sector.

Figure 57: Physical activity indicators adults and children, Queensland



**Key statistics:**

- 1.3 million Queensland adults were insufficiently active: 150,000 more women than men in 2016.
- 2.7 million Queensland adults did no strength or toning activities in the previous week while 760,000 did so on two or more days in 2014–15.
- 460,000 Queensland children did not meet the recommendation of being active every day, and of these 220,000 were inactive on four or more days per week in 2016.
- 300,000 children exceeded the recommended daily screen time for entertainment in 2015.

Addressing the challenges and supporting families and individuals to adopt an active lifestyle is important for the lifelong health of the population.

Increasingly, people are living into their 80s and 90s and to enjoy better health during the later years, activity is beneficial. There are national recommendations and, given the relatively low levels of activity on many of these measures among Queensland’s older population, more needs to be done to support people to be active throughout life and build environments that support this activity.

# Physical activity

The measurement and monitoring of physical activity in this section is based on multiple indicators including those derived from the 2014 Australian physical activity and sedentary behaviour guidelines.<sup>183</sup>

## What is the prevalence?

### Adults

- 61% of adults aged 18–75 years were sufficiently active for health benefit in 2016, that is, they participated in at least 150 minutes of moderate intensity physical activity on at least five sessions in the previous week (Table 21)—where many achieved 300 minutes of moderate activity (45% of all adults).<sup>134</sup>
- 21% had done no exercise for fitness, recreation, sport or transport in the previous week in 2014–15, while 38% had done some exercise on five or more days.<sup>37</sup>
- Among those who had participated at least once in some type of sport or physical activity in the previous 12 months in 2013–14, the most common forms of activity were<sup>184</sup>:
  - 1 in 5 had walked for exercise (19%)
  - 1 in 6 had attended a gym (17%)
  - 1 in 17 had been jogging (7%) cycling (6%) or swimming (6%).
- 1 in 5 (21%) Queensland adults had undertaken strength or toning activities on two or more days a week in 2014–15, 5% had done so on one day and 74% had done none.<sup>37</sup>
- 39% of Queensland adults (18–65 years) were sedentary (sitting for seven hours a day or more) on weekdays in 2011, 18% on weekends and 12% every day of the week<sup>185</sup>

The most common forms of physical activity for adults are walking and going to a gym.

### Children (Table 20)<sup>134</sup>

- 45% children were active for the recommended minimum of one hour every day in 2016:
  - 27% were active on three or less days a week
  - 23% were active on four or five days a week
  - 50% were active on six or seven days a week.
- 74% of children participated in organised sport (club or school based) in the previous 12 months in 2016.
- 38% of children exceeded the recommended maximum of two hours per day of screen based entertainment in 2015.

## Is it the same for everyone?

### Sex

- Adult females were 12% less likely to be sufficiently active than males (57% compared to 65%) in 2016 (Table 21).<sup>134</sup> Part of this difference was because females did fewer episodes of physical activity (31% more likely to do between one and four episodes of activity and 8% less likely to do five or more) and were less likely to achieve the recommended 150 minutes. For other indicators females did not differ from males:
  - frequency of exercising for fitness, recreation, sport or transport (on three or more days, 40% of females and 41% for males: on no days, 21% of females and 20% males) in 2014–15<sup>37</sup>
  - participation in sport and physical recreation activities (in the previous 12 months, 55% females and 53% males)<sup>184</sup>
  - frequency of strength and toning activities (on two days a week, 20% females and 21% males)<sup>37</sup>
  - sedentary behaviour, that is, sitting seven hours a day, seven days a week in 2011 (11% females, 14% males).
- The prevalence of being active every day did not differ between girls and boys in 2016 and nor did organised sport participation in the previous year (Table 20). However, for screen-based entertainment more boys than girls exceeded the recommendation (41% of boys and 34% of girls).

### Age

- The prevalence of sufficient physical activity decreased with age: from 77% in 18–24 year olds to 43% in those aged 75 years in 2016 (Table 21).
- A similar age pattern was observed for sport and physical recreation with the highest rate (64%) for 18–24 year olds and the lowest (40%) for those 65 years and older.<sup>184</sup>
- Young people (18–24 years) were 2.4 times as likely to undertake strength or toning activities on two or more days a week as those aged 65 years or older (29% compared with 12%) in 2014–15.<sup>37</sup>
- For children, the prevalence of being active every day was highest for 5–7 year olds (59%) and lowest for 16–17 year olds (27%) with a similar age pattern for boys and girls (Table 20).
- Participation in organised sport was also higher in younger than older children: 74% of 5–7 year olds and 51% of 16–17 year olds in 2016 (Table 20).
- Older children (16–17 years) were 2.3 times more likely to exceed the recommended screen time than younger children (5–7 years) (Table 20).

# Physical activity

## Socioeconomic status

- Adults living in socioeconomically advantaged areas were 14% more likely to achieve sufficient physical activity than those living in disadvantaged areas (66% compared to 58%) in 2016 (Table 21).
- Children’s activity based on achieving the recommended one hour every day in 2016 and exceeding the recommended screen time in 2015<sup>33</sup> did not differ by area of socioeconomic advantage or disadvantage (Table 20).
- Children living in socioeconomically advantaged areas were 33% more likely to play organised sport in the previous 12 months than those living in disadvantaged areas in 2016 (84% and 64% respectively) (Table 20). Children in higher income households were 2.2 times more likely to have participated in club based organised sport than those from lower income households in 2016 (67% compared with 31%) and for school based organised sport, 72% more likely (60% compared with 35%).<sup>134</sup>

## Remoteness

There was no difference in levels of sufficient physical activity for adults or for children in 2016 (based on multiple indicators) by remoteness (Table 21, Table 20).

## Indigenous Queenslanders

- 3 in 5 (60%) Indigenous Queensland adults in non-remote areas were sedentary or had low levels of physical activity in 2012–13. The rate did not differ from the non-Indigenous Queensland rate (59%) nor from the Australian Indigenous rate (61%), even after adjustment for age differences.<sup>121</sup>
- About 1 in 2 (49%) Indigenous Queensland children were active for the recommended minimum one hour per day in the previous three days in 2012–13 with a similar rate (38%) for non-Indigenous children.<sup>186</sup>
- About 3 in 5 (56%) Indigenous Queensland children exceeded the recommended maximum screen time in the previous three days in 2012–13—similar to the rate for non-Indigenous children (58%).<sup>186</sup>

## Regional Queensland

- In 2015–16, the prevalence of sufficient activity in adults was about 10% lower than the state average in three HHSs (South West, Darling Downs and Central Queensland) and in Torres and Cape it was 17% higher.<sup>122</sup>
- For children the prevalence of being active every day was 17% higher among children at the Sunshine Coast HHS but did not differ for any other HHS. More information on HHS indicators is available from the statistical tables online (page i for details).<sup>122</sup>

Compared to national prevalence, Queensland adults were less likely to be sufficiently active, whereas Queensland children were more likely to be active every day.

## How do we compare?

### National

- Queensland prevalence of adult sufficient physical activity was 9% lower than national and was second lowest of the jurisdictions after Tasmania in 2014–15 (Table 24, page 116).<sup>37</sup>
- In 2014–15, the Queensland prevalence of strength and toning activities on two or more days a week was 6% lower than national (22%) and second lowest of the jurisdictions after Tasmania.<sup>37</sup>
- Queensland prevalence of adult participation in sport and physical recreation in the previous 12 months was 10% lower than national (60%) and lowest of all the jurisdictions in 2013–14.<sup>184</sup>
- For Queensland children aged 2–17 years in 2011–12, the prevalence of being active at least one hour every day was 18% higher than Australia and third highest of the jurisdictions.<sup>187</sup>

## What are the trends?

The prevalence of sufficient physical activity in adults (defined as 150 minutes of moderate activity over five or more sessions in a week) increased in the early part of the past decade but has slowed in recent years. Between 2004 and 2009, the prevalence increased by an average of 6.2% per year and between 2010 and 2016 by 1.9% per year.<sup>122</sup>

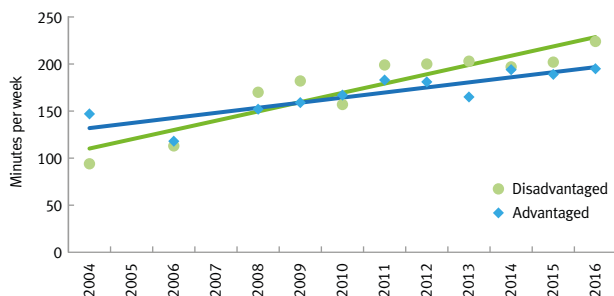
# Physical activity

There have been changes in activity among socioeconomic groups over the past decade (2004–2016).<sup>127</sup> The amount of time spent walking each week has increased substantially for both males and females from disadvantaged areas—from about 110 minutes per week in 2004 to 220 minutes in 2016 (Figure 58).

There has been an increase in vigorous activity, particularly for males from disadvantaged areas, from about 50 minutes per week in 2004 to about 120 minutes in 2016, compared with an increase from about 100 minutes to about 140 minutes for those in advantaged areas. As a result, the gap between advantage and disadvantage in terms of meeting physical activity guidelines is narrowing for males, with smaller gains for females.

The assessment of trends in children’s physical activity is limited by the number of years data has been collected but will be available in 2017. Preliminary assessment is showing no change in the childhood prevalence of being active every day since 2011.

**Figure 58: Trends in walking time (minutes per week) by socioeconomic status, adults, Queensland**



## What are the impacts?

### Burden of disease

Physical inactivity accounted for 5.0% of DALYs in Australia in 2011, and was the fifth largest risk factor associated with health loss (Table 2, page 12).<sup>12</sup> Queensland data is not currently available. More than half the health loss due to physical inactivity was associated with coronary heart disease (51% of the DALY burden), 14% with diabetes, 13% with bowel cancer, 11% with stroke and 11% with breast cancer.<sup>12</sup>

The amount of time spent walking by adults in disadvantaged areas doubled over a decade.

### Deaths

In 2011 for Australia, physical inactivity accounted for 11,489 deaths (7.8% of all deaths) and an estimated 2300 were Queenslanders (Table 2, page 12).<sup>12</sup>

### Disability and hospitalisation

Physical inactivity caused 2.1% of YLD burden in Australia in 2011 (Table 2, page 12).<sup>12</sup> Data for Queensland is not currently available.

In 2013–14, there were about 20,000 hospitalisations in Queensland due to physical inactivity, involving about 77,000 patient days—1% of the 2 million hospitalisations in Queensland in that year.<sup>87</sup> Of these hospitalisations, 70% were for coronary heart disease and stroke, 17% were for breast and colorectal cancer and 13% for diabetes.

### Expenditure

In 2008, it was estimated that insufficient physical activity resulted in \$672 million in health sector costs nationally, and \$1135 million in production losses (Table 10, page 54).<sup>107</sup> Based on population share, this was a total of \$361 million in Queensland, where 37% or \$134 million was associated with costs to the health sector and 63% or \$227 million was for production losses. More recent data is not available.

### Opportunities to improve physical activity

There have been some improvements in the prevalence of regular physical activity over the last decade and this has had a positive effect on the health of Queenslanders by contributing to a decrease in the burden of cardiovascular disease and some cancers. However, further gains are possible with targeted strategies to increase regular physical activity across all age groups. There are some specific issues to be addressed:

- Adults—there were about 320,000 adults who were inactive in the previous week in 2016. Another 1.0 million had been active, but not of sufficient frequency, duration or intensity to meet the recommended level. Supporting these people to introduce some regular physical activity, and for others to increase their activity levels will improve their wellbeing and reduce their risk of chronic disease. Doing any physical activity is better for health than none at all.<sup>188</sup>

## Physical activity

- Children—460,000 young Queenslanders aged between five and 17 years were not sufficiently active in 2016 based on the national recommendation of being active every day. Of these, about 220,000 were inactive on at least four days a week (100,000 boys and 120,000 girls). It is essential to build good foundations in childhood for lifelong health—and a large number of Queensland children are at risk of becoming inactive, sedentary adults, increasing their risk of chronic disease and unhealthy weight gain. There are, however, barriers and impediments for families when building an active lifestyle. Lack of time, concern about strangers and fitting in extra-curricular activities were the leading barriers identified by Queensland parents in their decision about children walking or cycling to school in 2014.<sup>170</sup> Financial barriers may limit participation in organised sport as suggested by socioeconomic data reported for Queensland on page 94. Excess screen time was the leading concern for Australian parents in 2015—56% identified it as a big health problem for children, followed by obesity (55%) and insufficient physical activity (54%).<sup>189</sup> Screen time is a prevalent issue among Queensland children, whether in cities, regional areas or remote areas and there is no difference among children in socioeconomically disadvantaged and advantaged areas.
- Strategies are needed to revitalise gains for adults and stimulate change in children’s activity. In the period up to 2009, there was an improvement in adult physical activity and after that, it slowed substantially. Furthermore, the early data is showing no change in the prevalence for children. The growth in the fitness industry almost certainly reflects an increased demand in support for active lifestyles—the number of gyms and fitness centres in Australia has increased by 3.5% per year over the past five years and the number of personal trainers by 8.7% per year.<sup>153,154</sup>
- The following strategies are recommended.
- Establish activity patterns in childhood—it is important to address the issue of childhood sedentariness and provide support for families and individuals to adopt an active lifestyle. This will require concerted action across many sectors.
  - Provide safe environments for walking—walking has been identified as a very common form of physical activity and is easily adopted by young and old and those with varying levels of ability. It is recommended by the US Surgeon General.<sup>190</sup> Importantly, there are no financial barriers to participation. Safe, supportive local environments are needed to encourage people to incorporate more walking into daily life.
  - Embed opportunities for regular physical activity into everyday life—disease risk is reduced significantly by small additions to daily routines. For example, incorporating an extra 10 minutes a day climbing stairs, 15 minutes vacuuming, 20 minutes running and 25 minutes walking or cycling, could reduce the risk of coronary heart disease by 16%, diabetes by 14% and colorectal cancer by 10%.<sup>191</sup>
  - Promote less sitting—sedentary behaviour is a conspicuous feature of contemporary life, with 12% of Queensland adults spending seven or more hours a day sitting, seven days a week. This is a universal problem and did not vary between males and females, younger and older adults, between socioeconomically advantaged and disadvantaged areas, or between cities and regional and remote areas. Over one-third (39%) of adults were sedentary on weekdays in 2011 while 18% were sedentary on weekends. About 2 in 5 children exceed the recommended screen time. Strategies to reduce sitting time at school, work, while travelling and during recreation periods are necessary.<sup>192</sup> The detrimental effect of prolonged sitting can be mitigated by regular physical activity.<sup>193</sup> The beneficial effect of moderate intensity physical activity increases with the duration—the evidence shows that 60–75 minutes a day of moderate activity eliminates the heightened risk from prolonged sitting.
  - Promote active ageing—supporting people to adopt regular physical activity practices as they age and particularly in life-course transitions such as the post-retirement period is essential. Population ageing, that is, an increasing number and proportion of older people in the population is evident across the whole state (Figure 3c, page 9). Many older people are inactive: 37% of those aged 65 years and older had done no exercise for fitness, recreation, sport or transport in the past week, about half were insufficiently active for health benefit, 87% had done no toning and strengthening exercises in the previous week. Healthy ageing, including maintaining and building an active lifestyle will contribute to a better quality of life. For example, regular, structured exercise which challenges a person’s balance can reduce the risk and severity of falls.<sup>194</sup>



## Physical activity

Table 20: Physical activity indicators, children, percentage (95% CI), Queensland<sup>33,134</sup>

		*Active every day of the past week	*Played organised sport in past 12 months	**Two or more hours per day of screen-based entertainment
5–17 years	Persons	44.5 (42.1–46.9)	73.8 (71.6–75.9)	37.8 (35.5–40.1)
	Males	46.8 (43.4–50.1)	74.0 (70.9–76.8)	40.9 (37.7–44.2)
	Females	42.0 (38.6–45.5)	73.7 (70.5–76.6)	34.4 (31.3–37.7)
Persons	5–7 years	58.6 (53.6–63.4)	73.9 (69.1–78.1)	22.1 (18.6–26.2)
	8–11 years	49.1 (44.5–53.7)	82.2 (78.6–85.4)	36.2 (31.9–40.8)
	12–15 years	37.6 (33.5–41.7)	77.0 (73.4–80.3)	44.3 (40.2–48.5)
	16–17 years	26.5 (21.4–32.3)	50.6 (44.4–56.7)	51.5 (46.0–56.9)
Males	5–7 years	58.1 (51.1–64.9)	72.2 (65.2–78.3)	24.4 (19.2–30.5)
	8–11 years	50.5 (44.1–56.9)	82.6 (77.3–86.8)	38.9 (32.9–45.2)
	12–15 years	43.4 (37.6–49.3)	76.5 (71.3–81.0)	48.5 (42.7–54.4)
	16–17 years	27.7 (20.9–35.6)	54.3 (45.9–62.4)	55.6 (47.9–63.0)
Females	5–7 years	59.1 (52.0–65.8)	75.6 (69.0–81.2)	19.6 (15.0–25.2)
	8–11 years	47.7 (41.1–54.3)	81.9 (76.4–86.3)	33.5 (27.5–40.1)
	12–15 years	31.4 (26.1–37.3)	77.6 (72.3–82.2)	39.9 (34.2–45.9)
	16–17 years	25.2 (18.0–34.1)	46.8 (38.0–55.7)	47.3 (39.7–55.1)
Socioeconomic status	Most disadvantaged	49.3 (43.9–54.8)	63.5 (58.1–68.5)	39.6 (34.6–44.8)
	Quintile 2	48.3 (43.2–53.4)	70.5 (65.4–75.2)	38.5 (34.0–43.3)
	Quintile 3	46.4 (41.1–51.8)	75.0 (69.9–79.4)	38.9 (33.9–44.2)
	Quintile 4	41.3 (36.0–46.7)	73.1 (67.9–77.6)	40.2 (35.0–45.6)
	Most advantaged	38.9 (33.6–44.4)	84.3 (79.9–87.9)	32.0 (27.2–37.3)
Remoteness	Major cities	42.8 (39.4–46.3)	78.0 (75.0–80.8)	36.0 (32.8–39.3)
	Inner regional	45.5 (41.2–49.8)	67.8 (63.4–71.9)	39.7 (35.5–44.1)
	Outer regional	46.5 (41.7–51.4)	69.4 (64.7–73.8)	40.5 (36.0–45.1)
	Remote/very remote	56.8 (43.3–69.4)	65.1 (51.7–76.5)	42.3 (30.5–55.1)

