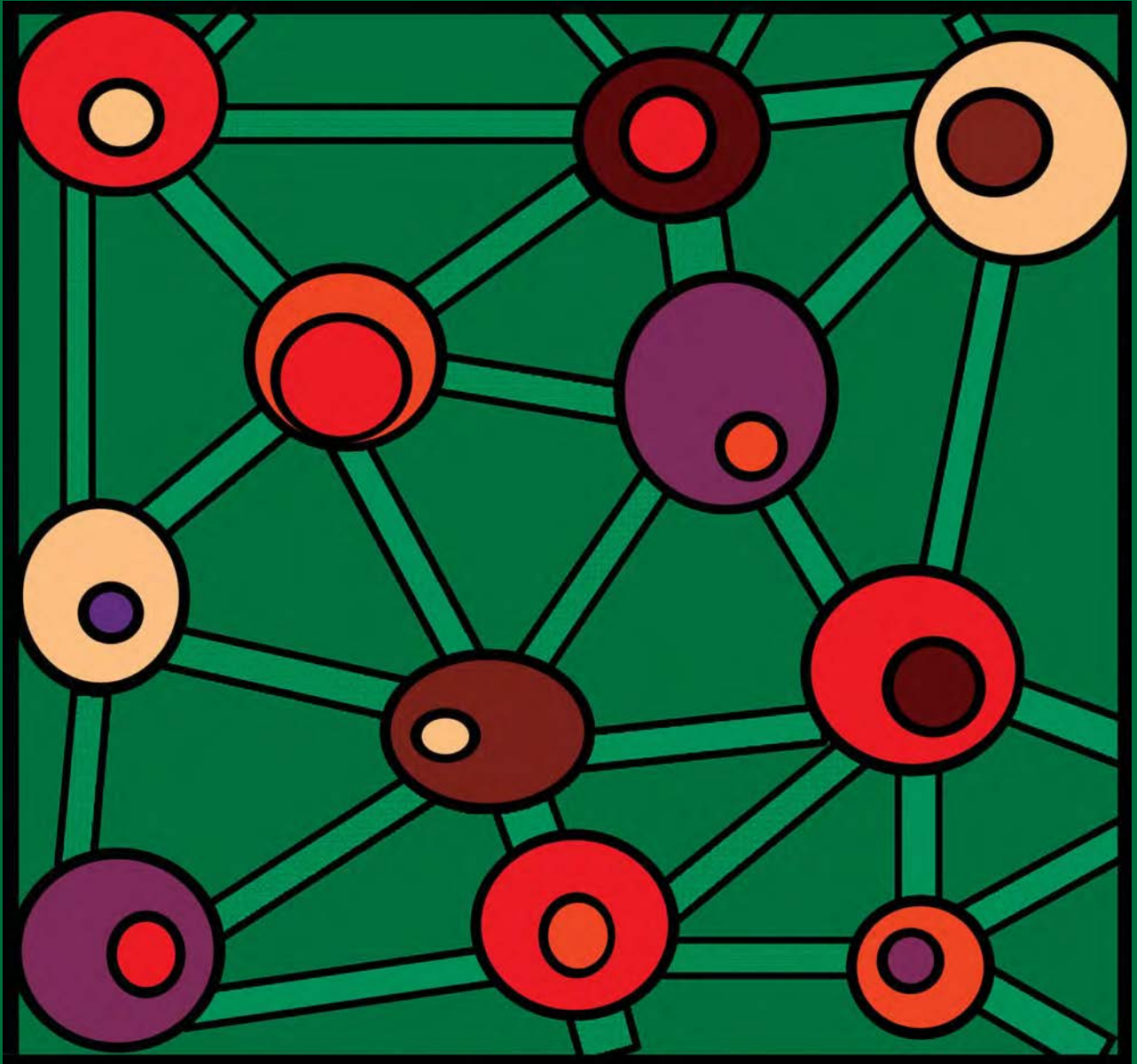


The health of the people of New South Wales



Report of the Chief Health Officer 2006

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Foreword

This is the sixth edition of the report: *The health of the people of NSW—Report of the Chief Health Officer*. The report gives a comprehensive picture of health in New South Wales, Australia, which will inform policy and planning for population health programs in our State.

Population health programs aim to promote health, create healthy environments, enable individuals and communities to make healthy choices, and reduce differences in health among population groups. These programs focus on identifying health risks and developing ways to eliminate or reduce exposure to these risks. Population health programs provide opportunities not only to improve health but also, through prevention, to reduce the demand for acute services, such as emergency department services and inpatient care. Nations across the world are renewing their commitment to population health approaches, in recognition of the likely health system costs of population ageing and chronic disease, and the potential impacts of emerging diseases such as SARS and avian influenza.

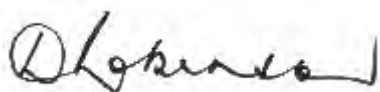
This sixth edition of the report features new maps of population and health outcomes by local government area, including population change between 2005 and 2025, smoking in pregnancy, and avoidable hospitalisations; inclusion of projections to 2015 for hospitalisations and deaths; inclusion of population pyramids for each local government area for 2005 and 2025; inclusion of indicators by NSW Divisions of General Practice; inclusion of data on childhood obesity for the first time; inclusion of new data on burden of disease, including the relative burden of 14 health risk factors; enhancements to the chapter on diabetes including comparisons of Type 1 and Type 2 diabetes and diabetes complications; inclusion of long-term trends in influenza and pneumonia deaths and hospitalisations; and enhancements to the Aboriginal Health chapter, including immunisation of Aboriginal infants and expenditure on Aboriginal health programs.

Some of the public health successes reported in this edition are: life expectancy at birth continues to increase now 78.9 years for males and 83.7 years for females; immunisation rates in Aboriginal infants have increased to 88%; smoking rates continue to fall in both adults (20%) and teenagers (9%); cardiovascular disease death rates continue to decline to 39% of all deaths; cancer death rates continue to fall and cancer survival continues to increase with around 63% of people diagnosed with cancer in NSW alive five years later; injury and poisoning death and hospitalisation rates continue to decrease; and illicit drug and alcohol use in teenagers continues to fall.

However, there are still improvements that need to be made including: obesity and overweight rates continue to increase with more than 50% of the population classified as overweight or obese; fall injury rates continue to increase in people aged 65 years and over; diabetes prevalence continues to increase (now 8% in males and 7% in females); sexually transmitted infections are on the increase; and there is a widening gap between the highest and lowest socioeconomic groups, and between health in urban, rural and remote populations in many health indicators.

I am delighted to see this evolution in the report, and applaud the technical innovation, ingenuity and hard work that has contributed to its production. New information in this report has been developed to support emerging bodies of work for NSW Health including *Healthy People 2010: The population health plan for New South Wales, Fit for the Future—the futures planning initiative*, the *State Health Plan 2006–2010*, the NSW Health contribution to the *NSW State Plan—A New Direction*, and the NSW contribution to the Australian Better Health Initiative.

I am keen to further develop and strengthen links between epidemiological findings, such as those presented in this report, and their application in health policy and planning. To that end, I will be delighted to receive feedback from you about how you used this report, and how future editions can be enhanced.



Dr Denise Robinson

Deputy Director-General, Population Health and Chief Health Officer

December, 2006.

About this report

This report is the sixth in a series that began in 1996. This is also, therefore, the tenth anniversary of reports of *The health of the people of New South Wales*. The report provides an overview of the health of the people of NSW, presents trends in key health indicators, demonstrates health inequalities, and highlights emerging health priorities and new health data sources. It is intended for a wide variety of users, including public health practitioners, planners, policy analysts, researchers, students and health consumers.

This edition of the report contains information on almost 300 population health indicators, which are available in the online (Web) version of the 2006 report. About half of these indicators are presented in the printed 2006 version. Most of the indicators have been updated from the 2004 Report, but there is also of new information, including analysis by various geographical subdivisions, such as Divisions of General Practice and small area analyses, projections to 2015 for hospitalisations and deaths, and enhancements to the Aboriginal Health and other chapters.

The latest available data are presented, including hospitalisation data for 2004-05, death data for 2004, NSW Health Survey and NSW School Student Health Behaviours Survey data for 2005, communicable diseases data for 2005, and emergency department data for 2006. The 2006 report uses the Australian standard population based on the 2001 Census for calculating age-standardised rates for comparing trends over time. Indicators analysed by the health area boundaries in NSW follow the boundaries which came into effect on 1 January 2005. Geographical areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score. Socioeconomic Indices for Areas (SEIFA) based on the 2001 Census have been used in the report.

Content

The report has four sections: Determinants of health, Burden of disease, Health inequalities and Health priority areas.

Each of the four sections of the report is divided into several chapters.

Section One, Determinants of health: includes chapters on the NSW population, social determinants of health, the environment, and health-related behaviours. The social determinants of health chapter provides updated data on income, social welfare benefits, crime rates and socioeconomic scores by the new health area boundaries in NSW. The chapter on the environment updates indicators of air and water quality and includes data on sources of drinking water used in urban and rural areas, unflued gas and wood heaters, and healthy living practices in Aboriginal communities in NSW. The health-related behaviours chapter presents updates on the key health risk factors of smoking, sun protection, physical activity, obesity and overweight, nutrition and alcohol consumption and includes information sexual health behaviours and illicit drug use.

Section Two, Burden of disease: presents information about the major causes of disease burden currently in NSW, life expectancy, death rates, causes of death and causes of hospitalisation and international comparisons of life expectancy, infant mortality, self-rated health status, and ambulatory care sensitive conditions. Arthritis and musculoskeletal conditions, and dementia are also included there.

Section Three, Health inequalities: examines differentials in health among population groups. Chapters examine inequalities among Aboriginal and Torres Strait Islander peoples, including the health of Aboriginal people in custody, overseas-born people, NSW trends in the burden or mortality by socioeconomic groups and inequalities in rural and remote populations associated with the degree of remoteness from major service centres, using the ARIA+ index.

Section Four, Health priority areas: presents recent information on key health issues including cardiovascular diseases, diabetes mellitus, cancer, respiratory disease, injury and poisoning, mental health, oral health, pregnancy and the newborn period, and communicable diseases. There are numerous new indicators, especially in the first two chapters and a more concise presentation of information throughout this section.

Sources and methods

This report uses data from a wide variety of sources. Most data sets were accessed and analysed via the Health Outcomes Information Statistical Toolkit (HOIST) datamart. Descriptions of the data sets, details of the analytic methods used, and guidance on how to interpret charts, are given in the Methods chapter.

Web version

The web (HTML) version of this report includes downloadable version of the charts and data tables. These are provided to facilitate re-use of the information contained in the report. You are encouraged to use these downloadable files in other documents or presentations, provided that no changes to the data are made and that the source is acknowledged. Please note that commercial use or resale of these downloadable files or any other information contained in this report is prohibited. The Web version of the report will also be updated regularly so that it reflects the most recently available data.

Contributors

The preparation of *The health of the people of New South Wales-Report of the Chief Health Officer, 2006*, 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 within the Population Health Division, as well as other branches of the Department and external groups. The following list indicates the broad roles played by the many contributors to this report.

FROM THE CENTRE FOR EPIDEMIOLOGY AND RESEARCH:

Project management:

Helen Moore, Hanna Noworytko and Jill Kaldor.

Editors:

Helen Moore, Hanna Noworytko and Jill Kaldor.

Programming infrastructure:

Jill Kaldor, Tim Churches, Mark Cerny and Allison Low.

Data analysis and/or biostatistical advice:

Mark Cerny, Jill Kaldor, Hanna Noworytko, Claire Monger (Centre for Chronic Disease Prevention and Health Advancement), Helen Moore, Bruce Tabor, Suzanne Schindeler, Diane Hindmarsh, Louisa Jorm, Tim Churches, Darren Mayne (South Eastern Sydney and Illawarra Area Health Service), Robin Turner, Kim Lim, Behnoosh Khalaj and Alan Willmore.

Data management:

Alan Willmore and Mark Cerny.

Text:

Helen Moore, Hanna Noworytko, Helen Gardiner (Centre for Aboriginal Health), Bruce Tabor, Suzanne Schindeler, Claire Monger, Lee Taylor, Jill Kaldor, Margo Eyeson-Annan, Louisa Jorm and Michael Giffin.

Administrative support:

Margie Scott-Murphy and Julie Holbrook.

FROM OTHER PARTS OF NSW HEALTH, AND OTHER ORGANISATIONS:

Text and/or content advice:

Pam Albany, Paul Armstrong, Deborah Baker, Bill Balding, Clare Banks, Mark Bartlett, Alan Betts, Jim Bishop, Kim Browne, Judith Burgess, Hugh Burke, Tony Butler, Paul Byleveld, Sue Campbell-Lloyd, Carmine Di Campli, Mary Crum, Linda Cutler, Patricia Davidson, Gary Eckstein, Karen Fogarty, Lyn Fragar, Eddie Greenaway, Mohammad Habib, Andrew Hayen, Lara Harvey, Sue Hendy, Paul Huntley, Maggie Jamieson, Paul Jelfs, Ros Johnson, Judy Jones, Neill Jones, Michael Kakakios, Brian Kelly, Behnoosh Khalaj (Centre for Epidemiology and Research), Harry Lai, Sandy Leask, Peta Lucas, Darlene Mathen, Jeremy McAnulty, David McGrath, Kathy Meleady, Andrew Milat, Elayne Mitchell, David Muscatello (Centre for Epidemiology and Research), Claire Phelan, Kate Purcell, Andrew Phillips, Geoff Richards, Vahid Saberi, John Sanders, Vicky Sheppard, Shanti Sivaneswaran, Mitchell Smith, Stephanie Smith, Robyn Speerin, Michael Staff, Jeff Standen, Gavin Stewart, Trish Strachan, Geoffrey Tofler, Elizabeth Tracey, Marshall Tuck, Phillip Vita, Vicki Wade, Leanne Wallace, Bronwyn Wilkinson and Clive Wright.

Cover design:

Lisa Donnelly.

Desk-top publishing:

Margaret Chidgey.

Copy Editing and publishing:

Sarah Thackway, Kris Rogers, Kristin Ludlow, Renee Roos, Cathy Kerslake and Saikat Choudhury.

Library:

Brian Tutt Library and Knowledge Services under Gillian Wood.

Executive Summary

This report presents information for more than 250 health indicators, arranged in thematic chapters covering determinants of health, burden of disease, health inequalities and health priority areas. This summary presents some of the key findings overall, and for people at different stages of their lives.

How healthy are we?

Around 85,600 babies were born in NSW in 2004. Male babies could expect to live 78.9 years (78.8 years is the national average), while female babies could expect to live 83.7 years (83.8 years is the national average). Only males and females born in Japan and Switzerland, and males born in Iceland, could expect to live longer.

However, not all NSW residents can expect such a long life. The life expectancy of Aboriginal people is about 17 years less than for the general population. An Aboriginal male born now in NSW can expect to live to around 60 years of age, while an Aboriginal female born now in NSW can expect to live to around 65 years of age.

Longer lives are the result of reductions in the death rate. The age-adjusted death rate in NSW decreased by more than half (51%) over the 33-year period 1972 to 2004. The death rate in babies aged less than one year (infant mortality rate) also declined quickly (49% since 1986), and was 4.6 per 1,000 live births in 2004 (lower than the national average at 4.7). However, the infant mortality rate among Aboriginal babies in NSW was almost double the rate for the general population.

Although females born in NSW in 2004 could still expect to live longer than males, this difference decreased from 6.8 years in 1972 to 4.8 years in 2004. In 2004, the overall male death rate was 50% higher than the female death rate, down from a difference of 61% in 1972.

Around 46,400 NSW residents died in 2004. Cardiovascular diseases, including ischaemic heart disease and stroke, were the leading cause of death and were responsible for 39% of all deaths. The next most common causes of death were cancers (28%), respiratory diseases (9%), injuries and poisoning (5%), nervous system diseases and digestive system diseases (both at over 3%). The main causes of death among Aboriginal residents in NSW were cardiovascular diseases (33%), cancers (19%), injury and poisoning (13%) and diabetes (5%).

Rates of premature death (before age 75 years) declined among all socioeconomic groups in NSW in the 20 years to 2004. By far the steepest decline was in the highest socioeconomic group, resulting in an increase in the relative 'gap' between this group and the rest of the population. The relative 'gap' between the lowest socioeconomic group and the middle three-fifths of the population appears to be narrowing.

In 2004, 67% of all premature deaths were due to causes that could potentially be reduced or avoided through promotion of healthy lifestyles, prevention or early detection of disease or improved treatment and management of disease. The comparable figure for Aboriginal residents in NSW was 76%. Ischaemic heart disease and stroke together contributed more than one-third of these 'avoidable' deaths, with lung cancer and colorectal cancer the next

largest causes. Compared with people who lived in metropolitan areas of NSW, people who lived in remote or very remote areas were 1.5 to 2 times more likely to die from causes classified as 'avoidable'.

Just under 2.2 million hospitalisations were recorded in NSW in the financial year 2004–05. By 2014–15, there is expected to be a 25% increase in the number of hospitalisations in NSW to around 2.8 million if the trend over the last 16 years continues into the future. Most of this increase is caused by the ageing of the population in NSW. Between 1989–90 and 2004–05, the age-adjusted rate of hospitalisation increased by more than one-third (36%). In 2004–05, the most common causes of hospitalisation were 'factors influencing health' (including symptoms without a specific cause, admissions of newborn infants, and admissions for rehabilitation, nursing home and respite care), injuries (including injuries sustained in motor vehicle crashes and falls), conditions relating to pregnancy and childbirth and digestive system diseases.

Around 7% of hospitalisations in NSW in the financial year 2004–05 were considered to be potentially avoidable through preventive care and early disease management (usually delivered by general practitioners or other primary health care). People who lived in remote or very remote areas of NSW were more than twice as likely than those living in metropolitan areas to be hospitalised for these conditions. The most important causes of these avoidable hospitalisations over the period 2002–03 to 2004–05 were chronic obstructive pulmonary disease, diabetes with complications, angina, asthma, dehydration and gastroenteritis, dental conditions and congestive heart failure.

What are some of the important issues in babies and young children?

In 2004, deaths soon after birth, congenital abnormalities and injury and poisoning claimed the most lives of young children aged less than five years. Just over 7% of all babies were born prematurely (with higher rates for teenage and older mothers), and almost 6.5% were of low birthweight (with a higher rate for teenage mothers), while under 2% were reported to have a congenital abnormality. Around 15% of all babies were admitted to a neonatal special care nursery and just under 3% were admitted to a neonatal intensive care unit. Rates of prematurity (12%) and low birthweight (13%) were much higher in Aboriginal babies than in the general population.

In 2004, 13 children aged 0–4 years drowned in NSW, and in the financial year 2004–05 there were 78 hospitalisations following near-drowning among children in this age group. There were a further 2,378 hospitalisations for injuries caused by falls, 340 hospitalisations for burn and scald injuries, and 548 hospitalisations for unintentional poisoning in 2004–05 in this age group.

In 2003 and 2004 combined, 88% of children aged 2–8 years consumed the recommended daily minimum quantity of fruit. Only around 20% of children in this age group (one in five) consumed the recommended daily minimum quantity of vegetables.

At the end of December, 2005, 91% of non-Aboriginal infants and 88% of Aboriginal infants aged 12 to 15 months were fully immunised. These high immunisation rates have been accompanied by declines in notifications for vaccine-preventable diseases, including rubella, pertussis and measles.

What are some of the important issues for school-aged children and young people?

Injury and poisoning were the leading causes of death in children and young people aged 5–24 years in 2004. In recent years, motor vehicle transport injuries killed 30 young people aged 0–14 years, and were responsible for 1,477 hospitalisations of people in this age group annually. There were 8,295 hospitalisations for injuries caused by falls in children aged 0–14 years and 298 hospitalisations for injuries caused by interpersonal violence among children aged 0–14 years annually.

In 2004, almost one quarter of school students aged 5–16 years in NSW were overweight or obese, with rates around 33% in boys and 30% in girls aged 9–12 years. These rates have increased markedly over the last 20 years. Despite this, three-quarters of boys and girls aged 11–16 years met the national recommendation of at least one hour of moderate to vigorous physical activity each day.

In 2003 and 2004 combined, 17% of children aged 5–8 years, 14% of children aged 9–15 years and 13% of youth aged 16–24 years had asthma. In the financial year 2004–05, there were 4,503 hospitalisations for asthma among NSW residents aged 5 to 34 years. Hospitalisation rates for asthma in this age group almost halved between 1989–90 and 2004–05. Exposure to fumes from unflued heating is associated with an increased risk of asthma symptoms. In 2004, just under one-third of NSW households used unflued heating, including unflued gas and slow combustion heaters, and open fireplaces.

Almost one in six (17%) NSW secondary school students reported high levels of psychological distress in 2005. In NSW in 2004, the death rate from suicide was 12.4 per 100,000 in males aged 15–24 years, which was the lowest suicide rate in the last 20 years. Nonetheless, in 2004, 58 males and 17 females aged 15–24 years died through suicide. Females in this age group, however, were around two-and-a-half times more likely to be hospitalised for suicide attempts, with 2,159 hospitalisations of females and 925 hospitalisations of males recorded in the financial year 2004–05.

In 2005, one-third of secondary school students in NSW reported ever smoking tobacco, while 9% of boys and 8% of girls reported smoking in the previous week. Use of tobacco was lower than in 2002.

Use of sun protection measures (covering the body, wearing a hat or staying in the shade) by secondary school students declined between 2002 and 2005, however the use of maximum protection sunscreen increased. Just over two-thirds of secondary school students in 2005 reported doing moderate or vigorous physical activity on one to four occasions in the previous week.

Between 1990 and 2004, the teenage pregnancy rate in NSW declined from just over 2% of all teenage girls to 1.5% of all teenage girls. The teenage pregnancy rate was consistently higher among girls living in the lowest socioeconomic group than in the highest socioeconomic group over this period (with a ratio of 8:1 in 2004).

What are some of the important issues for adults?

Injuries, both intentional and unintentional, were by far the leading cause of death in young males aged 25 to 44 years annually, in recent years, but cancers were the leading cause of death in females in this age group. Cancers, followed by cardiovascular diseases, were the major causes of death in people of both sexes aged 45 to 64 years.

In 2004, there were 34,092 new cases of cancer and 13,100 deaths from cancer in NSW. The most common types of cancers causing death among males were lung, prostate and colorectal and among females were breast, lung and colorectal. The most common types of cancers diagnosed in males were prostate, colorectal, melanoma of skin, and lung and in females were breast, colorectal, melanoma of skin, and lung. The death rate from lung cancer decreased by 22% in males. There were declines in the death rates from colorectal cancer (by 25%) and from prostate cancer (by 20%) over the same period. The death rate from breast cancer fell by more than 14%, and the death rate from cervical cancer almost halved. In NSW in 2003 and 2004, just over half of women aged 50–69 years participated in breast cancer screening and just over 57% of women aged 20–69 years had a Pap test.

Coronary heart disease caused 8,722 deaths in 2004 and more than 54,000 hospitalisations in the financial year 2004–05. The rate of hospitalisations decreased by almost 20% between 1995–96 and 2004–05. About 4,100 (5,100 in 2002–03) coronary artery bypass graft procedures and 10,000 (7,700 in 2002–03) coronary angioplasty procedures were performed in 2004–05. About three-quarters of those undergoing surgery were males. In 2004, stroke caused more than 4,500 deaths in NSW, and was the principal reason for almost 18,000 hospitalisations in 2004–05. Death rates from both coronary heart disease and stroke have more than halved since 1985, as a result of both decreased incidence—associated with reductions in risk factors—and increased survival in those affected. Aboriginal residents of NSW were 50% more likely as non-Aboriginal people to be hospitalised for cardiovascular diseases, while residents born in Lebanon, Fiji and India had higher rates of hospitalisation for coronary heart disease than the Australian-born.

In 2005, over 8% of males and almost 7% of females in NSW aged 16 years and over reported having diabetes or high blood sugar. This was a significant increase since 1997 (when it was just over 5% and 4% respectively). In the financial year 2003–04, there were 11,645 hospitalisations for diabetes. People who were hospitalised at least once with diabetes (either as a principal diagnosis or co-morbidity) in that year had on average 1.7 hospitalisations. Aboriginal residents of NSW were almost three times more likely than non-Aboriginal people to be hospitalised for diabetes. NSW residents born in some overseas countries, particularly Lebanon, Vietnam, Italy, India and Philippines, had higher rates of hospitalisation for diabetes than the Australian-born.

Among NSW residents aged 16 years and over in 2005, 14% of females and more than 9% of males reported high or very high levels of psychological distress. However the rates of suicide continue to decrease—they fell by over 29% in persons of all ages between 1995 and 2004.

Among NSW residents aged 16 years and over in 2005, almost 23% of males and 18% of females were current smokers, representing a further 2% decline since 2003. However, smoking contributed to more than 6,500 deaths in NSW in 2004 and more than 55,500 hospitalisations in the financial year 2004–05—more than any other health behaviour. Smoking rates were higher in Aboriginal people than in non-Aboriginal people.

Among NSW residents aged 16 years and over in 2005, 37% of males and 27% of females reported risky drinking behaviours, which was an improvement on the figures reported in 2003 (41% and 30% respectively). Males

were more likely than females to report risk drinking behaviour across all age groups. Alcohol use caused more than 1,400 deaths in NSW in 2004 (100 fewer than in 2002) and over 40,000 hospitalisations in the financial year 2004–05.

Opiate (mainly heroin) overdose killed 146 NSW residents in 2004. The death rate from heroin overdose declined steeply between 1999 and 2002. In 2001, prisoners in NSW reported higher levels of illicit drug use than the general population, and Aboriginal prisoners reported particularly high levels of illicit drug use (almost 90% of Aboriginal prisoners reported ever using illicit drugs).

In 2005, well over half of male (57.5%) and approaching half of female (42.3%) residents of NSW aged 16 years and over were overweight or obese (56% and 41% respectively in 2003). Only 56.6% of men and 47.3% of women were adequately physically active, but it was an improvement on reported figures in 2003 (50% and 41% respectively). Vegetable consumption deteriorated substantially in men, as only 4.7% of men reported eating recommended quantities of vegetables in 2005 (down from 8.0% in 1997). There was some improvement in women since 1997 when 9.7% reported eating recommended quantities of vegetables and 10.1% reported that in 2005. Fruit consumption increased in 2005 and more than 50% of persons aged 16 years and over reported eating recommended quantity of fruit in 2005.

HIV diagnoses in NSW declined steadily through the 1990s and to 2001, increased in 2002 and 2003, and declined again in 2004 and 2005. Among the 390 cases notified in 2005 (414 in 2003), 91% were males and 68% reported male homosexual sex as a primary risk factor.

In 2004, cardiovascular diseases, followed by cancers, were the major causes of death in people of both sexes aged 65 years and over in NSW.

Almost 880 people died of heart failure in NSW in 2004, of whom most were over 75 years of age. In the financial year 2004–05, there were more than 12,700 hospitalisations for heart failure in NSW. Presentations to emergency departments for heart failure peaked in the winter months.

Chronic obstructive pulmonary diseases (COPD), including chronic bronchitis and emphysema, were responsible for more than 1,600 deaths in NSW in 2004 and more than 18,000 hospitalisations in the financial year 2004–05. Around 90% of deaths and more than three-quarters of hospitalisations were in people aged 65 years and over. Similarly, 73% of persons who die from lung cancer are aged over 65 years.

In 2004, 336 people died in NSW with falls as a principal or contributing cause of death. People aged 65 years and over accounted for more than 86% of all fall-related deaths. The rate of fall-related deaths in NSW increased from 1997 to 2001, but decreased in men afterwards. The rate continued to grow in women. In the financial year 2004–05, there were more than 52,000 hospitalisations of NSW residents following a fall. More than half of those hospitalised following a fall (54%) were aged 65 years or more.

Around half of all hospitalisations for pneumococcal disease in 2004–05, and of hospitalisations for influenza and pneumonia in the same financial year, were in people aged 65 years and older. However, 93% of death from

What are some of the important issues for older adults?

influenza and pneumonia were in people 65 years and older. Vaccination for pneumococcal disease and influenza is recommended for all people aged 65 years and over (as well as Aboriginal people aged 50 years and over, and others who are at high risk of infection). In 2005, over 60% of NSW residents aged 65 years and older had been vaccinated against influenza in the past year and around 54% had been vaccinated for pneumococcal pneumonia in the past five years.

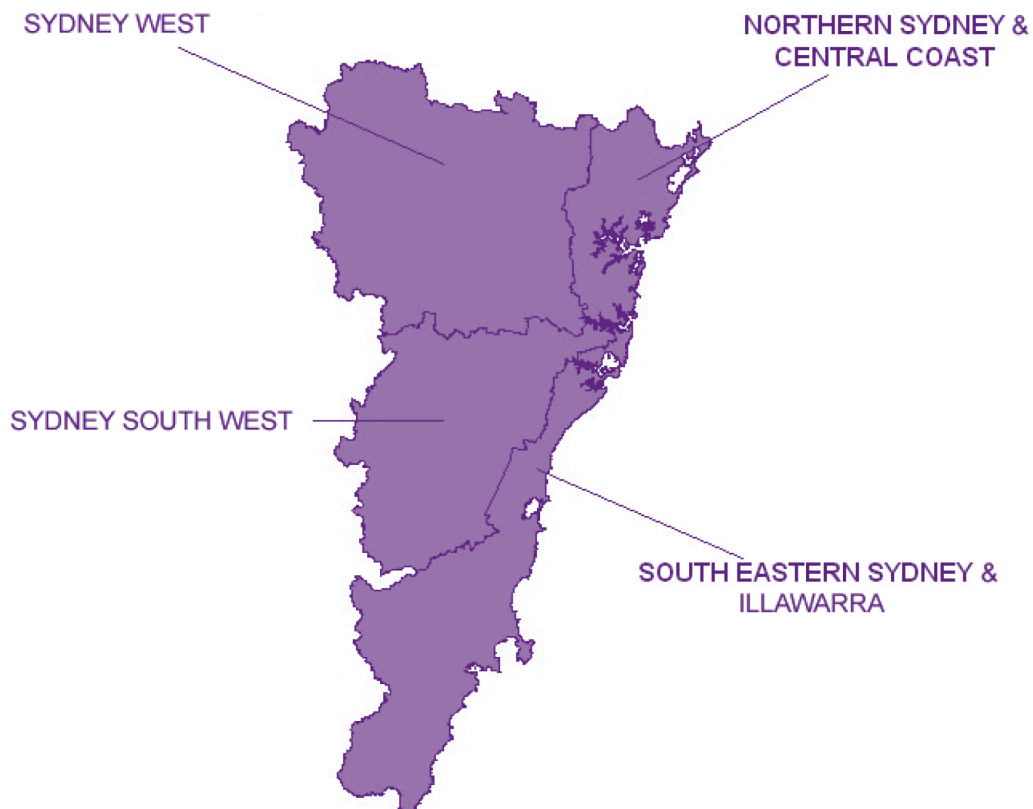
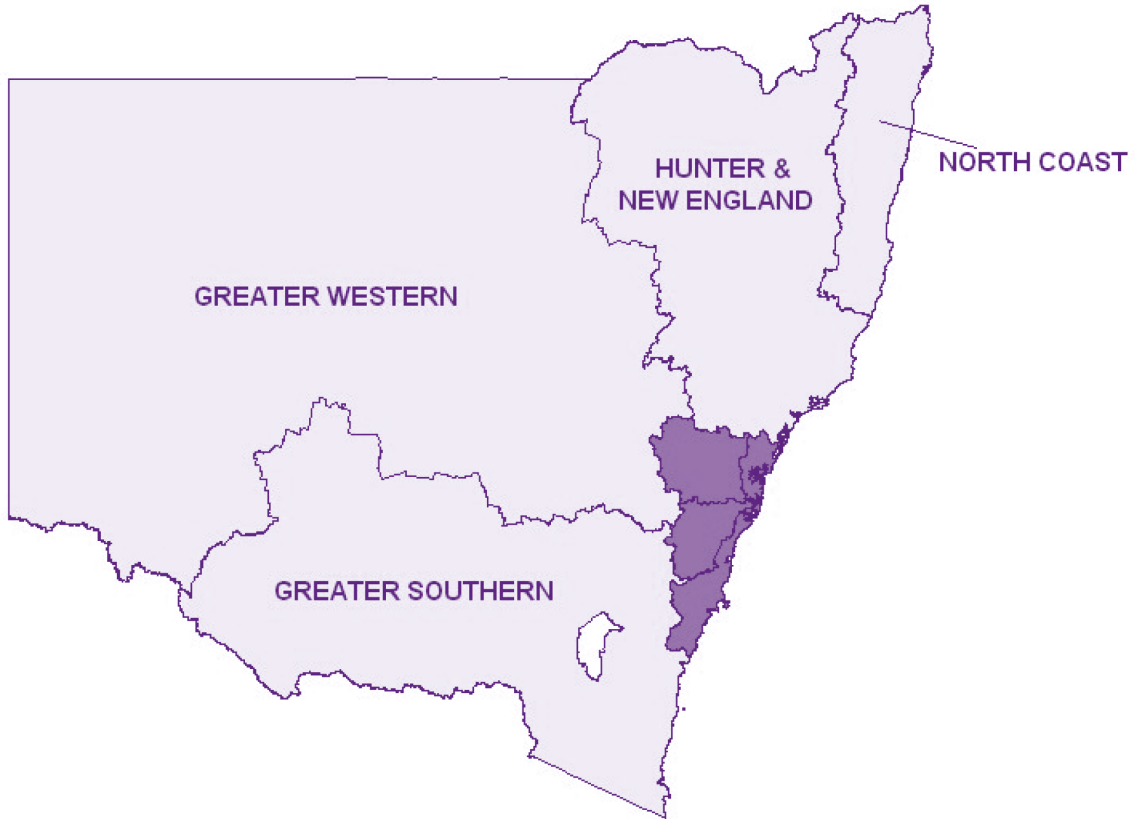
Levels of particle pollution in the air are associated with hospital admissions for cardiac disease in the elderly and respiratory symptoms. Improvements in particle levels were seen in NSW during the 1980s, due to the elimination of backyard burning and emission control on vehicles, but recently, levels in urban areas have fluctuated, with peaks seen in years of major bushfires. Rural areas may experience high particle levels in winter in association with wood heater use.

In 2005, rates of edentulism (all natural teeth missing) among people aged 55 years and over in NSW ranged from 8% (in 55 to 64 years olds) to 20% (in 75 years old and older) in males and 12% to 36%, respectively, in females.

In NSW in 2005, rates of overweight and obesity declined with age, among both sexes, in older persons. In people aged 75 years and over in 2005, 49% of males and 40% of females were overweight or obese. This compares with 67% of males and 58% of females aged 55–64 years. This may reflect higher death rates among older people who are overweight or obese.

Map of NSW area health services

These maps illustrate the current boundaries of the NSW area health services. Each is made up of a number of statistical local areas or local government areas, which are listed in the Appendix.



List of abbreviations

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
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 Socioeconomic Indices for Areas
SES	Socioeconomic 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

1 Determinants of health

NSW population

- The estimated residential population of NSW in 2005 was 6,804,522. The population of NSW in 2025 is projected to be approximately 7,960,000.
- The rate of growth of the NSW population is declining. Between 1995 and 2000 the average annual growth rate was approximately 1.15%. Between 2000 and 2005 the average growth rate was 0.96% per year, while it is projected to decline to 0.79% per year between 2005 and 2025.
- The NSW population continues to age. For the NSW population in 2000 the median age, or the age for which half the population are older and half are younger, was 35 years. In 2005 the median age was 36 years, while in 2025 the median age is projected to be 41 years.
- In 2005 the female population slightly outnumbered the male population. In 2025 males are projected to slightly outnumber females.
- The proportion of females in the population increases with age. In 2005 females made up 55% of the NSW population aged 65 years or more, and 64% of the population aged 80 years or more.
- The NSW population is predominantly urban. In 2001 approximately 71% of the NSW population lived in metropolitan areas, 21% lived in inner regional areas, and 8% in outer regional and remote areas.
- In 2025, 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.

