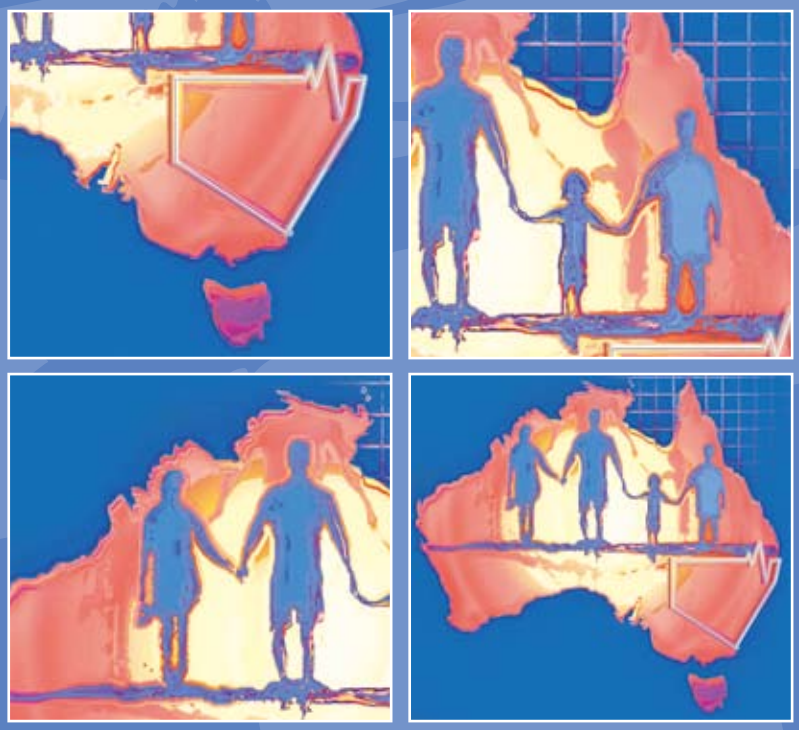
REPORT OF THE
CHIEF
HEALTH
OFFICER
2008

The Health of the People of New South Wales

SUMMARY REPORT



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November 2008

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Contributors to the Report

The preparation of the *Health of the people of New South Wales - Report of the Chief Health Officer, 2008*, was a team effort. This effort involved many people within the Centre for Epidemiology and Research in indicator definition, data cleaning, data analysis and presentation, and writing and editing the report. It also involved many other people from within the Department, particularly the Population Health Division, as well as external groups. The following list indicates the broad roles played by the many contributors to the Summary Report only. Contributors to the e-CHO can be found on the web site.

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Foreword

The people of New South Wales generally live long and productive lives. A child born in 2006 would now expect to live 79.3 years if male and 84.2 years if female, an increase of just under 3 years since 1997. Australian longevity was third only to Japan and Switzerland in 2006.

However, our population is also subject to a heavy burden of disease. These diseases include, in order of burden, cancer, cardiovascular diseases, mental disorders, neurological disorders, injuries, respiratory diseases and diabetes. Together these diseases constitute just over 80% of all disease burden in our community.

Each of these diseases can in part be prevented and others have had improved survival over the last decade with the advancement of medical science and research. Prevention requires addressing the determinants of poor health and substantial changes in life-style behaviours associated with disease risk. These risky behaviours include smoking, poor diet low in fruit and vegetables, little exercise, and high alcohol consumption.

This report, *The Health of the People of NSW – Report of the Chief Health Officer,* clearly shows that life expectancy is increasing and deaths from the major diseases are falling. The report shows ongoing reductions in risky behaviours such as smoking, sedentary behaviour and risk-drinking, which lead to disease. Risky drinking has reduced by over 13% in males and 9% in females in the last 10 years and adequate levels of physical activity have increased by 10% in men and 4% in women.

However, overweight and obesity rates have increased by over 3% in men and just under 4% in women in the last five years. The consumption of vegetables has remained low in both men and women, with below 15% of men and women eating the recommended amount of vegetables in 2007.

The report also highlights that the significant health gains experienced by many people in NSW have not been shared equally, with poorer health outcomes in individuals in low socio-economic groups and in the Aboriginal population of NSW. In these populations, health outcomes remain unacceptably different from the rest of the community.

Deaths from all causes decreased by 22% in men over the last ten years and by 19% in women. There was a higher rate of decline in deaths from potentially avoidable causes of 36% in men and 32% in women in the last decade. Life expectancy for those who have survived to age 65 years is now around 84 years for men and 87 years for women.

This report provides key information on the status of the health of our community, current challenges and inequities and trends in these factors. It provides information to all those working to improve health on the effectiveness of their programs. The report should allow the public to take steps to maintain healthy lives.

Dr Kerry Chant
Acting Deputy Director-General, Population Health and Chief Health Officer

November 2008

About this Summary Report

The health of the people of NSW – Report of the Chief Health Officer, has been produced since 1996 and has become a flagship publication of the NSW Department of Health. This is the seventh edition, and the first year that this Summary Report has been produced to replace the previous hard copy version. It provides an overview of key population health indicators, health inequalities, emerging health priorities and new health data sources.

This seventh edition of *The health of the people of NSW – Report of the Chief Health Officer* consists of three components:

1) the electronic report or **e-CHO**, which is an interactive web-based report providing graphs and complete data tables and explanatory text on over 400 population health indicators, as well as files for each indicator which can be downloaded by users.
2) **Data books** of each chapter in portable document format (pdf) containing all graphs and tables on a particular topic and which can be printed from the website.
3) This new **Summary Report**, which provides summary tables of trends in key population health indicators, a comparison of differences in key indicators among the eight NSW health areas, an overview of each chapter of the e-CHO and a detailed analysis of two special topics – this year on inequalities in mortality and childhood overweight and obesity.

The latest available data are presented, including hospitalisation data to 2006-07, deaths data to 2006, NSW Population Health Survey data to 2007, mothers and babies data to 2006, cancer incidence and screening data to 2006, and communicable diseases data to 2007. The 2008 report uses estimated residential populations based on the 2006 Australian Census of Population and Housing and the Australian standard population based on the 2001 Census for calculating age-standardised rates for comparing trends over time. Geographical areas were grouped according to the Australian Standard Geographical Classification (ASGC) Remoteness categories. This was calculated using the Accessibility/Remoteness Index for Australia (ARIA+ version) score based on the 2006 Census boundaries. Socioeconomic Indices for Areas (SEIFA) based on the 2006 Census have been also used in the report. Details of methods used in this report can be found in the Appendix.

This Summary Report is a condensed version of a subset of indicators available in the electronic version of the report, or e-CHO. The full e-CHO is available on the internet at **http://www.health.nsw.gov.au/public-health/chorep**

Sections 1 and 2 provide summary statistics on 71 indicators in tables allowing the reader to directly compare figures for each health area and over time, with a colour-coded indication of significant differences with the state average among health areas, the statistical significance of trends over time and the link to statewide plans.

Section 3 provides a more in-depth analysis of two special topic areas.

Sections 4 to 7 provide an introduction and key points for each of 18 chapters included in the e-CHO, with up to three selected graphs from the e-CHO for each chapter. The full data tables and explanatory text for these and other indicators can be found in the e-CHO.

Links to statewide plans

The tables in Sections 1 and 2 of this Summary Report show the link between the key population health indicators and the current strategic statewide plans, the ***NSW State Plan***, ***NSW State Health Plan, Healthy People NSW*** and the ***Two Ways Together*** Plans.

Colours have been used to denote the relationship of the indicator to the relevant plan. Official performance indicators are a subset of the indicators presented in this report.

The reporting requirements for each plan are to different levels of government, ranging from the *NSW State Plan* (reporting to the Premier), *NSW State Health Plan* (reporting to the NSW Minister for Health), *Healthy People NSW* (Reporting to the Deputy Director-General, Population Health and Chief Health Officer), and *Two Ways Together* (reporting to the Premier).

Performance on all *NSW State Plan* and *NSW State Health Plan* indicators is also reported by each health area to the Director-General of Health through the Area Health Service Performance Agreements. All indicators included in the higher-level reporting plans are also included in the lower level plans.

NSW State Plan

Describes priorities for NSW Government action, in five areas: rights, respect and responsibility; delivering better services; fairness and opportunity; growing prosperity across NSW; and environment for living.

NSW State Health Plan

Reflects the priorities in the *NSW State Plan* with seven strategic directions for health priorities over the next five years:

SD1: Make prevention everybody's business.
SD2: Create better experiences for people using health services.
SD3: Strengthen primary health and continuing care in the community.
SD4: Build regional and other partnerships for health.
SD5: Make smart choices about the costs and benefits of health services.
SD6: Build a sustainable health workforce.
SD7: Be ready for new risks and opportunities.

Healthy People NSW

Healthy People NSW: Improving the health of the population. Describes the platform for population health action in NSW and identifies three priorities for action and two enablers to achieve them. The priorities are:

P1: Assess the health of populations
P2: Protect from threats to health
P3: Promote health and prevent disease, disability and injury.

The enablers are:

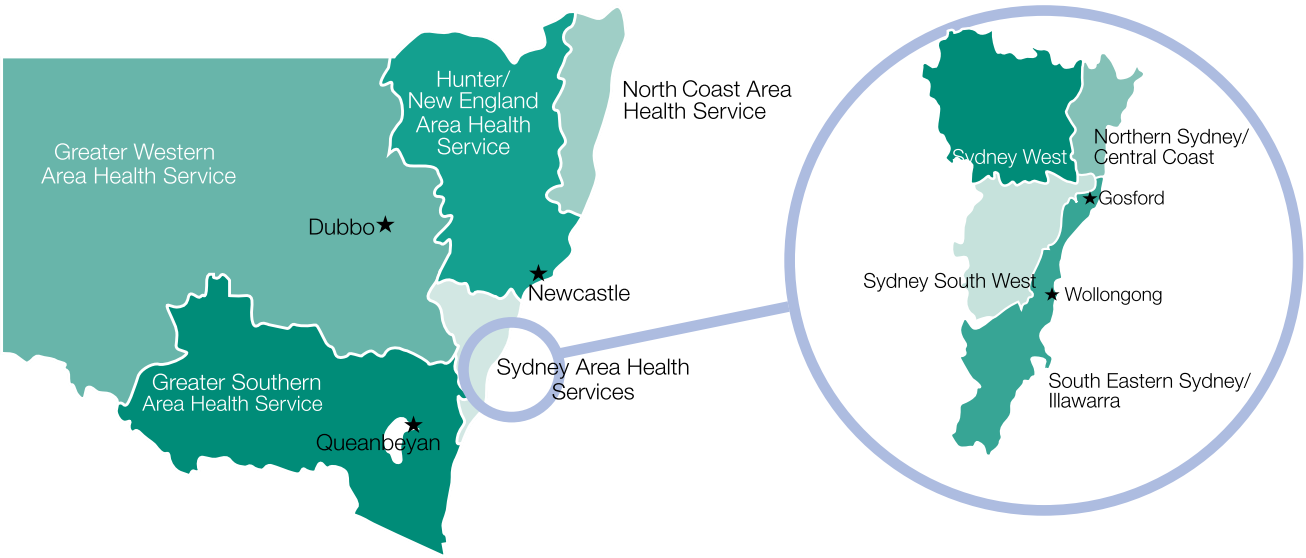
E1: Ensure population health capacity
E2: Build the evidence base for population health.

Two Ways Together

The NSW Aboriginal Affairs Plan 2003-2012 - developed in consultation with the Aboriginal communities of NSW, has seven priority areas: health; housing; education; culture and heritage; justice; economic development; and families and young people.

Map of NSW Area Health Services

These maps illustrate the current boundaries of the eight NSW Area Health Services. Each Area Health Service is made up of a number of statistical local areas or local government areas (see table below).



Area Health Service	Localities within Area Health Service boundaries
Sydney South West	Ashfield, Bankstown, Burwood, Camden, Campbelltown, Canada Bay, Canterbury, Fairfield, Leichhardt, Liverpool, Marrickville, Strathfield, Sydney (part), Wingecarribee, Wollondilly
South Eastern & Illawarra	Botany Bay, Hurstville, Kiama, Kogarah, Randwick, Rockdale, Shellharbour, Shoalhaven, Sutherland Shire, Sydney (part), Waverley, Wollongong, Woollahra
Sydney West	Auburn, Baulkham Hills, Blacktown, Blue Mountains, Hawkesbury, Holroyd, Lithgow, Parramatta, Penrith
Northern Sydney & Central Coast	Gosford, Hornsby, Hunter's Hill, Ku-ring-gai, Lane Cove, Manly, Mosman, North Sydney, Pittwater, Ryde, Warringah, Willoughby, Wyong
Hunter & New England	Armidale Dumaresq, Cessnock, Dungog, Glen Innes Severn, Gloucester, Greater Taree, Great Lakes, Gunnedah, Guyra, Gwydir, Inverell, Lake Macquarie, Liverpool Plains, Maitland, Moree Plains, Muswellbrook, Narrabri, Newcastle, Port Stephens, Singleton, Tamworth Regional, Tenterfield, Upper Hunter Shire, Uralla, Walcha
North Coast	Ballina, Bellingen, Byron, Clarence Valley, Coffs Harbour, Hastings, Kempsey, Kyogle, Lismore, Nambucca, Richmond Valley, Tweed
Greater Southern	Albury, Bega Valley, Berrigan, Bland, Bombala, Boorowa, Carrathool, Conargo, Coolamon, Cooma-Monaro, Cootamundra, Corowa Shire, Deniliquin, Eurobodalla, Goulburn Mulwaree, Greater Hume Shire, Griffith, Gundagai, Harden, Hay, Jerilderie, Junee, Leeton, Lockhart, Murray, Murrumbidgee, Narrandera, Palerang, Queanbeyan, Snowy River, Temora, Tumbarumba, Tumut Shire, Upper Lachlan, Urana, Wagga Wagga, Wakool, Yass Valley, Young
Greater Western	Balranald, Bathurst Regional, Blayney, Bogan, Bourke, Brewarrina, Broken Hill, Cabonne, Central Darling, Cobar, Coonamble, Cowra, Dubbo, Forbes, Gilgandra, Lachlan, Mid-Western Regional, Narromine, Oberon, Orange, Parkes, Walgett, Warren, Warrumbungle Shire, Weddin, Wellington, Wentworth, Unincorporated NSW

Key population health indicators by Area Health Service

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About this section

This section reports key population health indicators of determinants of health, the burden of disease, health inequalities, and health priority areas, for NSW and by Area Health Service.

Area Health Service-level indicators were compared with the NSW average, where possible, by assessing the overlap of appropriate 95% confidence intervals for NSW and each Area Health Service. For full details of the methods used to calculate and compare 95% intervals see Appendix 2 – Methods.

How to interpret tables

Indicators are reported by population group for the period and in the units specified in tables. Cells are highlighted based on the results from the comparison of 95% confidence intervals, and signify whether the AHS-level indicator was higher, lower or no different from the NSW average (see Key).

For example, in 2007 a greater proportion of males in North Coast Area Health Service and a lower proportion of males in Sydney South West Area Health Service engaged in risk alcohol drinking compared with the NSW average. There was no difference between the NSW average and the proportion of males engaging in risk alcohol drinking in all other Area Health Services.

KEY

- Linked to NSW State Plan, NSW State Health Plan and Healthy People NSW
- Linked to NSW State Health Plan and Healthy People NSW
- Linked to Healthy People NSW only
- Linked to Two Ways Together only
- Higher than NSW average
- Lower than NSW average
- No difference from NSW average
- – Data not available

NOTES

a See appendix Explanatory Notes for full description of indicators

b ASR = rate per 100,000 population, age-adjusted to the Australian population as at 30 June 2001.

NSW = New South Wales
SSW = Sydney South West Area Health Service
SESI = South Eastern Sydney & Illawarra Area Health Service
SW = Sydney West Area Health Service
NSCC = Northern Sydney & Central Coast Area Health Service
HNE = Hunter & New England Area Health Service
NC = North Coast Area Health Service
GS = Greater Southern Area Health Service
GW = Greater Western Area Health Service

* No data on statistically significant differences available

Table 1.1 **Determinants of health**

Social determinants[a]	Period	Group	Unit[b]	NSW	SSW	SESI	SW	NSCC	HNE	NC	GS	GW
Household weekly income < $500	2006	Households	%	12.1	13.0	10.8	10.3	7.6	15.3	17.8	13.7	16.0
Household weekly income > $2000	2006	Households	%	21.7	21.4	26.7	22.7	34.1	14.1	8.2	13.6	12.2
Health-related behaviours[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Adequate physical activity	2007	Males	%	62.1	55.9	64.1	57.4	66.8	69.7	64.5	63.0	57.8
	2007	Females	%	47.6	41.8	54.7	44.9	52.8	40.6	49.7	50.5	46.4
Overweight and obesity (16+ yrs)	2007	Males	%	58.8	53.6	60.0	60.6	53.0	65.6	55.4	62.1	75.3
	2007	Females	%	44.7	44.0	40.1	46.3	37.6	53.1	44.6	51.8	54.3
Recommended fruit consumption	2007	Males	%	48.4	49.2	44.1	49.4	53.7	45.6	47.2	51.4	45.0
	2007	Females	%	59.8	57.0	59.1	59.1	67.3	58.7	60.4	58.6	53.9
Recommended vegetable consumption	2007	Males	%	7.2	6.3	8.8	3.7	7.3	7.6	10.8	8.5	8.9
	2007	Females	%	13.8	10.0	15.0	10.0	12.3	19.6	17.4	17.0	16.6
Children free of dental caries (5-6 yrs)*	2007	Children	%	59.3	61.7	72.8	59.6	72.2	63.0	40.3	49.8	44.7
Current smoking	2007	Males	%	21.9	29.0	20.1	25.3	14.7	14.3	26.1	25.0	19.3
	2007	Females	%	15.4	17.5	14.7	16.1	9.5	18.7	17.5	15.2	16.0
Risk alcohol drinking	2007	Males	%	37.2	28.0	36.6	35.2	35.0	43.8	49.1	46.1	43.9
	2007	Females	%	27.0	22.4	25.6	20.9	35.8	28.8	27.5	32.1	26.4
High risk alcohol drinking	2007	Males	%	11.3	7.9	10.5	11.3	10.8	11.5	15.4	17.3	15.4
	2007	Females	%	6.7	7.0	5.3	5.3	8.0	9.0	6.5	5.4	6.2
Vaccinated against influenza in last 12 months (65+ years)	2007	Males	%	71.1	68.3	65.4	70.2	79.7	74.5	73.5	65.7	68.1
	2007	Females	%	74.2	73.6	71.0	73.3	75.0	79.3	71.4	77.1	73.1
Vaccinated against pneumoccal in last 5 years (65+ years)	2007	Males	%	56.7	49.0	48.0	61.0	62.1	62.6	57.7	62.2	53.7
	2007	Females	%	61.1	56.6	53.9	59.5	59.3	73.4	61.6	69.4	64.4

Table 1.2 **Burden of disease**

Deaths[a]	**Period**	**Group**	**Unit**[b]	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
All causes	2002-2006	Males	ASR	777.2	807.0	708.7	776.9	697.6	845.9	782.4	845.2	948.0
	2002-2006	Females	ASR	515.6	516.8	477.4	531.7	484.1	553.3	510.2	550.4	592.1
Potentially avoidable	2002-2006	Males	ASR	221.7	229.7	203.2	221.2	180.0	243.6	239.2	246.7	275.2
	2002-2006	Females	ASR	122.8	120.4	111.5	131.5	103.4	138.4	128.7	133.4	155.9
Hospital separations[a]	**Period**	**Group**	**Unit**[b]	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
All causes	2006-07	Males	ASR	32,985.4	32,480.9	34,196.9	31,971.0	33,388.8	30,767.1	32,995.0	34,179.7	36,488.4
	2006-07	Females	ASR	34,096.3	32,049.5	34,483.8	34,217.5	34,996.5	34,280.2	33,683.0	34,024.9	37,625.4
Ambulatory care sensitive conditions	2006-07	Males	ASR	2,580.4	2,456.3	2,326.5	2,758.9	2,232.3	2,534.3	2,910.4	2,932.2	3,700.8
	2006-07	Females	ASR	2,403.5	2,204.5	2,209.9	2,593.9	2,021.2	2,375.6	2,762.7	2,876.7	3,694.5
Other[a]	**Period**	**Group**	**Unit**[b]	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Life expectancy at birth	2002-2006	Males	Years	78.7	78.4	79.9	78.9	80.3	77.5	78.3	77.5	76.0
	2002-2006	Females	Years	83.7	83.7	84.7	83.4	84.5	82.7	83.7	82.9	81.9
Life expectancy at age 65 yrs	2002-2006	Males	Years	83.2	82.8	84.0	83.1	84.0	82.6	83.6	82.6	81.7
	2002-2006	Females	Years	86.7	86.6	87.4	86.4	87.0	86.2	87.0	86.1	85.6

KEY

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b ASR = rate per 100,000 population, age-adjusted to the Australian population as at 30 June 2001.

NSW = New South Wales Area Health Service, SSW = Sydney South West Area Health Service, SESI = South Eastern Sydney & Illawarra Area Health Service, SW = Sydney West Area Health Service, NSCC = Northern Sydney & Central Coast Area Health Service, HNE = Hunter & New England Area Health Service, NC= North Coast Area Health Service, GS = Greater Southern Area Health Service, GW = Greater Western Area Health Service

Table 1.3 **Health inequalities**

Deaths[a]	Period	Group	Unit[b]	NSW	SSW	SESI	SW	NSCC	HNE	NC	GS	GW
Potentially avoidable (males)	2002-2006	Aboriginal	ASR	526.8	379.6	419.5	403.4	349.6	535.4	542.3	473.9	807.1
	2002-2006	non-Aboriginal	ASR	218.2	228.6	201.6	219.7	179.3	237.8	233.7	243.7	252.9
Potentially avoidable (females)	2002-2006	Aboriginal	ASR	312.6	238.3	331.4	259.3	135.0	290.8	331.1	356.3	420.8
	2002-2006	non-Aboriginal	ASR	120.7	119.5	110.1	130.5	103.2	135.6	124.4	129.9	143.0
Hospital separations[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Ambulatory care sensitive conditions (males)	2006-07	Aboriginal	ASR	5,890.2	2,414.6	3,618.1	4,011.6	2,857.6	7,203.7	7,078.5	5,712.7	8,830.0
	2006-07	non-Aboriginal	ASR	2,527.9	2,440.8	2,303.8	2,733.7	2,230.8	2,434.2	2,762.0	2,861.5	3,430.2
Ambulatory care sensitive conditions (females)	2006-07	Aboriginal	ASR	5,961.1	3,529.4	4,364.6	4,680.4	3,077.0	5,036.7	7,322.3	7,493.8	9,581.0
	2006-07	non-Aboriginal	ASR	2,374.6	2,214.1	2,216.3	2,593.3	2,045.4	2,322.0	2,629.6	2,818.4	3,382.0
Pregnancy and the newborn[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Perinatal deaths	2002-2006	Aboriginal	RLB	13.0	14.6	7.9	8.0	13.0	17.3	11.6	4.4	15.8
	2002-2006	non-Aboriginal	RLB	8.7	9.6	8.3	8.6	6.9	10.5	7.8	7.0	10.2
First antenatal visit before 20 weeks gestation	2002-2006	Aboriginal	%	71.7	60.6	75.9	65.7	86.1	72.8	72.0	74.5	71.8
	2002-2006	non-Aboriginal	%	87.6	81.1	90.8	84.6	94.7	87.2	91.2	90.8	91.7
Premature babies	2002-2006	Aboriginal	%	11.7	13.0	11.5	11.8	14.1	12.8	11.7	8.9	10.8
	2002-2006	non-Aboriginal	%	7.1	6.9	7.0	7.0	6.9	8.4	6.8	5.4	7.4
Low birth weight babies	2002-2006	Aboriginal	%	12.6	12.0	11.5	13.0	11.7	13.5	12.6	10.9	12.7
	2002-2006	non-Aboriginal	%	6.2	6.4	6.0	6.3	5.6	7.0	5.7	4.8	6.4
Other[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Immunisation coverage (12-15 months)	2007	Aboriginal	%	83.5	80.9	88.0	86.1	84.7	83.6	87.5	73.2	82.2
	2007	non-Aboriginal	%	92.0	92.1	91.4	91.9	91.7	94.5	86.5	93.8	93.5

KEY

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NOTES

a See appendix Explanatory Notes for full description of indicators

b ASR = rate per 100,000 population, age-adjusted to the Australian population as at 30 June 2001, RLB = rate per 1,000 live births

NSW = New South Wales Area Health Service, SSW = Sydney South West Area Health Service, SESI = South Eastern Sydney & Illawarra Area Health Service, SW = Sydney West Area Health Service, NSCC = Northern Sydney & Central Coast Area Health Service, HNE = Hunter & New England Area Health Service, NC= North Coast Area Health Service, GS = Greater Southern Area Health Service, GW = Greater Western Area Health Service

Table 1.4 **Health priority areas**

New cases of cancer[a]	Period	Group	Unit[b]	NSW	SSW	SESI	SW	NSCC	HNE	NC	GS	GW
All cancer	2002-2006	Males	ASR	580.5	548.8	597.9	548.6	578.7	598.4	613.5	591.5	608.6
	2002-2006	Females	ASR	399.9	376.7	406.2	380.9	413.7	409.2	432.8	395.9	393.4
Lung cancer	2002-2006	Males	ASR	58.4	67.5	54.9	59.5	49.7	58.3	62.4	59.0	62.7
	2002-2006	Females	ASR	29.1	28.5	28.9	30.9	27.0	29.2	33.4	27.8	29.4
Colorectal cancer	2002-2006	Males	ASR	74.2	71.5	74.2	68.2	73.6	77.6	77.4	74.8	84.3
	2002-2006	Females	ASR	52.1	46.9	51.7	47.7	53.9	53.2	58.9	57.8	51.3
Melanoma	2002-2006	Males	ASR	61.7	39.3	63.5	45.9	73.5	74.0	90.1	55.8	66.3
	2002-2006	Females	ASR	38.9	24.3	37.7	30.4	44.1	49.1	59.4	40.8	44.6
Prostate cancer	2002-2006	Males	ASR	162.1	139.6	173.9	162.1	167.9	159.8	154.5	181.9	167.2
Breast cancer	2002-2006	Females	ASR	113.4	103.8	116.9	105.6	127.2	114.9	115.9	106.6	109.2
Cervical cancer	2002-2006	Females	ASR	6.6	6.9	7.7	6.0	5.0	8.3	6.4	5.7	7.1
Cancer deaths[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
All cancer	2002-2006	Males	ASR	230.9	231.9	216.2	224.3	212.8	252.2	245.0	245.1	254.9
	2002-2006	Females	ASR	143.3	141.1	138.2	141.2	137.7	151.9	148.2	153.0	147.7
Lung cancer	2002-2006	Males	ASR	48.7	55.5	45.3	48.9	40.8	50.0	53.6	50.1	53.0
	2002-2006	Females	ASR	22.4	21.4	21.2	23.3	21.2	22.8	25.8	23.3	22.8
Colorectal cancer	2002-2006	Males	ASR	23.3	21.9	24.6	22.5	21.3	24.4	22.0	26.5	26.4
	2002-2006	Females	ASR	15.2	14.5	14.7	13.8	14.6	17.4	15.4	16.6	16.7
Melanoma	2002-2006	Males	ASR	9.3	7.3	9.0	7.6	9.6	11.1	12.0	10.3	9.0
	2002-2006	Females	ASR	3.6	2.9	3.6	2.6	3.9	4.3	4.8	3.7	3.2
Prostate cancer	2002-2006	Males	ASR	32.8	29.4	26.5	30.8	31.7	41.8	36.6	36.0	39.7
Breast cancer	2002-2006	Females	ASR	23.9	22.2	22.9	24.2	24.9	26.2	21.6	24.7	25.9
Cervical cancer	2002-2006	Females	ASR	2.1	2.3	2.2	2.1	1.4	2.5	2.0	1.9	2.9
Cancer biennial screening rates[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Breast cancer	2005-2006	Females	%	–	–	–	–	–	–	–	–	–
Cervical cancer	2005-2006	Females	%	57.8	52.5	58.1	52.5	60.3	61.3	60.8	59.3	54.6
Other deaths[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Cardiovascular disease	2002-2006	Males	ASR	276.1	287.4	242.6	280.1	253.3	298.0	267.1	303.0	349.6
	2002-2006	Female	ASR	195.3	197.7	175.9	202.3	181.2	210.8	191.7	210.3	233.4
Diabetes-related	2002-2006	Males	ASR	41.0	47.4	33.8	49.2	30.3	49.4	37.5	42.1	51.2
	2002-2006	Female	ASR	24.9	30.2	20.7	29.6	17.0	29.3	21.7	28.4	33.6
Chronic obstructive pulmonary disease (65+ yrs)	2002-2006	Males	ASR	247.1	265.4	207.6	262.1	199.9	275.7	244.9	306.3	319.2
	2002-2006	Female	ASR	124.4	116.1	108.5	146.5	121.1	126.8	126.9	134.3	139.2
Asthma (5-34 yrs)	2002-2006	Males	ASR	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.3	0.4
	2002-2006	Female	ASR	0.3	0.3	0.2	0.3	0.2	0.6	0.2	0.0	0.0
Injury and poisoning	2002-2006	Males	ASR	49.8	47.7	46.9	43.6	40.3	58.4	60.8	60.8	70.2
	2002-2006	Female	ASR	19.4	18.5	19.1	17.1	17.5	22.0	22.3	22.9	23.3
Fall-related (65+ yrs)	2002-2006	Males	ASR	62.7	67.7	73.5	50.5	60.2	67.6	58.1	53.3	56.7
	2002-2006	Female	ASR	50.9	44.5	53.7	48.4	52.8	54.4	47.1	51.8	53.8

Suicide and self-inflicted injury	2002-2006	Males	ASR	14.1	13.1	13.9	14.2	12.7	16.4	15.4	14.7	16.0
	2002-2006	Female	ASR	3.5	3.7	3.6	3.3	3.4	3.6	3.9	3.9	3.5
Hospital separations[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Cardiovascular disease	2006-07	Males	ASR	2,673.1	2,467.5	2,803.4	2,657.1	2,449.9	2,599.0	2,624.5	3,104.3	3,176.7
	2006-07	Female	ASR	1,671.5	1,528.2	1,668.8	1,694.5	1,493.0	1,647.8	1,739.7	2,037.6	2,140.5
Diabetes (principal diagnosis)	2006-07	Males	ASR	366.8	339.5	310.4	364.5	355.5	395.7	390.6	425.5	490.8
	2006-07	Female	ASR	350.5	380.4	304.7	356.9	273.7	420.9	359.4	339.1	447.3
Diabetes (comorbidity)	2006-07	Males	ASR	2,135.1	2,288.6	2,139.1	2,527.7	1,656.7	2,007.4	1,847.7	2,416.5	2,628.1
	2006-07	Female	ASR	1,673.4	1,978.6	1,600.3	2,083.1	1,203.8	1,572.6	1,282.1	1,697.1	2,345.7
Chronic obstructive pulmonary disease (65+ yrs)	2006-07	Males	ASR	1,925.5	2,096.6	1,551.1	2,450.6	1,412.5	1,855.5	1,751.7	2,541.6	2,907.9
	2006-07	Female	ASR	1,132.8	1,150.9	944.6	1,488.1	927.6	1,034.0	1,014.1	1,533.0	1,523.8
Asthma (5-34 yrs)	2006-07	Males	ASR	170.7	174.2	161.9	230.1	146.9	128.5	192.7	146.5	178.9
	2006-07	Female	ASR	161.1	150.7	146.5	186.6	128.9	157.5	210.3	189.5	211.5
Injury and poisoning	2006-07	Males	ASR	2,598.4	2,146.9	2,552.3	2,691.6	2,425.7	2,679.2	3,108.6	3,149.4	3,130.7
	2006-07	Female	ASR	1,764.9	1,501.6	1,867.5	1,848.1	1,736.9	1,731.5	1,899.0	1,930.4	1,908.1
Fall-related (65+ yrs)	2006-07	Males	ASR	2,275.0	2,150.4	2,387.0	2,645.9	2,457.1	1,839.9	2,000.5	2,311.7	2,163.3
	2006-07	Female	ASR	3,073.1	2,877.2	3,188.1	3,354.7	3,485.4	2,514.8	2,647.2	2,988.7	3,059.2
Suicide and self-inflicted injury	2006-07	Males	ASR	122.2	100.5	106.5	110.9	99.0	148.6	193.5	149.6	155.6
	2006-07	Female	ASR	185.3	158.3	163.6	163.8	160.5	237.7	220.7	239.8	248.4
Notifications of communicable disease[a]	**Period**	**Group**	**Unit[b]**	**NSW**	**SSW**	**SESI**	**SW**	**NSCC**	**HNE**	**NC**	**GS**	**GW**
Arboviral infection	2005-2007	Persons	ASR	21.7	2.4	7.9	3.2	8.9	45.9	114.7	35.3	47.0
Chlamydia	2005-2007	Persons	ASR	177.3	142.3	220.4	116.2	152.7	229.4	249.3	170.0	218.6
Gonorrhoea	2005-2007	Persons	ASR	23.2	32.1	49.5	12.8	13.6	11.4	14.3	3.6	6.9
Hepatitis A	2005-2007	Persons	ASR	1.2	1.7	1.1	1.7	1.1	0.4	0.8	0.4	1.2
Hepatitis B	2005-2007	Persons	ASR	39.0	77.0	33.5	51.5	29.1	11.6	13.0	14.0	13.0
Hepatitis C	2005-2007	Persons	ASR	64.4	71.3	61.2	63.1	35.4	65.7	97.4	65.5	92.0
Measles	2005-2007	Persons	ASR	0.3	0.3	0.4	0.6	0.4	0.0	0.1	0.1	0.1
Meningococcal disease	2005-2007	Persons	ASR	1.8	1.5	2.0	1.8	1.9	1.5	1.9	1.7	2.0
Pertussis (whooping cough)	2005-2007	Persons	ASR	61.8	56.1	71.4	73.5	55.9	52.2	40.9	63.0	79.8
Pneumococcal infection	2005-2007	Persons	ASR	8.1	7.9	6.7	9.2	7.0	9.5	8.7	7.9	13.0
Salmonella infection (non-typhoid)	2005-2007	Persons	ASR	33.6	32.7	31.4	33.3	34.3	29.5	63.4	26.2	25.3
Syphillis (infectious)	2005-2007	Persons	ASR	4.5	5.9	13.1	1.8	1.5	1.2	1.5	0.3	1.0
Tuberculosis	2005-2007	Persons	ASR	6.5	12.5	5.7	11.9	4.7	1.6	1.3	1.8	0.6

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Trends in key population health indicators

Introduction 10

2.1 Determinants of health 11

2.2 Burden of disease..... 12

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2.4 Health priority areas 14

About this section

This section reports trends in key population health indicators of the determinants of health, the burden of disease, health inequalities, and health priority areas in NSW over the most recent ten year period for which data is available.

Where possible, linear trends in indicators were analysed using appropriate regression models to estimate average annual rates of change over time. For full details of the methods used to conduct trend analyses see Appendix 2 – Methods.

How to interpret tables

Indicators are reported by group in the units specified in tables, and the estimated average annual rate of change and period of analysis are indicated in the final two columns of each table. Cells containing the average annual rate of change and period of analysis are highlighted when there was a significantly increasing or decreasing linear trend over the specified period of analysis. These cells are left blank when there was no significantly increasing or decreasing linear trend over time (see Key).

For example, in the ten-year period from 1997 to 2006, age-adjusted mortality rates from lung cancer decreased significantly in males (by an average of 3.0% per year), and increased significantly in females (by an average of 1.1% per year). Over the same period of time there were no significant trends in age-adjusted mortality rates from melanoma for males or females.

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b ASR = rate per 100,000 population, age-adjusted to the Australian population as at 30 June 2001.

c Average annual relative rate of change over specified period of time (see Appendix Methods for full description). NA = no trend analysis performed.

d 10Y = 10-year period, 5Y = 5 year period

* over-estimation resulting from different methodology

Table 2.1 Determinants of health

Social determinants[a]	Group	Unit[b]	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	% change per yr[c]	Period[d]
Unemployment rate	Males	%	6.7	5.6	5.6	6.1	5.7	5.1	4.8	5.3	4.6	4.3	NA	–
	Females	%	6.4	5.3	4.8	6.1	5.6	5.6	5.1	4.8	4.8	4.8	NA	–
Student retention to Year 12	Persons	%	67.2	67.6	67.5	68.2	69.9	70.5	71.1	71.1	70.5	69.7	NA	–
Health-related behaviours[a]	**Group**	**Unit[b]**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**% change per yr[c]**	**Period[d]**
Adequate physical activity	Males	%	52.5	–	–	–	51.0	49.5	57.0	56.6	60.4	62.1	+5.2	5Y
	Females	%	43.4	–	–	–	43.4	40.4	47.9	47.3	49.6	47.6	+3.7	5Y
Overweight and obesity (16+ yrs)	Males	%	49.8	–	–	–	53.4	55.7	56.2	57.5	57.4	58.8	+1.3	5Y
	Females	%	34.1	–	–	–	38.2	41.0	40.5	42.3	43.3	44.7	+2.4	5Y
Overweight and obesity in children (7-16 yrs)	Boys	%	–	–	–	–	–	–	26.1	–	–	–	NA	–
	Girls	%	–	–	–	–	–	–	23.7	–	–	–	NA	–
Recommended fruit consumption	Males	%	39.5	–	–	–	41.4	40.1	40.6	44.6	47.0	48.4	+5.4	5Y
	Females	%	50.9	–	–	–	51.2	54.5	53.4	57.5	59.6	59.8	+3.0	5Y
Recommended vegetable consumption	Males	%	7.1	–	–	–	5.8	8.1	6.0	4.7	6.4	7.2	-1.6	5Y
	Females	%	8.6	–	–	–	9.1	11.4	10.3	10.1	12.4	13.8	+5.9	5Y
Children free of dental caries (5-6 yrs)*	Children	%	–	–	68.3*	–	–	–	–	–	–	59.3	NA	–
Current smoking	Males	%	26.2	–	–	–	23.9	24.7	22.5	22.6	19.2	21.9	-3.9	5Y
	Females	%	21.3	–	–	–	19.2	19.7	19.3	17.6	16.2	15.4	-6.5	5Y
Risk alcohol drinking	Males	%	50.4	–	–	–	39.3	41.5	40.5	37.2	37.3	37.2	-2.9	5Y
	Females	%	36.3	–	–	–	30.2	30.2	30.3	27.3	28.4	27.0	-2.9	5Y
High risk alcohol drinking	Males	%	–	–	–	–	16.8	17.8	15.6	13.2	12.3	11.3	-10.8	5Y
	Females	%	–	–	–	–	12.1	10.8	10.9	7.1	6.4	6.7	-13.8	5Y
Recent illicit drug use (14+ yrs)	Persons	%	–	–	–	–	–	–	14.6	–	–	13.4	NA	–
Vaccinated against influenza in last 12 months (65+ years)	Males	%	61.9	–	–	–	74.6	76.3	76.1	75.3	73.8	71.1	-1.7	5Y
	Females	%	64.5	–	–	–	75.8	75.9	75.5	74.5	75.9	74.2	-0.4	5Y
Vaccinated against pneumoccal in last 5 years (65+ years)	Males	%	–	–	–	–	36.0	45.5	43.4	51.0	60.0	56.7	+7.9	5Y
	Females	%	–	–	–	–	40.9	48.6	50.3	56.5	61.6	61.1	+6.8	5Y

Table 2.2 **Burden of disease**

Deaths[a]	Group	Unit[b]	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	% change per yr[c]	Period[d]
All causes	Males	ASR	952.1	915.3	897.5	864.9	821.0	827.1	795.0	783.9	745.0	739.6	-3.3	10Y
	Females	ASR	608.4	578.6	565.1	561.8	529.7	536.7	532.3	520.7	496.1	494.5	-2.5	10Y
Potentially avoidable	Males	ASR	310.7	290.2	293.7	274.3	257.3	248.9	231.8	223.1	207.4	198.1	-5.2	10Y
	Females	ASR	164.5	149.3	147.8	143.3	134.5	136.3	127.4	124.6	114.4	112.2	-3.9	10Y
Hospital separations[a]	**Group**	**Unit[b]**	**1997-98**	**1998-99**	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**% change per yr[c]**	**Period[d]**
All causes	Males	ASR	29,259.4	29,332.7	29,243.3	29,234.8	29,668.8	30,243.6	30,601.0	31,127.6	32,262.9	32,985.4	+2.1	5Y
	Females	ASR	31,400.9	31,482.7	30,901.7	31,107.1	31,356.6	31,721.1	31,883.2	32,241.0	33,351.3	34,096.3	+1.8	5Y
Ambulatory care sensitive conditions	Males	ASR	2,489.8	2,574.0	2,453.0	2,550.7	2,513.9	2,468.5	2,517.1	2,488.0	2,563.2	2,580.4	+1.3	5Y
	Females	ASR	2,232.2	2,298.8	2,196.4	2,306.8	2,268.1	2,256.0	2,298.6	2,268.7	2,369.6	2,403.5	+1.7	5Y
Other[a]	**Group**	**Unit[b]**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**% change per yr[c]**	**Period[d]**
Life expectancy at birth	Males	Years	76.1	76.5	76.7	77.3	78.0	78.0	78.4	78.8	79.2	79.3	+0.5	10Y
	Females	Years	81.8	82.4	82.6	82.7	83.4	83.3	83.3	83.6	84.1	84.2	+0.3	10Y
Life expectancy at age 65 yrs	Males	Years	81.5	81.9	82.0	82.4	82.8	82.7	83.0	83.1	83.6	83.7	+0.3	10Y
	Females	Years	85.2	85.7	86.0	85.9	86.5	86.4	86.4	86.6	87.0	87.0	+0.2	10Y

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c Average annual relative rate of change over specified period of time (see Appendix Methods for full description). NA = no trend analysis performed.

d 10Y = 10-year period, 5Y = 5 year period

Table 2.3 **Health inequalities**

Deaths[a]	Group	Unit[b]	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	% change per yr[c]	Period[d]
Potentially avoidable (males)	Aboriginal	ASR	–	609.5	587.8	585.8	598.0	682.1	555.6	462.8	463.6	493.8	-6.6	5Y
	non-Aboriginal	ASR	–	285.9	290.5	271.1	253.7	244.6	228.2	220.3	204.1	194.8	-5.3	5Y
Potentially avoidable (females)	Aboriginal	ASR	–	296.3	299.8	428.9	318.3	325.3	299.1	320.8	275.8	341.0	-0.2	5Y
	non-Aboriginal	ASR	–	147.3	146.2	140.2	132.5	134.0	125.5	122.5	112.6	109.6	-5.0	5Y
Hospital separations[a]	**Group**	**Unit[b]**	**1997-98**	**1998-99**	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**% change per yr[c]**	**Period[d]**
Ambulatory care sensitive conditions (males)	Aboriginal	ASR	5,078.2	4,706.7	5,048.3	5,230.3	5,137.6	4,994.4	5,053.3	4,958.2	5,454.6	5,890.2	+4.2	5Y
	non-Aboriginal	ASR	2,431.0	2,519.3	2,397.2	2,494.4	2,467.0	2,417.8	2,464.2	2,437.5	2,508.3	2,527.9	+1.3	5Y
Ambulatory care sensitive conditions (females)	Aboriginal	ASR	5,376.9	5,129.0	5,036.9	5,332.6	5,238.0	5,246.7	5,463.8	5,302.5	6,090.8	5,961.1	+4.3	5Y
	non-Aboriginal	ASR	2,197.5	2,268.5	2,168.3	2,277.0	2,246.1	2,231.2	2,272.3	2,240.8	2,336.3	2,374.6	+1.6	5Y
Pregnancy and the newborn period[a]	**Group**	**Unit[b]**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**% change per yr[c]**	**Period[d]**
Perinatal deaths	Aboriginal	RLB	20.0	15.5	14.0	17.4	18.3	11.0	15.1	11.6	15.2	12.1	-3.9	10Y
	non-Aboriginal	RLB	9.3	9.1	9.0	9.4	9.0	8.6	8.4	9.0	8.6	8.8	-0.9	10Y
First antenatal visit before 20 weeks gestation	Aboriginal	%	62.0	66.1	65.4	67.5	64.7	67.3	70.6	70.0	74.9	74.7	+2.7	5Y
	non-Aboriginal	%	85.3	85.4	86.6	87.0	86.7	86.9	87.0	88.0	88.4	87.8	+0.2	5Y
Premature babies	Aboriginal	%	12.4	10.6	12.3	11.7	12.5	12.3	12.0	11.7	12.1	10.8	-0.7	10Y
	non-Aboriginal	%	6.7	6.8	7.0	7.2	7.1	6.9	6.8	7.2	7.1	7.3	+0.4	10Y
Low birth weight babies	Aboriginal	%	12.0	10.5	12.6	11.8	13.6	12.8	12.3	12.9	12.5	12.4	+0.7	10Y
	non-Aboriginal	%	6.0	6.0	6.2	6.3	6.2	6.2	6.1	6.2	6.1	6.2	+0.1	10Y
Other[a]	**Group**	**Unit[b]**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**% change per yr[c]**	**Period[d]**
Immunisation coverage (12-15 months)	Aboriginal	%	–	–	–	–	–	–	85.3	87.6	82.4	83.5	NA	–
	non-Aboriginal	%	–	–	–	–	–	–	90.9	90.8	91.8	92.0	NA	–

KEY

- Linked to NSW State Plan, NSW State Health Plan and Healthy People NSW
- Linked to NSW State Health Plan and Healthy People NSW
- Linked to Healthy People NSW only
- Linked to Two Ways Together only
- Significantly increasing linear trend
- Significantly decreasing linear trend
- No significant increasing or decreasing linear trend
- – Data not available

NOTES

a See appendix Explanatory Notes for full description of indicators

b ASR = rate per 100,000 population, age-adjusted to the Australian population as at 30 June 2001. RLB = Rate per 1,000 live births

c Average annual relative rate of change over specified period of time (see Appendix Methods for full description). NA = no trend analysis performed.

d 10Y = 10-year period, 5Y = 5 year period

Table 2.4 Health priority areas

New cases of cancer[a]	Group	Unit[b]	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	% change / yr[c]	Period[d]
All cancer	Males	ASR	550.2	532.0	538.1	539.6	539.6	557.1	561.5	596.9	594.9	590.0	+1.7	5Y
	Females	ASR	380.9	383.3	373.6	383.2	390.9	400.6	401.6	403.3	400.3	394.0	-0.4	5Y
Lung cancer	Males	ASR	66.8	67.0	62.4	63.1	60.3	58.0	56.4	62.2	57.1	58.2	-1.7	10Y
	Females	ASR	26.4	25.5	24.9	27.3	26.3	27.5	27.3	29.0	31.4	30.2	+2.3	10Y
Colorectal cancer	Males	ASR	78.1	73.9	76.0	79.4	74.6	72.7	71.5	76.6	74.5	75.3	-0.4	10Y
	Females	ASR	51.3	51.4	53.8	50.8	55.1	50.5	51.3	52.7	51.8	54.2	+0.2	10Y
Melanoma	Males	ASR	56.9	53.2	55.3	53.6	56.5	62.3	59.1	60.6	61.8	64.3	+1.6	10Y
	Females	ASR	36.3	34.2	34.0	34.8	36.1	38.0	38.2	40.4	40.8	37.1	+1.7	10Y
Prostate cancer	Males	ASR	131.5	126.0	128.6	131.1	128.8	135.7	146.8	168.3	178.4	179.2	+8.6	5Y
Breast cancer	Females	ASR	111.7	113.9	104.9	113.0	116.6	117.2	114.3	114.1	110.9	110.7	-1.6	5Y
Cervical cancer	Females	ASR	8.9	9.1	8.3	8.6	7.5	6.4	6.9	7.4	6.1	6.2	-4.4	10Y
Cancer deaths[a]	**Group**	**Unit[b]**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**% change / yr[c]**	**Period[d]**
All cancer	Males	ASR	255.1	251.1	247.2	242.4	246.7	234.5	229.3	233.3	233.1	223.9	-1.5	10Y
	Females	ASR	149.1	149.6	144.0	146.3	145.1	145.0	144.6	144.5	142.3	140.1	-0.6	10Y
Lung cancer	Males	ASR	58.8	60.5	56.1	53.7	53.8	51.6	48.1	51.4	48.3	44.5	-3.0	10Y
	Females	ASR	20.2	21.9	20.7	21.7	22.5	23.1	21.1	22.2	23.1	22.2	+1.1	10Y
Colorectal cancer	Males	ASR	32.5	30.7	30.7	29.8	29.1	25.9	22.4	23.9	22.8	21.6	-4.7	10Y
	Females	ASR	19.7	20.9	18.2	19.3	17.7	18.2	15.0	15.8	13.8	13.3	-4.7	10Y
Melanoma	Males	ASR	8.7	8.6	8.5	8.0	9.2	10.0	8.4	8.9	10.2	8.9	+0.9	10Y
	Females	ASR	3.4	3.2	3.7	3.5	4.3	3.2	3.8	3.1	3.9	3.9	+1.1	10Y
Prostate cancer	Males	ASR	36.9	36.1	33.4	34.3	35.1	35.4	31.8	31.2	34.8	31.1	-1.5	10Y
Breast cancer	Females	ASR	27.3	25.6	23.5	23.7	24.1	24.6	24.0	24.9	22.9	23.4	-1.0	10Y
Cervical cancer	Females	ASR	3.4	2.8	2.2	2.6	2.5	2.0	2.1	2.1	2.2	2.0	+2.7	5Y
Cancer biennial screening rates[a]	**Group**	**Unit[b]**	**1997 - 1998**		**1999 - 2000**		**2001 - 2002**		**2003 - 2004**		**2005 - 2006**		**% change / yr[c]**	**Period[d]**
Breast cancer (50-69 yrs)	Females	%	52.6		53.3		53.0		50.2		57.2		NA	NA
Cervical cancer (20-69 yrs)	Females	%	59.5		59.2		60.7		57.3		57.8		NA	NA
Other deaths[a]	**Group**	**Unit[b]**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**% change / yr[c]**	**Period[d]**
Cardiovascular disease	Males	ASR	384.9	363.7	363.0	335.9	307.9	306.8	292.9	281.2	254.6	248.9	-5.2	10Y
	Female	ASR	270.1	251.8	247.7	235.5	219.7	213.9	206.6	197.9	184.3	176.0	-5.4	10Y
Diabetes-related	Males	ASR	44.9	45.3	45.1	44.2	44.4	45.0	43.3	43.0	37.1	37.0	-5.3	5Y
	Female	ASR	29.5	28.6	27.6	28.2	24.5	25.3	26.0	25.1	23.6	24.5	-1.3	5Y
Chronic obstructive pulmonary disease (65+ yrs)	Males	ASR	378.4	329.6	326.5	315.9	290.0	286.5	264.4	246.0	227.7	214.4	-5.9	10Y
	Female	ASR	150.3	130.6	148.7	142.1	132.5	139.1	127.5	128.5	112.3	115.6	-2.6	10Y
Asthma (5-34 yrs)	Males	ASR	0.7	0.9	0.8	0.4	0.6	0.3	0.3	0.2	0.3	0.1	-17.1	10Y
	Female	ASR	0.6	0.9	0.4	0.6	0.4	0.6	0.2	0.3	0.1	0.1	-16.0	10Y
Injury and poisoning	Males	ASR	59.4	62.1	62.5	56.5	56.3	53.8	50.4	47.7	47.9	49.1	-3.2	10Y
	Female	ASR	23.4	20.7	23.3	20.8	20.6	19.8	20.1	20.3	19.5	17.3	-2.4	10Y
Fall-related (65+ yrs)	Males	ASR	63.3	61.9	67.5	64.2	66.8	67.9	65.6	56.8	58.4	65.2	-0.8	10Y
	Female	ASR	55.5	46.8	47.7	46.1	44.8	51.0	48.8	54.3	53.2	47.4	+0.2	10Y