\* 2016 \*\* 2015

Table 21: Physical activity, 18–75 years, percentage (95% CI), Queensland, 2016<sup>134</sup>

		Inactive (no physical activity)	Insufficient time or sessions	Sufficient physical activity (>150mins over at least 5 sessions)
18+ years	Persons	9.3 (8.6–10.1)	29.4 (28.2–30.8)	61.3 (59.9–62.7)
	Male	9.0 (7.9–10.2)	25.7 (23.9–27.6)	65.3 (63.3–67.3)
	Female	9.6 (8.6–10.6)	33.2 (31.4–35.0)	57.3 (55.3–59.2)
Persons	18–24 years	*4.5 (2.7–7.4)	18.7 (14.6–23.5)	76.8 (71.6–81.3)
	25–34 years	7.5 (5.8–9.6)	27.6 (24.4–31.1)	64.9 (61.2–68.4)
	35–44 years	8.5 (6.9–10.4)	29.8 (27.0–32.8)	61.7 (58.5–64.8)
	45–54 years	8.8 (7.4–10.6)	30.0 (27.3–32.9)	61.2 (58.2–64.1)
	55–64 years	11.5 (9.9–13.2)	33.0 (30.4–35.7)	55.5 (52.8–58.3)
	65–74 years	14.4 (12.6–16.3)	35.6 (33.1–38.2)	50.0 (47.4–52.7)
	75+ years	22.5 (15.6–31.2)	34.1 (25.7–43.7)	43.4 (33.8–53.5)
Males	18–24 years	n/a	15.4 (10.3–22.3)	81.1 (73.5–86.9)
	25–34 years	6.6 (4.4–9.9)	21.1 (17.0–26.0)	72.2 (67.0–76.9)
	35–44 years	8.5 (6.1–11.7)	24.7 (20.8–29.1)	66.8 (62.1–71.3)
	45–54 years	10.5 (8.0–13.6)	28.3 (24.5–32.5)	61.1 (56.7–65.5)
	55–64 years	11.1 (8.9–13.7)	30.9 (27.1–35.1)	58.0 (53.8–62.1)
	65–74 years	13.2 (10.9–15.8)	33.4 (29.7–37.2)	53.5 (49.5–57.4)
	75+ years	*19.9 (11.3–32.6)	*24.0 (14.1–37.8)	56.0 (41.8–69.4)
Females	18–24 years	*5.4 (3.1–9.3)	21.8 (16.0–28.9)	72.8 (65.3–79.2)
	25–34 years	8.4 (6.2–11.4)	34.3 (29.6–39.2)	57.3 (52.4–62.2)
	35–44 years	8.5 (6.6–10.9)	35.0 (31.1–39.1)	56.5 (52.3–60.5)
	45–54 years	7.3 (5.8–9.3)	31.5 (27.8–35.5)	61.2 (57.1–65.1)
	55–64 years	11.9 (9.9–14.3)	35.2 (31.7–38.7)	52.9 (49.3–56.5)
	65–74 years	15.5 (13.0–18.4)	37.7 (34.3–41.2)	46.8 (43.2–50.3)
	75 years	25.5 (15.8–38.4)	46.1 (33.6–59.0)	28.4 (18.1–41.6)
Socioeconomic status	Disadvantaged	12.0 (10.5–13.8)	29.7 (27.2–32.3)	58.3 (55.4–61.1)
	Quintile 2	11.3 (9.7–13.0)	29.6 (27.1–32.2)	59.1 (56.3–61.8)
	Quintile 3	9.6 (8.1–11.3)	31.4 (28.7–34.2)	59.0 (56.1–62.0)
	Quintile 4	7.7 (6.2–9.6)	29.2 (26.2–32.4)	63.0 (59.7–66.3)
	Advantaged	6.2 (4.7–8.2)	27.5 (24.3–30.9)	66.3 (62.6–69.7)
Remoteness	Major cities	7.8 (6.8–8.9)	28.4 (26.6–30.3)	63.8 (61.8–65.7)
	Inner regional	12.2 (10.6–14.0)	31.1 (28.7–33.5)	56.7 (54.1–59.3)
	Outer regional	10.6 (9.1–12.4)	31.5 (28.7–34.3)	57.9 (54.9–60.9)
	Remote/very remote	12.3 (10.1–14.9)	29.8 (26.1–33.7)	57.9 (53.7–61.9)

\* Estimate has a relative standard error of 25% to 50% and should be used with caution. n/a not available for publication.

# Blood pressure and cholesterol

High blood pressure and high blood cholesterol are described as metabolic risk factors, particularly important in the development of cardiovascular disease (page 22).<sup>195</sup> In Australia in 2011, 69% of the cardiovascular disease burden was due to modifiable risks, where high blood pressure and cholesterol independently contributed 30% and 15% respectively.<sup>12</sup>

High blood pressure, often referred to as hypertension, was assessed by physical measurement in the 2014–15 national survey.<sup>37</sup> High blood cholesterol was based on a national blood measurement survey in 2011–12.<sup>172</sup>

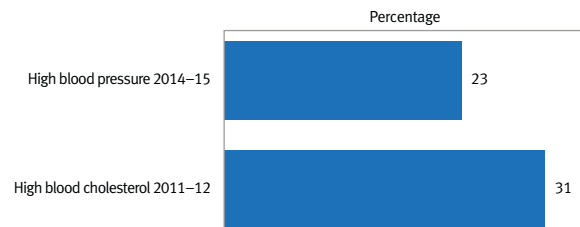
Hypertension was the most frequently managed problem by GPs over a decade, and lipid disorders among the top 10 problems. Nevertheless, undiagnosed cases of these metabolic risks are an ongoing challenge:

- 3 in 4 Australian adults with measured high blood pressure were unaware they had it in 2014–15.<sup>37</sup>
- 9 in 10 Australian adults with high cholesterol in 2011–12, did not know they had it.<sup>172</sup>

As a result, there is a heightened risk of chronic diseases in these individuals, specifically cardiovascular disease, diabetes and renal disease.<sup>196</sup>

Improved cardiovascular disease outcomes—relatively fewer deaths and fewer hospitalisations—have been achieved through successful prevention, early

Figure 59: High blood pressure and cholesterol, adults, Queensland



Key statistics (2016 population, and excluding those on effective treatment):

- 850,000 adults had measured high blood pressure
- 1.1 million adults had high cholesterol levels based on blood measurement.

diagnosis and improved treatment. Identifying cases of undiagnosed high blood pressure and cholesterol and effectively treating them has the potential to reduce the cardiovascular burden even further, reduce health system costs and improve life expectancy and quality of life of many Queenslanders. Reducing these risks by reducing salt intake, increasing physical activity and maintaining a healthy weight is essential, particularly with an ageing population.

## What is the prevalence?

- In 2014–15, 23% of Queensland adults had high blood pressure. This excludes those who were taking medication that effectively controlled the condition.<sup>37</sup>
- In 2011–12, 31% of Queensland adults had high total cholesterol.<sup>197</sup> This excludes those who were taking medication that effectively controlled the condition.
- Considering those who had been diagnosed and treated, as well as those who were undiagnosed, in 2011–12, 64% of Queensland adults were dyslipidaemic and 30% were hypertensive.<sup>31,197</sup>

Hypertension is the most frequently managed problem by GPs nationally.

## How does it differ?

- The prevalence of high blood pressure in Queensland adults in 2014–15<sup>37,49</sup>:
  - was similar for males and females
  - increased markedly with age: prevalence in adults 65 years and older was 4–5 times that of 18–34 year olds
  - did not differ from the national prevalence
  - was ranked fifth highest among the eight jurisdictions.
- The prevalence of high total blood cholesterol in Queensland adults in 2011–12<sup>197</sup>:
  - did not differ by sex
  - steadily increased with age from about 30 years onwards
  - did not differ from the national prevalence
  - was ranked seventh highest among the eight jurisdictions.

# Blood pressure and cholesterol

## What are the impacts?

### Burden of disease

In 2011, of the risk factors, high blood pressure was the sixth largest cause of disease burden in Australia, accounting for 4.9% of total DALYs and high cholesterol the eighth largest at 2.4%.<sup>12</sup> Both risks had a greater impact on fatal outcomes (YLL) than on disability (YLD)—80% compared to 20% for each. Queensland data is not currently available.

The main disease outcomes from high blood pressure were coronary heart disease (52% of accountable DALYs), stroke (25%), chronic kidney disease (6%) and the remaining 17% was for a range of other cardiovascular diseases.<sup>12</sup> The burden due to high cholesterol was associated with coronary heart disease (91%) and stroke (9%).

### Deaths

In 2011 of the risk factors, high blood pressure was the third largest cause of death and accounted for 14,570 deaths (10% of all deaths) and an estimated 2900 were Queenslanders (Table 2, page 12).<sup>12</sup> High blood cholesterol accounted for 5174 deaths in Australia (3.5% of all deaths nationally) and an estimated 1000 were Queenslanders.

### Disability and hospitalisation

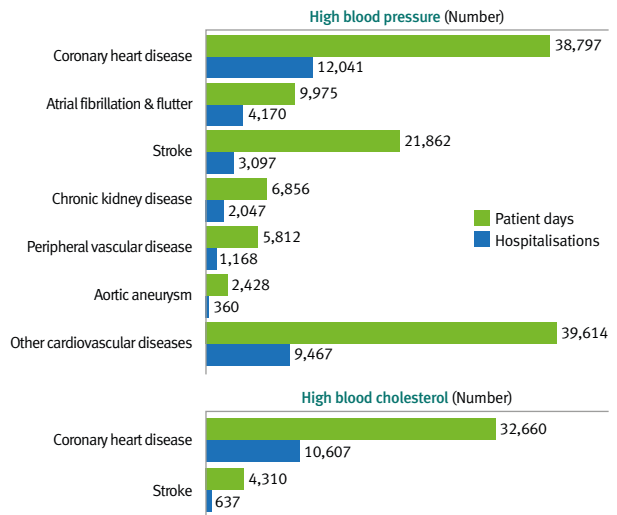
High blood pressure caused 2.0% of YLD burden in Australia in 2011 and high cholesterol 1.0% (Table 2, page 12).<sup>12</sup> Data for Queensland is not currently available.

Hypertension is the most frequently managed problem by GPs nationally.<sup>198</sup> There has been a decline in encounters for hypertension in the past decade from 9.4% in 2005–06 to 7.9% in 2014–15, however, it has remained the leading managed problem. Lipid disorders were the ninth most frequent problem managed in 2014–15 accounting for 3% of encounters.

In 2013–14 there were about 32,000 hospitalisations due to high blood pressure in Queensland, 1.6% of the 2 million hospitalisations for all causes in that year.<sup>87</sup> Of these, over 80% were for coronary heart disease and stroke (Figure 60).

For high cholesterol there were about 11,000 hospitalisations (0.5% of total), entirely associated with coronary heart disease and stroke.<sup>87</sup> Hospitalisation data for HHSs is available from the statistical tables published online (page i for details).

Figure 60: Hospitalisations for high blood pressure and high cholesterol, Queensland 2013–14<sup>87</sup>



## The importance of having regular check-ups

High blood pressure and cholesterol are influential contributors to health loss in Queensland. Some of the long-term gains in cardiovascular disease, including declining death rates, better survival and fewer hospitalisations, are due to the development and use of effective medications for treating these risks.

Queensland adults need to be aware of their blood pressure and cholesterol levels to ensure appropriate action is taken early.<sup>196</sup> This is as important for young to middle aged adults as it is for older people. For example in 2011–12, of the 18–24 year olds who were measured with high blood pressure in a national measurement survey, 97% did not know they had it, and even of those aged 75 years and older 51% were unaware.<sup>172</sup>

In 2011–12, more than 1 in 10 (11%) of Australians aged 45–74 years was at high risk of a primary cardiovascular event in the following five years, and most were not receiving treatment for high blood pressure or blood lipids.<sup>196</sup> A further 8.7% had a history of cardiovascular disease, requiring monitoring and treatment. Assessing absolute risk and testing of the metabolic risk factors in GP clinics, pharmacies and other settings is critical to achieving early diagnosis and taking action.

While drug therapy is commonly used to treat high blood pressure and cholesterol and is essential to the treatment in some individuals, there is clearly benefit in also improving the modifiable risk factors of obesity, physical inactivity, and dietary choices such as high fat and high salt foods. This will lead to healthier lives, better quality of life and may reduce the reliance on pharmaceuticals, one of the high cost components in treating cardiovascular disease.

# Illicit drug use

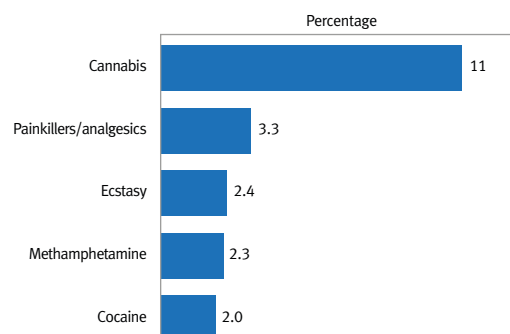
Illicit drug use includes use of illegal drugs (such as cannabis), the use of pharmaceutical drugs for non-medical purposes (such as tranquillisers) and the misuse of other substances (such as paint, glue or petrol as inhalants).

Typically, illicit drug use is initiated in late teenage years and peaks in young adulthood, although a small minority continue the practice into middle age—6% of 50–64 year olds were using cannabis and 4% using painkillers or analgesics for non-medicinal purposes.

The social impact of drug use is high—crime associated costs were about 20 times health system costs. The long term health impact is evident in chronic liver diseases and cancer.

Patterns of drug use and harms change. While the prevalence of methamphetamine use in the community is still relatively low, there has been a consistent increase in the purity of the drug since 2010. Regular users of the drug report more frequent use, and greater use of the crystalline form, commonly called ‘ice.’ This has resulted in a range of harms experienced by individuals, families and communities and is impacting on emergency department presentations, hospital admissions and treatment through alcohol and other drug services.

Figure 61: Prevalence of recent illicit drug use, persons 14 years and older, Queensland, 2013<sup>115</sup>



### Key statistics:

- About 590,000 persons aged 14 years and older had used any illicit drug in the previous year in 2013.
- The majority had used cannabis (420,000) and more than half of these (250,000) had not used any other drug.
- About 125,000 had used painkillers and analgesics for non-medical purposes and more than half of these (about 76,000) had not used any other drug.
- About 90,000 had used methamphetamine in the previous 12 months with about 11,000 daily or weekly users.

### What is the prevalence?

- In 2013, 16% of Queenslanders aged 14 years and older had used illicit drugs in the previous 12 months (defined as recent use).<sup>115</sup>
- The most commonly used were marijuana/cannabis (11%), pain killers/analgesics (3.3%), ecstasy (2.4%), methamphetamine (2.3%) and cocaine (2%) (Figure 61).<sup>115</sup>
- Poly-drug use varied by type of drug<sup>115</sup>:
  - Cannabis users and those who used pharmaceutical drugs for non-medicinal purposes were less likely to use other illicit drugs (60% had only used the one drug).
  - Of those who used methamphetamine, 94% had also used at least one other illicit drug, as had 86% of cocaine users, with poly-drug use common to most other drug types.

### How does it differ?

The prevalence of recent drug use in Queenslanders aged 14 years and older in 2013<sup>115</sup>:

- was 67% higher in males than females (20% compared with 12%)
- was initiated at 19.2 years on average, and peaked in the 20–29 year age group
- did not differ from national prevalence
- was ranked fourth highest among the eight jurisdictions.

### What are the impacts?

#### Burden of disease:

In 2011, of the risk factors, illicit drug use was the tenth largest cause of disease burden in Australia, accounting for 1.8% of total DALYs.<sup>12</sup> The main outcomes from illicit drug use were drug use disorders (40% of attributable DALYs), chronic liver disease (31%), liver cancer (20%), suicide and self inflicted injuries (8%) and the remaining 0.5% was due to HIV/AIDS, hepatitis C (acute) and hepatitis B (acute).

# Illicit drug use

Males experienced 75% of the drug use burden. Peak DALY burden occurred between the ages of 25 and 54 years and after that it decreased, although the burden associated with liver cancer and chronic liver disease was long-lasting, affecting people into their 80s.

## Deaths

In 2011 for Australia, illicit drug use accounted for 1926 deaths (1.3% of all deaths) and an estimated 400 were Queenslanders (Table 2, page 12).<sup>12</sup>

## Disability and hospitalisation

Illicit drug use caused 1.3% of YLD burden in Australia in 2011 (Table 2, page 12).<sup>12</sup> Data for Queensland is not currently available.

In 2013–14 there were about 6900 hospitalisations due to illicit drug use in Queensland, 0.3% of the 2 million hospitalisations for all causes in that year.<sup>87</sup> Of these, 62% were for drug dependence disorders, 25% for chronic liver disease, 7% for liver cancer, 6% for self-harm and suicide and the remaining 0.6% were due to HIV/AIDS, hepatitis B and hepatitis C. Hospitalisation data for HHSs is available from the statistical tables published online (page i for details).

## Expenditure

The most recent national assessment of the cost of illicit drug use was in 2004–05<sup>105</sup> (also discussed on page 54). Based on Queensland's share of the Australian population, in 2004–05, the financial cost of illicit drugs to the Queensland economy was \$1.4 billion, with \$0.04 billion spent on healthcare, \$0.4 billion on lost production (workplace and home), and \$0.89 on crime and road transport injury. Health system costs were 3% of the tangible or financial costs. Intangible losses associated with early deaths and loss of wellbeing were assessed at \$0.26 billion, taking the total cost of illicit drug use to Queensland society in 2004–05 to \$1.64 billion.

## The impact of methamphetamine use

Methamphetamine is a drug, a stimulant that is part of the amphetamine group often manufactured from common pharmaceuticals and readily-available household chemicals. It has the effect of speeding up the function of the brain and nervous system. There are three main forms—'ice' commonly describes the crystalline form of methamphetamine, usually smoked or injected; base is a damp or oily substance typically injected or swallowed; powder, also known as 'speed' can be snorted, injected or swallowed. Among people who use methamphetamine, crystal meth use more than doubled between 2010 and 2013 (from 22% to 50% of methamphetamine users), while use of powder almost halved (from 51% to 29%).