In this chapter

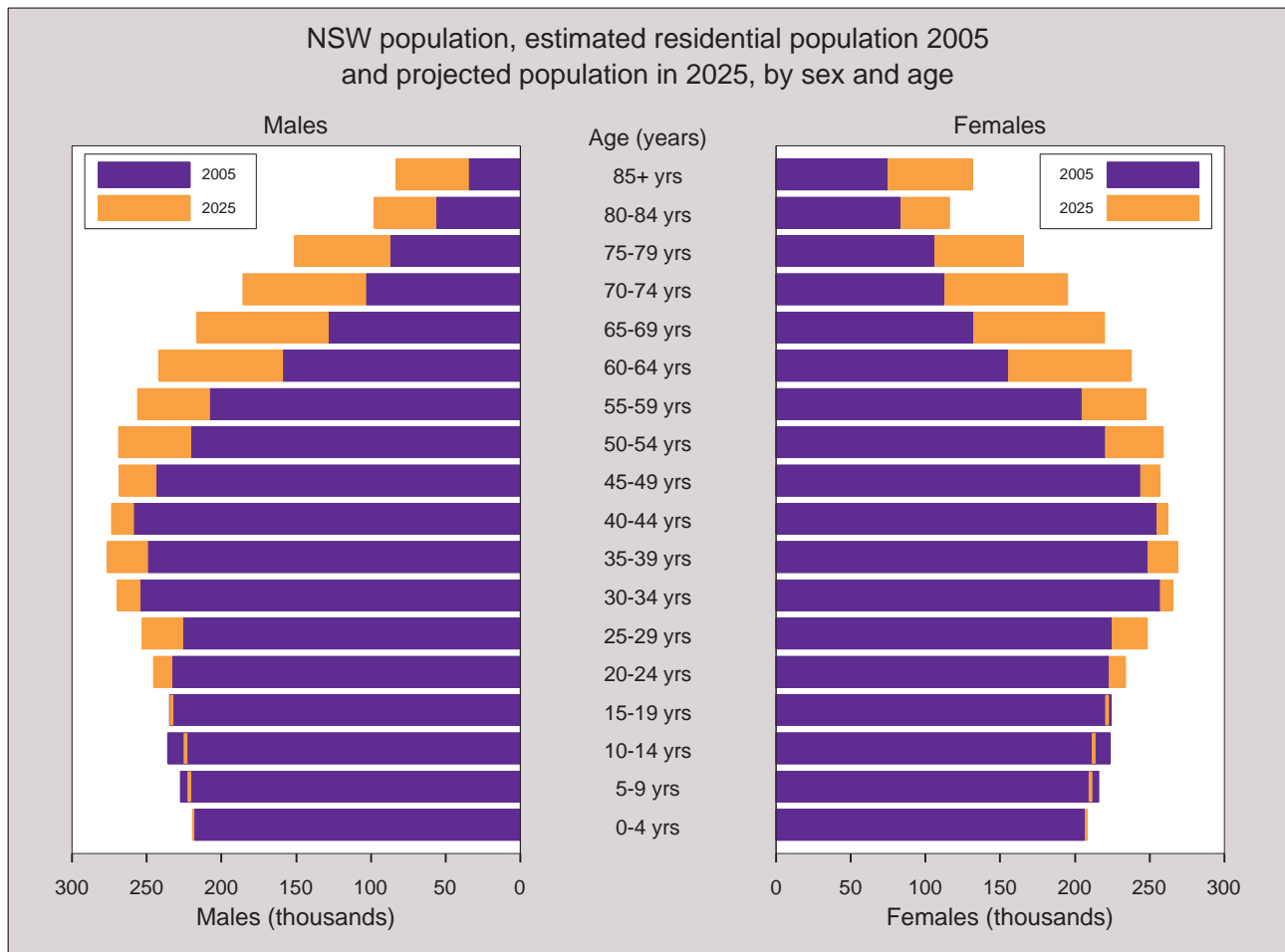
- Population pyramid
- 2005 NSW population by health area
- NSW population, percent change
- Bankstown and Byron LGA population pyramid
- Population pyramid by grouped geographic category

Introduction

Age and sex are important determinants of the health of individuals. Pattern of illness and use of health services therefore reflect the age and sex structure of a population. This chapter presents information on the age and sex structure of the NSW residential population in 2005, including a breakdown by health area, local government area, and by the Access/Remoteness Index of Australia (ARIA+). The chapter also gives population projections for NSW for 2025 and includes a map showing the percentage change in the population for each local government area over the next twenty years.

Other important demographic determinants of health are country of birth, indigenous status and living in a rural or remote area. More information on these demographic factors can be found in Country of Birth, Aboriginal and Torres Strait Islander Peoples and Rural and Remote Populations.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/



Note: Population estimates as at 30 June each year. Where a bar does not have a segment for 2025, the number of people in that category is predicted to decrease by 2025. The predicted number is shown as a lighter coloured line on the overlying 2005 bar. Population components may not add exactly due to rounding.

Source: ABS estimated residential populations based on 2001 Census counts and population projections from the Transport and Population Data Centre, Department of Planning (HOIST).

- In NSW the estimated residential population in 2005 (based on data collected in the 2001 Census) was 6,804,522. This represents an average annual growth rate of approximately 0.96% in the years 2000 to 2005, compared to an average annual growth rate of 1.15% in the years 1995 to 2000 (ABS, 2005). By 2025 it is projected that the population of NSW will be just over 7,960,000, which represents an average annual increase of 0.79% on the 2005 population.
- In 2005 approximately half the NSW population was aged 36 years or more. The median age was 36 years for males and 37 years for females. In 2000 the median age was 35 years (34 years for males and 36 years for females) while in 1995 it was 34 years (33 and 34 years for males and females respectively). The median age projected for 2025 is 41 years (40 years for males and 42 years for females).
- The female population slightly outnumbered the male population in 2005, a situation that is projected to reverse by 2025. Several factors determine the balance of the sexes, but higher birthrates for males and lower death rates in females are the most important. The proportion of females in the population increases with age. In 2005 females made up 55% of the NSW population aged 65 years or more, and 64% of the population aged 80 years or more. By 2025 these proportions will be 53% and 58% respectively, as male life expectancies are increasing faster than those of females (see Life Expectancy at Birth).
- In 2001 approximately 71% of the NSW population lived in metropolitan areas, 21% lived in inner regional areas, and 8% in outer regional and remote areas.

6 NSW POPULATION

Population pyramid

Sex	Age (years)	30 June 2005	30 June 2025
Males	0-4	218,715	219,708
	5-9	227,843	221,565
	10-14	236,722	223,961
	15-19	235,318	233,720
	20-24	233,380	245,787
	25-29	226,106	253,550
	30-34	254,708	270,295
	35-39	249,759	277,066
	40-44	259,166	274,155
	45-49	244,109	268,834
	50-54	220,896	269,312
	55-59	208,449	256,388
	60-64	159,136	242,500
	65-69	128,932	217,048
	70-74	103,518	185,971
	75-79	87,647	151,700
	80-84	56,557	98,172
85+	34,882	83,708	
	All ages	3,385,843	3,993,440
Females	0-4	207,177	208,609
	5-9	216,445	210,623
	10-14	224,221	212,590
	15-19	224,460	221,759
	20-24	223,417	234,187
	25-29	224,891	248,851
	30-34	257,498	266,173
	35-39	249,422	269,242
	40-44	255,460	262,719
	45-49	244,117	257,262
	50-54	220,544	259,590
	55-59	204,842	247,927
	60-64	156,007	238,375
	65-69	132,259	220,439
	70-74	113,179	195,439
	75-79	106,402	165,845
	80-84	83,411	116,544
85+	74,928	131,863	
	All ages	3,418,680	3,968,038
Persons	0-4	425,893	428,317
	5-9	444,288	432,188
	10-14	460,943	436,552
	15-19	459,777	455,479
	20-24	456,797	479,975
	25-29	450,997	502,401
	30-34	512,205	536,467
	35-39	499,181	546,308
	40-44	514,626	536,874
	45-49	488,227	526,096
	50-54	441,439	528,902
	55-59	413,291	504,315
	60-64	315,143	480,875
	65-69	261,191	437,486
	70-74	216,697	381,410
	75-79	194,049	317,545
	80-84	139,968	214,717
85+	109,811	215,572	
	All ages	6,804,522	7,961,478

Note: Population estimates as at 30 June each year. Population components may not add exactly due to rounding.

Source: ABS estimated residential populations based on 2001 Census counts and population projections from the Transport and Population Data Centre, Department of Planning (HOIST).

Health Area populations

Sex	Health area	Age (years)									
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Males											
	All NSW	218715	227843	236722	235318	233380	226106	254708	249759	259166	244109
	Sydney South West South Eastern Sydney & Illawarra	45322	44910	45501	45791	50440	51782	57157	54117	53078	47643
	Sydney West Northern Sydney & Central Coast	34278	34189	34819	36922	45222	46036	50032	45852	45168	40877
	Sydney West Northern Sydney & Central Coast	40154	40842	41391	41449	41525	39467	43627	42186	42806	39244
	Hunter & New England	33187	35246	36506	37125	36290	35562	40921	41146	42743	39704
	Hunter & New England	26027	28539	30739	29546	26101	22953	26573	27121	29744	29955
	North Coast	13637	15942	18220	16780	11165	9647	12143	13785	16953	18091
	Greater Southern	15285	16676	17720	16600	13580	12334	14369	15375	17474	17554
	Greater Western	10826	11499	11825	11105	9057	8325	9886	10177	11201	11042
Females											
	All NSW	207177	216445	224221	224460	223417	224891	257498	249422	255460	244117
	Sydney South West South Eastern Sydney & Illawarra	42753	42320	43011	44122	49906	52695	57770	52461	51147	47273
	Sydney West Northern Sydney & Central Coast	32582	32634	33109	36018	43467	44701	49035	44292	43351	40276
	Sydney West Northern Sydney & Central Coast	38059	38603	39051	39608	39518	38956	43663	41908	41640	39497
	Sydney West Northern Sydney & Central Coast	31540	33919	34863	35204	35754	36392	42467	42320	43855	41060
	Hunter & New England	24811	27269	29366	28248	24149	22295	27029	27752	29858	29834
	Hunter & New England	12920	15087	17005	15435	9980	9859	13283	14926	17861	18642
	North Coast	14382	15905	16857	15547	12426	11984	14491	15536	16958	16951
	Greater Southern	10131	10707	10959	10277	8217	8008	9758	10227	10790	10584
	Greater Western	10131	10707	10959	10277	8217	8008	9758	10227	10790	10584
Persons											
	All NSW	425893	444288	460943	459777	456797	450997	512205	499181	514626	488227
	Sydney South West South Eastern Sydney & Illawarra	88076	87230	88512	89913	100346	104476	114927	106578	104224	94917
	Sydney West Northern Sydney & Central Coast	66860	66823	67928	72940	88689	90737	99067	90144	88519	81152
	Sydney West Northern Sydney & Central Coast	78213	79445	80442	81057	81043	78424	87290	84093	84447	78741
	Sydney West Northern Sydney & Central Coast	64727	69165	71369	72329	72044	71954	83388	83466	86598	80764
	Hunter & New England	50838	55808	60106	57794	50250	45247	53602	54873	59602	59789
	Hunter & New England	26556	31029	35225	32215	21145	19506	25426	28711	34814	36733
	North Coast	29667	32582	34577	32147	26006	24318	28861	30912	34431	34505
	Greater Southern	20957	22206	22785	21382	17274	16334	19645	20404	21990	21626
	Greater Western	20957	22206	22785	21382	17274	16334	19645	20404	21990	21626

Note: Population estimated as at 30 June 2005.

Source: ABS estimated residential populations based on 2001 Census counts and population projections from the Transport and Population Data Centre, Department of Planning (HOIST).

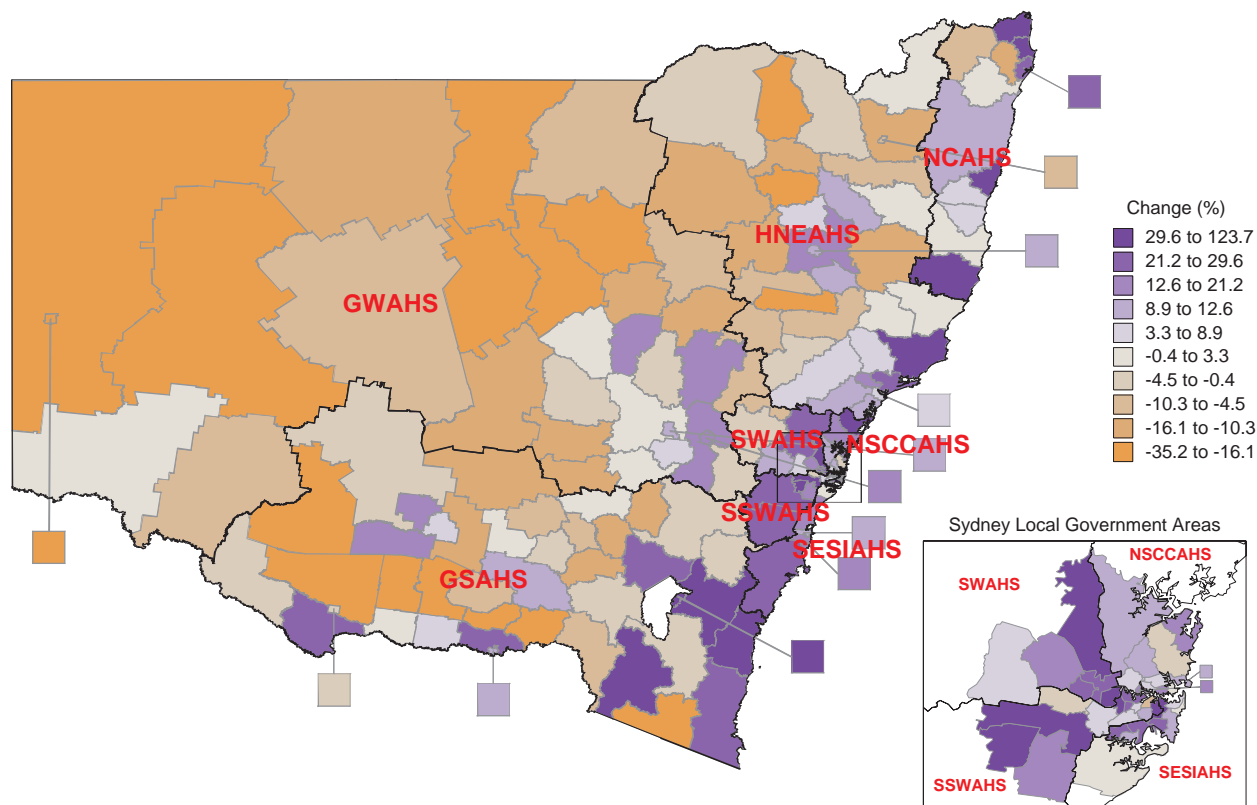
Health Area populations (continued)

Sex	Health area	Age (years)								All ages
		50–54	55–59	60–64	65–69	70–74	75–79	80–84	85 +	
Males										
	All NSW	220896	208449	159136	128932	103518	87647	56557	34882	3385843
	Sydney South West	41282	37309	27101	21431	17112	13857	8525	5034	667392
	South Eastern Sydney & Illawarra	36725	34970	26921	22503	18451	16078	10665	6653	586361
	Sydney West	35189	32250	22697	16574	11883	9486	5921	3450	550140
	Northern Sydney & Central Coast	35629	33800	25808	20320	16942	15181	10847	7206	544164
	Hunter & New England	27855	27180	22274	18448	15013	12671	8101	4803	413642
	North Coast	17142	16823	13606	12002	10359	8931	5795	3676	234694
	Greater Southern	16486	15951	12741	10893	8492	7097	4257	2548	235434
	Greater Western	10588	10166	7988	6762	5265	4346	2446	1512	154016
Females										
	All NSW	220544	204842	156007	132259	113179	106402	83411	74928	3418680
	Sydney South West	41099	35835	25680	22011	18660	16830	12769	10713	667057
	South Eastern Sydney & Illawarra	36630	34607	26788	23180	20424	19813	15660	13964	590531
	Sydney West	35002	31260	21611	16733	13341	12034	9363	7727	547574
	Northern Sydney & Central Coast	37231	34777	26434	21985	19638	19702	16691	16570	570401
	Hunter & New England	27822	27379	21987	18841	16119	15278	11651	10433	420120
	North Coast	17213	16510	13734	12419	10702	9877	7662	6711	239826
	Greater Southern	15716	14915	12158	10483	8718	7947	5985	5355	232314
	Greater Western	9832	9559	7616	6606	5579	4922	3629	3455	150856
Persons										
	All NSW	441439	413291	315143	261191	216697	194049	139968	109811	6804522
	Sydney South West	82382	73144	52781	43442	35773	30687	21294	15748	1334449
	South Eastern Sydney & Illawarra	73355	69577	53709	45682	38875	35890	26325	20617	1176892
	Sydney West	70190	63510	44308	33307	25223	21520	15284	11177	1097714
	Northern Sydney & Central Coast	72859	68577	52242	42305	36580	34883	27538	23777	1114565
	Hunter & New England	55677	54559	44261	37288	31132	27949	19752	15235	833761
	North Coast	34355	33333	27339	24421	21061	18808	13457	10387	474520
	Greater Southern	32202	30866	24899	21377	17210	15045	10242	7903	467748
	Greater Western	20419	19725	15604	13368	10844	9268	6075	4967	304872

Note: Population estimated as at 30 June 2005.

Source: ABS estimated residential populations based on 2001 Census counts and population projections from the Transport and Population Data Centre, Department of Planning (HOIST).

NSW and Sydney metropolitan population change (%) between 2005 and 2025

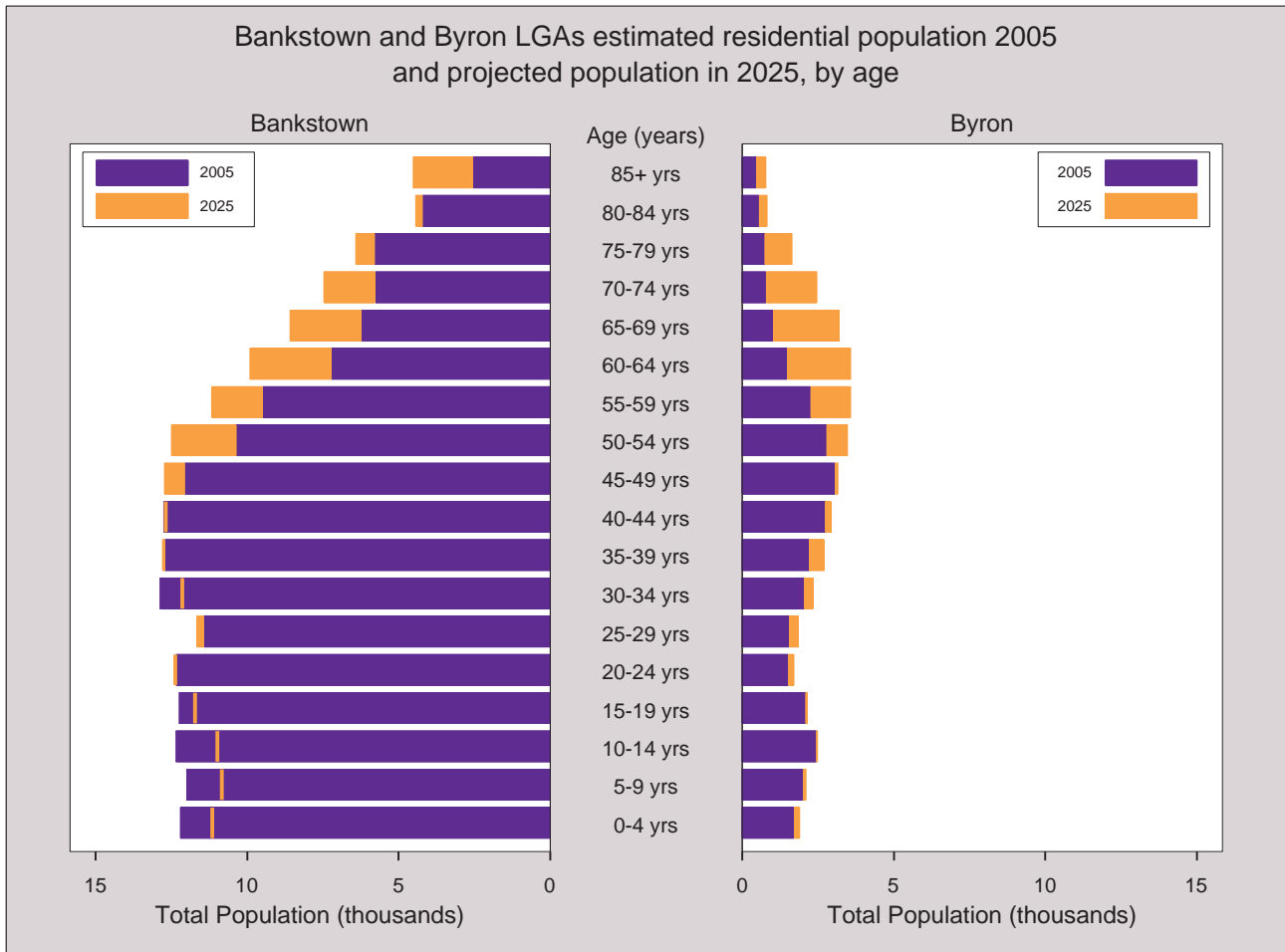


Note: Population estimates as at 30 June each year.

Source: Population estimates from the Transport and Population Data Centre, Department of Planning (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Between 2005 and 2025, it is expected that the overall population of NSW will increase by approximately 17%. Sydney will remain the dominant population centre. Most growth in Sydney will occur to the west and south west of the city. The population of Camden Local Government Area (LGA) will more than double (164% increase). The populations of South Sydney, Liverpool and Sydney LGAs will increase by more than 75%, while the populations of Strathfield, Baulkham Hills and Auburn LGAs will increase by more than 50%.
- The population of most LGAs along the NSW coast will increase, with the north coast being the biggest growth area outside of Sydney. The populations of Wyong and Tweed LGAs will increase by more than 50%, while the populations of Byron, Hastings, Great Lakes, Eurobodalla, Shoalhaven and Coffs Harbour LGAs will increase by 40–50%.
- By contrast, the population of most inland areas of NSW, with the exception of some regional centres, will decline. The populations of Urana and Unincorporated NSW LGAs will decline by more than 30%. The populations of Warren, Coonamble, Bombala, Conargo, Central Darling, Broken Hill, Brewarrina, Bogan, Yallaroi, Murrurundi, Barraba, Jerilderie, Culcairn and Hay LGAs will decline by 20–30%.

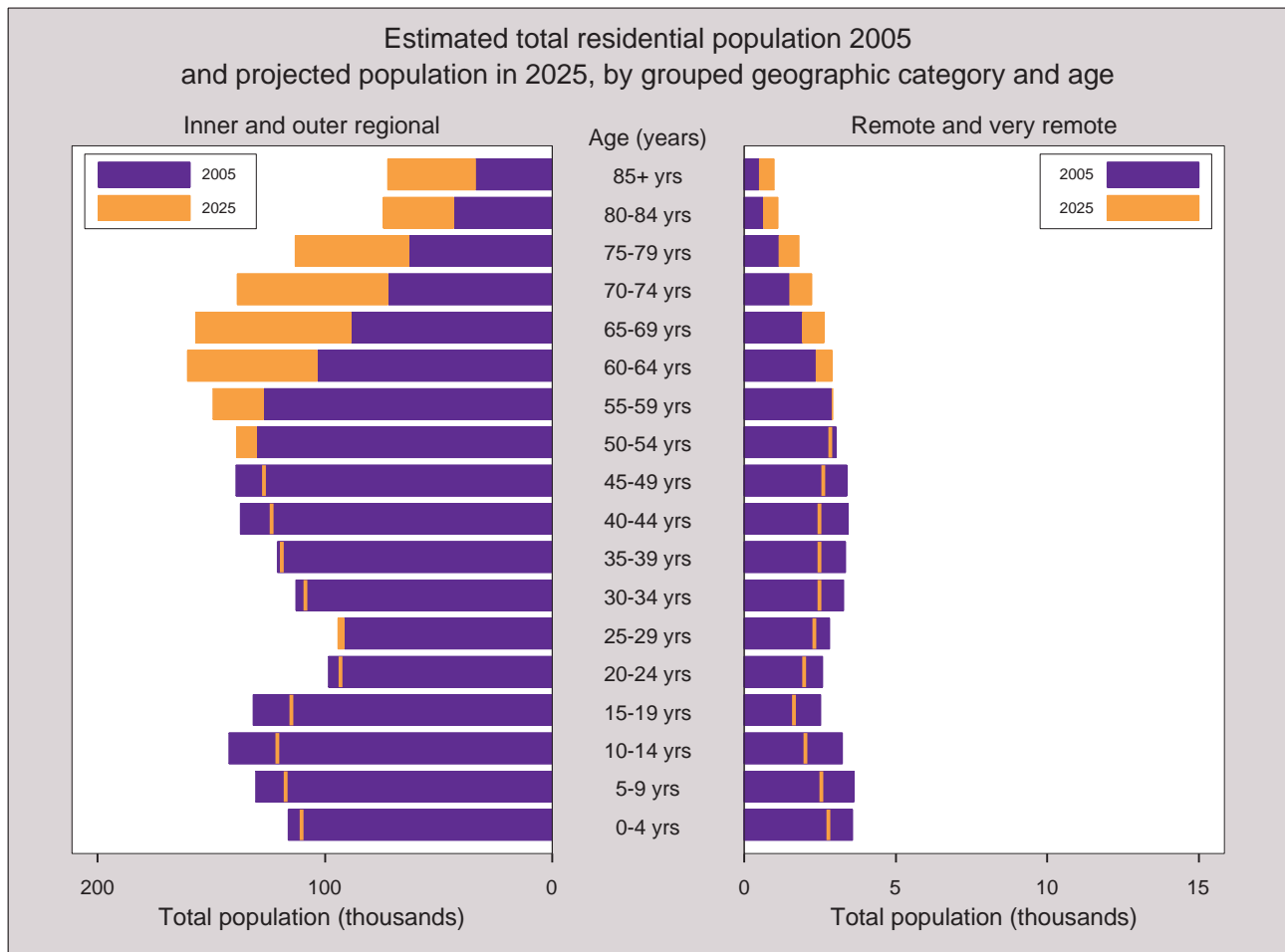
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Note: Population estimates as at 30 June each year. Where a bar does not have a segment for 2025, the number of people in that category is predicted to decrease by 2025. The predicted number is shown as a lighter coloured line on the overlying 2005 bar. Population components may not add exactly due to rounding.

Source: Population estimates from the Transport Population Data Centre, Department of Planning (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- These population pyramids illustrate the very different population age structures, and patterns of population change, that are experienced in Local Government Areas (LGAs) across the state. Population pyramids for every LGA are available in the web-based edition of this report at www.health.nsw.gov.au/public-health/chorep/.
- In Bankstown LGA, the estimated residential population in 2005 was 175,007. This is projected to increase by an average of 0.26% annually, to around 184,500 by 2025.
- In Byron LGA, the estimated residential population in 2005 was 31,721. This is projected to increase by an average of 1.56% annually to around 43,200 by 2025.
- In 2005, approximately half of the Bankstown LGA population was aged 35 years or more. The median age predicted for 2025 is 39 years. In 2005, approximately half of the Byron LGA population was aged 40 years or more. The median age predicted for 2025 is 46 years.



Note: Local Government Areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score. Population estimates as at 30 June each year. Where a bar does not have a segment for 2025, the number of people in that category is predicted to decrease by 2025. The predicted number is shown as a lighter coloured line on the overlying 2005 bar. Population components may not add exactly due to rounding.

Source: Accessibility/Remoteness Index for Australia (ARIA+ version) and Population estimates from the Transport Population Data Centre, Department of Planning (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- In 2001, the Australian Bureau of Statistics (ABS) applied the Access/Remoteness Index of Australia Plus (ARIA+) methodology (GISCA) to define ASGC Remoteness Areas (ABS, 2003). The ASGC Remoteness Areas are: Major cities, inner regional, outer regional, remote, and very remote.
- In inner and outer regional Local Government Areas (LGA) as classified by ARIA+, the estimated residential population in 2005 (based on data collected in the 2001 Census) was 1,886,358. By 2025 it is projected that the population of inner and outer regional LGAs will be approximately 2,135,393. This represents an average annual increase of 0.62% on the 2005 population.
- In remote and very remote LGAs as classified by ARIA+, the estimated residential population in 2005 (based on data collected in the 2001 Census) was 46,144. By 2025 it is projected that the population of remote and very remote LGAs will be approximately 40,954. This represents an average annual decrease of 0.59% on the 2005 population.
- In 2005, the 10–14 year age group comprised the largest percentage of the total population in inner and outer regional LGAs. By 2025, the 60–64 year age group will comprise the largest percentage of the total population.
- In 2005, the 5–9 year age group comprised the largest percentage of the total population in remote and very remote LGAs. By 2025, the 60–64 year age group will comprise the largest percentage of the total population.

For more information

About ARIA+ (Accessibility/Remoteness Index of Australia)[webpage on the Internet]. Adelaide: National Key Centre for Social Applications of Geographical Information Systems (GISCA) [cited 29 August 2006]. Available from http://www.gisca.adelaide.edu.au/products_services/ariav2_about.html.

Australian Bureau of Statistics *ASGC Remoteness Classification: Purpose and Use Census Paper No. 03/01 2003*. Available at www.abs.gov.au.

Australian Bureau of Statistics at www.abs.gov.au. Australian Bureau of Statistics. *1996 and 2001 Census Community Basic Profile*. Canberra: ABS, 2002. Available at www.abs.gov.au/.

Australian Bureau of Statistics. *Population projections, Australia 2004 to 2101*. ABS Catalogue No. 3222.0. Canberra: ABS, 2005. Available at www.abs.gov.au/ausstats.

Australian Bureau of Statistics. *Population, Australian States and Territories: Electronic Delivery*. ABS Catalogue No. 3239.0.55.001. Canberra: ABS, 2003. Available at www.abs.gov.au/ausstats.

Australian Bureau of Statistics. *New South Wales. Regional Statistics. New South Wales Profile*. Canberra: ABS, 2006. Available at www.abs.gov.au/websitedbs/c311215.nsf/20564c23f3183fdaca25672100813ef1/f75079ff0879cb45ca256e5c002377e4!OpenDocument.

Garden F, Moore H, Jorm L. *The current and future health status of the New South Wales population*. Sydney: NSW Department of Health, 2005.

Last JM (editor) *A Dictionary of Epidemiology*, Fourth Edition. Oxford University Press, 2001.

New South Wales Department of Planning, Transport and Population Data Centre. *New South Wales State and Regional Population Projections 2001–2051*. 2005 release.

The New South Wales Premier's Department at www.premiers.nsw.gov.au.

Social determinants

- Social factors such as income, socioeconomic status, employment status, educational attainment, and crime rates, are associated with inequalities in health.
- In NSW in 2003–04, the average weekly household income was \$1,212. Wages and salaries accounted for more than half (58%) of household incomes and government pensions and allowances accounted for just over one quarter (27%).
- Among NSW health areas, the North Coast Area Health Service had the largest proportion of low-income households, while the Western Sydney and Northern Sydney and Central Coast Area Health Services had the smallest proportions of such households.
- The proportion of the population receiving income support varied widely among areas. Overall, of those in the eligible age groups:
 - 66% received the age pension;
 - 6% received disability or sickness benefits;
 - 4% received unemployment benefits;
 - 28% of families received parenting payment.
- Among households in NSW in 2003–04, almost 28% comprised couples with dependent children, while 6.5% were one-parent families with dependent children.
- The unemployment rate has remained relatively steady since 2000, and stood at 5.5% for males and 5.3% for females in June 2006. However, unemployment rates vary by area and age group. Almost 14% of young people aged 15–24 years who live outside Sydney are unemployed.
- The Year 12 retention rate has increased since 2000 and was around 71% in 2006. NSW has the fifth highest school retention rates behind ACT, Victoria and Queensland and Western Australia.
- More than 78,000 assaults and robberies and 300,000 thefts were recorded in NSW in 2005. Outer-regional and remote areas have higher rates of assaults and robberies while the rate of thefts was higher in metropolitan areas.
- In NSW in 2005, measures of social capital related to safety and social reciprocity were higher in rural compared to urban areas.

In this chapter

- Household income
- Aged pension and disability and sickness benefits by health area
- Unemployment and family assistance benefits by health area
- Household family composition and number
- Unemployment rate
- Unemployment rate by region and age
- Year 12 retention rate
- Crime rates by health area
- Social capital by health area
- Index of relative disadvantage by local government area

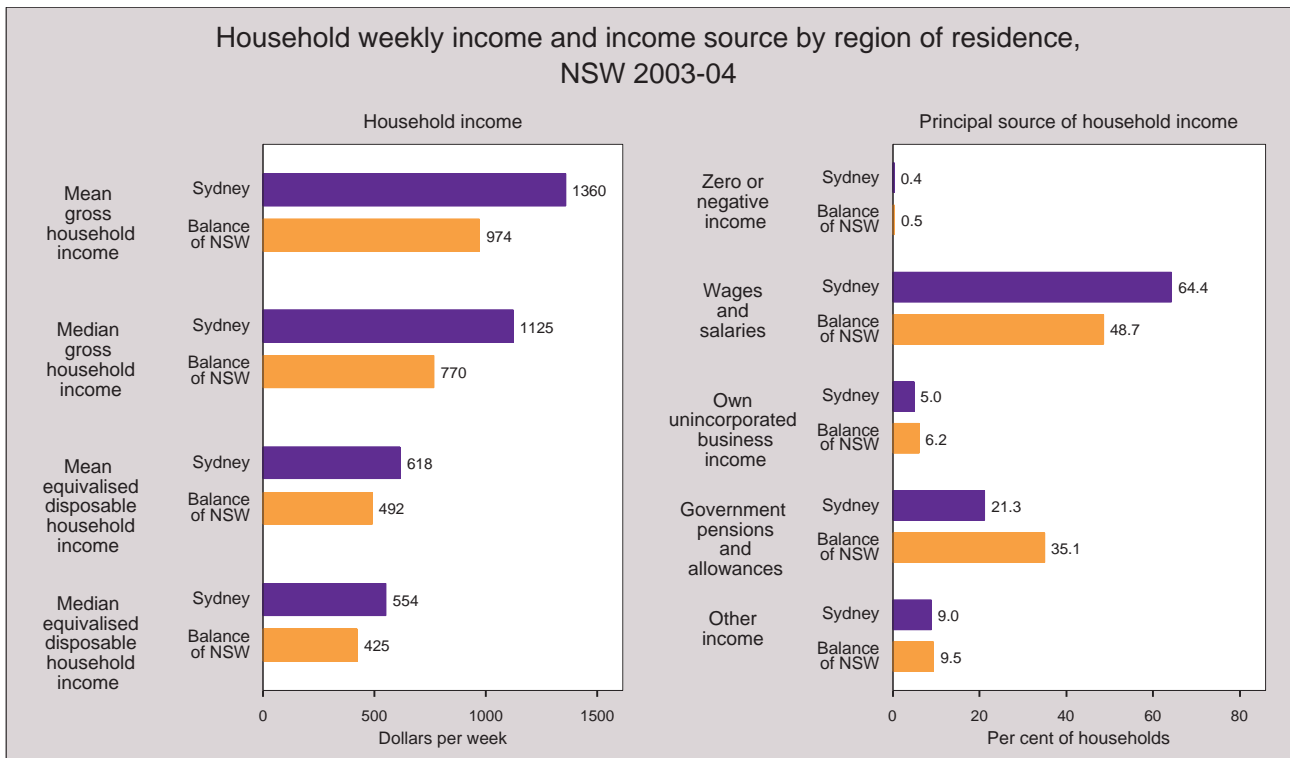
Introduction

There is strong and unequivocal evidence, from Australia and other developed countries, that factors such as income, socioeconomic status, employment status and educational attainment are associated with inequalities in health (Berkman et al., 2000; Turrell et al., 2006). The health burden in the Australian population attributable to socioeconomic disadvantage is large and much of this burden is potentially avoidable (Turrell et al., 2006). Socioeconomically disadvantaged groups experienced more ill health, and were more likely to engage in behaviours or have a risk factor profile consistent with their poorer health status (Turrell et al., 2006). These inequalities are important from both social justice and economic perspectives—not only can they be considered ‘unfair’ and preventable, but they also have high direct and indirect costs on the health system (Sainsbury and Harris, 2001).

The mechanisms—at both individual and community levels—through which social and economic factors influence health, and through which health inequalities perpetuate, are only beginning to be understood. Nonetheless, there is growing interest in identifying opportunities for the health sector to act to reduce health inequalities. In response, the NSW Department of Health has developed a Health and Equity Statement (NSW Department of Health, 2004). As well as setting out priorities for action by NSW Health, the Statement recognises that many of the factors that contribute to health inequalities lie outside the control of the health system. It emphasises the need for strong partnerships among clinicians, community and consumer groups, and other government and non-government organisations to tackle these issues, and provides guidance on how to build these partnerships. It will act as a platform for future planning and decision-making within the NSW health system to reduce ‘gaps’ in health and health outcomes.

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. Further information on the effects of social determinants on health outcomes can be found in the chapter on socioeconomic status.

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.

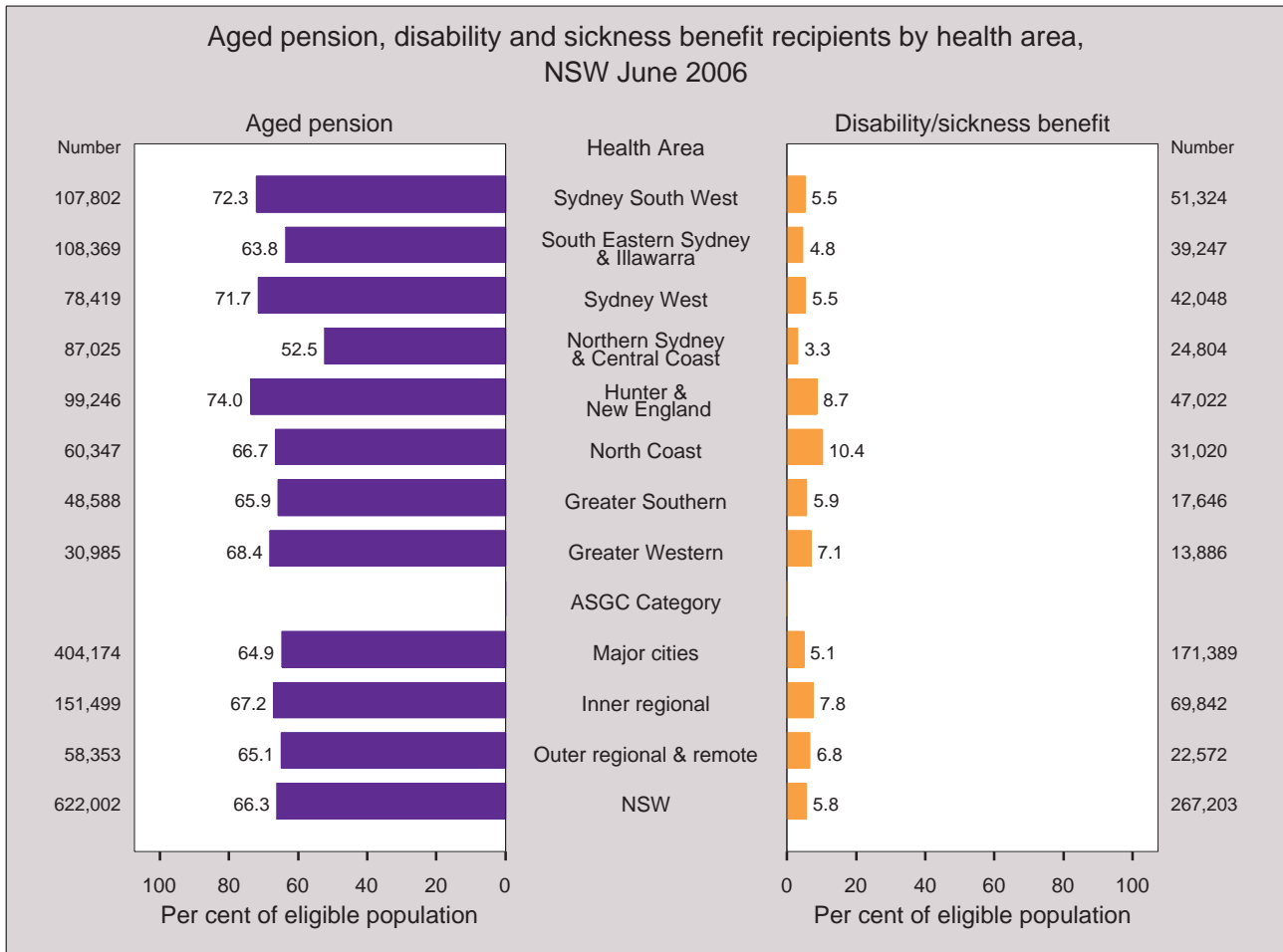


		Sydney	Balance of NSW	All NSW
Dollars per week	Mean gross household income	1,360	974	1,212
	Median gross household income	1,125	770	970
	Mean equivalised disposable household income	618	492	571
	Median equivalised disposable household income	554	425	514
Per cent of households	Zero or negative income	0.4	0.5	0.4
	Wages and salaries	64.4	48.7	58.4
	Own unincorporated business income	5.0	6.2	5.4
	Government pensions and allowances	21.3	35.1	26.6
	Other income	9.0	9.5	9.2
	Total	100.0	100.0	100.0

Note: Estimates are for households and persons resident in private dwellings. Estimates are based on 1537 households in Sydney and 1093 households in the balance of NSW.