Suicide and self-inflicted injury	Males	ASR	23.7	21.7	21.8	18.8	19.4	16.7	14.9	13.8	13.3	11.6	-7.5	10Y
	Female	ASR	6.9	4.8	5.4	4.4	5.0	4.1	3.9	3.5	3.2	2.9	-7.8	10Y
Hospital separations[a]	**Group**	**Unit[b]**	**1997-98**	**1998-99**	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**% change / yr[c]**	**Period[d]**
Cardiovascular disease	Males	ASR	3,076.5	2,949.4	2,908.7	2,801.2	2,748.6	2,748.0	2,732.4	2,674.9	2,692.1	2,673.1	-0.6	5Y
	Female	ASR	1,952.5	1,908.5	1,851.9	1,821.5	1,812.4	1,753.8	1,734.4	1,656.0	1,683.9	1,671.5	-1.2	5Y
Diabetes (principal diagnosis)	Males	ASR	117.5	117.1	113.9	218.7	242.6	251.1	272.0	313.9	336.2	366.8	+9.2	5Y
	Female	ASR	154.6	153.8	148.1	212.5	227.9	253.7	265.4	293.2	322.0	350.5	+8.3	5Y
Diabetes (comorbidity)	Males	ASR	1,316.1	1,356.3	1,321.6	1,317.3	1,482.9	1,574.5	1,705.7	1,878.8	2,005.9	2,135.1	+7.2	5Y
	Female	ASR	1,029.5	1,089.0	1,075.6	1,072.1	1,183.2	1,250.5	1,349.2	1,492.5	1,612.7	1,673.4	+7.6	5Y
Chronic obstructive pulmonary disease (65+ yrs)	Males	ASR	1,985.3	2,312.7	2,334.7	2,263.4	2,225.7	2,260.7	2,247.3	2,119.8	2,009.3	1,925.5	-4.2	5Y
	Female	ASR	821.7	1,104.5	1,116.7	1,200.2	1,191.1	1,176.8	1,226.6	1,159.4	1,160.5	1,132.8	-1.2	5Y
Asthma (5-34 yrs)	Males	ASR	242.6	285.3	225.2	253.5	199.1	166.0	164.4	166.9	151.7	170.7	-8.2	10Y
	Female	ASR	264.9	286.6	236.4	260.0	180.9	159.7	166.3	157.3	149.0	161.1	-8.2	10Y
Injury and poisoning	Males	ASR	2,343.2	2,333.5	2,368.5	2,358.6	2,410.6	2,326.0	2,407.2	2,422.6	2,582.5	2,598.4	+3.3	5Y
	Female	ASR	1,493.8	1,560.4	1,546.2	1,566.7	1,622.1	1,541.1	1,614.4	1,628.4	1,723.6	1,764.9	+3.3	5Y
Fall-related (65+ yrs)	Males	ASR	1,683.3	1,798.2	1,947.6	1,838.1	1,853.0	1,821.5	1,977.0	2,024.0	2,226.8	2,275.0	+2.5	10Y
	Female	ASR	2,628.6	2,794.9	2,835.1	2,729.7	2,747.1	2,611.0	2,814.8	2,792.5	2,967.8	3,073.1	+0.9	10Y
Suicide and self-inflicted injury	Males	ASR	111.6	116.0	110.8	119.4	120.9	115.9	119.9	122.3	125.5	122.2	+1.5	10Y
	Female	ASR	138.1	138.8	144.0	165.0	170.3	175.3	180.0	188.5	186.7	185.3	+3.6	10Y
Notifications of communicable disease[a]	**Group**	**Unit[b]**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**% change / yr[c]**	**Period[d]**
Arboviral infection	Persons	ASR	12.4	19.1	15.2	18.1	9.9	15.2	17.0	15.9	27.8	21.4	+14.2	5Y
Chlamydia	Persons	ASR	8.8	38.0	53.9	68.7	88.3	117.5	151.2	168.9	179.3	183.6	+10.6	5Y
Gonorrhoea	Persons	ASR	16.3	19.8	16.1	20.7	22.9	19.9	21.6	23.6	25.8	20.3	+4.7	10Y
Hepatitis A	Persons	ASR	14.4	6.5	3.0	3.0	2.2	1.9	2.1	1.2	1.4	1.0	-15.9	5Y
Hepatitis B	Persons	ASR	46.3	54.6	61.2	69.5	53.7	42.8	42.2	40.9	37.2	38.9	-3.2	5Y
Hepatitis C	Persons	ASR	112.1	133.1	127.7	132.1	101.6	79.1	74.0	65.4	65.1	62.8	-5.0	5Y
Measles	Persons	ASR	1.8	0.5	0.5	0.5	0.1	0.3	0.2	0.1	0.9	0.0	+13.0	5Y
Meningococcal disease	Persons	ASR	2.9	3.4	3.9	3.5	3.3	3.0	2.3	2.1	1.6	1.6	-14.7	5Y
Pertussis (whooping cough)	Persons	ASR	36.3	22.1	57.2	67.9	30.5	41.8	53.2	85.1	70.8	30.1	+0.5	5Y
Pneumococcal infection	Persons	ASR	–	–	–	6.7	12.8	11.8	13.2	9.2	7.9	7.3	-9.2	5Y
Salmonella infection (non-typhoid)	Persons	ASR	28.3	22.5	21.7	25.4	31.9	27.7	32.2	32.6	30.6	37.6	+6.7	5Y
Syphillis (infectious)	Persons	ASR	0.7	1.3	1.3	1.0	1.9	3.6	4.6	3.6	3.4	6.4	+12.8	10Y
Tuberculosis	Persons	ASR	6.0	7.5	6.8	6.3	6.7	5.6	6.3	6.5	6.7	6.4	-0.6	10Y

KEY

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- Significantly increasing linear trend
- Significantly decreasing linear trend
- No significant increasing or decreasing linear trend
- – Data not available

NOTES

a See appendix Explanatory Notes for full description of indicators

b ASR (age-Standard Rate) = rate per 100,000 population, age-adjusted to the Australian population as at 30 June 2001.

c Average annual relative rate of change over specified period of time (see Appendix Methods for full description). NA = no trend analysis performed.

d 10Y = 10-year period, 5Y = 5 year period

Special topics from the NSW Chief Health Officer

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3.1 Inequalities in mortality

Measuring success

Reduce the number of potentially avoidable deaths of people under 75 years of age from 175 per 100,000 population in 2003 to 150 per 100,000 population by 2016

The issue

The past decade has seen considerable improvement in the health of the people of NSW, including substantial declines in mortality and consistent improvements in life expectancy for both males and females (ABS, 2007). Despite these advances, health outcomes such as mortality remain unequally distributed between subgroups of the NSW population, and continue to vary by:

- Socioeconomic status
- Rurality and remoteness
- Aboriginality.

Socioeconomic status (SES) refers to social and economic factors (like occupation, income, and education) that are likely to influence the position an individual holds within the structure of society, which in turn may have an influence on their health (Lynch et al., 2000). There is a well documented socioeconomic gradient of mortality in Australia, with people from more disadvantaged areas experiencing significantly higher rates of mortality compared with people from less disadvantaged areas (Draper et al., 2004). While rates of total and potentially avoidable mortality between socioeconomic groups have decreased over recent decades, relative inequalities have increased, as rates of decline have not been equal across the SES gradient (Burnley, 1998; Turrell and Mathers, 2001; Burnley and Rintoul, 2002; Hayes et al., 2002; Draper et al., 2004; Population Health Division, 2006; Korda et al., 2007).

People living in rural and remote areas of Australia generally experience higher mortality than those from metropolitan areas due to geographic isolation, socioeconomic disadvantage, shortage of health care providers, less access to health services, greater exposure to injury risks, and larger Aboriginal populations with a higher prevalence of health risk factors and diseases (AIHW, 2007). Although the magnitude of this differential tends to increase with remoteness, absolute inequalities in mortality rates between metropolitan and rural and remote areas have decreased over time, and relative inequalities in mortality rates have remained relatively constant over time (AIHW, 2007).

In Australia, the health status of the Aboriginal population remains poor in comparison with the rest of the population, and as a result, Aboriginal people experience higher mortality rates than non-Aboriginal people across all age groups and from all major causes of death (ABS and AIHW, 2008).

Potentially avoidable mortality

Potentially avoidable mortality refers to premature deaths (persons aged less than 75 years) from conditions considered preventable or otherwise avoidable through earlier intervention or action by the health and related sectors (including primary, secondary and tertiary prevention interventions) (Tobias and Jackson, 2001; Page et al., 2006). Potentially avoidable mortality is a better measure of inequalities in the burden of disease in the population than total mortality, as it only considers deaths that could potentially have been avoided by improved access to the health system or through the primary prevention of disease through population health interventions.

In NSW, age-adjusted potentially avoidable mortality rates have declined steadily over the past decade, from 235.7 per 100,000 population in 1997 to 154.6 per 100,000 population in 2006. This is consistent with the NSW State Plan and the NSW State Health Plan (NSW Government, 2006; NSW Department of Health, 2007), which aim to reduce potentially avoidable mortality to 150 per 100,000 population by 2016.

In this special topic, we investigate inequalities in potentially avoidable mortality in NSW from 2002 to 2006 by SES, remoteness, and Aboriginality. While there is a high degree of correlation between the factors causing increased mortality within low SES groups, rural and remote areas, and Aboriginal people, for the purposes of this study they are considered individually. By quantifying the magnitude of differences in potentially avoidable mortality rates for these subgroups and identifying the causes of death that contribute most to inequalities, this study aims to increase awareness of important inequalities in the burden of disease in the NSW population. This in turn may assist with better targeting of population health interventions.

Methods

Australian Bureau of Statistics (ABS) mortality and population estimates for 2002 to 2006 were obtained from HOIST (CER, 2008). Numbers for 2006 include an estimate of the small numbers of deaths in 2006 registered in 2007, data for which were unavailable at the time of production.

All deaths were classified into 13 causes of death groups using ICD-10, and assigned to:

- Population-weighted SES quintiles based on the Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD) of the Statistical Local Area (SLA) of residence (Adhikari, 2006).
- One of five Australian Standard Geographical Classification (ASGC) Accessibility–Remoteness Index of Australia Plus (ARIA+) remoteness categories (major cities, inner regional, outer regional, remote, and very remote) based on the SLA of residence (AIHW, 2004).
- Aboriginal and non-Aboriginal deaths, with both Aboriginal and Torres Strait Islander people referred to as Aboriginal in recognition of the fact that Aboriginal people are the original inhabitants of NSW (NSW Aboriginal Health Resource Cooperative Ltd, 1998).

Age-specific and age-standardised (to the Australian standard population as at 30 June 2001) total and cause of death group-specific potentially avoidable mortality rates were calculated by sex and population subgroup for 2002 to 2006 combined. To quantify inequalities in potentially avoidable mortality by SES, we used the Relative Index of Inequality (RII) (Kunst and Mackenbach, 1995; Mackenbach and Kunst, 1997). This measure uses ordinary least squares regression, which takes into account rates in all five SES quintiles, to calculate an index measure of the estimated inequality in rates between the notionally most and least disadvantaged population subgroups in NSW. It is calculated by dividing the estimated difference in rates at the lowest and highest ends of the socioeconomic spectrum by the estimated rate in the notionally most disadvantaged group. An RII of 0 indicates no inequality by SES; an RII of 1 indicates that potentially avoidable mortality rates were 100% greater (i.e. twice as great) in the most socioeconomically disadvantaged group than in the least disadvantaged group.

To quantify inequalities in potentially avoidable mortality by rurality and remoteness, and Aboriginality, we used a measure of relative inequality (RI) calculated by dividing the excess mortality (McCracken, 2002) between comparison and reference population subgroups by the mortality rate in the reference subgroup. The RI for rurality and remoteness were calculated by comparing the rates in inner regional, outer regional, and remote and very remote geographic categories with those in major cities (the reference subgroup). The RI for Aboriginality was calculated by comparing rates in Aboriginal people with those in non-Aboriginal people (the reference subgroup). Similar to the RII; an RI of 0 indicates no inequality between population subgroups; an RI of 1 indicates that rates were 100% greater in the comparison subgroup than in the reference subgroup.

The primary difference between the RI and the RII is that the RI is simply used to compare actual rates between two population subgroups, while the RII is used to compare estimated rates at the lowest and highest ends of the socioeconomic spectrum, after taking into account actual rates in all SES subgroups.

Inequalities in potentially avoidable mortality rates between SES groups and Aboriginal and non-Aboriginal people were calculated by sex and age, and inequalities between remoteness categories were calculated by sex using age-standardised rates. The contribution of separate causes of death groups to the total inequality in all-cause potentially avoidable mortality rates was calculated by dividing each cause-specific difference in rates by the all-cause rate in the relevant reference population subgroup.

When cause-specific contributions are summed they equal the RII or RI for all-cause potentially avoidable mortality. All inequalities are presented graphically based on methods developed elsewhere (Leyland et al., 2007a; Leyland et al., 2007b). In figures, the total height of the stacked areas represents the all-cause RII or RI, and the heights of individual areas indicate the relative contribution of that cause of death group to the total inequality in potentially avoidable mortality between population subgroups.

This study investigates separately, inequalities in potentially avoidable mortality by SES, remoteness, and Aboriginality. There is, in reality, a high degree of correlation between low SES, rurality and remoteness, and Aboriginality, which should be considered in interpreting the inequalities shown in this paper for any individual subgroup.

Results

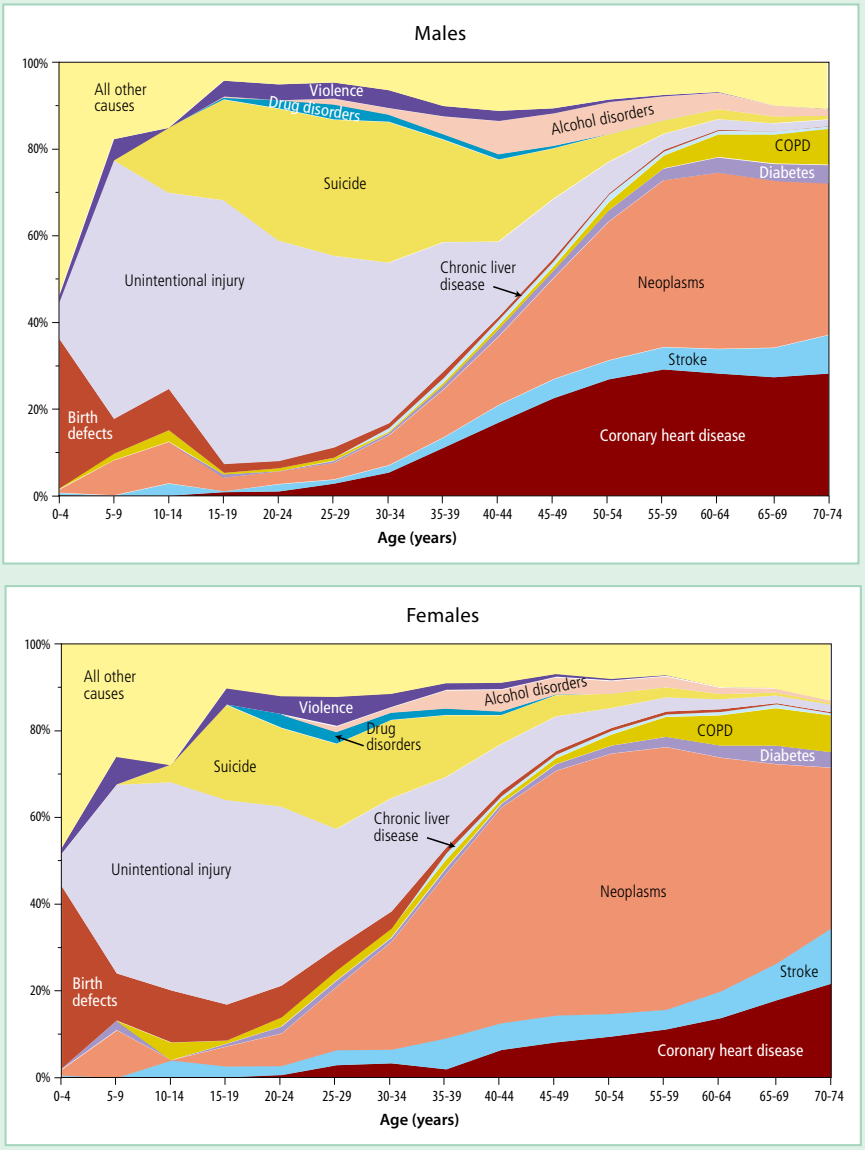
Potentially avoidable mortality by cause of death and age

In NSW from 2002 to 2006, the most common causes of potentially avoidable deaths in younger age-groups were birth defects, unintentional injury, suicide, neoplasms, drug disorders, violence, and other causes (primarily complications of the perinatal period). The most common causes of death in older age-groups were coronary heart disease, stroke, neoplasms, diabetes, chronic obstructive pulmonary disease, and alcohol disorders. Compared with females, a greater proportion of potentially avoidable male deaths were due to unintentional injury, suicide, and coronary heart disease, while a lesser proportion were due to neoplasms (Figure 1).

Differences in potentially avoidable mortality

In NSW from 2002 to 2006, male and female age-standardised potentially avoidable mortality rates were substantially higher in lower SES groups, in regional and remote areas of NSW, and in Aboriginal people. Compared with the highest SES group, the lowest SES group experienced excess potentially avoidable mortality of 101.5 male and 48.8 female deaths per 100,000 population. Potentially avoidable mortality rates in remote and very remote areas exceeded those in major cities by 127.0 males and 75.2 females per 100,000. There was excess potentially avoidable mortality of 308.6 Aboriginal males and 191.9 Aboriginal females per 100,000 population compared with non-Aboriginal males and females (Figure 2).

Figure 1: Percentage contribution of leading causes of potentially avoidable mortality by sex and age, NSW, 2002 to 2006 combined



Inequalities by socioeconomic status

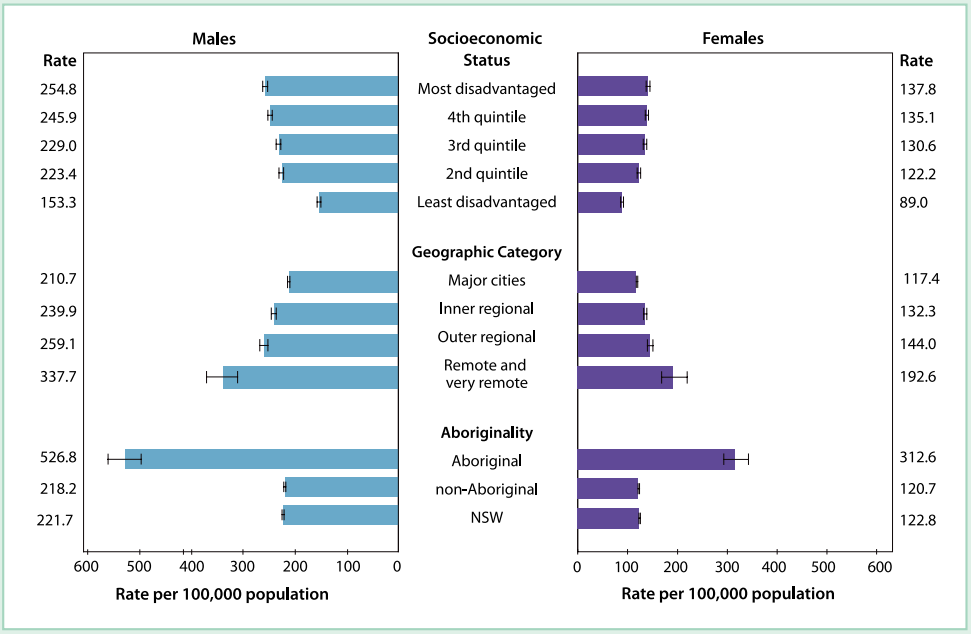
The RII between the notionally most and least socioeconomically disadvantaged males ranged from a minimum of 0.46 at 15–19 years to a maximum of 1.61 at 35–39 years of age. This means that from 2002 to 2006, potentially avoidable mortality rates in the most disadvantaged males were at least 46% and up to 161% greater than those in the least disadvantaged males in NSW. Overall, inequalities by SES for males tended to increase up to 35–39 years of age, and steadily decrease thereafter.

In younger age-groups, a large portion of the overall inequality between the most and least socioeconomically disadvantaged males in NSW was due to large differences in potentially avoidable mortality rates from unintentional injury, suicide, and violence. From 35 years of age, deaths from coronary heart disease, neoplasms, and stroke were major contributors to inequalities. As males approached 75 years of age, an increasingly large percentage of overall inequalities in potentially avoidable mortality were due to differences in deaths from diabetes and chronic obstructive pulmonary disease (COPD).

The RII between the notionally most and least disadvantaged females ranged from a minimum of 0.38 at 45–49 years to a maximum of 1.63 at 20–24 years of age. This means that potentially avoidable mortality rates from 2002 to 2006 were at least 38% greater and up to 163% greater in the most disadvantaged females compared with the least disadvantaged females in NSW. Overall, inequalities in female potentially avoidable mortality peaked at younger ages and at 35–39 years of age, fell to a minimum at 45–49 years of age and then increased steadily thereafter. Most of the inequality between the most and least socioeconomically disadvantaged females in younger age-groups was due to differences in potentially avoidable mortality rates from unintentional injury and suicide. There were also considerable inequalities in deaths from neoplasms at all ages, and deaths from coronary heart disease for females from around 40 years of age. From around 50 years of age, there were noticeable inequalities in potentially avoidable deaths from diabetes and COPD.

Comparing the magnitude of inequalities in all-cause potentially avoidable mortality between males and females, it is apparent that females suffered from greater inequalities from 0 to 29 years of age, while males experienced greater inequality from 30 to 64 years of age. There was little difference in inequalities between the notionally most and least disadvantaged males and females in NSW from 65 to 74 years of age however (Figure 3). Due to the correlation between lower SES, rurality and remoteness, and larger Aboriginal populations, these latter two factors may also partly explain inequalities by SES.

Figure 2: Potentially avoidable mortality by socioeconomic status, remoteness, Aboriginality and sex, NSW, 2002 to 2006 combined



Inequalities by Aboriginality

The RI between Aboriginal and non-Aboriginal males over the study period ranged from 0.38 in males aged 15–24 years to 2.45 in those aged 35–44 years. In other words, from 2002 to 2006 potentially avoidable mortality rates in Aboriginal males were at least 38% and up to 245% greater than in non-Aboriginal males, and were at least 100% greater from 25 to 74 years of age (Figure 4).

In younger age-groups, most of the inequalities between Aboriginal and non-Aboriginal males were due to differences in potentially avoidable mortality rates from suicide and other causes (primarily complications of the perinatal period). From 25 to 44 years of age there were substantial inequalities in Aboriginal and non-Aboriginal male deaths due to coronary heart disease, unintentional injury, suicide, alcohol disorders and violence. Inequalities due to alcohol disorders and coronary heart disease continued up to 75 years of age, while a substantial proportion of all inequalities from 35 to 74 years of age were due to deaths from neoplasms and diabetes. There were also large inequalities between Aboriginal and non-Aboriginal males in potentially avoidable deaths due to COPD from 55 to 74 years of age.

The RI for Aboriginal and non-Aboriginal females ranged from a minimum of 0.84 at 0–14 years of age to peak at 2.19 for those aged 25–34 years. In fact, the RI was only less than 1.30 in the 0–14 year age-group, meaning that from 15 to 74 years of age potentially avoidable mortality rates were at least more than 130% greater in Aboriginal females than non-Aboriginal females.

From 0 to 24 years of age, there were large inequalities between Aboriginal and non-Aboriginal females in potentially avoidable deaths from birth defects and other causes (primarily complications of the perinatal period). A large proportion of the overall inequality between Aboriginal and non-Aboriginal females from 25-34 years of age was due to deaths from unintentional injury. There were substantial inequalities between Aboriginal and non-Aboriginal females deaths due to alcohol disorders from 35-44 years of age and deaths due to neoplasms from 25-74 years of age. Similar to males, a large portion of the overall inequalities found from 45-74 years of age were due to differences in potentially avoidable deaths from coronary heart disease, diabetes and COPD.

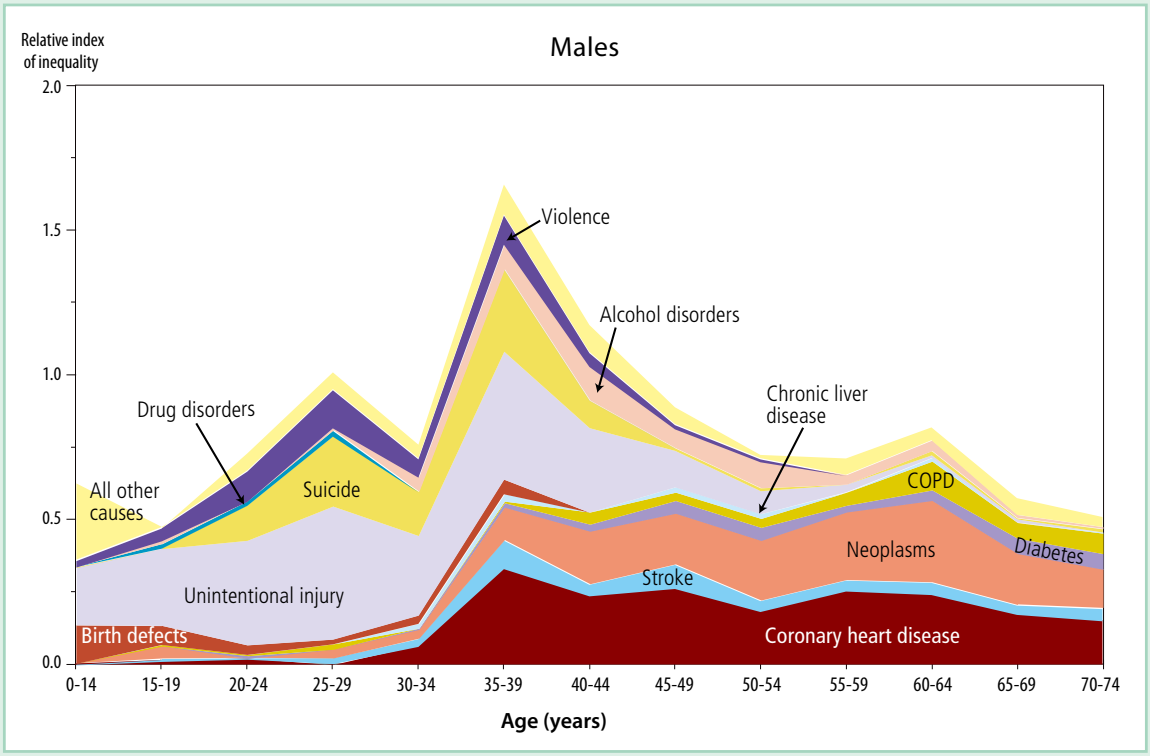
The overall shape of inequalities in potentially avoidable mortality between Aboriginal and non-Aboriginal males and females were similar, although Aboriginal females did experience noticeably greater inequalities than Aboriginal males from 0 to 24 years of age (Figure 4). Due to the correlation between larger Aboriginal populations, lower SES, and rurality and remoteness, the latter two factors may also partly explain inequalities by Aboriginality.

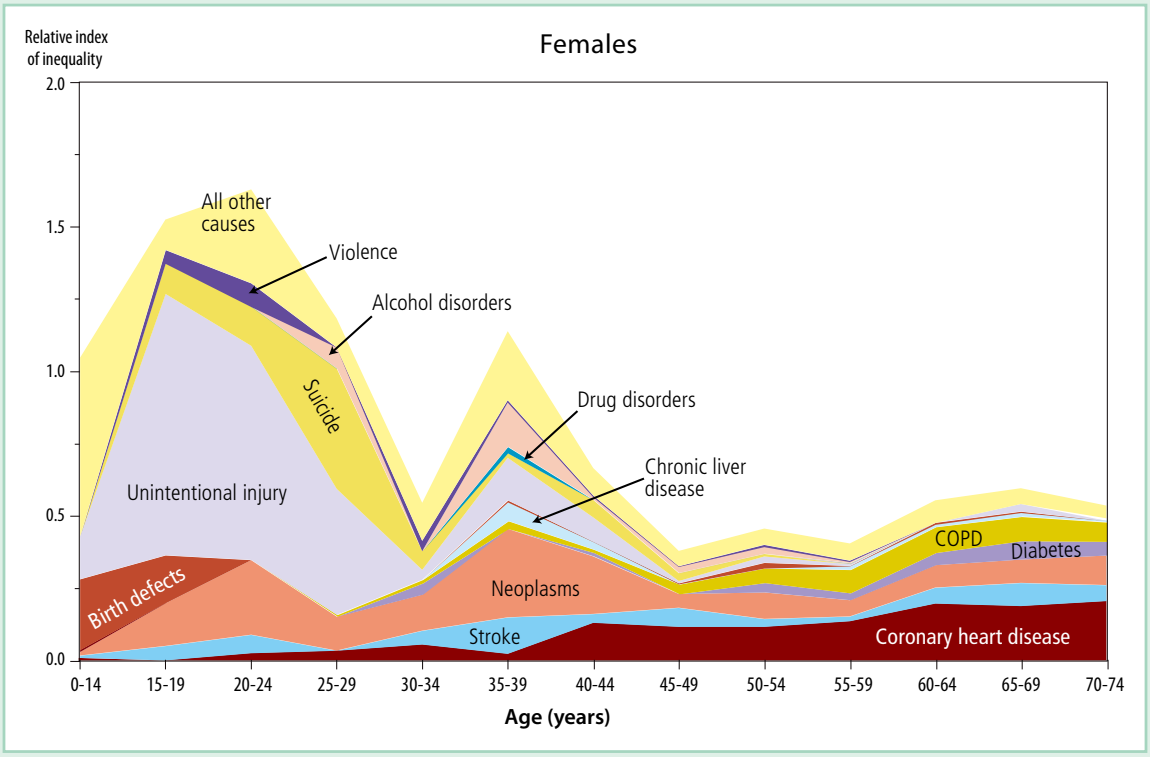
To investigate inequalities by Aboriginality separate from SES, we compared potentially avoidable mortality rates in Aboriginal people with rates in only the most socioeconomically disadvantaged non-Aboriginal people (the lowest 20%). This had little impact on the magnitude of inequalities between Aboriginal and non-Aboriginal people at each age. The RI in males continued to peak from 35 to 44 years of age at 1.96 and rates in Aboriginal males remained at least 100% greater than non-Aboriginal males from 25 to 64 years of age. The maximum RI in females actually increased slightly at 25–34 years of age to 2.34, although there were minor decreases in all other age-groups. However, potentially avoidable mortality rates remained at least 100% higher in Aboriginal females from 15 to 74 years of age (Figure 5). This result suggests that inequalities between Aboriginal and non-Aboriginal people are primarily explained by factors other than lower SES.

Inequalities by rurality and remoteness

The RI in potentially avoidable mortality between major cities and more remote areas of NSW increased with increasing remoteness for both males and females. From 2002 to 2006, male age-standardised potentially avoidable mortality rates were 14% greater in inner regional areas, 22% greater in outer regional areas, and 59% greater in remote and very remotes areas than in major cities. Similar results were found for females, for whom potentially avoidable mortality rates were 13%, 22%, and 64% greater in inner regional, outer regional, and remote and very remote areas respectively than in major cities. Most of the overall inequalities between major cities and regional and remote areas were due to differences in potentially avoidable mortality rates from unintentional injury, coronary heart disease, neoplasms, and COPD. In remote and very remote areas females experienced greater rates of death from stroke than in major cities. There were also substantial inequalities in potentially avoidable deaths from diabetes between major cities and remote and very remote areas, but little or no inequality with inner and outer regional areas (Figure 6). Due to the correlation between rurality and remoteness, lower SES, and larger Aboriginal populations, the latter two factors may also partly explain inequalities by rurality and remoteness.

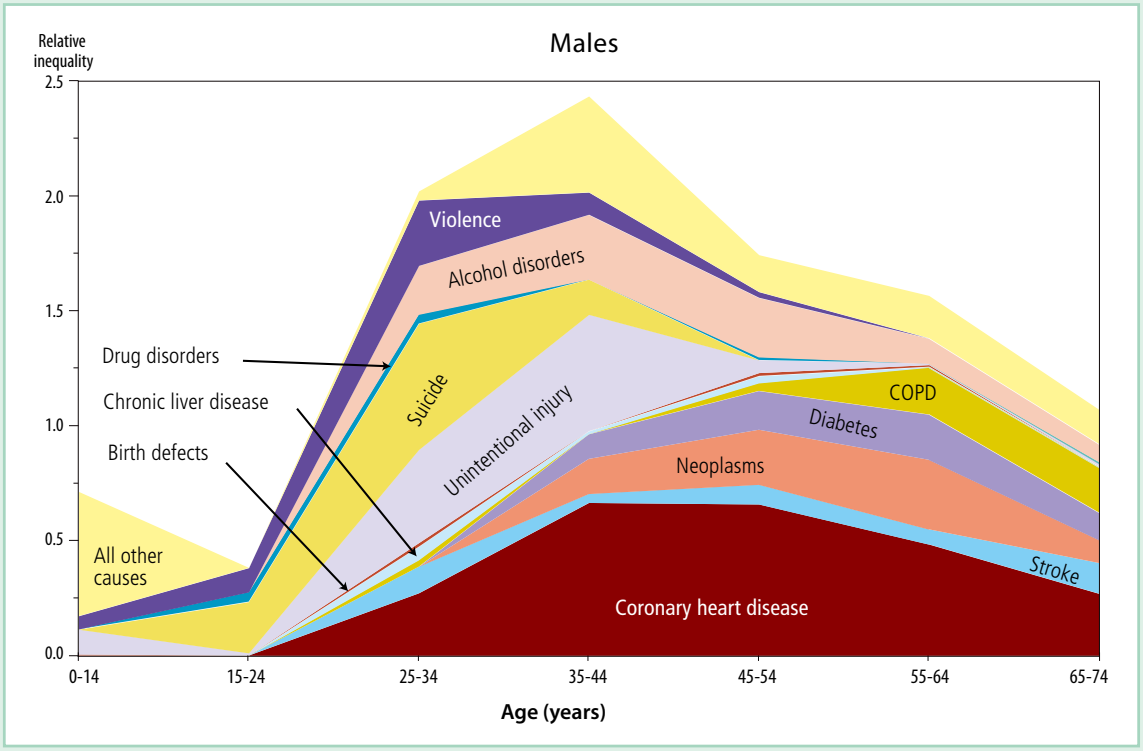
Figure 3: Inequalities in potentially avoidable mortality between the most and least socioeconomically disadvantaged population groups in NSW by age, sex, and cause of death, NSW, 2002 to 2006 combined

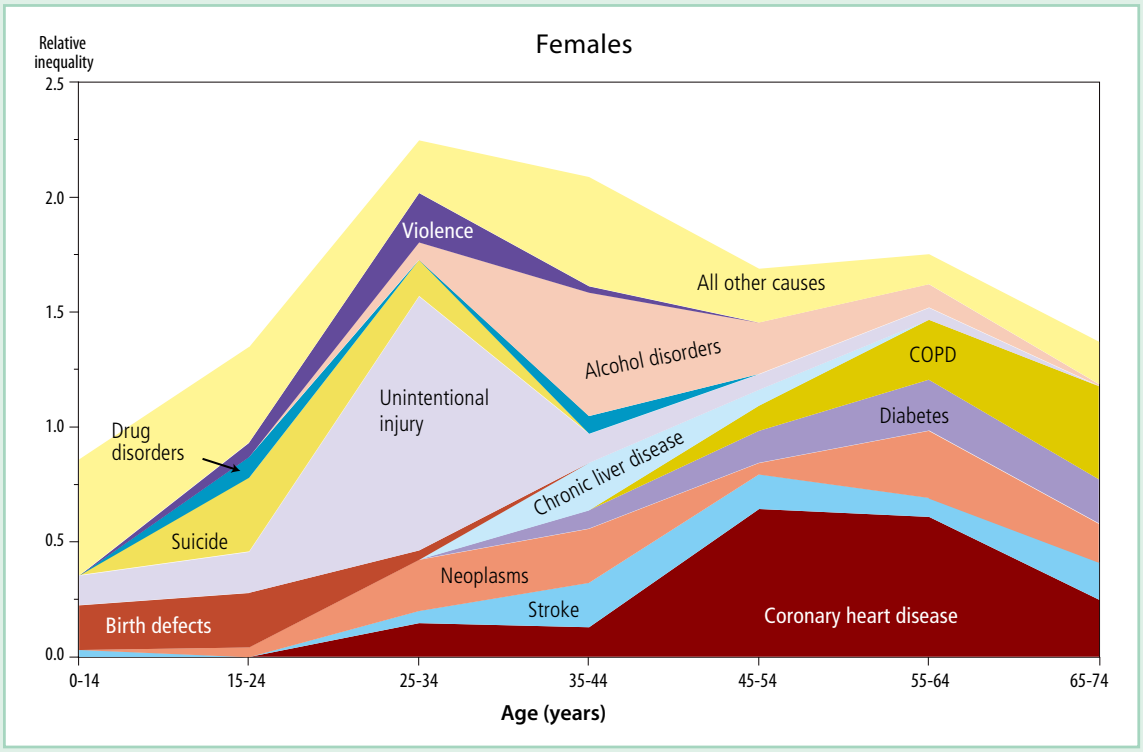




Note: The total height of the stacked areas at each age represents the all-cause RII in potentially avoidable mortality between the notionally most and least disadvantaged males or females in NSW at that age. The heights of the individual coloured areas indicate the relative contribution of each cause of death to this inequality. An RII of 0 indicates no inequality; an RII of 1 indicates that rates in the most disadvantaged males or females were 100% greater than in those who were least disadvantaged.

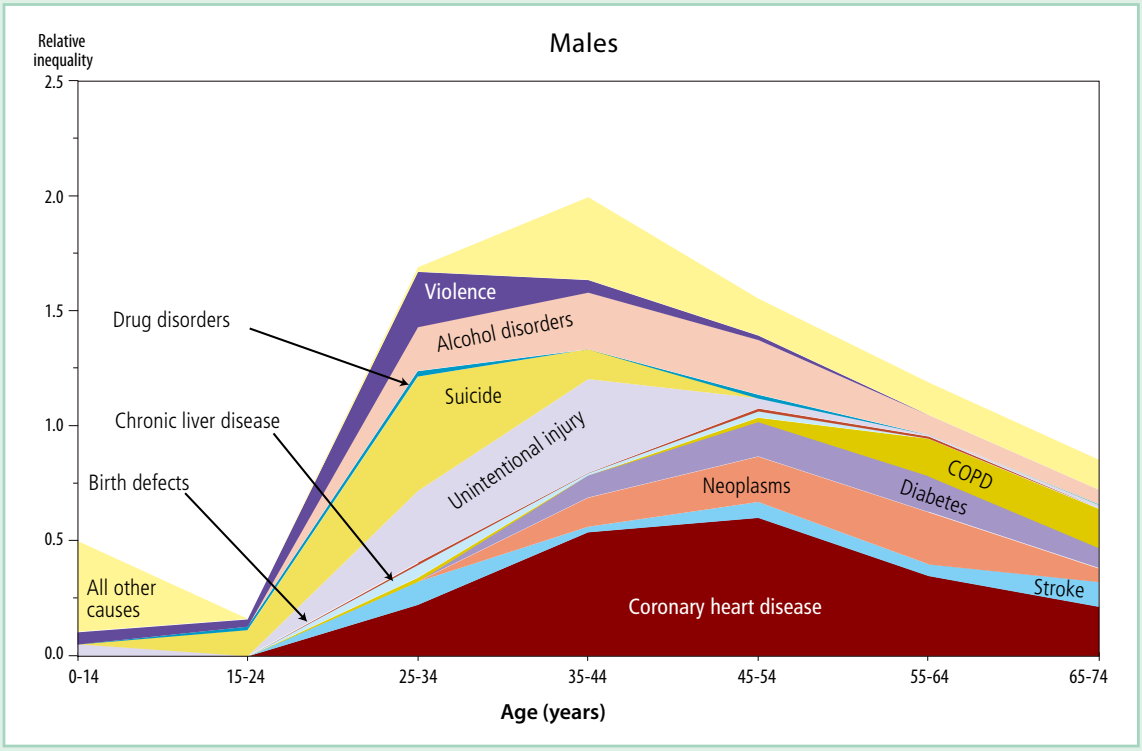
Figure 4: Inequalities in potentially avoidable mortality between Aboriginal and non-Aboriginal people by sex and cause of death, NSW, 2002 to 2006 combined

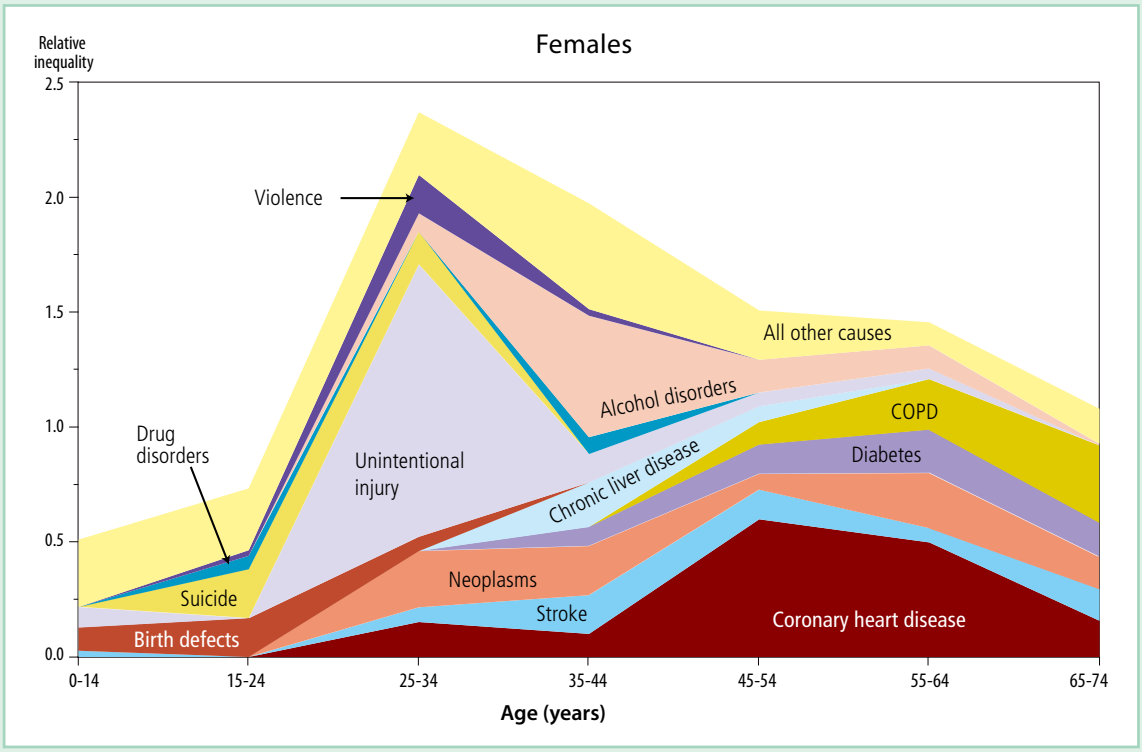




Note: The total height of the stacked areas at each age represents the all-cause RII in potentially avoidable mortality between Aboriginal and non-Aboriginal people at that age. The heights of the individual coloured areas indicate the relative contribution of each cause of death to this inequality. An RI of 0 indicates no inequality; an RI of 1 indicates that rates were 100% greater in Aboriginal people than in non-Aboriginal people.

Figure 5: Inequalities in potentially avoidable mortality between Aboriginal and the most socioeconomically disadvantaged (lowest 20%) non-Aboriginal people by sex and cause of death, NSW, 2002 to 2006 combined





Note: The total height of the stacked areas at each age represents the all-cause RI in potentially avoidable mortality between Aboriginal and non-Aboriginal people from the most socioeconomically disadvantaged population group (lowest 20%) at that age. The heights of the individual coloured areas indicate the relative contribution of each cause of death to this inequality. An RI of 0 indicates no inequality; an RI of 1 indicates that rates were 100% greater in Aboriginal males or females than in the most socioeconomically disadvantaged non-Aboriginal males or females.

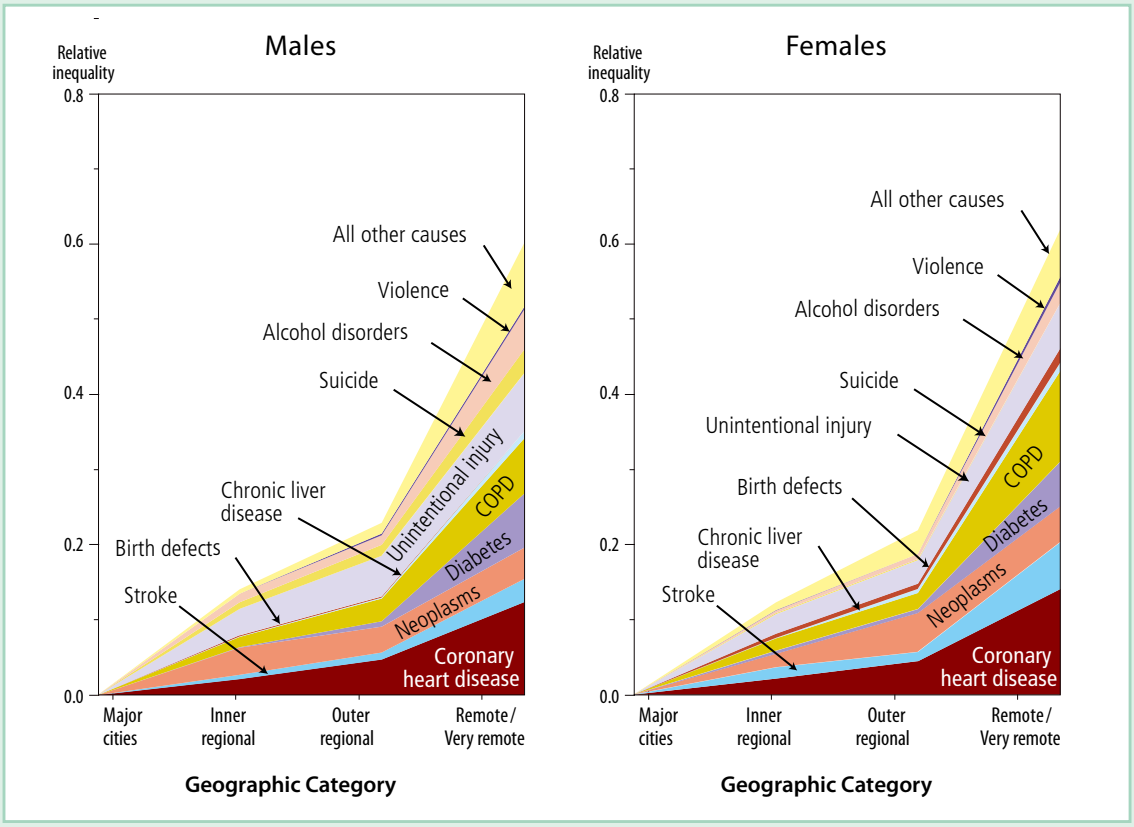
Conclusion

Rates of avoidable mortality are declining in NSW; however, further reductions rely upon targeting causes of death which are amenable to health intervention. Interventions include reducing behavioural and environmental risk factors in the healthy population, intervening earlier to detect and manage early stage disease and treating people with acute and chronic injuries and diseases appropriately, efficiently and effectively. There is great variation in the causes of deaths for different age groups and sexes (and therefore the type of appropriate preventive interventions), due to the impact of the natural history of diseases over the life cycle, biological differences, and differences in exposure to hazards and risk factors and varying risk behaviours.