Harms associated with methamphetamine include mental disorders and mental health problems, potential for aggressive behaviour, a wide range of physical problems including heart disease and kidney failure with prolonged use, pregnancy related risks, and risk of bloodborne infections from injecting drug use.<sup>199</sup>

In 2013, about 1 in 40 Queenslanders aged 14 years and older reported having used methamphetamine in the previous 12 months.<sup>115</sup> In 2014, 1.1% of secondary school students aged 12–13 years had done so, 2.4% of 14–15 year olds and 3.5% of 16–17 year olds.<sup>119</sup> The majority (73%) of persons aged 14 years and older, who had used methamphetamines in the previous 12 months, had done so only a couple of times a year or every few months. About 1 in 8 (12%) were daily or weekly users and a similar proportion (15%) were monthly users.<sup>115</sup>

**Emergency department presentations** (persons 16 years and older)<sup>199</sup>:

- There were 1619 methamphetamine related presentations in 2014–15, a five-fold increase from 333 in 2009–10.
- Two-thirds were males—68% in 2014–15.
- 74% were for the age group 16–34 years—1206 in 2014–15.
- About one-third of those presenting to emergency departments were admitted to hospital.
- The proportion for Indigenous Queenslanders has been increasing, from 6% in 2009–10 to 11% in 2014–15.

**Admitted patient hospitalisations** (persons 16 years and older)<sup>199</sup>:

- There were 1968 hospitalisations related to methamphetamine in 2014–15, a 15-fold increase from 133 in 2009–10.
- Over the full five-year period, 66% was for males.
- The highest rates were in the age group 16–34 years.
- The Indigenous Queensland rate was 3.4 times the non-Indigenous rate, and accounted for 11% of admissions in 2014–15.
- Two-thirds (69%) were in major cities in 2014–15.
- 5% of admitted persons had three or more hospitalisations and accounted for 20% of all methamphetamine related episodes.

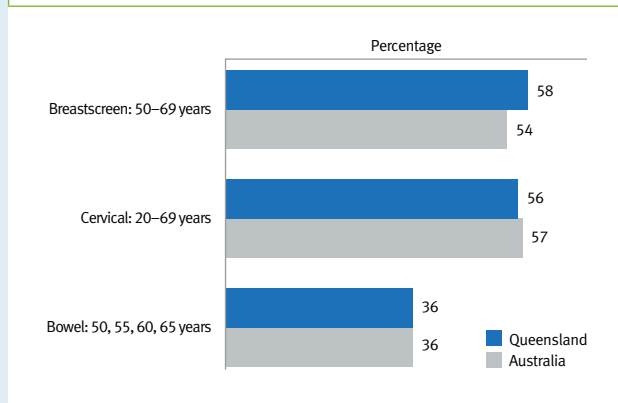
# Cancer screening

In Queensland, the delivery of population-based screening programs continues to have a positive impact on improving the health outcomes for men and women. The goal of these programs is to reduce the morbidity and mortality associated with breast, bowel and cervical cancers through early detection and prevention strategies.

### Key statistics:

- 310,000 women aged 50–69 years had been screened for breast cancer in the two-year period 2013–2014 through BreastScreen Queensland.
- 750,000 women aged 20–69 years were screened for cervical cancer through Pap smear test in the two years 2013 to 2014.
- 100,000 adults participated in the bowel screening program in the financial year 2013–14.

Figure 62: Participation in screening programs, Queensland and Australia, 2013–2014<sup>200-202</sup>



Note: Crude participation rates are displayed. The rates for breast and cervical screening programs are for the two-year period 2013–2014; the rate for bowel screening program is for one financial year 2013–14.

### Breast cancer screening

The target age group for the BreastScreen Queensland Program is women aged 50–74 years—having changed from 50–69 years in 2015. The new age group will be reflected in national reports from 2017 onwards. Women in the target age range are invited for a free mammogram every two years. In 2013–2014, of women aged 50–69 years, 58% participated in the program. In this period, participation in Queensland was<sup>200</sup>:

- higher than the national rate (54%) and highest of the states and territories
- higher in areas of greater socioeconomic disadvantage (65%) than lower disadvantage (53%)
- higher in inner and outer regional areas (58%, 62% respectively) than in major cities (56%) and lower in remote areas (52%)
- higher among culturally and linguistically diverse women (62%)
- lower for Indigenous Queensland women (46%).

Participation in the BreastScreen Queensland program has remained stable since 2002.

In 2013, invasive cancer was detected in 1220 Queensland women aged 40 years and older who had been screened through the program, about 40% of all breast cancer cases diagnosed in that age group.<sup>200</sup> Of these, just over half (58%) were small cancers (less than 15mm). Ductal carcinoma in situ was detected in 315 women through the screening program.

### Cervical screening

The Queensland Cervical Screening Program recommends cervical screening every two years for women aged 20–69 years. In 2013–2014, of women in the target age group, 56% participated in the program. Participation in Queensland was<sup>201</sup>:

- slightly lower than the national average (57%) and third lowest among the states and territories
- higher in areas of least socioeconomic disadvantage (59%) than all other areas
- higher for women living in major cities (56%) than other areas: inner and outer regional (54%, 56% respectively) and remote and very remote (46% and 50%).

Participation in the cervical screening program has remained stable since 2002. In 2014, 3691 Queensland women aged 20–69 years were diagnosed with a high grade abnormality providing an opportunity for treatment before possible progression to cancer.<sup>203</sup>

### Bowel cancer screening

The National Bowel Cancer Screening Program has continued to expand its target group since 2015 and now includes 64, 70, 72 and 74 year olds (as well as those aged 50, 55, 60 and 65 years). It will expand progressively until 2019 when two-yearly screening for all Australians between 50–74 years will be available.

More than half of women in the target age range participated in the breast cancer (58%) and cervical cancer (56%) screening programs.

# Cancer screening

The participation rate in 2013–14 in Queensland was 36% and did not differ from the national average (36%).<sup>202</sup> Preliminary assessment has shown no change in the participation rate in Queensland since the program commenced in 2008, although year to year variation is evident.

The National Bowel Cancer Screening Program uses the Faecal Occult Blood Test (FOBT) for screening. Between July 2013 and June 2014, 7397 Queenslanders (aged 50, 55, 60 and 65 years) returned a positive FOBT result (7.5% of participants).<sup>202</sup> Of these, 4538 participants underwent an assessment colonoscopy, and bowel cancer was detected in 36 participants—about 16% of cases diagnosed in these age groups.

## Prevalence and trends in breast, cervical and colorectal cancer

- In 2013, there were 3272 new cases of female breast cancer in Queensland, 187 new cases of cervical cancer and 2912 new cases of colorectal cancer.
- Over a decade (2004 to 2013) incidence rates for female breast cancer increased by 10%, cervical cancer rates did not change and colorectal cancer rates decreased by 12%.
- Incidence rates varied very little among the HHSs, with the following differences noted in 2011–2013:
  - female breast cancer was 42% lower in Torres and Cape, 16% lower in Wide Bay, 12% lower in Central Queensland
  - cervical cancer was 35% lower in Sunshine Coast
  - colorectal cancer was 10% lower in Metro South.
- In 2014 there were 513 female breast cancer deaths in Queensland, 58 cervical cancer deaths and 828 colorectal cancer deaths.
- Over a decade (2001 to 2011) death rates for female breast cancer decreased by 19%, cervical cancer rates did not change and colorectal cancer rates decreased by 31%.
- The HHSs did not differ from the state average for death rates for any of the three cancers in 2009–2011.

## Challenges and opportunities

Over the next few years, there will be a range of challenges and opportunities for population based screening for breast, bowel and cervical cancer.

From 1 May 2017, changes will be introduced to the National Cervical Screening Program in a joint initiative between the Australian and state and territory governments to provide better protection against cervical cancer. Based on new evidence, the test for cervical screening will change from the current Pap smear to a test for the human papillomavirus (HPV). Australia will be one of the first countries in the world to introduce HPV screening. HPV screening is as safe as Pap smear screening and more effective, with women only needing to be tested every five years. Recommended screening in Queensland will change to 25–74 years of age from 20–69 years. It will be a challenge to maintain and improve participation rates during the transition and implementation of the new test and testing regime.

Enhancing participation in screening programs is a priority, particularly for Indigenous Queensland women and those in rural and remote areas. Market research has identified a number of factors affecting awareness, motivators and barriers that will inform strategies to increase participation in population screening. These include:

- a statewide social marketing strategy to maximise public awareness of cancer screening programs and engagement with the primary health sector
- financial incentives for BreastScreen Queensland services to increase access to women through out-of-hours appointments
- a new BreastScreen Queensland online portal to assist new and existing clients to make or update screening appointments online at a time convenient to them.

Innovative approaches are needed to increase participation in the bowel cancer screening program with about one-third of invitees participating. The expansion of the National Bowel Cancer Screening Program to two-yearly screening for those aged between 50–74 years will result in greater demand for colonoscopy services.

Advancements in genetics and genomics provide an opportunity for greater understanding of and further exploration into potential tailored screening at the population level. New technologies in the BreastScreen Queensland program including tomosynthesis and remote radiology for the assessment pathway are further contemporary opportunities to support enhanced delivery of high quality and safe screening services in Queensland.

# Sun safety

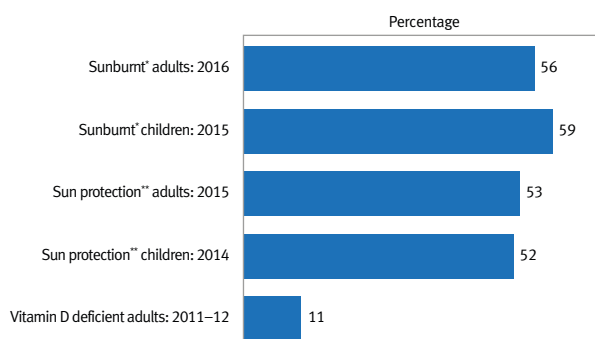
Ultraviolet radiation (UV), whether from the sun or a UV-emitting tanning device, is carcinogenic and exposure can cause melanoma and cancers of the outermost layers of skin. Queensland has the highest rate of melanoma in Australia, and Australia the second highest rate in the world after New Zealand.

While sun exposure puts people at higher risk of skin cancer, it is also an excellent source of vitamin D, a substance essential to human health. The higher rate of solar radiation in Queensland results in lower levels of vitamin D deficiency: about half the national prevalence and about one-third that of southern states.

In 2010, 6% of cancers in Australia were due to solar radiation—this is an underestimate because the assessment excluded basal cell and squamous cell cancers.<sup>54</sup> Appropriate use of sunscreen could reduce the prevalence of all skin cancers by 10–15%, and daily use could reduce the risk of melanoma by 75% and squamous cell cancer by 40%.<sup>204</sup> Sunscreen use is one of the five recommended ways to be sun safe.<sup>205</sup>

Melanoma is a prevalent cancer in Queensland with 1 in 14 people likely to be diagnosed in their lifetime. The survival rates are relatively high (a five-year relative survival of over 90%), and about 1 in 20 cancer deaths is due to melanoma. Males have higher rates of sunburn and are more likely to be diagnosed with a melanoma than females—incidence rates for males are still rising, while death rates are now steady. Female incidence rates are also rising, and death rates are steady.

Figure 63: Sun safety indicators, children and adults, Queensland



\* in the previous year \*\* 3 of 5 protection behaviours in summer

2.6 million Queenslanders had been sunburnt in the previous 12 months:

- 520,000 children in 2015
- 2.1 million adults in 2016, where 360,000 were aged 18–24 years.

For young people, melanoma is the leading cancer diagnosed. Melanoma incidence rates for young people are decreasing, demonstrating the benefit of sun protection policies in early childhood centres and schools over recent decades. However, three-quarters of young people reported being sunburnt in the previous 12 months, putting them at higher risk of long-term skin damage and skin cancers in later life. Capitalising on the good practice developed in childhood for teenagers and young people is essential to strengthen the early gains in lifelong skin cancer prevention.

## What is the prevalence?

- 56% of adults (2016) and 64% of children (2014) reported having been sunburnt in the previous 12 months (Table 22).
- 56% of adults (2015) and 52% of children (2014) adhered to three of the five sun protection guidelines in summer.
- 11% of Queenslanders were vitamin D deficient (mild, moderate or severe) in 2011–12, 6% in summer and 15% in winter.<sup>206</sup>

## How does it differ?

- Adult males were 20% more likely to report having been sunburnt than females, but there was no difference between girls and boys (Table 22). Sun protection practice did not differ by sex.

- Young adults were about 3 times more likely to report sunburn than older adults in 2016 (Table 22). Sun protection practice was highest in adults aged 35–64 years in 2015.
- Older children (12–17 years) were 54% more likely to have been sunburnt in the previous 12 months than younger children in 2016 (about 73% compared with 48%) (Table 22).

## What are the impacts?

### Sunburn prevalence:

In 2015–16, the prevalence of adult sunburn was higher than the state average in two HHSs (18% higher in Mackay, 8% higher in Central Queensland) and lower in one (7% lower in Metro South).<sup>122</sup> For children, the prevalence of sunburn in Mackay HHS was 16% higher than the state average in 2013–14, but did not differ for other HHSs.<sup>122</sup>



## Sun safety

Consultations for skin cancer and sunburn were the ninth largest cause of GP consultation in Australia.

**Cancer incidence:**

In 2013, there were 3697 new cases of melanoma where 59% were for males.<sup>207</sup> The male rate was 50% higher than the female rate. Melanoma incidence varied within HHSs and was higher at the Gold Coast and Sunshine Coast than the northern and western HHSs in 2011–2013. Detailed data is available from the statistical tables published online (page i for details).

**Deaths:**

In 2014, there were 352 melanoma deaths in Queenslanders, and 67% were males (237 males, 115 females).<sup>64</sup> The male rate was 2.1 times the female rate. About 1 in 7 deaths occurred in adults under 50 years of age with the number of deaths increasing with age, peaking in those aged 80 years and older.

**International and national comparisons:**

Queensland had the highest melanoma incidence rate among the jurisdictions in 2005–2009 (latest national assessment) and was 40% higher than national.<sup>208</sup> The melanoma death rate was similarly highest of the jurisdictions and 36% higher than the national rate.

Internationally, Australia had the second highest melanoma incidence and death rates (after New Zealand)—incidence rates were about 12 times the world average and death rates were 7 times the world average in 2012.<sup>209</sup> The projected number of new melanoma cases in Australia in 2027–31 was relatively lower than five other countries with high incidence rates (including New Zealand) evidence that Australian trends are slowing substantially.<sup>210</sup>

**GP visits:**

In 2014–15, consultations for skin cancer were the ninth most frequent reason for GP visits among chronic disease problems with 1.2 consultations per 100 encounters nationally.<sup>198</sup> Considering all encounters, skin cancer was among the top 30 reasons, having increased by about 20% over the previous decade. Consultations for sunburn were among the 30 leading reasons with 1.2 consultations per 100 encounters in 2014–15.

**Hospitalisations:**

In 2013–14, there were 24,290 hospitalisations for non-melanoma skin cancers and 3086 for melanoma. Males dominated with about 60% for both. About two-thirds (62%) of non-melanoma skin cancer hospitalisations were for people aged 65 years and older. For melanoma, the age of hospitalisation peaked in 60–79 year olds, accounting for 48% of total.

**Expenditure:**

Treatment of non-melanoma skin cancer was estimated to cost \$0.367 billion in Australia in 2008–09, 8.1% of total cancer expenditure across the healthcare sector.<sup>211</sup> The majority of the expenditure was associated with admitted hospital patient costs (61%) followed by 36% for out-of-hospital costs, that is, general practice and associated specialist consultations and treatments. This will include most pathology costs. The remainder (3%) was for pharmaceuticals. Consistent with the prevalence, the majority of expenditure (60%) was for males.

In 2014, the cost to Medicare for consultations and treatments for non-melanoma skin cancers was \$43.8 million in Queensland (\$128 million nationally), and for melanoma \$2.8 million in Queensland (\$9.4 million nationally).<sup>212</sup>

Table 22: Sunburnt in the previous 12 months, percentage (95% CI), Queensland<sup>134,213</sup>

	Children 5–17 years (2014)			Adults (2016)			
	Males	Females	Persons	Males	Females	Persons	
<b>5–17 years</b>	63.5 (60.2–66.7)	64.4 (61.0–67.7)	64.0 (61.6–66.2)	<b>18+ years</b>	60.9 (58.9–62.9)	50.7 (48.9–52.6)	55.8 (54.4–57.1)
<b>5–7 years</b>	45.2 (38.6–52.0)	50.5 (43.9–57.0)	47.8 (43.1–52.5)	<b>18–24 years</b>	80.6 (71.4–87.3)	76.9 (69.1–83.2)	78.7 (72.9–83.5)
<b>8–11 years</b>	61.9 (55.7–67.8)	61.9 (55.2–68.2)	61.9 (57.4–66.2)	<b>25–34 years</b>	78.2 (73.1–82.6)	68.7 (63.8–73.2)	73.5 (70.0–76.8)
<b>12–15 years</b>	75.2 (69.8–79.9)	72.6 (66.5–77.9)	73.9 (69.9–77.5)	<b>35–44 years</b>	72.4 (67.9–76.6)	66.5 (62.4–70.4)	69.5 (66.4–72.4)
<b>16–17 years</b>	72.3 (63.7–79.5)	74.6 (65.7–81.8)	73.4 (67.4–78.7)	<b>45–54 years</b>	63.8 (59.3–68.0)	54.2 (50.2–58.2)	58.8 (55.7–61.7)
				<b>55–64 years</b>	47.5 (43.4–51.6)	31.5 (28.5–34.8)	39.7 (37.1–42.4)
				<b>65–74 years</b>	33.3 (29.8–37.1)	19.8 (17.2–22.6)	26.3 (24.1–28.7)
				<b>75+ years</b>	16.6 (12.9–21.0)	8.9 (6.8–11.6)	12.4 (10.3–14.8)
<b>Socioeconomic status</b>		<b>Remoteness</b>		<b>Socioeconomic status</b>		<b>Remoteness</b>	
<b>Disadvantaged</b>	64.3 (59.4–68.9)	<b>Major cities</b>	63.6 (60.0–67.0)	<b>Disadvantaged</b>	52.5 (49.8–55.3)	<b>Major cities</b>	55.3 (53.3–57.2)
<b>Quintile 2</b>	65.5 (60.8–69.9)	<b>Inner regional</b>	63.6 (59.5–67.5)	<b>Quintile 2</b>	57.7 (55.1–60.2)	<b>Inner regional</b>	54.8 (52.4–57.2)
<b>Quintile 3</b>	61.0 (55.3–66.4)	<b>Outer regional</b>	66.5 (62.5–70.3)	<b>Quintile 3</b>	56.1 (53.4–58.9)	<b>Outer regional</b>	58.6 (55.7–61.4)
<b>Quintile 4</b>	64.3 (58.9–69.4)	<b>Remote/very remote</b>	62.2 (52.2–71.4)	<b>Quintile 4</b>	58.8 (55.5–62.0)	<b>Remote/very remote</b>	57.6 (53.4–61.7)
<b>Advantaged</b>	64.5 (59.0–69.7)			<b>Advantaged</b>	53.6 (50.0–57.3)		

# Oral health and fluoridation

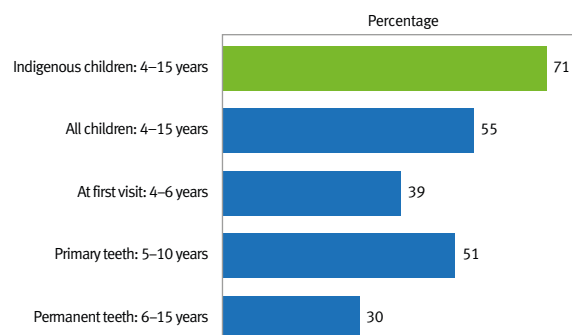
Oral health is essential to the individual’s overall health, wellbeing and quality of life. The major oral diseases are dental caries (tooth decay), periodontal disease (gum disease) and oral cancers. Oral diseases are among the most common and costly health problems experienced by Australians.