Source: ABS Household Income and Income Distribution, Australia, 2003-04 (Catalogue no. 6523.0)

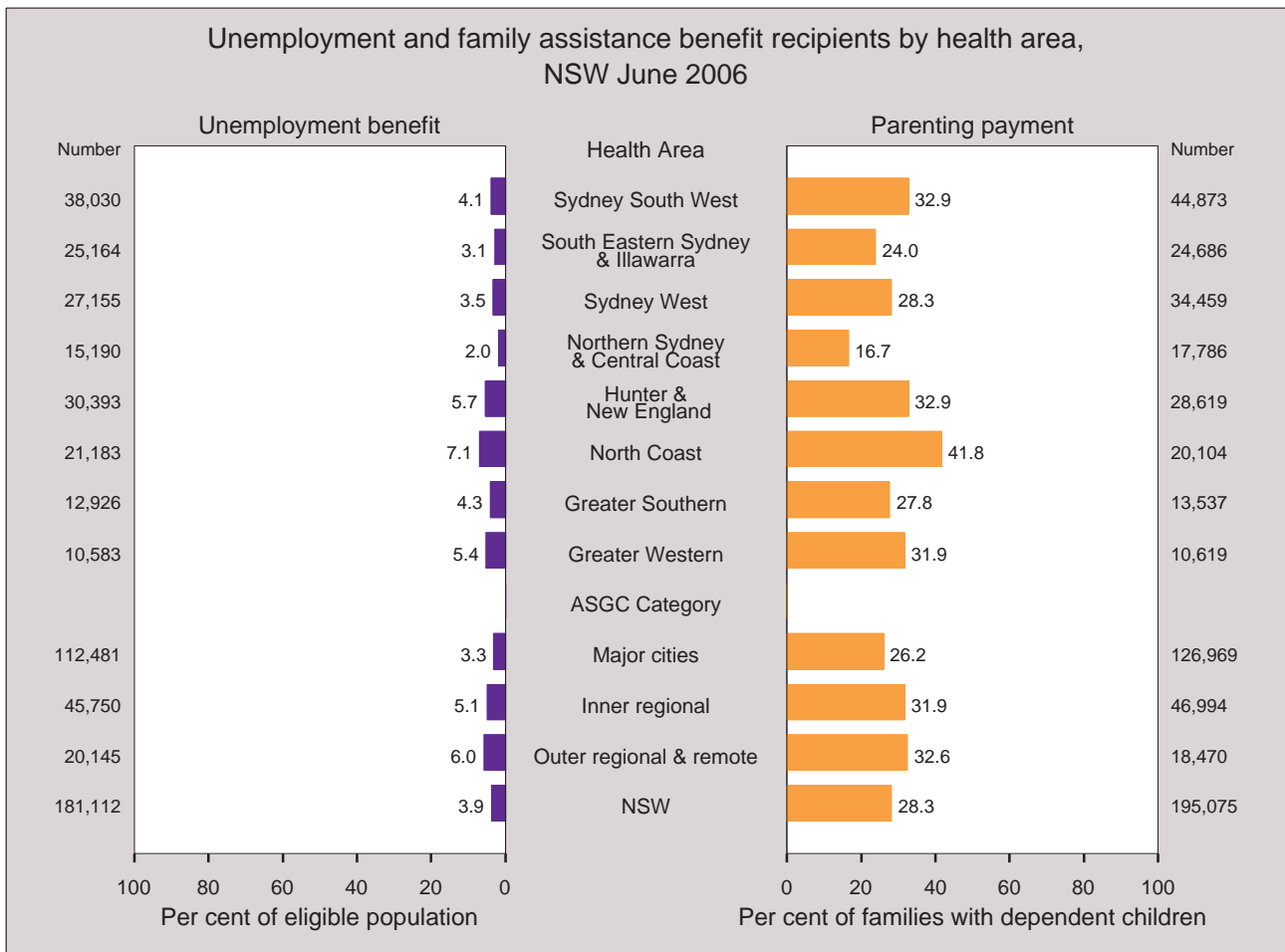
- Income is one of the main determinants of poverty, which is closely linked to poor health.
- In NSW in 2003-04 the mean or average income per week was \$1,212. In Sydney the mean income per week (\$1,360) was 40% higher than in the rest of NSW (\$974).
- The median income (where half of the households have an income above and half below the median) was \$970. Median income in Sydney (\$1,125) was almost twice as high as in the rest of NSW (\$770).
- Disposable income is gross income less the value of income tax and Medicare levy to be paid on the gross income and is a better indicator of the resources available to a household to maintain its standard of living. Equivalised disposable household income adjusts the disposable income of a household for the number of people living in a household, with the weighting for adults being higher (0.5) than for dependent children (0.3) (ABS, 2005). In contrast with the mean gross income, the mean equivalised disposable income in Sydney was only 26% higher (\$618 per week) than that for the rest of NSW (\$492 per week).
- In NSW in 2003-04 the source of more than half of household incomes (58.4%) was from wages and salaries. In Sydney the proportion of income derived from wages and salaries accounted for 64.4% of total household incomes while 21.3% was derived from government pensions and allowances. Comparative proportions for the rest of NSW are 48.7% and 35.1%. Negative income such as losses in household investments was estimated for 0.4%



Note: The eligible population for aged pensions comprised persons aged 65 years and over and for disability and sickness benefits, comprised persons aged 15 to 64 years. Disability and sickness benefits included disability support pension, sickness allowance, mobility allowance, and carer allowance. Postcodes were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

Source: Centrelink, Canberra (unpublished data).

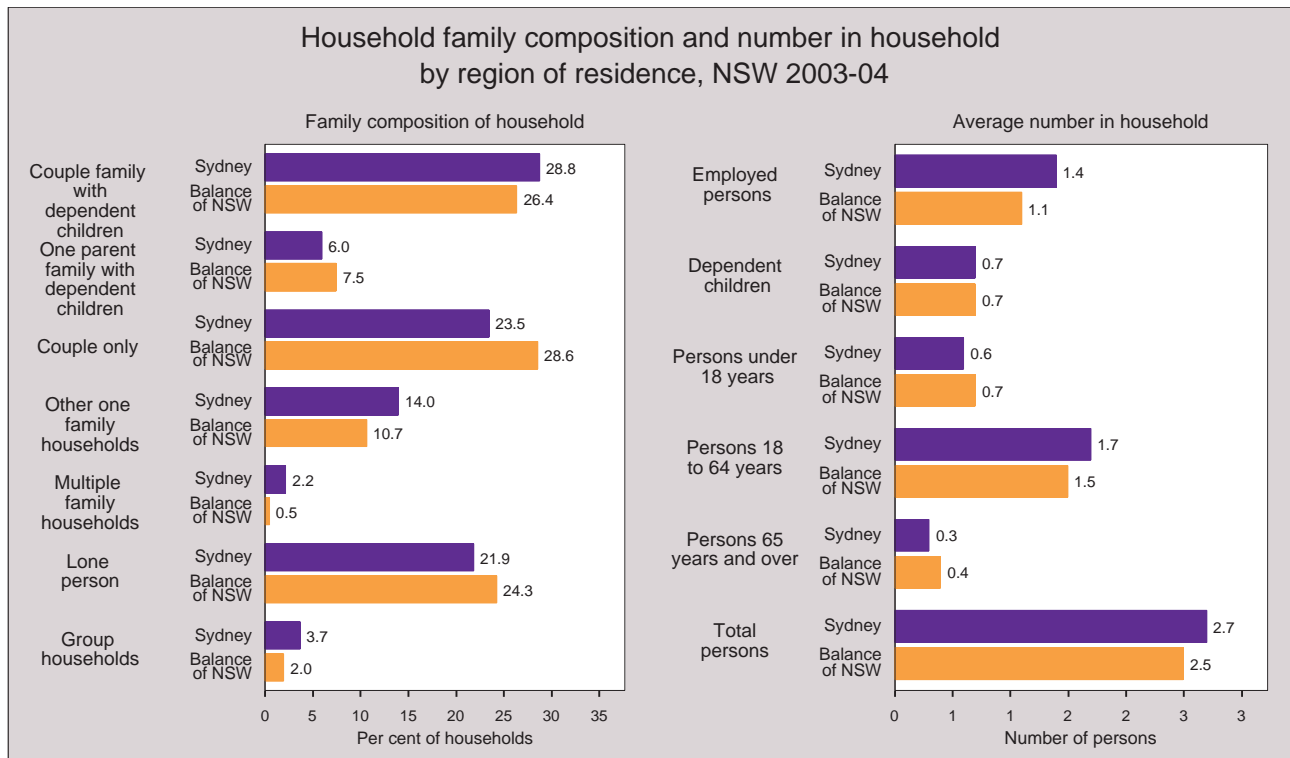
- The level of receipt of income support in a community provides a measure of the amount of poverty. The level of receipt of specific benefits, such as age pension, or sickness or disability benefits, provides an indication of the number of people who are both economically disadvantaged, and have high need for health services.
- The age pension is both income and assets tested. It is currently payable at age 65 years. In June 2006, 622,002 people in NSW received the age pension. This constituted 66.3% of the total NSW population in the eligible age group. The Hunter & New England and Sydney South West Area Health Services had the largest proportion of older people receiving the age pension (74.0% and 72.3%) while the Northern Sydney & Central Coast Area Health Service had the smallest proportion (52.5%). Older people living in inner regional areas (67.2%) were more likely to receive the age pension than those living in metropolitan (64.9%) or outer regional and remote (65.1%) areas.
- Government benefits for people who need support as a result of disability or sickness include disability support pension (for people unable to work for two years due to illness, injury, or disability), sickness allowance (for people temporarily unable to work due to illness, injury, or disability), mobility allowance (for people with disabilities to help them travel to work, training, or job search activities) and carer allowance (for people who care for a child with a disability at home). In June 2006, 267,203 people in NSW received disability or sickness benefits. This comprised 5.8% of people in the eligible age group. The North Coast Area Health Service had the largest proportion of residents receiving these benefits (10.4%) and the Northern Sydney & Central Coast Area Health Service had the smallest proportion (3.3%). People in the eligible age group living in outer regional and remote (6.8%) and inner regional (7.8%) areas were more likely to receive these benefits than those living in metropolitan areas (5.1%).



Note: The eligible population for unemployment benefits comprised persons aged 15 to 64 years. Unemployment figures as at 30 June 2006. Unemployment benefits comprised Youth Allowance, Newstart Allowance and Mature Age Allowance. Family assistance benefits comprised Parenting Payments (single and partnered). Postcodes were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

Source: Centrelink, Canberra (unpublished data).

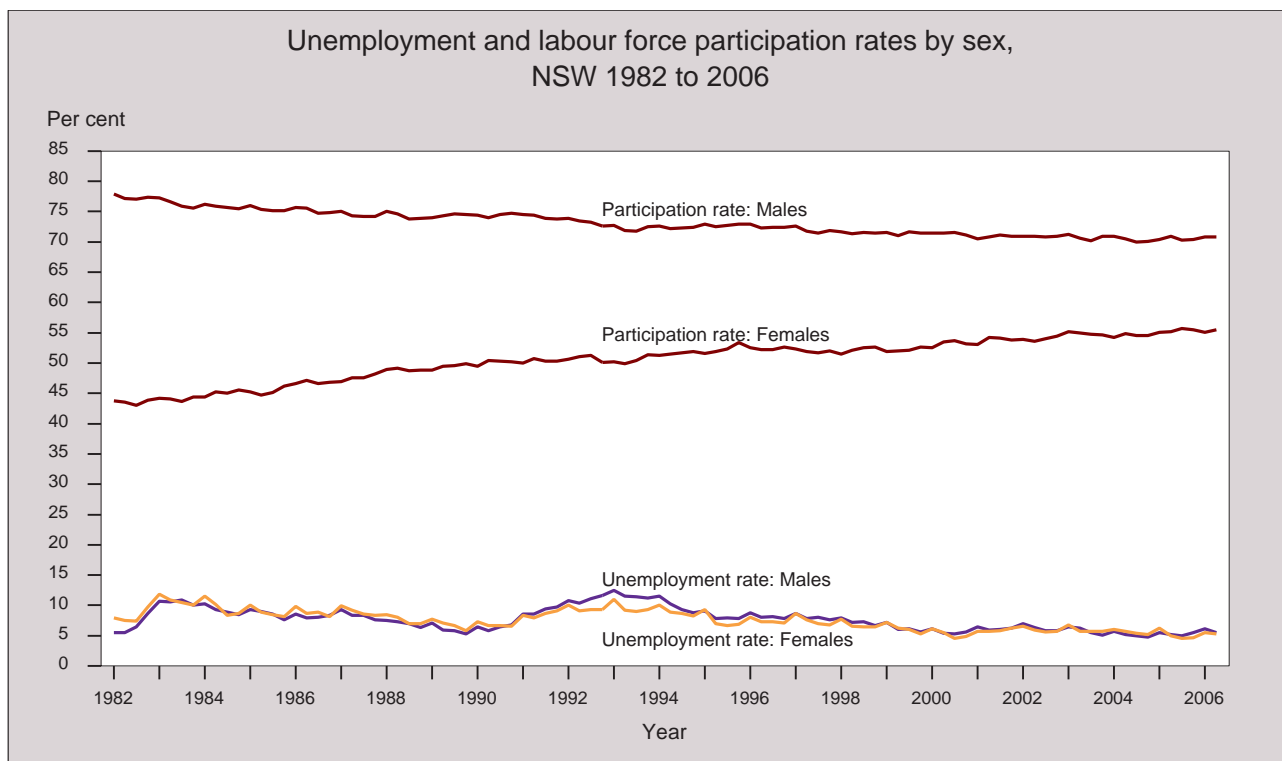
- Benefits paid to unemployed people include Youth Allowance (for people aged under 21 years who are unemployed or under 25 years and undertaking full-time studies), Newstart Allowance (for unemployed people aged 21 years or over), and Mature Age Allowance (for older unemployed people aged 60 years or over and below age pension age). People getting Newstart or Youth Allowance must meet the ‘activity test’, a set of requirements to show they are actively looking for work. In June 2006, 3.9% of the total population in the eligible age group (181,112 people) in NSW received unemployment benefits. The North Coast Area Health Service had the largest proportion of working age adults receiving unemployment benefits (7.1%) while the Northern Sydney & Central Coast Area Health Service had the lowest (2.0%). Almost 1 in 16 (6.0%) working age adults living in outer regional and remote areas received unemployment benefits, compared to 1 in 20 (5.1%) of those in inner regional areas, and only 1 in 30 (3.3%) of those living in metropolitan areas.
- Family assistance benefits are paid to help with the cost of raising children. They include Family Tax Benefit, which is income tested (but a minimum amount is paid to all applicants), and Parenting Payment, which is paid to primary carers of children, and is subject to more stringent income and assets tests. In June 2006, almost one-third (28.3%) of families (195,075 families) with dependent children in NSW received Parenting Payment. The North Coast Area Health Service had the largest proportion of families receiving Parenting Payment (41.8%), while the Northern Sydney & Central Coast Area Health Service (16.7%) had the lowest. Almost a third of families with dependent children in inner regional (31.9%) and outer regional and remote (32.6%) areas of NSW received this benefit, compared with just over a quarter (26.2%) of these families living in metropolitan areas.



Note: Estimates are for households and persons resident in private dwellings. Estimates are based on 1537 households in Sydney and 1093 households in the balance of NSW.

Source: ABS Household Income and Income Distribution, Australia, 2003–04 (Catalogue no. 6523.0)

- The family and family structure has a strong impact on the health and wellbeing of children and their parents. Inadequate family income is more common in single parent families, and family breakdown can also have adverse social and health consequences for children and their parents.
- In 2003–04, couples with dependent children accounted for 27.9% of household types. In Sydney the proportion (28.8%) was higher than in the rest of NSW (26.4%). One-parent families with dependent children accounted for 6.5% of household types in NSW in 2003–04. In Sydney the proportion was lower (6.0%) than in the rest of NSW (7.5%). Households composed of couples only (25.4%) accounted for the second highest proportion of household types in NSW followed by those households occupied by lone persons (22.8%).
- In NSW in 2003–04 the average number of persons per household was 2.7 in Sydney and 2.5 in the rest of NSW. The average number of dependent children per household was 0.7 and this was the same in both Sydney and the rest of NSW. The average number of persons per household (0.3) was lowest for persons aged 65 years. The average number of employed persons per household in NSW was higher in Sydney (1.4) than in the rest of NSW (1.1).
- Average incomes were higher in households with non-dependent children, reflecting higher proportions of employed persons in these households, and were lower in households comprising older couples and lone persons, where the numbers of employed persons were substantially lower. Households comprising one parent with dependent children had a mean income of \$391 per week, similar to that of elderly couples (\$396 per week), but only 11% of the one parent households fully owned their home and therefore a substantially greater proportion had to make mortgage or rental payments from their income. Of these households, 54% had government pensions and allowances as their principal source of income. On average they had 0.8 employed persons in the household (ABS, 2005).



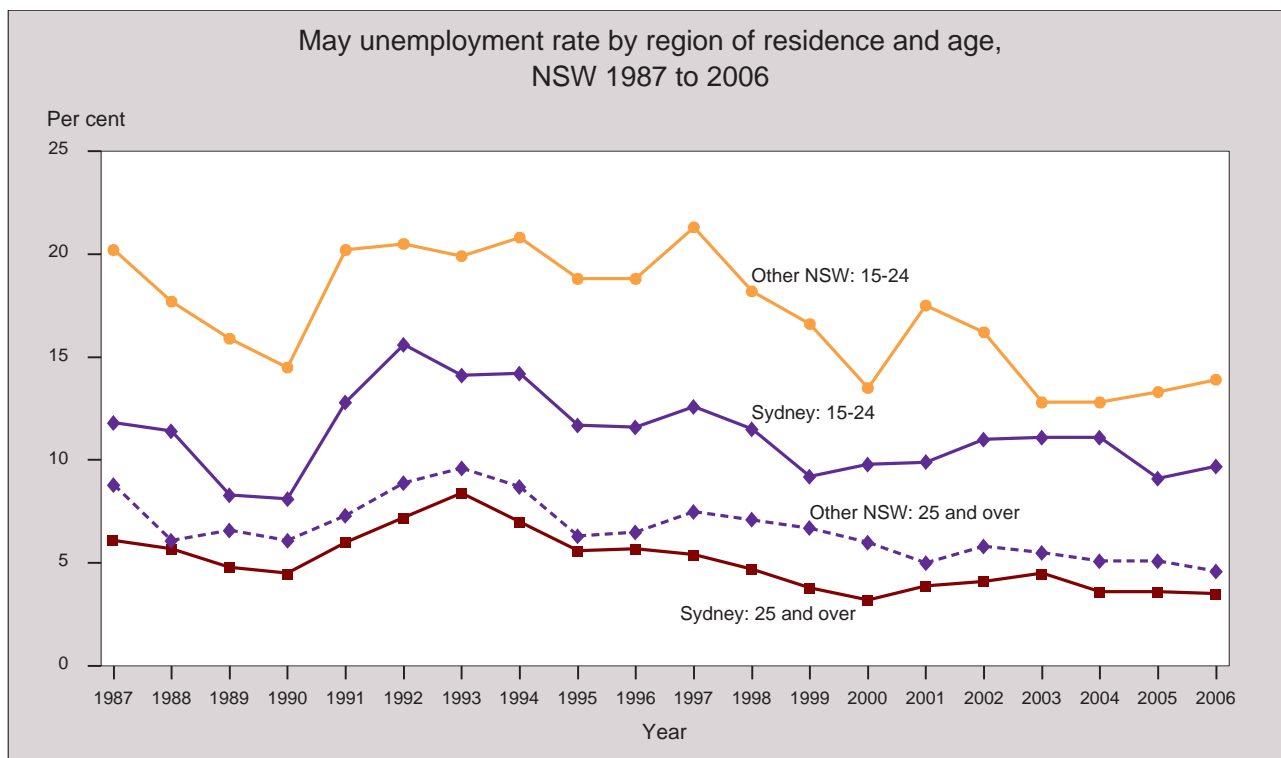
Note: Unemployed people = people aged 15 years and over who were not employed but were actively looking, and available, for work. Unemployment rate = the number of unemployed people expressed as a percentage of the labour force. Unemployment to population ratio = the number of unemployed people expressed as a percentage of the civilian population aged 15 years and over. Participation rate = the labour force expressed as a percentage of the civilian population aged 15 years and over.

Source: Australian Bureau of Statistics Monthly Labour Force Data.

- People who are unemployed have poorer physical and mental health than people who are employed. Health problems that are associated with unemployment include depression and other mental health problems, chronic illnesses such as cardiovascular disease, and high levels of risk behaviours such as smoking. These health differentials are the result of several mechanisms. Job loss can be a consequence of ill health. Unemployment also causes ill health, by reducing people’s ability to purchase goods and services—such as adequate nutrition and housing—and through its psychosocial effects, including lowered self-esteem and loss of social networks (Mathers and Schofield, 1998). The impact of unemployment on health is thought to increase with the length of unemployment, with many chronic physical and mental health problems acting as barriers to re-employment (Harris et al., 1998).
- Official statistics on employment are published by the Australian Bureau of Statistics each month. Over the last 22 years, the unemployment rate in NSW has fluctuated. It peaked in 1993 at 11.6%
- of males and 9.5% of females, declined from 1994 to 2000, and has remained relatively steady since 2000. The unemployment rate stood at 5.5% for males and 5.3% for females in June 2006. The unemployment rate is calculated as a percentage of the labour force, rather than of the entire population of working age. This latter percentage (known as the unemployment to population ratio) has also declined over recent years. It stood at 3.9% for males and 2.9% for females in June 2006, down from a high of 8.4% of males and 4.7% of females in 1993.
- The male labour force participation rate declined slowly over the last 22 years, from more than 77% in 1982 to less than 71% in 2006. In the same period, the female participation rate rose, from less than 44% to 55.5%.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/

May unemployment rate by region of residence and age, NSW 1987 to 2006

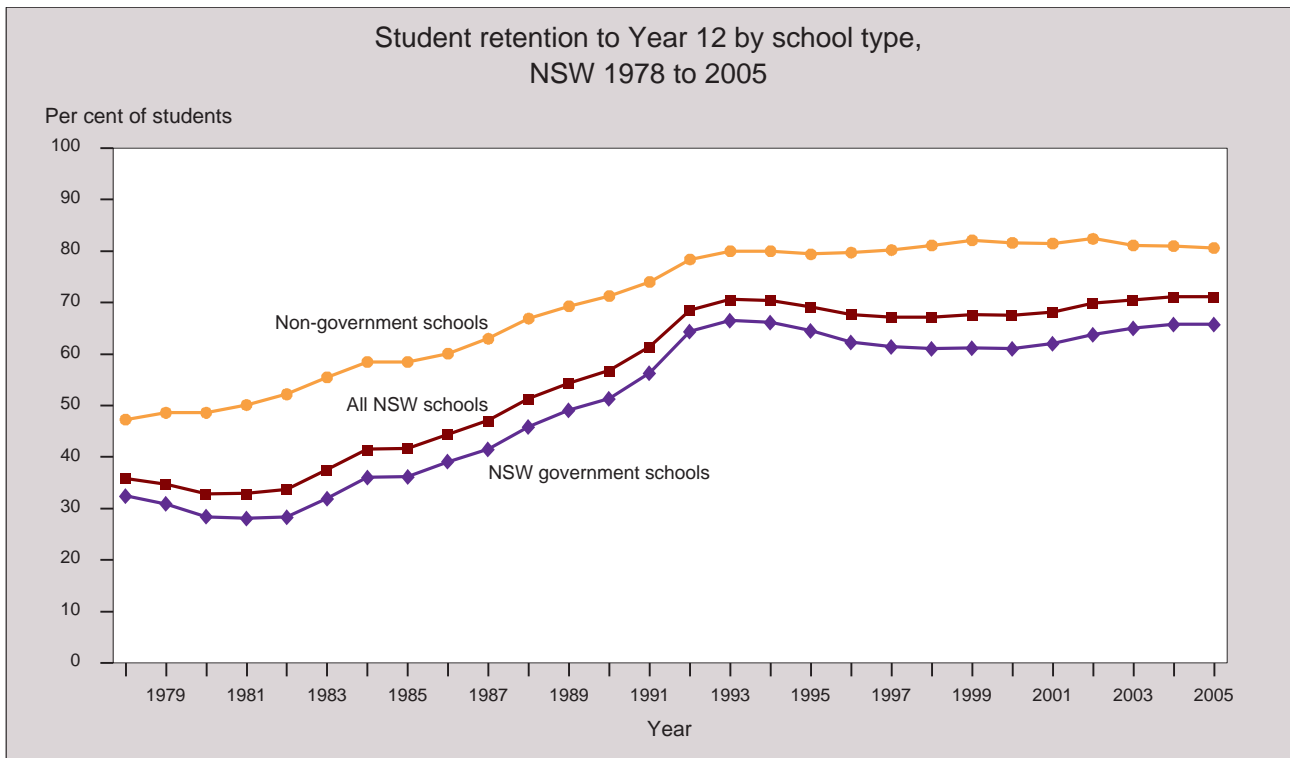


Region	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Sydney: 15-24	12.6	11.5	9.2	9.8	9.9	11.0	11.1	11.1	9.1	9.7
Other NSW: 15-24	21.3	18.2	16.6	13.5	17.5	16.2	12.8	12.8	13.3	13.9
Sydney: 25 and over	5.4	4.7	3.8	3.2	3.9	4.1	4.5	3.6	3.6	3.5
Other NSW: 25 and over	7.5	7.1	6.7	6.0	5.0	5.8	5.5	5.1	5.1	4.6

Note: Unemployed people = people aged 15 years and over who were not employed but were actively looking, and available, for work. Unemployment rate = the number of unemployed people expressed as a percentage of the labour force. Unemployment to population ratio = the number of unemployed people expressed as a percentage of the civilian population aged 15 years and over. Participation rate = the labour force expressed as a percentage of the civilian population aged 15 years and over.

Source: Australian Bureau of Statistics Monthly Labour Force Data.

- Unemployment and its accompanying health effects are not distributed evenly through the population. Unemployment rates in NSW are highest among people aged less than 25 years, and are higher in rural and regional areas than in urban areas. Over the period 1987 to 2006, unemployment rates among people aged less than 25 years were around double the rates in older people in Sydney and were consistently more than double in the remainder of NSW. The unemployment rate for 15–24 year olds in Sydney peaked at 15.6% in 1992 before declining to 9.2% in 1999 and then rising to 11.1% in 2004, declining again to 9.7% in 2006. In 15–24 year olds in the remainder of NSW, unemployment rates peaked at 21.3% in 1997 but had declined to 12.8% by 2003 after which there was a rise to 13.9% in 2006.
- Unemployment rates were also consistently higher outside Sydney among people aged 25 years and over. The unemployment rate in this age group peaked in 1993 at 8.4% in Sydney and 9.6% in the rest of NSW. It then declined to 3.2% in Sydney in 2000 and 5.0% in the remainder of NSW in 2001. Although there was rise to 4.5% in Sydney and 5.5% in the rest of NSW by 2003 there has since been a decline to 3.5% in Sydney and 4.6% in the rest of NSW.
- Overall participation rates changed little over the period shown, for both age groups and in both regions (data not shown).

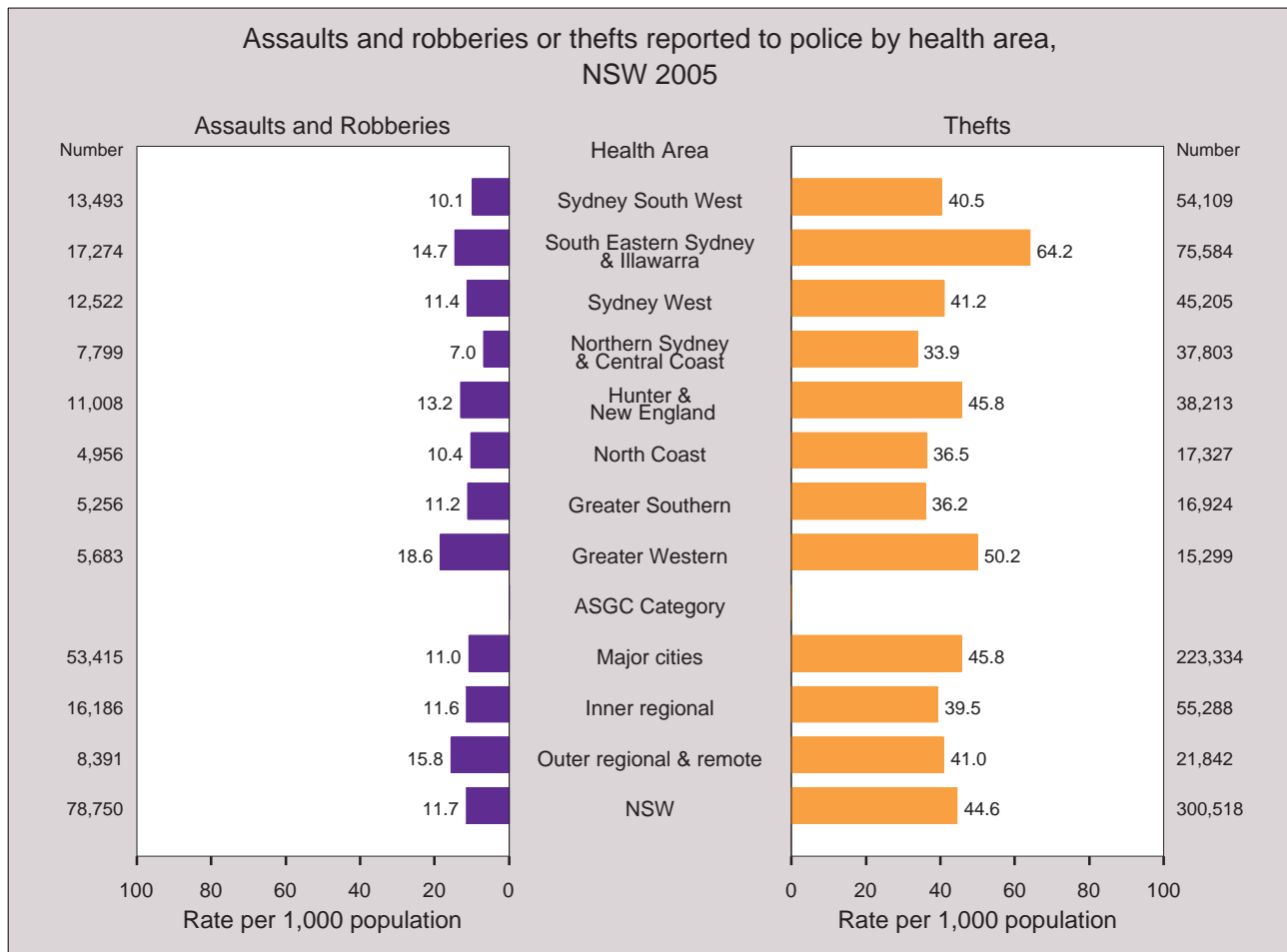


	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
NSW Government schools	62.3	61.4	61.1	61.2	61.0	62.0	63.8	65.0	65.8	65.8
Non-government schools	79.7	80.2	81.1	82.1	81.6	81.5	82.4	81.1	81.0	80.6
All NSW schools	67.7	67.2	67.2	67.6	67.5	68.2	69.9	70.5	71.1	71.1

Note: The apparent school retention rate is the number of full-time students who are enrolled in Year 12 in a given year expressed as a percentage of their cohort group at the commencement of secondary schooling.

Source: NSW Department of Education and Training (unpublished data) and Australian Bureau of Statistics. *Schools 2005. ABS Catalogue no. 4211.0*

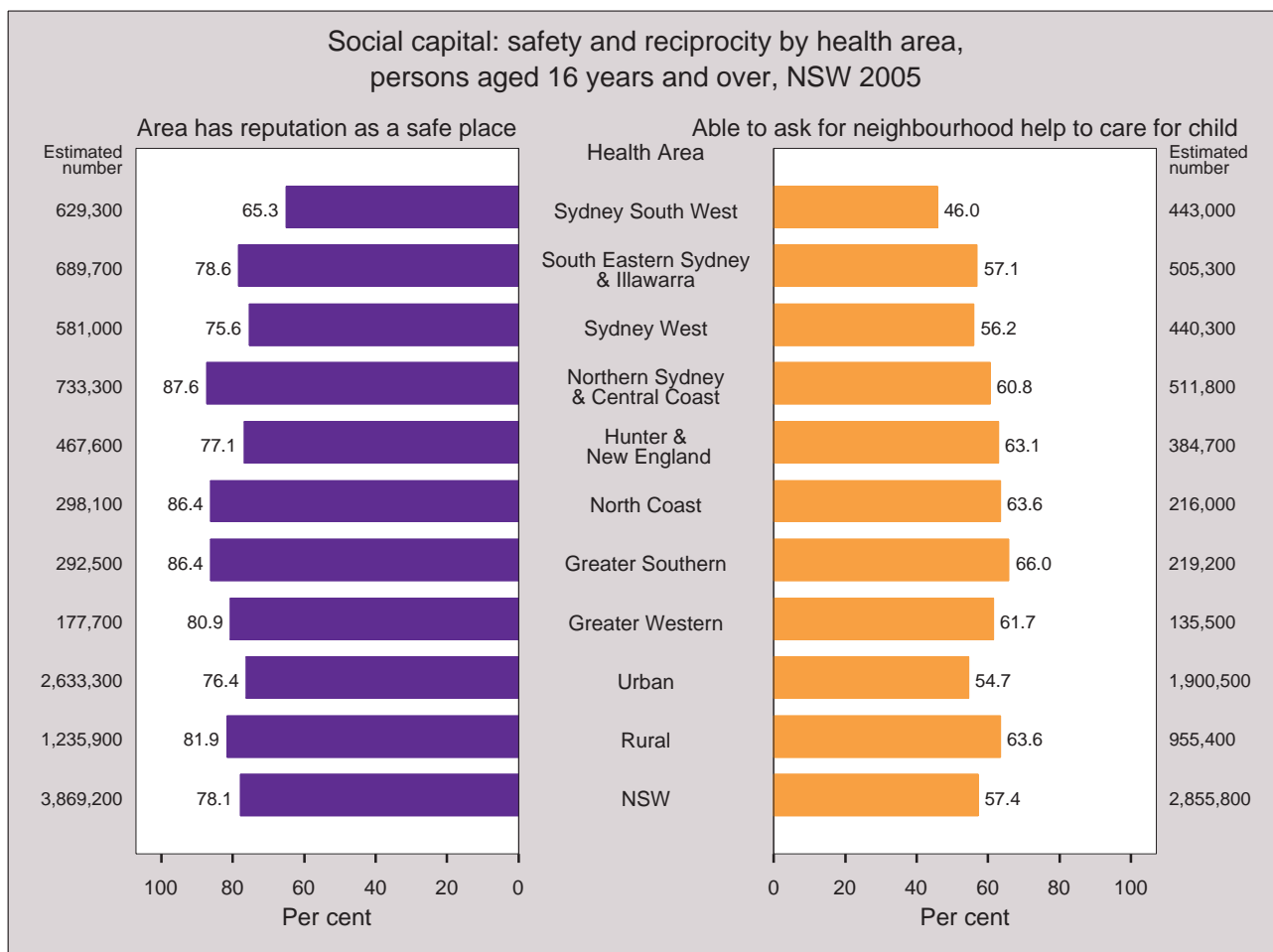
- The estimated lifetime cost to Australia of each early school-leaver is \$74,000. Half of this is a direct monetary cost and the remaining half is a social cost. Costs borne largely by the individual early school-leaver include reduced chances of employment, fewer opportunities for job mobility and training, decreased financial security, and reduced cultural enjoyment. Examples of the costs to government and the community of early school-leaving include increased social welfare costs, increased demand for health services, higher costs of crime prevention and detection, and decreased social cohesion (King, 1999).
- The Year 12 retention rate in NSW doubled between 1978 and 1994, reaching a high of 70.6% in 1993. It then decreased to 67.2% in 1997 and 1998, before increasing gradually to 71.1% in 2005. NSW has a Year 12 school retention rate below the Australian average of 75.3% and was ranked fifth among the eight Australian states and territories, behind the Australian Capital Territory, Victoria, Queensland and Western Australia (ABS, 2006).
- The retention rate in non-government schools was consistently higher than in government schools, and in 2005 was 80.6%, compared with 65.8% in government schools. Government school retention rates may be more greatly affected by students transferring to the TAFE system to complete their secondary education. Transfers between government and non-government sectors also affect retention rates.
- In NSW in 2005 the retention rate for Aboriginal students to year 10 was 83.3% compared to 97.4% for non-Aboriginal students. The difference between Aboriginal and non-Aboriginal students was even more significant in the retention rates to Year 12 which were 32.1% and 72.7% respectively.
- Female students have consistently higher retention rates. In 2005 in NSW, the Year 12 retention rate for females was 76.3%, compared with 66.0% for males, however males may be more likely than females to leave school to complete their education in the TAFE system (ABS, 2006).