While these same age and gender-related causes of death exist within population subgroups in NSW, an additional mortality burden is carried by those with the lowest SES, those living in rural and remote areas and Aboriginal people.

The methods presented in this special topic explore relative inequalities in potentially avoidable mortality by age and sex for different socioeconomic groups, remoteness areas and by Aboriginality. This approach highlights those causes for each age, sex and population sub-group which provide the greatest potential for health intervention. At younger age groups, birth defects, complications in the perinatal period, unintentional injuries (such as motor vehicle injuries and poisoning), suicide and interpersonal violence feature as major causes of inequality in mortality. The major chronic diseases, including coronary heart disease, stroke, neoplasms, chronic obstructive pulmonary disease and diabetes, feature with increasing age, although inequalities in mortality tend to diminish in the very old age group.

Figure 6: Inequalities in potentially avoidable mortality between major cities and other geographic categories by sex and cause of death, NSW, 2002 to 2006 combined



Note: The total height of the stacked areas at each geographic category represents the all-cause RI in age-standardised potentially avoidable mortality between major cities and that geographic category. The heights of the individual coloured areas indicate the relative contribution of each cause of death to this inequality. An RI of 0 indicates no inequality; an RI of 1 indicates that rates in the comparison geographic category were 100% greater than in major cities.

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3.2 Childhood overweight and obesity

Measuring success

- Stop the growth in childhood overweight and obesity by holding it at the 2004 level of 25% by 2010, then reduce levels to 22% by 2016.
- Prevent further increases in levels of adult overweight and obesity, currently at 50%

The issue

Childhood overweight and obesity has the potential to become one of the biggest public health issues over the coming century. Based on past mortality trends life expectancy in Australia is expected to increase over the next 20 years (Begg et al., 2007). However, if the trend of increasing childhood obesity is not reversed, modelling from the United States has predicted that instead of increases in life expectancy, there will be reductions of 2–5 years by mid-century (Ludwig, 2007).

Adult health problems related to obesity are being seen increasingly in children and young people. These health problems include fatty liver disease, dyslipidaemia, hypertension, type 2 diabetes, gastrointestinal disorders and orthopaedic problems (Must et al., 1999). Children who are obese are also at increased risk of having poor self-esteem and other psychological health issues (Reilly et al., 2003). Obese children and adolescents have an increased risk of developing coronary heart disease in adulthood (Skilton and Celermajer, 2006), with the prevalence of coronary heart disease in young and middle-aged adults attributable to adolescent overweight predicted to rise significantly over the next three decades (Bibbins-Domingo et al., 2007). Children who are obese are likely to become obese adults (Venn et al., 2007). Currently, the estimated total burden of disease attributable to high body mass in Australia is 7.5% (Begg et al., 2007).

Overweight and obesity can be assessed and defined using body mass index (BMI). BMI is calculated from weight and height and is considered a reliable indicator of body fatness for most people. For children and teens BMI is age and sex specific and is often referred to as BMI for age. BMI is only one factor related to risk for disease. In assessing someone's likelihood for developing obesity-related diseases an individual's waist circumference, level of physical activity, diet and biomarkers, such as high blood pressure, also need to be considered.

Childhood overweight and obesity rates are continuing to increase in New South Wales. The rate for overweight and obesity for children in 2004 was around 25%, compared with around 11% in 1985 (Booth et al., 2007).

Many factors contribute to the epidemic of overweight and obesity. Changed social and environmental factors have led to an increase in sedentary behaviours, increased use of cars and a decrease in active transport such as walking and cycling, increased availability of energy-dense nutrient poor foods and sweetened drinks, and increased portion sizes of foods. The combination of factors contributing to obesity has often been described as an obesogenic environment – one which makes unhealthy choices easier to make than healthy ones (Egger and Swinburn, 1997).

The links between the influences contributing to the overweight and obesity epidemic are complex. Overweight and obesity continues to present a significant challenge to population health. To reduce the prevalence of overweight and obesity a coordinated, whole-of-government approach involving communities and the private sector is required.

Context of childhood overweight and obesity

Children are not becoming overweight or obese in isolation; families are becoming more overweight. Across Australia, around half of adults are overweight or obese (Table 1; AIHW, 2006).

In more recent data from the NSW Population Health Survey, the proportion of adults in NSW in 2007 who were either overweight or obese was 51.7%. This proportion has increased significantly since 1997 (41.8%) (CER, 2008a).

Table 1: Australia-wide prevalence of self-reported overweight and obesity, persons aged 18 years or older (%) by state (extract from Table 3.17, AIHW, 2006)

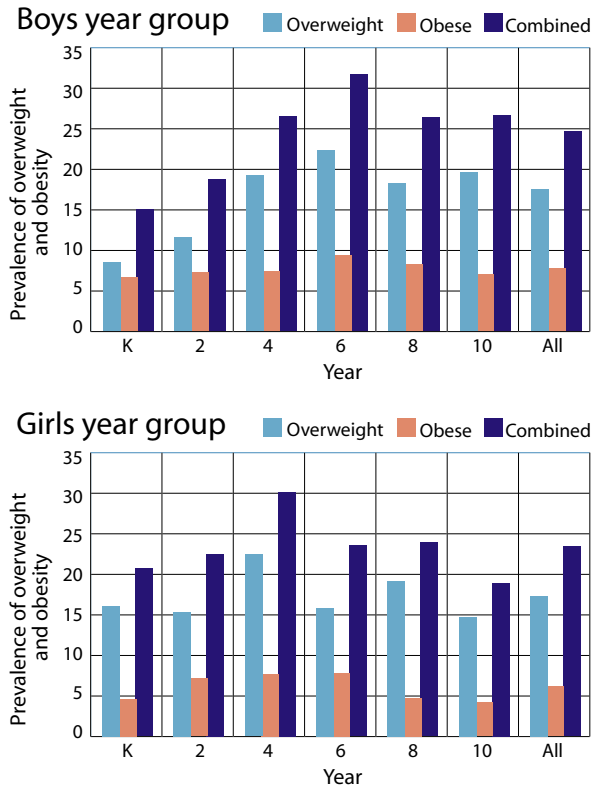
State/Territory	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Overweight or obese (%)	49.5	49.4	51.8	51.8	55.3	50.6	48.2	51.5	50.6

Having one or both parents overweight is an important risk factor for childhood obesity (Agras et al., 2004; Hesketh et al., 2004). Any approaches to target childhood obesity must also target adults, in particular families with children. Parents are important role models for their children and can have a positive influence on both the eating and physical activity behaviours.

Overweight and obesity in NSW children

The NSW Schools Physical Activity and Nutrition Survey 2004 (SPANS) collected and reported on childhood overweight and obesity data, as well as on behaviours influencing overweight and obesity in NSW school students in Years K, 2, 4, 6, 8 and 10. Figure 1 shows the prevalence of overweight and obesity in boys and girls (Booth et al., 2006).

Figure 1: Prevalence of overweight and obesity and overweight/ obesity combined among boys and girls in Years K, 2, 4, 6, 8 and 10 (%) (reproduced from Booth et al., 2006)



Overall, the survey found that about a quarter of children in NSW in 2004 were overweight or obese. When looking at obesity alone, the highest prevalence for boys of 9% occurred in Year 6, and the peak for girls of 8% occurred in Years 4 and 6, which is just prior to these children's pubertal growth period (i.e. peak velocity height).

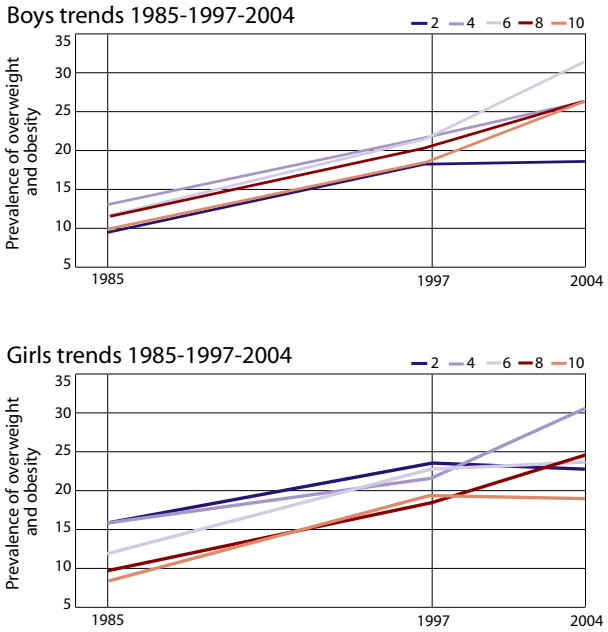
There were no consistent associations between overweight and obesity and socioeconomic status across year groups for boys and girls. Although the prevalence of overweight and obesity tended to be lower among students from a high socioeconomic status background, these differences were not statistically significant except among Year 10 girls.

Data from the Longitudinal Study on Australian Children indicate that more than one in five preschoolers in NSW are overweight or obese. Speaking a language other than English, Indigenous status and a lower socioeconomic status were associated with higher BMI (Wake et al., 2007).

Trends in NSW childhood overweight and obesity

Comparisons of data from 1985, 1997 and 2004 show there has been an increase in the prevalence of overweight and obesity in NSW children (Booth et al., 2007). The level of overweight and obesity for boys rose from 11% in 1985 to 20% in 1997 and 26% in 2004. For girls, levels of overweight and obesity increased from 12% in 1985 to 21% in 1997 and 24% in 2004. Figure 2 shows this increase in the prevalence of overweight and obesity over time.

Figure 2: Prevalence of overweight and obesity among boys and girls in Years 2, 4, 6, 8 and 10 for the 1985, 1997 and 2004 NSW data sets (%) (reproduced from Booth et al., 2006)



Trends in overweight and obesity in NSW youth aged 16–24 years

Between 1997 and 2007 there was a significant increase in the proportion of people aged 16–24 years in NSW who were obese (from 4.0% in 1997 to 8.7% in 2007). The increase was significant among females (2.7% to 9.9%), among those in the most disadvantaged quintile (6.3% to 14.3%) and among those in the urban (3.2% to 7.4%) and rural (6.1% to 11.8%) areas.

There has been no significant variation in the overall proportion of people aged 16–24 years who were either overweight or obese (combined). However, there was a significant increase among those in the most disadvantaged quintile (25.4% to 37.9%) and among those in the rural areas (25.0% to 35.6%) (CER, 2008b).

Health behaviours associated with overweight and obesity

Several behaviours may contribute to childhood overweight and obesity, including what children eat and drink, how often and how long they participate in physical activity and how much time they spend in sedentary behaviours.

Food and drink consumption

Eating adequate amounts of healthy food is important to provide a nutritious diet to promote growth and wellbeing. With a ready availability of energy-dense nutrient poor food and sweetened drinks, together with altered eating habits, many children consume too much high-energy food and not enough healthy foods.

Dietary patterns

Soft drinks

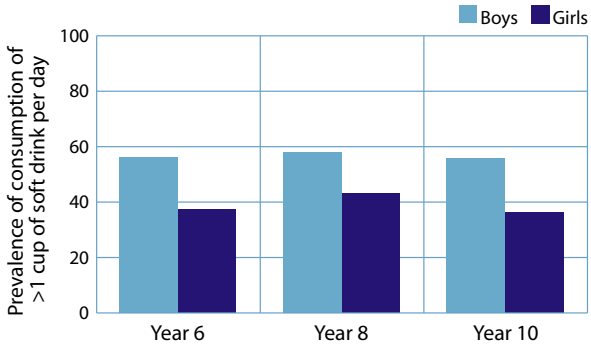
Regular soft drinks, cordials, sports drinks and flavoured mineral waters can contain large amounts of sugar. The consumption of sugar-sweetened drinks is likely to be a significant causative factor of childhood obesity. The risk that a child will be obese has been shown to increase with the daily consumption of each additional serve of sugar-sweetened drink (Ludwig et al., 2001).

Findings from the SPANS report (Booth et al., 2006) showed that around half of the children surveyed drank more than one cup (i.e. 250 mL) of soft drinks (excluding fruit juice) per day. Figure 3 shows the prevalence of drinking more than one cup of soft drink per day.

The highest consumption of soft drink was among children in Year 8, with 12% of boys and 6% of girls consuming more than 1 litre per day. Obese boys and obese Year 6 girls had the highest prevalence of consuming more than one cup of soft drink a day.

When looking at patterns of soft drink consumption, around a quarter of boys and a fifth of girls said that they usually chose soft drink over water or milk, and drank soft drink with their meals at home. Year 10 boys had the highest consumption of soft drink with their lunch at school (23%).

Figure 3: Prevalence of consumption of more than one cup per day of soft drink among boys and girls in Years 6, 8 and 10 (%) (reproduced from Booth et al., 2006)



Fruit and vegetable consumption

Fruit and vegetables are an important source of vitamins and minerals, and help protect against cardiovascular disease and some cancers. SPANS found that almost three-quarters of Year 6 students and 65–70% of boys and girls in Years 8 and 10 reported that they ate at least two serves of fruit a day. Less than a quarter of children ate the recommended four serves of vegetables a day (Booth et al., 2006).

'Extra' foods

A number of foods are considered to be 'extra'. This includes chocolates, lollies, biscuits, cakes, pies, sausage rolls, chips, crisps and soft drinks. Extra foods generally contain large amounts of fat and/or sugar. The Australian

Guide to Healthy Eating recommends that adolescents eat no more than one or two extra foods per day.

A study of children and youth aged 2–18 years found that extra foods are consumed excessively, at 2–4 times the recommended level (Rangan et al., 2008). From SPANS, around 10% of Year 10 boys and 8% of Year 10 girls ate hot chips four or more times a week. About 20% of children ate potato chips and other salty snacks four or more times a week. About 10% of boys and girls ate confectionery every day (Booth et al., 2006).

A study in western Sydney found that children aged 1–2 years had a high intake of extra foods—150 g a day. The intake of extra foods also had an inverse relationship to the intake of healthy foods (Webb et al., 2006).

Eating habits

It is considered important to eat regular meals (breakfast, lunch and dinner) to maintain a healthy weight. Eating meals with the family is also likely to encourage a balanced diet. With an increase in the number of eating occasions, energy intake is likely to increase (Booth et al., 2006).

SPANS found that 41% of girls in Year 10 did not eat breakfast every day, and around 30% of Year 10 children did not eat lunch every day. Between 13% and 27% of children buy food on the way home from school at least once a week. Between 10% and 20% of children eat food from a fast food shop at least once a week. Between 20% and 25% of Year 6, 8, and 10 students reported not eating dinner with their family at least four times a week (Booth et al., 2006).

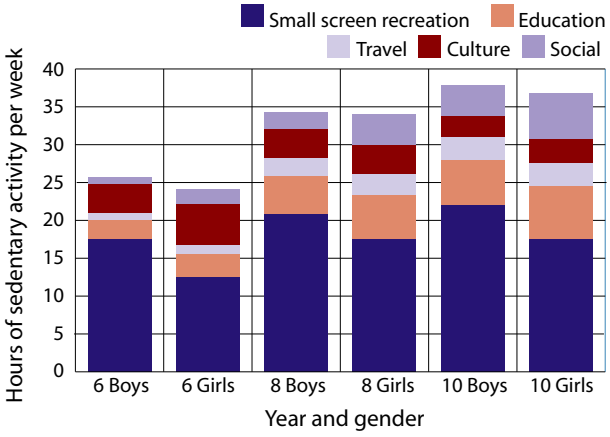
Sedentary behaviours

Time spent in sedentary behaviours may displace the time available for physical activity, and can be associated with the consumption of energy-dense nutrient poor foods and sweetened drinks. Looking at the effect of time spent in sedentary behaviour, separate to time spent in physical activity, is important, because the amount of time spent in physical activity alone does not correlate well with childhood obesity (Marshall, 2004). While physical activity is clearly important for a range of health and wellbeing issues, the SPANS report found no significant correlation between weight and activity levels (Booth et al., 2006). Interventions to decrease sedentary behaviours have been shown to reduce obesity in children (DeMattia et al., 2007).

Sedentary behaviours outside of school include watching television or DVDs, using computers and digital games, reading, socialising, travelling and time spent doing homework (Hardy et al., 2006). About half of the time spent on sedentary behaviours was spent watching television (Hardy et al., 2006).

The SPANS report found that children become increasingly sedentary with age, with a major shift between primary and secondary school. Figure 4 shows the median time spent in sedentary behaviours.

Figure 4: Median hours/week spent in small screen recreation, educational, travel, cultural and social sedentary behaviours among boys and girls in Years 6, 8 and 10



Active travel

Increased use of cars has meant that children use less active travel (i.e. walking or cycling), either as the primary form of travel or in combination with public transport. About a third of Year 6 students and about 15–20% of high school students travel to school by car every day. About 15–20% of high school students walk to school every day For those students who walk to school every day, the median time spent in walking is 10–15 minutes (Booth et al., 2006).

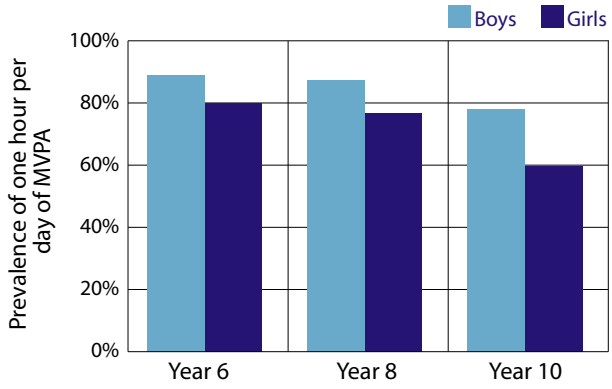
A study of students aged 9–11 years in the inner western suburbs of Sydney found that 29% of children who travelled to school by car lived less than 1 km away, and a further 18% lived between 1 and 1.5 km away (Wen et al., 2008).

Physical activity

Physical activity is an essential part of children's lives. As well as developing strength, fitness and coordination, children use physical activity to play games, socialise and to travel.

Physical activity includes both organised (sports and games) and non-organised activities. It is recommended that children aged 5-18 years spend at least 60 minutes every day in moderate-to-vigorous physical activity. (Australian Government Department of Health and Ageing, 2004). Figure 5 shows the self-reported prevalence of physical activity during summer terms.

Figure 5: Prevalence of one hour per day of moderate to vigorous physical activity during summer school terms among boys and girls in Years 6, 8, and 10. (Reproduced from Booth et al, 2006)



External influences on overweight and obesity

The built environment

The links between the physical environment and the overweight and obesity epidemic are becoming clearer. The built environment includes residential, commercial and public buildings, parks and roads (AIHW, 2006).

The built environment can be health-promoting: providing safety and shelter, readily accessible opportunity for physical activity in pleasant surroundings, ease of access to supermarkets and fresh food shops, and opportunity for socialising with neighbours and community. However, many built environments make healthy choices more difficult. Homes may be distant from schools, shops, and other facilities; closest food stores to homes may be fast food outlets; supermarkets and sources of healthy food may be outnumbered by fast food outlets (Babey et al., 2008); footpaths may be absent or in a poor state of repair.

Urban sprawl, where much of the population lives in low-density residential areas, is associated with inadequate physical activity, and the likelihood of being overweight or obese (Garden and Jalaludin, 2007). The authors highlighted the important role that urban planners have in incorporating health-promoting design in new developments.

Interventions aimed at changing or designing the built environment to make it more health-promoting are often outside of the direct control of NSW Health. NSW Health works with other government and non-government agencies to collect and provide accurate data on overweight and obesity levels and interventions. NSW Health works with local governments to develop ways of promoting physical activity within communities.

Food marketing

Australia has a high number of television advertisements for food targeted at children. Most of these advertisements are for foods that are high in fat, sugar and/or salt (Chapman et al., 2006). While there are regulatory controls around television advertising, a study by Kelly and Chau (2007) found a number of breaches of the code. The US Institute of Medicine found that there is a link between childhood obesity and food advertising and that television advertising is associated with children's food choices and requests.

With children's increased use of the Internet, food advertising targeted at children on the Internet has also increased and has been found to advertise foods of a low nutritional value, similar to television advertising (Alvy and Calvert, 2008).

Childhood overweight and obesity: links to NSW State Plan and NSW State Health Plan

Reducing overweight and obesity in the population is a priority area in the NSW State Plan. Priority S3 aims to improve health through reduced obesity, smoking, illicit drug use and risk drinking. Specifically, the Plan aims to stop the growth in childhood overweight and obesity by holding childhood overweight and obesity at the

2004 level of 25% to 2010 and reducing levels to 22% by 2016. This is an ambitious target that will require a comprehensive, inter-sectoral and collaborative approach.

The NSW State Health Plan reinforces the targets to address obesity in Strategic Direction 1: Making prevention everybody's business.

Overweight and obesity prevention interventions

NSW Health is committed to addressing overweight and obesity in NSW and is implementing a range of healthy eating and physical activity initiatives in schools, childcare and health facilities as well as providing healthy lifestyle information for the broader community. Key initiatives are summarised below.

Munch & Move program

This program provides early childhood workers with training, information resources and support to develop and implement policies and practices to promote healthy eating and physical activity to young children and their carers.

Live Life Well @ School program

The Live Life Well @ School program is being delivered to NSW government primary schools. It focuses on promoting key physical activity and healthy eating messages to students and the broader school community.

Fresh Tastes @ School

Ongoing implementation of Fresh Tastes @ School, the NSW Healthy School Canteen Strategy, to improve the nutritional value of food and drinks sold in school canteens.

The Healthy Kids website

http://www.healthykids.nsw.gov.au

This is a joint initiative between NSW Health, NSW Department of Education and Training, NSW Department of Sport and Recreation and the National Heart Foundation—NSW Division. The site provides information, benchmarks and strategies on healthy eating and physical activity for a range of groups, including parents and carers, teachers, early childhood workers and health professionals.

The Good for Kids, Good for Life program

http://www.goodforkids.nsw.gov.au

This program aims to prevent overweight and obesity in children aged 2–15 years in the Hunter New England Health Area, and to build evidence for policy and practice related to the prevention of childhood obesity across NSW. Program initiatives focus on the six key areas of schools, childcare, community organisations, health services, Aboriginal communities and media and marketing providers.

Social Marketing

NSW Health, in conjunction with the Cancer Institute NSW, conducted the second phase of Go for 2&5® in the middle of 2008. This campaign aims to increase the consumption of fruit and vegetables through:

- increased awareness of the recommended daily intake of fruit and vegetables
- positive attitude toward fruit and vegetable consumption
- improved knowledge of the health benefits of eating the recommended amounts of fruit and vegetables.

NSW Health has also implemented a campaign promoting the importance of water consumption instead of sugary drinks, with the key message "When it comes to thirst, think water first". Other key messages for social marketing are: Get active for an hour or more each day; Turn off the TV or computer and get active; Eat more fruit and vegetables; and Eat fewer snacks.

NSW Premier's Council for Active Living

http://www.pcal.nsw.gov.au

The NSW Department of Health provides representation to the NSW Premiers Council for Active Living (PCAL), whose purpose is to promote physical activity in cities and towns throughout NSW. PCAL works across sectors to promote active transport, improve the liveability of towns, incorporate the development of parklands, cycleways and footpaths into town plans, and improve access to supermarkets and fresh food stores.

Data sources and research on overweight and obesity and related health behaviours and interventions

NSW Schools Physical Activity and Nutrition Survey (SPANS)

http://www.health.nsw.gov.au/pubs/2006/spans/index.html

SPANS 2004 was a representative population survey of school students conducted in the first half of 2004. The survey reported on weight, physical activity, active travel to and from school, fundamental movement skills, sedentary behaviours and eating behaviours. There are plans for the survey to be repeated in 2010.

Australian Bureau of Statistics (ABS)

http://www.abs.gov.au/ausstats/abs@.nsf/mf/4835.0.55.001

The ABS collects and collates data on participation in sports and physical recreation for adults and children.

National Nutrition Survey (NNS)

http://www.abs.gov.au/ausstats/abs@.nsf/mf/4805.0

The NNS was conducted between February 1995 and March 1996, and collected information for people aged 2 years or more on food and beverage intake, food-related habits and attitudes, and physical measurements.

2005–2006 Report on Child Health

http://www.health.nsw.gov.au/publichealth/surveys/reports.asp

The 2005–2006 Report on Child Health was conducted as part of the NSW Department of Health NSW Population Health Survey, and includes information on health behaviours which may impact on obesity, including: serves of vegetables per day and serves of fruit per day.

NSW School Students Health Behaviours Survey (SSHB)

http://www.health.nsw.gov.au/publichealth/surveys/hss/index.asp

The SSHB Survey collects information about the health behaviours and attitudes of secondary school students in NSW, including: number of serves of fruit and vegetables eaten per day; frequency of eating fast foods, snacks, soft drinks and cordials; use of low fat milk; self-reported weight and height; number of days in the previous seven where moderate or vigorous physical activity was done; types of physical activity during school term; walking for transport and walking for pleasure; and hours of sedentary behaviour.

Good for Kids, Good for Life Program

http://www.goodforkids.nsw.gov.au/index.html

The Good for Kids, Good for Life Program, a large-scale obesity prevention initiative, is being trialled in the Hunter New England Area Health Service to explore a range of interventions aimed at reducing childhood obesity in children aged 2–15 years. This program brings together a variety of agencies, community groups and industry to provide practical information, as well as new programs and systems, to help children, parents, carers and the wider community know more about healthy weight, nutrition and physical activity. The first data from this program is expected to be available later in 2008. This will include information on self-reported behaviours on nutrition and physical activity; knowledge and attitude; and measured body mass index data.

The NSW Centre for Overweight and Obesity (COO)

http://www.coo.health.usyd.edu.au/

The NSW Centre for Overweight and Obesity is a collaboration between public health research groups to address overweight and obesity with particular emphasis on children and young people.

Longitudinal Study on Australian Children (LSAC)

http://www.aifs.gov.au/growingup/

The Longitudinal Study of Australian Children is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs. It looks at a range of issues to address a number of research questions. Data on overweight and obesity has been collected as part of LSAC.

The Infant Feeding Activity and Nutrition Trial (INFANT)

This is a randomised controlled trial being conducted in Victoria, which is examining the effect of an early health promotion program to promote healthy eating, physical activity and reduced sedentary behaviours in children of first-time parents (Campbell et al., 2008).

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Determinants of health

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Determinants of health: section review

Introduction

The determinants of health include characteristics such as age and sex, as well as external factors which can bring about a change in the health of individuals and populations. This Section provides an overview of the age and sex structure of the NSW population, as well as the social, environmental and behavioural factors that affect the health of populations.

The e-CHO

The indicators of the following chapters are also available in the e-CHO, the on-line, electronic version of *The health of the people of New South Wales: Report of the Chief Health Officer.* A detailed description of this content of can be found at:
http://www.health.nsw.gov.au/public-health/chorep/

NSW Population

In this report, the NSW population chapter includes the population distribution in NSW by age and sex and by Health Area and rurality index. Differences in the age and sex structure of populations in different geographic areas and subgroups affects the overall burden of disease and death in those areas and subgroups.

The adjustment for differences in the age and sex structure of populations by weighting rates to a standard population over time or between geographic allows for risks to be compared after controlling for these factors. Both the overall burden and risk are important measures for population health services planning and evaluation.

The following indicators are also included in the e-CHO:

NSW population pyramids by sex and age, with projected change in 20 years for:

- NSW
- individual Health Areas
- Local Government Areas
- Five NSW geographic areas based on the Accessibility/ Remoteness Index of Australia scores.

Social Determinants

In this report, the social determinants of health chapter shows the geographic distribution by local government area of socioeconomic disadvantage in NSW.

The following indicators of the social determinants of health are also included in the e-CHO:

- income
- employment
- educational attainment
- family structure
- reported crime
- social capital
- a map by local government area of the Index of Relative Socioeconomic Disadvantage scores

Environment

In this report, the Environment chapter includes indicators of the air quality index by geographic region in NSW and also water quality as measured by the level of indicator pathogenic bacteria.

The following environmental indicators are also included in the e-CHO:

- air quality index in fours regions of NSW
- sources of domestic heating and their contribution to indoor air pollution
- blood lead levels in children in Broken Hill
- water pollution by: bacteria, pesticides and inorganic chemicals
- sources of drinking water and fluoridation of water sources
- healthy living practices in Aboriginal communities

Health-related behaviours

In this report, the Health-related behaviours chapter includes indicators of the prevalence of selected risk factors in the population of NSW aged 16 years and over.

The following indicators of health-related behaviours are also included in the e-CHO presented by age, Area Health Service and trends over time:

- physical activity
- body mass index and overweight and obesity
- fruit and vegetable consumption
- breastfeeding
- sun protection
- sexual behaviour
- smoking
- alcohol consumption
- illicit drug use
- Deaths and hospitalisations attributable to smoking, excessive alcohol consumption, and overweight and obesity.

4.1 NSW population

Introduction

Age and sex are important determinants of the health of individuals. Thus, the age and sex structure of a population has a strong effect on patterns of illness and use of health services.

In 2006 the estimated resident population of Australia was 20.7 million. Almost a third of the Australian population lives in NSW, with about one fifth in the Sydney Statistical Division. In NSW, Aboriginal people accounted for 2.2% of the population in 2006.

The five yearly Census of Population and Housing is the primary source of basic population statistics, providing a total count of the population on census night. Population counts can be provided according to place of enumeration or according to place of usual residence. In Australia the key population measure is the estimated resident population (ERP), which is based on the concept of a person's 'usual residence' for a period of 12 months or more within Australia.

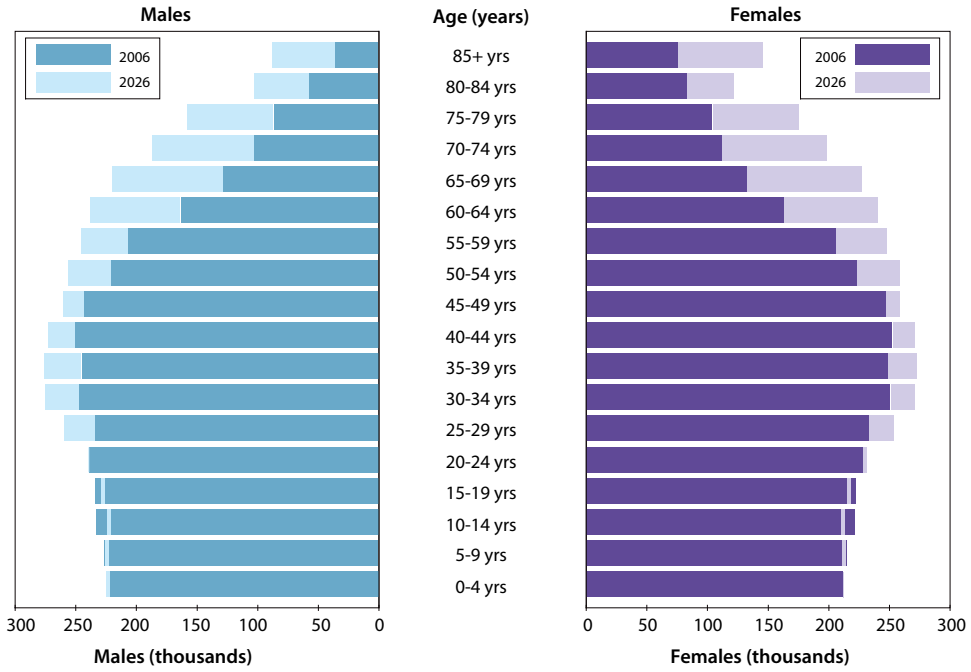
The ERP in a census year is derived from the census count, with adjustments for estimated undercount and for Australian residents temporarily overseas on census night. Between censuses the ERP is updated using information on birth and death registrations from state and territory Registrars of Births, Deaths and Marriages, and overseas arrivals and departures data from the Department of Immigration and Citizenship, as well as Medicare registration changes of address for modelling interstate migration.

The age and sex structure will vary among different regions, for reasons such as young adults moving to cities for study or work and older people retiring to coastal areas.

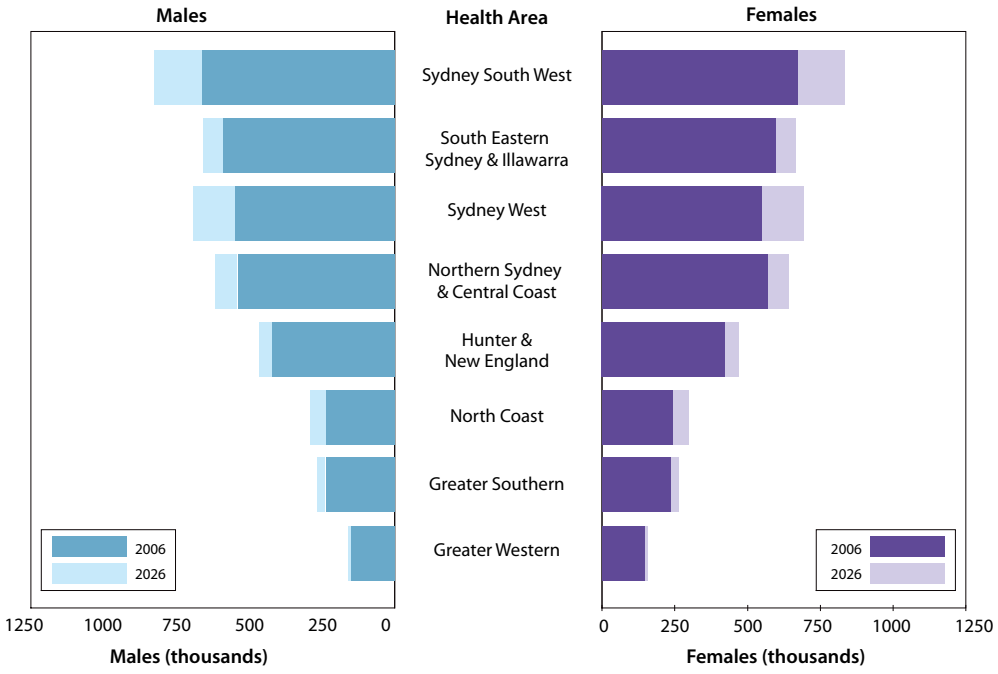
Key points

- The estimated residential population of NSW in 2006 was 6,817,182. The population of NSW in 2026 is projected to be approximately 8,000,000.
- The rate of growth of the NSW population is declining. Between 1996 and 2001 the average annual growth rate was approximately 1.17%. Between 2001 and 2006 the average growth rate was 0.73% per year, and it is projected to increase slightly to 0.80% per year between 2006 and 2026.
- The NSW population continues to age. For the NSW population in 2001 the median age, or the age for which half the population are older and half are younger, was 36 years. In 2006 the median age was 37 years, and in 2026 the median age is projected to be 41 years.
- In 2006 the female population slightly outnumbered the male population (98.2 males per 100 females); the gap will narrow slightly to 98.7 males per 100 females in 2026.
- The proportion of females in the population increases with age. In 2006 females made up 55% of the NSW population aged 65 years or more, and 63% of the population aged 80 years or more.
- The NSW population is predominantly urban. In 2006 approximately 73% of the NSW population lived in metropolitan areas, 20% lived in inner regional areas and 7% in outer regional and remote areas.
- In 2026 Sydney will remain the dominant population centre in NSW. Most growth in Sydney will occur to the west and south west of the city. The population of most local government areas along the NSW coast will increase, while the population of most inland areas of NSW will decline.

NSW population, estimated residential population 2006 and projected population in 2026, by age and sex



NSW population, estimated residential population 2006 and projected population in 2026, by Health Area



Note: Population estimates as at 30 June each year. Where a bar does not have a segment for 2026 the number of people in that category is predicted to decrease by 2026. The predicted number is shown as a lighter coloured line on the overlying 2006 bar.

Source: ABS estimated residential populations based on 2006 Census counts and population projections from the Transport and Population Data Centre, Department of Planning (HOIST).

4.2 Social determinants

Introduction

The World Health Organization established the Commission on the Social Determinants of Health in 2005. It outlines what can be done to promote health equity and aims to foster a global movement to achieve it. In its final report the Commission provides the evidence and actions recommended to be put in place by all governments to work towards "Closing the gap in a generation: health equity through action on the social determinants of health".

This chapter presents data on social and economic factors that are associated with health. These include indicators of household income, income sources, pensions, unemployment rates, family composition, school retention rates, crime rates and social capital. The indicators are based on data from the Australian Bureau of Statistics; the NSW Population Health Survey; the NSW Department of Education and Training; and the NSW Bureau of Crime Statistics and Research.

Low income is one of the main determinants of poverty, which is closely linked to poor health. Average total weekly earnings figures, which are published by the Australian Bureau of Statistics each quarter, provide one measure of income. The averages are calculated based on the total number of employees, not the total population of working age. Changes in the averages may be affected not only by changes in the level of earnings of employees but also by changes in the overall composition of the wage and salary earner segment of the labour force. For example, an increase in the number of part-time employees will generally lower the average.

Key points

- Social factors such as income, socioeconomic status, employment status, educational attainment and crime rates are associated with inequalities in health.

- In NSW in 2006, the gross average weekly household income was $1,378 and the average equivalent disposable weekly household income was $660. In NSW in 2006, 12% of households had household weekly incomes of less than $500 per week and 22% of households had household weekly incomes of more than $2,000 per week. Outer regional, remote and very remote areas of NSW had lower average weekly household incomes, with 18% having less than $500 per week and only 9% more than $2,000 per week.

- Among NSW area health services, in 2006, the North Coast Area Health Service had the largest proportion of low-income households of less than $500 gross income per week (18%), while the Northern Sydney-Central Coast Area Health Services had the lowest proportion (8%) of such households.

- In NSW in 2007, measures of social capital related to safety and social reciprocity were higher in rural compared to urban areas. Social reciprocity was lowest in Sydney South West and Sydney West Area Health Services and highest in the North Coast Area Health Service. Greater Southern Area Health Service reported the highest proportion of residents (88%) who believed their area had a reputation as a safe place compared to only 64% in Sydney South West Area Health Service.

- The proportion of the population receiving income support varied widely among areas. Overall, of those in the eligible age groups in 2008:
  - 68.5% received the age pension;
  - 8% received disability or sickness benefits;
  - 4.8% received unemployment benefits;
  - 14.2% of families received parenting payment.

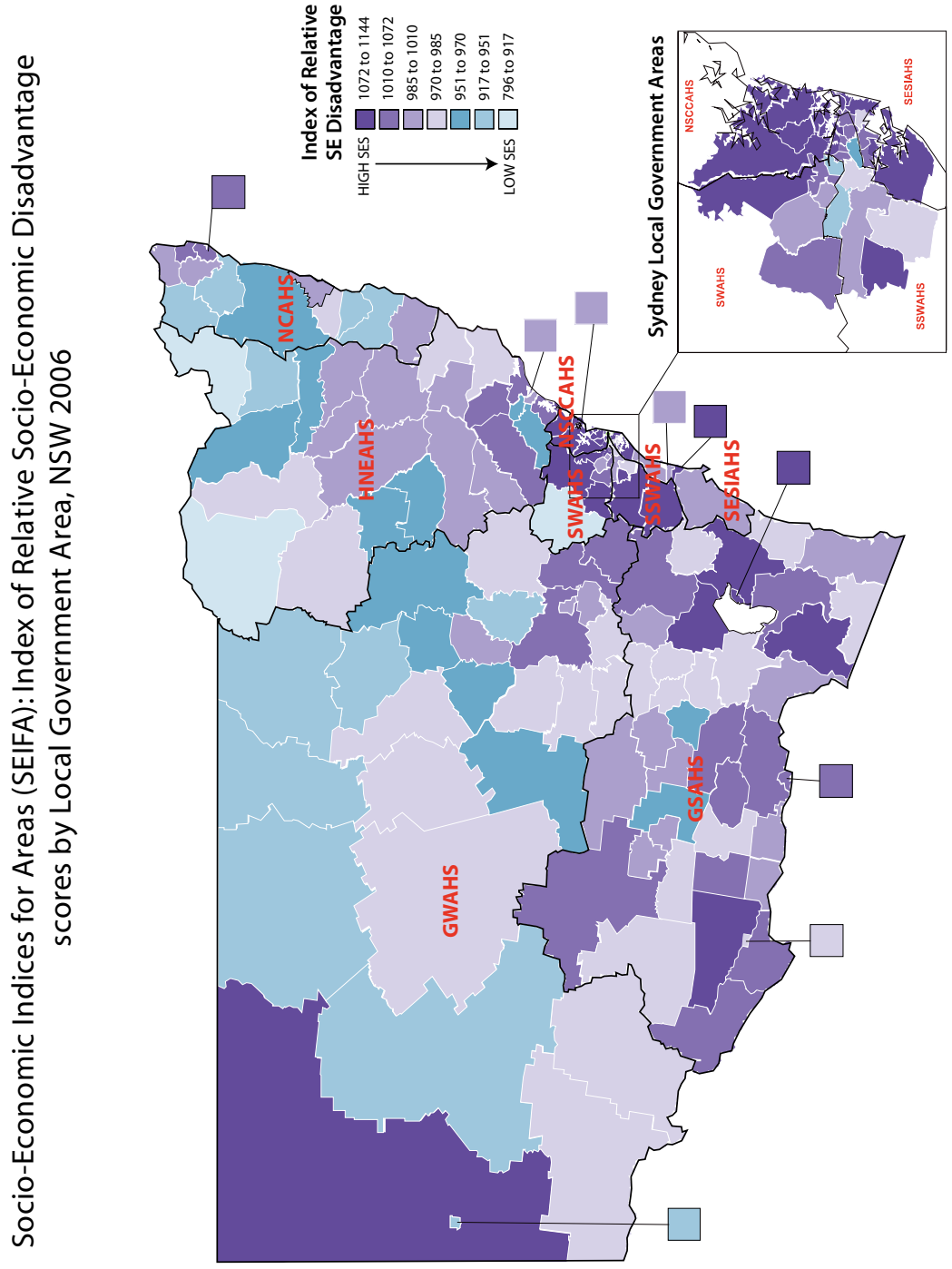
- The unemployment rate has remained relatively steady since 2000, and stood at 4.5% for males and 4.7% for females in June 2008.

- The Year 12 retention rate declined slightly in 2007 to 69.7% and ranged from 64.5% in NSW government schools to 78.6% in non-government schools.

- Just under 81,000 assaults and robberies and just over 293,000 thefts were recorded in NSW in 2007.

- In 2006, four of the five most socioeconomically disadvantaged local government areas of NSW were in remote or very remote parts of the state (Brewarrina, Central Darling, Walgett and Coonamble). Fairfield Local Government Area, also one of the five most disadvantaged areas, is in south-western Sydney. The five least disadvantaged local government areas were all in metropolitan Sydney: Ku-ring-ai, Mosman, Woollahra, Lane Cove and Baulkham Hills.

Socio-Economic Indices for Areas (SEIFA): Index of Relative Socio-Economic Disadvantage scores by Local Government Area, NSW 2006



Note: Australian scores are the reference point and are set to 1,000 for each index. Scores for local government areas are population-weighted means of the scores of their constituent census collector districts. The SEIFA indexes for 2006 were based on place of usual residence rather than place of enumeration as with previous SEIFA indexes.

Source: ABS Socio Economic Indices for Areas (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

4.3 Environment

Introduction

Factors in the natural and built environment have direct and indirect effects on human health which can be immediate or long-term. In rural areas issues as diverse as land use, agricultural practice, water quality and biodiversity all affect human health. People in urban and built environments are affected by air and water quality, transport choice, urban form and environmental health infrastructure.

The effects on human health of global phenomena such as population growth and climate change are also recognised at a local level. The report from the Garnaut Climate Change Review has warned of a variety of health impacts from climate change. These are based on no mitigation, through various levels of carbon emission control, and the subsequent impact on health from changes in temperature and humidity. The Report notes that the health impacts will vary by region. Potential health impacts include direct (e.g. increasing number of heatwaves and air pollution from bushfires) and indirect (increases in food- and water-borne diseases, increasing prevalence of mosquito-borne diseases from changes to natural ecological systems).

In the context of large-scale environmental change the 2008 Public Health Congress called on "all key stakeholders to invest in sustainable policies, actions and infrastructure to address the determinants of health", including the environmental factors leading to climate change.

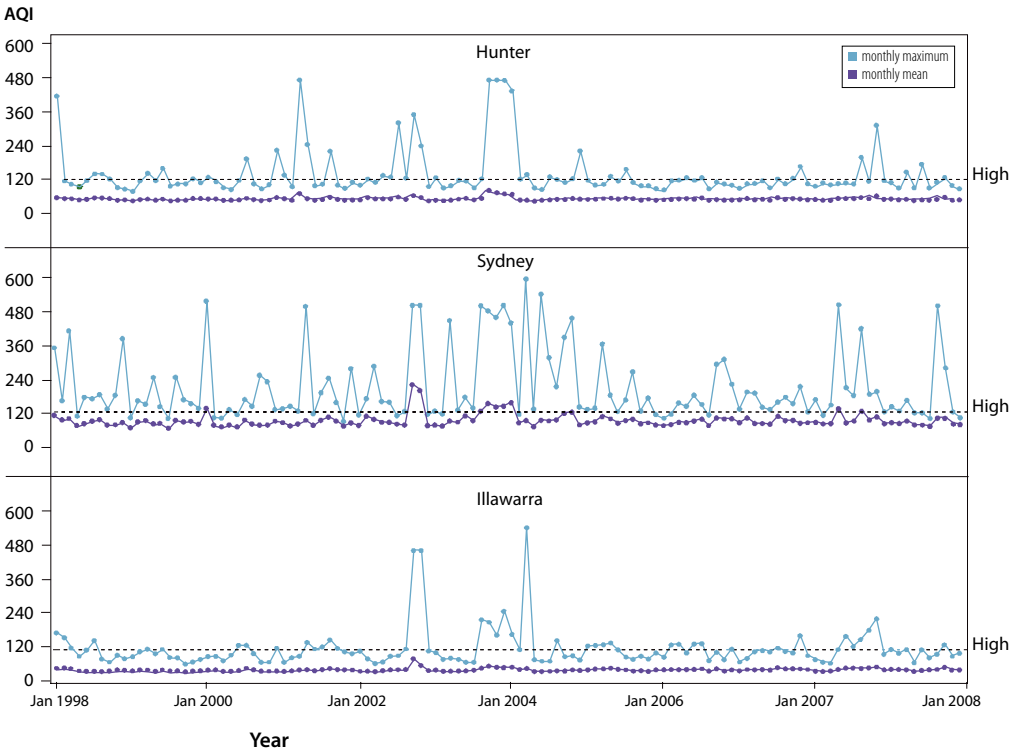
Responsibility for the management of environmental health hazards is deployed across three tiers of government. The Commonwealth and States work cooperatively to set environmental standards for drinking water and air quality. In NSW, the NSW Department of Environment and Climate Control has carriage of legislation governing controls on air and water quality, chemical hazards, and contaminated land. The NSW Department of Health has responsibilities in relation to drinking water; and a variety of infectious hazards linked to premises including Legionella in public air conditioning systems, tattooing and the funeral industry. The NSW Department of Health, Public Health Units in Area Health Services and local government manage these hazards in partnership.

The NSW Department of Health also manages statewide programs such as the Aboriginal Environmental Health Program, the NSW Drinking Water Monitoring Program and the Arboviral Disease Program. It is also helps assess the health effects of major developments within NSW.

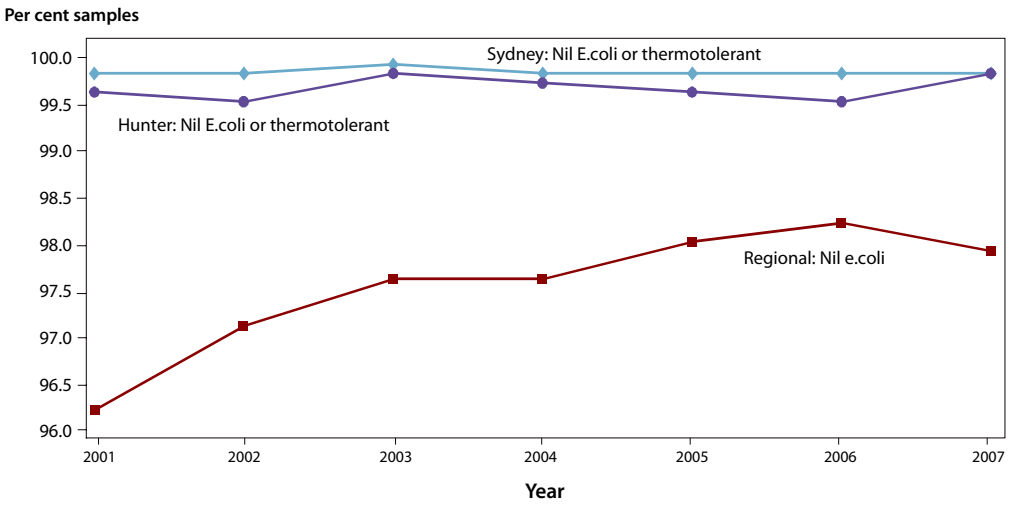
Key Points

- Human health is inextricably linked to the environment.
- The main contributors to air pollution in cities are industry, motor vehicles and wood-burning heaters. In the last ten years in Sydney:
  - Levels of ozone in the air have exceeded permissible levels from 9 to 21 days
  - levels of particulate air pollution have peaked at the time of bushfires.
- A range of indicators of the quality of drinking water, and water for recreational use, are monitored continuously. The majority of households in NSW use public water supplies. Recent testing of drinking water indicates that:
  - drinking water supplied by the Sydney and Hunter Water Corporations meets Drinking Water Guidelines and is of good quality
  - Overall compliance rate for rural water supplies is high, but results from individual supplies vary substantially
  - the level of fluoride in Sydney and Hunter Water Corporations' drinking water stayed within the required daily limits for the majority of samples tested in 2007. Over three quarters of the samples in rural water supplies met the daily fluoride standards in 2007
  - all samples tested for inorganic chemicals (lead, copper, nitrate and nitrites) met the standards in the Sydney and Hunter regions. In the regional water supplies tested, lead was detected at unacceptable levels in 1.3% and copper in 0.1% of samples in 2007
- Leaded petrol has been the main source of lead exposure for most NSW children, except those living near major sites for lead mining. In recent years blood lead levels among preschool children living in Broken Hill have declined steadily, with almost three-quarters of children aged 1 to 4 years tested in 2007 having lead levels below the maximum permissible.
- The Housing for Health program aims to assess, repair, and replace health hardware in Aboriginal residences. Surveys conducted on 182 houses 6-12 months apart identified major improvements in key areas of safety, and facilities such as working showers and laundries, as a result of the program in 2006-07.