Improving oral health outcomes requires a focus on healthy eating to reduce risk of decay, good oral hygiene, regular access to dental services beginning in the infant years, and access to fluoride to protect the teeth, through community water supplies and oral care products.

This section draws on data collected by the Queensland Health oral health services and national survey data for adults and children.

Decay experience is defined as teeth that are decayed, missing or filled because of decay.

Figure 64: Prevalence of decay experience, children attending Queensland Health oral health services, 2014–2015



Of the 157,000 children aged 4 to 15 years who attended the oral health services in 2015:

- 86,500 had decay experience, including 11,400 Indigenous Queensland children
- 55,100 children aged 5–10 years had decay experience in their primary teeth
- 40,400 children aged 6–15 years had decay experience in their permanent teeth
- 16,900 children aged 4–6 years had decay experience at their first visit.

## What is the prevalence?

In 2014–2015, of children attending Queensland Health oral health services (Figure 64):

- 55% of those aged 4–15 years had decay experience, including 27% with four or more teeth affected.
- 39% of 4–6 year olds (first visit to the service) had at least one tooth affected by decay, including 17% with four or more teeth affected.
- 51% of 5–10 year olds had decay experience in their primary teeth. On average, these children had 4.0 teeth affected
- 30% of 6–15 year olds had decay experience in their permanent teeth. On average, these children had 2.8 teeth affected.

About half the 4–6 year old children from disadvantaged areas had decay experience at their first visit to the oral health service in 2014–2015.

## How does it differ?

In 2014–2015, of children attending Queensland Health oral health services:

- 63% of children (4–15 years) in socioeconomically disadvantaged areas had decay experience, compared with 49% of those in advantaged areas.

- For children at their first visit (aged 4–6 years), twice as many from disadvantaged areas had decay experience compared to those in advantaged areas (47% compared with 25%).
- 71% of Indigenous Queensland children had decay experience (41% with four or more teeth affected).
- The mean number of untreated decayed teeth in 4–15 year olds was greater than the state average in Wide Bay, Darling Downs and Metro South HHSs and lower in Metro North and Sunshine Coast (Figure 65).
- National and jurisdictional comparisons: the prevalence of decay experience in Queensland compared to the 2012–2014 national average was<sup>214</sup>:
  - 20% higher in 5–10 year olds (primary teeth) (50% compared with 42%), and second highest of the jurisdictions
  - 33% higher in 9–14 year olds (permanent teeth) (41% compared with 31%), and second highest of the jurisdictions.

## What are the trends?

Decay experience in Australian children has decreased markedly since 1977 when national monitoring of school dental services began. Data from 1989 onwards is available for Queensland<sup>215-217</sup>:

# Oral health and fluoridation

- Decay experience in primary teeth (in 6-year olds) dropped between 1989 and 1997 (from an average of 2.2 teeth affected to 1.8), but has risen again since then (to 2.5 teeth in 2009).
- Decay experience in permanent teeth (in 12-year olds) dropped from an average of 1.7 teeth affected in 1989 to 1.1 in 1997 but has risen slightly since, to 1.2 in 2009.

## What are the impacts?

**Individual wellbeing:** Poor oral health can cause pain, infection and tooth loss, and the destruction and degeneration of the tissues of the mouth. A healthy mouth enables people to eat, speak and socialise without pain, discomfort or embarrassment. In 2013, of Queensland adults aged 15 years and older<sup>218</sup>:

- 1 in 7 (17%) of those with natural teeth experienced toothache in the previous 12 months
- 1 in 4 (26%) felt uncomfortable about their dental appearance in the previous 12 months
- 1 in 5 (21%) avoided eating certain foods due to problems with their teeth.

There were about 3000 hospitalisations for dental caries for 0–9 year olds in 2013–14.

**Hospitalisations:** There were 27,042 hospitalisations for dental conditions in 2013–14 (4358 for 0–9 year olds). Of these, 16% or 5670 were for dental caries. Young children were more commonly hospitalised for dental caries than other age groups—57% were for children aged 0–9 years (3223 hospitalisations). Rates and trends in hospitalisations for dental caries are reported on pages 40 and 45.

**Expenditure:** Oral health was the third largest cause of recurrent, allocated health system expenditure in 2008–09 accounting for 9.7% of spending.<sup>95</sup> Most of the spending (95%) was associated with the cost of services provided by private and other dental services. More information is on page 51.

## Causes and prevention

Many factors protect against dental disease including dietary patterns, oral health behaviours, the use of dental services and access to the protective effect of fluoride.

**Dietary patterns:** A diet high in sugary, sticky foods and beverages increases the risk of dental caries and dental disease. In 2011–12, 51% of children aged 2–18 years had consumed sugar sweetened drinks in the previous day.<sup>49</sup> One in 4 children was eating sticky, sweet foods at least weekly and about 1 in 12 was eating confectionary weekly (page 67). Not only do these eating patterns increase the risk of dental caries, they contribute to weight gain and risk of chronic disease in adulthood.

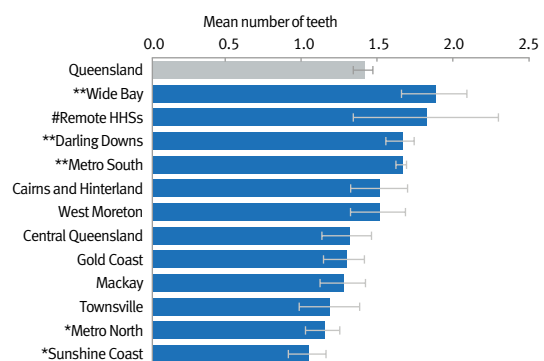
**Fluoride:** Fluoride plays a crucial role in reducing tooth decay and can be delivered through a range of methods, predominantly toothpastes and fluoridated water. Community water fluoridation is a cost-effective and equitable means of increasing exposure to the protective effects of fluoride, thereby reducing tooth decay across the population.<sup>219</sup> In 2008, prior to the introduction of the Water Fluoridation Act 2008, less than 5% of Queenslanders had access to fluoridated water. By 2012, this figure had risen to 87%. Access to fluoridated water had dropped to 79% by early 2016 following decisions of some local councils.

Community water fluoridation has been shown to be associated with improved oral health outcomes in Queensland—over a three-year period following introduction of fluoride, there was a 19% reduction in decay experience in children in an area of high decay prevalence.<sup>220</sup> Furthermore, children in Townsville, an area with a long history of water fluoridation, were 40% less likely to have decay experience than children in other areas in Queensland.<sup>221</sup>

**Use of dental services<sup>218</sup>:** In 2013,

- 76% of 5–14 year olds had a dental visit in the previous 12 months and 92% in the previous two years.
- 62% of adults aged 15 years and older had a dental visit in the previous 12 months and 80% in the previous two years—with no difference in frequency between dentate adults eligible for public dental care (63%) and those who were not eligible (62%), nor between adults in metropolitan, regional or remote locations.
- 3 in 4 children and young people reported that their latest dental visit was for a check-up rather than a problem (71% of 5–14 year olds, 80% of 15–24 year olds), compared with 56% of adults aged 25 years and older.
- 45% of children aged 5–14 years attended a public dental service for their last dental visit.

Figure 65: Untreated decay, children aged 4–15 years attending Queensland Health oral health services, by HHS Queensland 2014–2015



\* lower than Qld \*\* higher than Qld

# North West, Central West, South West, Torres and Cape

# Immunisation

Immunisation is one of the most successful and cost effective health interventions, as the benefits of personal immunity extend to the whole community. This benefit is known as herd immunity.<sup>222</sup>

In Australia, many vaccines are funded under the National Immunisation Program for children, adolescents, and adults.<sup>223</sup> These vaccines can prevent measles, mumps, rubella, polio, diphtheria, tetanus, pertussis (whooping cough), varicella (chickenpox), hepatitis B, hepatitis A (for Indigenous Queensland children) *Haemophilus influenzae* type b (Hib), meningococcal C, influenza, human papillomavirus (HPV), pneumococcal and rotaviral diseases.

Collection of information from pregnant women about their vaccination status for whooping cough and influenza commenced in July 2015 with the first six months of data available for reporting. It is based on self reported status.

There are a number of opportunities to enhance Queensland's immunisation program, including improving coverage for Indigenous Queensland children and increasing the uptake of the school immunisation program. Misinformation about immunisation remains a major challenge. A strategy has been developed to address these complex issues with clear goals for Queensland to become the state with the highest immunisation rates in Australia. Milestones towards this goal are being achieved.

Table 23: Immunisation coverage by cohort, Queensland and Australia, 2015<sup>224</sup>

		Queensland	Australia
Fully vaccinated at 1 year	Indigenous	87.3	88.7
	Non-Indigenous	92.9	92.5
	All children	92.4	92.3
Fully vaccinated at 2 years	Indigenous	85.8	86.2
	Non-Indigenous	90.6	89.5
	All children	90.2	89.3
Fully vaccinated at 5 years	Indigenous	93.6	93.9
	Non-Indigenous	92.4	92.5
	All children	92.4	92.6

#### Key statistics:

- About 58,000 one-year olds were fully immunised, 4700 were not
- About 56,500 two-year olds were fully immunised, 6200 were not
- About 60,500 five-year olds were fully immunised, 4900 were not
- In July–December 2015, of about 30,000 pregnant women:
  - 10,900 reported having been vaccinated for whooping cough
  - 7,900 reported having been vaccinated for influenza.

### Vaccination coverage

In 2015, rates for fully immunised Queensland children were (Table 23)<sup>224</sup>:

- 92.4% for one-year olds
- 90.2% for two-year olds
- 92.4% for five-year olds.

In 2015, coverage rates for Indigenous Queensland children compared to non-Indigenous children, were as follows (Table 23):

- 5.6 percentage points lower at one year of age
- 4.8 percentage points lower at two years of age
- 1.2 percentage points higher at five years of age.

A similar difference was evident nationally although the gap was slightly lower at each milestone.

### Pregnant women

Among pregnant women in the latter part of 2015 (July–December)<sup>21</sup>

- 36% reported being vaccinated for whooping cough
- 26% reported being vaccinated for influenza.

### Regional variation

There was variation in childhood immunisation rates among the HHSs. In 2015, coverage was highest in Central West at all three milestones, that is, one-year old, two-year old and five-year old (96.5%, 92.5% and 96.2% respectively) and lowest in Sunshine Coast (89.1%, 86.8% and 89.3% respectively).

Pregnancy vaccination reporting varied widely by HHS<sup>21</sup> with:

- whooping cough: from 59% in Central West to 25% in Gold Coast
- influenza: from 46% in Central West to 12% in Gold Coast.

The proportion of records where pregnancy vaccination status was not stated also varied markedly. For whooping cough in Gold Coast the vaccination status was unknown in about 20% of records, while in many other HHSs fewer than 5% of records did not include status. For influenza, 40% of Metro South records did not include vaccination status while for many of the smaller HHSs, fewer than 5% were unreported. It is expected that with time this will improve as it becomes a more routine part of the perinatal data collection. Information for all HHSs is available from the statistical tables online (page i for details).

# Immunisation

## National comparison

Compared to national coverage rates in 2015, Queensland was (Table 23):

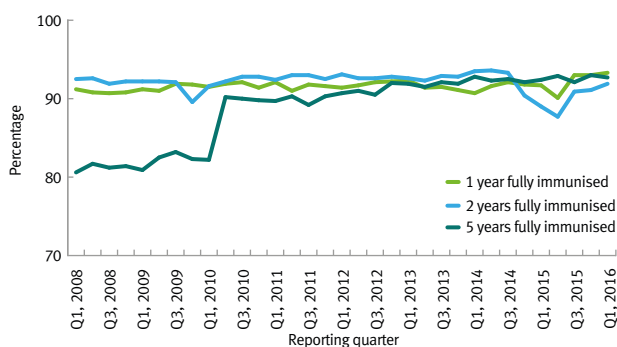
- slightly higher than the national coverage of 92.3% at the one-year milestone
- slightly higher than the national coverage of 89.3% at the two-year milestone
- slightly lower than the national coverage of 92.6% at the five-year milestone.

## Trends

In 1998, when the Australian Childhood Immunisation Register commenced reporting vaccine coverage, fewer than 70% of Queensland children aged two years were fully immunised. Since then, coverage has steadily improved and in the third quarter of 2014, peaked at 93% (Figure 66). In the first half of 2015, Queensland (and all jurisdictions) experienced a fall in coverage rates due to a change in the national definition of fully immunised at two years. However, in the second half of 2015, rates once again climbed above 90%, and will continue to improve as the changes become routine.

Coverage for children aged one year and five years has remained at around 92% since 2010 (Figure 66).

Figure 66: Trends in immunisation coverage by cohort, Queensland



## Challenges and opportunities

Some of the biggest challenges facing Queensland's Immunisation Program include:

- the gap in coverage rates for one-year old and two-year old Indigenous Queensland children, placing them at a higher risk of contracting vaccine preventable disease
- sub-optimal uptake of adolescent vaccination in the School Immunisation Program, placing many adolescents at risk of contracting vaccine preventable disease

- misinformation about immunisation circulating in the community, creating unnecessary confusion and concern about a proven, effective and safe public health intervention.

Queensland Health is working to address these challenges and has developed a strategy for Queensland's Immunisation Program. The *Queensland Immunisation Strategy 2014–2017* (updated October 2015) aims to work toward the highest immunisation rates in Australia through five key goals:

1. Queenslanders make decisions about immunisation based on credible, evidence based information and are confident of the benefits that immunisation provides.
2. 95% of all Queensland children are fully immunised at one year, two years and five years of age.
3. 85% of Queensland adolescents are fully immunised through the school immunisation program.
4. Queensland's immunisation program is informed by strong research and policy agenda, and readily positioned to meet the State's immunisation needs.
5. Adults are protected against vaccine preventable diseases.

Since implementation of the strategy, there have been a number of achievements across the five key goals. Notable achievements in 2015 include:

- implementation of major marketing campaigns for childhood immunisation
- implementation of the *Immunise to 95* initiative: over 28,500 children overdue for immunisation were followed up by 13HEALTH from October to December 2015 to help resolve their immunisation status
- amendments to the *Public Health Act 2005* to empower early childhood education and care services to refuse enrolment/attendance of children not up to date with their immunisations
- continued provision of free whooping cough vaccine to pregnant women to provide the best protection for newborn babies until they can be vaccinated from six weeks of age
- funding of a statewide Specialist Immunisation Service at the Lady Cilento Children's Hospital to provide services for children with complex vaccination needs
- funding of a transition of the School Immunisation Program from Year 8 to Year 7 in school year 2016 to improve uptake of the School Immunisation Program.

# Social risks: domestic and family violence

Domestic and family violence is defined as the intentional use of violence, intimidation or threats to maintain control over an intimate partner, family member, or informal carer. It can manifest in a variety of forms including physical, sexual, emotional, psychological and economical abuse. Exposure to domestic abuse can have lasting emotional consequences and health impacts.

Victims of domestic violence are overwhelmingly adult females but also include children, men and the elderly.

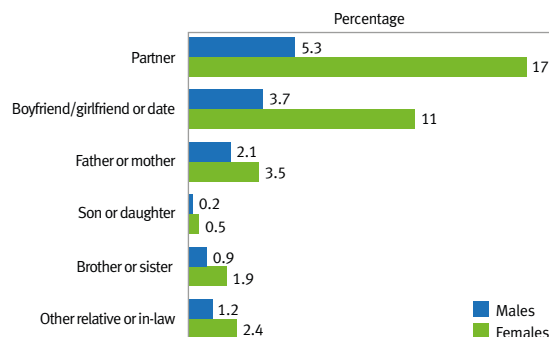
Child victims of domestic assault are most likely to have been assaulted by a parent, adult females by a spouse or partner, and the elderly by another family member.<sup>225</sup>

In 2013, intimate partner violence was estimated to be responsible for 265 female deaths in Australia.<sup>226</sup> Almost half of all homicide deaths in Queensland in the latest two-year period were classified as domestic-related (47 of 96 deaths).<sup>228</sup>

Beyond the physical injuries, those who experience domestic violence have an increased risk of mental health disorders, suicide and self inflicted injuries, and for pregnant women, adverse birth outcomes. Children exposed to domestic violence are more likely to exhibit emotional and behavioural problems<sup>229</sup> and experience violence as an adult.<sup>227</sup>

The sensitive nature of domestic violence issues means that the prevalence, and therefore health impacts, can be difficult to measure. It is likely that the data quoted in this section is an underestimate of the true extent of family and domestic violence in the Queensland community. There are also variations in the concept of domestic and family violence which can make the comparison of data difficult. For example, domestic violence data on perpetrator and victim often excludes intimate partners classified as a boyfriend, girlfriend or date, while separate data on intimate partner violence sometimes does include these relationships. This section brings together some data to describe the scope and nature of the problem, recognising it will not fully describe this complex issue.