Note: The counting units are recorded criminal incidents. A large number of assaults, sexual assaults, and robberies, are not reported to the police. Local Government Areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

Source: NSW Bureau of Crime Statistics and Research.

- Crime has adverse effects on health. Personal violence and assault, including domestic violence, has direct short-term and long-term effects on the physical and mental health of its victims and witnesses. Victims of property crime may also suffer psychological harm. Additionally, fear of crime may be a factor that limits enjoyment of life. Crime and ill-health also share common causes. Areas with high crime rates tend to have higher death rates, indicating that the social origins of crime—including social disorganisation, income inequality and low social capital—are also causes of ill-health (Kawachi et al., 1999). In NSW, between 2003 and 2005, there has been a decline in the numbers of both assaults and robberies and thefts reported to police. Recent trends in recorded crime are identified and described in NSW Recorded Crime Statistics 2005 (Moffatt et al., 2006).
- In 2005, a total of 78,750 assaults and robberies were reported in NSW, giving a rate of 11.7 per 1,000 NSW population. In the same year, there were 300,518 reported thefts (44.6 per 1,000 population). These figures underestimate the true rates of these crimes, because a large number of assaults, sexual assaults, and robberies, are not reported to the police.
- Outer regional and remote areas (15.8 per 1,000 population) had rates of assaults and robberies approximately one and a half times those of inner regional (11.6 per 1,000 population) and metropolitan (11.0 per 1,000 population) areas. The rate of assaults and robberies ranged from 7.0 per 1,000 population in the Northern Sydney and Central Coast Area Health Service to 18.6 per 1,000 population in the Greater Western Area Health Service. The rate of thefts was highest in the metropolitan areas, followed by outer regional and remote areas and inner regional areas. The rate of thefts ranged from 33.9 per 1,000 population in the Northern Sydney and Central Coast Area Health Service to 64.2 per 1,000 population in the South Eastern Sydney and Illawarra Area Health Service.

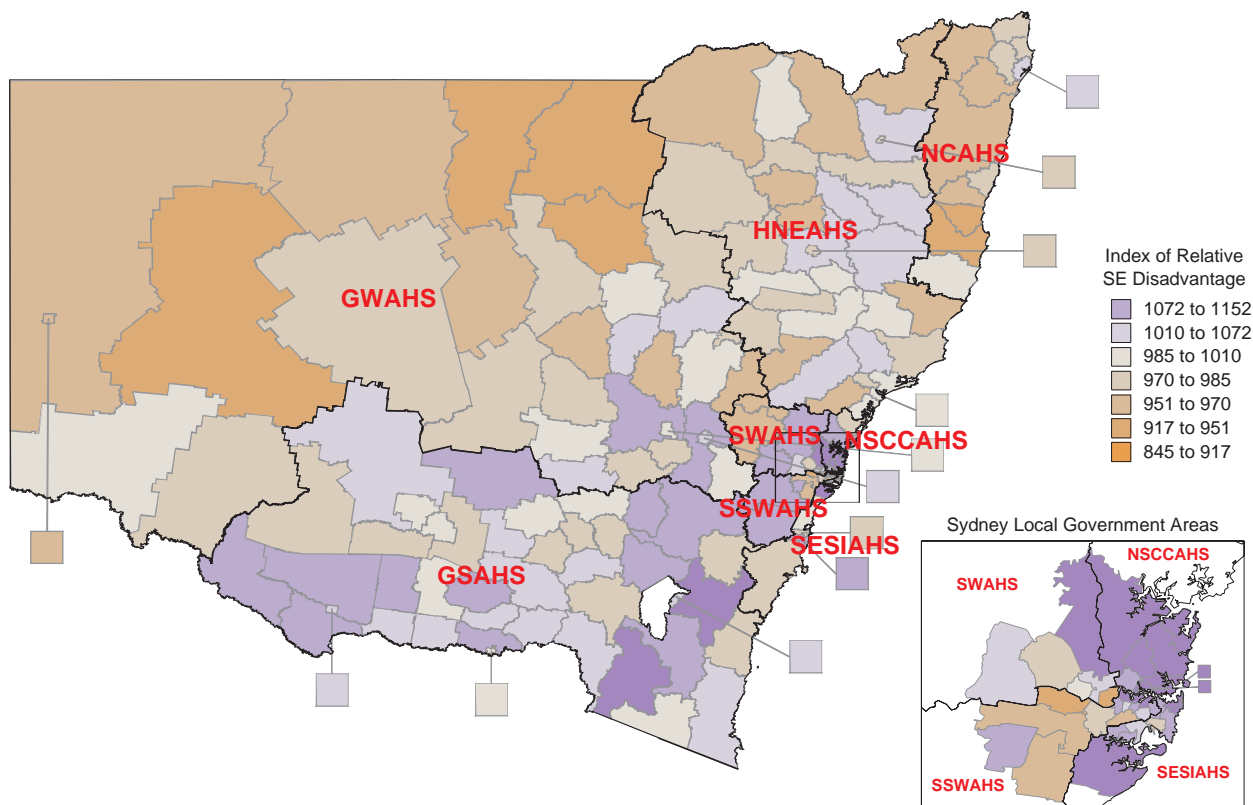


Note: The safety of area indicator includes those who strongly agree or agree that their area has a reputation for being a safe place. The question used was: Do you strongly agree, agree, disagree or strongly disagree with the statement My area has a reputation for being a safe place? Estimates are based on 11,038 respondents. 462 (4.02%) were 'not stated' (Don't know or Refused). The neighbourhood help indicator includes those who would definitely or possibly be able to ask someone in their neighbourhood for help to care for a child. The question used was: If you were caring for a child and needed to go out for a while, and could not take the child with you, would you ask someone in your neighbourhood for help? Estimates are based on 10,918 respondents. 582 (5.06%) were 'not stated' (Don't know or Refused).

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

- The term 'social capital' refers to the institutions, relationships, and norms, that shape social networks, foster trust, and facilitate coordination and cooperation for mutual benefit. A key concept of social capital is the notion of interlocking networks of relationships between individuals and groups (World Bank, 2003; CER, 2004). There is evidence that state-level indicators of social capital are associated with measures of poor health, including mortality and health risk factors, after adjusting for differences in other determinants of health such as low income, low education and poor access to health services (Berkman et al., 2000).
- The aspects of social capital reported relate to social reciprocity, where people act for the benefit of others with the general expectation that this help will be returned in the future when they might need help themselves; and feelings of trust and safety in the local community.
- In NSW in 2005, 78.1% of residents believed the area in which they live had a reputation as a "safe place". Among residents of rural NSW 81.9% felt they lived in a safe place compared to 76.4% of urban residents. Perceptions of safety in the local area also varied by health area. Residents of the Northern Sydney and Central Coast Area Health Service (87.6%) felt safer than those of the Sydney South West Area Health Service (65.3%).
- In NSW in 2005, 63.6% of rural residents felt they were able to ask for neighbourhood help to care for a child compared to 57.4% of urban residents. In the Greater Southern Area Health Service, 66.0% of residents felt confident in asking for help compared to only 46.0% in Sydney South West Area Health Service.

Socioeconomic Indices For Areas (SEIFA):
Index of Relative Socioeconomic Disadvantage scores by local government area, NSW 2001



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.

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

- Socioeconomic Indexes for Areas (SEIFA) have been constructed by the Australian Bureau of Statistics from the 2001 Census of Population and Housing data. These indexes allow comparison of the social and economic conditions across Australia. SEIFA scores are derived from multiple-weighted variables, with the reference score for the whole of Australia set to 1,000. Lower scores indicate lower socioeconomic status. There are, however, three factors which the indexes do not represent well—they are accumulated wealth, an area’s infrastructure and different costs in living across areas.
- One index for SEIFA is the Index of Relative Socioeconomic Disadvantage (IRSD), which includes variables such as high income, low income, and professional occupation, as well as people employed in unskilled occupations. Inclusion of both indicators of advantage and disadvantage allows the index to be used as a measure of advantage and disadvantage in a continuum (Adhikari, 2006).
- The map shows the IRSD scores for each local government area (LGA) in NSW. The scores for IRSD ranged from 845.11 in the Brewarrina LGA to 1,151.47 in the Ku-ring-gai LGA.
- Over 90% of the LGAs in the Northern Sydney and Central Coast Area Health Service scored above 1,000 for IRSD. The most disadvantaged health area was the North Coast with all LGAs in the area scoring less than 1,000 for IRSD. Over 90% of LGAs in the Hunter and New England Area Health Service and the Greater Western Area Health Service scored less than 1,000 for IRSD.
- Socioeconomic disadvantage is associated with a higher prevalence of health risk factors and higher rates of hospitalisations, deaths and other adverse health outcomes (see Socioeconomic status chapter). Maps of socioeconomic disadvantage by LGA viewed in conjunction with maps of health outcomes can assist in identifying factors which may be associated with poorer outcomes.

For more information

Adhikari P. *Socio-economic indexes for areas: Introduction, use and Future directions*. ABS Catalogue no. 1351.0.55.015. Canberra: ABS, 2006.

Australian Bureau of Statistics at www.abs.gov.au.

Australian Bureau of Statistics. *Australian Social Trends 2005*. Catalogue no. 4102.0. Canberra: ABS, 2005. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4102.02005?OpenDocument>.

Australian Bureau of Statistics. *Household Income and Income Distribution, Australia, 2003-04*. ABS Catalogue no. 6523.0 Canberra: ABS, 2005.

Australian Bureau of Statistics. *Schools 2005*. ABS Catalogue no. 4221.0. Canberra: ABS, 2006.

Australian Bureau of Statistics. *Socioeconomic indexes for areas, Australia 2001*. ABS Catalogue no. 2039.0. Canberra: ABS, 2003.

Australian Institute of Health and Welfare at www.aihw.gov.au.

Berkman LF, Kawachi I (Editors). *Social epidemiology*. New York: Oxford University Press, 2000.

Centre for Epidemiology and Research. *2005 Report on adult health in New South Wales*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research. New South Wales Adult Health Survey 2003. *N S W Public Health Bull* 2004; 15(S-4). Available at www.health.nsw.gov.au/public-health/phbsup/ahs2003.pdf.

Centrelink at www.centrelink.gov.au/.

Draper G, Turrell G, Oldenburg B. *Health inequalities in Australia: Mortality*. Health Inequalities Monitoring Series No. 1. AIHW Cat. No. PHE 55. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare, 2004. Available at www.aihw.gov.au/publications/index.cfm/title/10041.

Harris E, Webster I, Harris M and Lee P. Unemployment and health: The healthcare system's role. *Med J Aust* 1998; 168: 168-70.

Kawachi I, Kennedy BP and Wilkinson RG. Crime: Social disorganization and relative deprivation. *Soc Sci Med* 1999; 48: 719-731.

King A. *The Cost to Australia of Early School Leaving*. Report commissioned by the Dusseldorp Skills Forum. Canberra: National Centre for Social and Economic Modelling, University of Canberra, 1999.

Mathers CD and Schofield DJ. Health consequences of unemployment: The evidence. *Med J Aust* 1998; 168: 178-182.

Moffatt S, Goh D, Poynton S. *New South Wales recorded crime statistics 2005*. Sydney: NSW Bureau of Crime Statistics and Research, 2006. Available at http://www.lawlink.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/pages/bocsar_crime_stats.

NSW Bureau of Crime Statistics and Research at www.lawlink.nsw.gov.au/bocsar.

NSW Department of Health at www.health.nsw.gov.au/pubs.

Sainsbury P, Harris E. Health inequalities: Something old, something new. *N S W Public Health Bull* 2001; 12: 117-119. Available at www.health.nsw.gov.au/public-health/phb/phb.html.

Turrell G, Stanley L, de Looper M and Oldenburg B. *Health Inequalities in Australia: Morbidity, health behaviours, risk factors and health service use*. Health Inequalities Monitoring Series No. 2. AIHW Cat. No. PHE 72. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare, 2006. Available at www.aihw.gov.au/publications/index.cfm/title/10041.

Walker A, Abello A. *Changes in the health status of low income groups in Australia: 1977-78 to 1995*. Discussion paper no. 53. Canberra: National Centre for Social and Economic Modelling, University of Canberra, 2000.

World Bank. *What is Social Capital?* Available online at www.worldbank.org/poverty/scapital/whatsc.htm. Accessed 1 July 2003.

The environment

- Human health and the environment are inextricably linked.
- The main contributors to air pollution in cities are industry and motor vehicles and wood-burning heaters. In the last 10 years in Sydney:
 - the number of days on which levels of ozone in the air have exceeded permissible levels has fluctuated;
 - levels of particulate air pollution have peaked at the time of bushfires.
- A range of indicators of the quality of drinking water, and of water used for recreation, 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;
 - although the overall compliance rate for rural water supplies is high, results from individual supplies vary substantially;
 - the level of fluoride in drinking water supplied by the Sydney and Hunter Water Corporations stayed within the required limits for the majority of samples tested in 2005. More than three quarters of the samples in rural water supplies met the fluoride standards in 2005;
 - poisonous inorganic chemicals were detected in concentrations lower than required limits in 2005.
- Leaded petrol has been the main source of exposure to lead for most NSW children, except for those living near major sites for lead mining and processing, such as Broken Hill. In recent years:
 - blood lead levels among preschool children living in Broken Hill have declined steadily;
 - Aboriginal children in Broken Hill have blood lead levels higher than non-Aboriginal children.
- The Housing for Health program aims to assess, repair, and replace health hardware so that houses are safe and the occupants have the ability to carry out healthy living practices. 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 this chapter

- Air quality—Regional Pollution Index
- Air quality—Indoor air
- Water quality—Microbiological quality
- Water source
- Healthy Living Practices in Aboriginal houses

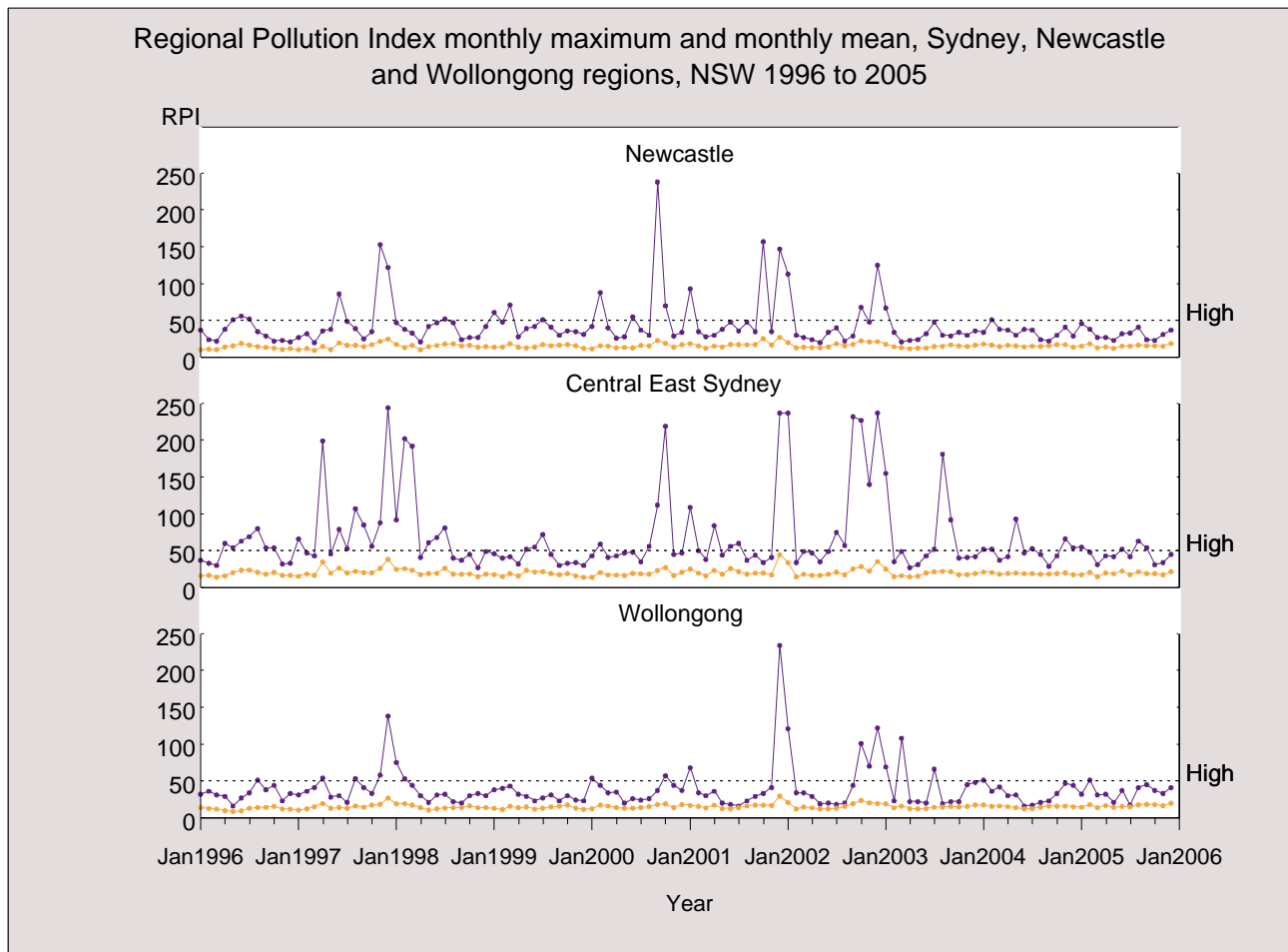
Introduction

Human health and the environment are inextricably linked. In rural areas, issues as diverse as land use, agricultural practice, water quality and biodiversity, all affect human health. Similarly, air and water quality, transport choice, urban form, and environmental health infrastructure underpin the health status of people in the urban and built environments. Increasingly, the effects on human health of global phenomena such as population growth and climate change are also recognised at a local level.

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 Conservation has carriage of legislation governing controls on air and water quality, chemical hazards, and contaminated land. The NSW Department of Health has specific responsibilities in relation to drinking water; and a variety of infectious hazards linked to premises and the built environment including *Legionella* in public air conditioning systems, tattooing and the funeral industry. The NSW Department of Health and Public Health Units in Area Health Services work in partnership with local government to manage these hazards effectively. 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. Increasingly, the NSW Department of Health is becoming involved in assessment of the health effects of major developments within NSW.

This chapter presents an overview of some important indicators of environmental health status in NSW, including air and water quality, blood lead levels and the Housing for Health program. It has been designed to complement rather than duplicate the comprehensive information presented in the triennial NSW Department of Environment and Conservation's *New South Wales State of the Environment* reports.

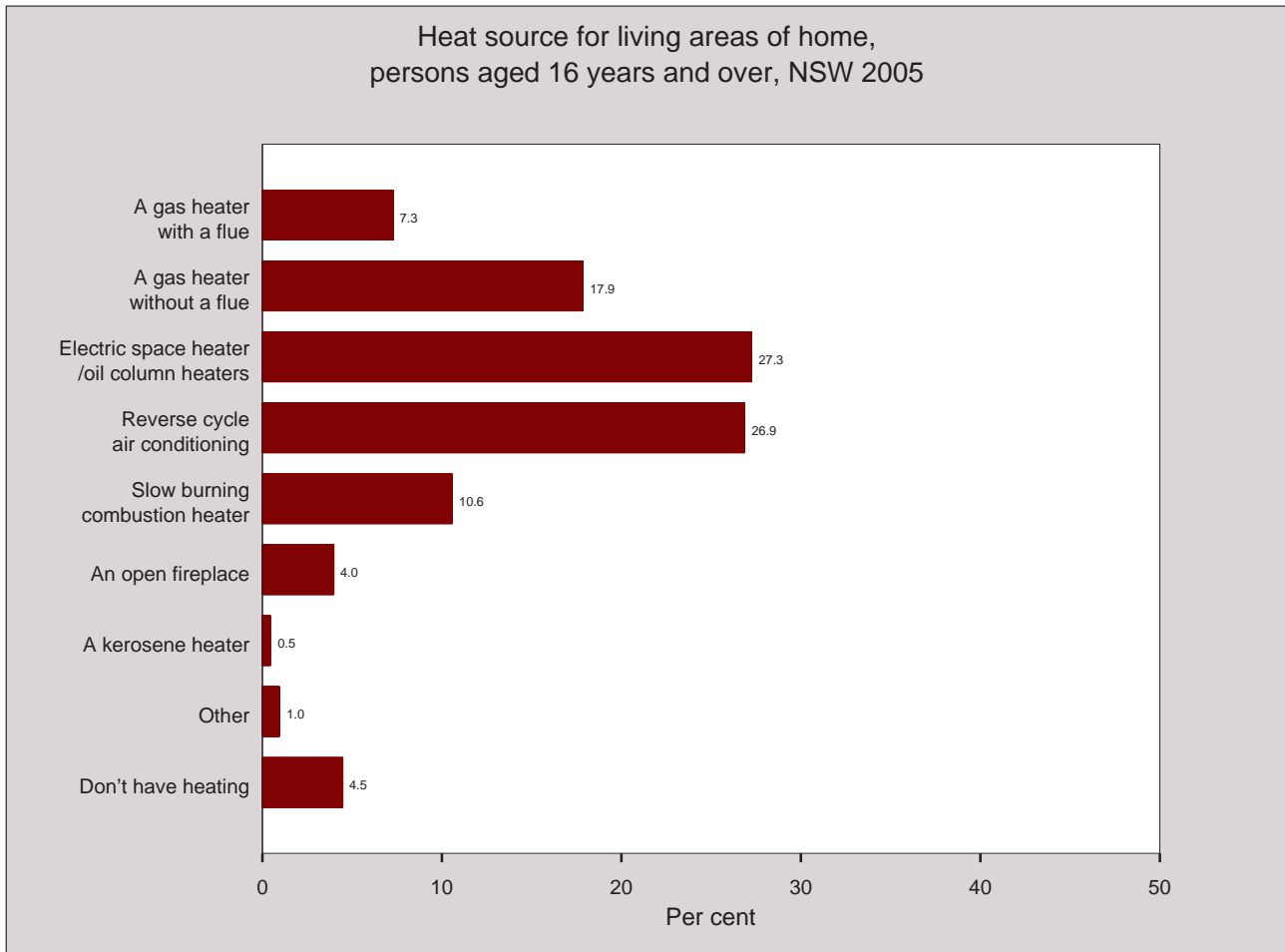
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: RPI data is reported twice daily on the Department of Environment and Conservation website <http://www.environment.nsw.gov.au/air/airdata.htm>. This graph shows the monthly maximum and monthly mean RPI.

Source: NSW Department of Environment and Conservation incorporating Environment Protection Authority.

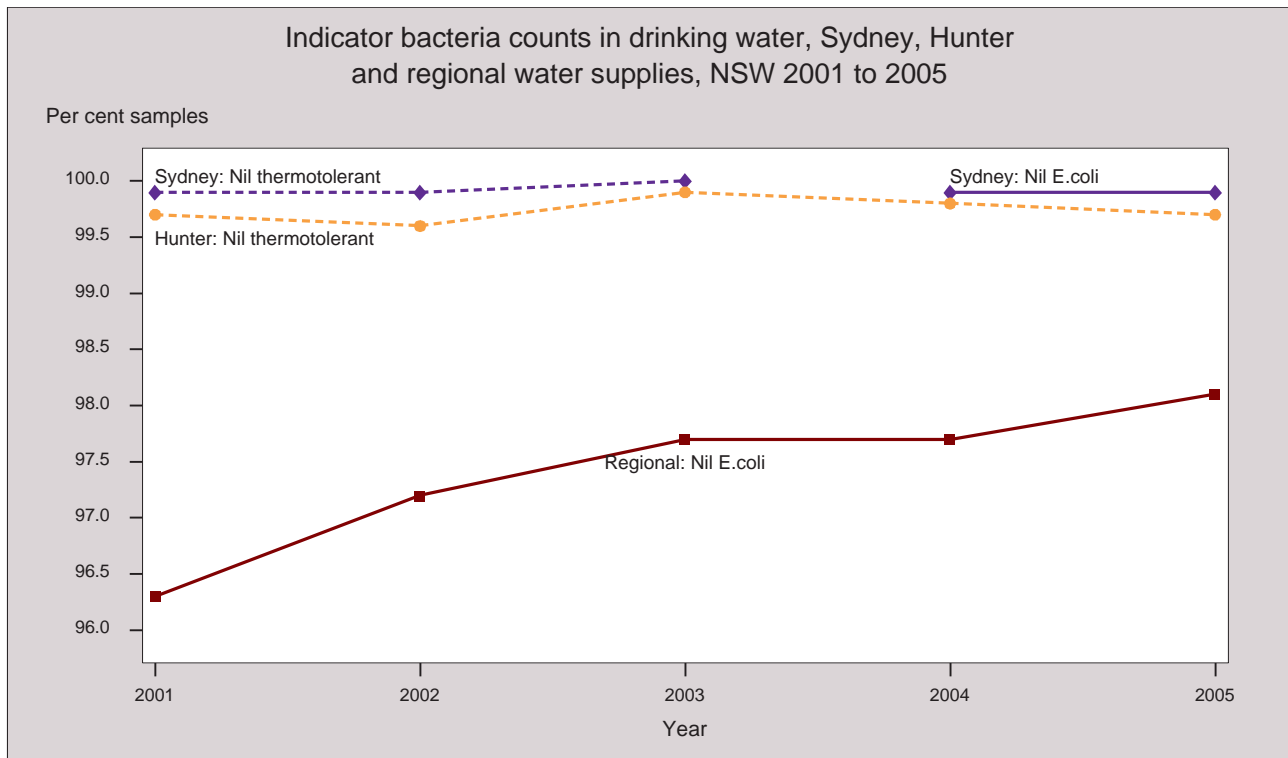
- The Regional Pollution Index (RPI) has been developed by the NSW Department of Environment and Conservation (DEC) to provide twice daily reporting of pollutant levels in Sydney, Lower Hunter and Illawarra. The RPI is produced for three regions in Sydney (Central Eastern Sydney, North Western Sydney, and South Western Sydney); three sites in the Lower Hunter (Newcastle, Wallsend and Beresfield); and two sites in the Illawarra (Wollongong and Albion Park).
- The RPI is based on three pollutants: fine particles (measured by visibility), nitrogen dioxide and ozone. The RPI reports on the highest pollutant in comparison to its highest permissible level. A high RPI indicates that at least one of the three pollutants has exceeded its permissible level during the reporting period. Using information about forecast weather conditions, the DEC also provides a forecast of pollution levels for the Sydney region the following day.
- The peaks shown on the graphs are in the main associated with bushfires. The usual contributors to air pollution in these three cities are industry and motor vehicles, with significant contributions from wood heaters overnight in the winter.
- The NSW Government's 25-year air quality management plan, *Action for Air*, began in 1998, was revised in 2001 and updated in 2006 (EPA, 2006). The plan relies on linked strategies such as *City of Cities: A plan for Sydney's future*, the *NSW Greenhouse Plan* and the *State Infrastructure Strategy New South Wales 2006–07 to 2015–16*. Promotion of 'active transport' started in the original *Action for Air* continues throughout the later documents. Active transport includes walking, cycling and using public transport instead of private vehicles. This not only generates less pollution but also improves health through increased physical activity. Further information about physical activity can be found in the health-related behaviours chapter.



Note: The question used to define the indicator was: What is the usual way you heat the living areas of your home? Estimates are based on 8,295 respondents. 85 (1.01%) were not stated (Don't know or Refused).

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

- Burning fuels (like natural gas or wood) in the home releases products of combustion, which include water vapour, carbon monoxide, and other gases. In homes where this occurs, it is important to ensure adequate ventilation and proper maintenance of appliances.
- Unflued gas heaters and open wood fires are 2 sources of home heating that release products of combustion indoors (Sheppard V et al, 2006). The 2005 NSW Health Survey included questions about the usual methods for heating homes. Respondents to this survey reported that unflued gas heating was the usual method for 17.9% of homes, and open wood-fires were used by 4.0% of homes. These proportions are respectively lower and higher than in 2002 where the corresponding figures were 19.4% and 3.2%. The 2005 survey results also showed an increase in the use of reverse cycle air conditioning of almost 7% from 2002 (from 20.1% to 26.9%).
- A study of school children aged eight to 11 years in Belmont, New South Wales showed that being exposed to fume-emitting heaters in the first year of life was associated with an increased risk of asthma symptoms (Phoa et al, 2004). If confirmed in other settings, this finding would require a review of the range of heating types that are appropriate for use in households in which young children live.



Note: Presence of bacteria *Escherichia coli* (*E. coli*) is the most reliable and specific indicator of recent faecal contamination in drinking water.

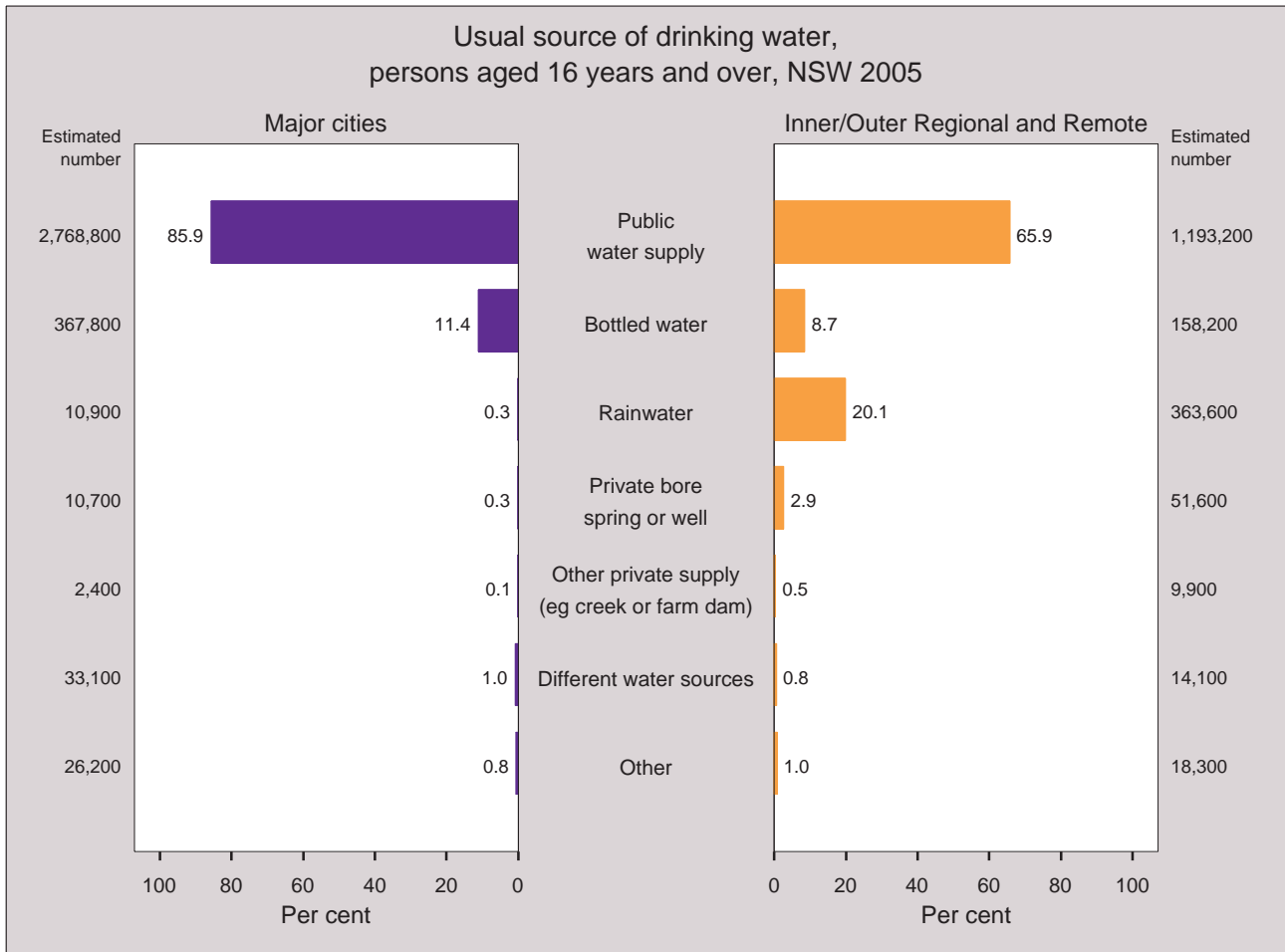
Source: Sydney Water and Hunter Water Corporations (Quarterly Reports) and NSW Health Drinking Water Monitoring Program (Database).

- Drinking water supplies in NSW are monitored for possible faecal contamination. This monitoring is performed by water utilities with oversight by NSW Health. *Escherichia coli* (*E. coli*) or thermotolerant coliforms are monitored as indicators of faecal contamination. Pathogenic microorganisms may enter the water supply as a result of faecal contamination.
- The Australian Drinking Water Guidelines 2004 (the Guidelines) (NHMRC, 2004) state that at least 98% of samples should contain no *E. coli* or thermotolerant coliforms. The Guidelines also recommend minimum sample numbers for monitoring of water supplies based on the population and complexity of the supply. Water testing results from the Sydney and Hunter Water Corporations indicate that drinking water meets the Guidelines and is of good quality.
- The NSW Health Drinking Water Monitoring Program was introduced in October 2000 to assist regional and rural water utilities to apply

the Guidelines. Under the Program, free drinking water analysis is available to water utilities through NSW Health laboratories.

- The NSW Drinking Water Database stores information and monitoring results for regional and rural water supplies. The Database has been operational since 1 January 2001 and results from the NSW Health Drinking Water Monitoring program are entered on a daily basis.
- The results from testing in rural and regional water supplies indicate that 97.7% and 98.1% of samples complied with the Guideline value for *E. coli* in 2004 and 2005 respectively. Compliance with Guideline recommendations for monitoring frequency varies widely throughout the State.

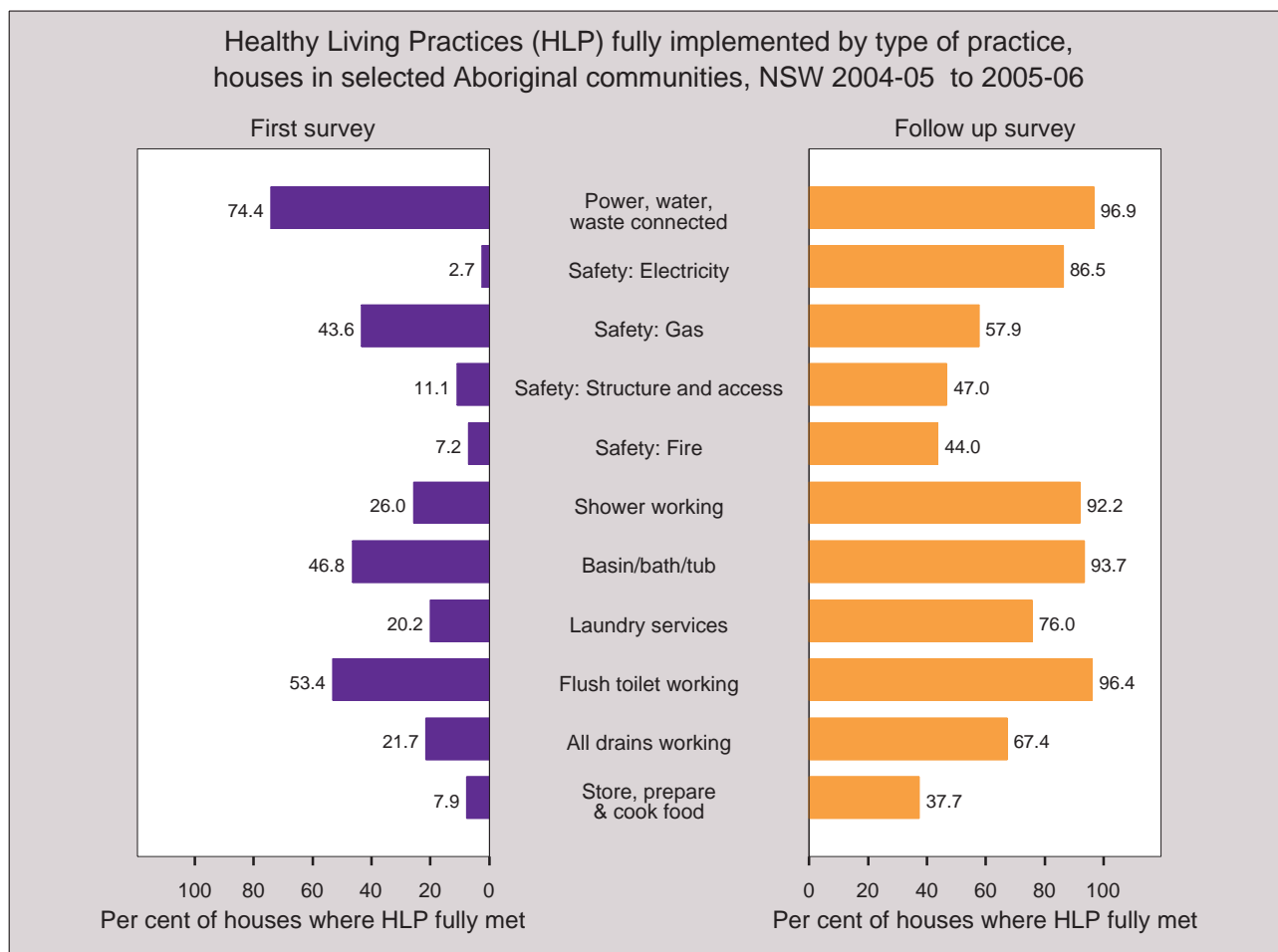
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: Postcodes were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

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

- Public drinking water supplies in NSW are routinely monitored to ensure drinking water meets the Australian Drinking Water Guidelines (NHMRC, 2004). In regional areas, local councils supply and monitor drinking water. There are many more tests conducted on tap water than bottled water (NSW Department of Health, 2002).
- In the 2005 NSW Health Survey, participants were asked about their usual source of drinking water.
- In metropolitan areas 85.9% of people obtained their drinking water from a public water supply, 11.4% from bottled water and 0.3% from rainwater. In total 1.0% of metropolitan residents obtained their drinking water from a combination of sources, and less than 1% obtained their drinking water from a private bore, well, spring or other private supplies (such as creeks or farm dams) or other sources.
- In regional and remote areas of NSW, 65.9% of people obtained their drinking water from a public water supply, 20.1% from rainwater and 8.7% from bottled water. In total 3.4% of residents in regional and remote areas obtained their drinking water from a private bore, well, spring or other private supplies (such as creeks or farm dams), and 0.8% obtained water from a combination of sources.