Air Quality Index monthly maximum and monthly mean, Hunter, Sydney and Illawarra regions, NSW 1998 to 2007



Indicator bacteria in drinking water, Sydney, Hunter and regional water supplies, NSW 2001 to 2007



Note: TOP GRAPH - Air Quality Index is derived from the measurement of several pollutants (ozone, nitrogen dioxide, carbon monoxide, sulpur dioxide and 2 types of particles: BSP and PM10). The readings for each pollutant are standardised as follows: pollutant AQI = pollutant data reading/standard x 100, where the pollutant reading at the permissible threshold (reading = standard) is 100 by definition. The site AQI is the highest reading of any pollutant, so an AQI reading above 100 means that at that site at least one pollutant exceeded its permissible threshold value. BOTTOM GRAPH - Presence of bacteria Escherichia coli (E. coli) is the most reliable and specific indicator of recent faecal contamination in drinking water.

Source: TOP - NSW Department of Environment and Climate Change. BOTTOM - Sydney Water and Hunter Water Corporations (Quarterly Reports) and NSW Health Drinking Water Monitoring Program (Database)

4.4 Health-related behaviours

Introduction

Good health enhances the quality of human life and benefits the community. Conversely, health-related behaviours also contribute significantly to cardiovascular and respiratory diseases, cancer, and other conditions that account for much of the burden of morbidity and mortality in later life.

Measuring and reporting on health behaviours provides important information for planning public health programs and for evaluation, at the macro level, of the net gains of these programs. The health behaviours described in this chapter include: physical activity, fruit and vegetable consumption, overweight and obesity, sun protection, smoking, and alcohol and illicit drug use.

Two of the measures of success in the *NSW State Plan* are: a reduction in avoidable hospital admissions of older people and people with chronic illnesses; and a reduction in smoking rates, unhealthy alcohol consumption, illicit drug use and obesity. *Healthy People NSW* sets the platform for population health action in NSW over the next five years and includes a range of strategies aimed at preventing chronic diseases, with specific initiatives aimed at reducing obesity, tobacco smoking, alcohol misuse, illicit drug use and preventing chronic diseases in Aboriginal communities.

One NSW initiative is a new child obesity prevention program, ASSIST, which is being conducted by the Hunter New England Area Health Service between 2005 and 2010. With funding of $7.5 million it is Australia's largest ever obesity prevention trial and will focus on overweight and obesity in children and young people up to 15 years of age. Other obesity prevention initiatives, commencing in 2008, aim to promote healthy eating and physical activity among children. *Live Life Well @ School*, a range of programs in NSW Government primary schools and *Munch and Move*, a program in preschools, will help prevent children from becoming overweight later in life by creating good habits while they are young.

With legislation now banning smoking in enclosed public places in New South Wales, recent amendments to the Public Health Act 1991 have further strengthened measures to prevent young people from taking up smoking. The *NSW Health Drug and Alcohol Plan 2006 – 2010* details priority areas that have been identified to reduce the problems caused by drug and alcohol use, including: prevention; brief and early intervention; and treatment and extended care.

This chapter includes information from the NSW Population Health Surveys conducted between 1997 and 2007 and covering both children and adults in NSW; the NSW Schools Physical Activity and Nutrition Survey conducted in 2004; Australian Bureau of Statistics (ABS) National Health Surveys; the NSW School Students Health Behaviours Surveys for 1993 to 2005 (formerly the Australian Secondary School Students' Surveys); the NSW Department of Health Admitted Patient Data Collection; and ABS mortality data.

Key points

- Unhealthy behaviours contribute significantly to the burden of death and ill-health in NSW. For example:
  - smoking causes more than 5,000 deaths and just over 42,000 hospitalisations per year
  - alcohol causes more than 1,220 deaths and just under 47,000 hospitalisations each year.

- Unhealthy behaviours affect people of all ages.

- Among adults in 2007:
  - 22% of men and 15% of women are current smokers
  - 59% of men and 45% of women are overweight or obese

while only:

  - 62% of men and 48% of women are adequately physically active
  - 48% of men and 60% of women eat adequate quantities of fruit
  - 7% of men and 14% of women eat adequate quantities of vegetables.

- Of secondary school students aged 12-16 years in 2005:
  - 9% of boys and 8% of girls smoked in the previous week
  - 27% of boys and 24% of girls consumed alcohol in the previous week
  - 27% of boys and 14% of girls were overweight or obese
  - 18% of boys and 13% of girls have used cannabis at least once

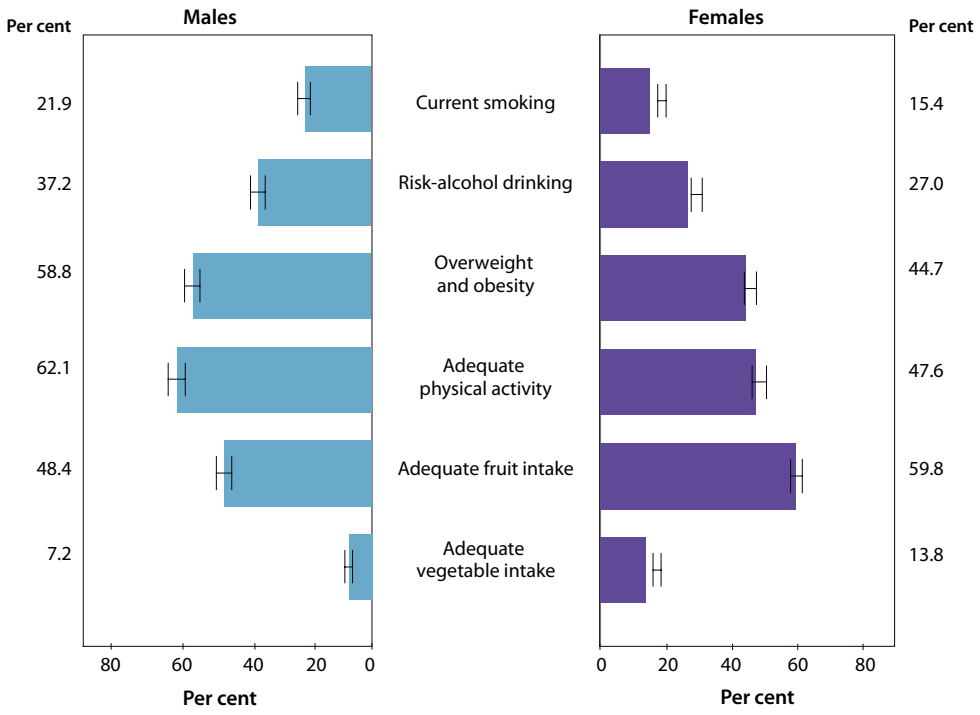
and only:

- 47% of boys and 24% of girls wear a hat in the sun
- 36% of boys and 49% of girls usually use sunscreen.

- Among children aged 2 to 15 years in 2005 to 2006:
  - 69% eat adequate quantities of fruit
  - 38% eat adequate quantities of vegetables.

- Encouragingly, though:
  - smoking rates have declined among both men and women since 1977
  - in 2007, for both sexes, the number of ex-smokers was greater than the number of current smokers
  - there has been a significant increase in the proportion of adults undertaking adequate physical activity over the last five years
  - the proportion of children consuming the recommended daily vegetable intake increased significantly between 2001-2002 and 2005-2006
  - the proportion of adults reporting risk drinking behaviour has decreased since 1997
  - the death rate from heroin overdose has declined steeply since 1999.

Key health behaviours by sex, persons aged 16 and over, NSW 2007



Note:

Smoking: Estimates are based on 7,510 respondents in NSW. For this indicator 6 (0.08%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who smoked daily or occasionally.

Risk alcohol: Estimates are based on 7,359 respondents in NSW. For this indicator 83 (1.12%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who exceed Guideline 1 of the NHMRC Australian Alcohol Guidelines, as 1 or more of the following: consuming alcohol every day, consuming on average more than [4 if male/2 if female] standard drinks, consuming more than [6 if male/4 if female] on any 1 occasion or day.

Overweight or obesity: Estimates are based on 7,264 respondents in NSW. For this indicator 279 (3.70%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who are overweigh or obese ie with a Body Mass Index (BMI) of 25 or higher.

Fruit intake: Estimates are based on 7,332 respondents in NSW. For this indicator 72 (0.97%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who met the recommended fruit consumption of 2 serves a day for people aged 16 years and over. One serve is equivalent to one medium piece or 2 small pieces of fruit.

Vegetable intake: Estimates are based on 7,300 respondents in NSW. For this indicator 104 (1.40%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who met the recommended consumption of 5 serves per day of vegetables for persons aged 16 years and over. One serve is equivalent to 1/2 cup of cooked vegetables or one cup of salad vegetables.

Physical activity: Estimates are based on 5,116 respondents in NSW. For this indicator 211 (3.96%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who did adequate physical activity. Adequate physical activity is a total of 150 minutes per week on 5 separate occasions.

Source: NSW Population Health Survey. Centre for Epidemiology and Research, NSW Department of Health.

Burden of disease

Burden of disease: section review 51

5.1 Burden of disease 52

Burden of disease: section review

This section contains indicators which describe the overall health status of the NSW population. The indicators compare the relative burden of death and illness for different diseases in males and females in NSW. The section includes international comparisons of the health of the Australian population.

In this report, the Burden of disease section includes international life expectancy rankings, a comparison of disability-adjusted life years for different diseases, as well as age and sex-specific charts of the major causes of hospitalisation and death in NSW.

The following indicators of the burden of disease are also included in the e-CHO for NSW as a whole, as well as selected indicators by the 8 NSW Area Health Services, 37 Divisions of General Practice and the 153 Local Government Areas:

- Trends in life expectancy at birth and at 65 years
- Trends in deaths from all causes and by category of cause
- Trends in premature and potentially avoidable deaths
- Trends in infant deaths
- Trends in all hospitalisations with projections to 2016
- Hospitalisations by category of cause
- Self-rated health status by age and sex
- Disability adjusted life years by category of cause and by risk factor and sex
- Hospitalisations for ambulatory care sensitive conditions
- International health comparisons of life expectancy, infant mortality and obesity
- Hospitalisations for dementia, musculoskeletal conditions and dialysis.

e-CHO

A detailed description of the content of the on-line, electronic version of *The health of the people of New South Wales. Report of the Chief Health Officer* can be found at **http://www.health.nsw.gov.au/public-health/chorep/**

5.1 Burden of disease

Introduction

Burden of disease refers to the health burden that diseases, injuries and risk factors place on populations. Traditional indicators used to quantify the burden of disease include life expectancy, mortality and hospitalisations, and show the contribution of various diseases, injuries and risk factors to the loss of life and disability in the population. The major limitation of using this is that the impact of conditions which cause substantial suffering or disability that don't result in death or hospitalisation is underestimated. The global burden of disease approach aims to address this limitation, by using a summary health gap measure called the 'disability-adjusted life year' (DALY).

The DALY aims to quantify the amount of full health lost due to disease or injury occurring in a particular period. It is calculated as the sum of the years of life lost due to premature death in the population, and the equivalent years of 'healthy' life lost due to poor health or disability arising from incident (new) cases of disease or injury. A discounting factor, which reflects the greater importance people place on the loss of health in the near future compared with the distant future, is also incorporated into the calculation.

The study *The burden of disease and injury in Australia, 2003* calculated total and age and sex-specific DALYs for 176 diseases, injuries and risk factors, is a complete assessment of the burden of disease in the Australian population. The DALYs for NSW and Australia are presented in this report. Other measures used in this chapter are potentially avoidable mortality and ambulatory care sensitive conditions.

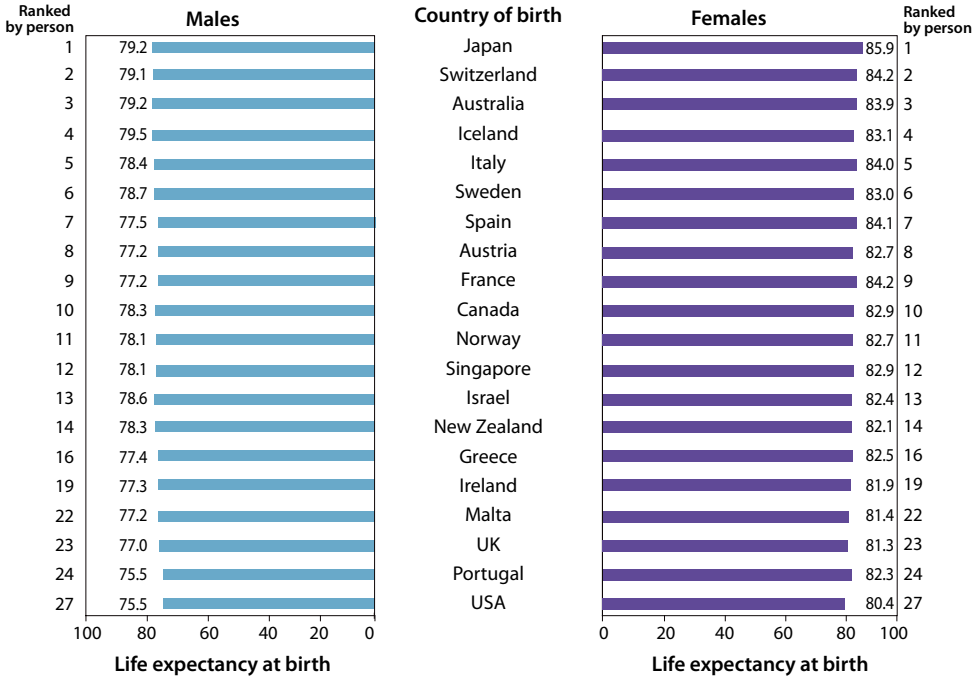
Potentially avoidable mortality refers to premature deaths (persons aged less than 75 years) from conditions considered preventable or avoidable through earlier intervention or action by the health and related sectors. Ambulatory care sensitive conditions are those for which hospitalisation could be avoided through preventive care and early disease management, usually delivered in an ambulatory setting, such as primary health care. For more information on methods used to calculate these measures see Appendix 2 – Methods.

This chapter presents a selection of burden of disease indicators for the NSW population. The values for life expectancy that appear may differ slightly from those published by the Australian Bureau of Statistics due to minor discrepancies in these methods. The ICD-10 codes used are listed in Appendix 3 – Disease and procedure codes.

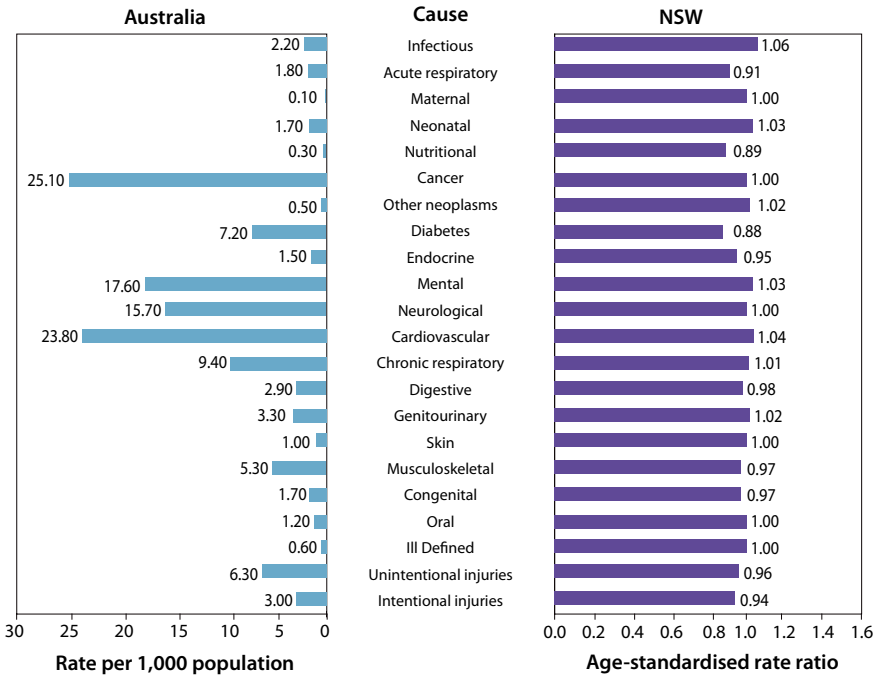
Key Points

- Life expectancy in NSW continues to increase. In 2006:
  - Newborn males could expect to live for 79.3 years, while newborn females could expect to live for 84.2 years.
  - Men who have reached age 65 years could expect to live to 83.7 years of age, while women who have reached age 65 could expect to live to 87.0 years of age.
  - Although females can still expect to live longer than males, the difference between the sexes is decreasing.
- Australia has the third highest life expectancy in the world.
- The age standardised death rate in NSW has more than halved in the last 35 years. The male death rate was 50% higher than the female rate in 2006.
- In 2006, more than one-third of premature deaths were classified as avoidable. The avoidable deaths rate has more than halved in the last 20 years.
- In 2006, the infant mortality rate was 4.9 per 1,000 live births in NSW and 4.7 per 1,000 live births in Australia; the 20th best in developed countries.
- Hospital separation rates have increased by more than 27% over the last fifteen years but only 11% in the last ten years. Rates have been higher in females but the gap is narrowing. In 2006-07 the most common causes of hospital separations were: factors influencing health (dialysis), factors influencing health (other), maternal conditions, injury and poisoning and digestive system diseases.
- Over three-quarters of adult NSW residents rated their health as 'good' or better in 2007. Almost one-half of NSW children reported 'excellent' health in 2005-06.
- The disease burden was greater in NSW than in Australia from infectious disease, neonatal causes, non-cancerous tumours, mental conditions, cardiovascular, chronic respiratory and genitourinary diseases.
- Ambulatory care sensitive hospitalisation separation rates have increased only slightly over the last 18 years.
- There were over 21,000 hospital separations for knee and hip replacement in NSW in 2006-07, and almost 80% of those were due to osteoarthritis.

Life expectancy in the 14 highest ranking and selected WHO countries by sex, 2006

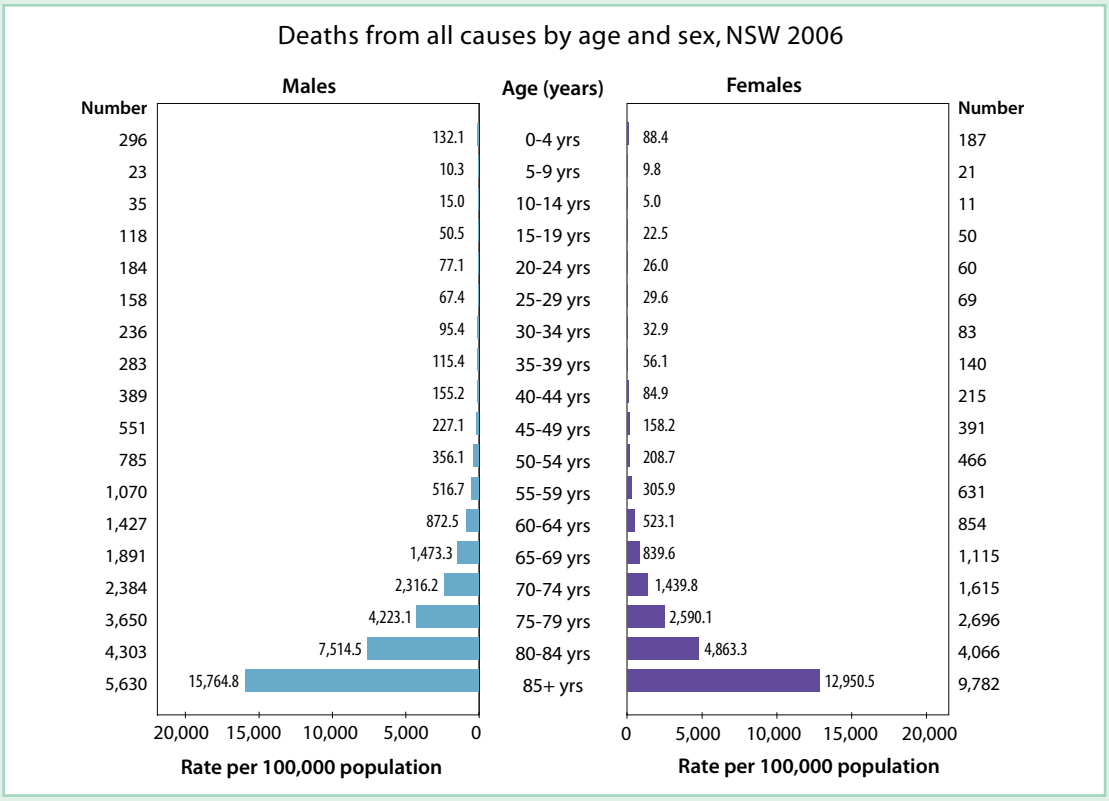


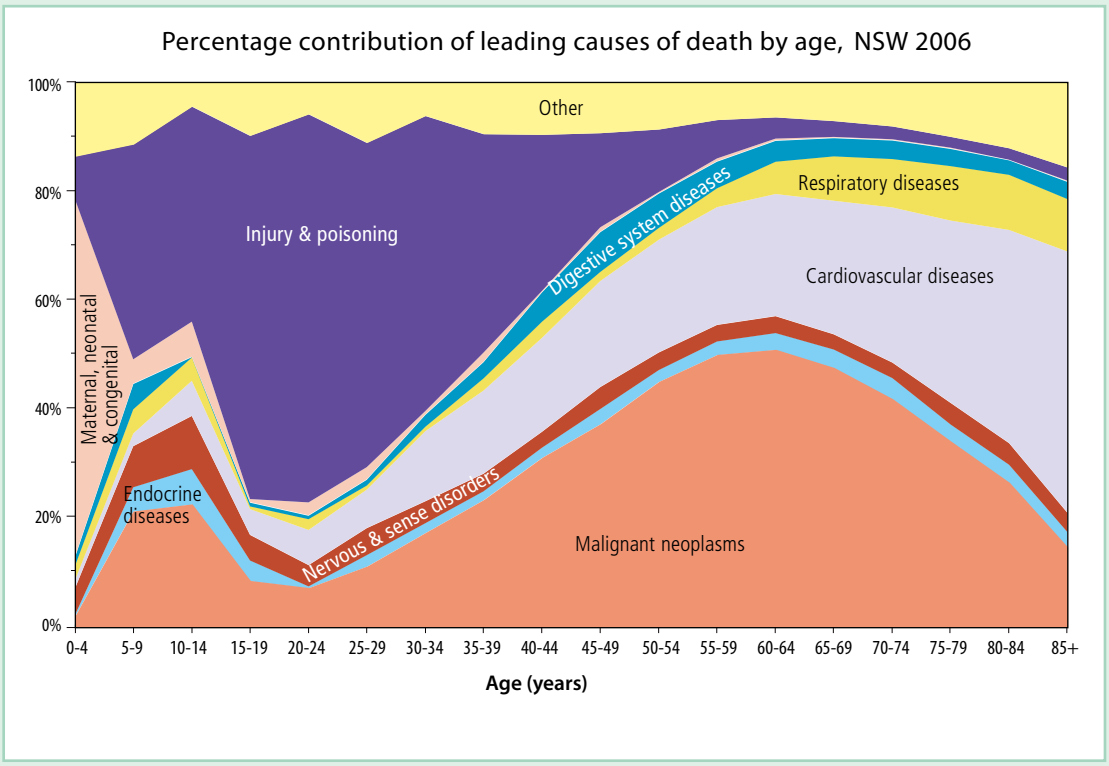
Disability adjusted life years (DALYs) by category of cause, Australia and NSW 2003



Note: TOP GRAPH - Only WHO countries are included. Hong Kong and Taiwan, both with high self reported life expectancy, are not included. BOTTOM GRAPH - The measure of burden of disease is DALY = disability adjusted life years. The DALY measures healthy years of life lost due to a disabling health state or death before a specified age.

Source: TOP GRAPH - WHO 2008. WHO Statistical information system. Life tables for WHO member states. Geneva: WHO, 2008. BOTTOM GRAPH - Begg S, Vos T, Barker B. et al. The burden of disease and injury in Australia, 2003. Centre for Epidemiology and Research, NSW Department of Health

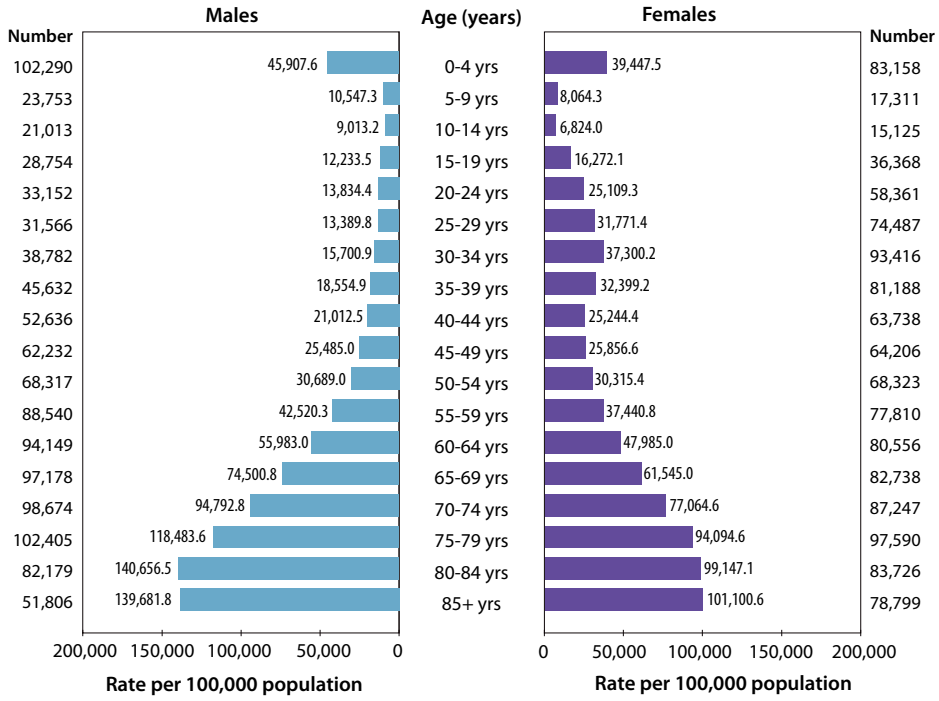




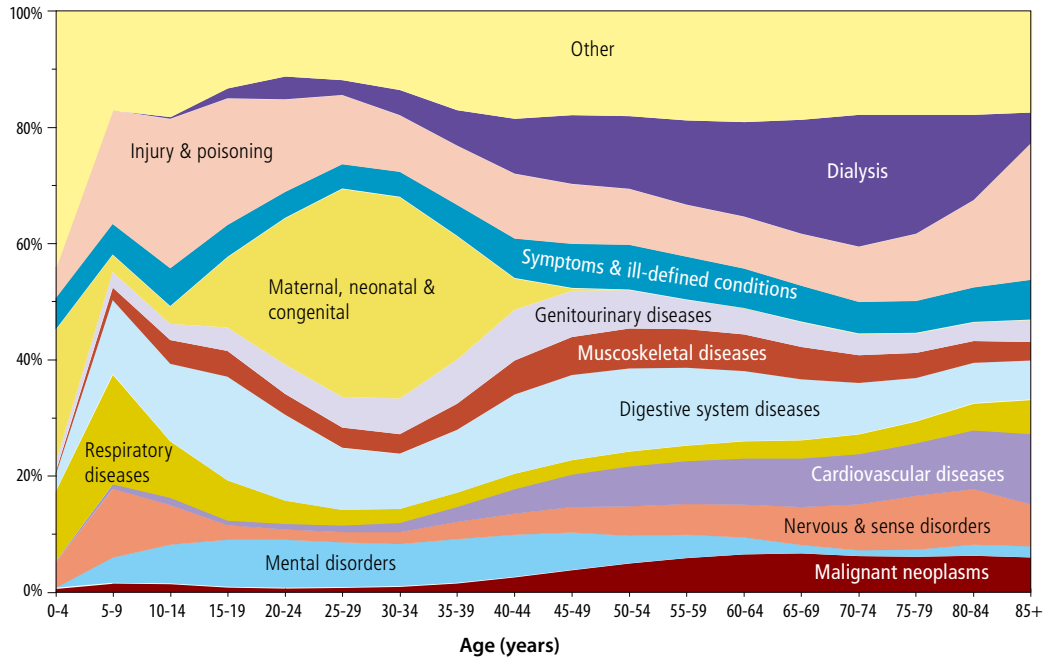
Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories. See ICD Codes for diseases and procedures for details. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production.

Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Hospital separations by age and sex, NSW 2006-07



Percentage contribution of leading causes of hospital separations by age, NSW 2006-07



Note: Hospital separations were classified using ICD-10-AM. See Codes for diseases and procedures for details. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisation, data for which were unavailable at the time of production.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Health inequalities

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Health inequalities: section review

Introduction

This section focuses on the inequalities in health outcomes and risk factors in subgroups of the NSW population. Poorer health is experienced in NSW in different social, economic, cultural and ethnic groups and in rural and remote areas of NSW. While these subgroups are considered individually in this report, in reality, there is a great degree of correlation between the factors causing poorer health within them, which should be considered in interpreting indicators for any individual subgroup. For example, remote areas of NSW tend to have a lower socioeconomic status and also have a higher proportion of Aboriginal people.

Aboriginal peoples

In this report, the chapter on Aboriginal people covers the distribution of the Aboriginal population in NSW by age and rurality and remoteness based on place of residence, as well as age and sex-specific charts of the major causes of hospitalisation and death of Aboriginal people in NSW.

The following indicators of the health of Aboriginal people in NSW compared wherever possible to that of the non-Aboriginal population, are also included in the e-CHO:

- sex and age distribution
- socioeconomic factors
- expenditure on health programs
- life expectancy
- all deaths, avoidable deaths, infant and perinatal deaths
- premature and low birth weight babies and antenatal maternal care
- hospitalisations for all causes and for ambulatory care sensitive conditions
- hospitalisation rates for acute respiratory, skin and gastrointestinal conditions
- interpersonal violence and alcohol attributed trauma
- injuries
- cardiovascular health, diabetes and dialysis
- smoking and cancers
- otitis media and oral health
- substance abuse treatment, mental conditions and suicide and self-harm
- Infant and adult immunisation coverage

Country of birth

In this report, the chapter on Country of Birth includes indicators of the change in the NSW migrant population over time and deaths and hospitalisations by country of birth.

The following indicators of health status by country of birth are also included in the e-CHO:

- NSW population distribution by country of birth
- income and country of birth for NSW and by Health Area
- fluency in English language among persons born overseas
- premature births and antenatal maternal care
- death rates from all causes
- alcohol use
- prevalence of smoking, overweight and obesity and psychological distress.
- diabetes
- heart disease
- cancer
- tuberculosis.

Rural and remote populations

In this report, the chapter on Rural and remote populations describes regional variations in health using an Australia-wide standardised geographical classification of remoteness which categorises Statistical Local Areas into ‘major cities’, ‘inner regional’, ‘outer regional’, ‘remote’ and ‘very remote areas’ on the basis of a score determined by the distance travelled by road to a major service centre (the Accessibility/Remoteness Index of Australia, or ARIA + score). This report features avoidable death rates and hospitalisations for ambulatory care sensitive conditions by ARIA+ category.

The following indicators of the health of rural and remote populations in NSW are also included in the e-CHO:

- population distribution by Aboriginality
- life expectancy by sex
- hospitalisation rates for all conditions and for ambulatory care sensitive conditions
- premature deaths and deaths from motor vehicle crashes and unintentional injuries
- low birth weight and premature babies and antenatal maternal care
- overweight and obesity
- cardiovascular disease and revascularisation procedures
- suicide
- difficulties in obtaining health care
- recent dental treatment, visits to community health centres and emergency departments
- self sufficiency as measured by the proportion of hospitalisations of residents within their Area Health Service

Socioeconomic status

In this report, the chapter on Socioeconomic status describes variations in health status by population-weighted quintiles of socioeconomic status as measured using an Australia-wide standardised Index of Relative Socioeconomic Disadvantage which was developed by the Australian Bureau of Statistics from census data as one of the Socioeconomic Indexes for Areas (SEIFA index). This chapter shows life expectancy and smoking, high risk drinking and overweight and obesity by socioeconomic status.

The following indicators of the health of rural and remote populations in NSW are also included in the e-CHO:

- life expectancy
- premature and avoidable deaths
- hospitalisations for ambulatory care sensitive conditions
- teenage mothers
- selected health risk factors such as overweight and obesity, smoking and risky alcohol drinking

Other topics

The following chapters are only available in the e-CHO version of the report

The **Refugee health** chapter contains information on migrants arriving under the Humanitarian Program and settling, at least initially, in NSW. The indicators of the health of Refugees in NSW in the e-CHO include:

- demographic information including sex, age, country of birth and the local government area of initial settlement.
- child health, immunity and carrier status, oral health and self rated health status.

The **Prisoner health** chapter describes health status of a particularly disadvantaged social group. Indicators focusing on Aboriginal prisoners and young offenders are also included, in this chapter. The indicators of the health of prisoners in NSW in the e-CHO include:

- prisoner population distribution by age and sex and Aboriginality
- trend in proportion of Aboriginal people in prison population
- prevalence of risk factors among prisoners by age
- prevalence of chronic conditions, mental disorders and communicable diseases in different age groups
- proportion of persons ever injecting drugs among prisoners

e-CHO: A detailed description of the content of the on-line, electronic version of *The health of the people of New South Wales. Report of the Chief Health Officer* can be found at **http://www.health.nsw.gov.au/public-health/chorep/**

6.1 Aboriginal peoples

Introduction

Physical and social environments are crucial to whether people live productive lives relatively free of serious illness. This is particularly the case for Aboriginal people, who suffer from new infectious and chronic diseases and social dislocation. Many Aboriginal people live today in conditions of clear social and economic disadvantage. All of these things interact to contribute to poor health in many groups of Aboriginal people.

In 2006, Aboriginal people comprised 2.2% of the total NSW population. The NSW Aboriginal population is 94.4% Aboriginal only, 3.4% Torres Strait Islander only, and 2.2% both Aboriginal and Torres Strait Islander. In this report all these people are referred to as Aboriginal in recognition of the fact that Aboriginal people are the original inhabitants of NSW.

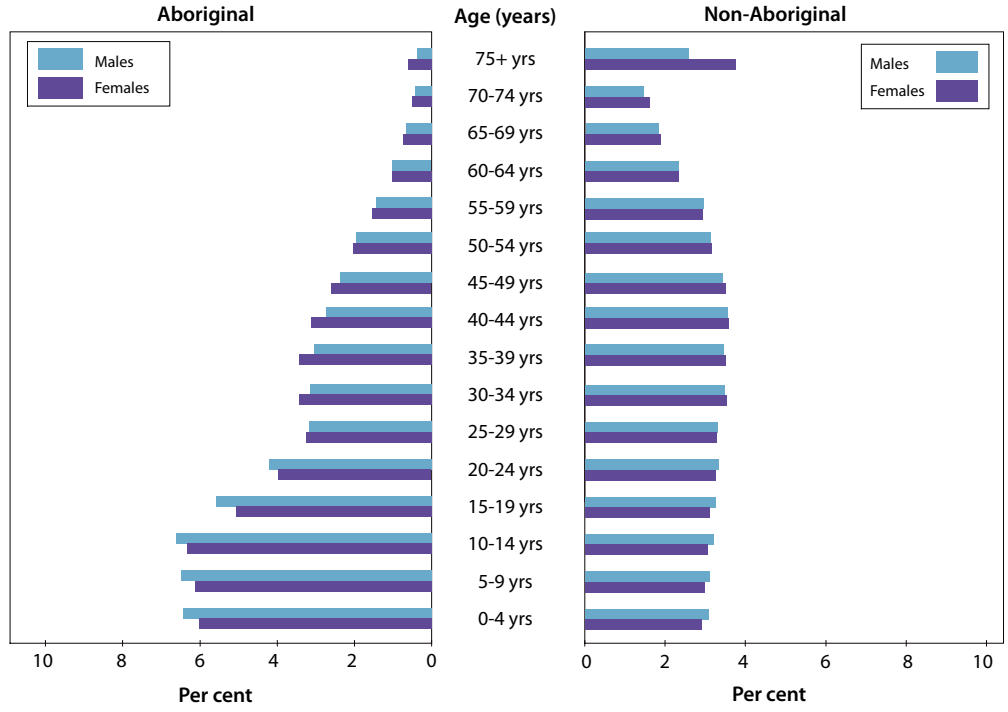
Estimating the size and composition of the Aboriginal population is difficult, in part due to the incomplete and differential identification of Aboriginal people in administrative data collections. The Aboriginal population is generally under-identified in administrative data collections for reasons such as staff reluctance to ask about Aboriginality and Aboriginal people's reluctance to identify as Aboriginal in some circumstances. Identification is usually better in rural and remote regions than in major cities. The Aboriginal population has a median age of 21 years, compared with 36 years for the non-Aboriginal population. As age is closely related to health, care should be taken when comparing information for these two populations.

NSW Health is committed to working in partnership with Aboriginal people and other government agencies to improve the health outcomes for Aboriginal people. *Two Ways Together,* the NSW Aboriginal Affairs Plan 2003–2012, establishes a whole-of-government approach to improve the lives of Aboriginal people. This chapter presents a selection of health and health-related indicators based on a range of administrative data sources, performance indicators for specific program areas and self-reported survey data.

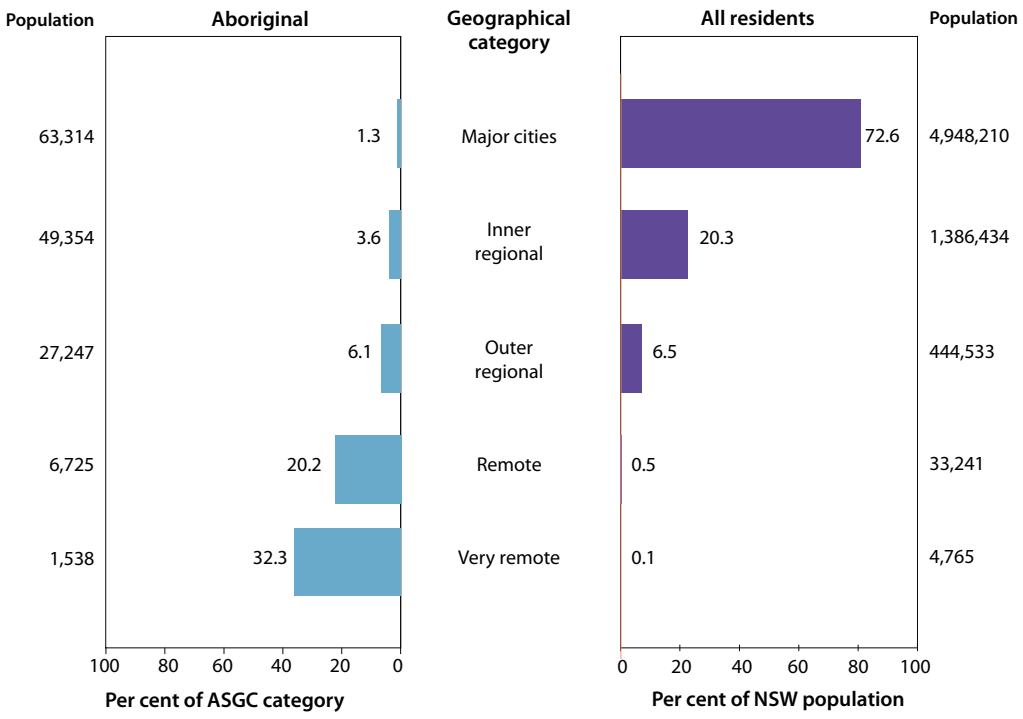
Key Points

- Around 148,178 Aboriginal people live in NSW, making up just over 2% of the total population and 29% of the total Australian Aboriginal population.
- The relative socioeconomic disadvantage experienced by Aboriginal people in NSW continues to place them at a greater risk of exposure to behavioural and environmental health risk factors.
- The Aboriginal population is younger, with 38% of the population under 15 years of age, compared with 19% of the non-Aboriginal population. The proportion of the Aboriginal population over the age of 65 years is just over 3%, compared with just over 13% of the non-Aboriginal population.
- Aboriginal people are more likely to die at younger ages. People aged less than 25 years make up around 10% of deaths of Aboriginal people, compared with 2% of deaths among non-Aboriginal people.
- The infant mortality rate for babies born to Aboriginal mothers was 7.5 per 1,000 births, almost twice the rate for NSW babies overall.
- Aboriginal people are more than twice as likely as non-Aboriginal people to die as a result of diabetes or from injuries.
- Aboriginal people are admitted to hospital at about 1.7 times the rate of non-Aboriginal people. Renal dialysis accounts for the largest number of hospitalisations for Aboriginal people.
- Compared with rates for non-Aboriginal people, hospitalisation rates for Aboriginal people in NSW are:
  - 140% higher for conditions for which hospitalisation can be avoided through prevention and early management
  - 210% higher for diabetes
  - 40% higher for cardiovascular diseases
  - 230% higher for chronic respiratory diseases
  - 50% higher for injury and poisoning
  - 240% higher for alcohol-related conditions.
- Reported rates of current smoking for Aboriginal adults are around double those for the general population across all age groups; while reported rates of risk drinking are around 1.4 times the general population rates across all age groups.

Age and sex distribution of population by Aboriginality, NSW 2006



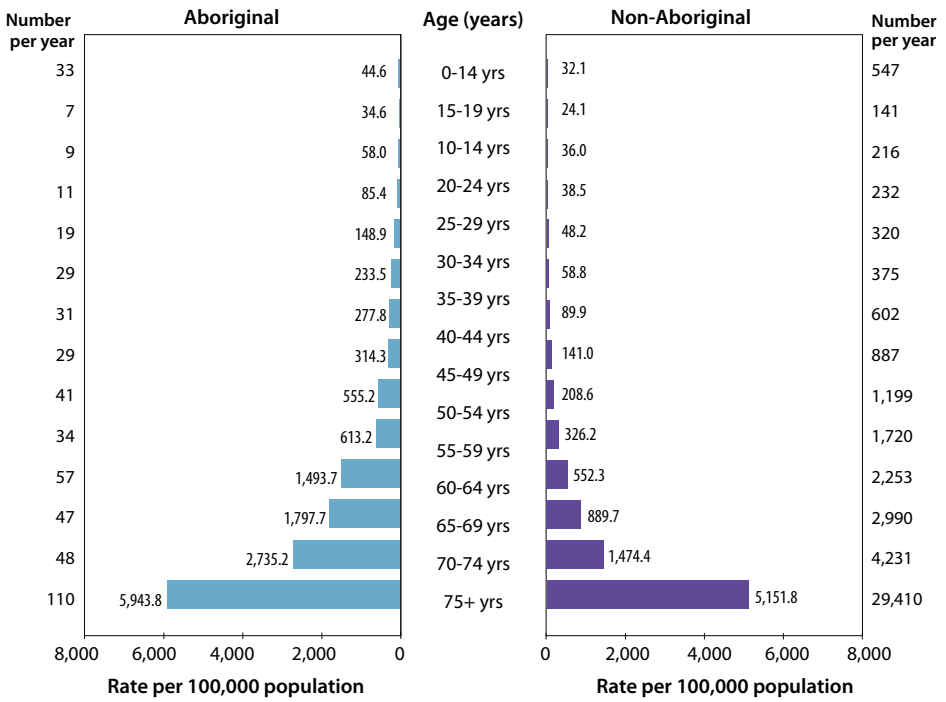
Age and sex distribution by population by Aboriginality, NSW 2006



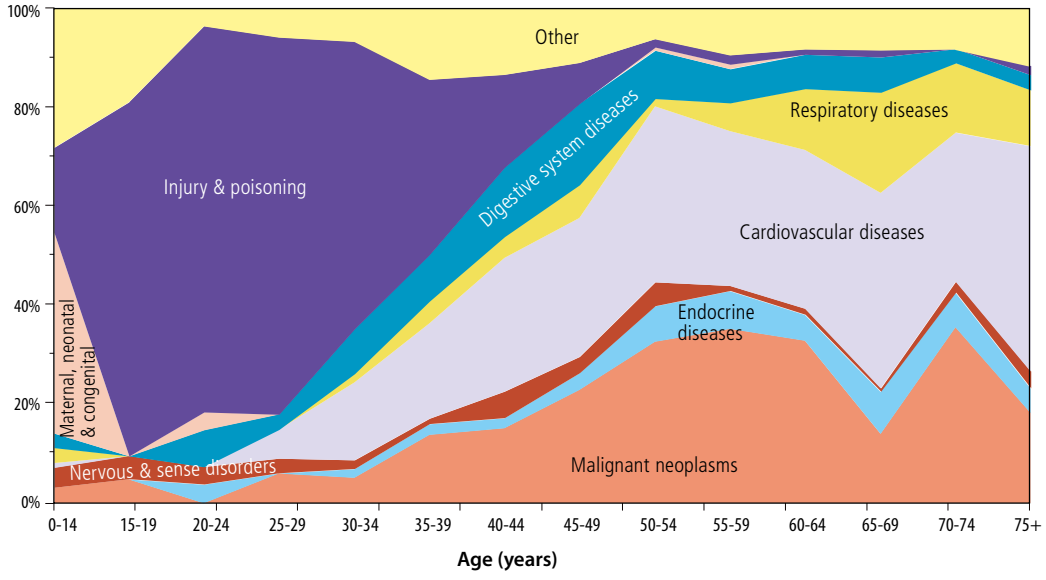
Note: TOP GRAPH - Estimated residential populations based on the 2006 ABS Census of Population and Housing. BOTTOM GRAPH - Statistical Local Areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index of Australia (ARIA+ version) score. 'Aboriginal' is used here to refer to both Aboriginal and Torres Strait Islander people.

Source: BOTH - ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health. BOTTOM - Also uses the Accessibility/Remoteness Index for Australia (ARIA+ version).

Deaths from all causes by age and Aboriginality, NSW 2004-2006 combined



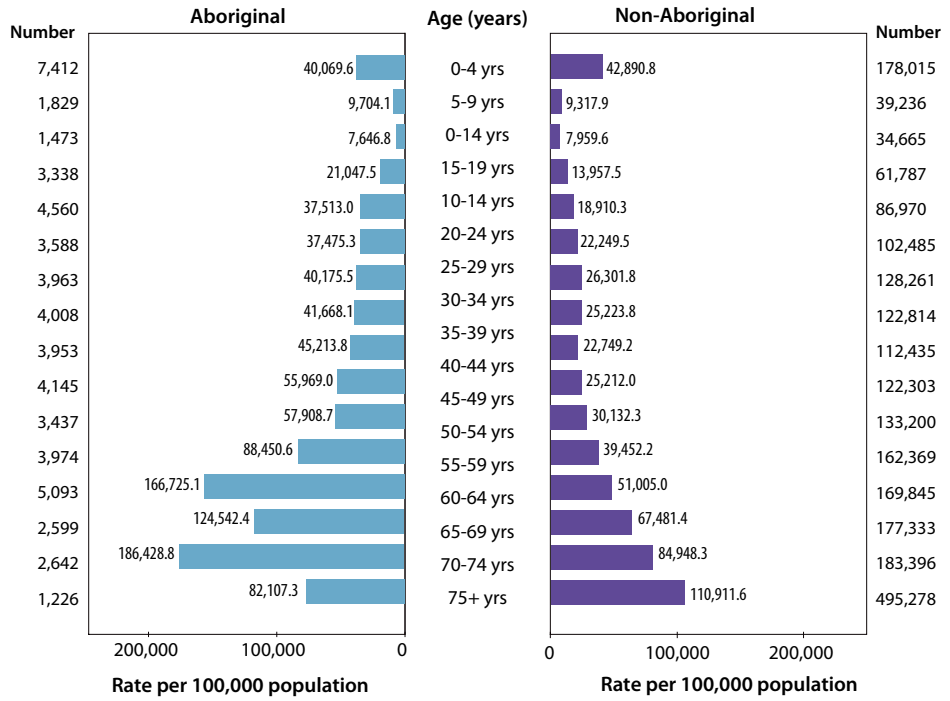
Percentage contribution of leading causes of deaths in Aboriginal persons by age, NSW 2006-07



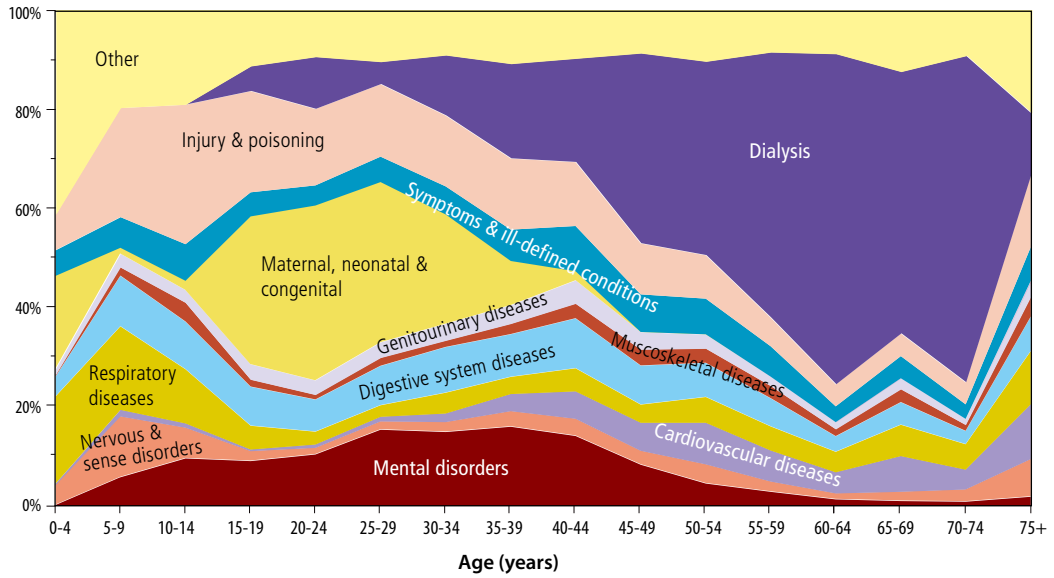
Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories. See ICD Codes for diseases and procedures for details. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production.

Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Hospital separations by age and Aboriginality, NSW 2006-07



Percentage contribution of leading causes of hospital separations in Aboriginal persons by age, NSW 2006-07



Note: Hospital separations were classified using ICD-10-AM. See Codes for diseases and procedures for details. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Records where Aboriginal status was not stated were classified as non-Aboriginal.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

6.2 Country of birth

Introduction

In 2006, just under one third (31%) of NSW residents was born overseas and one in four (25%) speaks a language other than English at home. The composition and age structure of the overseas-born population reflects patterns of migration. After World War II, there was a large migration of Europeans to NSW, followed by people from the Middle East, mainly from Turkey, Lebanon, and Egypt. Most recently, migrants have come in large numbers from Asian countries, particularly China, Vietnam, and the Philippines. The net overseas migration (that is, the net gain or loss of population through immigration to Australia and emigration from Australia) into Australia in the 2006-07 financial year was 177,617, of which NSW received the largest share (31%), closely followed by Victoria (27%).

In general, overseas-born residents have better health than Australian-born residents. This reflects the 'healthy migrant effect', whereby people in good health are more likely to meet eligibility criteria, and to be willing and economically able to migrate. However, certain diseases and health risk factors are more prevalent among some country-of-birth groups. This reflects diverse social, economic, environmental, cultural, and genetic influences.

The health experiences and needs of refugees are very different from those of other overseas-born residents of NSW. Experiences of persecution, psychological trauma, disrupted access to health care and other adverse effects of conflict contribute to their health needs. Health issues commonly identified in resettlement countries include psychological problems, injuries due to hostilities or torture, poor oral health, infectious diseases, under-immunisation, conditions related to under-nutrition and developmental issues among children. Refugees are also known to face significant barriers to accessing appropriate health care.

This chapter examines health differentials by country of birth, including information on specific health issues for people of refugee background.

Key points

- In 2006, just under one third (31%) of NSW residents were born overseas and around one in four speak a language other than English at home. Resident populations born in India, China and Iraq, all grew by 20% or more between 2001 and 2006, as did populations speaking Hindi, Korean, Chinese, Persian, Assyrian and Tamil languages at home.

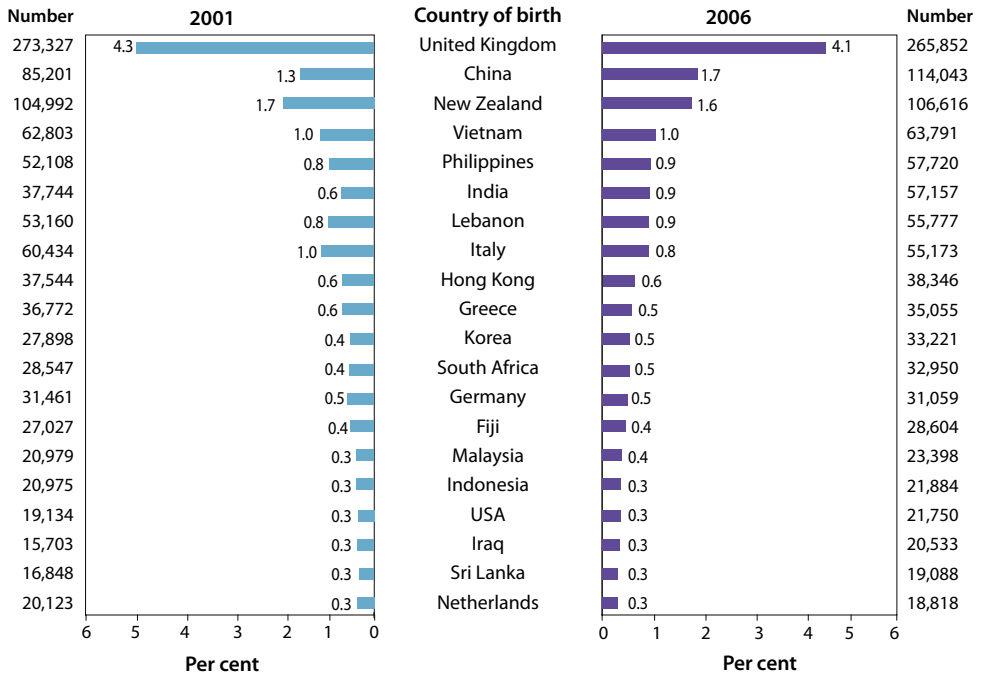
- Overseas-born people generally have good health, but patterns of some health conditions and health risk factors vary with country of birth.

- Compared with the Australian-born, people born in some overseas countries have high rates of:
  - self-reported risk alcohol drinking (females born in New Zealand)
  - self-reported current smoking (males born in Lebanon)
  - self-reported overweight and obesity (males and females born in Italy; females born in Greece)
  - self-reported diabetes (people born in Greece, Lebanon and Italy) and of hospitalisation for diabetes or its complications (people born in Lebanon, Fiji, Italy, India, and Greece).
  - hospitalisation for coronary heart disease (Lebanon, Fiji, Greece and India) and cardiac revascularisation procedures (Fiji, Lebanon, India and Greece)
  - liver cancer (Vietnam, Korea, Hong Kong, China, Malaysia, Egypt and the Philippines)
  - cervical cancer (females born in Fiji, the Philippines, Vietnam, New Zealand and China)
  - tuberculosis (India, the Philippines, Vietnam, China, Hong Kong, Korea, Fiji and the countries of the former Yugoslavia)
  - self-reported psychological distress (people born in Lebanon and Greece, females born in Italy).

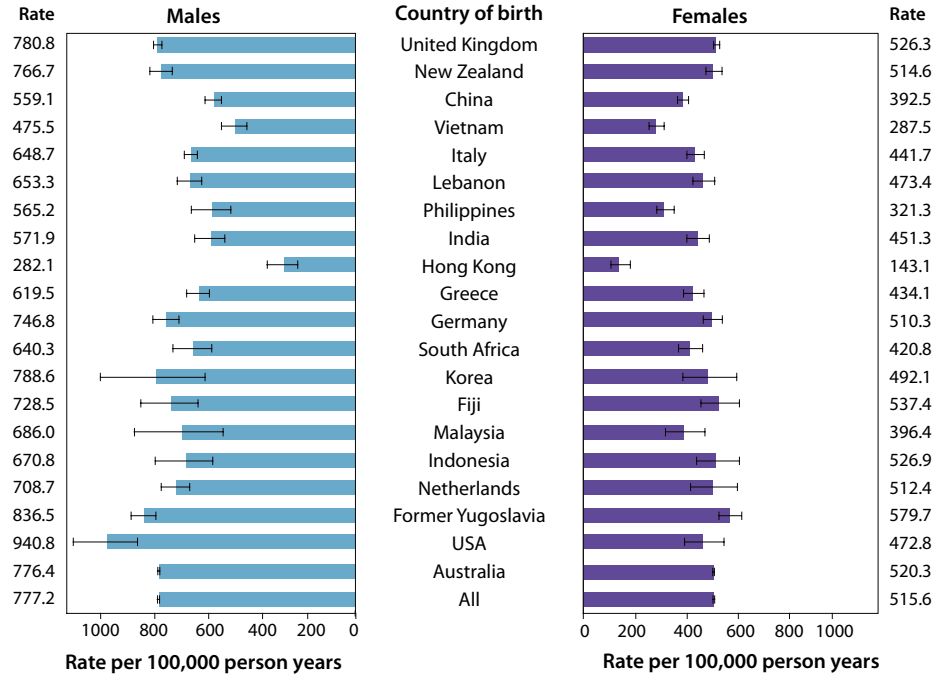
- Compared with the Australian-born, people born in some overseas countries:
  - are more likely to have premature babies (mothers born in Fiji)
  - are less likely to have their first antenatal visit before 20 weeks gestation (mothers born in Lebanon, Fiji, Korea, New Zealand, the Philippines, China, Vietnam, Indonesia, countries of the former Yugoslavia and India)

- Compared with people born in many overseas countries, people born in Australia:
  - are more likely to have premature babies
  - have high rates of self-reported risk alcohol drinking
  - have high rates of self-reported overweight and obesity.

Country of birth, persons born outside Australia, NSW 2001 and 2006



Death from all causes by country of birth and sex, NSW 2002 to 2006 combined



Note: TOP GRAPH - 70.6% and 69.0% respectively, of NSW residents in 2001 and 2006 were Australian-born. BOTTOM GRAPH: Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2006 include an estimate of the small number of deaths that were registered in 2007, data for which was unavailable at the time of production. LL/UL 95% CI - lower and upper limits of the 95% confidence interval for the point estimate.

Source: TOP GRAPH - ABS Census of Population and Housing (HOIST). Centre for Epidemiology and Research, NSW Department of Health.
BOTTOM GRAPH - ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

6.3 Rural and remote populations

Introduction

Across Australia, people living in rural and remote areas have worse health generally than those living in metropolitan areas. Many factors contribute to this differential, including geographic isolation, socioeconomic disadvantage, shortage of health care providers, lower levels of access to health services, greater exposure to injury risks, and poorer health among Aboriginal people, who comprise a significant proportion of the population in rural and remote areas. This chapter explores the effect on health outcomes of living in areas of NSW which are increasingly remote from major service centres.

This chapter presents a range of health indicators for NSW according to the Australian Standard Geographical Classification (ASGC) Remoteness categories as well as NSW Area Health Services. ASGC Remoteness categories were released by the ABS and are based on the Accessibility-Remoteness Index of Australia Plus (ARIA+) index, which was developed by the National Centre for Social Applications of Geographic Information Systems (GISCA). ARIA+ index values (between 0 and 15) are based on road distance from a locality to the closest service centre in each of five classes of population size.

ASGC Remoteness categories are assigned to Census Collection Districts (CDs) on the basis of the average ARIA+ score within the CD. An assessment of remoteness in larger areas (such as Statistical Local Areas or Local Government Areas) can then be made on the basis of the ASGC Remoteness categories allocated to the CDs making up that area, weighted to the population. There are five ASGC Remoteness categorises areas: 'major cities', 'inner regional', 'outer regional', 'remote' and 'very remote'. The term 'rural and remote' is used when referring generally to areas outside 'major cities'.

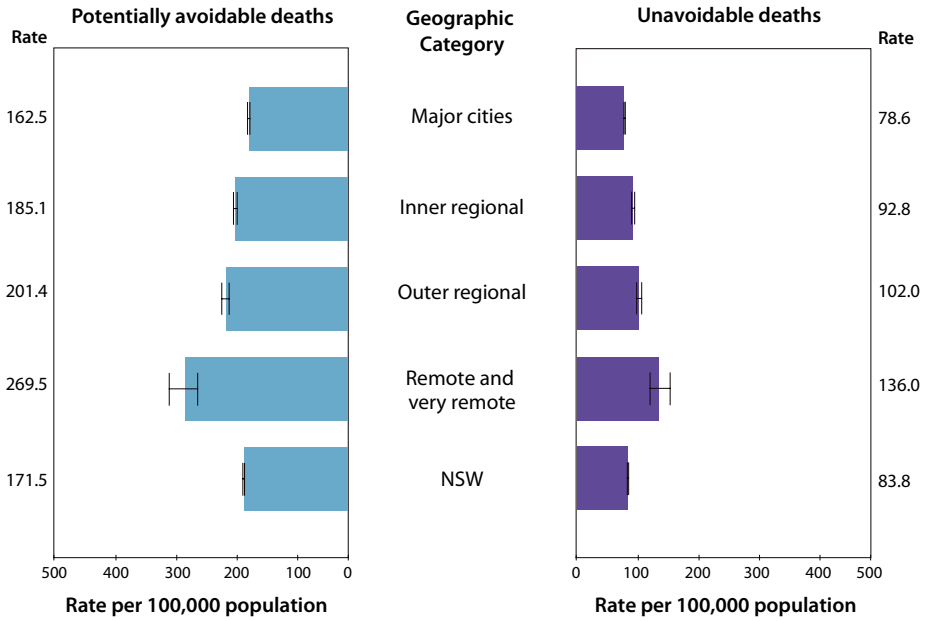
The population of NSW is highly urbanised. An estimated 38,000 people (0.6 % of the population) live in areas classified as 'remote' or 'very remote', according to the ASGC categories. Local Government Areas with more than one-third of their area classified as 'remote' or 'very remote' are clustered in the west and northwest of the state. The only Local Government Areas with a significant component in the 'very remote' category are Bourke, Central Darling, Brewarrina and Unincorporated NSW (Unincorporated Far West and Lord Howe Island).

Aboriginal people continue to make up an increasing proportion of the population with increasing remoteness, and comprise just under one-third of the population of 'very remote' areas. However, it is important to also note that only around 6% of the total Aboriginal population in NSW live in 'remote' or 'very remote' areas, with 43% living in 'major cities' in NSW.

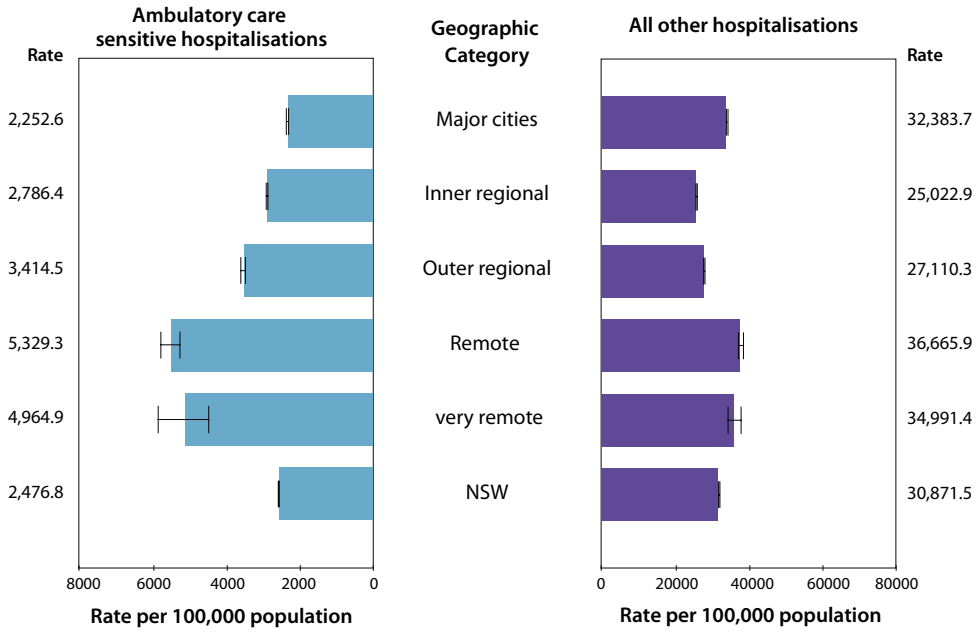
Key Points

- Across Australia, people living in rural and remote areas generally have worse health than those living in cities.
- Reasons for this health differential include geographic isolation, socioeconomic disadvantage, shortage of health care providers, lower levels of access to health services, greater exposure to injury risks and poor health among Aboriginal people who comprise a significant proportion of the population in rural and remote areas.
- The population of NSW is highly urbanised. Less than 1% of the total population live in areas classified as 'remote' or 'very remote'.
- In 2006 around 38,000 residents in NSW lived in 'remote' or 'very remote' areas of the state and just under a quarter of these (8,670) were Aboriginal. In 'very remote' areas alone Aboriginal people comprise almost one-third of the total population.
- Compared with people who live in 'major cities', people who live in 'remote' or 'very remote' areas:
  - can expect to live about five fewer years in 'remote' areas and seven fewer years in 'very remote' areas
  - are more likely to die prematurely, and from causes classified as 'potentially avoidable'
  - report greater difficulties in getting health care when they need it
  - are more likely to be hospitalised for conditions for which hospitalisation can be avoided through prevention and early management
  - are more likely to be overweight and obese, if female
  - are more likely to die in motor vehicle crashes
  - are more likely to commit suicide.

Potentially avoidable and unavoidable deaths by remoteness from service centres, persons aged under 75 years, NSW 2002 to 2006 combined



Hospitalisations for ambulatory care sensitive and all other conditions by remoteness from service centres, NSW 2006-07



Note: Statistical Local Areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score. Deaths were classified using ICD-10. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production. Hospital separations were classified using ICD-10-AM. Figures include an estimate of the small number of interstate hospitalisations of NSW residents, data for which were unavailable at the time of production. Rates were age-adjusted using the Australian population as at 30 June 2001. LL/UL 95%CI = lower and upper limits of the 95% confidence interval for the point estimate.

Source: Accessibility/Remoteness Index for Australia (ARIA+ version), ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

6.4 Socieconomic status

Introduction

The health of all Australians has improved enormously over the 20th century, with the life expectancy of both genders increasing by about 20 years over this time. Despite this, health outcomes remain unequally distributed between different socioeconomic subgroups of the NSW population.

There is a well-documented socioeconomic gradient on population health: as socioeconomic disadvantage increases, there is a simultaneous increase in mortality from both avoidable and other causes and morbidity. The health burden in the Australian population attributable to socioeconomic disadvantage is large and much of this burden is potentially avoidable.

The term "socioeconomic position" means the social and economic factors that influence what position individuals and groups hold within society that may have an influence on their health. Individual-level measures of socioeconomic position include occupation, income, assets and education. Group or area-level measures include occupational, educational and economic structure, housing characteristics and indexes of poverty or deprivation.

This report uses the Index of Relative Socio-Economic Disadvantage (IRSD), one of four Socio-Economic Indexes for Areas (SEIFA) developed by the Australian Bureau of Statistics based on census data, to measure socioeconomic disadvantage in the NSW population. The IRSD includes the main measures of disadvantage (low income, high unemployment, low levels of education and high levels of unskilled occupations) as well as other measures shown to be associated with disadvantage, such as the proportions of Aboriginal people, persons with low English fluency, and multiple families living in the one house in an area. IRSD scores are assigned to geographic areas rather than individuals, weighted to the population of the area, and ranked for the whole of Australia.

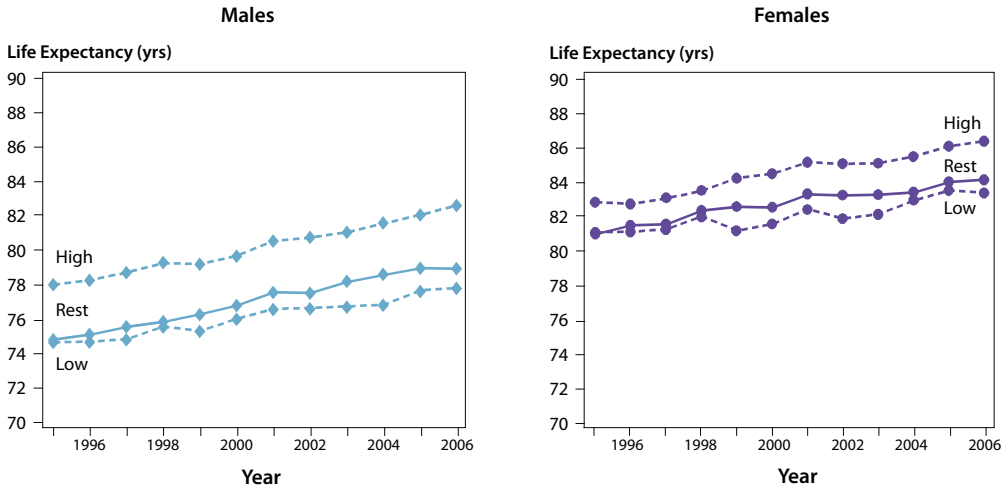
Such an approach means that health outcomes can be compared between areas based on the overall socio-economic status of areas. A disadvantage is that area scores may hide pockets of disadvantage in larger geographic areas. The IRSD also does not consider other socioeconomic measures which may be important, such as wealth, community infrastructure, or cost of living differences.

This chapter considers differences in trends of a selection of key population health indicators across socioeconomic groups in NSW. Both absolute and relative changes in indicators are presented, data important for assessing the success of any initiative aiming to reduce inequality.

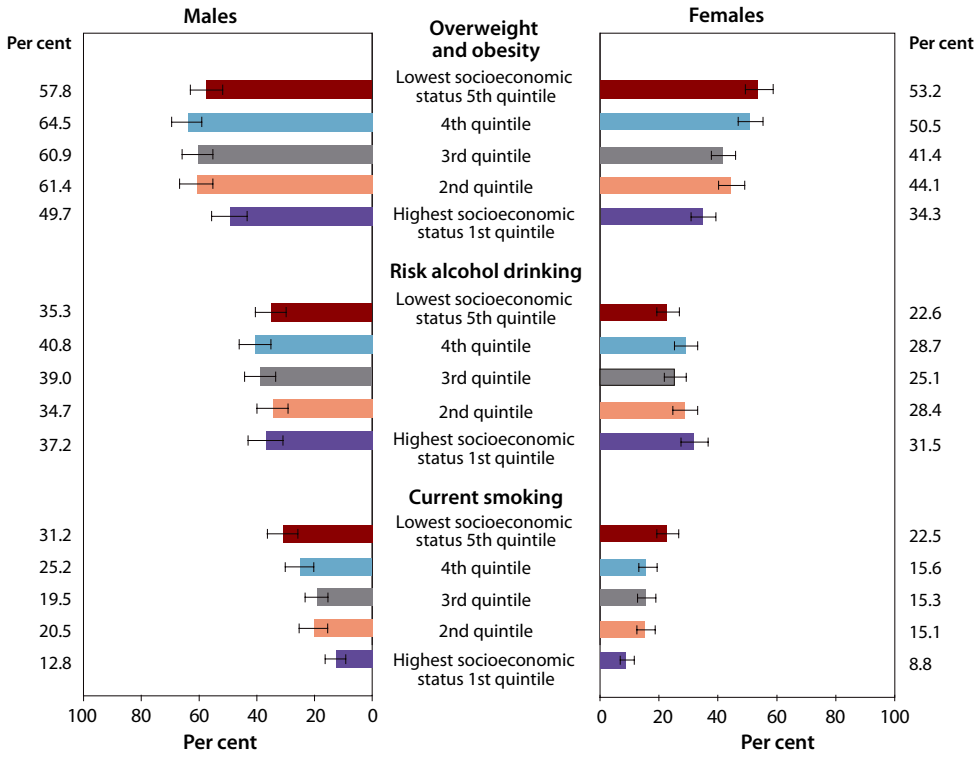
Key Points

- In NSW and Australia there are differences between socioeconomic groups in many measures of mortality and morbidity, due to differences in the determinants of health (both social and behavioural) between groups and to inequalities in the health system.
- Life expectancy has increased and rates of premature and potentially avoidable deaths have declined among all socioeconomic groups over the past 20 years in NSW.
- In this period life expectancy has remained consistently higher and premature and potentially avoidable death, ambulatory care sensitive hospital separations, and teenage pregnancy rates consistently lower, in the highest socioeconomic group than in the lowest socioeconomic group.
- Smoking and overweight and obesity show a similar pattern of sustained differences between the highest and lowest socioeconomic groups over time.
- Rates of decline in premature and potentially avoidable death have been greatest in the highest socioeconomic quintile for both males and females, resulting in an increasing relative 'gap' between this group and the rest of the population.
- Relative gaps in teenage pregnancy rates increased between all three socioeconomic groups.
- From 2002 to 2007, the relative gap in the prevalence of overweight and obesity was stable for both sexes, while the relative gap in the prevalence of smoking was stable for males but increased for females.

Life expectancy at birth in highest and lowest socioeconomic status quintiles and rest of population by sex, NSW 1995 to 2006



Key health behaviours by sex and socioeconomic status, persons aged 16 and over, NSW 2007



Note: TOP GRAPH - Life expectancy was calculated using the method of Chiang (see Methods section). Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production. BOTTOM GRAPH - **Overweight or obesity:** Estimates are based on 7,264 respondents in NSW. For this indicator 279 (3.70%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who are overweight or obese i.e. with a Body Mass Index (BMI) of 25 or higher. **Risk alcohol:** Estimates are based on 7,359 respondents in NSW. For this indicator 83 (1.12%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who exceed Guideline 1 of the NHMRC Australian Alcohol Guidelines, as 1 or more of the following: consuming alcohol every day, consuming on average more than [4 if male/2 if female] standard drinks, consuming more than [6 if male/4 if female] on any 1 occasion or day. **Smoking**: Estimates are based on 7,510 respondents in NSW. For this indicator 6 (0.08%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who smoked daily or occasionally.

Source: TOP - ABS Socio Economic Indices for Areas, ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health. BOTTOM - NSW Population Health Survey. Centre for Epidemiology and Research, NSW Department of Health.

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Health priority areas: section review

Health priority areas cover the major causes of ill health and premature death in NSW and in Australia, including: cardiovascular disease, diabetes mellitus, cancer, respiratory diseases, injury and poisoning and mental health. Other priority areas included in this section are oral health, pregnancy and the newborn period and communicable diseases in recognition of both the impact that these issues have on the health of populations and the need for sustained effort in prevention in order to maintain good population outcomes.

Cardiovascular disease

In this report, the chapter on Cardiovascular disease covers trends in surgical procedures as well as age and sex-specific charts of the major causes of hospitalisation and death from cardiovascular conditions NSW.

The following indicators on cardiovascular disease, as a whole as well as on selected conditions separately, in NSW are also included in the e-CHO:

- Trends in deaths and hospitalisations with projections to 2017
- Deaths by Health Area and by Local Government Area
- Trends in deaths and hospitalisations for specific conditions (coronary heart disease, stroke, peripheral vascular disease and heart failure)
- Trends in hospitalisations for acute coronary syndrome
- Trends in procedures for cardiovascular diseases and in deaths and hospitalisations for aortic aneurysms and dissections.

Diabetes

In this report, the chapter on Diabetes mellitus focuses on diabetes prevalence by age as well as age and sex-specific charts of hospitalisations and deaths from different types of diabetes in NSW.

The following indicators on diabetes are also included in the e-CHO:

- Diabetes prevalence and incidence
- Risk factors for diabetes
- Diabetes management
- Diabetes-related deaths
- Hospitalisations for diabetes by type of diabetes
- Amputations due to diabetes by site of surgery
- Persons hospitalised for diabetes and dialysis
- Diabetes and dialysis in the Aboriginal population and by country of birth

Cancer

In this report, the chapter on Cancer shows cancer survival and prevalence as well as age and sex-specific charts of the causes of death and new cases (incidence) of cancer.

The following indicators on cancer are also included in the e-CHO:

- Trends in deaths and incidence of all cancer with projections
- Cancer deaths, incidence and survival by leading type of cancer
- Trends in deaths and incidence for lung, breast, colorectal, prostate and cervical cancers and melanoma
- Incidence of lung, breast, colorectal, prostate cancers and melanoma by Health Area and by Divisions of General Practice
- Screening rates for breast, cervical and colorectal cancers

Respiratory disease

In this report, the chapter on Respiratory disease shows asthma prevalence, hospitalisations for influenza and pneumonia, as well as age and sex-specific charts of causes of death and hospitalisation for respiratory disease.

The following indicators on respiratory disease are also included in the e-CHO:

- Prevalence of asthma by age
- Trends in deaths and hospitalisations from asthma and chronic obstructive pulmonary disease (COPD) and Area Health Service for the latest year
- Deaths and hospitalisations by leading respiratory diseases and sex
- Hospitalisations for tuberculosis, asbestosis and other pneumoconioses, influenza and pneumonia
- Incidence of mesothelioma

Injury and poisoning

In this report, the chapter on Injury and poisoning shows

a map of fall-related injury in older people by Local Government Area as well as age and sex-specific charts of the causes of death and hospitalisation from injury and poisoning.

The following indicators on injury and poisoning are also included in the e-CHO:

- Trends in deaths from injury and poisoning as an underlying and associated cause with projections to 2017
- Trends in hospitalisations for injury and poisoning as principal reason for hospitalisation and as a co-morbidity with projections by sex
- Leading causes of injury and poisoning death and hospitalisation
- Trends in injury death and hospitalisation due to motor vehicle transport (by road user type), alcohol, falls, drowning, interpersonal violence, firearms (by intent), burns and scalds, sport and leisure, and work-related.

Mental health

In this report, the chapter on Mental health shows the burden of hospitalisations associated with different categories of mental and behavioural disorders as well as the burden of psychological distress in the general community.

The following indicators on mental health are also included in the e-CHO:

- Deaths and hospitalisations by leading mental and behavioural disorders
- Psychological distress and high psychological distress in adults by Health Area and in high school students by category action taken
- Trends in attention deficit disorder treatment with stimulant medication
- Trends in suicide and hospitalisations for self-harm

Oral health

In this report, the chapter on Oral health shows the oral health status of the NSW population as well as Area Health Service differences in hospitalisations for removal or restoration of teeth associated with dental decay.

The following indicators on oral health are also included in the e-CHO:

- Dental status in adults and in children
- Dental visits and treatment in adults and in children
- Trends in removal or restoration of teeth for dental decay in adults and in children by age, by sex and by Health Area
- Fluoridation of drinking water by Area Health Service and Local Government Area and attitudes to water fluoridation
- Trends in deaths and incidence of oral cancer

Pregnancy and the newborn period

In this report, the chapter on Pregnancy and the newborn period shows trends in fertility and births by the age of the mother and premature and low birth weight babies.

The following indicators on pregnancy and the newborn period are also included in the e-CHO:

- Trends in fertility and births by age of the mother
- Birth and fertility rates by Area Health Service
- Maternal and perinatal deaths
- Trends in folate supplementation in pregnancy
- Prenatal diagnostic procedures
- First maternal antenatal visit by gestational age
- Low birth weight and premature babies
- Sleeping position of babies
- Hospitalisations for special neonatal care and neonatal intensive care and congenital abnormalities
- Maps of smoking in pregnancy and antenatal care by Local Government Area

Communicable diseases

In this report, the chapter on Communicable diseases shows age and sex-specific charts of the causes of notifications of communicable diseases in NSW.

The following indicators on communicable diseases are also included in the e-CHO:

- Immunisation in children, in adults and by Aboriginality
- Trends in notifications, hospitalisations and deaths, including analyses by Area Health Service for selected diseases. The following communicable diseases are analysed in detail: measles, pertussis , chickenpox, rubella, pneumococcal disease, gonorrhoea, Chlamydia, infectious syphilis, HIV and AIDS, HIV and hepatitis C prevalence in injecting drug users, hepatitis A, B and C, meningococcal disease, salmonellosis, Ross River and Barmah Forest Virus infections, tuberculosis, Q fever and Legionnaires disease.

7.1 Cardiovascular disease

Introduction

Cardiovascular (or circulatory) diseases comprise all diseases of the heart and blood vessels. Among these diseases, the four types responsible for the most deaths in NSW are: coronary heart disease (or ischaemic heart disease), stroke (or cerebrovascular disease), heart failure, and peripheral vascular disease. Other common causes of mortality are cardiac arrhythmias (most notably atrial fibrillation), heart valve disorders, non-ischaemic cardiomyopathies, pulmonary embolism, and hypertensive renal and heart disease. Other significant causes of morbidity are hypertension, deep vein thrombosis, haemorrhoids and varicose veins.

Cardiovascular diseases accounted for 18% of the total disease burden in Australia in 2003, second only to cancers. In 2006, cardiovascular diseases accounted for 45,670 (34%) of all deaths in Australia, more than any other group of diseases. This proportion has been in decline since 1970, when nationally cardiovascular diseases were responsible for over half of all deaths.

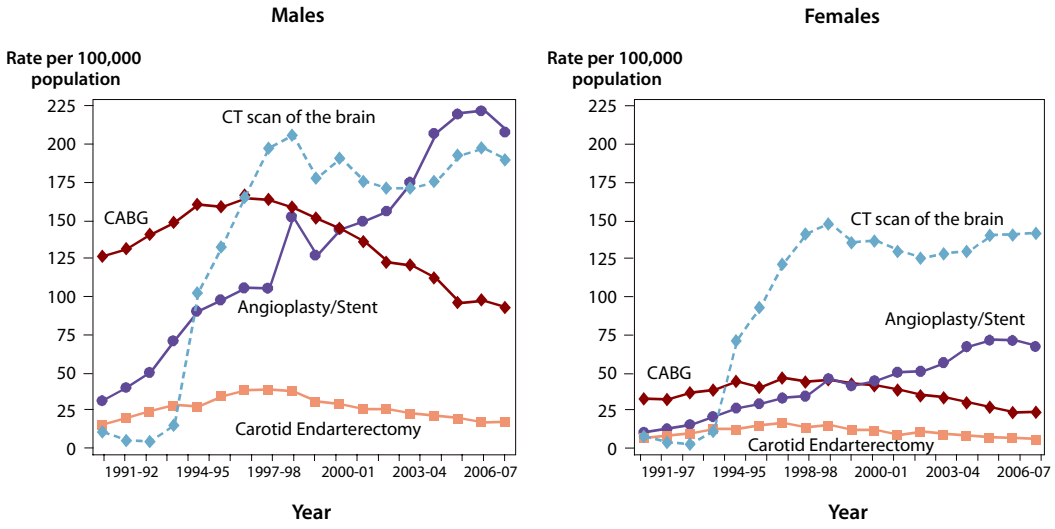
The four major causes of death from cardiovascular disease share a number of behavioural risk factors (tobacco smoking, physical inactivity, poor diet, heavy alcohol consumption) and physiological risk factors (high blood pressure, elevated blood lipids, diabetes mellitus, and overweight or obesity). To address needs in the critical care area, a coordinated system of cardiology networks has been developed in NSW by the Greater Metropolitan Clinical Taskforce Cardiology Services Network to link local hospitals with a major hospital offering interventional cardiology and access to high level facilities and clinical expertise.

This chapter presents recent data on deaths and hospitalisations and hospital procedures in NSW for cardiovascular diseases as a group, with particular emphasis on the four main causes of death.

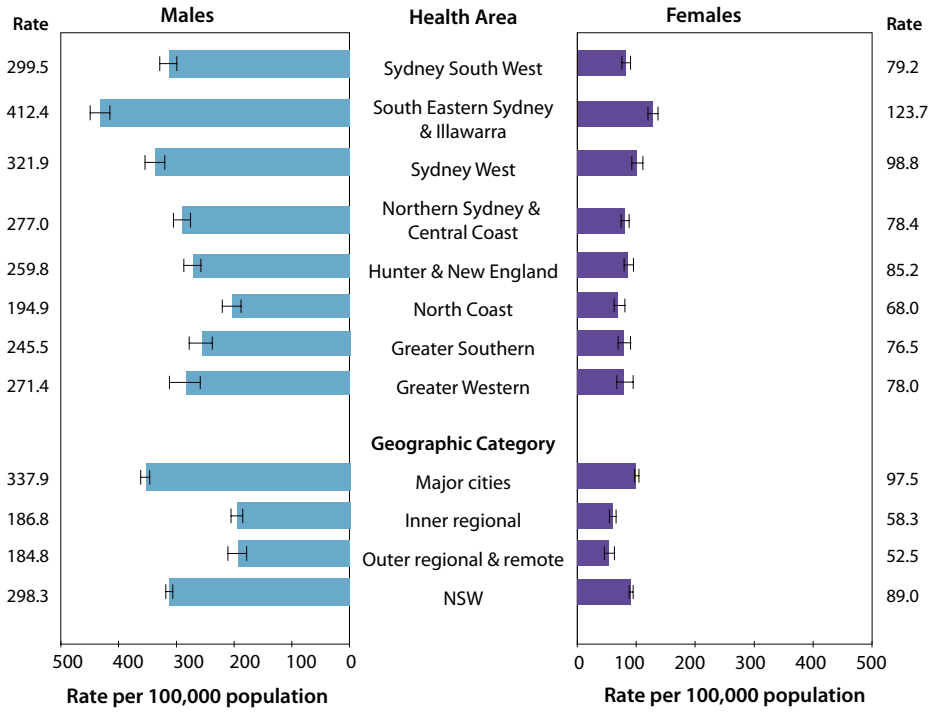
Key points

- Cardiovascular diseases cause about 16,200 deaths and almost 160,000 hospitalisations of NSW residents in each year. Coronary heart disease and stroke contribute the most to this disease burden, followed by heart failure and peripheral vascular disease.
- Death rates, and numbers of deaths, from cardiovascular disease are higher in males than in females. Death rates are higher in outer regional and remote areas of NSW than in metropolitan areas.
- Death rates from all forms of cardiovascular disease have more than halved since 1984, after adjusting for population ageing. This is due to both:
  - decreased incidence, associated with reductions in some risk factors, including smoking, saturated fats in the diet, and levels of blood pressure;
  - increased survival, as a result of improvements in medical and surgical treatment and follow-up care.
- Coronary heart disease caused just under 8,500 deaths in 2006, or about 23 deaths every day. Coronary heart disease was the principal reason for just over 54,000 hospitalisations in 2006-07.
- Stroke caused almost 4,500 deaths in NSW in 2006. Stroke was the principal reason for over 19,000 hospitalisations in 2006-07.
- Heart failure was the principal cause just over 950 deaths in NSW in 2006 and was a contributing cause in many more. Heart failure was the principal reason for just over 14,000 hospitalisations in 2006-07.
- Peripheral vascular disease caused 750 deaths in NSW in 2006. Peripheral vascular disease was the principal reason for just under 8,800 hospitalisations in 2006-07.
- If hospitalisation and death rates follow the same trend as the last 15 to 20 years, by 2017, hospitalisation rates for all cardiovascular diseases will be 17% lower than in 2006-07 and death rates will be 34% lower than in 2006. The overall number of hospitalisations are, however, projected to increase to around 176,000 by 2017 due to the ageing of the population. Despite this, the number of deaths is projected to fall to around 15,600 by 2017.
- In the treatment of coronary heart disease, the number of percutaneous transluminal angioplasty (PCTA) procedures (with and without stents) first exceeded the number of the more invasive coronary artery bypass graft (CABG) procedures in 1999-00. More than 9,900 PCTAs were performed in 2006-07, more than double the 4,100 CABGs.

Cardiovascular disease procedures: hospitalisations by procedure type and sex, NSW 1989-90 to 2006-07



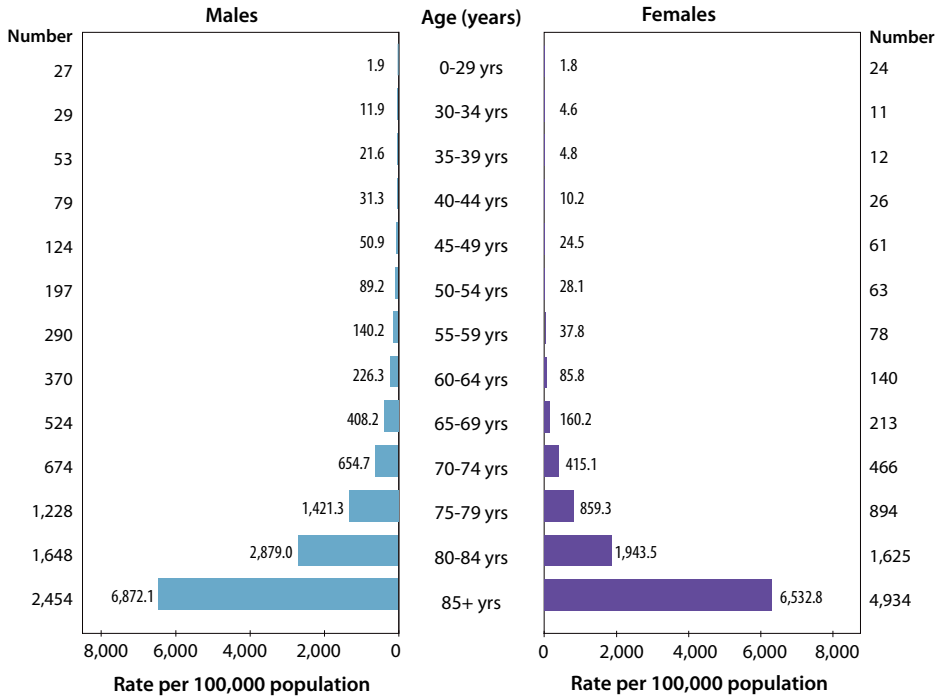
Coronary revascularisation procedures: hospitalisations by Health Area, NSW 2006-07



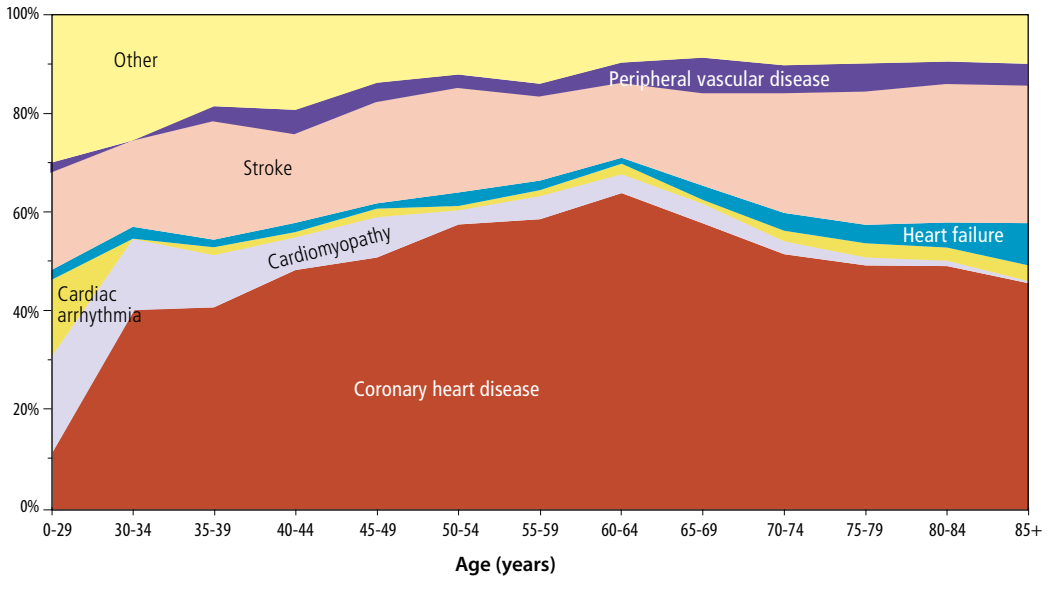
Note: Hospital separations were classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

Source: NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Cardiovascular disease deaths by age and sex, NSW 2006



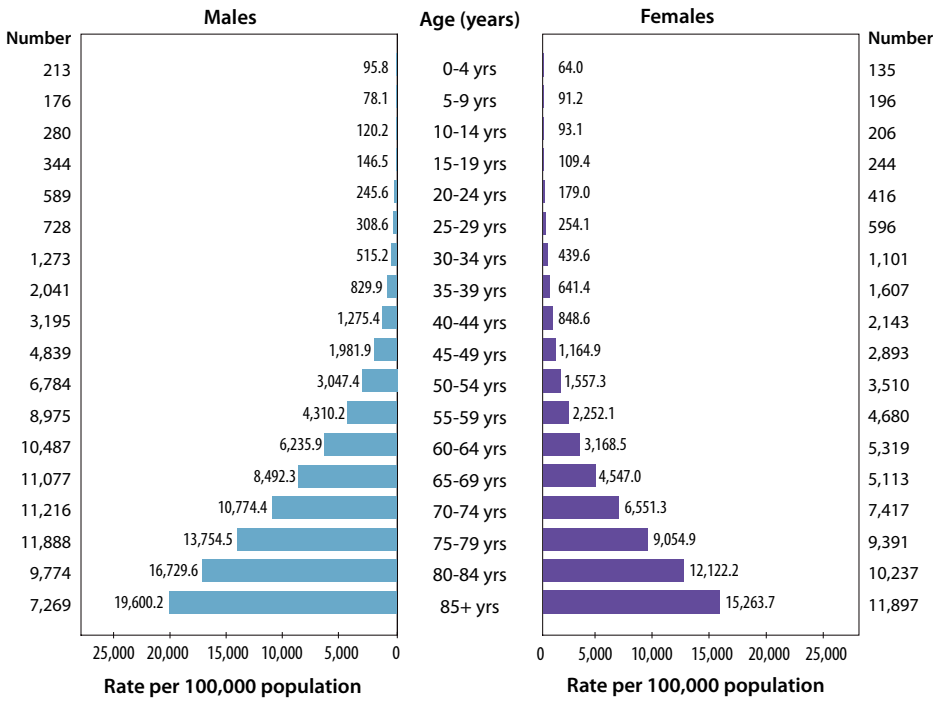
Percentage contribution of leading causes of cardiovascular disease deaths by age, NSW 2006



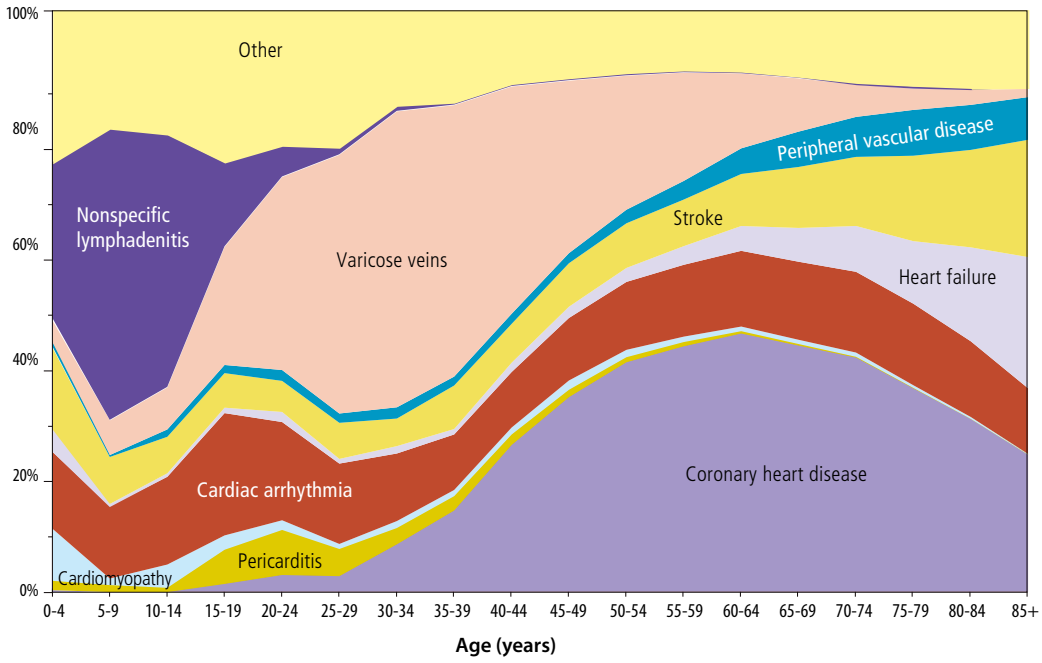
Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories. See ICD Codes for diseases and procedures for details. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production.

Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Cardiovascular disease hospital separations by age and sex, NSW 2006-07



Percentage contribution of leading causes of cardiovascular disease hospital separations by age, NSW 2006-07



Note: Hospital separations were classified using ICD-10-AM. See Codes for diseases and procedures for details. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisation, data for which were unavailable at the time of production.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.2 Diabetes

Introduction

Diabetes mellitus is a group of closely related chronic conditions characterised by high blood sugar (glucose) levels. In uncontrolled diabetes, glucose builds up in the bloodstream and leads to a range of short- and long-term problems, including damage to vital organs. Diabetes imposes a large burden on the health system and on some communities and in 2003 diabetes accounted for over 5% of the disease burden in Australia.