Figure 67: Experience of violence by perpetrator, adults aged 15 years and older, Australia 2012



### Key statistics:

- 1 in 6 Australian women (17%) has experienced partner violence since the age of 15 years.<sup>227</sup>
- Half of homicides in Queensland (47 of 96 deaths, 2010–11 to 2011–12) were classified as domestic.<sup>228</sup>
- 20% of domestic homicide victims were Indigenous Australians.<sup>228</sup>

### What is the prevalence?

- In 2012, 1 in 20 Queensland women aged 15 years or older (4.5%) experienced violence (any incident or threat of physical or sexual assault) in the previous 12 months where the perpetrator was known to them (78,800). For almost half of these (1.8%), the perpetrator was a current or former intimate partner (31,100).<sup>227</sup>
- In 2012, 5.9% of Queensland males aged 15 years or older experienced violence in the previous 12 months where the perpetrator was known to them.<sup>227</sup>

# Social risks: domestic and family violence

## Is it the same for everyone?

### Life stage

#### Childhood exposure to violence

- Children can be victims of family and domestic violence through abuse and neglect and through exposure to violence in the home—these exposures often overlap.<sup>229</sup>
- Based on the report of adults who had experienced partner violence, children were often also exposed. In 2012<sup>227</sup>:
  - Of those who experienced current partner violence, 54% of women (44% of males) had children in their care at the time of the violence and 58% of these children (41% for males) saw or heard the violence.
  - Of those who experienced previous partner violence, 61% of women (49% of males) had children in their care at the time of the violence and 78% of these children (69% for males) saw or heard the violence.

#### Intimate partner violence (predominantly young and middle-aged adults)

- 11% of adult Australians had experienced partner violence since the age of 15 years.<sup>227</sup>
- Females were more likely to be the victim of intimate partner violence:
  - In Australia, 17% of women and 5.3% of men reported having experienced violence by a partner since the age of 15 years—77% of the victims were female.<sup>227</sup>
  - Of the women who experienced partner violence and were pregnant during the relationship, 39% experienced violence during the pregnancy.
- 3.8% of persons experienced emotional abuse by a partner during the previous 12 months (2.8% males, 4.7% females) and 20% since the age of 15 years (14% males, 25% females).<sup>227</sup>
- Both men and women who reported having experienced partner violence since the age of 15 years were more likely than others to report having experienced physical and/or sexual abuse before the age of 15 years. Women who were victims of partner violence were 2.4 times more likely to have experienced abuse as a child (before the age of 15 years) than those who had not (2.9 times for males).

#### Elder abuse

There is limited data on the prevalence and patterns of elder abuse in Australia.

- Among adults aged 55 years and older, 2.2% of males and 1.5% of females reported having experienced violence from any perpetrator in the previous 12 months.<sup>227</sup>
- UnitingCare's Elder Abuse Prevention Unit operates an elder abuse helpline that services Queensland. Over a four-year period up to 2015:
  - Of the elder abuse cases reported to the hotline, 80% of the perpetrators were relatives or partners of the victim.<sup>230</sup> Sons were the most frequently cited perpetrators (31%), followed closely by daughters (29%). Other relatives were the perpetrators in 10% of cases, and spouses/partners in 9%. Victims were most frequently females (68%).
  - Where the perpetrator was an adult child, financial abuse (39%) and psychological abuse (38%) were the most frequent causes. In the case of a spouse/partner perpetrator, psychological abuse was most frequently reported (41%) followed by physical abuse (20%) and neglect (19%).<sup>230</sup>

#### Remoteness

Isolation, access to services and other issues relating to the cultural and social characteristics of small communities can have an effect on measurement of both the prevalence and impact of domestic and family violence in these settings. However, a number of sources indicate that the prevalence is higher in non-urban locations—in 2012, 21% of women living outside of capital cities experienced partner violence compared to 15% of women living in a capital city.<sup>231</sup>

#### Indigenous Queenslanders

Indigenous Australians are much more likely to report having experienced domestic violence. They are also more likely to be hospitalised for domestic assault, and to be the victim of domestic homicide—1 in 5 Indigenous Queenslanders aged 15 years and older (22%) experienced any violence in the previous 12 months.<sup>232</sup> This compares with 8.4% of all Queenslanders.<sup>227</sup>

# Social risks: domestic and family violence

## What are the impacts?

### Burden of disease

Intimate partner violence was responsible for 1.0% of the female burden of disease and injury in Australia in 2011.<sup>12</sup> The impact on males was not included in the study due to the evidence that females are the primary victims of intimate partner violence, and the lack of empirical evidence related to the health impact of intimate partner violence on males.

For women aged 25–44 years, intimate partner violence was the third leading cause of burden in 2011 accounting for 2.7% of total burden.<sup>12</sup> The burden due to intimate partner violence peaked in the 40–49 year age group. Almost half of the burden was associated with suicide and self inflicted injuries (47%), with 40% for depressive disorders and 12% for homicide and violence. The impact of intimate partner violence on the total burden of disease increased by about 14% between 2003 and 2010—this was attributed to population growth and changes in the population structure, unlike the increase in hospitalisations which was largely due to increasing admission rates (Figure 68).

### Deaths

In 2013, 265 female deaths in Australia were attributed to intimate partner violence,<sup>226</sup> of which 88 were suicides.

- About half (49%) of homicides in Queensland in 2010–12 were classified as domestic and 39% in Australia, where 58% of those were caused by an intimate partner.<sup>228</sup>
- Domestic homicide was responsible for two-thirds of female homicide in Australia (62%) and 23% of male homicides.<sup>228</sup> Female victims were much more likely to be killed by an intimate partner than male victims—46% of female homicide victims compared to 7.9% of male victims.
- One-fifth (20%) of the domestic homicide victims nationally were Indigenous Australians.<sup>228</sup>

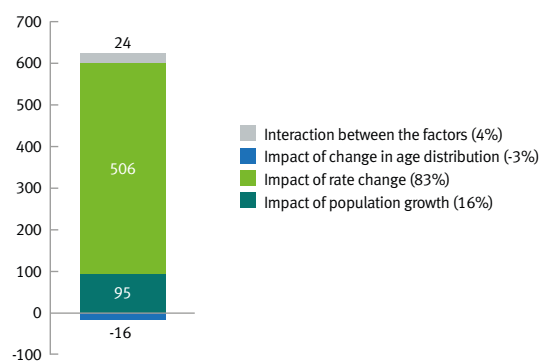
### Hospitalisations

In 2014–15, there were 1895 hospitalisations in Queensland for domestic assault and 69% were females. The majority of the hospitalisations (1190) were for assault by a spouse or domestic partner and of these, 85% were females.<sup>233</sup>

- Domestic assault is highest among young adults (as is violence more generally).<sup>233</sup>

- The most frequently cited perpetrator of domestic assault differed<sup>225</sup>:
  - for children aged 0–15 years, it was the parent (70%)
  - for those aged 16–64 years, it was the spouse or partner (82%)
  - for those aged 65 years and older, it was another family member (65%).

Figure 68: Underlying causes of increase in hospitalisations for domestic assault in 2014–15 compared to 2010–11, Queensland



- The number of hospitalisations for domestic assault increased by 73% between 2005–06 and 2014–15 (79% increase for spouse or domestic partner assaults).<sup>225</sup>
- Domestic assault hospitalisation numbers are increasing, primarily due to rate change—of the 609 extra hospitalisations in 2014–15 (compared with five years earlier), 83% were due to admission rate increase (independent of demographic factors), while 16% were due to population growth (Figure 68).
- Domestic assault was also associated with a high rate of discharge against medical advice<sup>233</sup>—5.7% in females aged 16–64 years compared with 0.6% for all-cause hospitalisations.<sup>225</sup>
- Indigenous Australians were over-represented in hospitalisations for domestic assault—36% in 2014–15.

### Expenditure

Partner violence against women was estimated to cost the Australian economy \$12.5 billion in 2014–15.<sup>234</sup>



# Social risks: domestic and family violence

## *Government response*

Addressing the complex issue of domestic and family violence is a priority of the Queensland Government. The final report from the Special Taskforce on Domestic and Family Violence in Queensland contained 140 recommendations to reduce domestic and family violence with a focus on providing practical solutions under three themes: changing culture and attitudes, implementing an integrated service response, and improving the law and justice system. The government supported and accepted all 140 of the report's recommendations and is working to implement the recommendations which included the development of the Domestic and family violence prevention strategy to drive reform and community collaboration for the next 10 years. Furthermore a Domestic and Family Violence Death Review and Advisory Board has been set up in Queensland to assess the impact of such violence in homicide and related deaths.<sup>235</sup>

## *Other forms of violence*

It is critical that violence in all its forms is challenged and addressed. Alcohol is often involved—from violence in the home, on streets and public venues and in workplaces. Information on the role of alcohol in domestic violence is presented on page 89. In Queensland Health facilities alone, there are about 5000 reported incidents of violence against staff each year (about 20 incidents per day, affecting about 1 in 20 staff)—about two-thirds involved physical abuse and one-third verbal abuse.<sup>236</sup> Queensland Ambulance Service staff are experiencing an increasing number of assaults. In 2015–16 there were 381 reported incidents of occupational violence—238 of deliberate physical attack, 123 of verbal threat and 20 of accidental contact—having increased by 54% on the previous year.<sup>237</sup> In December 2015, the Paramedic Safety Taskforce was established to investigate the issue and provide practical and strategic recommendations to reduce occupational violence against Queensland Ambulance Service officers.

# Environmental risks

Environmental risks to health arise from a broad range of sources and are due to physical, chemical and biological factors.

In 2013 it was estimated that 1.6% of the total burden of disease and injury in Australia was due to environmental risks alone (occupational exposures and hazards and high sun exposure).<sup>13</sup> Unhealthy environments had an additional impact on health loss through their interaction with metabolic and behavioural risk factors, generally based on the influence of the built environment, that is the places where people live, learn, work and play. This section focuses on selected natural environmental risks that showcase the importance of a strong protection response to safeguard and improve the health of Queenslanders.



## Foodborne illness

In 2013, notifications for foodborne disease increased markedly, principally due to *Salmonella* and *Campylobacter* contamination. Queensland maintains a multi-jurisdictional approach to the regulation of food safety, involving Queensland Health, the Department of Agriculture and Fisheries, and Safe Food Production Queensland.

In response to the increase in foodborne illness, the *Queensland Foodborne Pathogen Risk Mitigation Strategy March 2015 – March 2018* was developed. It is the only coordinated, whole-of-government strategy in Australia with a primary focus on reducing the risks associated with *Salmonella* and *Campylobacter* from production to consumption.

*Campylobacter* cases are influenced by per capita consumption of poultry meat products and changes in the patterns such as increased consumption of value added

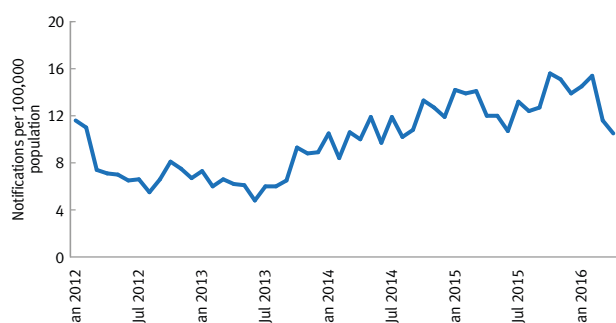
chicken portions. In general, as consumption increases, so do notifications. Poultry is the most affordable meat source and this is contributing to the increase in consumption and potential exposure to *Campylobacter*.

There was a steady rise in the rate of *Campylobacter* notifications from July 2013 onwards which prompted a more statewide focus (Figure 69a). Notifications declined in early 2016 and if sustained is consistent with effective protection and prevention initiatives.

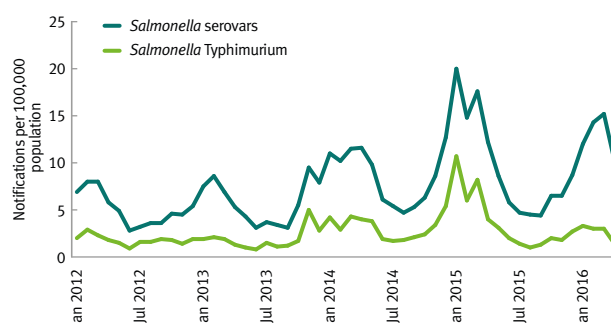
*Salmonella* cases are influenced by climate (seasonality), consumption of egg and poultry products and changes in patterns of consumption, for example consumption of raw egg products. Notifications increase during the warmer months. *Salmonella* Typhimurium, is the most common cause of foodborne illness attributed to Salmonella. Since the strategy was introduced in March 2015, case numbers have reduced, with a significant reduction in *Salmonella* Typhimurium cases (Figure 69b).

Figure 69: Trends in notifications of foodborne pathogens, Queensland

a. *Campylobacter*



b. *Salmonella*



# Environmental risks

Ongoing work under the strategy will concentrate on:

- maintaining and improving hygiene and other practices at production and processing stages of the food supply chain to minimise the presence of *Salmonella* and *Campylobacter* in raw food
- shifting the focus away from *Salmonella* Typhimurium to other *Salmonella* serovars
- investigation of on-farm practices that may spread or amplify presence of *Campylobacter* during production of meat birds
- gaining a better understanding of the types of *Campylobacter* species found in North Queensland compared to the rest of Queensland
- influencing consumer behaviour to improve the control of significant risks such as cross-contamination at retail level and in food preparation
- methods for detection and reporting that assist identification of the source of pathogens and prevention of future outbreaks.

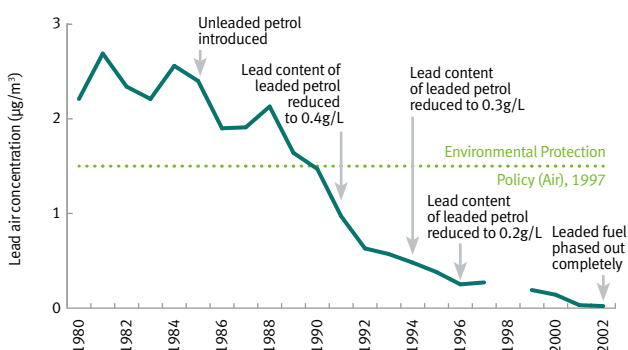
## Lead exposure

Lead is a cumulative poison that is particularly harmful to young children. Exposure is usually assessed through blood measurement. Elevated blood lead levels can adversely affect the development of the brain and nervous system. Children can absorb substantially more lead than adults and their hand-to-mouth behaviour often results in higher lead exposure due to ingestion of lead dust from surfaces and objects.

Lead can cause long-term harm in adults by increasing the risk of high blood pressure and kidney damage. Exposure of pregnant women to high levels of lead can increase the risk of miscarriage, stillbirth, premature birth and low birth weight, and also result in minor malformations.

Typical sources of environmental lead include mining, smelting, manufacturing and recycling activities, and lead paint. Historically, the primary source of lead in the environment was leaded petrol which was banned in Australia in 2012.

**Figure 70: Trends in lead levels in ambient air, south east Queensland<sup>238</sup>**



There has been a significant reduction in the levels of lead in ambient air over the past thirty years largely due to the phasing out of lead in petrol (Figure 70). As a result, routine monitoring of lead concentrations in ambient air by the Queensland Government ceased in south east Queensland in 2002. However, it is still undertaken in specific locations across Queensland, including Mount Isa and Townsville. This has greatly reduced lead exposure within Queensland, resulting in a significant decline in blood levels. In addition, there have been reductions in the blood lead notification levels and as of 1 January 2016, the notification level is 5µg/dL. Elevated blood levels of lead are now primarily due to workplace activities, soil contamination from industrial processes, building work and renovations, or some household products, including those that are imported. People working in or living near lead smelters and lead mines can also be exposed to higher levels of lead than are found in other areas.<sup>239</sup>

## Drinking water quality

Queensland maintains a whole-of-government approach to addressing water quality issues. This includes a joint regulatory framework involving Queensland Health and the Department of Energy and Water Supply to manage the quality of drinking and recycled water.

**Figure 71: Trends in water quality, Queensland**



*Escherichia coli* is used as an indicator for organisms that live in animal intestines and is typically transmitted via the faecal–oral route. It should be removed by water treatment processes, although there is seasonal pattern associated with increased rainfall run-off during the warmer months resulting in detection spikes (Figure 71).

There has been a steady decrease in *E. coli* levels in drinking water in Queensland since late 2010. This is an encouraging trend suggesting that improved management and the awareness of water service providers of their responsibility to provide safe drinking water is improving drinking water quality.

## National and international comparisons

Queensland does not differ from national prevalence for many risk factors (Table 24), with some exceptions:

- higher rates of smoking and risky lifetime drinking in 2013
- higher rates of decay experience in children's teeth in 2012–2014
- lower rate of sufficient physical activity in 2014–15
- BreastScreen participation rates were higher than national rates and highest of the jurisdiction in 2013–14.

Australia compared well internationally in terms of low rate of daily smoking compared to OECD countries (4th of 35 countries in 2014). Among 31 OECD countries in 2013, Australia had the highest prevalence of daily fruit consumption among adults and second highest (following Korea) for daily vegetable consumption.