Note: HLP= Healthy Living Practice. Follow up survey is conducted 6–12 months after the first, baseline survey. 182 houses were included in analysis. 54 houses had gas connected and were assessed for gas safety.

Source: Healthy Living Practices baseline (Fix1) and follow up (Fix2) Surveys, Environmental Health Branch, NSW Health Department.

- The Housing for Health program aims to assess, repair or replace health hardware so that houses are safe and the occupants have the ability to carry out healthy living practices. It aims to improve the health status of Aboriginal people, particularly children (Pholeros P et al, 1993). Housing for Health has been delivered to Aboriginal communities in NSW through the Aboriginal Communities Development Program. Between 1998 and 2005, 34 community projects have been conducted under this program.
- Two surveys were conducted on 182 houses in 7 Aboriginal communities in NSW approximately six to twelve months apart in the years 2004–05 to 2005–06.
- The first survey involved the collection of data that identified problems in the key areas of safety (electrical, gas, structural and fire) and healthy living practices (including facilities for washing people, washing clothes, removing sewage and waste and improving nutrition) and on-the-spot maintenance. This was followed by a capital works program and follow-up survey to assess improvements and a further maintenance program.
- Between the 2 surveys major improvements were demonstrated in houses in some areas, for example there was a 83.8% improvement in electrical safety and 66.2% improvement in working showers. More than 95% of all houses had power, water and waste removal connected and flush toilet working.
- Each of the healthy living practices (HLP) is made up of a number of criteria, which all need to be met to consider a house improved with respect to that practice. For example, the HLP: store, prepare and cook food has 15 criteria including adequate cooking facilities, bench space and cool storage. Occasionally, the criteria are beyond the scope of the program's funding capacity and while some improvements have been made (stoves and kitchen taps repaired etc) because other criteria have not been met (fridges) this area shows the most modest result (29.9% of houses improved from 7.9% to 37.7% of all houses).

For more information

Australian Institute of Health and Welfare. *Indigenous housing needs 2005- a multi-measure needs model* Canberra: AIHW, 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10166.

Balding B, Lesjak M, Kennedy C. *Blood lead trends in children aged less than 5 years, 2005*. Greater Western Area Health Service, 2006, unpublished.

Bell ML, Dominici F, Samet JM. A meta-analysis of time-series studies of ozone and mortality. *Epidemiology* 2005; 16: 436–445.

Boreland F, Lyle DM. Lead dust in Broken Hill homes: effect of remediation on indoor lead levels. *Environmental Research*. 100(2):276–83, 2006.

Department of Environment and Conservation. *New South Wales State of the Environment 2003*. Sydney: Department of Environment and Conservation, 2003. Available at www.environment.nsw.gov.au/SOE/soe2003/index.htm. The next edition of the report is expected at the end of 2006.

Department of Environment and Conservation. *Air pollution economics. Health costs of air pollution in the Greater Sydney Metropolitan Region*. Sydney: DEC, 2006. Available at <http://www.epa.nsw.gov.au/resources/airpollution05623.pdf>.

Department of Environment and Conservation. *Woodsmoke*. Available at www.environment.nsw.gov.au/woodsmoke/index.htm.

Department of Family and Community Services. *National Indigenous Housing Guide* (2nd edition) Canberra: Commonwealth of Australia, 2003.

Department of Industry, Tourism and Resources website at www.industry.gov.au/resources/petr_statistics/index.html.

EnHealth Council is the peak Environmental Health body in Australia. EnHealth website enhealth.nphg.gov.au.

Interdepartmental Lead Taskforce. *New South Wales Lead Management Action Plan*. Sydney: NSW Environment Protection Authority, 1994.

Jalaludin B, Chey T, O'Toole B, Smith W et al. Acute effects of low levels of ambient ozone on peak expiratory flow rate in a cohort of Australian children. *Int J Epidemiol* 2000; 29: 549–557.

Jalaludin BB, O'Toole BI, Leeder SR. Acute effects of urban ambient air pollution on respiratory symptoms, asthma medication use, and doctor visits for asthma in a cohort of Australia children. *Environmental Research*. 95(1):32–42, 2004.

Levy JL, Carrothers TJ, Tuomisto JT, Hammitt JK and Evans JS. Assessing the public health benefits of reduced ozone concentrations. *Environ Health Perspect* 2001; 109: 1215–1226.

Lewis P, Hensley M, Wlodarczyk J et al. Outdoor air pollution and children's respiratory symptoms in the steel cities of New South Wales. *Med J Aust* 1998; 169: 459–63.

Lippman M et al. The U.S. Environmental Protection Agency Particulate matter Health Effects Research Centers Program: A midcourse report of status, progress and plans. *Environ Health Perspect* 2003; 111: 1074–1092.

Lyle D, Balding B, Burke H, Begg S. NSW lead management program in Broken Hill. *NSW Public Health Bull* 2001; 12(6):165–167.

Mannes T, Jalaludin B, Morgan G, Lincoln D, Sheppard V, Corbett S. Impact of ambient air pollution on birth weight in Sydney, Australia. *Occupational and Environmental Medicine*. 62(8):524–30, 2005.

Morgan G, Corbett S, Wlodarczyk J, Lewis P. Air Pollution and Daily Mortality in Sydney, Australia, 1989 through 1993. *Am J Public Health* 1998; 88: 759–764.

Morgan G, Corbett S, Wlodarczyk J. Air Pollution and Hospital Admissions in Sydney, Australia, 1990 to 1994. *Am J Public Health* 1998; 88: 1761–66.

NSW Department of Environment and Conservation website at www.environment.nsw.gov.au.

NSW Department of Health. *Unflued gas heaters*. Sydney: NSW Department of Health, 2004. Available at

www.health.nsw.gov.au/pubs/2004/pdf/gas_heaters_fs.pdf.

NSW Department of Health. *Wood smoke from wood-fired home heaters*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/factsheet/pdf/wood_smoke_pub.pdf.

NSW Department of Health. *Air pollution and health*. Available at www.health.nsw.gov.au/public-health/ehb/hazards/air-pollution.html.

NSW Department of Health. *Air pollution health alerts—ozone*. Available at www.health.nsw.gov.au/living/airpollution.html.

NSW Department of Health. *Indoor air pollution*. Available at www.health.nsw.gov.au/public-health/ehb/hazards/indoor.html.

NSW Department of Health. *Outdoor air pollution*. Available at www.health.nsw.gov.au/public-health/ehb/hazards/outdoor.html.

NSW Department of Health. Water Quality and Health website at www.health.nsw.gov.au/public-health/ehb/water/drinkwater.html.

NSW Environment Protection Authority. *Action for Air*. Sydney: EPA, 1998. with *Action for Air, 2006 update*. Sydney: EPA, 2006. Available at: www.environment.nsw.gov.au/air/actionforair/execsum.htm.

NSW Environment Protection Authority. *Beachwatch and Harbourwatch State of the Beaches Sydney-Hunter-Illawarra 2000–2001 Report*. Sydney, NSW EPA, 2001.

National Environment Protection Council website at www.ephc.gov.au.

National Health and Medical Research Council and Natural Resource Management Ministerial Council. *Australian Drinking Water Guidelines 2004*. Canberra: NHMRC, 2004. Available at: www.nhmrc.gov.au/publications/synopses/eh19syn.htm.

National Health and Medical Research Council. *Revision of the Australian guidelines for lead in blood and lead in ambient air. Report of the 115th session of the NHMRC*. Canberra: AGPS, 1993. Available at www.nhmrc.gov.au/publications/_files/115th.pdf.

New South Wales Consolidated Acts. *Fluoridation of Public Water Supplies Act 1957*. Available at www.austlii.edu.au/au/legis/nsw/consol_act/fopwsa1957400/.

New South Wales Consolidated Acts. *The Code of Practice for the Fluoridation of Public Water Supplies 2002*. Available at www.austlii.edu.au/au/legis/nsw/consol_reg/fopwsr2002491.txt.

Phoa LL, BG Toelle, Ng K, Marks GB. Effects of gas and other fume emitting heaters on the development of asthma during childhood. *Thorax*.59(9):741–5, 2004.

Pholeros P, Rianow S, Torzillo P. *Housing for Health: Towards a Health Living Environment for Aboriginal Australia*. Healthabitat: Newport Beach, 1993.

Pope CA, Burnett RT, Thun MJ, Calle EE et al. Lung cancer, cardiopulmonary mortality and long-term exposure to fine particulate air pollution. *JAMA*2002; 287: 1132–1141.

Public Health Division. The Sydney Water Incident: July–September 1998. *N S W Public Health Bull* 1998; 9(8–9): 91–94.

Sheppard V, Morgan G, Corbett S. NSW Indoor Air Survey. Part I: Sources and concentrations of pollutants in homes in New South Wales; Part II: Concentrations of nitrogen dioxide in homes in New South Wales; Part III: Particulate matter concentrations in homes in New South Wales. *Environmental Health* 2006; 6(3): 15–41.

The Department of Environment and Conservation Lead Reference Centre. Available at: www.epa.nsw.gov.au/leadsafe/publications.htm. Publications include advice for home renovators.

The Hunter Water Corporation website at www.hunterwater.com.au.

The Sydney Water Corporation website at www.sydneywater.com.au.

Transport Population Data Centre. *2002 Household Travel Survey Executive Summary. 2004 Release*. Sydney: NSW Department of Infrastructure, Planning and Resources, 2004.

Watson BK, Sheppard V. Managing respiratory effects of air pollution. *Australian Family Physician*. 34(12):1033–6, 2005.

Health-related behaviours

- Unhealthy behaviours contribute significantly to the burden of death and ill-health in NSW. For example:
 - smoking causes more than 6,500 deaths and more than 55,500 hospitalisations each year;
 - alcohol causes almost 1,500 deaths and more than 40,000 hospitalisations each year.
- Unhealthy behaviours affect people of all ages.
- Among adults :
 - 23% of men and 18% of women are current smokers;
 - 58% of men and 42% of women are overweight or obese; while only:
 - 57% of men and 47% of women are adequately physically active;
 - 45% of men and 58% of women eat adequate quantities of fruit;
 - 5% of men and 10% of women eat adequate quantities of vegetables.
- Among secondary school students aged 12–16 years:
 - 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 13% 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 usually wear a hat in the sun;
 - 36% of boys and 49% of girls usually use sunscreen.
- Among children aged 2 to 15 years:
 - 68% eat adequate quantities of fruit;
 - 20% eat adequate quantities of vegetables.
- Encouragingly, though:
 - smoking rates have declined among both men and women since 1977;
 - in 2004, for both sexes, the number of ex-smokers was greater than the number of current smokers;
 - smoking rates and cannabis use in secondary school students have

In this chapter

- Physical activity trend
- Physical activity in adults
- Physical activity in secondary school students
- Body Mass Index trend
- Overweight and obesity in school students
- Overweight and obesity in secondary school students
- Fruit and vegetable consumption in adults and children
- Fruit and vegetable consumption by health area
- Fruit and vegetable consumption in secondary school students
- Breastfeeding
- Sun protection in adults and children
- Sun protection in secondary school students
- Smoking status trend
- Smoking in adults
- Smoking by health area
- Quitting smoking
- Smoking in secondary school students
- Death and illness attributable to smoking
- Illness attributable to smoking by local government area
- Alcohol use in adults
- High risk alcohol use by rurality
- Alcohol use in secondary school students
- Death and illness attributable to alcohol
- Illness attributable to alcohol by local government area
- Substance use in secondary school students
- Cannabis use in secondary school students
- Deaths from opiates and psychostimulants
- Ambulance attendances for drug overdose
- Methadone/Buprenorphine program use

Introduction

Good health enhances the quality of human life and benefits the community. The opportunity to participate in and contribute to society is maximised in a healthy population. Organisational, economic, and environmental factors have major influences on the health of individuals. However, 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 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.

In NSW, two of the measures of success in the State Plan: A New Direction for New South Wales (NSW Premier's Department, 2006), are a reduction in avoidable hospital admissions of aged people and people with chronic illnesses and a reduction in smoking rates, unhealthy alcohol consumption and obesity. *Healthy People 2010: The population health strategy for NSW*, sets the platform for population health action in NSW over the next 5 years and ensures that those interventions which have the highest benefits for our population and which address health differentials are undertaken. The plan builds on existing population health efforts in NSW and identifies key population health issues that must be tackled to meet the challenges arising from the changing profile of our community and the increasing prevalence of chronic diseases (NSW Health, 2006). The Plan 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.

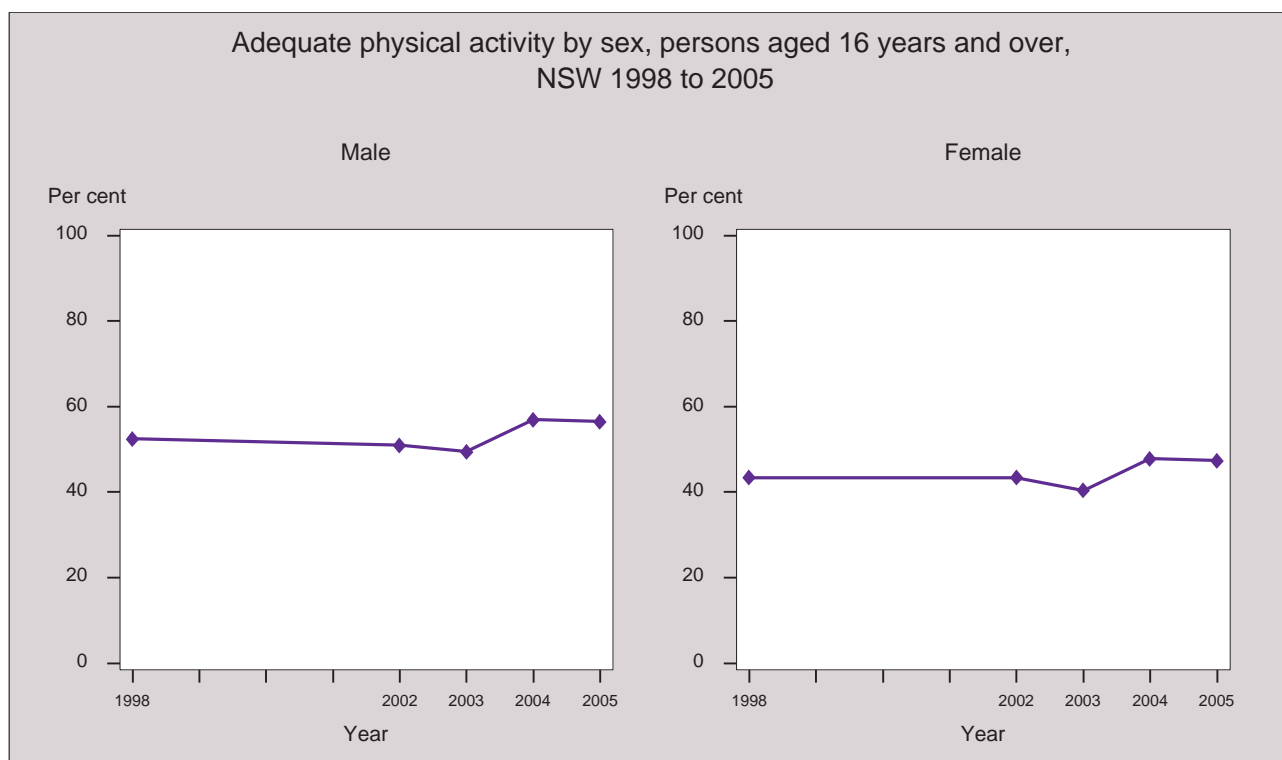
This chapter includes information from the NSW Population Health Surveys conducted between 1997 and 2005 and covering both children and adults in NSW; the NSW Schools Physical Activity and Nutrition Survey conducted in 2004; Australian Bureau of Statistics (ABS) National Health Surveys; the NSW School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

Apparent trends in some health indicators should be interpreted with caution, because data come from a range of surveys that used different modes. They may reflect real changes in the prevalence of behaviours, or differences due to variations in sampling and data collection methods.

For details of the methods used for analysing data from the New South Wales Population Health Survey and New South Wales School Students Health Behaviours Survey, refer to the Methods section.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

Adequate physical activity by sex, persons aged 16 years and over, NSW 1998 to 2005

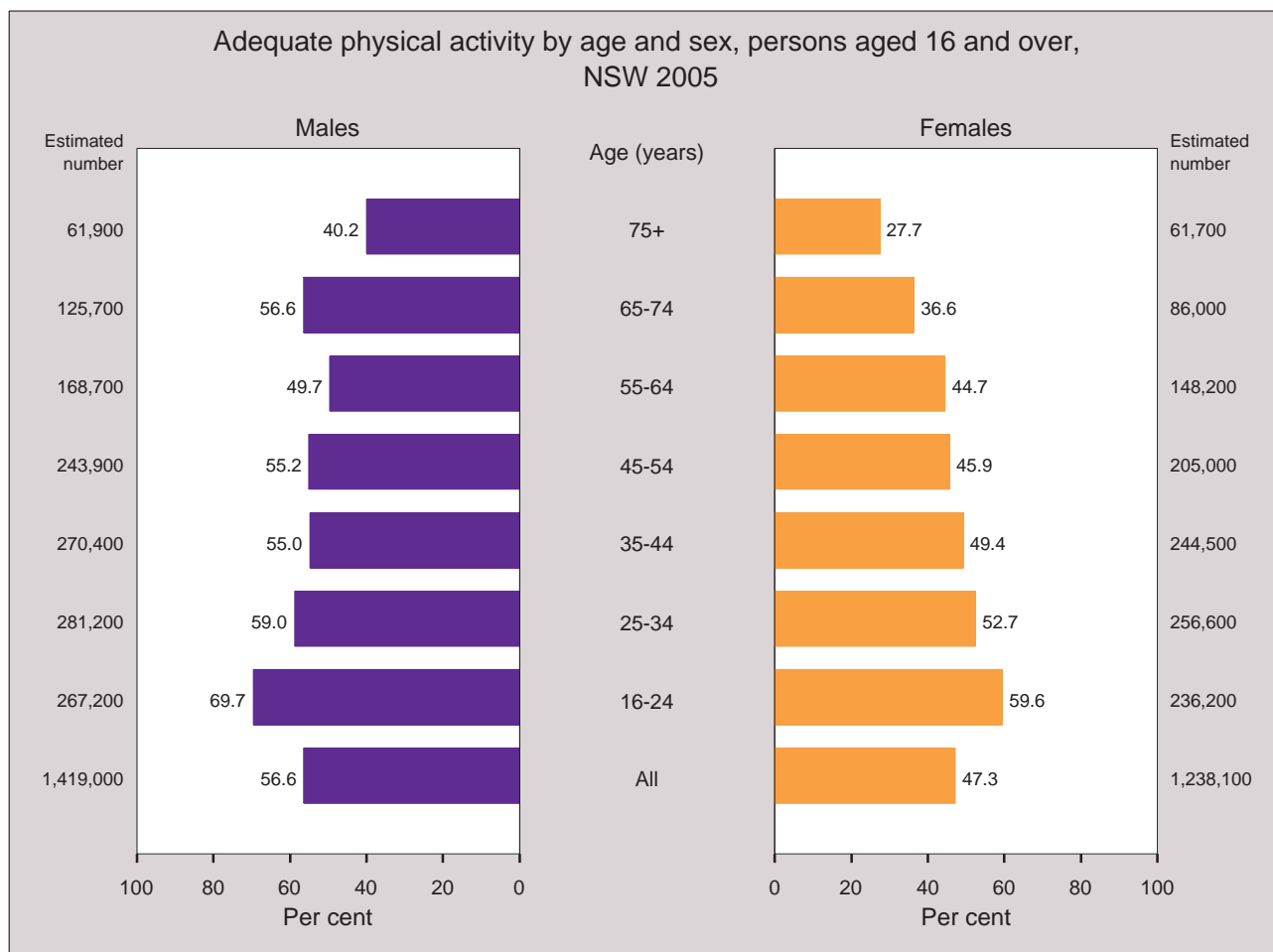


Year	Sex	Estimated number	Per cent	LL 95% CI	UL 95% CI
1998	Persons	2,367,000	47.9	46.9	48.9
2002	Persons	2,401,700	47.2	45.9	48.5
2003	Persons	2,252,700	44.7	43.5	46.0
2004	Persons	2,659,700	52.4	50.9	53.9
2005	Persons	2,657,100	51.9	50.6	53.1

Note: The indicator includes those who undertook adequate physical activity. Adequate physical activity is a total of 150 minutes per week on 5 separate occasions. The total minutes were calculated by adding minutes in the last week spent walking continuously for at least 10 minutes, minutes doing moderate physical activity, plus 2 x minutes doing vigorous physical activity. Estimates are based on 11,402 respondents. 98 (0.85%) were not stated (Don't know or Refused).

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

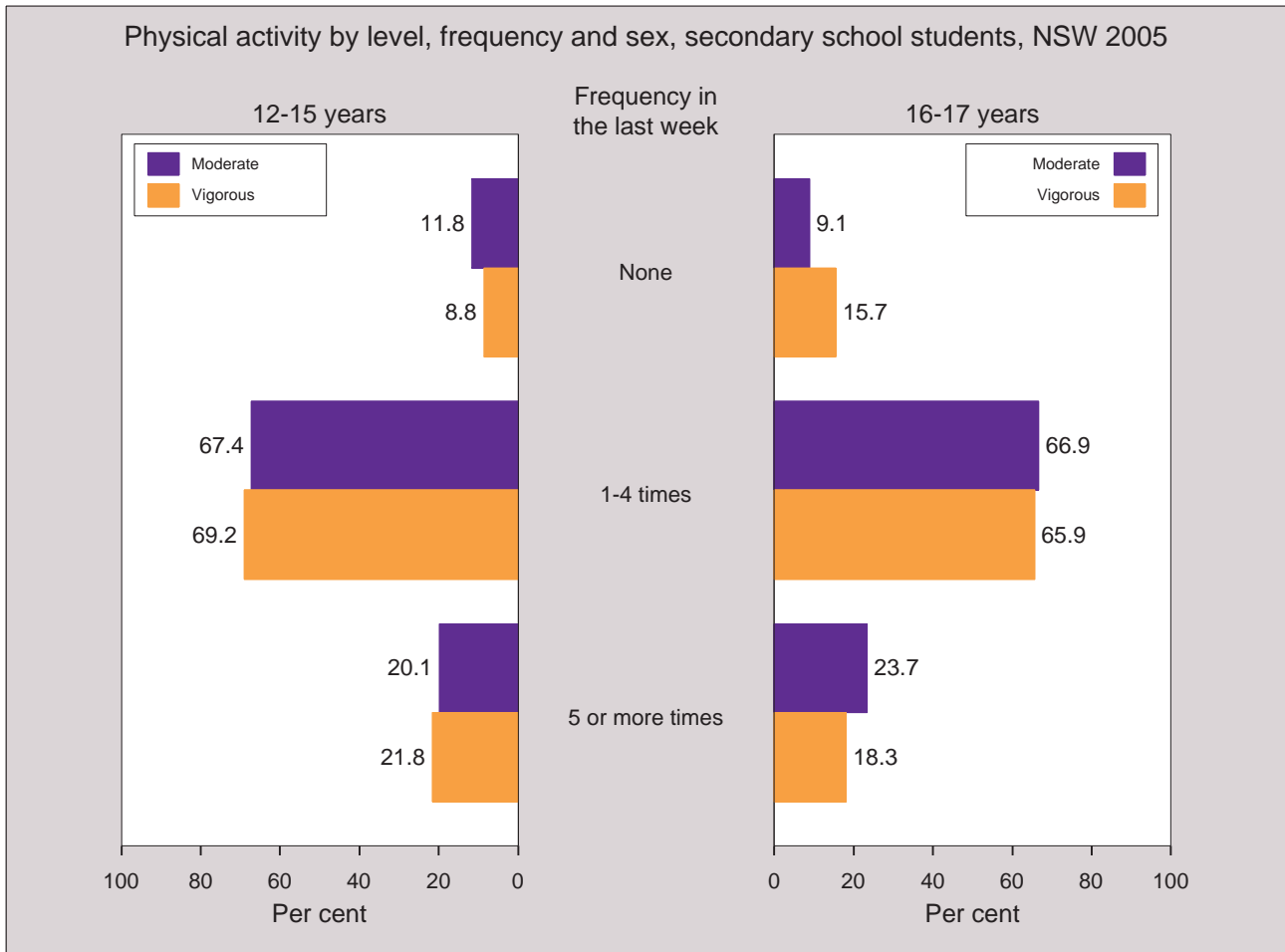
- Physical inactivity was responsible for 7% of the total burden of disease in Australia in 2003, with ischaemic heart disease, Type 2 diabetes and stroke accounting for more than four-fifths of this burden (Begg et al., in press).
- It is recommended that every adult in NSW should accumulate at least 30 minutes of moderate-intensity physical activity on most, and preferably all, days of the week (DHAC, 1999 and 2005; ADHA, 1999).
- The trend data on this page show NSW population survey data collected in 1998, 2002, 2003, 2004 and 2005. "Adequate" physical activity is defined as a total of 150 minutes of moderate to vigorous physical activity per week on five separate occasions. In 2005 in NSW 51.9% of adults reported adequate levels of physical activity, a significant increase on the level reported in 1998 (which was 47.9%). This increase applied to both males and females. In males, the level of adequate physical activity increased from 52.5% in 1998 to 56.6% in 2005; and in females it increased from 43.4% in 1998 to 47.3% in 2005.
- The Premier's Council for Active Living (PCAL) aims to build and strengthen the physical and social environments in which communities engage in active living. It comprises senior representatives from across government, industry and the community sector and was established in 2004. PCAL is using policy and legislative means to achieve its aims, as well as supporting leaders in the public, private and non-government sectors and building sustainable partnerships in these sectors to encourage active living in different physical and social environments in NSW (PCAL website).



Note: The indicator includes those who did adequate physical activity. Adequate physical activity is a total of 150 minutes per week on 5 separate occasions. The total minutes were calculated by adding minutes in the last week spent walking continuously for at least 10 minutes, minutes doing moderate physical activity, plus 2 x minutes doing vigorous physical activity. Estimates are based on 11,402 respondents. 98 (0.85%) were not stated (Don't know or Refused).

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

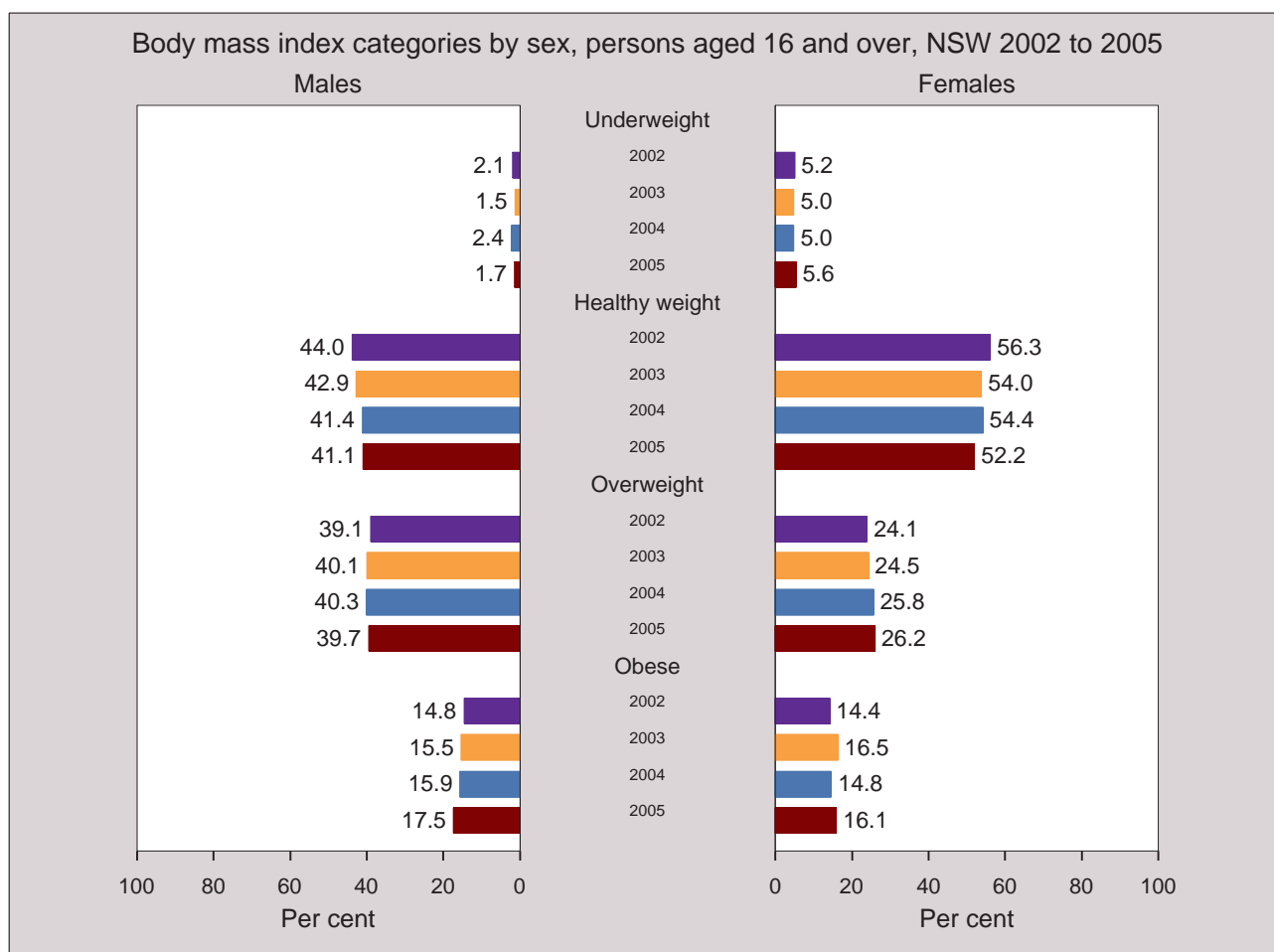
- Physical inactivity was responsible for 7% of the total burden of disease in Australia in 2003, with ischaemic heart disease, Type 2 diabetes and stroke accounting for more than four-fifths of this burden (Begg et al., in press). Physical activity is a preventive factor for cardiovascular disease, cancer, mental illness, diabetes mellitus and injury. To maintain health, it is recommended that moderate intensity activity be carried out on most, and preferably all, days of the week for at least 30 minutes per day (ADHA, 1999). Moderate intensity activity includes brisk walking, dancing, swimming and cycling.
- To maintain good health, the *National physical activity guidelines for adults* recommend at least 30 minutes of moderate activity on most, and preferably all, days of the week. This includes brisk walking, dancing, swimming, or cycling, which can be undertaken in shorter bursts such as 3 lots of 10 minutes (DHAC, 199 and 2005).
- In 2005, the New South Wales Population Health Survey showed that 51.9% of adults aged 16 years and over reported adequate levels of physical activity (56.6% of males and 47.3% of females). Adequate physical activity was most frequently reported by males (69.7%) and females (59.6%) aged 16–24 years. Adequate physical activity was least frequently reported by males (40.2%) and females (27.7%) aged 75 years and over.
- The Premier’s Council for Active Living is using policy and legislative means, as well as supporting leaders in the public, private and non-government sectors and building sustainable partnerships in these sectors to encourage active living in different physical and social environments in NSW (PCAL website).



Note: Vigorous physical activity was defined as doing ‘an activity for at least 30 minutes that made you sweat and breathe hard (for example: basketball, netball, soccer, football, running, fast bike riding, fast dancing, aerobics)’. Moderate physical activity was defined as doing ‘an activity for at least 30 minutes that did not make you sweat or breathe hard (for example: slow bike riding, swimming, pushing a lawn mower, mopping floors, brisk walking)’. Estimates are based on 6,180 respondents.

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

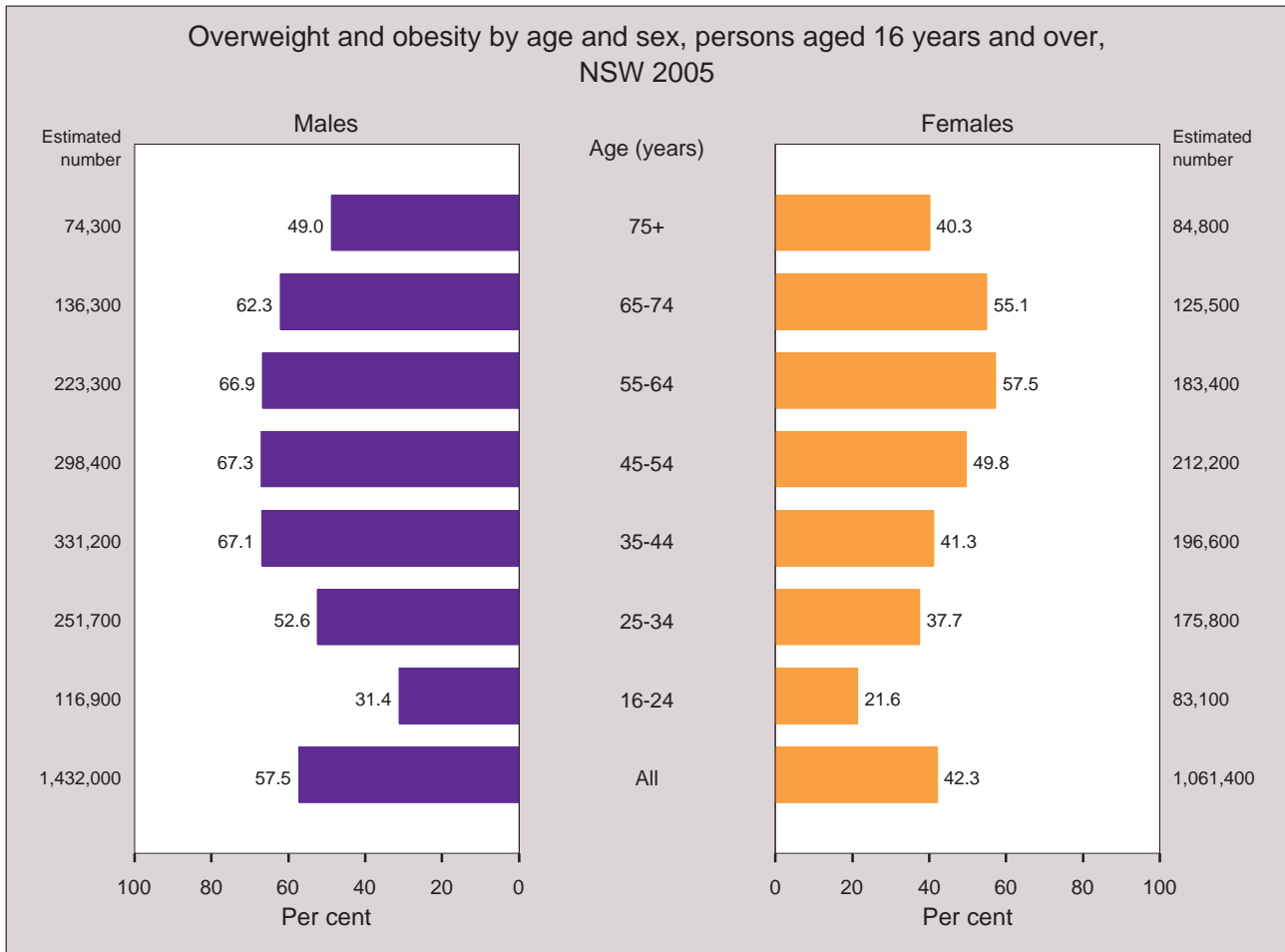
- It is increasingly difficult for children and adolescents to participate in a physically active lifestyle. An increase in sedentary recreational activities, such as watching television and videos and playing computer games, coupled with a culture of driving children to school and other activities instead of walking or cycling, have all contributed to creating an environment that encourages more sedentary pursuits (Booth, 2000a).
- It has been estimated that 20–25% of Australian children are not sufficiently physically active and are at risk of becoming inactive adults (Booth, 2000b). Regular physical activity throughout life reduces the risk of developing cardiovascular diseases (especially coronary heart disease) and non insulin dependent diabetes, and reduces the risks of heart disease and stroke, by helping to control body weight, blood pressure and blood lipid levels (Shilton, 2001). Australian recommendations for levels of physical activity in young people are at least 60 minutes of moderate to vigorous intensity physical activity every day (AGDHA, 2004).
- In the NSW Secondary School Students Behavioural Survey students were asked to estimate the amount of moderate and vigorous activity they had undertaken in the previous week. In 2005, the majority of secondary school students reported doing moderate (67.3%) and/or vigorous physical activity (68.3%) on one to four occasions in the previous week. Just under a quarter of students reported doing either moderate (21.0%) or vigorous (20.8%) activity at least five times in the previous week, with a higher proportion of males reporting moderate and vigorous activity than females. Just over one in ten students reported not doing any moderate (11.1%) or vigorous (10.7%) activity, which increased with age from 8.8% in the 12–15 age group to 15.7% in the 16–17 year age group for vigorous activity.