There are three main forms of diabetes mellitus: Type 1 diabetes, Type 2 diabetes and gestational diabetes. Type 1 diabetes is estimated to be present in 10-15% of people with diabetes and is caused by a combination of genetic and environmental factors, but there are no known modifiable risk factors for this form of diabetes. Type 2 diabetes accounts for about 85-90% of all diabetes cases and primarily affects people older than 40 years. Several modifiable risk factors play a role in the onset of Type 2 diabetes, including obesity, physical inactivity and poor nutrition, as does genetic predisposition and ageing. Gestational diabetes mellitus occurs during pregnancy in about 3-8% of females not previously known to have diabetes. It is a temporary form of diabetes and usually resolves after the baby is born.

Diabetes can lead to acute and chronic complications. Acute metabolic disturbances can lead to coma. Chronic high blood glucose levels (hyperglycaemia) is associated with long-term damage, dysfunction and failure of virtually every body organ, especially the heart and blood vessels, eyes, kidneys and nerves. Consequently, diabetes predisposes those suffering from it to many severe conditions, including cardiovascular disease, as well as visual loss, amputations and renal failure.

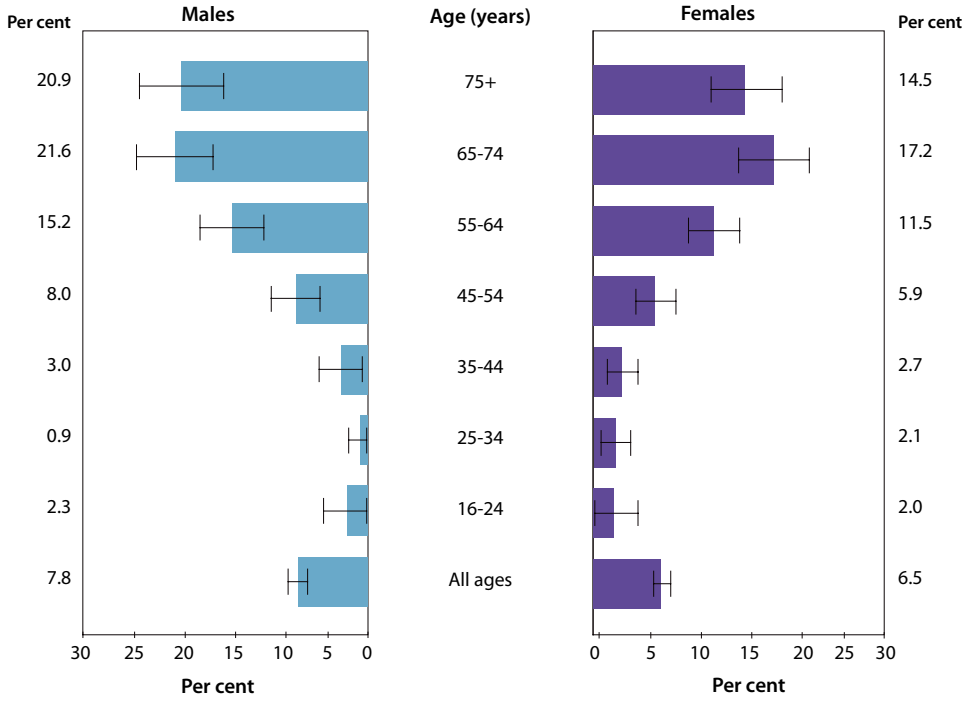
Sustained, individualised management substantially reduces the risk of complications in people with diabetes. A combination of diet, exercise and medication (including insulin injections) is used and very frequent monitoring of blood glucose levels and other risk factors (for example blood lipids, blood pressure) is also required, as is regular screening for complications.

This chapter presents recent data on the prevalence of diabetes, self-reported management of diabetes, selected cardiovascular risk factors among people with diabetes, deaths from diabetes, hospitalisations for diabetes by diabetes type and type of complication as well as hospitalisations for lower limb amputations and eye complications due to diabetes.

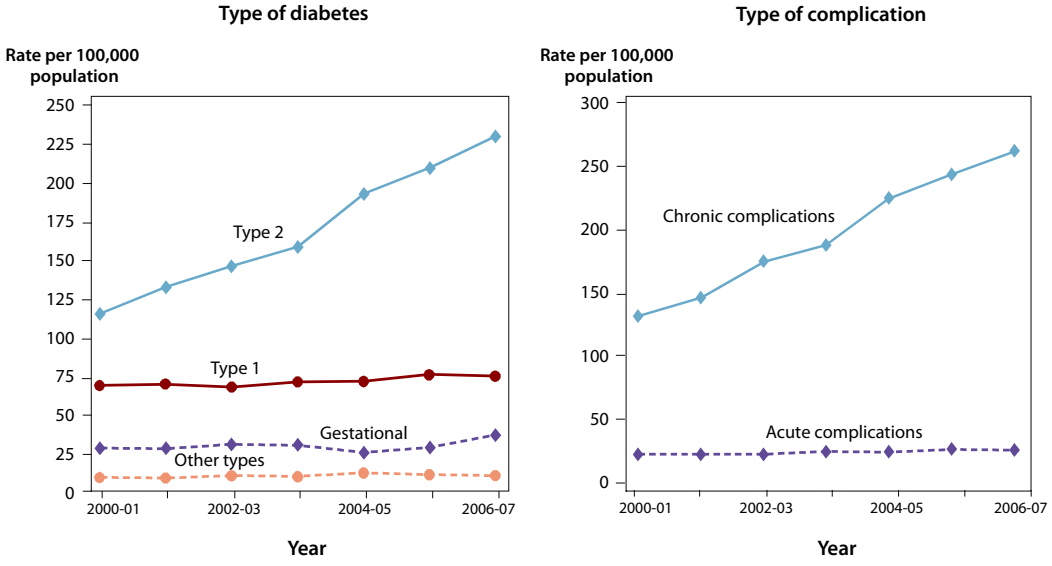
Key points

- In NSW in 2007, 7.8% of males and 6.5% of females aged 16 years and over reported having diabetes or high blood sugar. It is likely that there are many people with diabetes in NSW who are unaware they have it.
- Diabetes prevalence increases with age and socioeconomic disadvantage and is more prevalent among Aboriginal people and people born in the Mediterranean region.
- For people with diabetes, careful control of blood sugar levels through diet, exercise and in some cases medication and insulin injections, is vital to prevent complications. In NSW in 2006, around 60% of people with diabetes reported following a special diet, 43% reported taking tablets to manage their diabetes, around 11% required insulin injections and 8% reported 'not doing anything'.
- While diabetes was the principal cause of 2% of all deaths in NSW in 2006, 2,291 or almost 5% of all deaths in that year were related to diabetes. Cardiovascular disease was the most common cause of death among people with diabetes.
- Hospitalisations for which diabetes was recorded as a principal diagnosis increased by more than 160% between 1989-90 and 2006-07.
- While Type 2 diabetes accounts for up to 90% of all diabetes cases in the community, it accounts for only around 71% of all hospitalisations for diabetes. Type 1 diabetes accounts for around 20% of hospitalisations and gestational diabetes around 8%.
- The complications of diabetes include poor blood circulation and nerve function in the limbs, eye problems and kidney failure. There were 865 hospital admissions for lower extremity amputations and 9,448 hospitalisations for eye complications in people with diabetes in 2006-07.

Diabetes or high blood glucose by age and sex, persons aged 16 years and over, NSW 2007

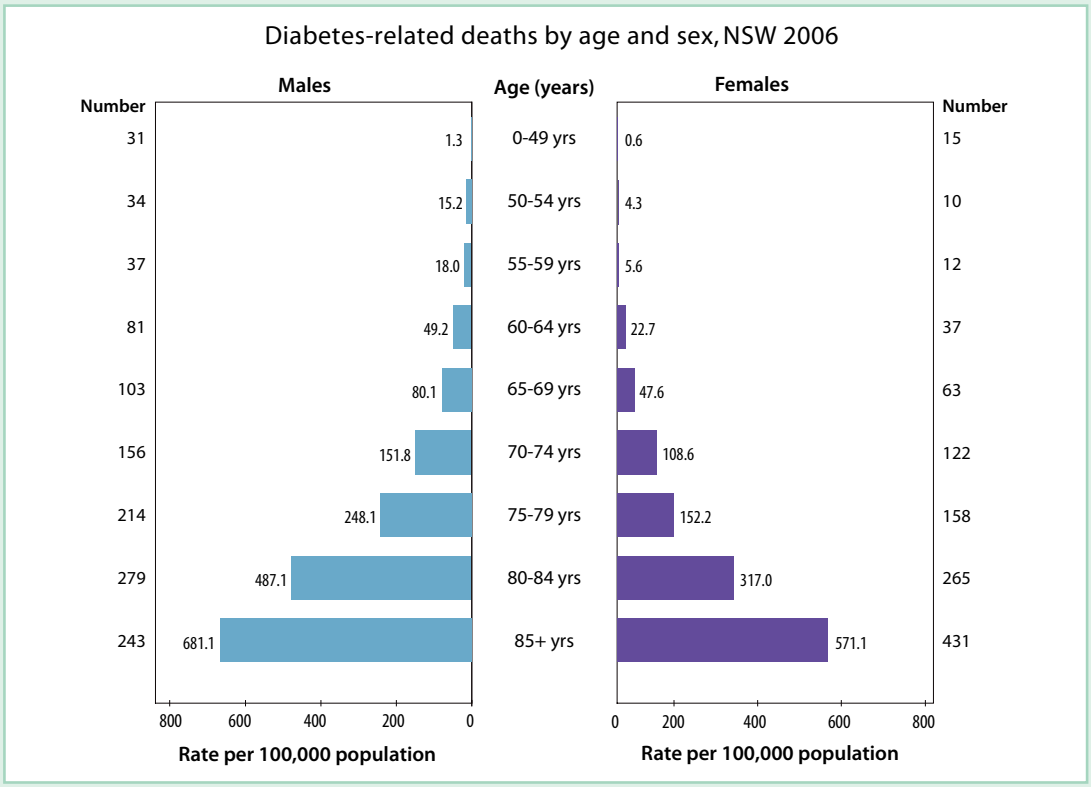


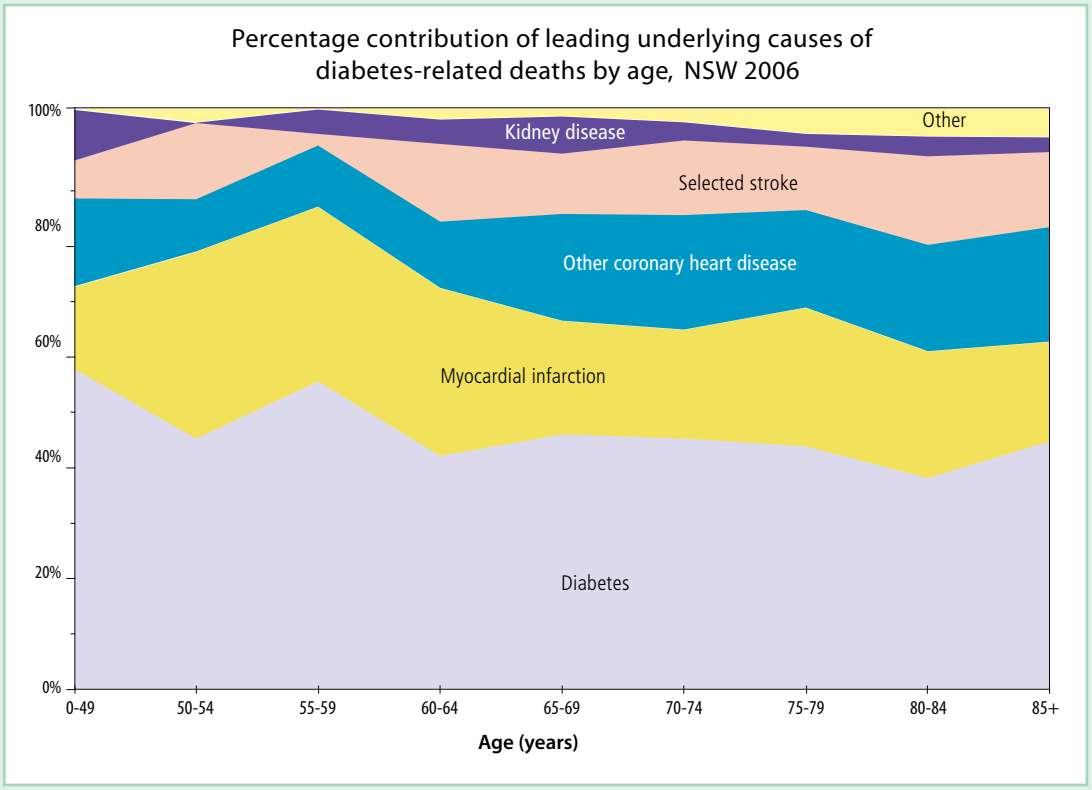
Diabetes hospitalisations by type of diabetes and by type of complication, NSW 2000-01 to 2006-07



Note: TOP GRAPH - Estimates are based on 7,316 respondents in NSW. For this indicator 60 (0.81%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who had ever been told by a doctor or hospital that they either had diabetes or high blood glucose but did not have gestational diabetes. BOTTOM GRAPH - Diabetes coded in the first diagnosis field only is included. Gestational and diabetes in pregnancy are included under relevant diabetes type and in 'no complications' category. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

Source: TOP GRAPH - New South Wales Population Health Survey. Centre for Epidemiology and Research, NSW Department of Health. BOTTOM GRAPH - NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

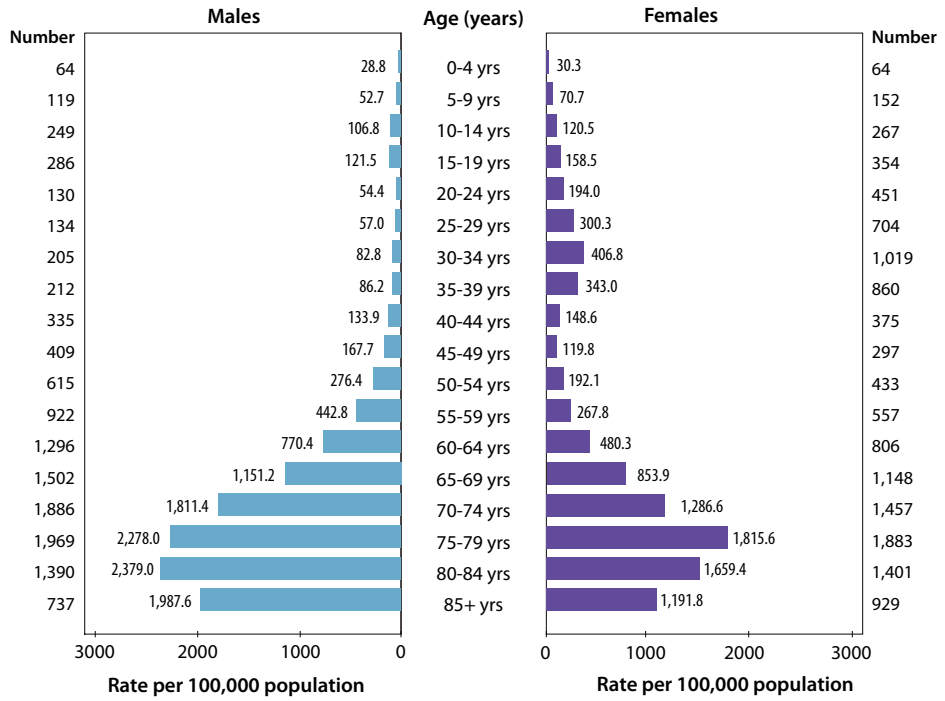




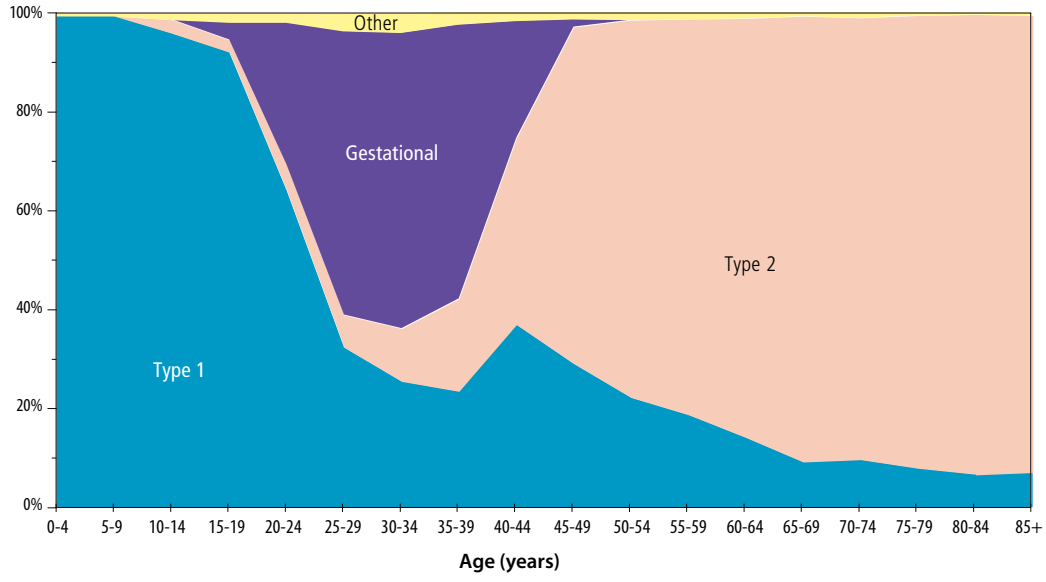
Note: Diabetes-related deaths are those where diabetes was either the underlying or an associated cause of death, when the underlying cause was a complication of diabetes (see Methods section). Deaths were classified using ICD-10. Labelled groupings include ICD-10 categories further refined for association with diabetes. See ICD Codes for diseases and procedures for details. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisation, data for which were unavailable at the time of production.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Diabetes hospital separations by age and sex, NSW 2006-07



Percentage contribution of leading causes of diabetes hospital separations by age, NSW 2006-07



Note: Diabetes coded in the first diagnosis field only is included. Hospital separations were classified using ICD-10-AM. See ICD Codes for diseases and procedures for details. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisation, data for which were unavailable at the time of production.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.3 Cancer

Introduction

Cancer is a major cause of mortality in Australia and contribute greatly to morbidity and disability. It accounts for 19% of the total burden of disease in Australia.

Most cancers have a unique set of causal factors, but some share risk factors. These include: smoking (responsible for the majority of preventable cancers); dietary influences; infectious agents; radiation (including ultraviolet radiation); and genetic factors. Risk of death from some cancers can be reduced by screening, early detection and treatment, and appropriate management and follow-up.

Legislation requires Australian states and territories to maintain a cancer registry. As such, cancer is the only major disease for which almost complete coverage of incidence (new cases) data is available. The NSW Central Cancer Registry (established 1972) collects and reports annually on invasive cancer cases and deaths in NSW on behalf of the NSW Department of Health. Basal and squamous cell carcinoma of skin (non-melanocytic skin cancers), the most common types of cancer, are not notifiable and are not included in the Registry reports. The latest published data are for cases diagnosed in 2006.

Since the Registry's inception the number of new cancers registered has increased. The rankings of individual cancers has also changed. In 1972, the four most common cancers in males were lung, colorectal (large bowel), prostate, and stomach; and in females were breast, colorectal, melanoma, and cervical cancers. The 2006 rank order is now prostate, colorectal, melanoma, and lung cancers in males; and breast, colorectal, melanoma, and lung cancer in females. In 2006, the Cancer Institute NSW prepared the NSW Cancer Plan 2007-2010, which aims to coordinate the strategic activities for cancer control in NSW including prevention, diagnosis, treatment and rehabilitation services as well as cancer information, education and research. The Cancer Institute NSW is also responsible for the NSW Pap Test Registry and BreastScreen NSW data.

This chapter contains an analysis of the incidence and mortality of lung; colorectal; melanoma (skin); prostate and breast cancers, (selected because of their overall impact in terms of numbers of new cases and deaths); and cancer of the cervix (because it can potentially be prevented). Deaths data presented here are from the Australian Bureau of Statistics (ABS) mortality collection. The ABS deaths data is used here to maintain consistency with other chapters, however, the Cancer Institute NSW's cancer death figures may differ slightly as the data is verified against histopathology reports for cases while the ABS data is sourced only from death certificates.

Key points

- Cancer is Australia's leading cause of disease burden. It accounts for almost one-fifth of years of healthy life lost due to premature death, disease, and injury.

- In NSW in 2006, there were 34,654 new cases of cancer (56% in males) and 13,099 deaths (56% in males). Between 1996 and 2005 the incidence rate for all cancers was stable in males, but rose by 7% in females. Death rates fell by 16% in males and 11% in females, with overall death rates from cancer in 2006 the lowest since the NSW Cancer Registry began.

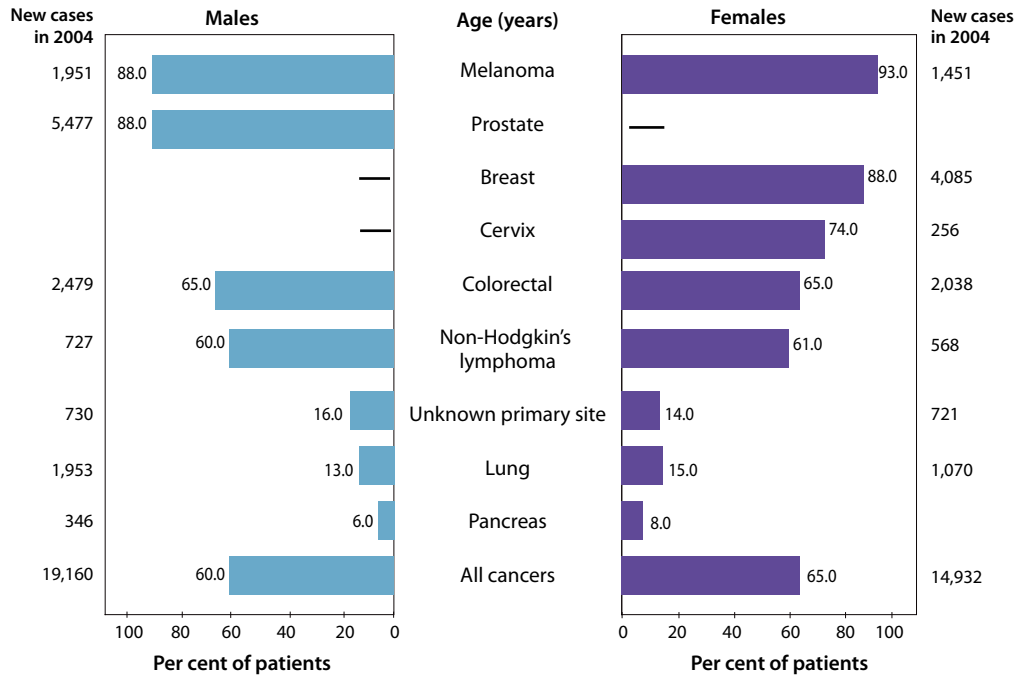
- In 2006 in NSW:
  - Prostate cancer was the leading cause of new cases of cancer but the fourth cause of cancer death
  - Colorectal cancer was the second leading cause of new cases of cancer and third cause of cancer death
  - Breast cancer was the third leading cause of new cases of cancer but the fifth cause of cancer death
  - Melanoma was the fourth leading cause of new cases of cancer but the tenth cause of cancer death
  - Lung cancer was the fifth leading cause of new cases of cancer, but the leading cause of cancer death.

- A bowel cancer screening program commenced in NSW in August 2006.

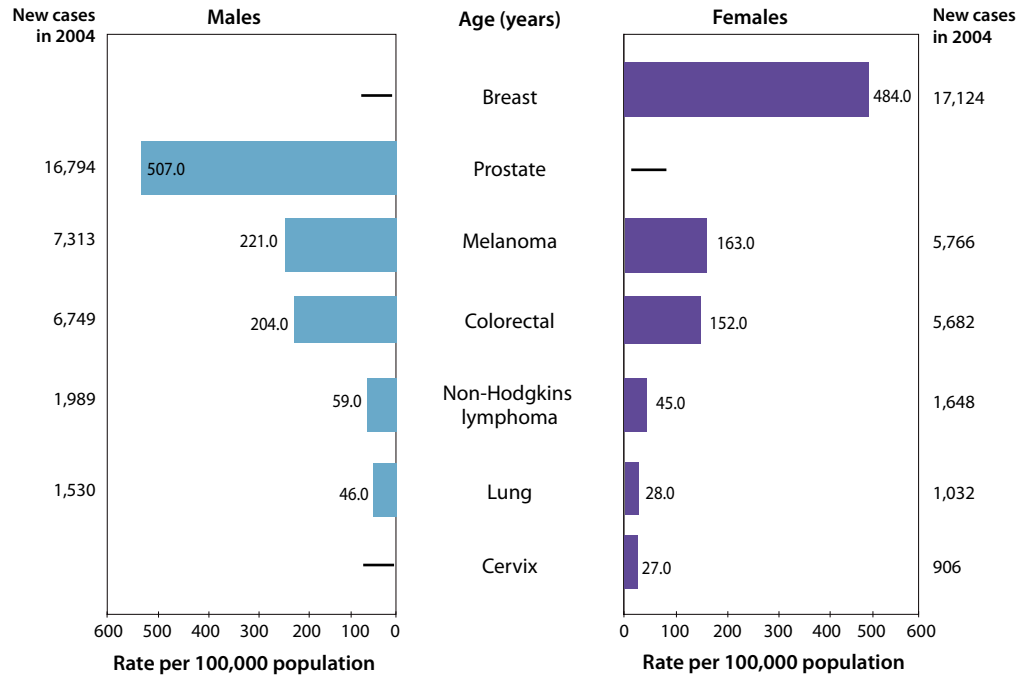
- Cervical cancer had been decreasing and in 2006 was the fourteenth most common female cancer. It can be prevented through the early detection of pre-cancerous lesions by two-yearly Pap tests of women aged 20-69 years. The percentage of eligible women who had their Pap test by December 2006 was 57.3%.

- BreastScreen NSW provides a biennial mammographic screening service to women aged 50-69 years in NSW, which aims to detect early cases of breast cancer. The percentage of eligible women who had their mammogram by December 2006 was 58.3%.

Cancer: five year relative survival by leading type of cancer and sex, NSW 1999 to 2003



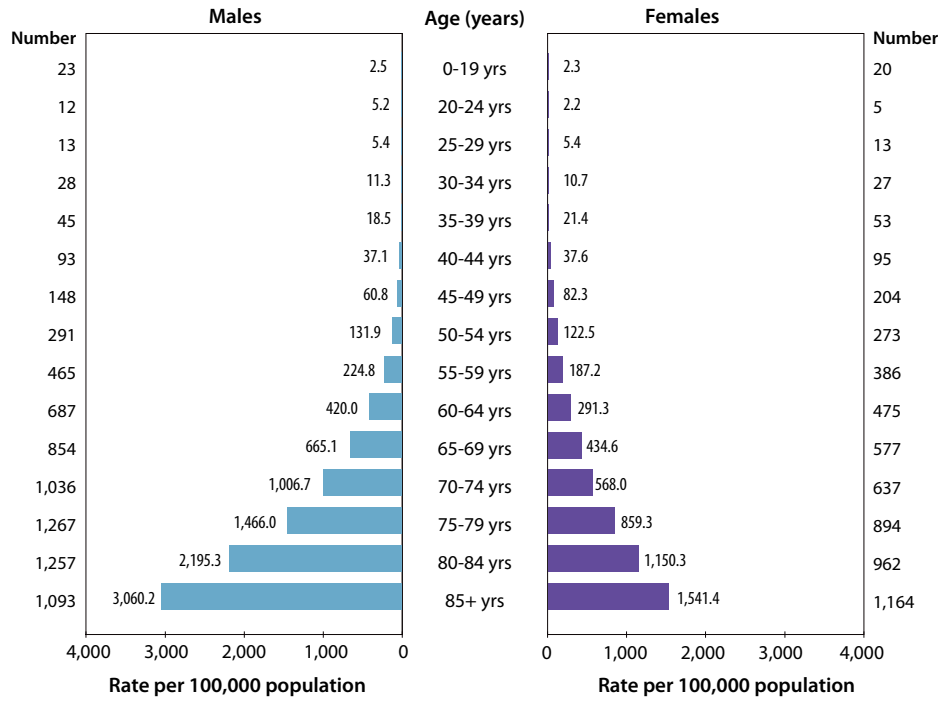
Cancer: five year-limited duration prevalence by leading type of cancer and sex, NSW 31 December 2004



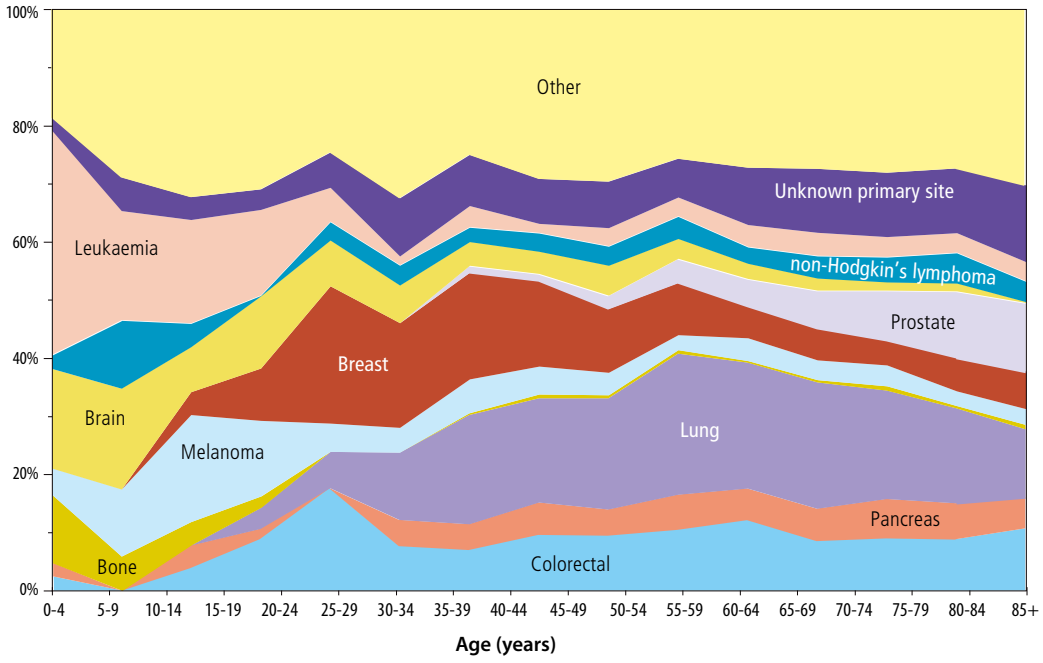
Note: Relative survival is the ratio of observed survival to that which would be expected in the absence of the cancer. Prevalence is a measure of the number of people with cancer at a specified point in time. Five-year prevalence includes everyone who is alive and who was diagnosed five years prior to 2004.

Source: NSW Central Cancer Registry survival and prevalence data. Cancer Institute NSW.

Cancer deaths by age and sex, NSW 2006

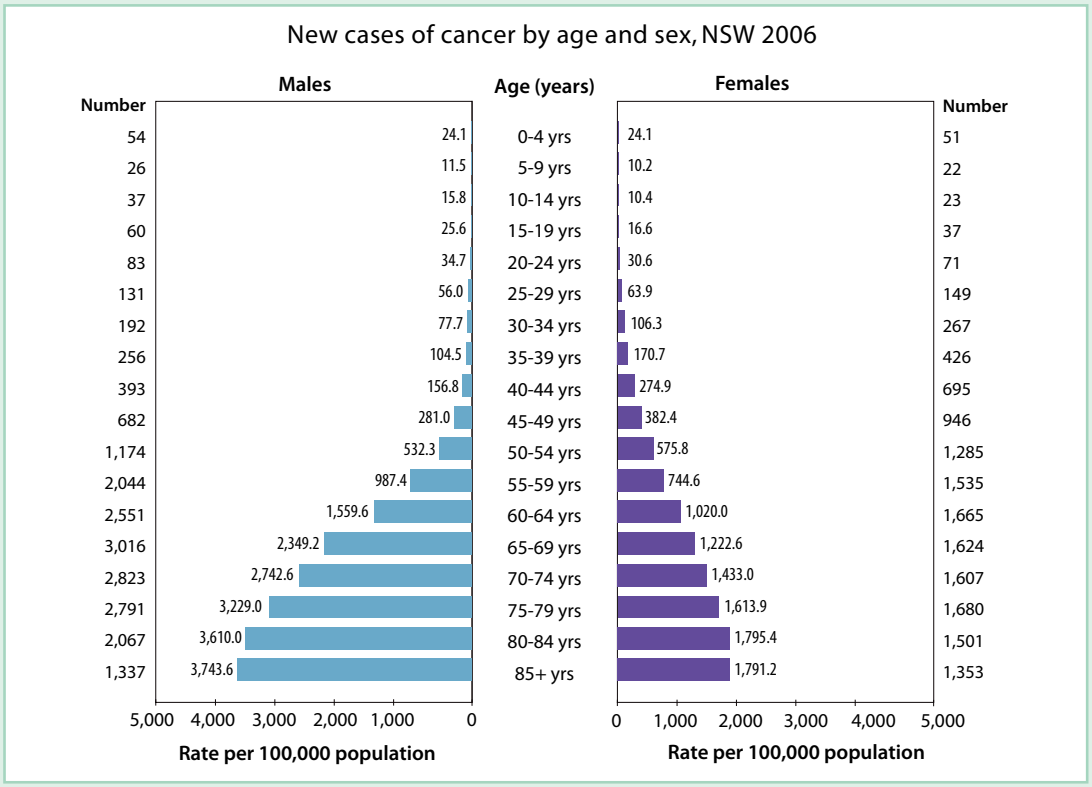


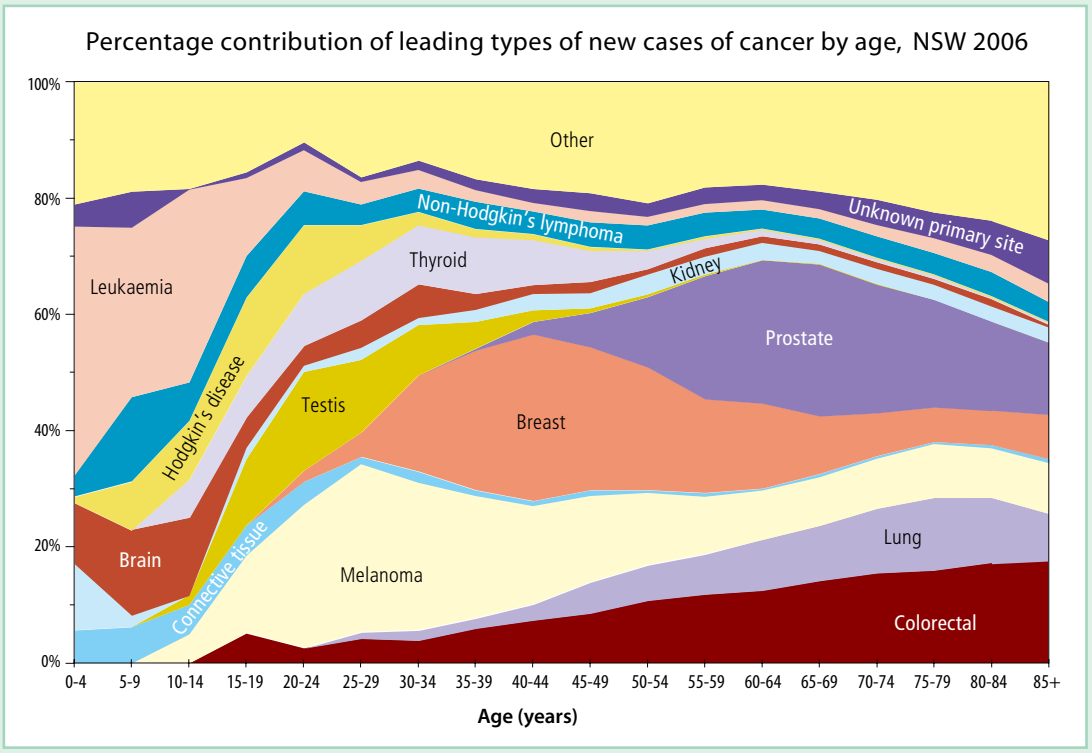
Percentage contribution of leading types of cancer deaths by age, NSW 2006



Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories. See ICD Codes for diseases and procedures for details. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production.

Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.





Note: Cases were classified using ICD-10.

Source: NSW Central Cancer Registry incidence data (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.4 Respiratory disease

Introduction

Respiratory diseases include acute diseases, such as influenza, pneumonia and chronic respiratory diseases (specifically asthma, chronic obstructive pulmonary disease, asbestosis, and respiratory tuberculosis), where preventive measures and better management of conditions can reduce the burden of disease and reduce associated healthcare costs. Respiratory diseases, including lung cancer, were together responsible for around 14% of all deaths in NSW in the period 2002 to 2006, and about 5% of hospital separations in 2006-07.

Influenza and pneumonia are acute respiratory diseases that can be very severe and, in persons at high risk, can lead to death.

Asthma is a significant public health problem in Australia and it is estimated that Australian prevalence rates are among the highest in the world, although recent studies in children show no further increase in prevalence. The overall prevalence of asthma reported in the 2004-05 National Health Survey was 10.3%, down from 11.6% in the 2001 survey. Among children and adults aged up to 35 years the prevalence declined from 14% in 2001 to 11.7 % in 2004-05. In Australia, in 2003, asthma was estimated to account for 2.3% of the disease burden.

Chronic bronchitis and emphysema are the two main conditions comprising chronic obstructive pulmonary disease (COPD). In Australia in 2003, COPD was estimated to account for 2.9% of the disease burden.

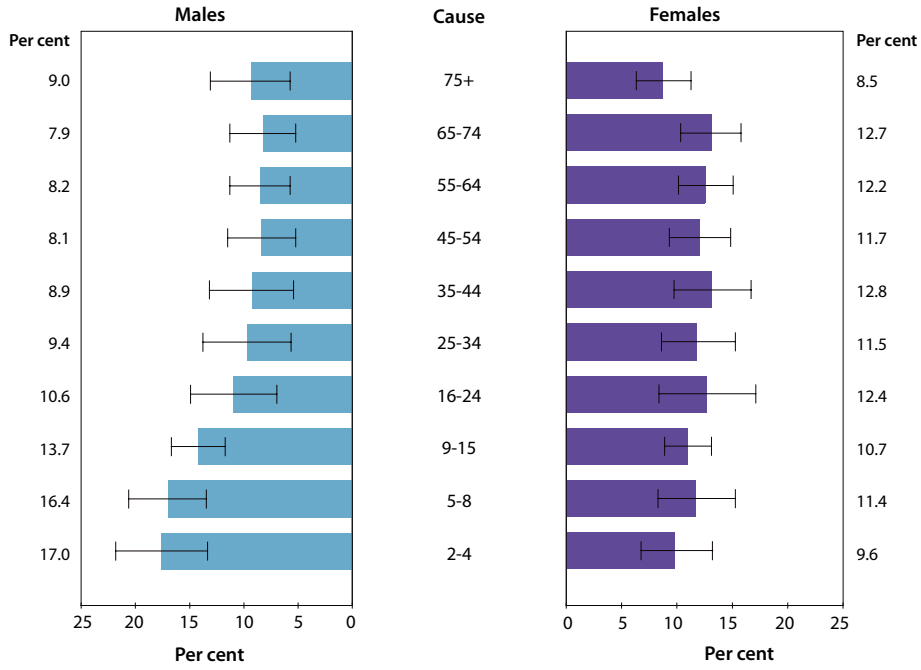
Tuberculosis (TB) is caused by the bacterial organism *Mycobacterium tuberculosis*. Despite the increasing burden from respiratory tuberculosis globally, it is not a significant public health problem in NSW; in fact the mortality and morbidity from all types of tuberculosis in NSW is one of the lowest in the world.

Tobacco smoking is the main risk factor for both COPD and lung cancer and the current incidence rates reflect smoking rates 20 years and more in the past. Lung cancer is one of the leading causes of death in NSW.

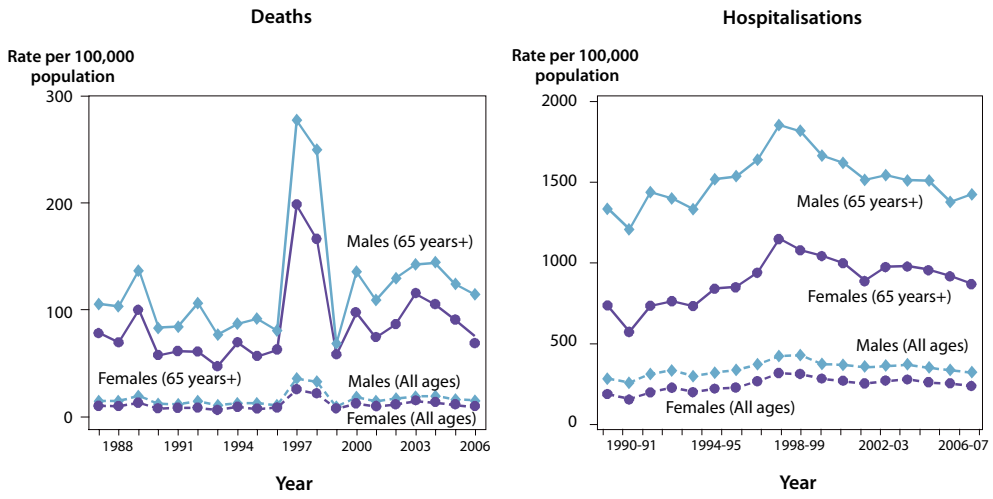
Key points

- In 2006 in NSW, around 10% of adult males and 12% of adult females had asthma and in 2005 and 2006. Just under 15% of boys and almost 11% of girls aged 2-15 years had asthma. Asthma was responsible for 145 deaths in 2006 and around 13,000 hospitalisations in 2006-07.
- Chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema, was responsible for over 1,500 deaths in 2006 in NSW and nearly 18,000 hospitalisations in 2006-07.
- In 2006, 73% of all deaths from chronic obstructive pulmonary disease in NSW and 83% of all lung cancer deaths were attributable to smoking. In 2006-07, smoking caused around 75% of all hospitalisations for chronic obstructive pulmonary disease and lung cancer.
- Asbestosis is a chronic lung disease that is associated with occupational exposure to asbestos. Hospitalisations due to asbestosis in NSW have decreased in the past two years, particularly in men aged 65 years and over.
- Death rates from respiratory tuberculosis have remained low and stable in the decade between 1994 and 2004 in NSW.
- The rate of new cases of malignant mesothelioma (a cancer that is associated with past exposure to asbestos) more than doubled in NSW between 1986 and 2003. It has decreased each year since then.

Current asthma by age and sex, persons aged 16 years and over, 2007 and persons ages 2-15, 2005 and 2006 combined, NSW



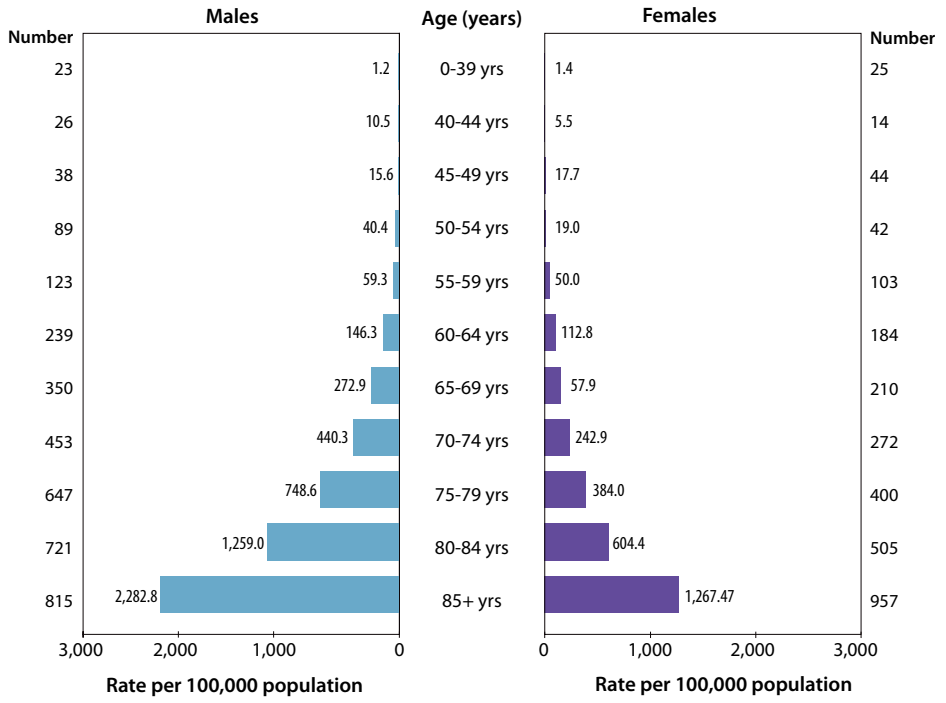
Influenza and pneumonia deaths 1987 to 2006 and hospital separations 1989-90 to 2006-07, persons or all ages and 65 years and over, NSW



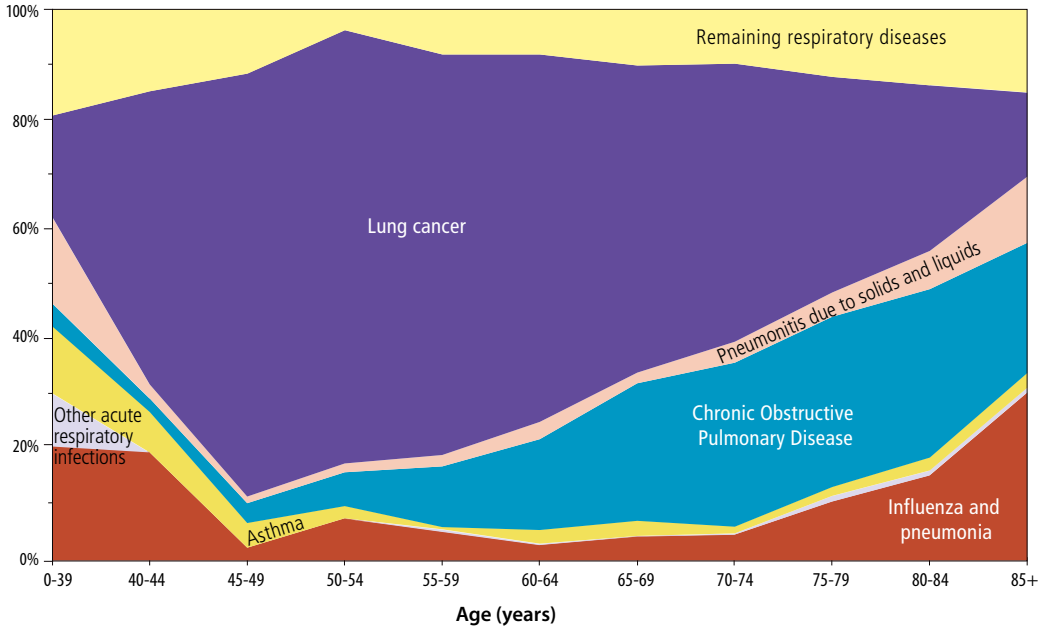
Note: TOP GRAPH - Current asthma was defined as diagnosed by a doctor and producing symptoms or requiring treatment in previous 12 months. Estimates based on 7,391 respondents in NSW Health Survey 2007 (21, that is 0.28%, not stated for current doctor diagnosed asthma) and 3,937 in the NSW Child Health Survey 2005-2006 (12, that is 0.3%, not stated). Bars show lower and upper limits of the 95% confidence interval for the point estimate. BOTTOM GRAPH - Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Hospital separations were classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

Source: NSW Population Health Survey (HOIST), NSW Admitted Patient Data Collection, ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Respiratory disease deaths by age and sex, NSW 2006



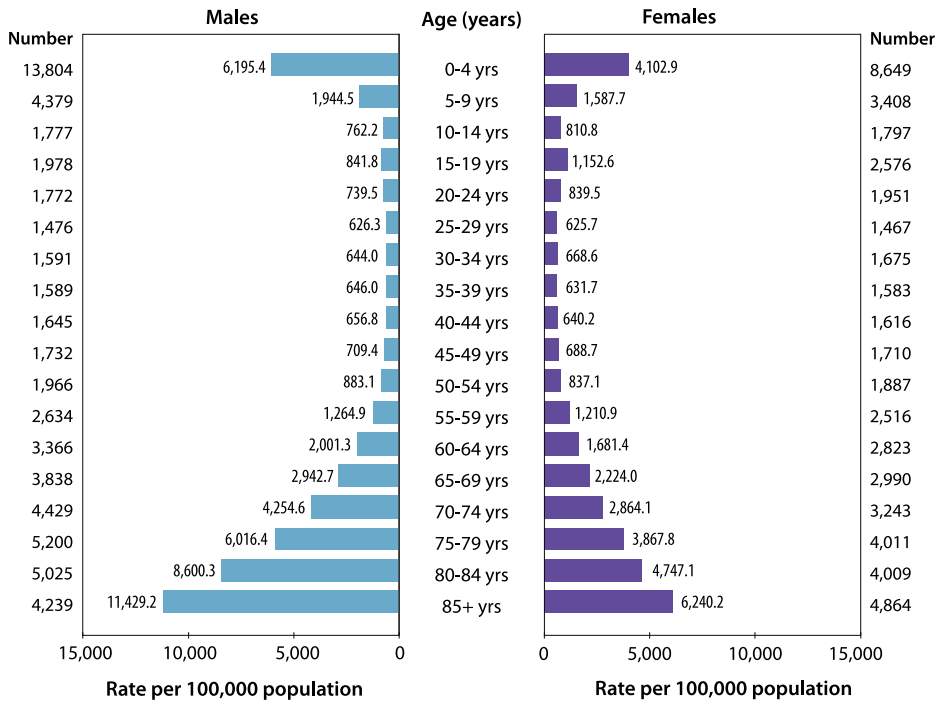
Percentage contribution of leading causes of respiratory disease deaths by age, NSW 2006



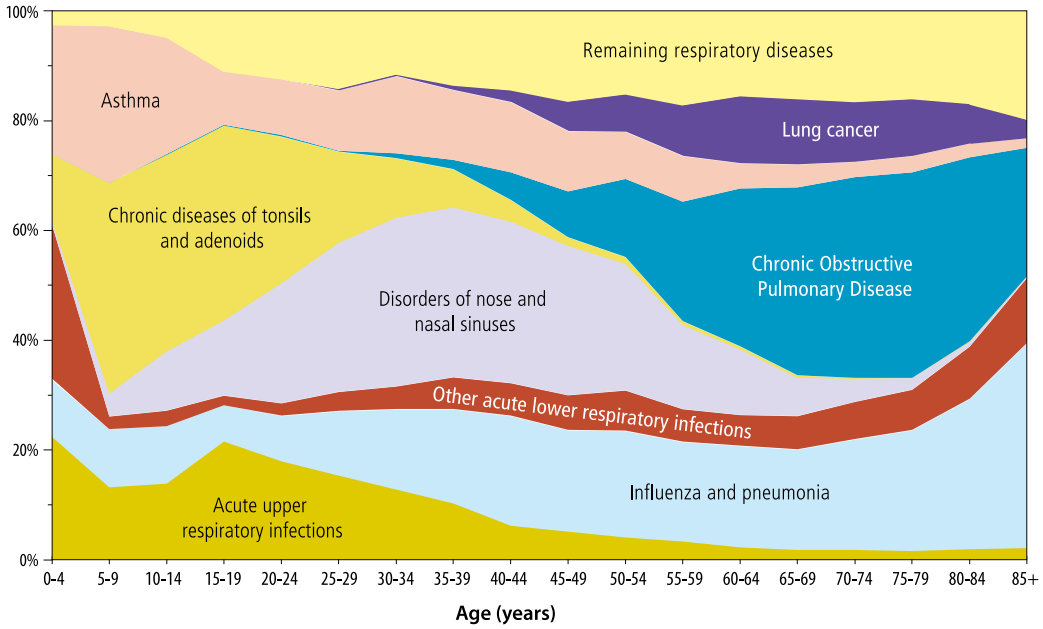
Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories. See ICD Codes for diseases and procedures for details. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production.

Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Respiratory disease hospital separations by age and sex, NSW 2006-07



Percentage contribution of leading causes of respiratory disease hospital separations age, NSW 2006-07



Note: Hospital separations were classified using ICD-10-AM. See Codes for diseases and procedures for details. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisation, data for which were unavailable at the time of production.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.5 Injury and poisoning

Introduction

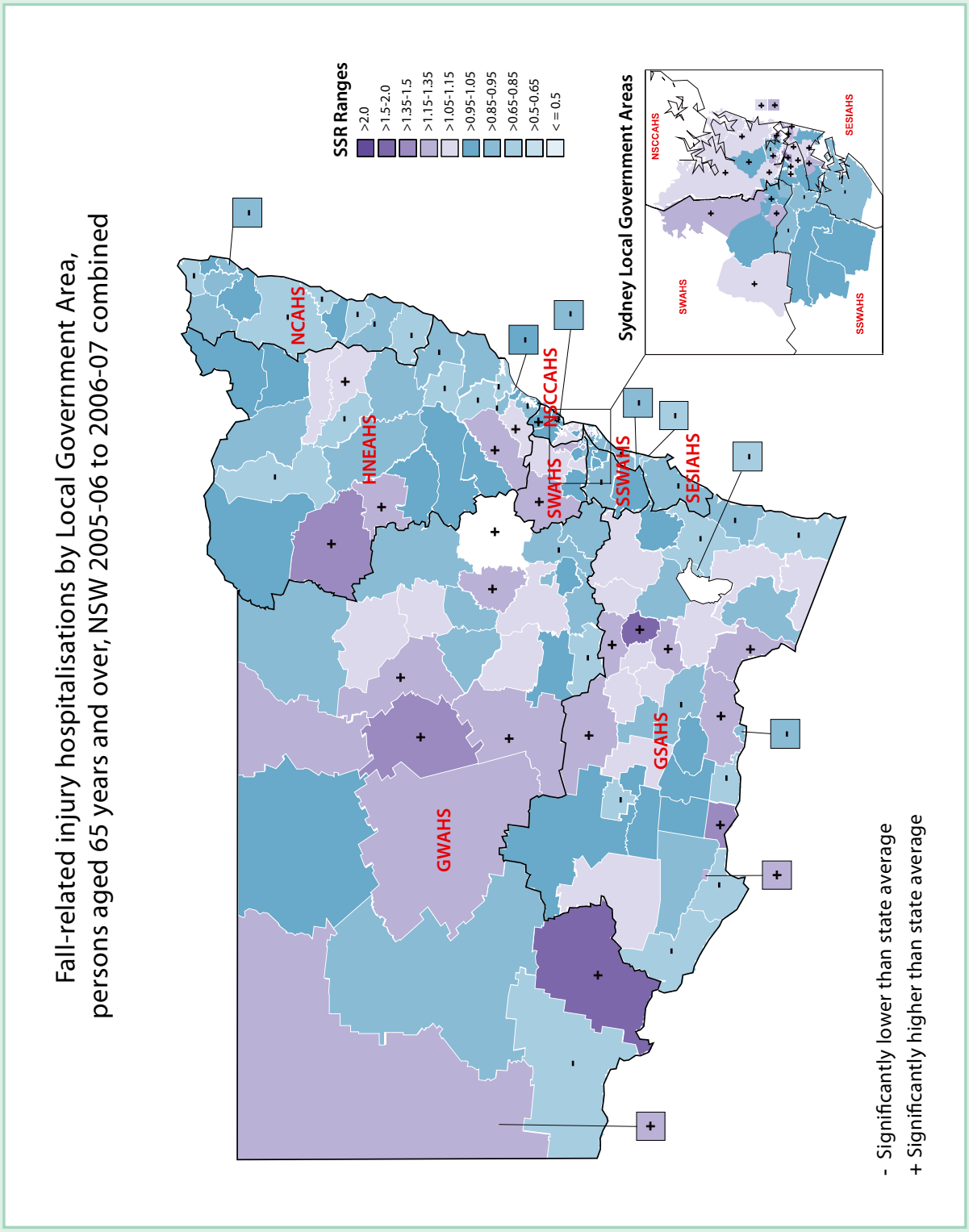
In 2000, around five million people died from injury or poisoning worldwide. This equates to almost 14,000 people dying each day and gives a rate of 83.7 per 100,000 of population. For each person who dies of injuries there are several thousand individuals who survive and are left with permanent disabilities.

In Australia, injury remains a leading cause of death, illness and disability. In 2006, 7,840 people died as a result of injury (including poisoning) as a leading cause of death, accounting for just under 7% of all deaths. Injury was the leading cause of death in people aged 1-44 years, and caused half of all deaths in this age group. Just under 395,000 hospitalisations in Australia in 2005-2006 were attributed to injury and poisoning as a principal diagnosis. Nationwide, inpatient health system costs due to injury are $4.0 billion per annum, around 8.0% of total recurrent health expenditure. In NSW, the total direct health-system cost due to injuries is estimated to be around $1.16 billion per year.

Injuries are often preventable. Effective injury prevention strategies have been developed for a wide-range of potential causes of injury. For example, balance and strength training is effective in reducing falls in older people, fencing around private swimming pools has reduced childhood drownings and seat-belt and drinking-driving legislation together with measures relating to vehicle and road design have greatly increased road safety.

Key points

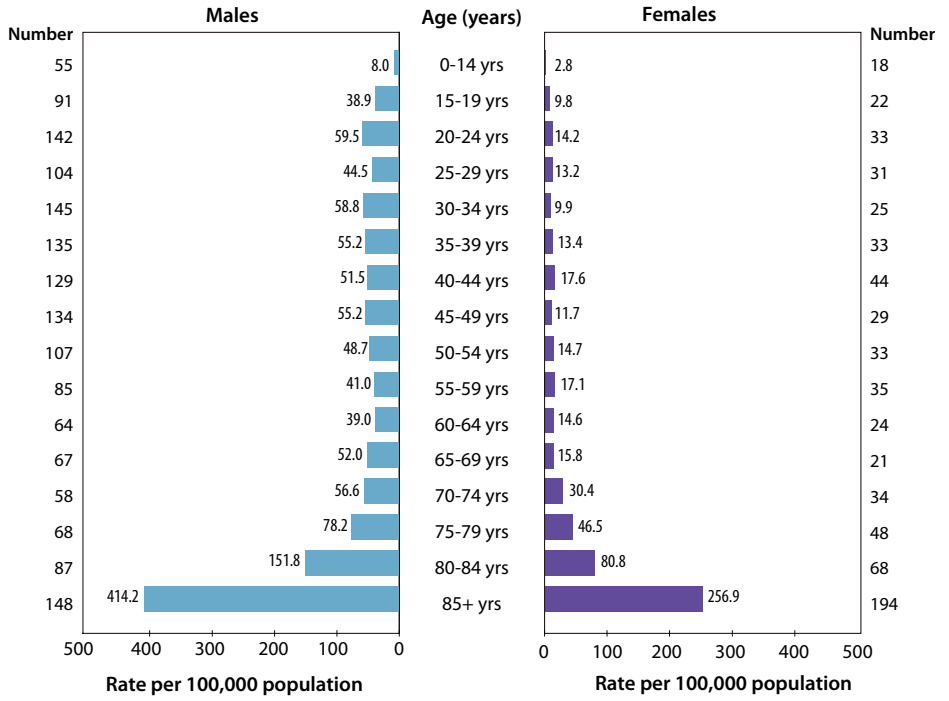
- There were around 3,300 injury-related deaths in 2006 and 150,000 injury-related hospitalisations in 2006-07 in NSW.
- Injury and poisoning is the leading cause of death among people aged 1 to 45 years.
- In the period 2002 to 2006, the most common causes of injury-related deaths were suicide, motor vehicle crashes, falls and unintentional poisoning.
- In the period 2004-05 to 2006-07, the most common causes of injury-related hospitalisations were falls, motor vehicle crashes, self-harm and interpersonal violence.
- In recent years, death rates have declined for:
  - injuries and poisonings overall
  - motor vehicle crash injuries
  - injuries to pedestrian
  - alcohol-related injuries
  - drowning
  - firearm-related deaths.
- Hospitalisation rates have **decreased** for:
  - unintentional poisoning
  - scalds in young children
  - firearm-related injuries.
- Hospitalisation rates have **increased** for:
  - injuries to motorcycle riders
  - fall-related injuries
  - injuries caused by interpersonal violence
  - injuries caused by knives
  - alcohol-related injuries.
- Males have much higher rates of death and hospitalisation than females for all major injury causes, except for falls among older people.
- Rates of death and hospitalisation from injury and poisoning are higher in remote areas than in metropolitan areas.



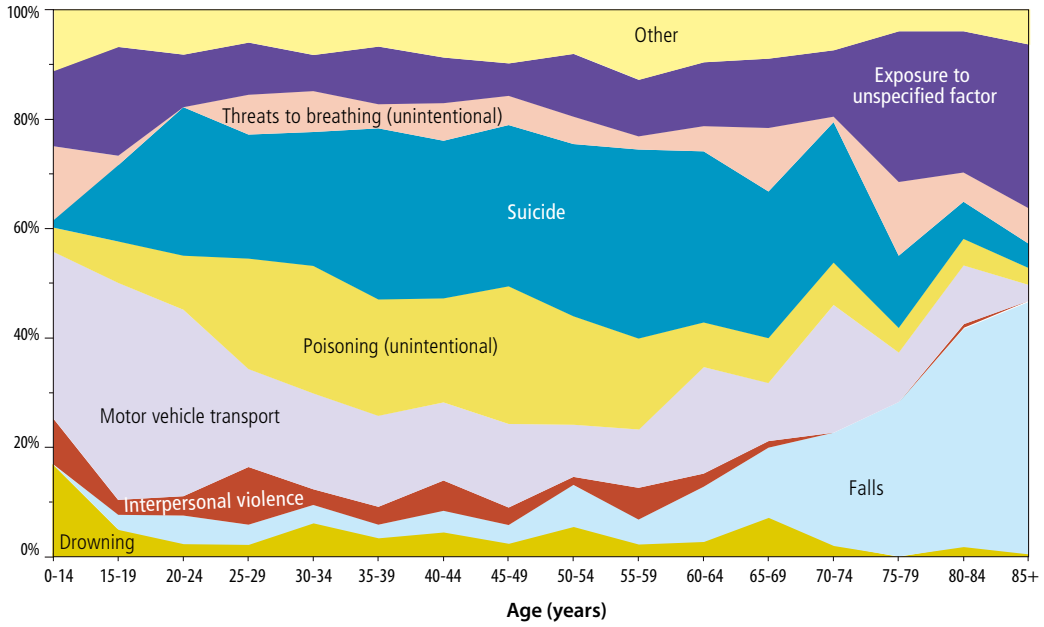
Note: Records relating to acute hospital transfer and statistical discharge were excluded. Numbers for the latest year include an estimate of the small number of interstate hospitalisations of NSW residents, data for which were unavailable at the time of production. Hospital separations were classified using ICD-10-AM. Indirect age and sex standardisation was used to calculate standardised incidence ratios, and then Bayesian smoothing was used to calculate the smoothed ratios (see Methods).

Source: NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Injury and poisoning deaths by age and sex, NSW 2006



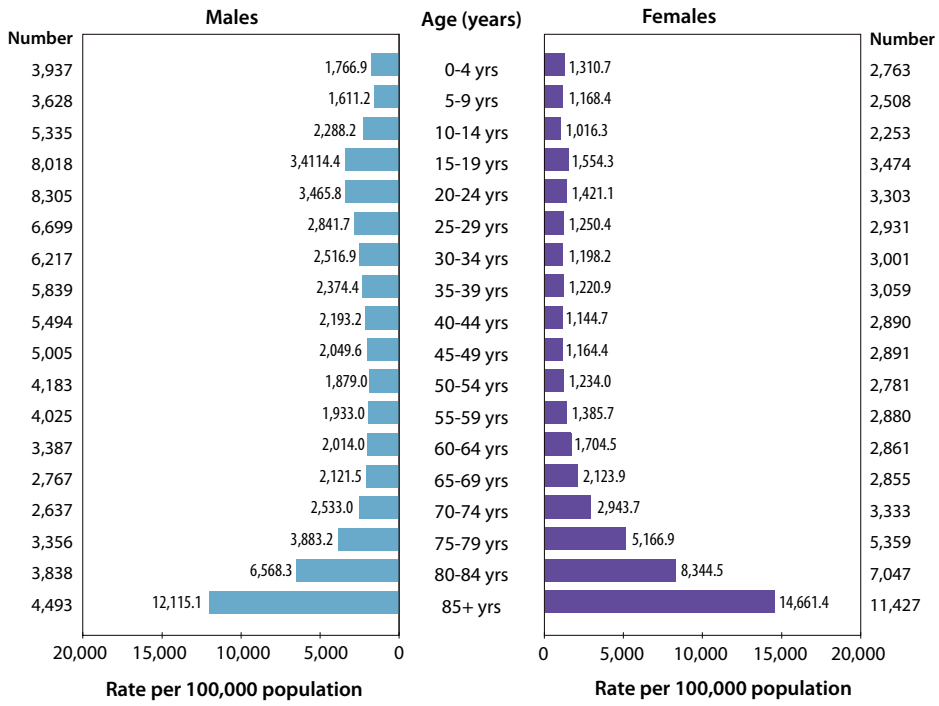
Percentage contribution of leading causes of injury and poisoning deaths by age, NSW 2006



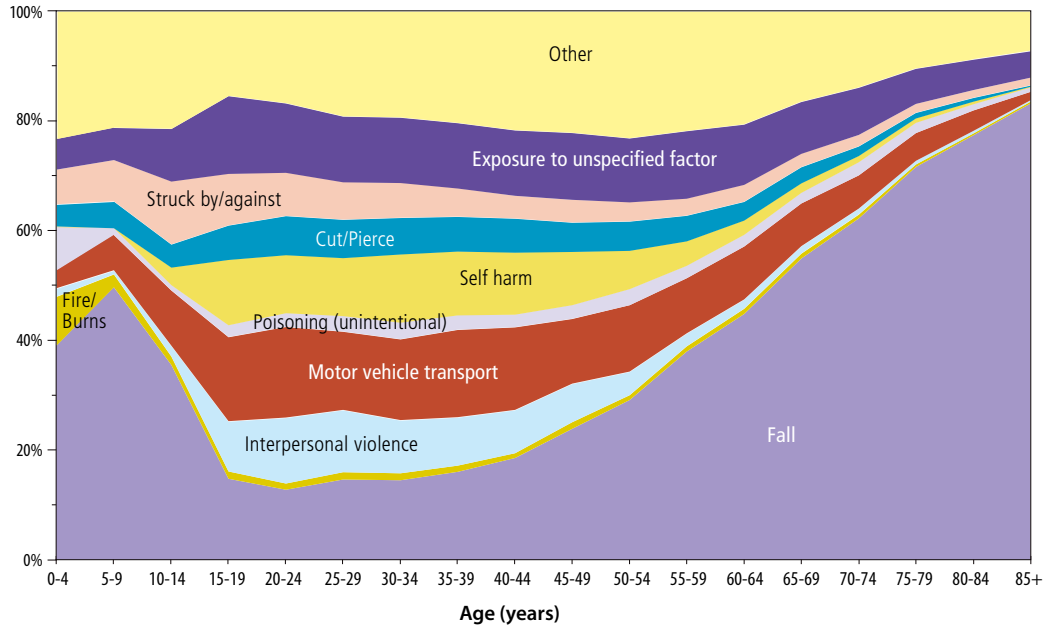
Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories. See ICD Codes for diseases and procedures for details. Numbers for 2006 include an estimate of the small numbers of deaths that were registered in 2007, data for which were unavailable at the time of production. All injuries known to be intentional were classified as suicide or interpersonal violence, regardless of the cause of the injury.

Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Injury and poisoning hospital separations by age and sex, NSW 2006-07



Percentage contribution of leading causes of injury and poisoning hospital separations by age, NSW 2006-07



Note: Hospital separations were classified using ICD-10-AM. See Codes for diseases and procedures for details. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisation, data for which were unavailable at the time of production. Records relating to acute hospital transfer and statistical discharge were excluded.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.6 Mental health

Introduction

Mental ill health is one of the leading causes of non-fatal burden of disease and injury in Australia. Mental problems are also associated with higher rates of health risk factors, poorer physical health and higher rates of deaths from many causes including suicide. Mental ill health was estimated to account for 13% of the disease burden in Australia in 2003, with anxiety and depression, alcohol abuse and personality disorders accounting for almost three-quarters of this burden. Only 7% of the burden from mental disorders is due to mortality, most of which is accounted for by fatal outcomes associated with substance abuse.

A range of early intervention, prevention and promotion initiatives are in place in NSW to cover the age spectrum alongside clinical care. These include: integrated perinatal and infant care focusing on the antenatal and post-natal periods; supportive programs for children whose parents have mental illness; the NSW School-Link initiative to improve the understanding, recognition, treatment and prevention of mental health problems in children and adolescents; the Early Psychosis Program for young people with first onset psychosis; and the Housing and Accommodation Support Initiative (HASI) for people with mental illness, which supports people with mental health problems to access safe, stable and affordable housing to enable them to live successfully in the community.

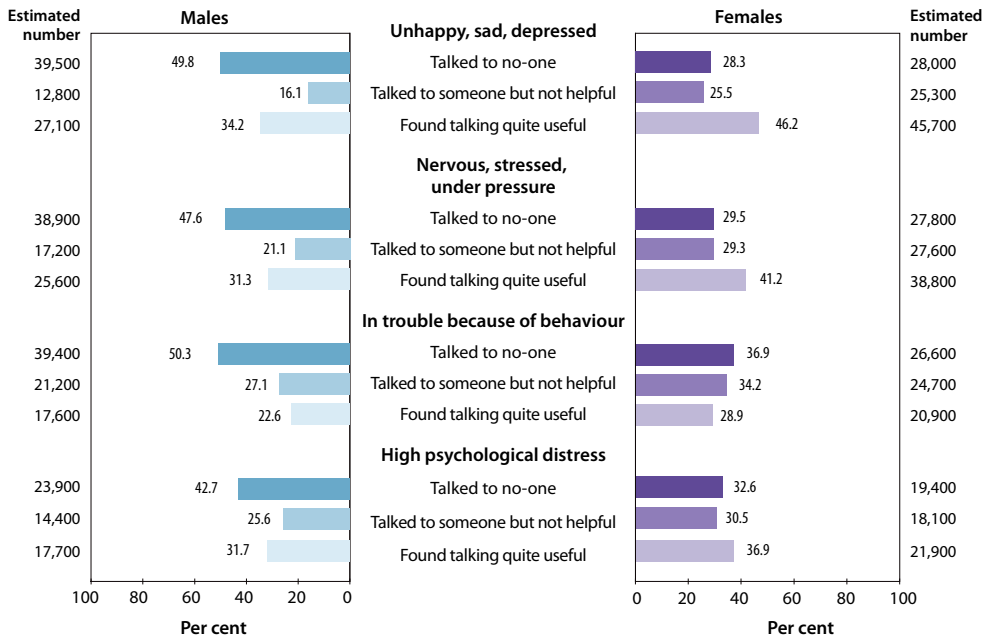
NSW has recently adopted the NSW *Aboriginal Mental Health and Well Being Policy 2006-2010*, which is a framework to guide NSW Health and NSW Area Mental Health Services in the provision of culturally sensitive and appropriate mental health and social and emotional well being services to the Aboriginal community of NSW.

There are also a number of other specific initiatives which contribute to suicide prevention, including a whole of government suicide prevention strategy. 'New South Wales: A New Direction for Mental Health' is a five-year plan to provide improved access to a greater range of mental health services in NSW. The plan, which was published in June 2006, aims to balance hospital focused care with community care.

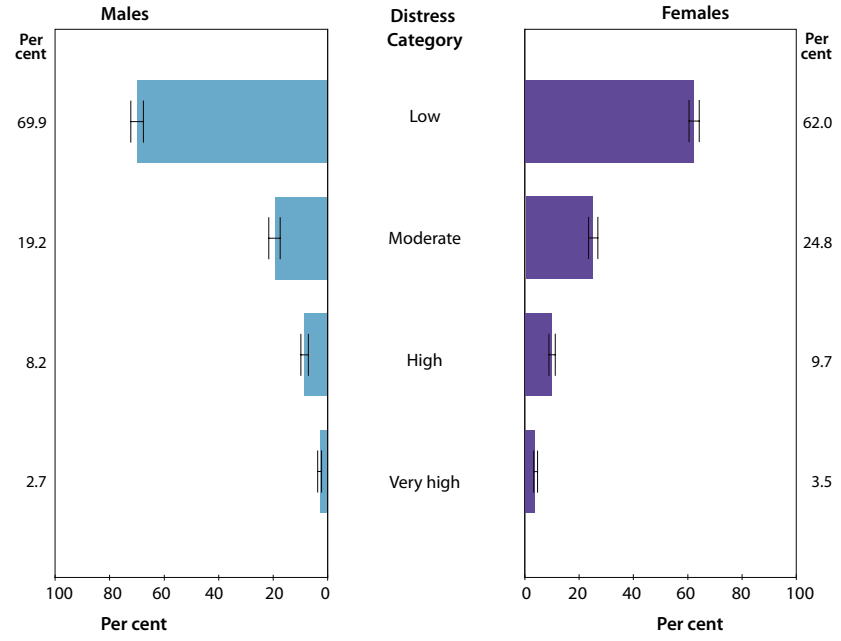
Key points

- In 2007 in NSW, around 12% of adults (11% of males and 13% of females) reported high or very high levels of psychological distress.
- Around 3% of adults in NSW report very high levels of psychological distress and overall adults cut down on their activities in almost 1 day per month on average due to psychological distress.
- Suicide rates have been dropping in NSW since 1997 but, still, 493 people died by suicide in 2006. This was 5% fewer than in the previous year. Males accounted for almost 80% of suicides in 2006.
- In 2006-07, there were more than 10,000 hospitalisations of NSW residents for intentional self harm. Females accounted for 60% of these hospitalisations.
- In 2007, around 1% of NSW children aged 17 years or under were prescribed stimulant medication for attention deficit hyperactivity disorder (ADHD). This was well below the estimated prevalence of ADHD.
- In 2005, one in 6 (16.6%) high school students reported high levels of psychological distress. Out of those who experienced high psychological distress one third talked to no-one about it and another one third talked to someone but found it not at all helpful.

High psychological distress by category and action taken, secondary school students aged 12-16 years, NSW 2005



Psychological distress by category and sex, persons aged 16 years and over, NSW 2007



Note: TOP GRAPH - Estimates based on 5,596 respondents who reported high psychological distress. Respondents chose from the following categories, 'talked to: no-one; family; friend/s; teachers or school counsellors; doctors or other health professionals', and from 'talking was found to be: not at all helpful; somewhat helpful; quite helpful; very helpful'. Respondents could choose more than one answer, so the total may be more than 100%. BOTTOM GRAPH:The K10 is a 10-item questionnaire that measures the level of psychological distress in the most recent 4-week period. The categories shown for the K10 scores are low (K10 between 10 and 15.9), moderate (K10 between 16 and 21.9), high (K10 between 22 and 29.9), and very high (K10 of 30 and over). Estimates are based on 7,366 respondents in NSW. For this indicator 27 (0.37%) were 'not stated' (Don't know or Refused) in NSW. Bars show lower and upper limits of the 95% confidence interval for the point estimate.

Source: NSW School Students Health Behaviours Survey, 2005 (HOIST), NSW Population Health Survey (HOIST), and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.7 Oral health

Introduction

Oral health is an integral component of lifelong health and is much more than the absence of oral disease. Oral health includes a person's comfort in eating and social interactions, their self-esteem and satisfaction with their appearance.

In recent years, dental caries was the most prevalent health problem, and periodontal diseases were the fifth most prevalent health problem in Australia. About 90% of all tooth loss can be attributed to these two health problems and, because they are preventable and treatable, most tooth loss is avoidable. In recent decades, factors such as changes in diet, reduced sugar consumption, exposure to fluoride, and changes in disease management, have contributed to significant improvements in oral health. Australians in all states and territories enjoy a relatively high standard of oral health. However, this high standard is not equally distributed among different age and social groups.

Oral health is affected by a complex interplay of social, environmental, and economic factors that extend beyond risk behaviour. Specific population groups, such as refugees and prison inmates, continue to experience extensive oral disease.

Currently, public health effort is focused on identifying disadvantaged populations that require special attention and, in the NSW population as a whole, on oral health promotion, disease prevention and improving access to services. This chapter presents an overall picture of the oral health of the people of NSW.

Water fluoridation is the most effective, cost-effective, equitable and safe means of providing protection from tooth decay. In 2003, NSW Health developed a coordinated, strategic, multidisciplinary approach to water fluoridation in order to reduce the growing inequalities in oral health. This approach has been successful, and many councils in NSW either voted or had been directed to fluoridate their community water supplies. As a consequence, the proportion of the NSW population without access to fluoridated water in their main supply will decrease from 8.6% in 2006 to 6.5% in 2008.

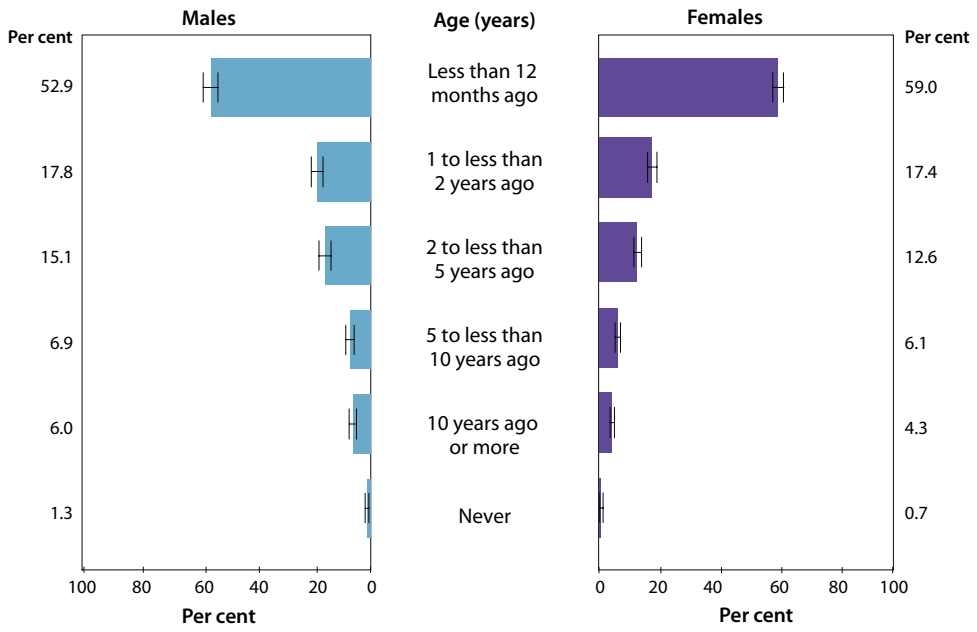
Data presented in this chapter come from four main sources. The NSW Population Health Survey was the source for data on dental status and ambulatory treatment patterns in adults, and on treatment patterns in children. Data on hospitalisations for the removal or restoration of teeth and ambulatory care sensitive conditions came from the NSW Admitted Patient Data Collection. Data on water fluoridation by Health Area has been supplied by the NSW Centre for Oral Health Strategy.

Key points

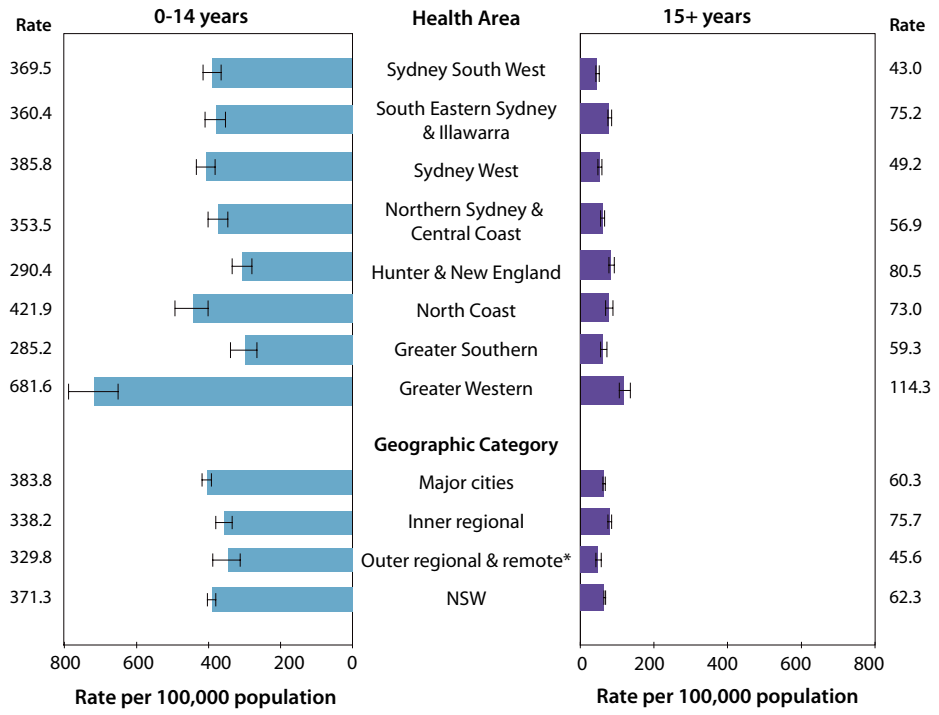
Overall, oral health in NSW is good by world standards. However, oral health varies with age and among population subgroups.

- Among children:
  - more than half have no evidence of tooth decay
  - more than one-third do not visit a dentist each year
- hospitalisations for the removal or restoration of teeth due to dental decay have not increased in recent years in older children and have decreased in toddlers
- an increasing proportion of hospitalisations for dental decay has been occurring in private hospitals.
- Among adults:
  - around 80% of adults report good oral health and have at least 20 teeth
  - well over one-third have all of their natural teeth
  - 1 in 17 have no natural teeth
  - around three-quarters visit a dentist every two years
  - around one-third have a filling each year
  - hospitalisations for the removal or restoration of teeth due to dental decay have increased in recent years, with an increasing proportion occurring in private hospitals.
- Oral health is worse in areas with no access to a fluoridated community water supply.

Time since last dental visit, persons aged 16 years and over, NSW, 2007



Removal and restoration of teeth for dental caries: hospitalisations by health area and sex, persons aged 0-14 years and 15 years and over, NSW 2006-07



Note: TOP GRAPH - Estimates are based on 7,443 respondents in NSW. For this indicator 45 (0.60%) were 'not stated' (Don't know or Refused) in NSW. BOTTOM GRAPH - Hospital separations were classified using ICD-10-AM. Numbers for 2006-07 include an estimate of the small number of interstate hospitalisations of NSW residents, data for which were unavailable at the time of production.

Source: TOP GRAPH - New South Wales Population Health Survey. Centre for Epidemiology and Research, NSW Department of Health. BOTTOM GRAPH - NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.8 Pregnancy and the newborn period

Introduction

The health of Australian mothers and babies is generally good by world standards. Maternal deaths are rare, and perinatal mortality rates continue to decline. There were 272,419 births in Australia in 2005 (one-third in NSW), an increase from 2004 of 15,214 (5.9%) births. The total fertility rate in Australia in 2007 of 1.93 babies per woman, was the highest since 1981 and the fertility of women aged 35-39 years was the highest since 1950. The median age of mothers in 2007 was 30.7 years and the percentage of mothers aged 35 years or older was 23.4% and teenage mothers was 4.1%. In 2007 there were 14,200 births registered in Australia where at least one parent was Indigenous and the total fertility rate for Indigenous women was 2.4 babies per woman.

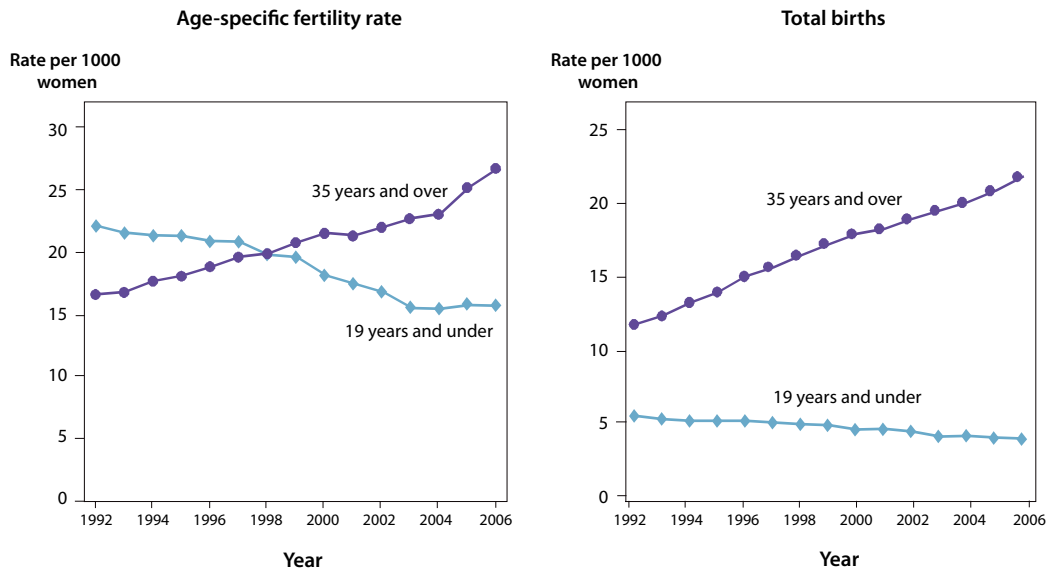
In the period 2003 to 2005, in Australia, there were 65 maternal deaths (i.e. either during pregnancy or within 42 days of the end of pregnancy) that were directly or indirectly related to pregnancy or its management. NSW ranked third highest in Australia for spontaneous vaginal delivery of babies (61.2% of all deliveries compared with the Australian average of 58.5%) and had the second lowest caesarean section delivery rate (28.1%, compared with the Australian average of 30.3%). NSW also had the lowest rate of low birth weight babies (less than 2,500 grams in weight) of 5.9% of all babies, compared with an Australian average of 6.4% in 2005.

Aboriginal mothers and babies, those from socioeconomically disadvantaged areas and some country-of-birth groups, continue to experience worse outcomes than other NSW mothers and babies. This chapter presents information on the main indicators of maternal and perinatal health in NSW, including trends in fertility rates, teenage pregnancy, prenatal diagnosis, low birth weight and premature babies, neonatal morbidity, perinatal mortality, maternal deaths and information on periconceptional folate supplementation.

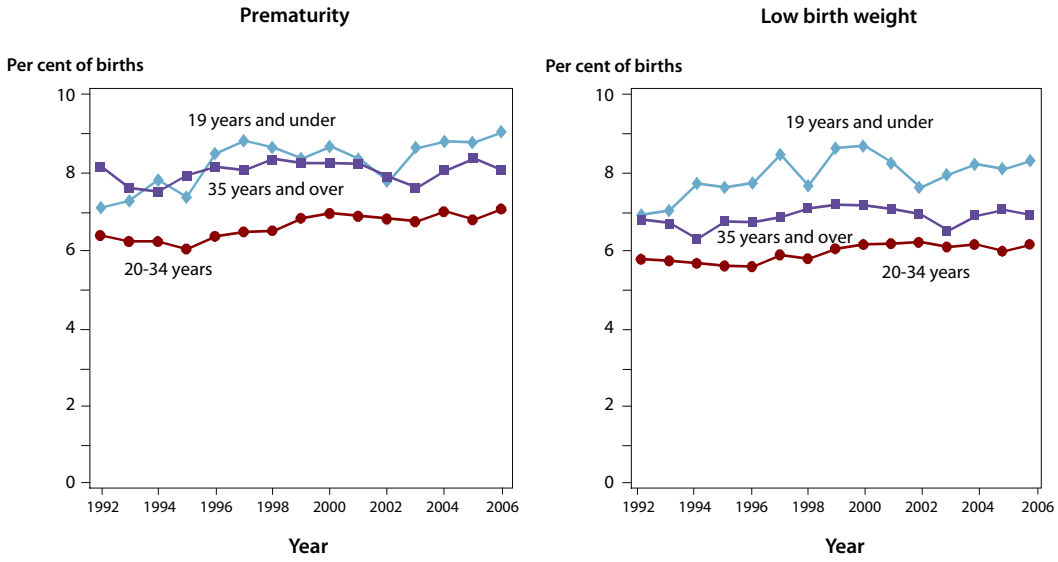
Key Points

- In 2006, 92,781 births occurred in NSW.
- The average woman in NSW can currently expect to give birth to 1.8 babies in her lifetime.
- Among NSW mothers:
  - teenage mothers account for 4% of all births, while mothers aged 35 years and over account for 22% of all births
  - just over a half of mothers take folate supplements, both one month before and in the first trimester of pregnancy, as recommended to prevent neural tube defects, with 48% of mothers without tertiary qualifications compared with 61% of mother with tertiary qualifications taking folate supplements as recommended
  - around 77% make their first antenatal visit before 16 weeks and 88% before 20 weeks gestation
  - around 14.1% report smoking during pregnancy, with this percentage varying markedly according to Local Government Area of residence.
- Among NSW babies:
  - about one-quarter of those born to mothers aged 35 years and over undergo prenatal cytogenetic tests for birth defects
  - around 7% are born prematurely, and 6% are of low birth weight, with babies born to teenage mothers having the highest rates of prematurity (9%) and low birth weight (8%)
  - around 16% of live born babies were admitted to a neonatal special care nursery or a neonatal intensive care unit.

Fertility and births by women's age, NSW 1992 to 2006



Prematurity and low birth weight, mothers aged 19 years and under, 20-34 and 35 years and over, NSW 1992 to 2006



Note: Age-specific fertility rate and total births include births for which the woman's age was not stated. Fertility rate is the number of live births that were reported from NSW public and private hospitals per 1,000 female population. Total births includes stillbirths, but not miscarriages prior to 20 weeks gestation or terminations. Low birth weight: less than 2,500 grams. Premature birth: less than 37 weeks gestation. Rates of prematurity and low birth weight include both stillbirths and live births. Births in NSW to women from interstate were included, but not births to NSW residents occurring interstate

Source: NSW Midwives Data Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

7.9 Communicable diseases

Introduction

Under the Public Health Act 1991, laboratories, hospitals, medical practitioners, schools and child care centres must notify the NSW Department of Health or their local public health unit of diagnoses of certain diseases. For some diseases a notification triggers a public health response by the public health unit, such as immunisation or prophylactic treatment of contacts. Notifications also provide valuable information that is used for planning and evaluation of prevention programs. Doctors, hospital staff, and laboratory staff reported 46,706 cases of notifiable communicable diseases among NSW residents in 2007.

The number of notifications received for any particular condition is almost always an underestimate of the number of cases that actually occur. For a condition to be notified a patient must seek medical help, be diagnosed with the condition, in some cases must have the appropriate laboratory tests done and then the diagnosis must be reported to the local public health unit or the Department of Health. Nonetheless, communicable disease notifications provide valuable information on disease patterns in NSW.

Among the most frequently reported notifiable conditions in 2007 were:

- **Chlamydia trachomatis infections**: 12,391 cases (183.6 per 100,000 population)
- **Hepatitis C**: 4,255 cases (62.8 per 100,000 population)
- **Hepatitis B:** 2,643 cases (38.9 per 100,000 population)
- **Salmonella infections:** 2,549 cases (37.6 per 100,000 population)
- **Pertussis**: 2,092 cases (30.1 per 100,000 population)

Conditions in 2007 with the most marked **declines** compared to previous years included:

- **Measles**: three cases, the lowest annual count to date
- **Meningococcal serogroup C disease**: ten cases, the lowest number since laboratory reporting began in 1991
- **Gonorrhoea**: 1368 cases compared with 1722 cases in 2006, a decrease of 21%
- **HepatitisA**: 65 cases, the lowest number of notifications to date
- **Psittacosis**: 34 cases, a 64% decrease compared with 94 cases in 2006
- **Leptospirosis**: eight cases, a steady decrease from 66 in 2001

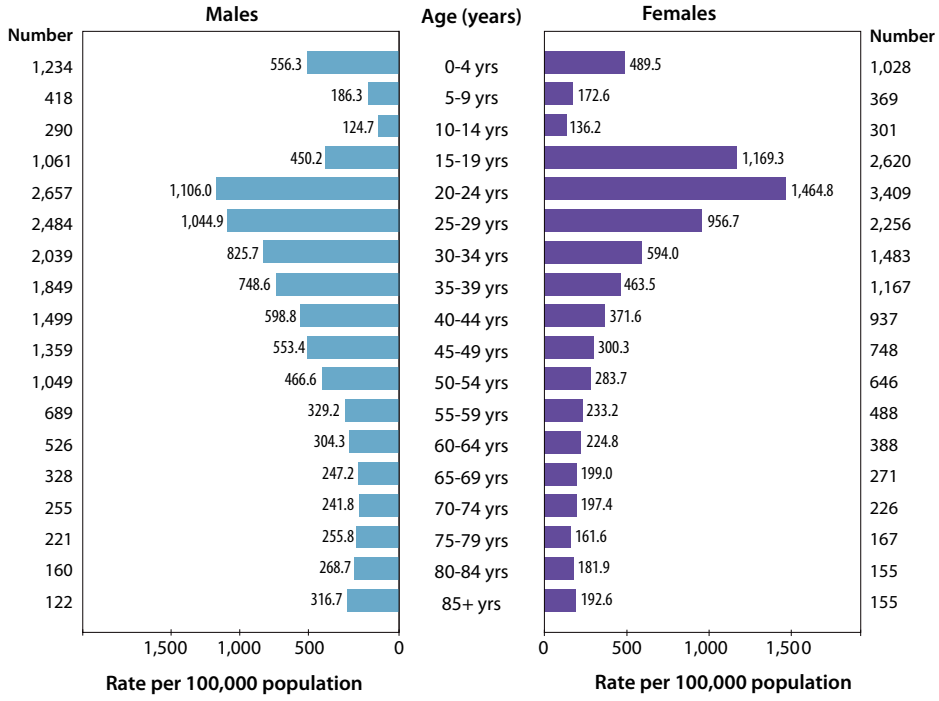
Conditions in 2007, with the most marked **increases** compared to previous years included:

- **Salmonella infections**: 2,549 cases, the highest annual count to date mainly due to a large point-source outbreak affecting 319 people
- **Infectious syphilis**: 431 cases, up from 224 in 2006
- **Mumps**: 318 cases, a steady increase from 28 cases in 2001
- **Legionnaires disease**: 73 reported Legionella pneumophila infections, in part due to an outbreak associated with a contaminated cooling tower
- **Influenza**: 1,913 notifications and 25 reported influenza A outbreaks in aged-care facilities, military facilities and a boarding school
- **VerotoxigenicEscherichia coli (VTEC) infections**: 23 cases reported compared with 10 cases in 2006

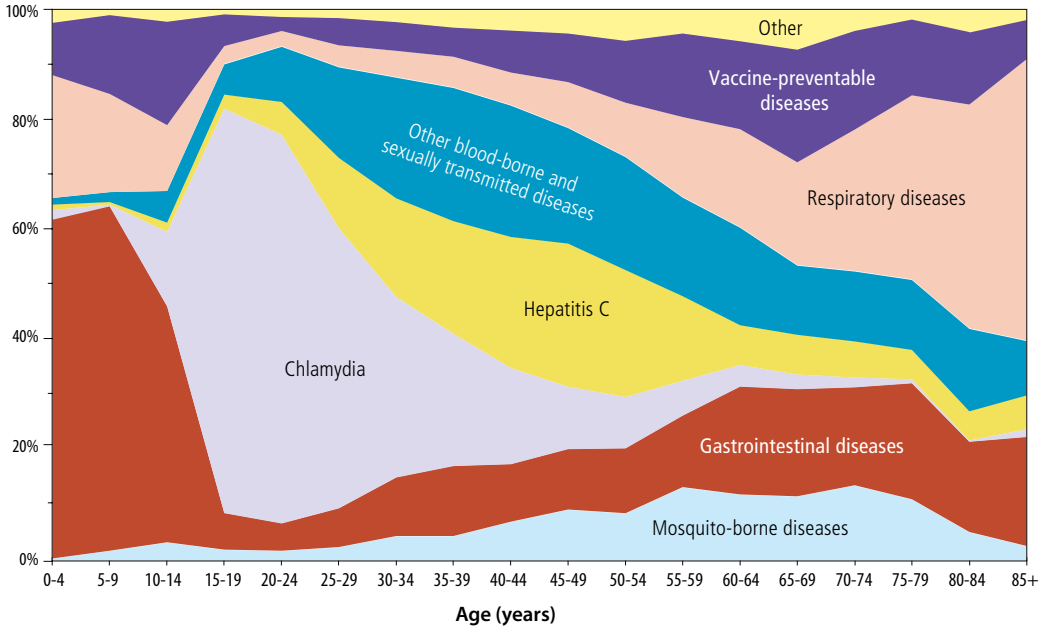
Key Points

- At the end of 2007, 91.7% of children aged 12-15 months were fully immunised, similar to the national figure of 91.5%.
- In 2007, three cases of measles and ten cases of meningococcal serogroup C disease were notified; the lowest numbers recorded for these vaccine preventable diseases since 1991.
- In 2007, 12,391 cases of Chlamydia infection were notified. Notifications of Chlamydia have risen steeply since June 1999 and it is now the most frequently notified communicable disease.
- The number of infectious syphilis notifications have increased from 224 in 2006, to 431 cases in 2007.
- In 2006 and 2007 there were several notable outbreaks of Legionnaires' disease, measles, Hepatitis A, Hepatitis C and Salmonella.

Notifications of communicable diseases by age and sex, NSW 2007



Percentage contribution of leading notifications of communicable diseases by age, NSW 2007



Note: Excludes foodborne illness in 2 or more related cases, gastroenteritis in an institution, and HIV-acquired immune deficiency syndrome (AIDS)

Source: NSW Notifiable Disease Database, NSW HIV/AIDS Database and ABS population estimates (HOIST). Centre for Health Protection and Centre for Epidemiology and Research, NSW Department of Health.