	Queensland compared to:			Australian ranking:	
	National	Interstate ranking	Year	International (OECD)	Year
Daily smoking (adults)	18% higher	3rd highest of 8	2013	4th lowest of 35	2014 (or nearest year)
Adequate fruit consumption (adults)	Not different	2nd highest of 8	2014–15	1st highest of 31*	2014 (or nearest year)
Adequate vegetable consumption (adults)	Not different	3rd highest of 8	2014–15	2nd highest 31*	2014 (or nearest year)
Adequate fruit consumption (child)	Not different	4th highest of 8	2014–15		
Adequate vegetable consumption (child)	Not different	6th highest of 8	2014–15		
Exclusive breastfeeding (at 4 months)	Not different	Lowest of 8	2011		
Daily sugar sweetened drinks	Not different		2011–12		
Obesity (adult by measurement)	Not different	2nd highest of 8	2014–15	5th highest of 19	2014 (or nearest year)
Overweight (adult by measurement)	Not different	Lowest of 8	2014–15		
Overweight and obese (adult by measurement)	Not different	5th highest of 8	2014–15		
Overweight and obese (child by measurement)	Not different	5th highest of 8	2014–15	12th highest of 33	2013 (or nearest year)
<b>Alcohol</b>					
Risky lifetime drinking	12% higher	4th highest of 8	2013		
Risky single occasion (monthly)	Not different	6th highest of 8	2013		
Consumption per capita				20th lowest of 35	2014 (or nearest year)
Sufficient physical activity (adults)	9% lower	2nd lowest of 8	2014–15		
Active every day (2–17 years)	18% higher	3rd highest of 8	2011–12		
High blood pressure (adults)	Not different	5th highest of 8	2014–15		
High total cholesterol (adults)	Not different	7th highest of 8	2011–12		
Recent illicit drug use (14+ years)	Not different	4th highest of 8	2013		
Breast screening participation	Higher than national	Highest of 8	2013–2014		
Cervical cancer screening	Lower than national	3rd lowest of 8	2013–2014		
Bowel cancer screening	Not different		2013–14		
<b>Prevalence of decay experience</b>					
5–10 years (primary teeth)	20% higher	2nd highest of 8	2010–2014		
9–14 years (permanent teeth)	33% higher	2nd highest of 8	2010–2014		

\* International comparison is for daily consumption of any fruit or any vegetable.

## Data sources and methods: risk and protective factors

This chapter includes a selection of key risk and protective factors for Queensland. The ordering of risk factors follows the ranking of risks based on burden of disease analysis for Australia as described on page 11.

Many data sources are used in this chapter and each are cited. Prevalence data is largely derived from the Queensland preventive health surveillance system [www.health.qld.gov.au/phsurvey](http://www.health.qld.gov.au/phsurvey) and from national surveys conducted either by ABS or AIHW.

Additional data on risk factor prevalence and attributable hospitalisation for HHSs and sociodemographic groups is available in the statistical tables published online (page i for details).

Within this chapter, prevalence estimates are reported as both a percentage and the number of persons at risk. The number at risk is generated from percentage prevalence (derived from survey sample estimates), and estimated resident population.<sup>2</sup> The projected population at risk is generated from prevalence trends and projected population estimates.<sup>3</sup>

Assessment of risk factor trends is based on log linear models which are described in the companion methods report.<sup>1</sup> Trend assessment should not be based on individual year comparisons. Caution should be exercised when comparing HHS results for 2015–16 and earlier years due to methodological changes that occurred in 2015.<sup>1</sup> This caveat does not apply to state level reporting.

The methodology for estimating hospitalisations due to risk factors is described in the companion methods report.<sup>1</sup>

### For further information:

- Preventive health surveys including the self report survey series undertaken by Queensland Health
- Risk factor trends for Queensland
- Previous reports from the Queensland Chief Health Officer
- Australian Bureau of Statistics: National Health Survey series including Australian Health Survey
- AIHW: National Drug Strategy Household Survey, Australian Burden of Disease Study 2011



# Terminology and definitions

## **Aboriginal and Torres Strait Islander populations:**

Referred to as 'Indigenous Queenslanders' or 'Indigenous Australians'.

## **Accessibility/Remoteness Index of Australia (ARIA)**

Remoteness was determined using the six-category *Remoteness areas* classification: major cities, inner regional, outer regional, remote, very remote, and migratory.<sup>77</sup> ARIA scores are based on how far the population must travel to access services.

**Adults and age groups:** Adults are persons aged 18 years and older. Children are defined in relevant sections and where not explicitly stated, refer to the age group 5–17 years.

**Age standardisation:** To facilitate comparisons between various populations with different age structures, rates may be adjusted for the age structures by relating them to a reference population (2001 Australian population). Age standardised prevalence rates are used to compare Queensland with other jurisdictions and nationally, where they are available. Crude prevalence is used to compare regions within Queensland.

**Australian Bureau of Statistics (ABS):** Australia's official statistical organisation and a statutory authority.<sup>240</sup>

**Australian Institute of Health and Welfare (AIHW):** Major agency for health and welfare statistics and information.<sup>241</sup>

**Avoidable death:** Deaths from conditions that are potentially preventable through individualised care and/or treatable through existing primary or hospital care.<sup>65</sup>

**Body mass index (BMI):** Measure correlated closely with body density and skinfold thickness, calculated as  $BMI = \text{weight (kg)} / \text{height (m)}^2$ .<sup>242</sup>

**Children:** Usually defined as 5–17 years.

**Chronic conditions of ageing and disability:** Includes the ICD Chapters for musculoskeletal conditions, nervous system diseases, mental disorders (including dementia and substance use disorders), endocrine, nutritional and metabolic disorders including diabetes and diseases of eyes and ears.

**Chronic obstructive pulmonary disease (COPD):** Term to describe chronic lung diseases that limit lung airflow, and includes emphysema and chronic bronchitis.<sup>243</sup>

**Confidence interval (CI):** In general, a range of values expected to contain the true value 95% of the time (95% CI).

**Crude rates:** The number of cases in a given time period in a geographic area divided by the total number of persons in the population. Crude rates more accurately reflect the health burden in the community.

**Dietary factors combined:** Estimated burden of disease due to joint effects of all risk factors included in the analysis. More detailed information page 71.

**Disability:** Temporary or long-term reduction of a person's capacity or function, including illness.<sup>242</sup>

**Disability adjusted life year (DALY):** Measure of overall burden of disease and injury, where the DALY for a disease or condition is the sum of the YLL and YLD.<sup>12</sup>

**Discretionary foods:** The *Australian dietary guidelines*<sup>136</sup> describe discretionary as those that are not essential or a necessary part of a healthy dietary pattern. These foods are high in kilojoules, saturated fat, added sugars and/or salt or alcohol. The ABS has identified a group of foods consistent with the guidelines based on the national food recall survey in 2011–12.<sup>140</sup> The Queensland Department of Health has a modified definition of 'discretionary foods' based on the child health status survey and described more fully in the *Methods for reporting population health status* report.<sup>1</sup>

**Fetal deaths:** A fetal death is a death prior to the complete expulsion or extraction from its mother as a product of conception of at least 20 completed weeks of gestation or with a birth weight of at least 400 grams. The death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.<sup>64</sup>

**Financial years:** Reported using the convention, 2013–14. Periods covering two full years are reported as follows: 2013–2014.

**Free sugars:** Defined by the World Health Organization as monosaccharides and disaccharides added to foods and drinks by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates.

**Gross domestic product (GDP):** Equivalent to total national expenditure plus exports of goods and services minus imports of goods and services.<sup>244</sup>

**Hospitalisations:** The term used for the total number of separations in all hospitals (public and private) that provide acute care services. A separation is an admitted episode of care which can be a total hospital stay or a portion of a hospital stay ending in a change of status.<sup>80</sup>

**Hypertension:** Prolonged elevation of the blood pressure also referred to as high blood pressure.

**Illicit drug use:** Includes the use of illegal drugs, non-medical use of pharmaceutical drugs and misuse of substances.<sup>175</sup>

**Incidence:** Number of new health-related events (for example, illness or disease) in a defined population in a defined period of time.<sup>242</sup>

**Indigenous Queenslanders:** Refers to Aboriginal and Torres Strait Islander people that are usual residents of Queensland.

**Infant mortality rate:** Number of deaths of children under one year of age in one calendar year per 1000 live births in the same calendar year.<sup>17</sup>

**International Classification of Diseases (ICD):** Standard classification of specific conditions and groups of conditions determined by an internationally representative group of experts<sup>242</sup> and used for health records.<sup>64</sup>

**Joint effects (burden of disease):** The impact of multiple risk factors on disease burden that takes into account the complex interaction and overlap of risk factors on disease outcome.

**Life expectancy:** Average number of additional years a person of a given age and sex might expect to live if the age-specific death rates of the given period continued throughout their lifetime.<sup>17</sup>

**Lifestyle related chronic conditions:** In this report defined as a group of seven chronic conditions that are major causes of disease burden and have the highest attributable risk factor burden (excluding alcohol related effects). They include coronary heart disease, stroke, lung cancer, colorectal cancer, breast cancer, COPD and diabetes (Diabetes is excluded for hospitalisations).

**National Health and Medical Research Council (NHMRC):** Australia's leading body promoting development and maintenance of public and individual health standards.<sup>245</sup>

**Neonatal death:** Death of any child born alive who died within 28 days of birth.<sup>66</sup>

**Notifications:** Reports of specified health conditions to government by medical practitioners, pathology laboratories and hospitals. In Queensland, this is legislated by the *Public Health Act 2005*.

**Organisation for Economic Co-operation and Development (OECD):** Group of 34 member countries using information to help governments foster prosperity and fight poverty through economic growth and stability.<sup>246</sup> Australia became a member in 1971.

**Perinatal mortality rate:** Annual number of perinatal deaths per 1000 births—includes all fetal and neonatal deaths of at least 400 grams birth weight or at least 20 weeks gestation.<sup>66</sup>

**Potentially preventable hospitalisations (PPHs):** Admissions to hospital that potentially could have been prevented through the provision of appropriate non-hospital health services. These are defined nationally<sup>88</sup>, while Queensland Health reports a modified suite of conditions.<sup>1</sup>

**Premature death:** Generally refers to a death that occurs before the age of 75 years.

**Prevalence:** Measure of disease occurrence or frequency, often used to refer to the proportion of individuals in a population who have a disease or condition at a particular point of time.<sup>242</sup>

**Psychological distress:** Assessed using the Kessler Psychological Distress Scale (K10) which is a scale of non-specific psychological distress based on 10 questions about the frequency of negative emotional states in the four weeks prior to interview.<sup>247</sup>

**Rates:** a measure of the frequency of the occurrence of an event or phenomenon in a defined population in a specified period of time.<sup>242</sup>

**Self report:** Method of collecting information about health status, usually during a survey where a person self-reports a status measure such as their height, weight or vaccination.

**Significant:** Term used in this report to reflect a level of importance as well as statistical difference. Statistical significance is based on non-overlap of 95% CIs and where these criteria are not met, non-significant results are described with terms such as 'similar', 'stable' or 'no difference'.

**Sufficient physical activity for health benefit:** Defined as 150 minutes of moderate activity over five or more sessions in a week, for adults and is usually limited to those aged 18–75 years.<sup>183</sup>

**Sugar sweetened drinks:** ABS definition for drinks that have added sugar (cordials, soft drinks, flavoured mineral waters, energy and electrolyte drinks, fortified waters, and fruit and vegetable drinks) where data was collected from the 2011–12 national food recall survey.<sup>140</sup>

**Suicide ideation:** Thoughts about, or an unusual preoccupation with suicide. The range of suicidal ideation varies greatly from fleeting thoughts, to extensive thoughts, to detailed planning.

**Takeaway foods:** Definition used by Queensland preventive health survey defines takeaway foods as those from fast-food outlets such as McDonalds, Hungry Jacks, Pizza Hut, Red Rooster or takeaway food from supermarkets, convenience stores and food places providing, for example, pies, sausage rolls, and fish and chips. It does not include Asian food takeaway, salads, sandwiches, sushi, and similar items.

**World Health Organization (WHO):** Directing and coordinating authority for health in the United Nations.<sup>248</sup>

**Years of life lost due to disability (YLD):** Measure of burden of disease and injury, capturing health loss due to any short-term or long-term condition.<sup>12</sup>

**Years of life lost due to premature mortality (YLL):** Measure of burden of disease and injury, capturing health loss due to premature mortality.<sup>12</sup>

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# References

1. Department of Health. *Methods for reporting population health status*. Release 6. Queensland Government: Brisbane; 2016.
2. Australian Bureau of Statistics. *Australian demographic statistics*. Cat. no. 3101.0. ABS: Canberra; 2016.
3. Queensland Treasury and Trade. *Queensland Government population projections, 2015 edition (medium series)*. Queensland Government: Brisbane; 2016.
4. Australian Bureau of Statistics. 2011 census: table builder. Available: <http://www.abs.gov.au/websitedbs/censushome.nsf/home/tablebuilder>. Accessed 7 Apr 2014.
5. Australian Bureau of Statistics. *Population by age and sex, regions of Australia*. Cat. no. 3235.0. ABS: Canberra; 2015.
6. Australian Bureau of Statistics. *2011 census of population and housing: Aboriginal and Torres Strait Islander peoples (Indigenous) profile*. Cat. no. 2002.0. ABS: Canberra; 2011.
7. Australian Bureau of Statistics. *Census of population and housing: basic community profile datapack, 2011 third release*. Cat. no. 2069.0.30.001. ABS: Canberra; 2011.
8. Queensland Government. The Settlement Reporting Facility: settlement database. Available <http://www.immi.gov.au/settlement/srf/>. Accessed 7 Jun 2016.
9. Australian Bureau of Statistics. *Labour force: Australia*, May 2016. Cat. no. 6202.0. ABS: Canberra; 2016.
10. Australian Bureau of Statistics. *Prisoners in Australia*, 2015. Cat. no. 4517.0. ABS: Canberra; 2016.
11. Australian Bureau of Statistics. *General social survey: summary results, Australia, 2014*. Cat. no. 4159.0. ABS: Canberra; 2015.
12. Australian Institute of Health and Welfare. *Australian burden of disease study: impact and causes of illness and death in Australia 2011. Published and unpublished data*. ABDS series no. 3 BOD 4. AIHW: Canberra; 2016.
13. Institute for Health Metrics and Evaluation. Global burden of disease study 2013 (GBD 2013). Available: <http://ghdx.healthdata.org/global-burden-disease-study-2013-gbd-2013-data-downloads>. Accessed 25 Mar 2016.
14. Australian Institute of Health and Welfare. *Impact and causes of illness and death in Aboriginal and Torres Strait Islander people 2011*. Cat. no. BOD 8. AIHW: Canberra; 2016.
15. Institute for Health Metrics and Evaluation. *Norway: state of the nation's health. Findings from the global burden of disease*. IHME: Washington; 2016.
16. Institute for Health Metrics and Evaluation. Changes in health in England, with analysis by English regions and areas of deprivation, 1990-2013: a systematic analysis for the global burden of disease study 2013. *The Lancet* 2015;386:2257-2274.
17. Australian Bureau of Statistics. *Deaths Australia 2014*. Cat. no. 3302.0. ABS: Canberra; 2015.
18. Institute for Health Metrics and Evaluation, GBD 2013 DALYs and HALE Collaborators. Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition. *The Lancet* 2015; Published online 27 August 2015.
19. Australian Bureau of Statistics. *Life tables for Aboriginal and Torres Strait Islander Australians, 2010-2012*. Cat. no. 3302.0.55.003. ABS: Canberra; 2013.
20. Australian Institute of Health and Welfare. *A picture of Australia's children*. Cat. no. PHE 58. AIHW: Canberra; 2005.
21. Queensland Health. *Perinatal data collection: published and unpublished data*. Queensland Government: Brisbane.
22. Australian Bureau of Statistics. *Births, Australia, 2014*. Cat. no. 3301.0. ABS: Canberra; 2015.
23. Australian Institute of Health and Welfare, Humphrey M, Bonello M, Chughtai A, Macaldowie A, Harris K, et al. *Maternal deaths in Australia 2008–2012*. Cat. no. PER 70. AIHW: Canberra; 2015.
24. Utz M, Johnston T, Zarate D. *A multivariate approach to the disparity in perinatal outcomes between Indigenous and non-Indigenous populations, Queensland*. Queensland Government: Brisbane; 2014.
25. Watson M, MacLeod S-L, Comes S, Howell S. *Maternal obesity and selected pregnancy risks and outcomes in nulliparous mothers in Queensland, 2008*. StatBite no. 27. Queensland Government: Brisbane; 2010.
26. World Health Organization. Child growth standards: weight-for-age tables. Available: [http://www.who.int/childgrowth/standards/w\\_f\\_a\\_tables\\_p\\_boys/en/](http://www.who.int/childgrowth/standards/w_f_a_tables_p_boys/en/). Accessed 8 Aug 2016.
27. Freeman J, Cole T, Chinn S, Jones P, White E, Preece M. Cross sectional stature and weight reference curves for the UK, 1990. *Archives of Disease in Childhood* 1995;73:17-24.