Note: Body Mass Index (BMI) was based on self reported height and weight. BMI=weight(kg)/height*height(m). BMI categories were as follows: underweight: BMI<20, acceptable weight: 20<=BMI<25, overweight: 25<=BMI<30, obese: BMI>=30.

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

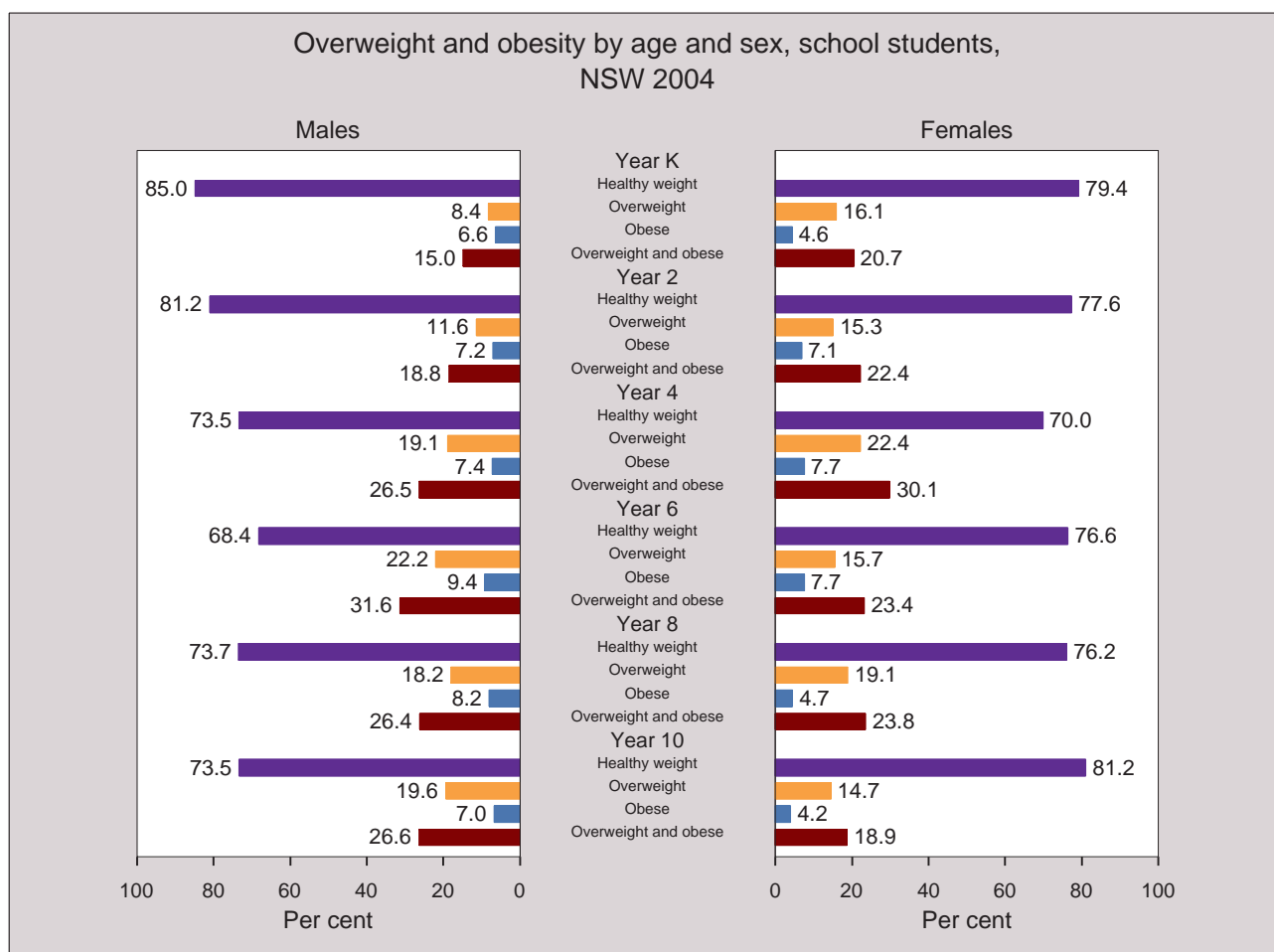
- Consistent with world and Australian trends, NSW is experiencing an increase in the levels of overweight and obesity in the population. Excess body fat increases the risk of developing a range of health problems including Type 2 diabetes, cardiovascular diseases, high blood pressure, certain cancers, sleep apnoea, osteoarthritis, psychological disorders and social problems (AIHW, 2006). High body mass was responsible for 9% of the total burden of disease in Australia in 2003, with Type 2 diabetes and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press).
- The prevalence of overweight or obesity is measured in the NSW Population Health Survey by using self-reported height and weight in adults to calculate the Body Mass Index (BMI) (weight in kilograms divided by the square of the height). The BMI is classified into 4 categories: underweight, healthy weight, overweight, and obese.
- In 2005, half of the NSW adult population was considered to be overweight or obese, an increase from 46.2% of the population in 2002. The increase over this period was statistically significant for the prevalence of obesity, but not for overweight. Between 2002 and 2005, levels of overweight and obesity increased in both males and females from 53.9% in 2002 to 57.2% in 2005 in males and from 38.5% in 2002 to 42.3% in 2005 in females. Levels of underweight were around three times higher in females than in males in 2005 (1.7% in males compared to 5.6% in females) and these levels were stable over the period 2002 to 2005. Levels of healthy weight declined in both males and females from 44.0% in 2002 to 41.1% in 2005 in males and from 56.3% in 2002 to 52.2% in 2005 in females.
- The results presented here underestimate the true prevalence of overweight and obesity, because they rely on self-report of height and weight, via telephone interview. A validation study of 1997 NSW Health Survey data reported that the prevalence of overweight and obesity was underestimated by 23% for men and 15% for women (Flood et al., 2000).



Note: The indicator includes those with a Body Mass Index (BMI) of 25 or higher. The questions used to define the indicator were: How tall are you without shoes? and How much do you weigh without clothes or shoes? BMI is calculated as follows: $BMI = \text{weight (kg)} / \text{height}^2(\text{m})$. Categories for this indicator include overweight (BMI between 25 and 29.9) and obese (BMI of 30 and over). Estimates are based on 11,078 respondents. 422 (3.67%) were not stated (Don't know or Refused).

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

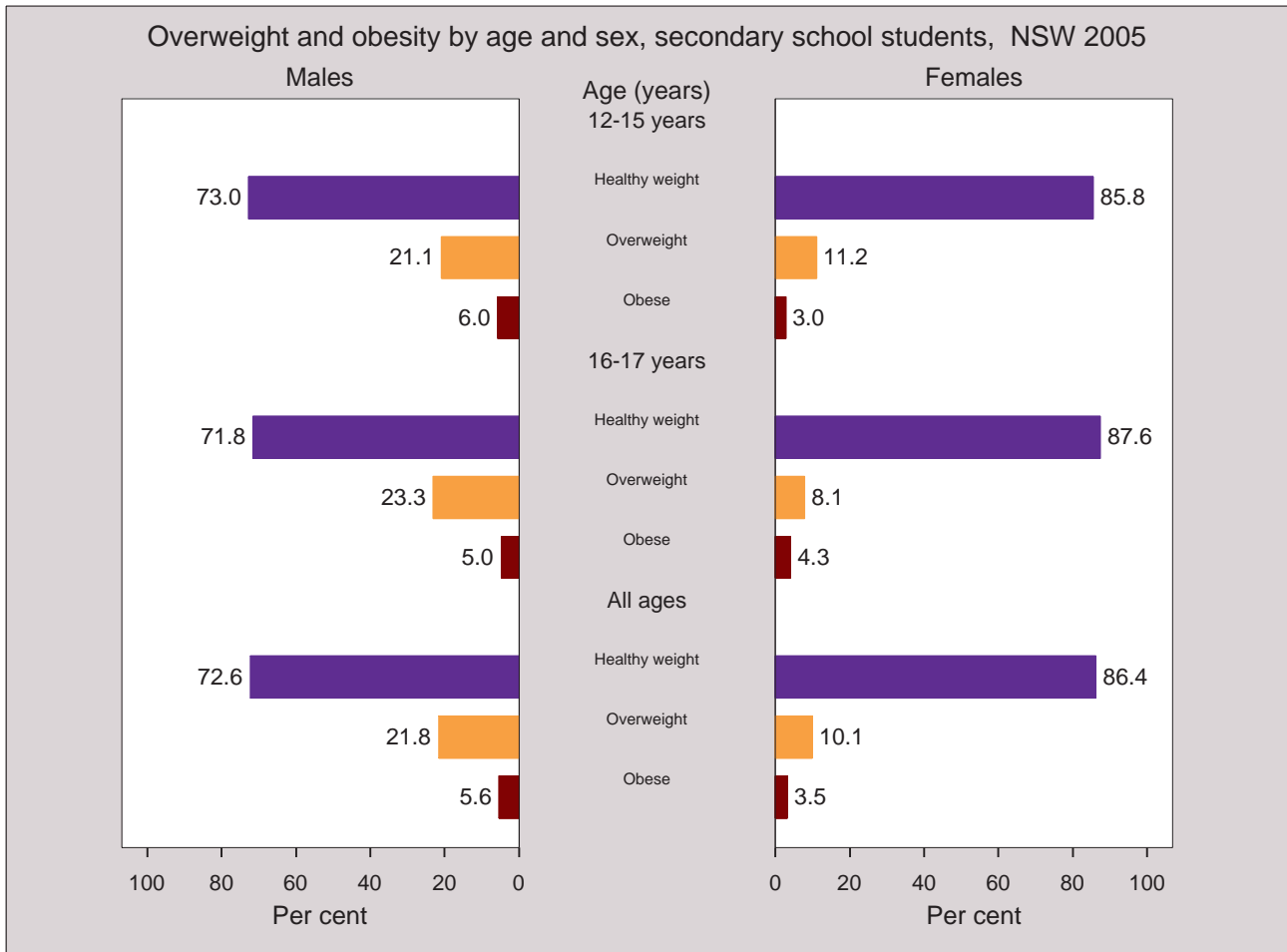
- High body mass was responsible for 9% of the total burden of disease in Australia in 2003, with Type 2 diabetes and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press). Excess body fat increases the risk of developing a range of health problems including Type 2 diabetes, cardiovascular diseases, high blood pressure, certain cancers, sleep apnoea, osteoarthritis, psychological disorders and social problems (AIHW, 2006).
- The prevalence of overweight or obesity is measured in the NSW Population Health Survey by using self-reported height and weight in adults to calculate the Body Mass Index (BMI) (weight in kilograms divided by the square of the height). The BMI is classified into 4 categories: underweight, healthy weight, overweight, and obese.
- In 2005, the New South Wales Population Health Survey showed that 49.9% of the population was classified as overweight or obese. More males (57.5%) than females (42.3%) were classified as overweight or obese. The proportion was lowest among those aged 16–24 years (31.4% among males and 21.6% among females). In both sexes the proportion rose steadily until age 55–64 years then declined among older respondents.
- The 1999–2000 AusDiab study measured the actual height and weight of study participants, who were aged 25 years and over. The AusDiab study found that 67% of males and 52% of females in Australia were overweight or obese (AIHW, 2006).
- Healthy people 2010* (NSW Health, 2006) includes strategies aimed at reducing obesity. Priorities include promoting healthy weight through increasing physical activity and encouraging healthy eating habits in schools, among parents and in childcare centres.



Note: Trained field staff measured height, weight and waist circumference in school children in years K, 2,4,6,8,and 10. Height and weight were used to calculate the body mass index (BMI) as weight (kg)/height (m²). Three categories of BMI were created based on the definitions of Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition of child overweight and obesity worldwide: international survey. *BMJ*, 320:1240–1243, 2000.

Source: Booth M, Okely AD, Denney-Wilson E, Hardy L, Yang B, Dobbins T. NSW Schools Physical Activity and Nutrition Survey (SPANS) 2004: Full Report. Sydney: NSW Department of Health, 2006.

- Excess body fat increases the risk of developing a range of health problems including Type 2 diabetes, cardiovascular diseases, high blood pressure, certain cancers, sleep apnoea, osteoarthritis, psychological disorders and social problems (AIHW, 2006).
- The NSW Schools Physical Activity and Nutrition Survey (SPANS) trained field staff to measure the height, weight and waist circumference of a sample of school children in years K, 2, 4, 6, 8, and 10 in NSW in 2004. The results showed that overall 25.0% of boys and 23.3% of girls were overweight or obese. Among boys, the prevalence of overweight and obesity rose from 15.0% in Year K to 31.6% in Year 6 before declining to around 26% in Years 8 and 10. There was a similar pattern in girls, but the peak of 30.1% appeared in Year 4 before declining to 18.9% in Year 10. The results of the study suggest that the pubertal growth spurt may be responsible for the decline in overweight and obesity and this may present a significant opportunity for primary school aged children who are overweight or obese to achieve a healthy weight (Booth et al., 2006).
- The SPANS survey also found that the prevalence of overweight and obesity has increased markedly in school-aged children over the last 20 years. In boys, the prevalence of overweight and obesity increased from 10.8% to 26.1% between 1985 and 2004 across all school years and from 12.0% to 23.7% in girls in the same period (Booth et al., 2006).
- The NSW Government Action Plan for the Prevention of Obesity in Children and Young People 2003–07 contains 34 individual actions that the NSW Government is currently implementing to address the prevention of obesity in children and young people (NSW Health, 2003).



Note: The questions used from the 2005 NSW School Students Health Behaviours (SSHBB) survey were: 'How tall are you without shoes?' and 'How much do you weigh without clothes or shoes?'. Body Mass Index (BMI) is calculated as follows: $BMI = \frac{\text{weight(kg)}}{\text{height}^2(\text{m})}$. The calculated child BMI is then scaled to the adult BMI using the table provided by AIHW in the Metadata Online Registry in the Person-Body Mass Index Classification available online <http://meteor.aihw.gov.au/content/index.phtml/itemId/27047>. The resulting categories shown for BMI scores are healthy weight (equivalent to an adult BMI less than or equivalent to 24.9), overweight (equivalent to an adult BMI between 25 and 29.9), and obese (equivalent to an adult BMI of 30 and over).

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

- Excess body fat increases the risk of developing a range of health problems including Type 2 diabetes, cardiovascular diseases, high blood pressure, certain cancers, sleep apnoea, osteoarthritis, psychological disorders and social problems (AIHW, 2006).
- There is a lack of recent national data on overweight and obesity among children and adolescents (AIHW, 2006). The 1995 National Health Survey found that the prevalence of overweight and obesity among children and adolescents aged 2 to 18 years was 19.5% for boys and 21.1% for girls (AIHW, 2006).
- Height and weight were reported by students in the NSW Secondary School Students Behavioural

- Survey in 2005 in order to calculate Body Mass Index (BMI). Over three quarters (78.8%) of students were calculated as being at a healthy weight, however 16.6% were overweight and 4.6% were obese. Overall 27.4% of males and 13.6% of females aged 12–17 years were overweight or obese. There was no difference by age group, however a higher proportion of females (86%) were at the healthy weight than males (73%).
- The NSW Government Action Plan for the Prevention of Obesity in Children and Young People 2003–07 contains 34 individual actions that the NSW Government is currently implementing to address the prevention of obesity in children and young people (NSW Health, 2003).

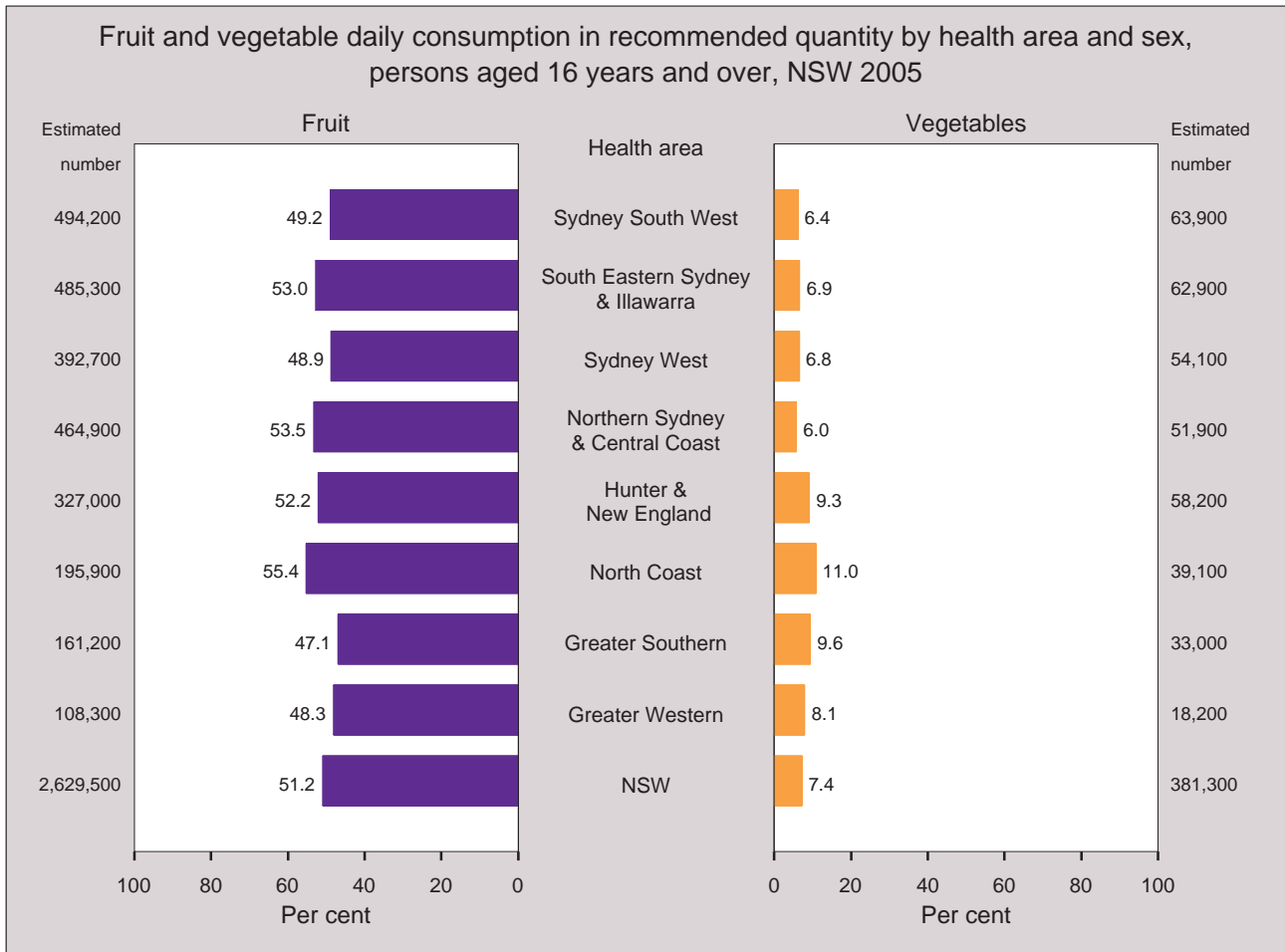
Fruit and vegetable daily consumption in recommended quantity by age and sex, persons aged 2-15 years, 2003 to 2004 combined, and persons aged 16 years and over, NSW 2005



Note: The indicator includes those who met the recommended fruit and vegetable consumption per day. One serve of fruit is equivalent to one medium piece or 2 small pieces of fruit. One serve of vegetables is

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

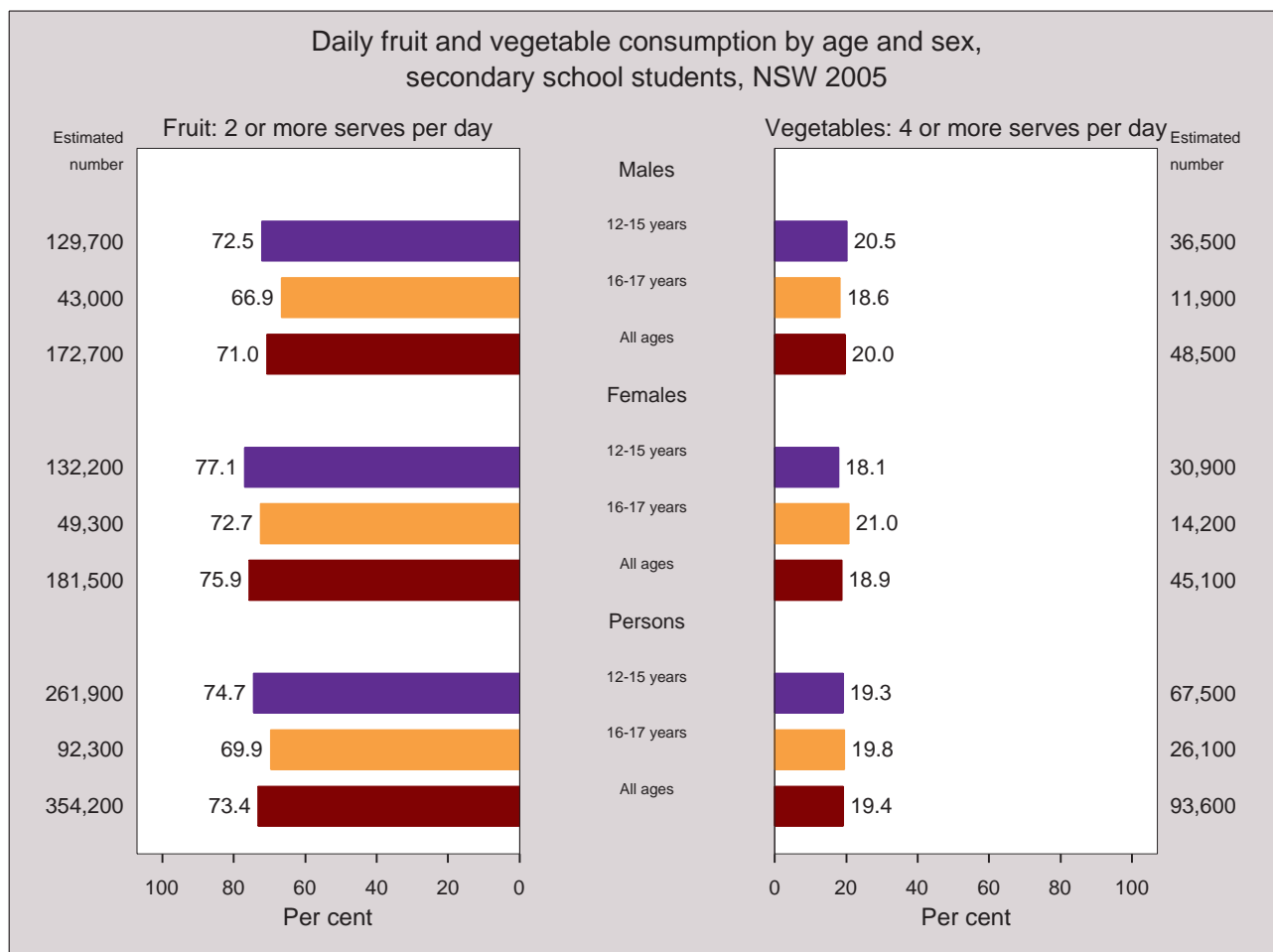
- Nutrition is important at all stages of life. Dietary factors are linked to health and disease, as protective influences or as risk factors, including: coronary heart disease, some cancers, Type 2 diabetes, overweight and obesity, osteoporosis, dental caries, gall bladder disease, and diverticular disease (NHMRC, 2003).
- The National Health and Medical Research Council dietary guidelines recommend a wide variety of nutritious foods to be eaten, with limits on fat intake, alcohol, salt and sugars (NHMRC, 2003). Specifically, the guidelines recommend that adults, adolescents and children consume on average at least two helpings of fruit and five of vegetables each day, selected from a wide variety of types and colours and served cooked or raw, as appropriate (NHMRC, 2003). An adequate intake of fruit and vegetables has a protective influence on health but most population groups eat less than the recommended amounts of these foods.
- Overall, in 2005, 51.1% of adults aged 16 years and over ate the recommended daily intake of fruit of 2 serves or more (44.5% males; 57.5% females), and 7.4% of adults ate the recommended daily intake of vegetables of 5 serves or more (4.7% males; 10.1% females). Fruit consumption increased with age from 50.4% in persons aged 16–24 years to 67.6% in those aged 75 years and over. Consumption of the recommended quantities of vegetables ranged from 4.6% in persons aged 16–24 years to 11.9% in those aged 65–74 years.
- In 2003–2004, 67.7% of children aged 2–15 years ate the recommended daily intake of fruit of 2 serves or more (65.9% males; 69.7% females), and 20.4% of children ate the recommended daily intake of vegetables of 5 serves or more (20.1% males; 20.7% females).
- *Healthy people 2010* (NSW Health, 2006) includes strategies aimed at reducing obesity. Priorities include promoting healthy weight through increasing physical activity and encouraging healthy eating habits in schools, among parents and in childcare centres.



Note: 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. The question used to define the indicator was: 'How many serves of fruit do you usually eat each day?' Estimates are based on 11,426 respondents. 74 (0.64%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who met the recommended consumption of vegetables. The recommended vegetable intake is 5 serves per day for persons aged 16 years and over. One serve is equivalent to 1/2 cup of cooked vegetables or one cup of salad vegetables. The question used to define the indicator was: 'How many serves of vegetables do you usually eat each day?' Estimates are based on 11,416 respondents. 84 (0.73%) were 'not stated' (Don't know or Refused) in NSW.

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

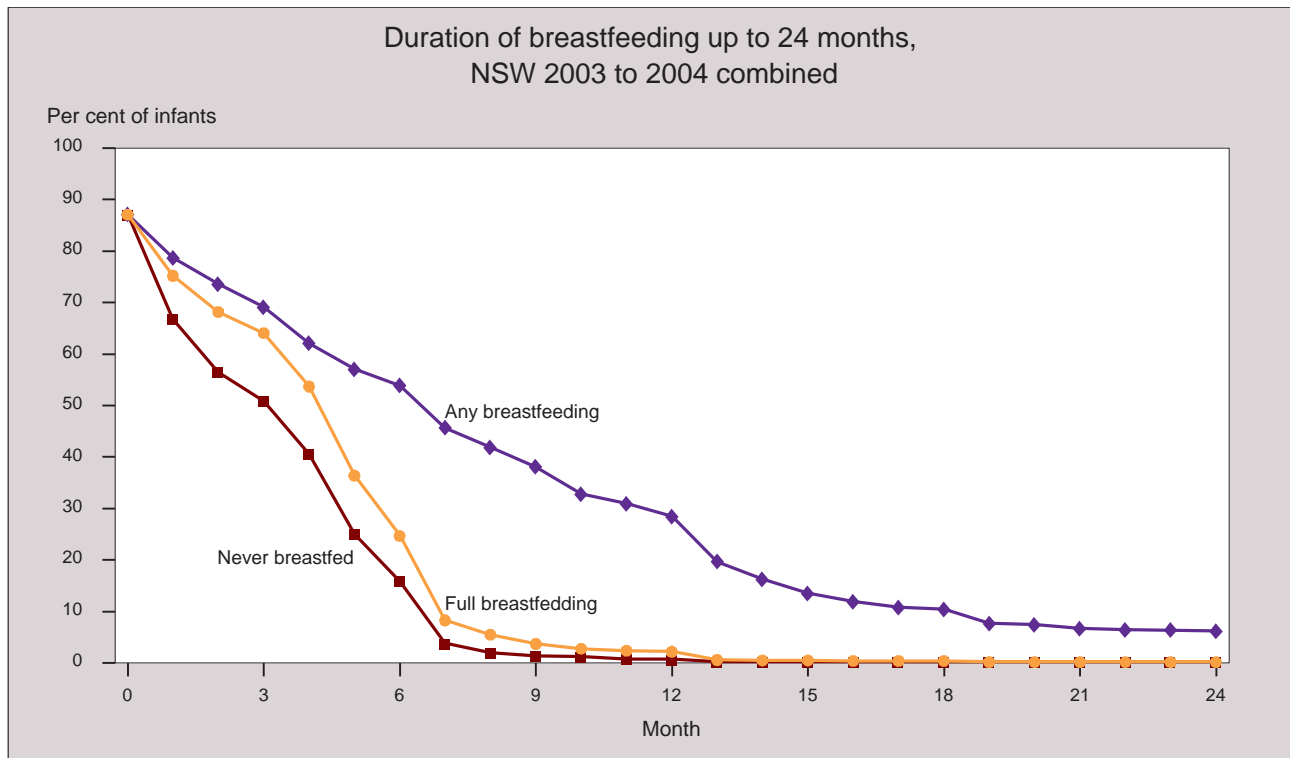
- Nutrition is important at all stages of life. Dietary factors are linked to health and disease, as protective influences or as risk factors, including: coronary heart disease, some cancers, Type 2 diabetes, overweight and obesity, osteoporosis, dental caries, gall bladder disease, and diverticular disease (NHMRC, 2003).
 - Most population groups eat less than the recommended amounts of these foods. Vegetables and fruit are sources of antioxidants, fibre, folate, and complex carbohydrates. The fibre and low-energy content of fruit and vegetables may benefit weight control (NSW Department of Health, 2002).
 - Overall, in 2005, 51.1% of adults ate the recommended daily intake of fruit (2 serves or more).
- There was no significant difference among the health areas in recommended daily fruit intake. Overall, in 2005, 7.4% of adults ate the recommended daily vegetable intake (5 serves or more). A significantly higher proportion of adults in the North Coast Area Health Service (11.0%) ate the recommended daily fruit intake.
- *Healthy people 2010* (NSW Health, 2006) includes strategies aimed at reducing obesity by coordinating the implementation of programs, services and infrastructure across different levels of government, industry and the community. Priorities include promoting healthy weight through increasing physical activity and encouraging healthy eating habits in schools, among parents and in childcare centres.



Note: Serve of vegetables: 1/2 cup of cooked vegetables or 1 cup of salad vegetables. Serve of fruit: 1 medium piece, 2 small pieces or 1 cup of diced. Estimates are based on 6180 respondents.

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

- Establishing healthy eating habits in childhood and adolescence is an important basis for short and long term health. A healthy diet for children and adolescents is defined by nutrition guidelines established by the National Health and Medical Research Council (NHMRC, 2003). These guidelines advise that children and adolescents should consume: sufficient nutritious foods to grow and develop normally (in combination with physical activity); a variety of healthy foods; plenty of vegetables, legumes, fruits and cereals (such as breads, rice, pasta and noodles); lean meat, fish, poultry or alternatives; reduced dairy fat foods (but full fat for children under 2 years); limited saturated fat; low salt foods; moderate total fat and sugars; and no alcohol. *The Australian Guide to Healthy Eating* defines the appropriate quantities of foods for different age groups (NHMRC, 2003).
- The recommended daily consumption for adolescents is three serves of fruit and four serves of vegetables or legumes (NHMRC, 2003). Adequate fruit and vegetable intake protects against coronary heart disease, hypertension, stroke, diabetes mellitus, and many forms of cancer, and may aid weight control.
- In 2005, 73% of secondary school students reported eating the recommended 2 serves of fruit per day and 19% of students reported eating the recommended 4 serves of vegetables per day. There were no substantial differences in reported fruit and vegetable intake between males and females, or younger students (12–15 years) compared to older students (16–17 years).

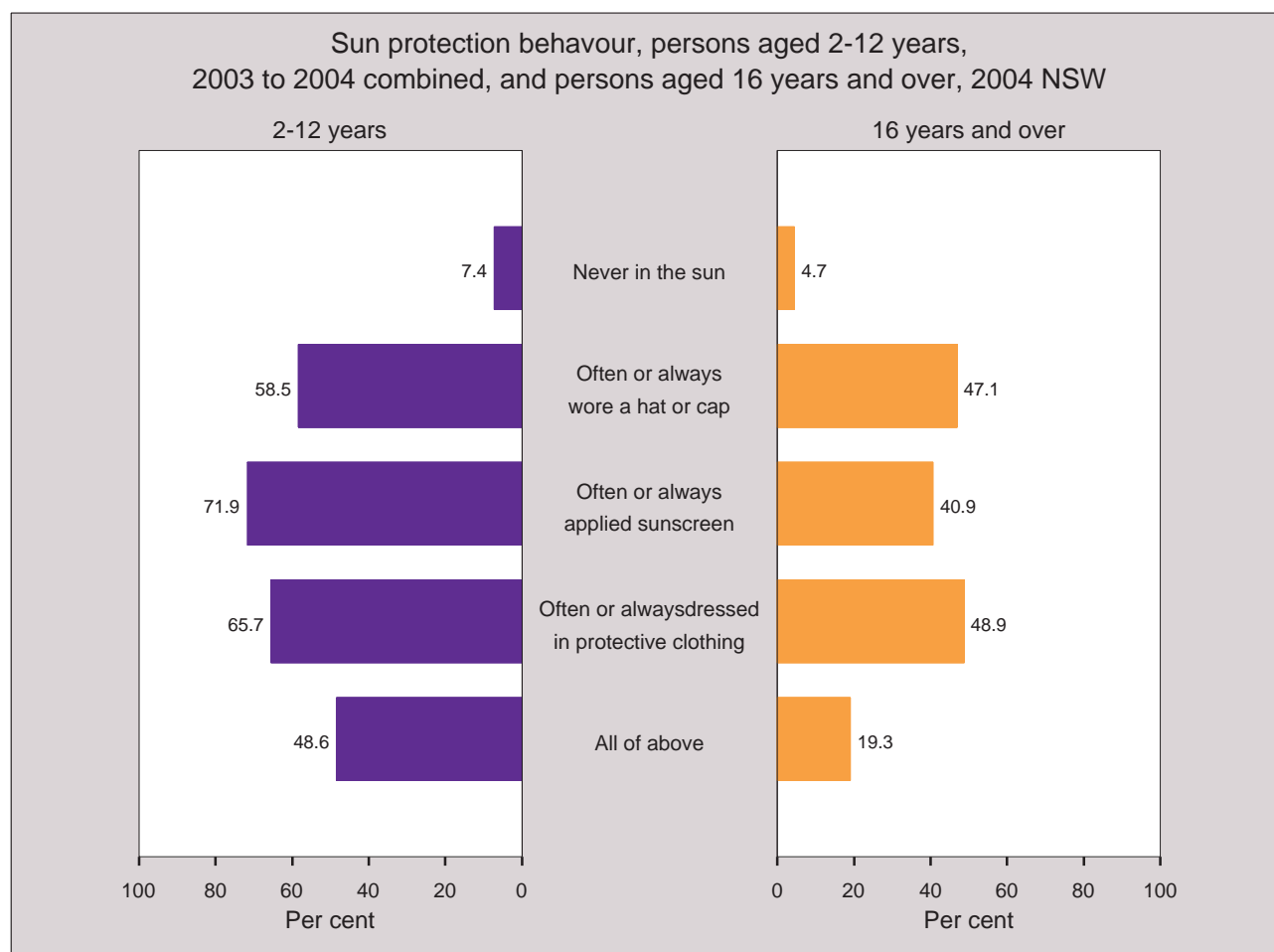


Response	0	1	2	3	4	5	6	7	8	9	10	11	12
Per cent of infants Never breastfed	87.1	66.8	56.5	50.9	40.6	25	15.8	3.8	2	1.4	1.2	0.8	0.7
Per cent of infants Any breastfeeding	87.1	78.7	73.6	69.1	62.1	57.1	53.9	45.7	41.9	38.1	32.8	31	28.5
Per cent of infants Full breastfeeding	87.1	75.2	68.2	64.1	53.7	36.4	24.7	8.3	5.5	3.7	2.8	2.4	2.2

Note: Full breastfeeding = breastfed only, no solids or milk substitutes, but may include water. Estimates were based on 1,487 respondents and were produced using survival analysis (see Methods section).