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APPENDIX 1 - EXPLANATORY NOTES AND SOURCES FOR INDICATORS IN THIS REPORT

DETERMINANTS OF HEALTH		
Social determinants	**Explanatory notes**	**Source**
Unemployment rate	Unemployed are 15 years and over, not employed, available and actively looking for work. Unemployment rate is a proportion of unemployed to a sum of employed and unemployed in civilian population aged 15 years and over (that is, to labour force)	Australian Bureau of Statistics*
Student retention to Year 12	School retention rate is a proportion of enrolled in Year 12 to all in a cohort who started secondary schooling	Australian Bureau of Statistics*
Health-related behaviours	**Explanatory notes**	**Source**
Adequate physical activity	Total of 150 minutes of physical activity per week on 5 separate occasions is considered adequate.	NSW Population Health Survey
Overweight and obesity (16+ yrs)	Overweight is from Body Mass Index (BMI) 25, obese from BMI 30 in persons aged 16 years and over.	NSW Population Health Survey
Overweight and obesity in children (7-16 yrs)	Overweight and obese in children are calculated from their Body Mass Index (BMI) score using Person-Body Mass Index Classification tables provided by AIHW.	NSW Population Health Survey
Recommended fruit consumption	2 medium pieces or 4 small pieces of fruit are recommended daily for persons aged 16 years and over.	NSW Population Health Survey
Recommended vegetable consumption	2.5 cups of cooked vegetables or 5 cups of salad vegetables daily are recommended for persons aged 16 years and over	NSW Population Health Survey
Children free of dental caries (5-6 yrs)	Children assessed during clinical examination to have no past or present dental decay in their deciduous teeth (dmft=0)	NSW Child Dental Health Survey
Current smoking	Includes daily and occasional smokers	NSW Population Health Survey
High risk alcohol drinking	High risk drinking is ever consuming 11 or more if male, or 7 or more if female, standard drinks in a day	NSW Population Health Survey
Risk alcohol drinking	Risk drinking is 1 or more of the following: consuming alcohol every day, consuming on average more than 4 if male or 2 if female standard drinks, consuming more than 6 if male and 4 if female on any one occasion or day.	NSW Population Health Survey
Recent illicit drug use (14+ yrs)	Includes any of the following illicit drugs used in the last 12 months: Heroin, amphetamines, cannabis, ecstasy and cocaine.	National Drug Strategy Household Survey
Vaccinated against influenza or pneumococcal disease in last 12 months (65+ yrs)	–	NSW Population Health Survey

Note: All data sources are from HOIST, Centre for Epidemiology and Research, NSW Department of Health, unless otherwise stated or marked with * in which cases data are directly from the source.

BURDEN OF DISEASE		
Deaths	**Explanatory notes**	**Source**
All causes	Classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards.	ABS mortality data and population estimates.
Potentially avoidable deaths	Classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards.	ABS mortality data and population estimates (HOIST). Population Health Information Development Unit (2006) and Tobias and Jackson (2001) (avoidable deaths)
Hospitalisations	**Explanatory notes**	**Source**
All causes	Classified using ICD-9 up to 1997-98 and ICD-10-AM from 1998-99 onwards.	NSW Admitted Patient Data Collection and ABS population estimates.
Ambulatory care sensitive conditions	Classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards.	NSW Admitted Patient Data Collection and ABS population estimates (HOIST). Victorian Department of Human Services, 2004 (ACSC).
Other	**Explanatory notes**	**Source**
Life expectancy at birth	The Chiang method used in calculations	ABS mortality data and population estimates
Life expectancy at age 65 years	The Chiang method used in calculations	ABS mortality data and population estimates

HEALTH INEQUALITIES		
Other	**Explanatory notes**	**Source**
Perinatal deaths	Counting all fetuses and infants who died within 28 days of birth, weighing at least 400 grams or (when birthweight is unavailable) having the corresponding gestational age (20 weeks) or body length (25 cm crown- heel). Reported by 1,000 of all births (defined as above).	Australian Bureau of Statistics*
First antenatal visit before 20 weeks gestation	–	NSW Midwives Data Collection
Premature babies	Premature baby is born after fewer than 37 weeks gestation. Live and stillbirths are included.	NSW Midwives Data Collection
Low birth weight babies	Low birth weight is under 2, 500 grams. Live and stillbirths are included.	NSW Midwives Data Collection
Immunisation coverage (12-15 months)	–	Australian Childhood Immunisation Register*

Note: All data sources are from HOIST, Centre for Epidemiology and Research, NSW Department of Health, unless otherwise stated or marked with * in which cases data are directly from the source.

HEALTH PRIORITY AREAS		
New cases of cancer	**Explanatory notes**	**Source**
Cancer (all, lung, colorectal, melanoma, prostate, breast and cervical)	Classified using ICD-9 up to July 1999, ICD-O-2 up to June 2004 and ICD-O-3 onwards.	ABS population estimates (HOIST). NSW Central Cancer Registry
Cancer deaths	**Explanatory notes**	**Source**
Cancer (all, lung, colorectal, melanoma, prostate, breast and cervical)	Classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards.	ABS mortality data and population estimates.
Cancer biennial screening rates	**Explanatory notes**	**Source**
Breast cancer (50-69 yrs)	No adjustments for screening outside NSW BreastScreen program.	BreastScreen NSW*
Cervical cancer (20-69 yrs)	Adjusted for hysterectomy rates and opt-offs.	NSW Cervical Screening Program*
Other deaths	**Explanatory notes**	**Source**
Deaths (cardiovascular disease, chronic obstructive pulmonary disease (>65 yrs), asthma (5-34 years), injury and poisoning, fall-related)	Classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards.	ABS mortality data and population estimates.
Diabetes-related deaths	Classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards.	ABS mortality data and population estimates (HOIST). Australian Institute of Health and Welfare (diabetes-related)
Suicide	Classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Coded as 'Suicide and self-inflicted injury' in ICD-9 and 'Intentional self-harm' in ICD-10.	ABS mortality data and population estimates.
Hospitalisations	**Explanatory notes**	**Source**
Hospitalisations (cardiovascular disease, diabetes (principal diagnosis or comorbidity), chronic obstructive pulmonary disease (>65 years), asthma (5-34 years), injury and poisoning)	Classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards.	NSW Admitted Patient Data Collection and ABS population estimates.
Fall-related	Classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Excludes day-only hospitalisations, transfers and statistical discharges.	NSW Admitted Patient Data Collection and ABS population estimates.
Intentional self-harm	Classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Includes suicide (attempted) and purposedly self-inflicted poisoning or injury.	NSW Admitted Patient Data Collection and ABS population estimates.
Communicable diseases	**Explanatory notes**	**Source**
Arboviral infection, Gonorrhoea, Hepatitis A, Hepatitis B, Hepatitis C, Salmonella infection (non-typhoid), Tuberculosis	Includes only laboratory confirmed cases.	NSW Notifiable Diseases Database and ABS population estimates.
Chlamydia	Notifiable from 1998.	NSW Notifiable Diseases Database and ABS population estimates.
Measles, Meningococcal disease, Pertussis (whooping cough), Syphillis (infectious)		NSW Notifiable Diseases Database and ABS population estimates.
Pneumococcal infection	Notifiable from 1998. Includes only laboratory confirmed cases.	NSW Notifiable Diseases Database and ABS population estimates.

Note: All data sources are from HOIST, Centre for Epidemiology and Research, NSW Department of Health, unless otherwise stated or marked with * in which cases data are directly from the source.

APPENDIX 2 - METHODS

2.1 Statistical methods

2.1.1 Crude rates

Crude rates represent an estimate of the proportion of a population that experiences an outcome during a specified period. It is calculated by dividing the number people with an outcome in a specified period by the number at risk during that period (typically per year). It does not take into account the age structure of the population studied and can be misleading when long-term trends are examined - or geographic areas are compared - because age structures of populations may vary over time or among areas.

2.1.2 Age-adjusted rates

Age-adjustment of rates uses direct age-standardisation. This method adjusts for effects of differences in the age composition of populations across time or geographic regions. The directly age-standardised rate is the weighted sum of age-specific (five-year age group) rates, where the weighting factor is the corresponding age-specific standard population. For this report, the Australian estimated residential population (persons) as at 30 June 2001 was used as the standard population (Table 1). The same population was used for males and females to allow valid comparison of age-standardised rates between the sexes.

Ninety-five per cent confidence intervals around the directly standardised rates were calculated using the method described by Dobson et al. (1991). This method gives more accurate confidence intervals than the usual normal approximation for rarer conditions. Where the number of events is larger, the confidence intervals are equivalent to those calculated in the conventional fashion (Armitage, Berry and Matthews, 2002).

2.1.3 Life expectancy

Life expectancy at birth

Life expectancy at birth is an estimate of the average length of time (in years) a person can expect to live, assuming that the currently prevailing rates of death for each age group will remain the same for the lifetime of that person. In fact, death rates will almost certainly change over the lifetime of a person born now, owing to changes in social and economic conditions, changes in lifestyle, advances in health care and possibly the emergence of new diseases. However, because no-one knows what the death rates for each age group and sex will be in the future, the usual practice is to use the current rates of death to calculate life expectancy.

For this report, estimates and confidence intervals for life expectancy were calculated using abridged current life tables based on five-year age groups, except for the first 5 years of life, which were split into 2 age groups 0-<1 years and 1-4 years. The methods used are described in detail by Chiang (1984).

Life expectancy at age 65

The average number of additional years a person who has reached the age of 65 would expect to live if current mortality trends continue to apply is based on the age-specific death rates for a given year. This measure assumes

TABLE 1: AUSTRALIAN STANDARD POPULATION (30 JUNE 2001)

Age	Persons
0-4 yrs	1,282,357
5-9 yrs	1,351,664
10-14 yrs	1,353,177
15-19 yrs	1,352,745
20-24 yrs	1,302,412
25-29 yrs	1,407,081
30-34 yrs	1,466,615
35-39 yrs	1,492,204
40-44 yrs	1,479,257
45-49 yrs	1,358,594
50-54 yrs	1,300,777
55-59 yrs	1,008,799
60-64 yrs	822,024
65-69 yrs	682,513
70-74 yrs	638,380
75-79 yrs	519,356
80-84 yrs	330,050
85+ yrs	265,235
All ages	19,413,240

Source: ABS population estimates (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

that death rates will remain constant for the next 20 to 30 years, a much more conservative assumption than the one used to calculate life expectancy at birth. For this report life expectancy was calculated using abridged current life tables based on five-year age groups.

2.1.4 Analysis of NSW Population Health Survey data

Data from NSW Population Health Surveys were weighted to adjust for differences in the probabilities of selection among subjects. These differences were due to the varying number of people living in each household, the number of residential telephone connections for the household and the varying sampling fraction in each Health Area.

Post-stratification weights were used to reduce the effect of differing non-response rates among males and females and different age groups on the survey estimates. These weights were adjusted for differences between the age and sex structure of the survey sample and the Australian Bureau of Statistics 2005 mid-year population estimates (excluding residents of institutions) for each Area Health Service (CER, 2007).

The 'Surveymeans' procedure in SAS for Windows Version 9.1.3 was used to calculate point estimates and 95% confidence intervals. This procedure uses the Taylor expansion method to estimate sampling errors of estimators based on a stratified random sample (SAS, 2004).

2.1.5 Analysis of trend in key population health indicators

Ten-year trends in key population health indicators were analysed using appropriate regression models to take into account outcomes in each year and estimate average change (linear trend) in outcomes over time. Where there was less than ten years of data available or strong evidence of a non-linear trend over ten years, trends were instead analysed over the most recent five years. No trend analysis was performed for indicators with less than five years of available data. A significance level of 5% was used to identify significant trends over time.

Negative-binomial regression models (Hilbe, 2007) were used to analyse age- and sex-adjusted trends in death rates, hospital separation rates, cancer incidence rates and communicable disease notification rates, which were found to be over-dispersed in almost all cases. The average annual rate of change in these rates was determined by taking the exponent of the coefficient for the year, which was parameterised as a continuous variable.

Log-binomial regression models (Hardin and Hilbe, 2007) were used to analyse maternal age-adjusted trends in rates of perinatal deaths, first antenatal visit before 20 weeks gestation, premature and low birth weight babies by Aboriginality. Similar to negative-binomial regression models, the average annual rate of change in rates was determined by exponentiating the coefficient for the year variable.

Linear regression models (Neter et al., 1996) were used to analyse trends in life expectancy from birth and 65 years and health-related behaviours population prevalence estimates obtained from the NSW Population Health Survey. Each outcome was log-transformed prior to modelling, to improve the assumption of linearity. The average annual rate of change in life expectancy and population prevalence was again calculated by taking the exponent of the coefficient for the year variable.

2.1.6 Analysis of key population health indicators by Area Health Service

Key population health indicators for Area Health Services (AHS) were compared with the NSW average by assessing the overlap appropriate 95% confidence intervals (CI). When the lower bound of the 95% interval for an AHS was above the upper bound of the 95% CI for all of NSW, the AHS indicator was considered to be higher than the NSW average. Conversely, when the upper bound of the 95% CI for an AHS was below the lower bound of the 95% CI for all of NSW, the AHS indicator was considered to be less than the NSW average. There was considered to be no difference between AHS and NSW average indicators when their respective 95% CI's overlapped.

Confidence intervals for life expectancy, NSW Population Health Survey estimates and all directly age-standardised rates were calculated using the methods previously described. Although only crude rates are presented for perinatal deaths, first antenatal visit before 20 weeks gestation, premature and low birth weight babies in tables, for analysis by AHS rates were first age-standardised to the distribution of maternal age for all births (Aboriginal and non-Aboriginal) during the study period and 95% CI were calculated using the

method described by Dobson et al. (1991) Intervals used in comparisons of all other indicators were calculated assuming an approximate normal distribution

2.1.7 Analysis of indicators by Local Government Area using statistical smoothing (Bayesian smoothing methods)

Mapping cases or rates of events of interest such as rates of deaths, cases of disease, or rates of smoking, can be informative in understanding the geographical distribution of the events. However, low numbers and rates can occur if the event is rare or if the areas studied have small populations. If numbers or rates are low, then they will also be very variable, since chance events will have an undue effect on the total number. Consequently, estimates of numbers or rates may be too changeable to be reliable for most purposes. Occasionally, there may not be any cases of interest at all in an area in a particular time period and the estimated rate for that area would be zero.

More reliable estimates of numbers and rates can be obtained by extending the length of time within which the cases are counted, or by increasing the size of the areas considered, but both these methods undermine the usefulness of the data. Another option is to apply statistical smoothing methods to data collected in smaller areas and for shorter periods. Statistical smoothing methods are used to improve the estimates for individual areas by including information on events in areas which are expected to be similar (such as adjacent areas) and general variability between all areas. Smoothing has the most effect for areas where the number of cases is the lowest. Rates can be estimated even when there were no cases in an area in the relevant period of time.

In this report, Bayesian smoothing was used to adjust raw estimates by taking information into account from adjacent areas (local or spatial variability) and from the whole state (global or non-spatial variability).

For indicators such as rates of hospitalisation, rates of death and other population-based indicators, Bayesian smoothing was obtained using the convolution or Besag, York and Mollie (BYM) model (Lawson et al, 2003). This model is widely used for disease mapping. The smoothed estimates calculated are the relative risk for each area compared to NSW, i.e. the standardised incidence ratio (SIR) for hospitalisations and the standardised mortality ratio (SMR) for deaths.

For indicators which are based on binary data, such as smoking in pregnancy, attendance at antenatal care and other proportions or percentages, smoothing was obtained by modelling the data using a binomial distribution with a logit link function. Smoothed proportions incorporate both local and global information, but are not age-standardised.

The results of the Bayesian smoothing were used to determine whether the results obtained from individual areas were significantly different from the estimate of the average for all areas. The level of significance and the direction of difference from the state average is shown using '+' and '-' signs. One plus sign means that the best estimate for an area is significantly greater than the state average at the 5% level of significance; two plus signs mean that the estimate is significantly greater at the 1% level of significance. Conversely, one minus sign means that the best estimate for an area is significantly lower than the state average at the 5% level of significance and two minus signs refer to the 1% level of significance. If an area does not differ from the state, then no symbol is shown. All maps were produced using SAS® V9.1.3 (SAS, 2004)

The success of the Bayesian smoothing method depends largely on the degree of similarity between areas that are used in the calculations. In the case of Local Government Areas in NSW, similarity is very high and the method works well.

2.2 Methods used for specific chapters, topics or indicators

2.2.1 Rural and remote populations

The chapter on rural and remote populations presents a range of health indicators for NSW according to ARIA+, an enhanced Accessibility–Remoteness Index of Australia classification.

In ARIA+ the remoteness index value is based on road distance from a 'populated locality' to each of five categories of 'service centre'. Almost 12,000 populated localities in Australia have been classified. The service

centre categories are based on population size, with the smallest centres having populations of 1,000-4,999. Centres with populations of at least 1000 persons are considered to contain at least some basic level of services (for example health, education, or retail) (GISCA, 1999). Service centres with larger populations are assumed to contain a greater level of service provision. ARIA+ scores are calculated for each populated locality and then interpolated to give index values for points on a one km grid covering all Australia. The index values range from 0 to 15 and are grouped into remoteness categories. There are five classes of remoteness: major cities, inner regional, outer regional, remote and very remote (AIHW, 2004). Census Collection Districts (CDs) are then assigned ASGC remoteness categories based on the average ARIA+ score of grid points within the CD. Statistical Local Areas (SLAs), which are larger than CDs, are then classified by the proportion of the population living in CDs in each ASGC remoteness category.

2.2.2 Country of birth

In September 2008, the six countries that comprise the Former Yugoslavia are: Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Slovenia. An additional category: Former Yugoslavia, not further defined (nfd) is also included in some analyses by country of birth. Depending on the data source and the span of years, the Former Yugoslavia, not further defined (nfd) category may comprise all data concerning all six countries or only a small proportion of data that cannot be defined more precisely. Footnotes describe specific cases. Persons born in Yugoslavia comprised 1% of population of NSW and Australia at the time of the breakup of Yugoslavia in the early 1990s (ABS, 2008).

2.2.3 Socioeconomic status measures

Socioeconomic (SES) groups were constructed using the index of relative socioeconomic disadvantage (IRSD), which is one of the socioeconomic indices for areas (SEIFA) produced by the Australian Bureau of Statistics (ABS) (ABS, 1998, 2003, 2008). Non-overlapping geographical areas covering all of NSW are assigned an IRSD score calculated from ABS census data on various socioeconomic characteristics of the people living in the areas. These characteristics relate to occupation, education, non-English speaking background, Indigenous origin and the economic resources of the household.

The ABS has released IRSD scores after the last five censuses. The methods used for calculation of the IRSD index were similar in 1986, 1991 and 1996, but changed for 2001 and 2006. The major change for the 2006 IRSD was that it was created based on a person's usual area of residence rather than their location on census night. The IRSD score is an ordinal measure based on a standard score of 1000 and standard deviation of 100 for Australia, based on the index scores of all collection districts (CDs) in Australia. The areas can be ranked by IRSD score but other arithmetic comparisons using the score are not valid. Only ranks and not the scores calculated using data from different censuses, can be compared. For instance, the score for NSW was 1006 using 1996 census data, which means that the SES of NSW was slightly better than Australia as a whole. The score for NSW in 1991 was 1002; however, that does not mean that NSW in 1996 was better off than NSW in 1991 because the scores were calculated based on a socioeconomically different Australian population. Calculation of the IRSD scores for a Local Government Area involves the weighting of the indexes based on the population for the particular year.

2.2.4 Potentially avoidable mortality

The method used to calculate potentially avoidable mortality in NSW in this report is based on a method described in ANZ Atlas of avoidable mortality (Page et al. 2006), which, in turn, is a revision of the original set of conditions and methodology developed by Tobias and Jackson (Tobias and Jackson, 2001). The Atlas is an authoritative source of information on avoidable conditions for Australia and New Zealand.

Avoidable deaths are defined as those which occur before 75 years and are due to avoidable causes. Avoidable causes are those whose case fatality could be substantially reduced either by currently available health care technologies (amenable causes) or by preventing the condition from occurring in the first place (preventable causes). To simplify and make the categorisation more stable over time, each condition classified as avoidable is ascribed totally to the preventable or amenable group, depending on which type of intervention plays a greater role in making the condition 'avoidable'. Only three conditions: diabetes, ischaemic heart disease and cerebrovascular diseases have been placed equally apportioned in both groups (PHIDU, 2006).

The codes used to define avoidable mortality groups, along with the sub-categorisation can be found in the disease and procedure codes section of this report.

2.2.5 Ambulatory care sensitive conditions

The method used to calculate potentially avoidable hospitalisations used the concept of ambulatory care-sensitive (ACS) conditions. These are hospitalisations that could have been avoided through the use of preventive healthcare or early disease management given in an ambulatory setting, such as by a general practitioner or community health centre. The categories used for the ambulatory care-sensitive conditions are based on those used by the Victorian Department of Human Services (VGDHS, 2004), which have been reviewed by the Public Health Information Development Unit (PHIDU) of the Australian Institute of Health and Welfare.

The information presented in this report differs from information presented in earlier editions. In 2006 in NSW the coding of diabetes was changed to include diabetes as a primary diagnosis only, which resulted in fewer cases of diabetes and therefore chronic conditions overall. In 2007, the acute conditions of urinary tract infections were included, which increased the numbers of cases and the coding of cellulitis and was aligned with national standards.

The codes used can be found in the disease and procedure codes section of this report.

2.2.6 Diabetes-related deaths

The term 'diabetes-related death' is used in this report to refer to deaths where either diabetes was recorded as the underlying cause of death, or where diabetes was recorded as an associated cause of death and the underlying cause of death was one of a specific list of commonly recognised diabetes complications. These complications are: myocardial infarction, ischaemic heart disease*, stroke or sequelae of stroke*, heart failure*, sudden death (cardiac arrest), peripheral vascular disease, kidney disease, hyperglycaemia and hypoglycaemia (AIHW, 2005).

The reason for this approach was that, more than other disorders, diabetes often causes death indirectly because it is a strong risk factor for common causes of death such as heart, kidney disease and stroke. These complications are likely to appear as the underlying cause of death, the basis for official mortality statistics. As such, the contribution of diabetes to death rates in Australia is underestimated unless it is included as an associated cause of death (AIHW, 2005).

The concept of 'diabetes-related deaths' is based on the definition of 'death related to diabetes' used in the United Kingdom Prospective Diabetes Study since 1998. The UKPDS definition has been modified by diabetes specialists on the National Diabetes Data Working Group, associated with the AIHW, to include additional conditions (marked above with an asterisk*) (AIHW, 2005).

2.2.7 Psychological distress

The K10 (Kessler and Mroczek, 1992, 1994; Kessler et al., unpublished) was included in the 1997, 1998, 2002, 2005, 2006 and 2007 NSW Population Health Surveys as a relatively short measure of psychological distress that allowed comparison against international survey data and validation against concurrent diagnostic data in the National Survey of Mental Health and Wellbeing (NSMHW) (ABS, 1997; Andrews and Slade, 2001).

The K10 is currently being used in a series of surveys similar to the Australian NSMHW, in 20 countries, under the auspices of the World Health Organisation (WHO). These surveys have a total sample size of about 200,000. The WHO regions surveyed include North America (Canada and the United States), Latin America (Brazil, Colombia, Mexico and Peru), Europe (Belgium, France, Germany, Italy, The Netherlands, Spain and The Ukraine), the Middle East (Israel), Africa (South Africa) and Asia (China, India, Indonesia, Japan and New Zealand) (Kessler et al., 2000).

The K10 measure is a ten item self-report questionnaire intended to yield a global measure of 'psychological distress' based on questions about the level of restlessness, anxiety and depressive symptoms in the most recent four-week period. It is designed to span the range from few or minimal symptoms through to extreme levels of distress, which is an essential feature of an instrument for use in population studies. Thus the K10 contains both low-threshold items, that many people may endorse, through to high-threshold items that very few will endorse. Overall, the item-response scale is designed to yield most precision around the 90th to 99th percentile of the general population.

For each item there is a five level response scale based on the amount of time (from none through to all) during a four-week period when the person experienced the particular problem. In NSW, there are also four follow-up questions, that aim to quantify the level of disability resulting from the feelings of distress; the health service usage resulting from the distress; and the extent to which the distress is believed to be mainly due to physical health problems.

Scoring of the raw questionnaire assigns between 1 to 5 points to each symptom in the direction of increasing problem frequency. Thus, the raw score range is from 10 (all responses to all questions are 'none of the time') through to 50 (all responses to all questions are 'all of the time'). Low scores indicate low levels of psychological distress and high scores indicate high levels of psychological distress (ABS, 2003).

The creators of the K10 have not yet published details on scoring the scale and there has been no international standard for determining cut off points for low, medium and high levels of psychological distress (ABS, 2003). Various interpretations of scoring were used in the past in Australia and worldwide. Recently and following the advice of the K10 originators, NSW adopted a four level approach to illustrate prevalence and severity. The four levels are given in Table 2.

TABLE 2: K10 SCORE AND LEVEL OF PSYCHOLOGICAL DISTRESS

K10 score	Level of psychological distress
10-15	low
16-21	moderate
22-29	high
30-35	very high

These cut-off scores were previously used in the 2000 Health and Wellbeing Survey (conducted in Western Australia) and the ABS 2001 National Health Survey Summary of Results Publication (ABS, 2003). The adoption of the above scores in NSW ensures comparability of the NSW results with national and, increasingly, international data.

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APPENDIX 3 - DISEASE AND PROCEDURE CODES AND GROUPS USED IN THIS REPORT

3.1 International Classification of Disease (ICD) codes

DISEASE GROUP	ICD-10 AND ICD-10-AM CODES USED FROM JULY 1998
Acute lower respiratory infection	J10-J22
Acute respiratory infection	J00-J22
Acute upper respiratory infection	J00-J06
Ambulatory care sensitive conditions	See separate table
Asthma	J45,J46
Burns and scalds	X00-X19
Cancer (all)	C00-C97
Cancer: bone	C40-C41
Cancer: brain	C71
Cancer: breast	C50
Cancer: cervical cancer	C53
Cancer: colorectal	C18-C21
Cancer: connective tissue	C47, C49
Cancer: Hodgkin's disease	C81
Cancer: leukaemia	C91-C95
Cancer: lung	C33-C34
Cancer: melanoma	C43
Cancer: Non-Hodgkin Lymphoma	C82-C85
Cancer: pancreas	C25
Cancer: prostate	C61
Cancer: testis	C62
Cancer: thyroid	C73
Cancer: unknown primary	C26,C39,C48,C76,C80
Cardiac arrhythmia	I47-I49
Cardiomyopathy	I42-I43
Cardiovascular diseases	I00-I99
Chronic diseases of tonsils & adenoids	J35
Chronic obstructive pulmonary disease	J41-J44
Chronic respiratory disease	J41-J46
Coronary heart disease	I20-I25
Cutting or piercing injury (unintentional)	W25-W29,W45
Diabetes	E10-E14, O24
Diabetes deaths	E10-E14 - Diabetes-related deaths: Underlying cause E10-E14, or associated cause E10-E14 with underlying cause E16.1-E16.2, I20-I22, I24-I25, I46, I50, I60-I64, I69.0-I69.4, I70-I74, N01-N28, R73
Diabetes: Gestational	O24.4
Diabetes: Other	E12, E13, E14, E12, O24.2, O24.3, O24.9
Diabetes: Type 1	E10, O24.0
Diabetes: Type 2	E11, O24.1
Dialysis	Z49
Digestive system diseases	K00-K93
Disorders of nose and nasal sinuses	J30-J34

DISEASE GROUP	ICD-10 AND ICD-10-AM CODES USED FROM JULY 1998
Drowning	W65-W74, V90, V92
Endocrine diseases	E00-E89
Exposure to unspecified factors injury	X59
Falls	W00-W19
Genitourinary diseases	N00-N99
Heart failure	I50
Influenza and pneumonia	J10-J18
Injury and poisoning (all external cause codes)	V00-Y89
Interpersonal violence	X85-Y09, Y87.1
Kidney disease	N01-N28
Maternal, neonatal and congenital causes	O00-Q99
Mental disorders	F00-F99
Mental disorders - adult personality disorders	F60-F69
Mental disorders-behavioural: due to physical factors	F50-F59
Mental disorders-behavioural: onset in child	F90-F98
Mental disorders-due to psychoactive substance	F10-F19
Mental disorders-mood disorders	F30-F39
Mental disorders-neurotic, stress-related	F40-F48
Mental disorders-organic	F00-F09
Mental disorders-psychological development disorders	F80-F89
Mental disorders-retardation	F70-F79
Mental disorders-schizophrenia	F20-F29
Mental disorders-unspecified	F99
Motor vehicle crash injury	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.6, V20-V79, V80.3-V80.5, V81.0, V81.1, V82.0, V82.1, V83, V84-V86, V87.0-V87.5, V87.7-V87.8, V88.0-V88.5, V88.7-V88.8, V89.0, V89.2, Y85
Musculoskeletal	M00-M99
Myocardial infarction	I21-I22
Neoplasms - malignant	C00-C99
Nervous and sense disorders	G00-H95
Nonspecific lymphadenitis	I88
Pericarditis	I01.0, I09.2, I30-I32
Peripheral vascular disease	I70-I74
Pneumonitis due to solids and liquids	J69
Poisoning (unintentional)	X40-X49
Potentially avoidable deaths	See separate table
Respiratory diseases	J00-J99
Stroke	I60-I69, G45,G46
Stroke (selected)	I60-I64, I69.0-I69.4
Struck by/against injury	W20-W22, W50-W52
Suicide / Self harm	X60-X84, Y87.0
Symptoms and other ill defined conditions	R00-R99
Threats to breathing injury (unintentional)	W75-W84
Varicose veins	I83-I86
Note: External cause codes: ICD-10 or ICD-10-AM codes which begin with U-Y are external cause codes.	

3.2 International Classification of Disease (ICD) procedure codes

PROCEDURE	ICD-10 AND ICD-10-AM CODES USED FROM JULY 1998
Carotid endarterectomy	33500-00 in procedure codes 1-5
Coronary artery bypass graft	38497, 38500, 38503, 90201
Coronary artery bypass angioplasty/stent	35310, 35304-00, 30305-00
CT scan of the brain	56001-00, 56007-00, 56010-02, 56010-03 in procedure codes 1-5 with I60-I69 in diagnosis codes 1-11
Dental: Removal or restoration of teeth (procedures)	97311-97327, 97411-97679, 97386-00, 97387-00, 97388-00 or procedure block 457-458, 462-473
Revascularisation procedures	38497, 38500, 38503, 90201, 35310, 35304-00, 30305-00

3.3 International Classification of Disease (ICD) codes for potentially avoidable deaths

DISEASE GROUP	CONDITIONS	ICD_10 CODES
Enteritis and other diarrhoeal diseases	Diarrhoeal diseases	A00-A09
Infections	Tuberculosis	A15-A19, B90
Childhood vaccine-preventable diseases	Diphtheria, whooping cough, tetanus, polio, Hib, measles, rubella	A35-A37, A49.1, A49.2, A80, B01, B05-B06, J11
Infections	Selected invasive bacterial and protozoal infections	A38-A41, A46, A48.1, B50-B54, G00, G03, J13-J15, J18, L03
Infections	Sexually transmitted diseases except HIV/AIDS	A50-A64, M02.3, N34.1, N70-N73, N75.0, N75.1, N76.4, N76.6, O00
Infections	HIV/AIDS	B20-B24
Infections	Hepatitis	B15-B19
Infections	Viral pneumonia and Influenza	J10, J12, J17.1, J21
Neoplasms	Lip, oral cavity and pharynx	C00-C14
Neoplasms	Oesophagus	C15
Neoplasms	Stomach	C16
Neoplasms	Colorectal	C18-C21
Neoplasms	Liver	C22
Neoplasms	Lung	C33-C34
Neoplasms	Melanoma of skin	C43
Neoplasms	Nonmelanotic skin cancer	C44
Neoplasms	Breast	C50
Neoplasms	Uterus	C54-C55
Neoplasms	Cervix	C53
Neoplasms	Bladder	C67
Neoplasms	Cancer of testis	C62
Neoplasms	Eye cancer	C69
Neoplasms	Thyroid	C73
Neoplasms	Hodgkins disease	C81
Neoplasms	Leukemia	C91.0, C91.1
Neoplasms	Benign	D10-D36
Nutritional, endocrine and metabolic conditions	Nutritional deficiency anaemia	D50-D53
Nutritional, endocrine and metabolic conditions	Thyroid disorders	E00-E07
Nutritional, endocrine and metabolic conditions	Diabetes	E10-E14

ICD codes for potentially avoidable deaths (continued)

DISEASE GROUP	CONDITIONS	ICD_10 CODES
Nutritional, endocrine and metabolic conditions	Adrenal disorders	E24, E25, E27
Newborn screening conditions	Congenital hypothyroidism, (coded under thyroid disorders), PKU, galactosaemia	E70.0, E74.2
Drug use disorders	Alcohol related disease	F10, I42.6, K29.2, K70
Drug use disorders	Illicit drug use disorders	F11-F16, F18-F19
Neurological disorders	Epilepsy	G40-G41
Ear and mastoid process diseases	Ear infections- Otitis media and mastoiditis	H65-H70
Cardiovascular diseases	Rheumatic and other valvular heart disease	I01-I09
Cardiovascular diseases	Hypertensive heart disease	I11
Cardiovascular diseases	Ischaemic heart disease	I20-I25
Cardiovascular diseases	Cerebrovascular diseases	I60-I69
Cardiovascular diseases	Aortic aneurysm	I71
Genitourinary disorders	Nephritis and nephrosis	I12-I13, N00-N09, N17-N19
Genitourinary disorders	Obstructive uropathy & prostatic hyperplasia	N13, N20-N21, N35, N40, N99.1
Respiratory diseases	DVT with pulmonary embolism	I26, I80.2
Respiratory diseases	COPD	J40-J44
Respiratory diseases	Asthma	J45-J46
Respiratory diseases	Upper respiratory tract infection	J00-J06
Digestive disorders	Peptic ulcer disease	K25-K28
Digestive disorders	Acute abdomen, appendicitis, intestinal obstruction, cholecystitis / lithiasis, pancreatitis, hernia	K35-K38, K40-K46, K80-K83, K85-K86, K91.5
Digestive disorders	Chronic liver disease (excluding alcohol related disease)	K73, K74
Osteomyelitis and other osteopathies of bone	Skin, bone and joint infections	M86, M89-M90
Maternal & infant	Birth defect	H31.1, P00, P04, Q00-Q99
Complication of pregnancy , labor or the puerperium	Complications of pregnancy	O01-O99
Maternal & infant	Complications of perinatal period	P03, P05-P95
Sudden infant death syndrome	SIDS	R95
Unintentional injuries	Road traffic injuries, other transport injuries	V01-V04, V06, V09-V80, V87, V89, V99
Unintentional injuries	Accidental poisonings	X40-X49
Unintentional injuries	Falls	W00-W19
Unintentional injuries	Fires, burns	X00-X09
Unintentional injuries	Drownings (swimming)	W65-W74
Intentional injuries	Suicide (coded as Intentional self-harm)	X60-X84, Y87.0, Y10-Y34
Intentional injuries	Violence	X85-Y09, Y87.1
Intentional injuries	War	Y36
Iatrogenic conditions	Complications of treatment	Y60-Y84

3.4 International Classification of Disease (ICD) codes for Ambulatory Care Sensitive (ACS) conditions

DISEASE GROUP	ICD-10-AM CODES	FURTHER SELECTION INFORMATION
Vaccine-preventable		
Influenza and pneumonia	J10, J11, J13, J14, J15.3, J15.4, J15.7, J15.9, J16.8, J18.1, J18.8	In any diagnosis field (1-5); exclude people under 2 months; ICD-9-CM: exclude cases with secondary diagnosis of 282.6; ICD-10-AM: exclude cases with secondary diagnosis of D57
Other vaccine preventable	A35, A36, A37, A80, B05, B06, B16.1, B16.9, B18.0, B18.1, B26, G00.0, M01.4	In any diagnosis field (1-5)
Chronic		
Diabetes with complications	E10.0-E10.8, E11.0-E11.8, E12.0- E12.8, E13.0-E13.8, E14.0-E14.8	Principal diagnosis only
Nutritional deficiencies	E40-E43, E55.0, E64.3	Principal diagnosis only
Iron deficiency anaemia	D50.1-D50.9	Principal diagnosis only
Hypertension	I10, I11.9	Principal diagnosis only; ICD-9-CM: exclude cases with procedure code of 35, 36, 37.5, 37.6, 37.7, 37.8; ICD-10-AM: exclude cases with procedures in blocks 600-693, 705-707, 717 and procedure codes 38721-00, 38721-01, 90226-00
Congestive heart failure	I11.0, I50, J81	Principal diagnosis only; ICD-9-CM: exclude cases with procedure code of 35, 36, 37.5, 37.6, 37.7, 37.8; ICD-10-AM: exclude cases with procedures in blocks 600-693, 705-707, 717 and procedure codes 38721-00, 38721-01, 90226-00
Angina	I20, I24.0, I24.8, I24.9	Principal diagnosis only; ICD-9-CM: exclude cases with procedure codes 01 to 86.99; ICD-10-AM: exclude cases with procedure codes in blocks 1-1779
Chronic obstructive pulmonary disease	J41-J44, J47, (J20)	Principal diagnosis only; ICD-9-CM: 466.0 only with secondary diagnosis of 491, 492, 494, 496; ICD-10-AM: J20 only with secondary diagnosis of J41, J42, J43, J44, J47
Asthma	J45, J46	Principal diagnosis only
Acute		
Dehydration and gastroenteritis	E86, K52.2, K52.8, K52.9	Principal diagnosis only
Convulsions and epilepsy	G40, G41, O15, R56	Principal diagnosis only
Ear, nose and throat infections	H66, H67, J02, J03, J06, J31.2	Principal diagnosis only
Dental conditions	A69.0, K02-K06, K08, K09.8, K09.9, K12, K13	Principal diagnosis only
Perforated/bleeding ulcer	K25.0- K25.2, K25.4-K25.6, K26.0-K26.2, K26.4-K26.6, K27.0-K27.2, K27.4-K27.6, K28.0-K28.2, K28.4-K28.6	Principal diagnosis only
Ruptured appendix	K35.0	In any diagnosis field (1-5)
Urinary tract infections including pyelonephritis	N10, N11, N12, N13.6, N39.0	Principal diagnosis only
Pelvic inflammatory disease	N70.0, N70.1, N70.9, N73, N74.0-N74.1, N74.2-N74.8	Principal diagnosis only
Cellulitis	L03, L04, L08.0, L08.8, L08.9, L88, L98.0, L98.3	Principal diagnosis only; ICD-9-CM: exclude cases with procedure codes 01 to 86.99 except 86.0 where it is the only listed procedure; ICD-10-AM: exclude cases when any procedure performed from blocks 1-1779 except when the following procedures done as the only ones: blocks: 1604-1606, 1608 and procedures: 90660-00, 30207-00, 30676-00, 30679-00, 34530-01 and 47912-00.
Gangrene	R02	In any diagnosis field (1-5)

3.5 Conditions for communicable disease groups

COMMUNICABLE DISEASE GROUP	CONDITION
Chlamydia trachomatis	Chlamydia trachomatis (non LGV)
Gastrointestinal diseases	Botulism
Gastrointestinal diseases	Cholera
Gastrointestinal diseases	Cryptosporidiosis
Gastrointestinal diseases	Giardiasis
Gastrointestinal diseases	Haemolytic Uraemic Syndrome (HUS)
Gastrointestinal diseases	Hepatitis A
Gastrointestinal diseases	Hepatitis E
Gastrointestinal diseases	Listeriosis
Gastrointestinal diseases	Salmonella infection
Gastrointestinal diseases	Shigellosis
Gastrointestinal diseases	Typhoid
Gastrointestinal diseases	Verotoxin-producing Escherichia coli (E. coli)
Gastrointestinal diseases	Other Gastrointestinal diseases
Hepatitis C	Hepatitis C
Mosquito-borne diseases	Barmah Forest
Mosquito-borne diseases	Ross River
Mosquito-borne diseases	Other arboviral diseases
Other	Anthrax
Other	Brucellosis
Other	Leprosy
Other	Leptospirosis
Other	Meningococcal disease
Other	Plague
Other	Psittacosis
Other	Q Fever
Other	Lyssavirus

COMMUNICABLE DISEASE GROUP	CONDITION
Other	Rabies
Other	Other communicable diseases
Other blood-borne and sexually transmitted diseases	Chancroid
Other blood-borne and sexually transmitted diseases	Gonorrhoea
Other blood-borne and sexually transmitted diseases	Hepatitis B
Other blood-borne and sexually transmitted diseases	Hepatitis D
Other blood-borne and sexually transmitted diseases	Human immunodeficiency virus (HIV) infection
Other blood-borne and sexually transmitted diseases	Syphilis
Other blood-borne and sexually transmitted diseases	Other blood-borne and sexually transmitted diseases
Respiratory diseases	Influenza
Respiratory diseases	Legionellosis
Respiratory diseases	Pneumococcal disease (invasive)
Respiratory diseases	Tuberculosis
Respiratory diseases	Other respiratory diseases
Vaccine-preventable diseases	Adverse event following immunisation
Vaccine-preventable diseases	Diptheria
Vaccine-preventable diseases	Haemophilus influenza type b
Vaccine-preventable diseases	Measles
Vaccine-preventable diseases	Mumps
Vaccine-preventable diseases	Pertussis (Whooping cough)
Vaccine-preventable diseases	Rubella (German measles)
Vaccine-preventable diseases	Tetanus
Vaccine-preventable diseases	Other vaccine-preventable diseases

APPENDIX 4 - ABBREVIATIONS USED IN THIS REPORT

ABS	Australian Bureau of Statistics
ACAM	Australian Centre for Asthma Monitoring
ACIR	Australian Childhood Immunisation Register
ACS	Ambulatory care sensitive conditions
AGPS	Australian Government Printing Service
AHR	Airway hyper-responsiveness
AHS	NSW Area Health Service or health area
AHTAC	Australian Health Technology Advisory Committee
AIDS	Acquired Immunodeficiency Syndrome
AIHW	Australian Institute of Health and Welfare
APDC	NSW Admitted Patient Data Collection, previously called Inpatients Statistics Collection (see Methods section)
ARIA+	Accessibility/Remoteness Index for Australia-plus
ARMCANZ	Agricultural and Resource Management Council of Australia and New Zealand
ASGC	Australian Standard Geographical Classification
ASHR	Australian Study of Health and Relationships
BFv	Barmah Forest virus
BMI	Body mass index
BSP	Back-scattering coefficient for particles
CATI	Computer Assisted Telephone Interviewing
CABG	Coronary artery bypass graft
CI	Confidence interval
COB	Country of birth
COPD	Chronic obstructive pulmonary disease
DALY	Disability-adjusted life years
DEC	Department of Environment and Conservation
dmft	The number of deciduous (infant) teeth which are decayed, missing or have been filled due to caries (that is, tooth decay)
DMFT	The number of permanent (adult) teeth which are decayed, missing or have been filled due to caries (that is, tooth decay)
DTP	Diphtheria-tetanus-pertussis combined vaccine (also called triple antigen vaccine)
ED	Emergency Department
ERP	Estimated resident population
ESRD	End-stage renal disease
F	Female
HARP	Health and Air Research Program
HIV	Human immunodeficiency virus
HOIST	Health Outcomes Information Statistical Toolkit (see Methods section)
ICD-9	International Classification of Diseases, 9th revision
ICD-9-CM	International Classification of Diseases, 9th revision, Clinical Modification
ICD-10	International Classification of Diseases, 10th revision
ICD-10-AM	International Classification of Diseases, 10th revision, Australian Modification
IDDM	Insulin-dependent diabetes mellitus
IRMRC	NSW Injury Risk Management Research Centre

IRSD	Index of relative socioeconomic disadvantage (a SEIFA index)
ISC	NSW Inpatients Statistics Collection or Admitted Patient Data Collection (see Methods section)
LGA	Local Government Area
LL 95% CI	Lower limit of 95% confidence interval for rate
M	Male
microg/dL	Micrograms per decilitre
mg/L	Milligrams per litre
MMR	Measles-mumps-rubella combined vaccine
NAC	National Asthma Campaign
NATSEM	National Centre for Social and Economic Modelling
NDD	Notifiable Diseases Database (see Methods section)
NHS	Australian Bureau of Statistics National Health Survey (see Methods section)
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NIDDM	Non-insulin-dependent diabetes mellitus
No.	Number
NO_2	Nitrogen dioxide
NSW	New South Wales
NSWHS	New South Wales Health Surveys
OECD	Organization for Economic Cooperation and Development
PM10	Particulate matter <10 microns in diameter
PM2.5	Particulate matter <10 microns in diameter ppm parts per million
RPI	Regional pollutant index
RRv	Ross River virus
SEIFA	Australian Bureau of Statistics Socio-Economic Indices for Areas
SES	Socio-Economic status
SLA	Statistical Local Area
SIDS	Sudden Infant Death Syndrome
STIs	Sexually transmitted infections
UL 95% CI	Upper limit of 95% confidence interval for rate
UVR	Ultraviolet radiation
WHO	World Health Organization
YLD	Years of healthy life lost due to disability
YLL	Years of life lost due to premature death

APPENDIX 5 - GLOSSARY OF TERMS

Admission	The formal process, using registration procedures, under which a person is accepted by a hospital or an area or district health service facility as an inpatient.
Aetiologic fraction	A measure of the amount of disease associated with an exposure within a population. In a situation in which exposure to a given factor is believed to be a cause of a given disease, the population attributable fraction (or population aetiologic fraction) is the proportion of the disease in the total population that can be attributed to exposure to the factor.
Age-adjusted rate	Rate adjusted to take account of differences in age composition when rates for different populations are compared.
Age-specific rate	Rate for a specified age group. Both numerator and denominator refer to the same age group.
Ambulance attendance	A response by the ambulance staff to a particular request for provision of care. Attendances are classified in several categories such as: cardiac, medical, surgical, trauma and routine attendance. Ambulance services mean services relating to the work of rendering first aid to and the transport of, sick and injured persons.
Ambulatory care sensitive conditions	Those for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered through primary health care.
Associated cause of death	See UNDERLYING cause of death.
Contact	A person who has been in association with an infected person or a contaminated environment that may provide an opportunity to acquire the infection.
Confidence interval	The computed interval with a given probability (for example, 95 per cent) that the true value of a variable such as a rate, mean or proportion, is contained within the interval.
Crude death rate	An estimate of the proportion of a population that dies in a specified period. It is calculated by dividing the number of deaths in a specified period by the number at risk during that period (typically per year).
Day-only admission	A person who is admitted to hospital and leaves on the same calendar day.
Employed persons	All civilians aged 15 years and over who worked for pay or profit or worked without pay in a family business or farm.
Fertility rate	Number of live births in an area during a year divided by the mid-year female population aged 15-44 in the same area in the same year.
Fetal death	Delivery of a child who did not, at any time after delivery, breathe or show any other evidence of life, such as a heartbeat.
Hospital separation or Hospitalisation	see SEPARATION
Illicit drugs	The following drugs used for non-medicinal purposes: speed, cocaine, sleeping pills or tranquilisers, marijuana, analgesics, heroin, petrol sniffing, other inhalants, hallucinogens, designer drugs and injecting of any illegal drug.
Incidence	The rate at which new cases of a disorder occur in the population: that is, the number of new cases in a specified period, divided by the population at risk of the disorder in that period.
Infant death	The death of a child before its first birthday.

Labour force	All persons aged 15 years and over who are employed and unemployed.
Participation rate	The labour force expressed as a percentage of the civilian population aged 15 years and over.
Life expectancy	The average number of years of life remaining to a person at a particular age.
Live birth	The birth of a child who after delivery, breathes or shows any other evidence of life, such as heartbeat. For calculation of perinatal death rates, includes only infants weighing at least 400 grams at birth or, where birth-weight is unknown, of at least 20 weeks gestation.
Neonatal death	Death within 28 days of birth of any child who after delivery, breathed or showed any other evidence of life, such as a heartbeat.
Notification	Certification in an approved form of a disease listed in the Schedule 3 of Notifiable Diseases of the NSW Public Health Act 1991. In this report, notifications concern cases of communicable diseases reported by general practitioners, hospitals and pathology laboratories to the Director General of the NSW Department of Health.
Patient presentation at emergency department	Occurs following the arrival of the patient at the emergency department and is the earliest occasion of the patient being registered clerically or triaged. The patient may be subsequently provided with a service by a treating medical officer or nurse and a provisional diagnosis is recorded. A 'presentation' is equal to a 'visit' or an 'attendance' at the emergency department.
Perinatal death	A fetal or neonatal death.
Prevalence	The number of people with a disease at a given time (point prevalence) or in a specified period (period prevalence), divided by the number of people at risk from that disease.
Principal diagnosis	The first ICD-9 or ICD-10 coding variable reported on the hospital separation form. It means the final diagnosis that best accounts for inpatient care.
Rate ratio	The ratio of two rates: for example, the rate of disease in one population group divided by the rate in another population group.
Scheduled medical condition	Medical conditions to be notified under the provisions of the NSW Public Health Act 1991.
Separation	The formal process whereby an inpatient leaves a hospital or other area health service facility after completing an episode of care. For example, a discharge to home, discharge to another hospital or nursing home, or death.
Standardised rate	see AGE-ADJUSTED RATE
Underlying cause of death	The primary disease or injury causing the death. It is listed on a death certificate together with other diseases or injuries, which are classified as associated causes. These are all other conditions, diseases or injuries that were considered to have contributed to the death.
Unemployed	Persons aged 15 years and over who were not employed and who were actively seeking work, or waiting to be called back to a job from which they had been stood down.
Unemployment rate	The number of unemployed expressed as a percentage of the labour force (that is, employed and unemployed).

APPENDIX 6 - INDEX

Since this document focuses on NSW, organisations and publications officially starting with 'NSW...' or 'New South Wales' have been indexed under the words that follow: e.g. for 'NSW Divisions of General Practice' see 'Divisions of General Practice'.

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vegetable consumption 30
verotoxigenic Escherichia coli (VTEC) infection notifications 100

W

water fluoridation 96

Y

youth, *see* also children
overweight and obesity 30
psychological distress 94
teenage pregnancy 68

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