28. Anderson A, Hure A, Powers J, Kay-Lambkin F, Loxton D. Predictors of antenatal alcohol use among Australian women: a prospective cohort study. *British Journal of Obstetrics and Gynaecology* 2013;120:1366-1374.
29. Department of Health. *Infant feeding in Queensland*. Queensland Government: Brisbane; 2016.
30. Department of Health. *Self reported health status 2012. Unpublished data/analysis*. Queensland Government: Brisbane; 2014.
31. Queensland Health. *The health of Queenslanders 2014: fifth report of the Chief Health Officer Queensland*. Queensland Government: Brisbane; 2014.
32. Australian Bureau of Statistics. *Australian health survey 2011-12. Expanded CURF, RADL. Findings based on use of ABS CURF data. Analysis undertaken by Department of Health, Queensland*. ABS: Canberra; 2014.
33. Department of Health. *Preventive health surveys 2015: Queensland. Published and unpublished analysis*. Queensland Government: Brisbane; 2016.
34. Department of Health. *Self reported health status survey 2011-12: unpublished data and analysis*. Queensland Government: Brisbane; 2014.
35. Queensland Health. *The health of Queenslanders 2012: advancing good health. Fourth report of the Chief Health Officer, Queensland*. Queensland Government: Brisbane; 2012.
36. Queensland Health. *Self reported health status 2011: quality of life, mental health and wellbeing and associations with preventive health indicators, Queensland*. Queensland Government: Brisbane; 2011.
37. Australian Bureau of Statistics. *National health survey: first results 2014-15*. Cat. no. 4364.055.001. ABS: Canberra; 2015.
38. Helliwell J, Layard R, Sachs J. *World happiness report 2016*. Update: vol. I. Sustainable Development Solutions Network: New York; 2016.
39. Australian Bureau of Statistics. *Australian health survey: first results, 2011-12*. Cat. no. 4364.0.55.001. ABS: Canberra; 2012.
40. Australian Bureau of Statistics. *Australian health survey: health service usage and health related actions, 2011-12*. Cat. no. 4364.0.55.002. ABS: Canberra; 2013.
41. Lloyd B, Gao X, Heilbronn C, Lubman D. *Self harm and mental health-related ambulance attendances in Australia 2013*. Turning Point: Melbourne; 2015.
42. Queensland Health. Mental health. Available: [www.health.qld.gov.au/public-health/topics/mental-health/default.asp](http://www.health.qld.gov.au/public-health/topics/mental-health/default.asp). Accessed 23 Jun 2016.
43. Queensland Government. Queensland Mental Health Commission. Available: <https://www.qmhc.qld.gov.au/>. Accessed 23 Jun 2016.
44. Melbourne Institute of Applied Economic and Social Research. *A statistical report on waves 1 to 11 of the household, income and labour dynamics in Australia survey*. Families, incomes and jobs: volume 9. The University of Melbourne: Melbourne; 2015.
45. Organisation for Economic Co-operation and Development. OECD.Stat: Health expenditure and financing. Available: [http://stats.oecd.org/index.aspx?DataSetCode=HEALTH\\_STAT](http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT). Accessed 9 Sep 2015.
46. Ileda N, Saito E, Inove M, Ikeda S, Satah T, Wado A, et al. What has made the population of Japan healthy? *The Lancet* 2011;378:1094-1105.
47. Productivity Commission: Steering Committee for the Review of Government Service Provision. *Report on government services 2016: Health*. Australian Government: Canberra 2016.
48. Medicare Australia. Medicare group reports. Available: [http://medicarestatistics.humanservices.gov.au/statistics/mbs\\_group.jsp](http://medicarestatistics.humanservices.gov.au/statistics/mbs_group.jsp). Accessed 1 Dec 2015.
49. Australian Bureau of Statistics. *Customised report: national health survey 2014-15 and Australian health survey 2011-12*. ABS: Canberra; 2016.
50. Queensland Health: Queensland Cancer Control Analysis Team. *Cancer prevalence in Queensland*. Queensland Government: Brisbane; 2015.
51. Queensland Health. Notifiable conditions reports. Available: [www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/surveillance/reports/notifiable/default.asp](http://www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/surveillance/reports/notifiable/default.asp). Accessed 12 Feb 2016.
52. Cancer Council Queensland. Queensland cancer statistics online. Available: <http://www.cancerqld.org.au/f/QCSOL/>. Accessed 1 Dec 2015.
53. Queensland Health: Queensland Cancer Control Analysis Team. *Cancer incidence higher in Queensland than in the rest of Australia*. Queensland Government: Brisbane; 2014.
54. Whiteman D, Webb P, Green A, Neale RE, Frtischli L, Bain C, et al. Cancers in Australia in 2010 attributable to modifiable factors: summary and conclusions. *Australian and New Zealand Journal of Public Health* 2015;39:477-484.

55. Lloyd-Jones D, Leip E, Larson M, D'Agostino R, Beiser A, Wilson P, et al. Prediction of lifetime risk for cardiovascular disease by risk factor burden at 50 years of age. *Circulation* 2006;113:791-798.
56. Magliano D, Shaw J, Shortreed S, Nusselder W, Liew D, Barr E, et al. Lifetime risk and projected population prevalence of diabetes. *Diabetologia* 2008;51:2179-2186.
57. Gershon A, Warner L, Cascagnette P, Victor C, To T. Lifetime risk of developing chronic obstructive pulmonary disease: a longitudinal population study. *The Lancet* 2011;378:991-996.
58. Wei Xu, Lan Tan, Hui-Fu Wang, Teng Jiang, Meng-Shan Tan, Lin Tan, et al. Meta-analysis of modifiable risk factors for Alzheimer's disease. *Journal of Neurology, Neurosurgery and Psychiatry*. Available: doi:10.1136/jnnp-2015-310548. Accessed 10 Aug 2015.
59. Sean Parnell. Managing risks helps keep dementia at bay. *The Australian*. 7 Aug 2015.
60. Whooley M, de Jonge P, Vittinghoff E, Otte C, Moos R, Carney R, et al. Depressive symptoms, health behaviors, and risk of cardiovascular events in patients with coronary heart disease. *Journal of American Medical Association* 2008;300:2379-2388.
61. Narayan K, Boyle J, Thompson T, Gregg E, Williamson D. Effect of BMI on lifetime risk for diabetes in the US. *Diabetes Care* 2007;30:1562-1566.
62. Brennan P, Crispo A, Zaridze D, Szeszenia-Dabrowska D, Rudnai P, Lissowska J, et al. High cumulative risk of lung cancer death among smokers and nonsmokers in central and eastern Europe. *American Journal of Epidemiology* 2006;164:1233-1241.
63. United States Department of Health and Human Services. The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. Available: <http://www.ncbi.nlm.nih.gov/books/NBK44324/>. Accessed 21 Jan 2016.
64. Australian Bureau of Statistics. *Causes of death, Australia 2014*. Cat. no. 3303.0. ABS: Canberra; 2016.
65. Australian Institute of Health and Welfare: METeOR. National Healthcare Agreement: PI 16—Potentially avoidable deaths, 2016. Available: <http://meteor.aihw.gov.au/content/index.phtml/itemId/598750>. Accessed 22 Apr 2016.
66. Australian Institute of Health and Welfare. *Australia's mothers and babies 2013 in brief*. Cat. no. PER 72. AIHW: Canberra; 2015.
67. World Health Organization. *Global action plan for the prevention and control of noncommunicable diseases 2013-2020*. WHO: Geneva; 2013.
68. Higginson I, Sarmiento V, Calanzani I, Benalia H, Gomes B. Dying at home – is it better? A narrative appraisal of the state of the science. *Palliative Medicine* 2013;27:918-924.
69. Yoong J. What can we do to help Australians die the way they want to? *Medical Journal of Australia* 2015;203:211.
70. Mortimer R. Dealing with death. *Medical Journal of Australia* 2015;203:232.
71. Scott I, Mitchell G, Reymond E, Daly M. Difficult but necessary conversations – the case for advance care planning. *Medical Journal of Australia* 2013;199:662-666.
72. Rosenwax L, McNamara B. Who receives specialist palliative care in Western Australia – and who misses out. *Palliative Medicine* 2006;20:439-445.
73. Van Weel C, Michels J. Dying, not old age, to blame for costs of health care. *The Lancet* 1997;350:1159-1160.
74. Organisation for Economic Co-operation and Development. OECD.Stat: health status – causes of mortality. Available: <http://stats.oecd.org/Index.aspx?QueryId=30115>. Accessed 28 Apr 2016.
75. Australian Bureau of Statistics. *Measures of Australia's progress: summary indicators, 2009*. Cat. no. 1383.0.55.001. ABS: Canberra; 2009.
76. Australian Bureau of Statistics. *Socio-economic indexes for areas (SEIFA). Technical paper 2006*. Cat. no. 2039.0.55.001. ABS: Canberra; 2008.
77. Australian Population and Migration Research Centre, University of Adelaide. ARIA (Accessibility/Remoteness Index of Australia). Available: [https://www.adelaide.edu.au/apmrc/research/projects/category/about\\_aria.html](https://www.adelaide.edu.au/apmrc/research/projects/category/about_aria.html). Accessed 18 Aug 2015.
78. Australian Institute of Health and Welfare. *Australia's hospitals 2013-14 at a glance*. Cat. no. HSE 157. AIHW: Brisbane; 2015.
79. Australian Institute of Health and Welfare. *Non-admitted patient care 2013-14. Australian hospital statistics*. Cat. no. HSE 159. AIHW: Canberra; 2015.
80. Australian Institute of Health and Welfare. *Admitted patient care 2013-14. Australian hospital statistics*. Cat. no. HSE 156. AIHW: Canberra; 2015.

81. National Centre for Classification in Health. *The international statistical classification of diseases and related health problems, tenth revision, Australian modification (ICD-10-AM)*. NCCCH: Sydney; 2010.
82. Queensland Health. *Queensland hospital admitted patient data collection*. Queensland Government: Brisbane.
83. Baker M, Barnard L, Kvalsvig A, Verrall A, Zhang J, Keall M, et al. Increasing incidence of serious infectious diseases and inequalities in New Zealand: a national epidemiology study. *Lancet Oncology* 2012;379:1112-1119.
84. Webster R, Queensland Health. *Trends in infectious disease admissions in Queensland public hospitals*. StatBite no. 55. Queensland Government: Brisbane; 2013.
85. Department of Health. *Infectious disease episodes in Queensland hospitals: key contributors to the increase*. StatBite no. 71. Queensland Government: Brisbane; 2016.
86. Cancer Care Ontario. Population aging and growth main contributors to increasing cancer burden. Available: <https://www.cancercare.on.ca/cms/one.aspx?portalId=1377&pageId=73110>. Accessed 7 Oct 2015.
87. Department of Health. *Analysis undertaken by Department of Health using population attributable fractions for Australia (2011 Australian Burden of Disease Study)*. Queensland Government: Brisbane; 2016.
88. Australian Institute of Health and Welfare. METeOR. National healthcare agreement. PI 22: selected potentially preventable hospitalisations, 2015. Available: <http://meteor.aihw.gov.au/content/index.phtml/itemId/559032>. Accessed 15 Aug 2016.
89. Department of Health. *Recent growth in public hospital separations – more than meets the eye?* StatBite no. 68. Queensland Government: Brisbane; 2015.
90. Australian Institute of Health and Welfare. *Health expenditure Australia 2013-14*. Cat. no. HWE 63. AIHW: Canberra; 2015.
91. Queensland Treasury. *2015 review of State finances*. Queensland Government: Brisbane; 2015.
92. Queensland Government. *Queensland budget 2016-17*. Budget Paper 2 – Budget Strategy and Outlook: Brisbane; 2016.
93. Daley J, McGannon C, Hunter A. *Budget pressures on Australian governments 2014*. Grattan Institute: Melbourne; 2014.
94. Australian Institute of Health and Welfare. *Health expenditure Australia 2013-14: analysis by sector*. Cat. no. HWE 65 AIHW: Canberra; 2015.
95. Australian Institute of Health and Welfare. *Australia's health 2014*. Cat. no. AUS 178. AIHW: Canberra; 2014.
96. Australian Institute of Health and Welfare. *Customised data: AIHW disease expenditure database* AIHW: Canberra; 2016.
97. Britt H, Miller G, Bayram C, Harrison C, Valenti L, Wong C, et al. *General practice activity in Australia 2013-14*. General practice series no. 36. University of Sydney: Sydney; 2014.
98. Endo T, Johnston T, Pozzi S. *Variations in deaths in Queensland hospitals for those aged 50 years and above*. StatBite no. 59. Queensland Government; 2014.
99. Wills R, Johnston T. *Variation in end of life care in Queensland*. StatBite no. 51. Queensland Government: Brisbane; 2012.
100. McGowan C. What is the cost of public hospital care at the end-of-life? Thesis submitted for Doctor of Philosophy. Flinders University, Adelaide. 2015.
101. Kardamanidis K, Lim K, Da Cunha C, Taylor LK, Jorm LR. Hospital costs of older people in New South Wales in the last year of life. *Medical Journal of Australia* 2007;187:383-386.
102. Goss J. *Projection of Australian health care expenditure by disease, 2003 to 2033*. Cat. no. HWE 43. AIHW: Canberra; 2008.
103. Organisation for Economic Co-operation and Development. *OECD reviews of health care quality: Australia – raising standards*. OECD: Paris; 2015.
104. PwC. *Weighing the cost of obesity: a case for action*. PricewaterhouseCoopers: Australia; 2015.
105. Collins DJ, Lapsley HM. *The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004-05*. Australian Government: Canberra; 2008.
106. Medibank Private. *The cost of physical inactivity*. Report prepared for Medibank Private by KPMG-Econtech; 2008.
107. VicHealth: Cadilhac DA, Magnus A, Cumming T, Sheppard L, Pearce D, Carter C. *The health and economic benefits of reducing disease risk factors*. VicHealth: Melbourne; 2009.

108. Australian Institute of Health and Welfare. *Obesity and workplace absenteeism among older Australians*. Cat. no. AUS 67. AIHW: Canberra; 2005.
109. Department of Health. *The clustering of chronic disease risk factors in Queensland 2012*. Queensland Government: Brisbane; 2014.
110. Australian Government. *The health of nations: the value of a statistical life*. Australian Safety and Compensation Council: Canberra; 2008.
111. Australian Institute of Health and Welfare. *Expenditure on health for Aboriginal and Torres Strait Islander people 2010-11*. Cat. no. HWE 57. AIHW: Canberra; 2013.
112. Australian Institute of Health and Welfare. *Expenditure on health for Aboriginal and Torres Strait Islander people 2010-11: an analysis by remoteness and disease*. Cat. no. HWE 49. AIHW: Canberra; 2013.
113. Organisation for Economic Co-operation and Development. OECD.Stat: Health expenditure and financing. Available: [http://stats.oecd.org/index.aspx?DataSetCode=HEALTH\\_STAT](http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT). Accessed 25 Nov 2015.
114. Banks E, Joshy G, Weber M, Liu B, Grenfell R, Egger S, et al. Tobacco smoking and all-cause mortality in a large Australian cohort study: findings from a mature epidemic with current low smoking prevalence. *BMC Medicine* 2015;13:38.
115. Department of Health. *Tobacco, alcohol and drug use in Queensland 2013. Analysis of the AIHW National Drug Strategy Household Survey*. Brisbane; 2016.
116. White D, Clemens S. The prevalence of e-cigarette use among Queensland adults, 2015-16. *Submitted to Medical Journal of Australia* 2016.
117. Department of Health. *Support for increasing smoke-free places*. Queensland Government: Brisbane; 2016.
118. Department of Health. *Preventive health surveys 2015-16, Queensland. Published and unpublished analysis*. Queensland Government: Brisbane; 2016.
119. Cancer Council Queensland. *Selected Queensland results from the 2014 ASSAD survey*. CCQ: Brisbane; 2016.
120. Department of Health. *Preventive health indicators for Aboriginal and Torres Strait Islander people in Queensland and Australia 2012-13*. Queensland Government: Brisbane; 2015.
121. Australian Bureau of Statistics. *2012-13 Australian Aboriginal and Torres Strait Islander health survey: customised report*. Cat. no. 4727.0.55.001. ABS: Canberra; 2014.
122. Queensland Health. Queensland survey analytic system (QSAS): regional detailed adult data. Available: <https://www.health.qld.gov.au/research-reports/population-health/preventive/data/preventive-health-surveys/results/default.asp>. Accessed 20 Jan 2016 (last update).
123. Australian Institute of Health and Welfare. *National drug strategy household survey detailed report 2013*. Drug statistics series no. 28. Cat. no. PHE 183. AIHW: Canberra; 2014.
124. Organisation for Economic Co-operation and Development. OECD datalab. Available: <http://www.oecd.org/statistics/>. Accessed 15 May 2013.
125. Ng M, Freeman M, Fleming T, Robinson M, Dwyer-Lindgren L, Thomson B, et al. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. *Journal of American Medical Association* 2014;311:183-192.
126. Queensland Health. Queensland survey analytic system (QSAS): current Queensland adult data and trends. Available: <https://www.health.qld.gov.au/research-reports/population-health/preventive/data/preventive-health-surveys/results/default.asp>. Accessed 19 Jan 2016 (last update).
127. Department of Health. *Trends in preventive risk factors: unpublished analysis*. Queensland Government: Brisbane; 2016.
128. Cancer Council Victoria. National survey release: tobacco use by Australian secondary school students declines Available: <http://www.cancervic.org.au/about/media-releases/2015-media-releases/november-2015/tobacco-use-secondary-school-students.html>. Accessed 18 Feb 2016.
129. Crimmins EM, Preston SH, Cohen B. *Explaining divergent levels of longevity in high-income countries*. 978-0-309-18640-7. National Academy of Sciences: Washington; 2011.
130. Mannan H, Curtis A, Forbes A, Maglianno D, Lowthian J, Gambhir M, et al. Improvements in life expectancy among Australians due to reductions in smoking: results from a risk percentiles approach *BMC Public Health* 2016;16:77.
131. Yuejen Z, Wright J, Begg S, Guthridge S. Decomposing Indigenous life expectancy gap by risk factors: a life table analysis. *Population Health Metrics* 2013;11:1.