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

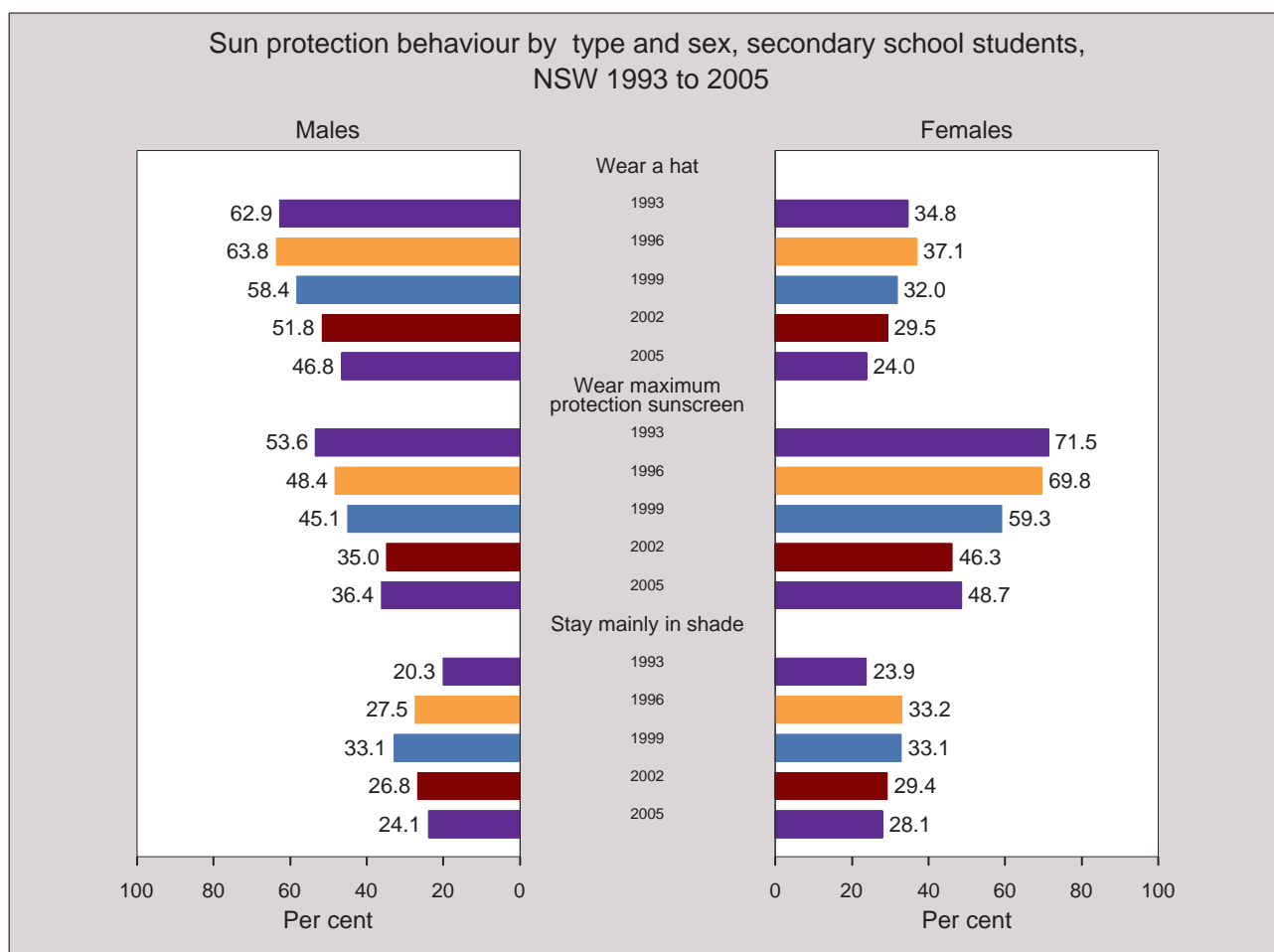
- Breastfeeding has health advantages for both infants and mothers. For infants, these include protection against diarrhoeal illnesses, respiratory infections, and otitis media; reduced risk of childhood obesity; and improved visual acuity and psychomotor development. For mothers, benefits include quicker recovery from childbirth, and reduced risk of ovarian cancer and premenopausal breast cancer (NHMRC, 2003). The World Health Organization (WHO) recommends exclusive breastfeeding to the age of 6 months and sustained breastfeeding together with adequate complementary foods thereafter for up to 2 years of age or beyond (WHO, 2002). These guidelines have been adopted in Australia (NHMRC, 2003).
- In the NSW Population Health Survey for the years 2003 and 2004, mothers of children aged less than 2 years were asked a series of questions about breastfeeding and infant feeding practices.
- Most mothers (87.1%) reported that their infant had been breastfed. However, many breastfed their baby for only a short period, with only 73.6% of babies still being breastfed at 4 weeks of age. At 3 months of age, this proportion was 69.1%, and at 6 months of age it had dropped to 53.9% and was 28.5% at 12 months.
- With regard to full breastfeeding (breastfed only, no solids or milk substitutes), just under two-thirds of mothers (64.1%) reported that their child was fully breastfed at 3 months of age. Just under a quarter (24.7%) reported that their child was fully breastfed at 6 months of age.
- In 2006 the *Breastfeeding in NSW: promotion, protection and support* policy was released with the aim of providing direction for NSW Health and Area Health Services on how to promote, protect and support breastfeeding in the community and among staff (NSW Health, 2006).



Note: The questions used were: 'Last summer, how often did [child] go out in the sun for more than 15 minutes between 11am and 3pm?', 'Last summer, when [child] was out in the sun for more than 15 minutes, how often did he/she wear a broad brimmed hat or cap with a back flap?', 'Still thinking about last summer, how often did [child] apply a broad spectrum sunscreen with an SPF of 15 or more to exposed skin?' and 'Still thinking about last summer, how often was [child] deliberately dressed in clothing to protect him/her from the sun?'. Estimates are based on 1,998 respondents. 3 (1%) were 'not stated' (Don't know or Refused).

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

- Unprotected exposure to solar ultra-violet radiation (UVR) is the primary modifiable risk factor in the development of skin cancer. Australia has the highest incidence of melanoma and non-melanocytic skin cancer in the world. Personal sun-protective behaviours play a key role in minimising the risk of developing skin cancer (Cancer Institute NSW website). In 2004, melanoma of the skin was the fourth leading cause of new cases of cancer in NSW (Tracey et al., 2006)
- Apart from avoiding exposure, combining a range of sun protective behaviours when outside remains the most effective way to minimise exposure to UVR including staying in the shade, wearing protective clothing, wearing a broad-brimmed hat and sunglasses, and applying SPF 30+ sunscreen 20 minutes before going outside (Cancer Institute NSW website).
- In NSW in 2003 and 2004, just under half (48.6%) of children aged 2–12 years reported sun-protective behaviours, compared with only a fifth (19.3%) of adults in 2004. A majority of children applied sunscreen (71.9%), wore protective clothing in the sun (65.7%) or wore a hat or cap (58.5%). Less than half of the adult respondents wore protective clothing (48.9%), applied sunscreen (40.9%) or wore a hat or cap (47.1%).
- The NSW Cancer Plan 2007–2010 includes a melanoma and skin cancer program, the *Skin Cancer Prevention Strategic Plan 2006 – 2009*. Young adults and males are at a greater risk of developing melanoma and less likely to practice sun protective behaviours and will be the focus of the Plan (CINSW, 2006).

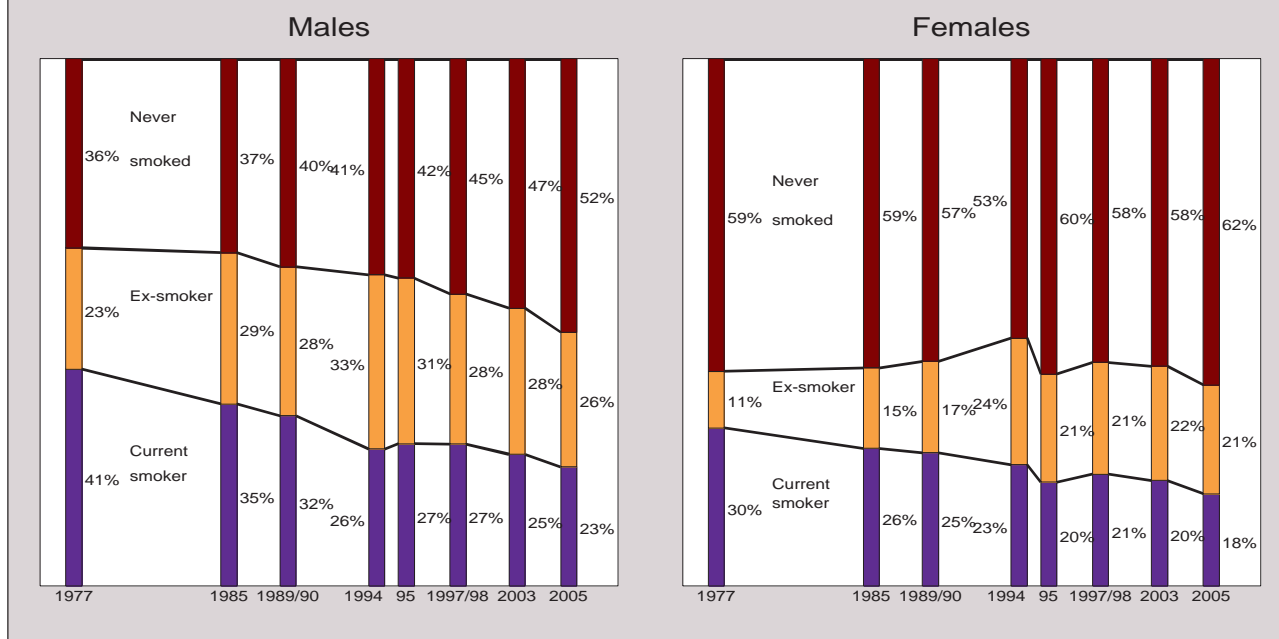


Note: Students who responded 'usually' or 'always' to the following questions: 'Thinking about sunny days in summer, when you are outside for an hour or more between 11.00 a.m. and 3.00 p.m., how often would you: wear a hat, wear maximum protection sunscreen, stay mainly in the shade?' Maximum protection sunscreen includes SPF30+ for 2002, both SPF15+ and SPF30+ for 1999, and SPF15+ only for 1996. Estimates are based on the following numbers of respondents: 10,026 in 1996; 7,348 in 1999; 6,180 in 2002 and 5580 in 2005.

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

- Some sun exposure is beneficial to health; for example, by helping the body to produce vitamin D, which is essential for healthy bones. However, excessive sun exposure can lead to sunburn in the short-term and to melanoma and other skin cancers in the long-term. Personal sun-protective behaviours play a key role in minimising the risk of developing skin cancer (Cancer Institute NSW website).
- Australia has one of the highest rates of melanoma in the world, and the incidence of new cases of melanoma continues to rise. However, the majority of new cancers that are diagnosed in Australia are non-melanocytic skin cancers (with 374,000 new cases in 2002 in Australia) (AIHW, 2006).
- In 2005, the most commonly reported sun protection measures among female secondary school students were wearing sunscreen (49%), followed by staying mainly in the shade (28%) and wearing a hat (24%). Among males, however, the most commonly reported sun protection measures were wearing a hat (47%) followed by wearing sunscreen (36%) and staying mainly in the shade (24%).
- Between 1993 and 2005 there has been a decline in the proportion of students wearing hats in NSW, from 49% to 41%. Similarly, between 1993 and 2002 there has been a decline in the proportion of students wearing maximum protection sunscreen, from 63% to 43%. The proportion of students who reported mainly staying in the shade increased between 1993 and 2002, from 22% to 26%.
- The NSW Cancer Plan 2007–2010 includes a melanoma and skin cancer program, the *Skin Cancer Prevention Strategic Plan 2006 – 2009*. Young adults and males are at a greater risk of developing melanoma and less likely to practice sun protective behaviours and will be the focus of the Plan (CINSW, 2006).

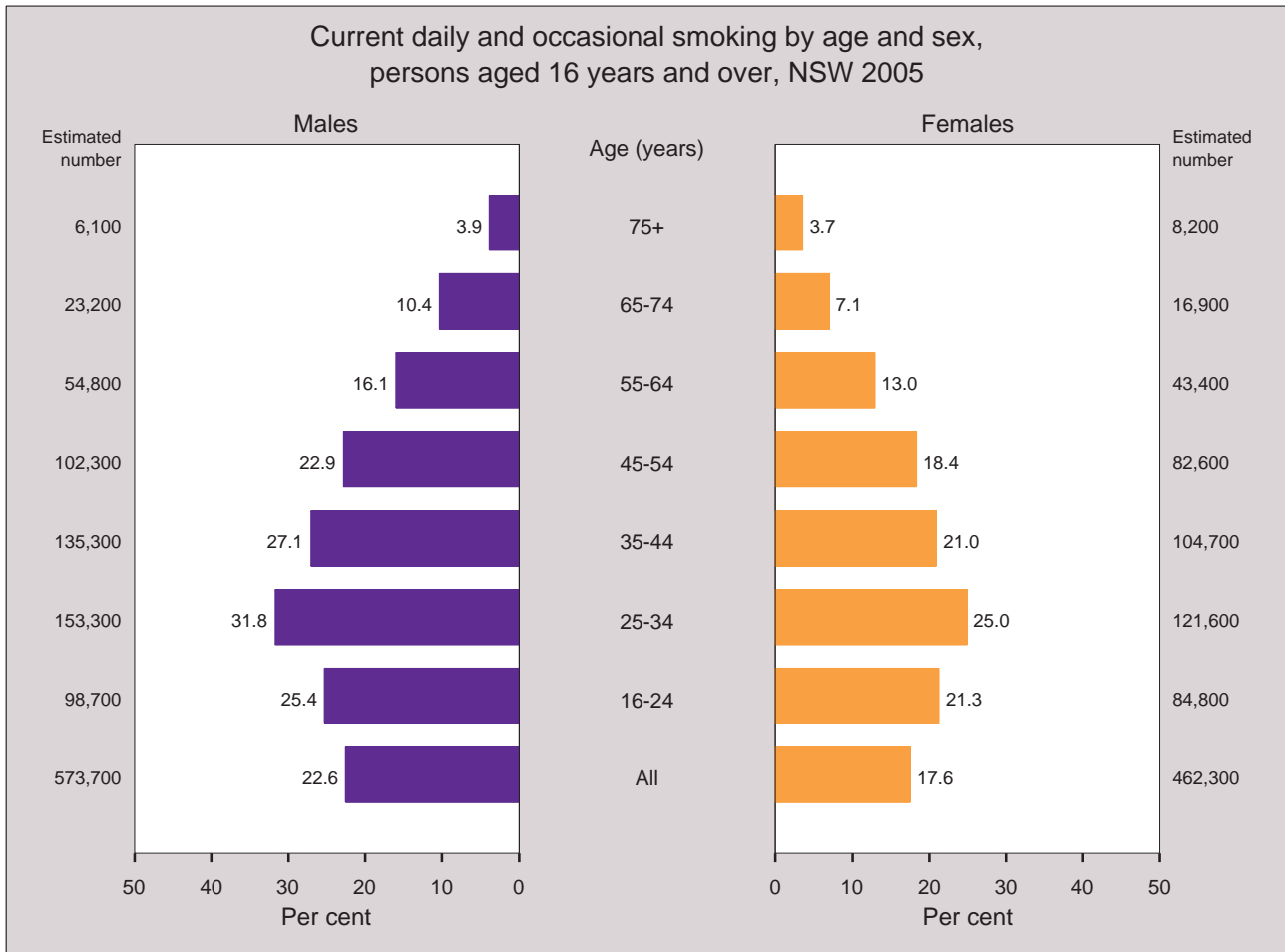
Smoking status by sex, persons aged 16 years and over, NSW 1977 to 2005



Note: Current smoking includes daily and occasional smoking.

Source: Source: ABS Survey of Alcohol and Tobacco Consumption Patterns, 1977 (ABS cat. no. 4312.0). ABS *Life Style: Health Risk Factors, NSW 1985* (ABS cat. no. 4311.1). ABS and NSW Health Department. *State of Health in NSW* (ABS cat. no. 4330.1); NSW Health Promotion Survey 1994, ABS National Health Survey, 1995, NSW Health Surveys 1997 and 1998 and NSW Population Health Survey (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

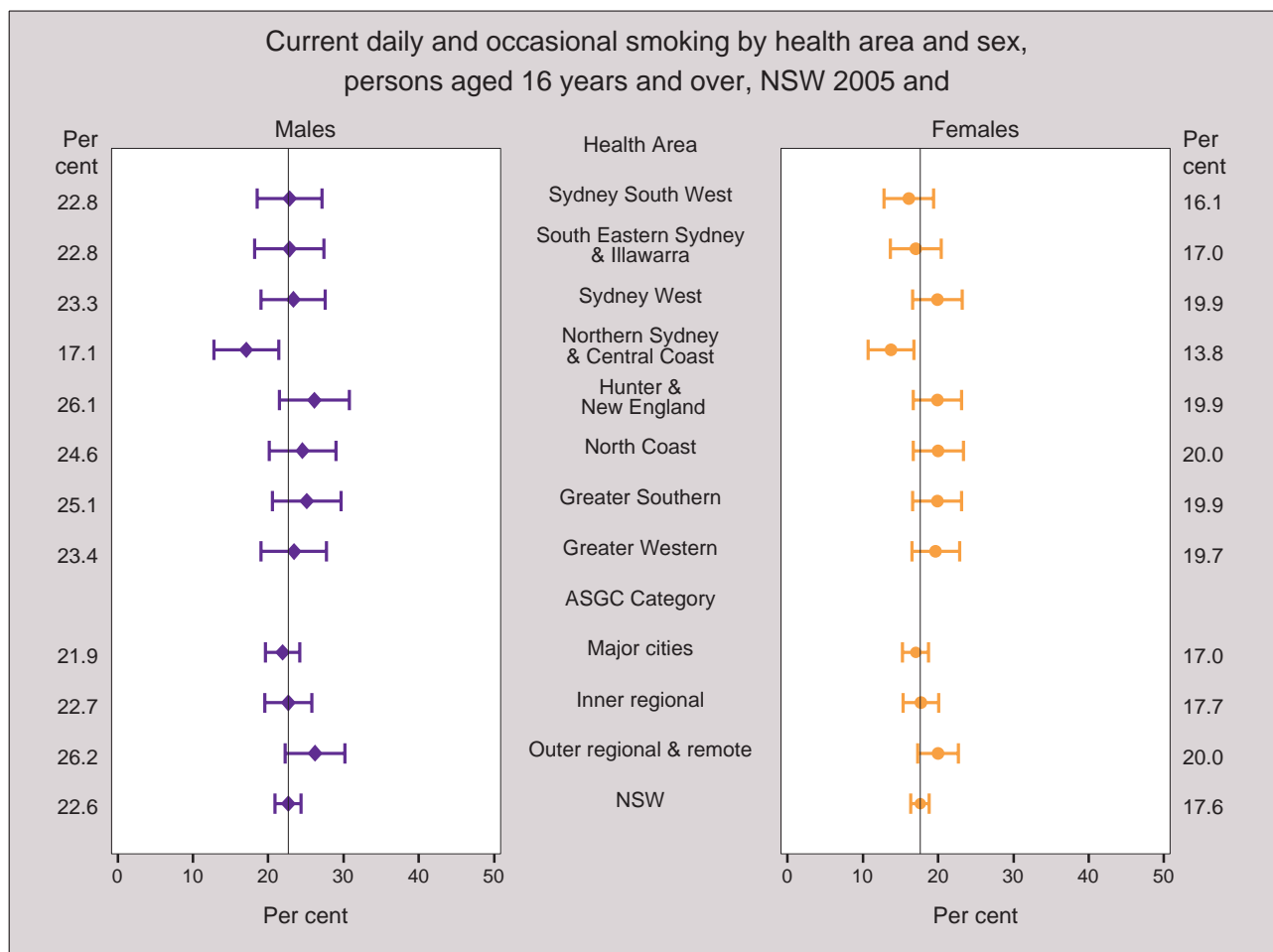
- Tobacco smoking was responsible for 8% of the total burden of disease in Australia in 2003, with lung cancer, chronic obstructive pulmonary disease, and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press).
- This chart presents data on smoking rates in NSW from 1977 to 2005. Data were collected by both face-to-face interview (1977, 1985, 1989–90 and 1995 surveys) and telephone interview (1994, 1997–98, 2003 and 2005 surveys), so apparent trends over time need to be interpreted with caution.
- The percentage of males reporting that they currently smoke in NSW in 2005 was 22.6% and of females was 17.5%. Overall, the data suggest that smoking rates in NSW have declined by around 18% in males and 13% in females since 1977; by 12% in males and 8% in females over the last 20 years (since 1985); and by 4% in males and 2% in females over the last 10 years (since 1995). Between 1977 and 2005, the percentage of male adults who have never smoked has increased by 16% from 36% in 1977 to 52% in 2005. In contrast, the percentage of women who have never smoked has increased by only 3% (but from a higher base) from 59% in 1977 to 62% in 2005. In 2005, in both sexes, the number of ex-smokers was greater than the number of current smokers.
- Among females, due to a fairly stable rate of those who never smoked, much of the decline in smoking rates is attributable to an increase in smoking cessation, with a smaller decrease in smoking uptake. Among males, however, a decrease in smoking uptake rather than an increase in the quit rate explains most of the overall decline.



Note: The indicator includes those who smoked daily or occasionally. The question used to define the indicator was: Which of the following best describes your smoking status: Smoke daily, Smoke occasionally, Do not smoke now, but I used to, I have tried it a few times but never smoked regularly, or I have never smoked? Estimates are based on 11,490 respondents. 10 (0.09%) were not stated (Don't know or Refused).

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

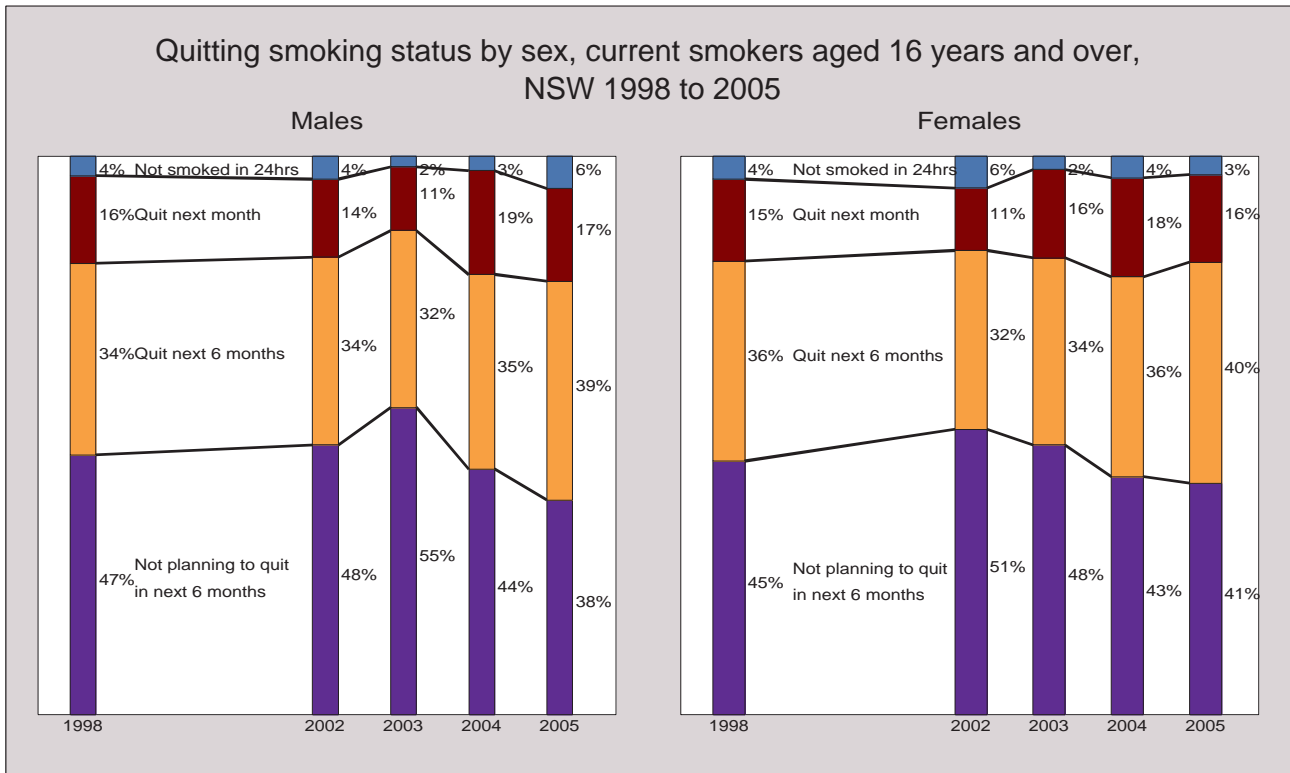
- Tobacco smoking was responsible for 8% of the total burden of disease in Australia in 2003, with lung cancer, chronic obstructive pulmonary disease, and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press). The tangible social costs of tobacco use in Australia were estimated to be \$7.6 billion in 1998–99, or about 2.3% of the gross domestic product (AIHW, 2006).
- In 2005, the New South Wales Population Health Survey showed that 20.1% of people reported current daily or occasional smoking (22.6% males; 17.6% females). The proportion was highest among those aged 16–34 years (23.3% to 28.4%). The proportion declined with age; however, 3.9% of males and 3.7% of females aged 75 years and over still reported current daily or occasional smoking.
- Australia has one of the most comprehensive tobacco control policies and programs in the world. The *NSW Tobacco Action Plan 2005 – 2009* is part of a national strategy and is organised around six 'focus areas' (smoking cessation, exposure to environmental tobacco smoke, marketing and the promotion of tobacco products, availability and supply of tobacco products, capacity building, research monitoring and evaluation). The aim of the tobacco control program in NSW is to contribute to an annual reduction of one percentage point per annum in smoking prevalence rates (CINSW, 2006).



Note: The indicator includes those who smoked daily or occasionally. The question used to define the indicator was: Which of the following best describes your smoking status: Smoke daily, Smoke occasionally, Do not smoke now, but I used to, I have tried it a few times but never smoked regularly, or I have never smoked? Estimates are based on 11,490 respondents. 10 (0.09%) were not stated (Don't know or Refused). Postcodes were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

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

- Tobacco smoking was responsible for 8% of the total burden of disease in Australia in 2003, with lung cancer, chronic obstructive pulmonary disease, and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press).
- In 2005, the New South Wales Population Health Survey showed that 20.1% of people reported current daily or occasional smoking (22.6% males; 17.6% females). A significantly lower proportion of people on the Northern Sydney and Central Coast Area Health Service (15.4%) reported current daily or occasional smoking, compared to the overall population. All other health areas displayed rates similar to the state average. Rates ranged from 17.1% in males from the Northern Sydney and Central Coast Area Health Service to 26.1% in the Hunter and New England Area Health Service; and from 13.8% in females from the Northern Sydney and Central Coast Area Health Service to 20.0% in the North Coast Area Health Service.
- Variations in smoking rates among Health Areas reflect the distribution of underlying social determinants of health. Smoking rates are known to increase with increasing socioeconomic disadvantage (see the Socioeconomic status chapter for more information).
- Australia has one of the most comprehensive tobacco control policies and programs in the world. The *NSW Tobacco Action Plan 2005 – 2009* is part of a national strategy and is organised around six ‘focus areas’ (smoking cessation, exposure to environmental tobacco smoke, marketing and the promotion of tobacco products, availability and supply of tobacco products, capacity building, research monitoring and evaluation). The aim of the tobacco control program in NSW is to contribute to an annual reduction of one percentage point per annum in smoking prevalence rates (CINSW, 2006).

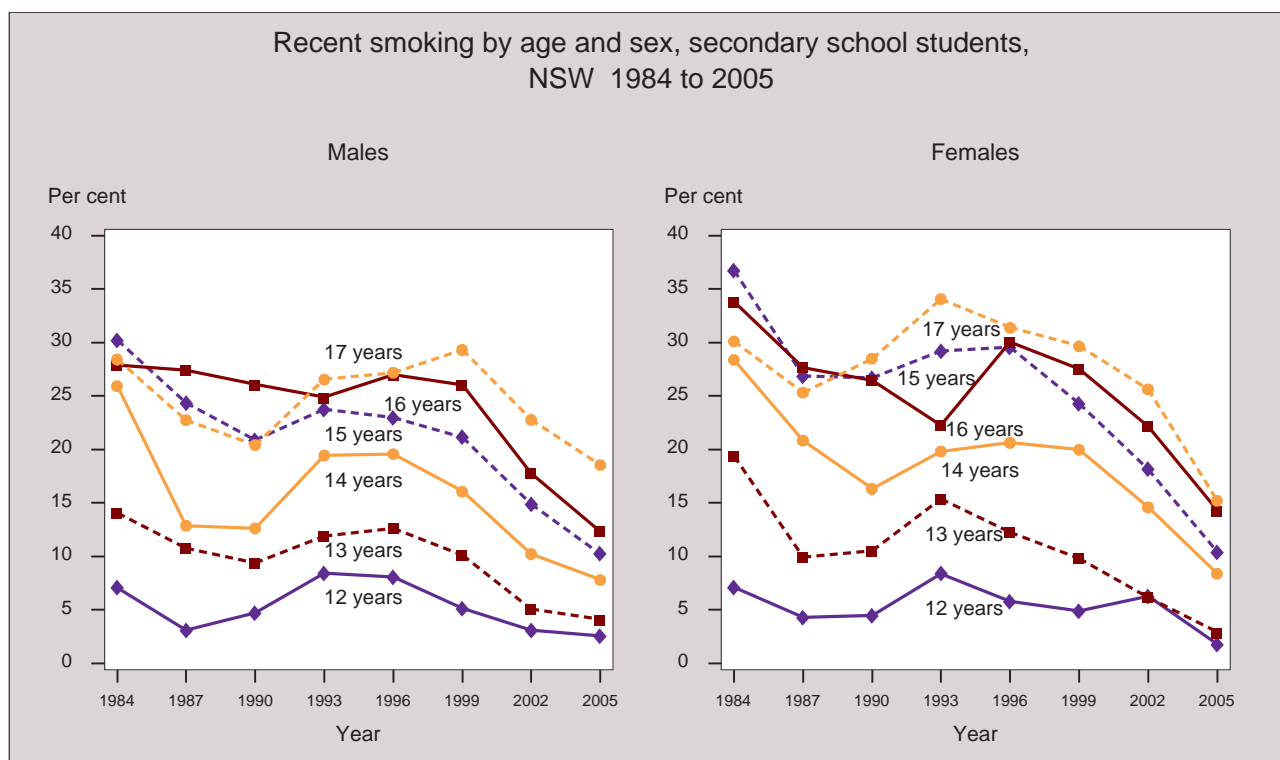


Note: Current smokers (smoke daily or occasionally) were asked: 'Which of the following best describes how you feel about your smoking?' Options ranged from not planning on quitting in the next six months, through planning on quitting in the next month or 6 months, to not having smoked in the last 24 hours or 6 months (2002 and 2003 only). Estimates are based on 4,272 respondents in 1998 with 131 (3.1%) 'not stated' (Don't know or Refused), 2,486 in 2002 with 90 (3.49%) 'not stated' and 2,587 in 2003 with 99 (3.69%) 'not stated'.

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

- Smoking cessation, or quitting, has immediate and important health benefits for individuals of all ages. Ex-smokers have improved life expectancy and reduced risk of smoking-related disease, compared to continuing smokers (Fiore et al., 2000). Dependence on tobacco-delivered nicotine can be characterised as a chronic relapsing disorder. Without assistance, around 95% of quitters will fail on any single attempt and most people make several attempts before they are successful. At least 70% of Australian smokers are believed to be dependent on tobacco-delivered nicotine (Commonwealth of Australia, 2005).
- In the NSW Population Health Survey, respondents who are current smokers are asked a question about their intention to quit smoking. The proportion of males not planning to quit in the next six months declined significantly by almost 8% from 46.5% in 1998 to 38.4% in 2005. For females, there was also a decline in the proportion not planning to quit from 45.4% in 1998 to 41.5% in 2005, however this was not a significant decline. There was an increase in respondents planning to quit in the next six months from 35.0% in 1998 to 39.8% in 2005, however this increase was not significant.
- The correct use of nicotine replacement therapies, such as gum, lozenge, patch, sublingual tablet or inhaler, doubles the chance of successfully quitting smoking (Silagy et al., 2001). The Quitline (13 7848) provides expert smoking cessation advice and quitting smokers can enrol in the free callback service, where an advisor will provide ongoing support throughout the quit attempt. The Quitline is accessible for the cost of a local call throughout NSW. A fax referral system is in place for all health services in NSW to refer clients who want to quit smoking to the NSW Quitline.
- NSW Health has published a guide to brief intervention for health professionals, titled 'Let's take a moment'. The document outlines clear and practical advice in the provision of smoking cessation interventions for health professionals, based on evidence for best practice (NSW Health website).

Recent smoking by age and sex, secondary school students, NSW 1984 to 2005



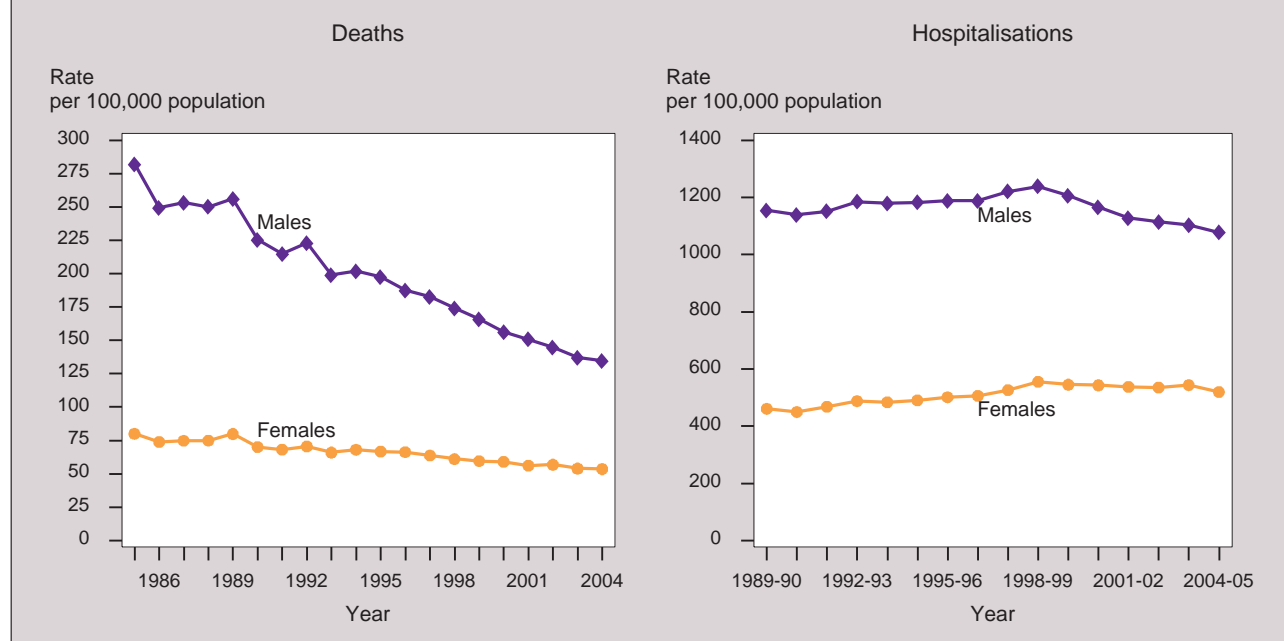
Note: Recent smoking: smoking on at least 1 day in the week prior to the survey. Estimates are based on the following numbers of respondents: 10,026 in 1996; 7,348 in 1999; 6,180 in 2002 and 5,610 in 2005.

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

- Tobacco smoking is the leading preventable cause of morbidity and premature mortality, particularly from cardiovascular disease; cancers of the lung, larynx, and mouth; and chronic obstructive pulmonary disease. Smoking also contributes to risk of sudden infant death syndrome (SIDS) and low birthweight (US Department of Health and Human Services, 2004). Tobacco smoking is estimated to kill approximately half (Peto et al., 2004) to two-thirds (Doll et al., 2004) of all its long-term users.
- Most people who go on to become long-term smokers started smoking during their secondary school years and early uptake is associated with heavier smoking patterns and greater difficulty in quitting (US Department of Health and Human Services, 1994). Nicotine dependence is established rapidly even among adolescents (Fiore et al., 2000) and preventing young people from commencing smoking will reduce smoking-related deaths and illness in the long term.
- Among NSW secondary school students in 2005, 33% of both students reported ever smoking. The percentage of ever smokers fell each year that the survey was conducted, from 57% in 1993 to 42% in 2002 to the current rate of 33%.
- 'Recent' smoking refers to smoking on at least 1 day in the week prior to the survey. The percentage of recent smokers fell from 20% in 1993 to 8% in 2005. This decline was observed in both males (18% to 9%) and females (21% to 8%) and across all age groups.
- NSW Health sponsors a smoking prevention program for NSW year 7 students in partnership with the NSW Department of Education and Training, the AFL (NSW/ACT), and the Sydney Swans. The 'Smoking Don't Be a Sucker' program integrates non-smoking messages with an AFL physical activity program and aims to provide students with increased knowledge and awareness of the health effects of smoking and the detrimental effects it has on physical and sporting performance, and exposes the students to non-sporting role models (NSW Health website).

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

Smoking attributed deaths, 1985 to 2004, and hospital separations, 1989-90 to 2004-05 by sex, NSW



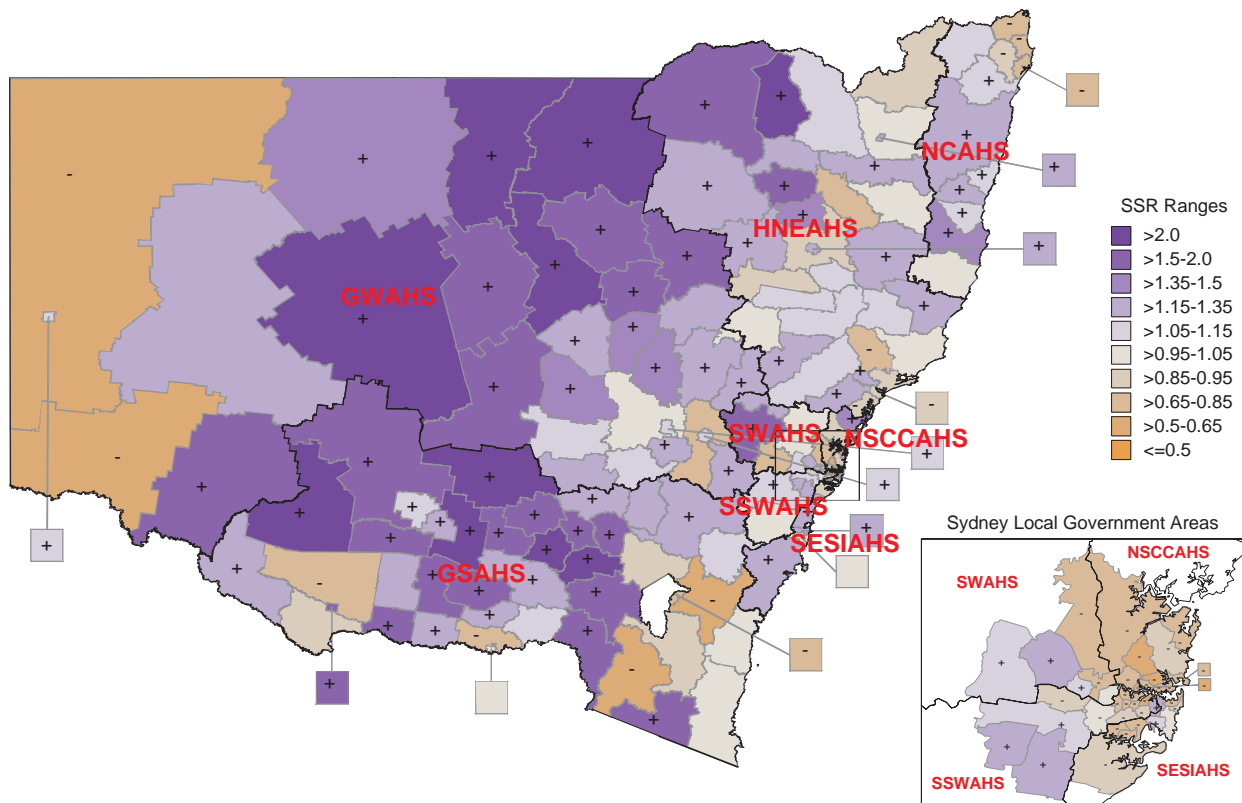
		Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	Persons	6861	6861	6753	6702	6626	6555	6609	6440	6506
	Rate	Persons	116.8	113.4	108.5	104.8	100.7	96.6	94.8	90.0	88.8
Hospitalisations	Number	Persons	49376	52201	54853	54688	54753	54688	55200	56261	55591
	Rate	Persons	813.6	840.3	864.0	843.3	825.4	805.8	798.3	798.6	774.5

Note: Deaths and hospital separations attributable to smoking were calculated using age- and sex-specific aetiologic fractions from AIHW, 2001. 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. Deaths are for calendar years. Hospitalisations are for financial years. Numbers of deaths for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. Hospitalisations for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Calculations of attributable fractions involve rounding of numbers.