132. Lovato C, Watts A, Stead LF. Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database of Systematic Reviews* 2011;10.
133. Queensland Health. Nobody smokes here anymore. Available: <http://www.health.qld.gov.au/tobaccolaws/default.asp>. Accessed 20 Feb 2012.
134. Department of Health. *Preventive health surveys 2016: Queensland. Published and unpublished analysis*. Queensland Government: Brisbane; 2016.
135. Dietitians Association of Australia. *A modelling system to inform the revision of the Australian guide to healthy eating*. National Health and Medical Research Council: Canberra; 2011.
136. National Health and Medical Research Council. Australian dietary guidelines 2013. Available: <https://www.nhmrc.gov.au/guidelines/publications/n55>. Accessed 6 Mar 2014.
137. Australian Institute of Health and Welfare. *Headline indicators for childrens health, development and wellbeing 2011*. Cat. no. PHE 144. AIHW: Canberra; 2011.
138. Australian Bureau of Statistics. *Customised report: Australian health survey: nutrition first results – foods and nutrients, 2011–12*. Cat. no. 4364.0.55.007. ABS: Canberra; 2014.
139. Department of Health. *Self reported health status 2014. Preventive health indicators: Queensland*. Queensland Government: Brisbane; 2014.
140. Australian Bureau of Statistics. *Australian health survey: nutrition first results – foods and nutrients, 2011-12*. Cat. no. 4364.0.55.007 ABS: Canberra; 2014.
141. Australian Institute of Health and Welfare. *2010 Australian national infant feeding survey: indicator results*. Cat. no. PHE 156. AIHW: Canberra; 2011.
142. Australian Institute of Health and Welfare. *2010 Australian national infant feeding survey [computer file]*. ID: O1244. Australian Data Archive: Canberra; 2011.
143. Organisation for Economic Co-operation and Development. OECD health indicators 2016. Available: <http://www.oecd.org/health/health-data.htm>. Accessed 25 Aug 2016.
144. World Health Organization. *Methodology and summary: country profiles on nutrition, physical activity and obesity in the 53 WHO European region member states*. WHO: Geneva; 2013.
145. Australian Bureau of Statistics. *Consumer price index, Australia Dec 2015* Cat. no. 6401.0. ABS: Canberra; 2016.
146. Australian Bureau of Statistics. *Australian health survey: consumption of food groups from the Australian Dietary Guidelines*. Cat. no. 4364.0.55.012. ABS: Canberra; 2016.
147. Australian Bureau of Statistics. *Australian health survey: consumption of added sugars*. Cat. no. 4364.0.55.011. ABS: Canberra; 2016.
148. Monasta L, Batty G, Cattaneo A, Lutje V, Ronfani L, van Lenthe F, et al. Early-life determinants of overweight and obesity: a review of systematic reviews. *Obesity Reviews* 2010;11:695-708.
149. Organisation for Economic Co-operation and Development. *Obesity update 2014*. OECD: Geneva; 2012.
150. Australian Food and Grocery Council. *Annual report: sustaining Australia*. AFGC: Canberra; 2015.
151. New South Wales Government: Food Authority. Evaluation of kilojoule menu labelling.
152. Medibank. Medibank health check #5. Community perceptions of food selection and the path to a healthy diet. Available: <https://www.medibank.com.au/content/dam/medibank/About-Us/media-centre/Medibank%20Health%20Check%20Report.pdf>. Accessed 11 Apr 2016.
153. IBISWorld. Gyms and fitness centres in Australia: market research report. Available: <http://www.ibisworld.com.au/industry/default.aspx?indid=658>. Accessed 11 Apr 2016.
154. IBISWorld. Personal trainers in Australia: market research report. Available: <http://www.ibisworld.com.au/industry/personal-trainers.html>. Accessed 11 Apr 2016.
155. Australian Bureau of Statistics. *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13 (First Issue)*. Cat. no. 4727.0.55.001 ABS: Canberra; 2013.
156. Department of Health. Epidemiology: health surveys. Available: <http://www.health.qld.gov.au/epidemiology/publications/health-surveys.asp>. Accessed 20 Aug 2013.
157. Department of Health. *Jurisdictional comparisons of selected preventive risk factors*. Queensland Government: Brisbane; 2016.

158. Institute of Health Metrics and Evaluation: GBD Risk Factor Collaboration. Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19.2 million participants. *The Lancet* 2016;387:1377–1396.
159. Organisation for Economic Co-operation and Development. Health at a glance 2015: OECD indicators. Available: [http://dx.doi.org/10.1787/health\\_glance-2015-en](http://dx.doi.org/10.1787/health_glance-2015-en). Accessed 31 Aug 2016.
160. Department of Health. *Measured obesity in Queensland 2011-12*. Queensland Government: Brisbane; 2013.
161. Institute for Health Metrics and Evaluation: GBD risk factor collaborators. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the global burden of disease study 2013. *The Lancet* 2015; Published online 11 September 2015.
162. Prospective Studies Collaboration. Body-mass index and cause specific mortality in 900,000 adults: collaborative analyses of 57 prospective studies. *The Lancet* 2009;373:1083-1096.
163. Olshansky SJ, Passaro DJ, Hershow RC, Layden J, Carnes BA, Brody J, et al. A potential decline in life expectancy in the United States in the 21st century. *The New England Journal of Medicine* 2005;352:1138-1145.
164. The Global Burden of Metabolic Risk Factors for Chronic Diseases Collaboration. Metabolic mediators of the effects of body-mass index, overweight, and obesity on coronary heart disease and stroke: a pooled analysis of 97 prospective cohorts with 1.8 million participants. *The Lancet* 2013; published online November 22.
165. Mehta T, Fontaine KR, Keith SW, Bangalore S, de los Campos G, Baetolucci A, et al. Obesity and mortality: are the risks declining? Evidence from multiple prospective studies in the United States. *Obesity Reviews* 2014; Available: 9 Jun 2014.
166. Walls H, Backholer K, Proietto J, McNeil J. Obesity and trends in life expectancy. *Journal of Obesity* Available: <http://www.hindawi.com/journals/job/2012/107989/>. Accessed 29 Aug 2016.
167. Ministry of Health. *Health loss in New Zealand 1990-2013: a report from the New Zealand burden of diseases, injuries and risk factors study*. Ministry of Health New Zealand: Wellington; 2016.
168. The Global BMI Mortality Collaboration, Di Angelantonio E, et al. Body-mass index and all-cause mortality: individual-participant-data-meta-analysis of 239 prospective studies in four continents. *The Lancet*: published online 13 July 2016.
169. Australian Bureau of Statistics. Customised report: *Australian health survey: biomedical results for nutrients, 2011-12* Cat. no. 4364.0.55.006. ABS: Canberra; 2014.
170. Department of Health. *Self reported health status survey 2014: unpublished results*. Queensland Government: Brisbane; 2014.
171. Australian Bureau of Statistics. *National health survey: summary of results*. State tables. 2007-08 (Re-issue). Cat. no. 4362.0. ABS: Canberra; 2009.
172. Australian Bureau of Statistics. *Australian health survey: updated results, 2011-12*. Cat. no. 4364.0.55.001. ABS: Canberra; 2013.
173. National Health and Medical Research Council. *Australian guidelines to reduce health risks from drinking alcohol*. NHMRC: Canberra; 2009.
174. Clough A, Fitts M, Robertson J, Shakeshaft A, Miller A, Doran C, et al. Study protocol – Alcohol Management Plans (AMPs) in remote indigenous communities in Queensland: their impacts on injury, violence, health and social indicators and their cost-effectiveness. *BMC Public Health* 2014;14:15.
175. Australian Institute of Health and Welfare. 2013 National drug strategy household survey. Available: <http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs/2013/alcohol/>. Accessed 17 Jul 2014.
176. Australian Bureau of Statistics. *Apparent consumption of alcohol, Australia, 2013-14*. Cat. no. 4307.0.55.001. ABS: Canberra; 2015.
177. Queensland Ambulance Service, *Turning Point. Turning Point coding and analysis of Queensland Ambulance Service data; unpublished*. Turning Point: Melbourne; 2016.
178. Queensland Health. *Emergency department information system (EDIS) and emergency data collection*. Queensland Government: Brisbane.
179. Laslett A, Mugavin J, Jiang H, Manton E, Callinan S, MacLean S, et al. *The hidden harm: alcohol's impact on children and families*. Foundation for Alcohol Research and Education: Canberra 2015.
180. Jenny M, Makkai T. *Women's experiences of male violence: findings from the Australian component of the International Violence Against Women Survey (IVAWS)*. Research and Public Policy Series no. 56. Australian Institute of Criminology: Canberra; 2004.

181. Bryant W, Cussen T. *Homicide in Australia: 2010-11 to 2011-12*. National homicide monitoring program report no. 23. Australian Institute of Criminology: Canberra; 2015.
182. Dearden J, Payne. *Alcohol and homicide in Australia* Trends and issues in crime and criminal justice series no. 372. Australian Institute of Criminology: Canberra; 2009.
183. Australian Government Department of Health. Australia's physical activity and sedentary behaviour guidelines. Available: <http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines>. Accessed 13 Apr 2016.
184. Australian Bureau of Statistics. *Participation in sport and physical recreation, Australia, 2013-14*. Cat. no. 4177.0. ABS: Canberra; 2015.
185. Queensland Health. *Self reported health status 2011: physical activity levels and factors associated with intentions to increase physical activity*. Queensland Government: Brisbane; 2011.
186. Australian Bureau of Statistics. *Australian Aboriginal and Torres Strait Islander health survey: physical activity 2012-13 – Australia*. Cat. no. 4727.0.55.004. ABS: Canberra; 2014.
187. Australian Bureau of Statistics. *Australian health survey: physical activity, 2011-12*. Cat. no. 4364.0.55.004. ABS: Canberra; 2013.
188. Brown WJ, Baumann A, Bull F, Burton N. *Development of evidence-based physical activity recommendations for adults (18-64 years)*. Report prepared for the Australian Government Department of Health. 2013.
189. The Royal Children's Hospital Melbourne. *Australian child health poll: top 10 child health problems*. Poll number 1. RCH: Melbourne; 2015.
190. US Department of Health and Human Services. Step it up! The Surgeon General's call to action to promote walking and walkable communities. Available: <http://www.surgeongeneral.gov/library/calls/walking-and-walkable-communities/>. Accessed 15 Apr 2016.
191. Kyu H, Bachman V, Alexander L, Mumford J, Afshin A, Estep K, et al. Physical activity and risk of breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events: systematic review and dose-response meta-analysis for the Global Burden of Disease Study 2013. *British Medical Journal* 2016;354:i3857.
192. Chaput J, Carson V, Gray C, Tremblay M. Importance of all movement behaviors in a 24 hour period for overall health. *International Journal of Environmental Research and Public Health* 2014;12575-12581.
193. Ekelund U, Steene-Johannessen J, Brown W, Fagerland M, Owen N, Powell K, et al. Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women. *The Lancet*; Published online: 27 July 2016.
194. Tiedemann A, Sherrington C, Close J, Lord S. Exercise and Sports Science Australia position statement on exercise and falls prevention in older people. *Journal of Science and Medicine in Sport* 2011; 14:489-495.
195. National Vascular Disease Prevention Alliance. *Guidelines for the assessment of absolute cardiovascular disease risk*. National Heart Foundation of Australia: Canberra; 2012.
196. Banks E, Crouch S, Korda R, Stavreski B, Page K, Thurber K, et al. Absolute risk of cardiovascular disease events, and blood pressure-lipid lowering therapy in Australia. *Medical Journal of Australia* 2016;204:320.e321-e328.
197. Australian Bureau of Statistics. *Customised report: Australian health survey, biomedical results for chronic diseases 2011-12*. ABS: Canberra; 2014.
198. Britt H, Miller G, Henderson J, Bayram C, Valenti L, Harrison C, et al. *A decade of Australian general practice activity 2005-06 to 2014-15*. Sydney; 2015.
199. Department of Health. *Methamphetamine background paper – Queensland data*. Queensland Government: Brisbane; 2016.
200. Australian Institute of Health and Welfare. *BreastScreen Australia monitoring report 2012-2013*. Cat. no. CAN 93. AIHW; 2015.
201. Department of Health. *Queensland cervical screening program pap smear register data*. Queensland Government: Brisbane; 2015.
202. Australian Institute of Health and Welfare. *National bowel cancer screening program monitoring report 2013-14*. Cat. no. CAN 92. AIHW; 2015.
203. Australian Institute of Health and Welfare. *Cervical screening in Australia 2013-2014*. Cat. no. CAN 95. AIHW: Canberra; 2016.
204. Green A, Williams G, Logan V, Strutton G. Reduced melanoma after regular sunscreen use: randomised trial follow-up. *Journal of Clinical Oncology* 2011;29:257-263.

205. Department of Health and Ageing. National skin cancer awareness campaign. Available: <http://www.health.gov.au/internet/skincancer/publishing.nsf/Content/home>. Accessed 11 May 2012.
206. Australian Bureau of Statistics. *Australian health survey; biomedical results for nutrients, 2011-12*. Cat. no. 4364.9.55.006. ABS: Canberra; 2013.
207. Queensland Health. Oncology analysis system (OASys). Queensland Cancer Control Analysis Team. Available: <https://qool.health.qld.gov.au/OASys>. Accessed 21 Mar 2016.
208. Australian Institute of Health and Welfare. *Cancer in Australia: an overview 2014*. AIHW: Canberra; 2014.
209. World Health Organization. Globocan 2012. Cancer incidence and mortality worldwide. Available: <http://globocan.iarc.fr>. Accessed 23 Mar 2016.
210. Whiteman D, Green A, Olson C. The growing burden of invasive melanoma: projections in incidence rates and numbers of new cases in six susceptible populations through 2031. *Journal of Investigative Dermatology* 2016; Article in press.
211. Australian Institute of Health and Welfare. *Health system expenditure on cancer and other neoplasms in Australia, 2008-09*. Cat. no. CAN 78. AIHW: Canberra; 2013.
212. Australian Institute of Health and Welfare. *Skin cancer in Australia*. Cat. no. CAN 96. AIHW: Canberra; 2016.
213. Department of Health. *Child health status survey 2014*. Queensland Government: Brisbane; 2015.
214. Australian Research Centre for Population Oral Health. *National child oral health survey 2012-2014*. University of Adelaide: Adelaide; 2016.
215. Meija GC, Amarasena N, Ha DH, Roberts-Thomson KF, Ellershaw AC. *Child dental health survey Australia 2007: 30-year trends in child oral health*. Cat. no. DEN 217. AIHW: Canberra; 2012.
216. Chrisopoulos S, Beckwith K, Harford JE. *Oral health and dental care in Australia: key facts and figures 2011*. Cat. no. DEN 214. AIHW: Canberra; 2011.
217. Armfield J, Spencer A. Quarter of a century of change: caries experience in Australian children, 1977-2002. *Australian Dental Journal* 2008;53:151-159.
218. Australian Research Centre for Population Oral Health. *National dental telephone interview survey 2013: unpublished results*. AIHW: Canberra; 2016.
219. COAG Health Council. *Australia's national oral health plan 2015-2024*. Australian Government: Canberra; 2015.
220. Koh R, Pukallus M, Newman B, Foley M, Walsh L, Kim Seow W. Effects of water fluoridation on caries experience in the primary dentition in a high caries risk community in Queensland, Australia. *Caries Research* 2015;49:184-191.
221. Do L, Spencer A. Contemporary multilevel analysis of the effectiveness of water fluoridation in Australia. *Australian and New Zealand Journal of Public Health* 2015;39:44-50.
222. Kim TH, Johnstone J, Loeb M. Vaccine herd effect. *Scandinavian Journal of Infectious Diseases* 2011;43:683-689.
223. Department of Health and Ageing. National immunisation program schedule. Available: <http://www.immunise.health.gov.au>. Accessed 4 Oct 2016.
224. Australian Government Department of Human Services. Australian childhood immunisation register. Available: <http://www.medicareaustralia.gov.au/provider/patients/acir/index.jsp>. Accessed 28 Apr 2016.
225. Queensland Health. *Hospitalisations for domestic assault, Queensland, 2005-06 to 2014-15*. StatBite no. 69. Queensland Government: Brisbane; 2016.
226. Institute of Health Metrics and Evaluation. GBD compare. Available: <http://vizhub.healthdata.org/gbd-compare>. Accessed 7 Jun 2016.
227. Australian Bureau of Statistics. *Personal safety, Australia, 2012*. Cat. no. 4906.0. ABS: Canberra; 2013.
228. Bryant W, Cusses T. *Homicide in Australia: 2010-11 to 2011-12. National homicide monitoring program report*. Monitoring report no. 23. Australian Institute of Criminology: Canberra; 2015.
229. Richards K. *Children's exposure to domestic violence in Australia*. Trends and issues in crime and criminal justice. No. 419 Australian Institute of Criminology: Canberra; 2011.
230. Spike C. *The EAPU Helpline: Results of an investigation of five years of call data. Report for the International Association of Gerontology and Geriatrics Asia and Oceania regional congress 2015*. UnitingCare Community: Queensland; 2015.

231. Campo M, Tayton S. *Domestic and family violence in regional, rural and remote communities. An overview of key issues*. Australian Institute of Family Studies: Melbourne; 2015.
232. Australian Bureau of Statistics. *National Aboriginal and Torres Strait Islander social survey, 2014-15*. Cat. no. 4714.0. ABS: Canberra; 2016.
233. Queensland Health. *Morbidity and discharge patterns in hospitalisations for domestic assault, Queensland, 2014-15*. StatBite no. 70. Queensland Government: Brisbane; 2015.
234. PwC. A high price to pay. *The economic case for preventing violence against women*. PricewaterhouseCoopers: Australia; 2015.
235. Queensland Government. Domestic and Family Violence Death Review and Advisory Board Available: <https://www.legislation.qld.gov.au/Bills/55PDF/2015/CoronersDFVAB15.pdf>. Accessed 22 Jul 2016.
236. Queensland Health. *Workforce performance and assurance. Occupational violence dashboard Q3 2015-16*. Queensland Government: Brisbane; 2016.
237. Queensland Ambulance Service. *Paramedic Safety Taskforce. Final report*. Queensland Government: Brisbane; 2016.
238. Department of Science Information Technology and Innovation. *Queensland air monitoring report 2014. National environment protection (ambient air) quality measure*. Queensland Government: Brisbane; 2015.
239. NHMRC. Evidence on the effects of lead on human health (May 2015). Available: [www.nhmrc.gov.au/\\_files\\_nhmrc/publications/attachments/eh58a\\_information\\_paper\\_effects\\_lead\\_human\\_health\\_a.pdf](http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/eh58a_information_paper_effects_lead_human_health_a.pdf). Accessed 16 Jun 2016.
240. Australian Bureau of Statistics. About the Australian Bureau of Statistics. Available: <http://www.abs.gov.au>. Accessed 15 Aug 2016.
241. Australian Institute of Health and Welfare. About AIHW. Available: <http://www.aihw.gov.au/about/>. Accessed 15 Aug 2016.
242. Porta MA, Greenland S, Last JM (editors). *Dictionary of epidemiology*. 5th ed. Oxford: Oxford University Press; 2008.
243. Australian Institute of Health and Welfare. About COPD. Available: <http://www.aihw.gov.au/copd/>. Accessed 4 Jul 2016.
244. Australian Bureau of Statistics. *Australian system of national accounts: concepts, sources and methods, Australia, 2012*. Edition 1. Cat. no. 5216.0. ABS: Canberra; 2012.
245. National Health and Medical Research Council. NHMRC's role. Available: <http://www.nhmrc.gov.au/about/organisation-overview/nhmrcs-role>. Accessed 15 Aug 2016.
246. Organisation for Economic Co-operation and Development. About the OECD. Available: <http://www.oecd.org/about/>. Accessed 15 Aug 2016.
247. Australian Bureau of Statistics. *Information paper: use of the Kessler psychological distress scale in ABS health surveys, Australia, 2007-08*. Cat. no. 4817.0.55.001. ABS: Canberra; 2012.
248. World Health Organization. About WHO. Available: <http://www.who.int/about/en/>. Accessed 15 Aug 2016.

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