Source: Australian Institute of Health and Welfare (aetiologic fractions), 2001. NSW Inpatient Statistics Collection data and ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Tobacco smoking was responsible for 9.6% of the total burden of disease in Australia in 2003, with lung cancer, chronic obstructive pulmonary disease, and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press). The total social costs of tobacco use in Australia were estimated to be \$21.1 billion in 1998-99 (Collins et al., 2002) with tangible costs at \$7.6 billion or about 2.3% of gross domestic product (AIHW, 2006).
- The data presented here were derived by applying aetiologic fractions (the probability that a particular case of illness or death was caused by smoking) to death and hospital morbidity data for NSW.
- In NSW in 2004, smoking caused an estimated 6,507 deaths overall (4,244 males and 2,263 females). This represents 18% of all male and 10% of all female deaths. In 2004-05 it is estimated that smoking caused 55,591 hospitalisations (36,129 male and 19,462 female). This represents 4% of all male and 2% of all female hospitalisations.
- Between 1985 and 2004, there was a 45% decline in the age-adjusted rate of deaths attributable to smoking in NSW. In 1985, smoking killed 282 men and 80 women per 100,000 population. By 2004, the rate had decreased to 135 men and 54 women per 100,000. The death rate attributable to smoking declined over this time by 52% among men, and by 33% among women.
- The age-adjusted rate of smoking-related hospitalisations in females in NSW increased by 13% between 1989-90 and 2004-05. However, in males, the rate decreased by only 7% between 1989-90 and 2004-05.

Smoking attributed hospital separations by local government area, NSW 2003-04 to 2004-05

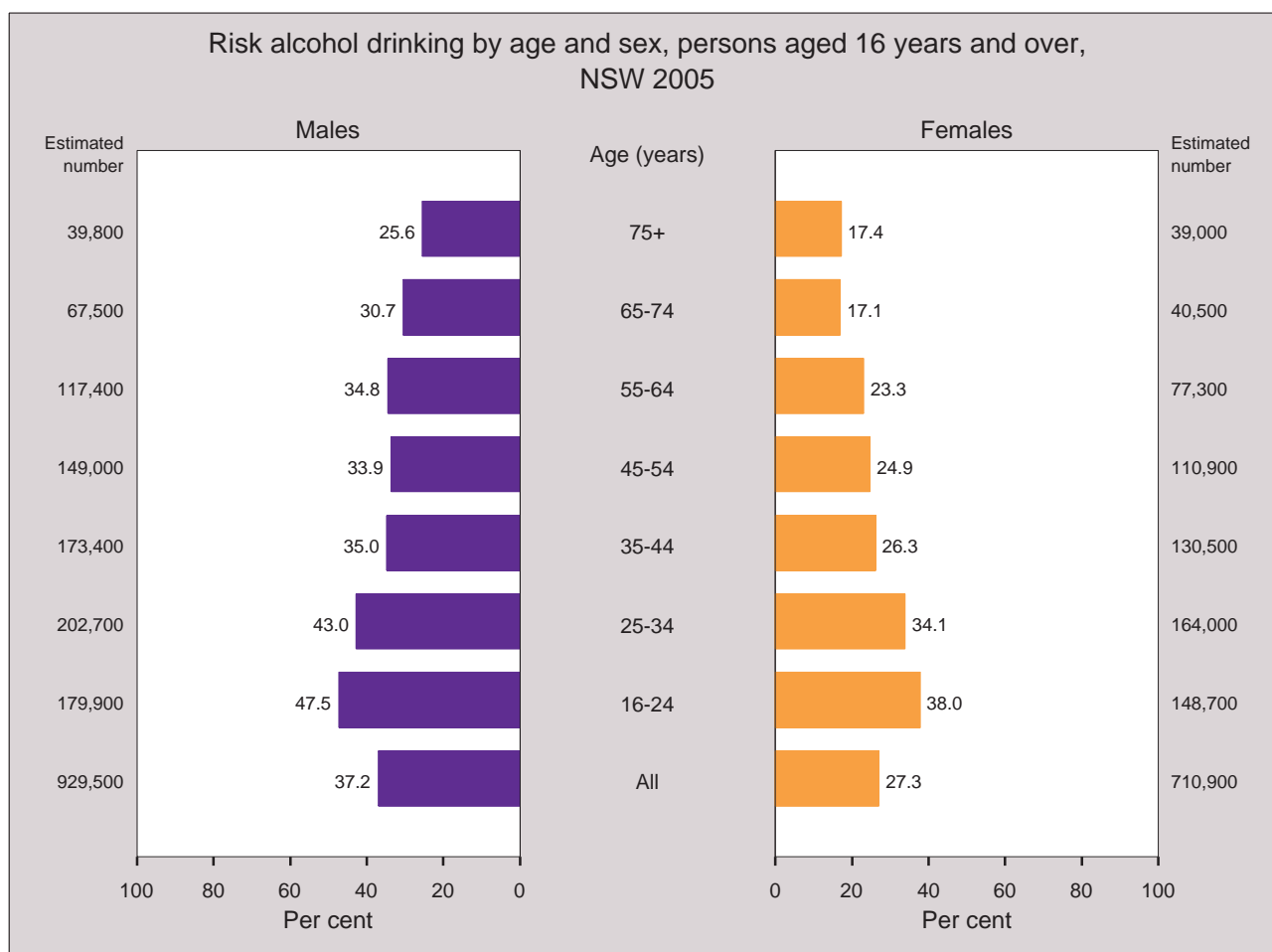


- Significantly lower than state average, + Significantly higher than state average

Note: 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). * indicates figures not provided when based on fewer than 5 cases.

Source: Australian Institute of Health and Welfare (aetiological fractions), 2001. NSW Inpatient Statistics Collection data and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

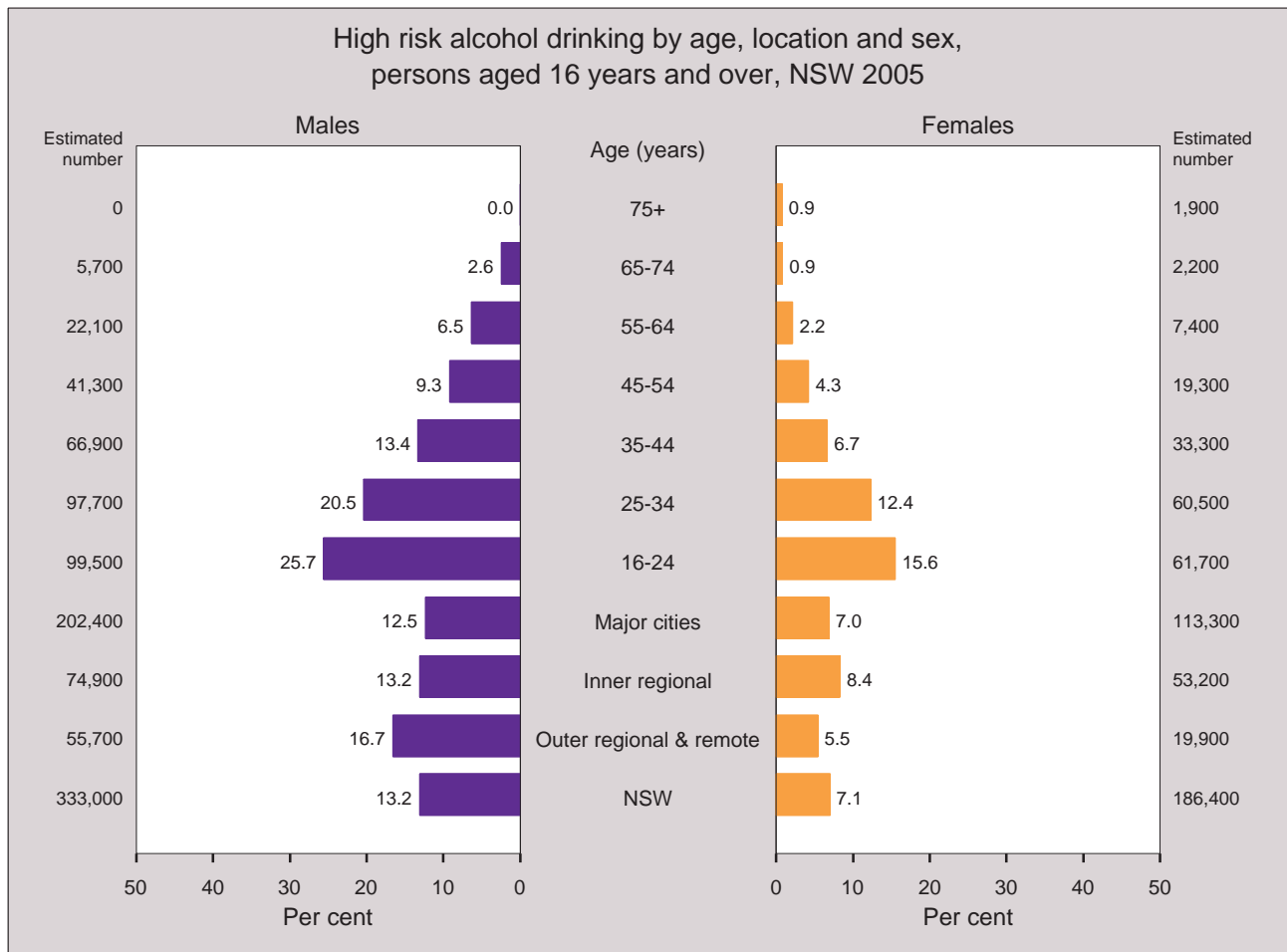
- Tobacco smoking was responsible for 8% of the total burden of disease in Australia in 2003, with lung cancer, chronic obstructive pulmonary disease, and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press). The tangible social costs of tobacco use in Australia were estimated to be \$7.6 billion in 1998–99, or about 2.3% of the gross domestic product (AIHW, 2006).
- The data presented here were derived by applying aetiological fractions (the probability that a particular case of illness or death was caused by smoking) to death and hospital morbidity data for NSW.
- An average of approximately 54,840 hospitalisations per year could be attributed to smoking over the five years. This equates to a crude rate of approximately 830 per 100,000 population. Between 10 and 2,270 hospitalisations occurred per year in individual LGAs due to illness associated with smoking.
- The smoothed Standardised Separation Ratio (sSSR, see Methods) for each LGA can be interpreted as a 'relative risk', and compared to the NSW average which is set to 100. The sSSR for hospitalisations attributed to smoking-related disease in NSW ranged from 58 (Ku-ring-gai LGA) to 261 (Brewarrina LGA). LGAs with more than double the risk of the state average were Brewarrina, Narrandera, Warren, Junee, Hay, Bland, Yalbaroi, Gundagai, Cobar and Walgett LGAs. Most of these LGAs are within the Greater Western and Greater Southern health areas, and are areas of socioeconomic disadvantage. LGAs with a sSSR due to smoking-attributable disease which were less than 65% of the state average were Ku-ring-gai, Wentworth, Willoughby, Unincorporated Far West, Leichhardt, Hunters Hill, Palerang and Snowy River.



Note: Risk drinking behaviour was defined as one 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 one occasion or day. Estimates are based on 12886 respondents in NSW. 122 (0.94%) were 'not stated' (Don't know or Refused).

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

- Alcohol has both a hazardous and protective effect on health, which varies by age and sex. In Australia in 2003, the burden of disease associated with alcohol was 10 times higher in males (6.5%) than in females (0.6%), with the greatest burden in males occurring in those aged 0–44 years (8% of the total disease burden in this age group) (Begg et al., in press). In Australia, the annual cost to the community of alcohol-related social problems was estimated to be \$7.6 billion (\$5.5 billion tangible) in 1998–99 (Commonwealth of Australia, 2006).
- Guideline 1 of the Australian Alcohol Guidelines defines 'any risk-drinking behaviour' as one or more of the following: consuming alcohol every day; consuming on average more than 4 if male or 2 if female standard drinks per day; or consuming more than 6 if male or 4 if female standard drinks on any occasion in the past 4 weeks (NHMRC, 2001).
- In 2005, the New South Wales Population Health Survey showed that 32.1% of people reported risk drinking (37.2% males; 27.3% females). The proportion was highest among those aged 16–25 years (47.5% males; 38.0% females). The proportion declined with age; however, 25.6% of males and 17.4% of females aged 75 years and over were still reporting risk drinking.
- *The National Alcohol Strategy 2006 – 2009* focuses on reducing the prevalence of drinking to intoxication, for example through targeting alcohol availability, service practices and social norms, and also on minimising impacts when intoxication does occur (Commonwealth of Australia, 2006). The NSW Department of Health is incorporating alcohol disease prevention into broader drug and alcohol plans.

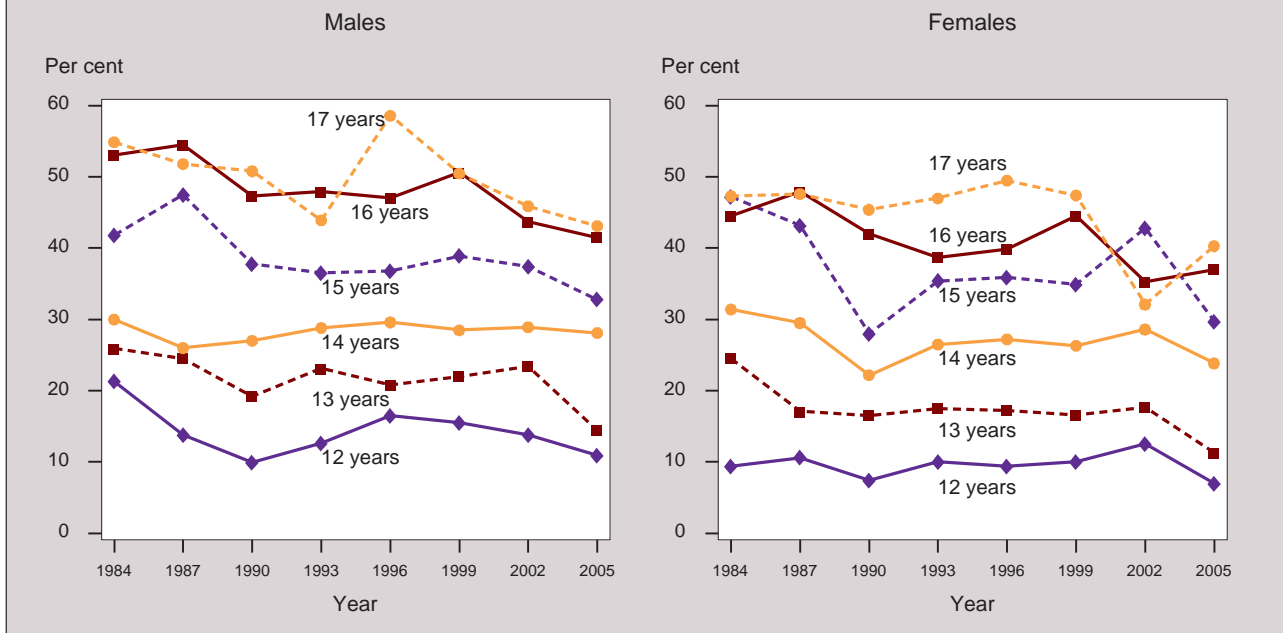


Note: The indicator includes those who consume alcohol and have had [11 or more if male/7 or more if female] drinks in a day. Estimates are based on 11,457 respondents. 43 (0.37%) were not stated (Don't know or Refused). Postcodes were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

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

- Alcohol has both a hazardous and protective effect on health, which varies by age and sex. In Australia in 2003, the burden of disease associated with alcohol was 10 times higher in males (6.5%) than in females (0.6%), with the greatest burden in males occurring in those aged 0–44 years (8% of the total disease burden in this age group) (Begg et al., in press). In Australia, the annual cost to the community of alcohol-related social problems was estimated to be \$7.6 billion (\$5.5 billion tangible) in 1998–99 (Commonwealth of Australia, 2006).
- Excessive alcohol consumption is associated with cirrhosis of the liver, mental illness, several types of cancer, pancreatitis, fetal growth retardation, aggressive behaviour, family disruption, and reduced productivity. Higher levels of consumption cause higher levels of harm at all ages, but high rates of harm have been found among low-to-moderate drinkers when they drink to intoxication.
- Guideline 1 of the Australian Alcohol Guidelines defines ‘high risk alcohol drinking’ as having consumed 11 or more standard drinks in any one day if male, and 7 or more if female (NHMRC, 2001).
- In 2005, the New South Wales Population Health Survey showed that 10.1% of people reported high risk drinking (13.2% males; 7.1% females). The proportion was highest among those aged 16–24 years (25.7% males; 15.6% females). The proportion declined with age.
- There was no significant difference in the proportion of people reporting high risk drinking by geographic area in NSW.
- The National Alcohol Strategy 2006–2009 focuses on reducing the prevalence of drinking to intoxication, for example through targeting alcohol availability, service practices and social norms, and also on minimising impacts when intoxication does occur (Commonwealth of Australia, 2006).

Recent alcohol consumption by age and sex, secondary school students aged 12-17 years, NSW 1984 to 2005

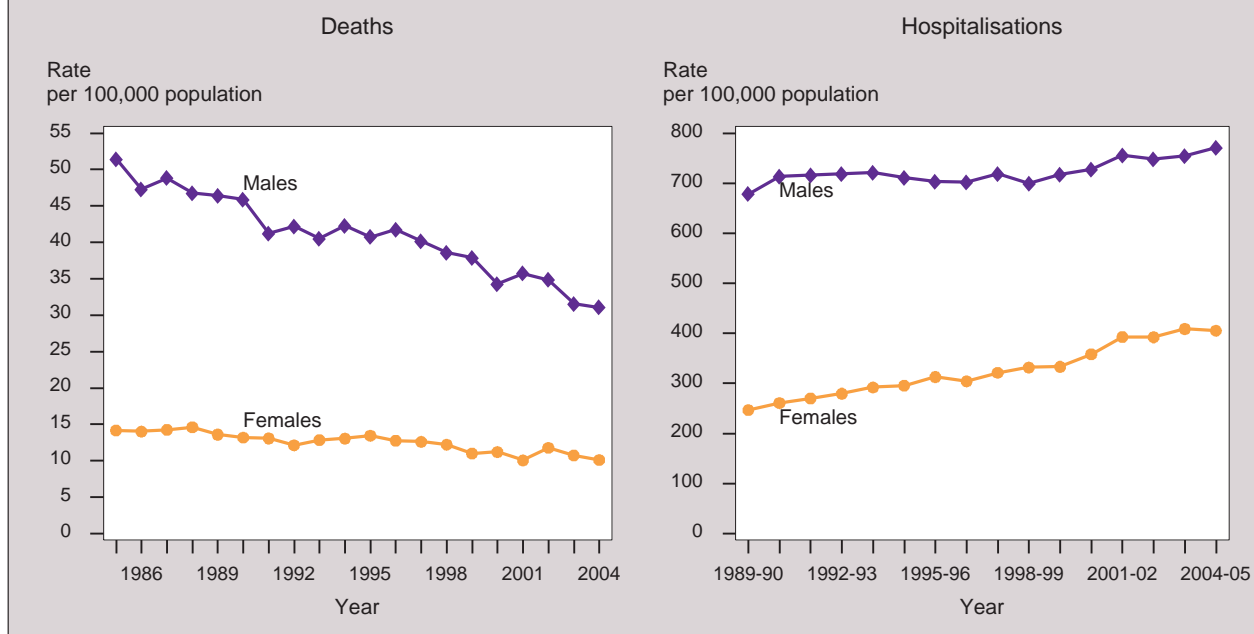


Note: Recent drinking: having an alcoholic drink in the last 7 days. Estimates are based on the following numbers of respondents: 4,931 in 1984; 4,871 in 1987; 5,174 in 1990; 4,823 in 1993; 10,026 in 1996; 7,348 in 1999; 6,180 in 2002 and 5,602 in 2005.

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

- In the short term, excessive use of alcohol among adolescents can lead to falls, accidents (including motor vehicle accidents), risky sexual behaviour, and violent behaviour. In the longer term, alcohol dependency can lead to loss of control of one's life, while heavy ongoing use of alcohol can lead to damage to the pancreas and liver (cirrhosis), stomach ulcers, cognitive impairment, and an increased risk of some cancers (NHMRC, 2001).
- Recent drinking refers to having an alcoholic drink in the last seven days. In 2005, 25% of students reported being recent drinkers. As expected, the percentage of recent drinkers generally increased as the age of students increased, from 9% among students aged 12 years to 42% among students aged 17 years. Although in previous years there was a high proportion of males who were recent drinkers than females, in 2005 there was no significant difference between males and females.
- The *National Alcohol Strategy 2006 – 2009* focuses on reducing the prevalence of drinking to intoxication, for example through targeting alcohol availability, service practices and social norms, and also on minimising impacts when intoxication does occur (Commonwealth of Australia, 2006). The NSW Department of Health is incorporating alcohol disease prevention into broader drug and alcohol plans.

Alcohol attributed deaths, 1985 to 2004, and hospital separations, 1989-90 to 2004-05 by sex, NSW

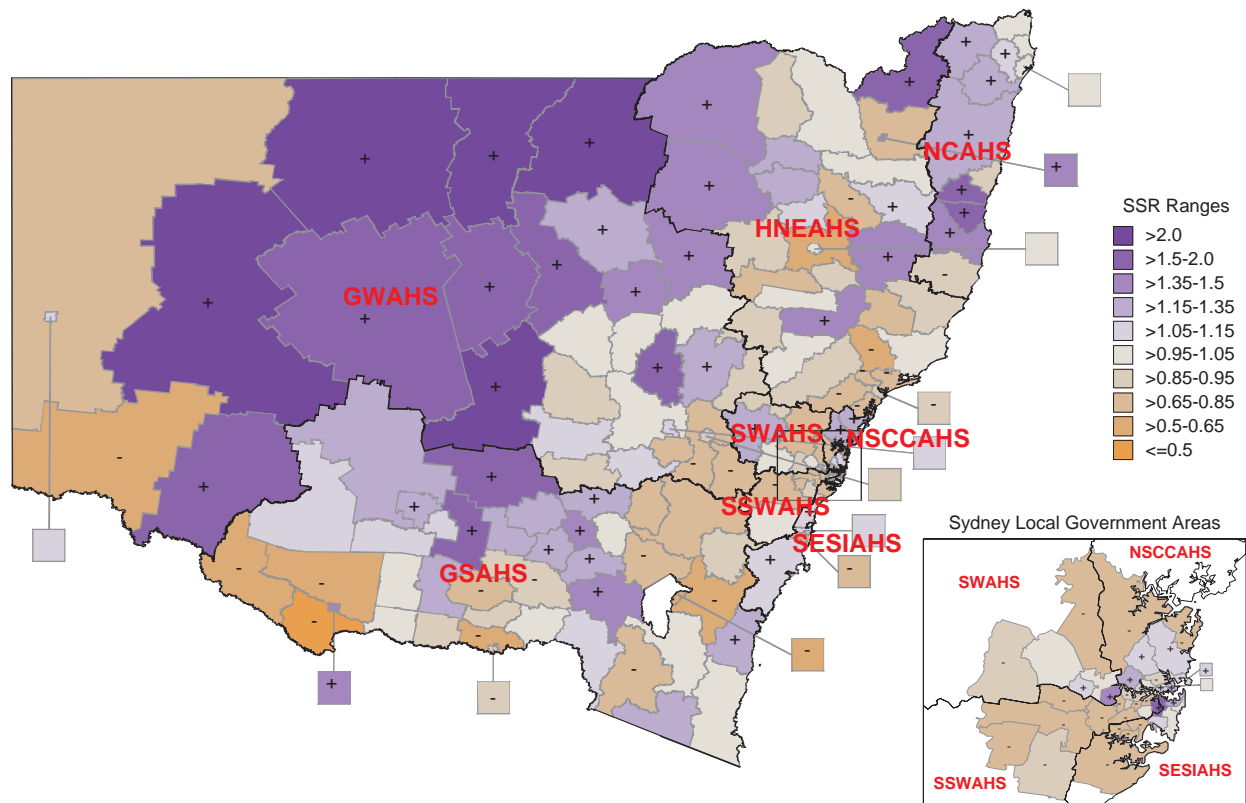


		Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	Persons	1580	1570	1544	1510	1441	1482	1542	1429	1416
	Rate	Persons	26.3	25.5	24.6	23.6	22.1	22.2	22.6	20.6	20.0
Hospitalisations	Number	Persons	30443	31921	32095	33208	34879	37536	37851	39134	40042
	Rate	Persons	497.7	514.3	509.8	519.5	537.3	568.4	564.7	576.2	582.5

Note: Excludes conditions where low to moderate alcohol consumption has an apparent overall protective effect. Deaths and hospital separations attributable to alcohol were calculated using age- and sex-specific aetiologic fractions from AIHW, 2001. 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. Deaths are for calendar years. Hospitalisations are for financial years. Numbers of deaths for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. Hospitalisations for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Calculations of attributable fractions involve rounding of numbers.

Source: Australian Institute of Health and Welfare (aetiologic fractions), 2001. NSW Inpatient Statistics Collection data and ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Alcohol has both a hazardous and protective effect on health, which varies by age and sex. In Australia in 2003, the burden of disease associated with alcohol was 10 times higher in males (6.5%) than in females (0.6%), with the greatest burden in males occurring in those aged 0-44 years (8% of the total disease burden in this age group) (Begg et al., in press).
- Excessive alcohol consumption is associated with cirrhosis of the liver, mental illness, several types of cancer, pancreatitis, fetal growth retardation, aggressive behaviour, family disruption, and reduced productivity.
- In NSW in 2004, alcohol use caused an estimated 1,416 deaths (1,021 males and 395 females). This represents 4.3% and 1.7% of all male and female deaths respectively. Between 1985 and 2004, the age-adjusted rate of deaths attributable to alcohol declined by 36% from 31 to 20 deaths per 100,000 population. The rate of decline was greater for males (39%) than females (29%) over this period.
- In 2004-05 alcohol caused an estimated 40,042 hospitalisations (25,680 among males and 14,362 among females). This represents 2.5% and 1.2% of all male and female hospitalisations respectively. The age-adjusted hospital separation rate increased between 1989-90 and 2004-05 by approximately 27%, from 460 to 583 hospitalisations per 100,000 population. The rate of increase in hospitalisations attributable to alcohol was greater for females (64%) than males (14%) over this period.

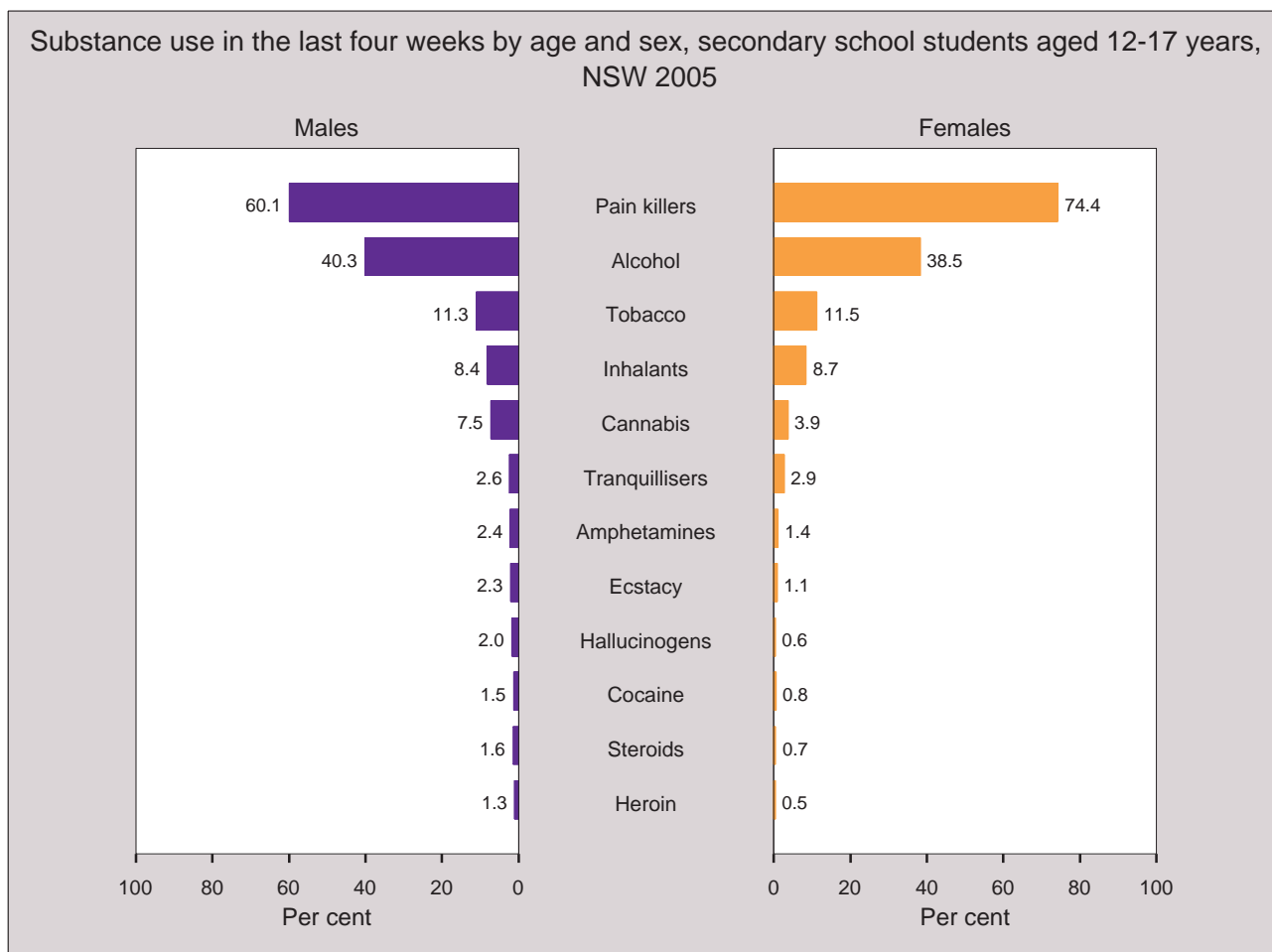
Alcohol attributed hospital separations by local government area,
NSW 0304 to 0405

- Significantly lower than state average, + Significantly higher than state average

Note: 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). * indicates figures not provided when based on fewer than 5 cases.

Source: Australian Institute of Health and Welfare (aetiologic fractions), 2001. NSW Inpatient Statistics Collection data and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Alcohol has both a hazardous and protective effect on health, which varies by age and sex. In Australia in 2003, the burden of disease associated with alcohol was 10 times higher in males (6.5%) than in females (0.6%), with the greatest burden in males occurring in those aged 0–44 years (8% of the total disease burden in this age group) (Begg et al., in press).
- The data presented here were derived by applying aetiologic fractions (the probability that a particular case of illness or death was caused by smoking) to death and hospital morbidity data for NSW.
- Diseases caused by drinking excessive amounts of alcohol include some cancers, heart disease, stroke, liver disease, gastritis and dementia. Alcohol also contributes to injury from assaults, road trauma, domestic violence and suicide.
- Over the period from 1999–00 to 2003–04 there were an average of just under 36,000 hospitalisations per year that could be attributed to the detrimental effect of alcohol. This equates to a rate of 542 per 100,000 persons.
- The smoothed Standardised Separation Ratio (sSSR, see Methods) for each LGA can be interpreted as a ‘relative risk’, and compared to the NSW average which is set to 100. The sSSR for alcohol attributable hospitalisations in NSW ranged from 49 (Murray LGA) to 428 (Bourke LGA). Nine LGAs had sSSRs that were less than two-thirds of the state average (Parry, Hume, Conargo, Murray, Dungog, Palerang, Wakool, Wentworth, Queanbeyan and Snowy River LGAs). Bourke, Walgett and Central Darling LGAs had sSSRs that were over three times the state average, and Brewarrina and Lachlan LGAs had sSSRs that were more than double the state average. These LGAs with higher ratios are among the areas with the lowest socio-economic status, the highest proportion of Aboriginal people and in the most remote areas of NSW.



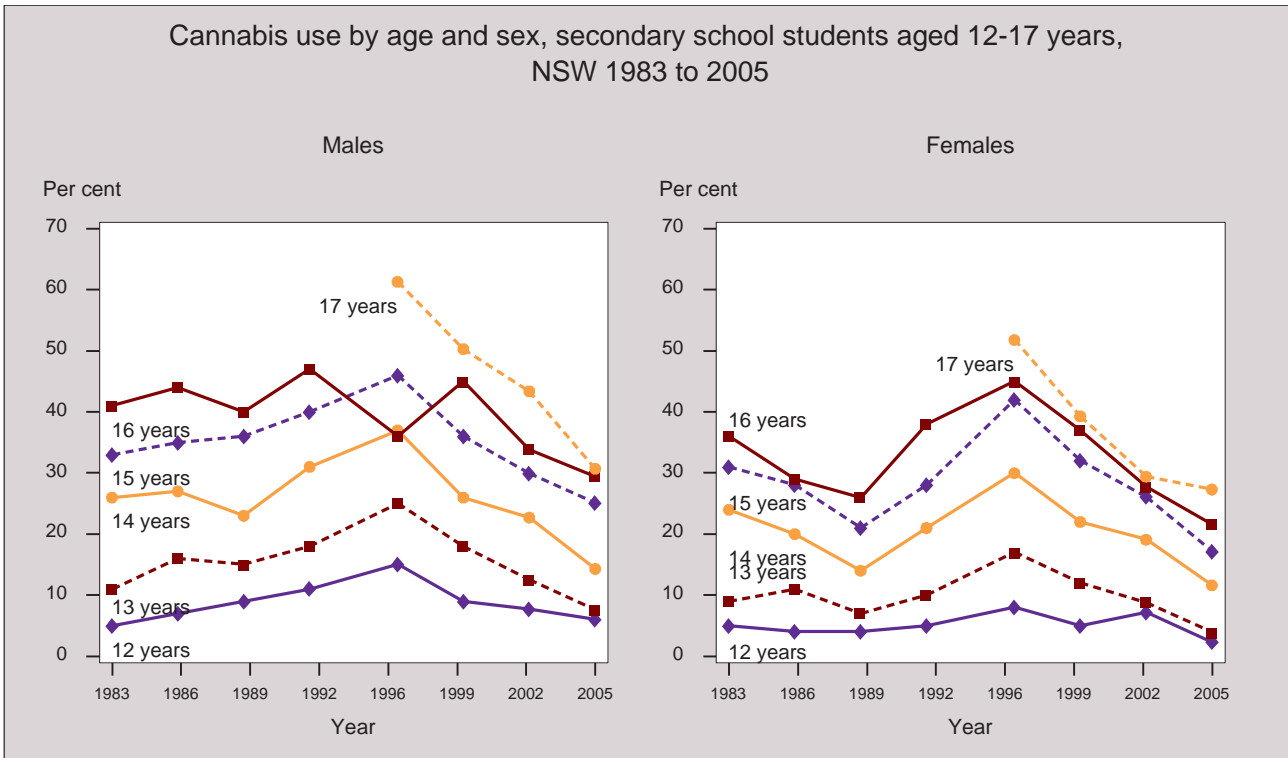
Note: Inhalant use includes sniffing spray cans and substances such as glue, paint, petrol or thinners. Hallucinogens include LSD, 'acid', 'trips', magic mushrooms, datura, and angel's trumpet. Estimates are based on 6180 respondents.

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

- The New South Wales School Students Health Behaviours Survey collected information on students' use of a variety of substances. In NSW in 2005 the most frequently reported substance used in the last four weeks was painkillers (67%) followed by alcohol (39%), tobacco (11%), inhalants (9%), cannabis (6%) and tranquillisers (3%). A higher proportion of alcohol and cannabis use was reported in older students (64% and 22% respectively in 17 year olds) whereas a higher proportion of inhalants were reported in younger students (12% in 12 year-old students).
- Generally, male and female students reported similar levels of using substances in the last four weeks.

Female students were more likely to report ever using pain killers (74% compared with 60%), while male students were more likely to report using cannabis (8% in males and 4% in females). While low levels of recent use of amphetamines, ecstasy, hallucinogens, cocaine, steroids or heroin were reported by both sexes, recent use was more often reported by male students than female students.

- The NSW Department of Health has developed a *NSW Health Amphetamine, Ecstasy and Cocaine Prevention and Treatment Plan, 2005–2009*, which aims to reduce the harms associated with the use or the abuse of psychostimulants (NSW Health, 2005).

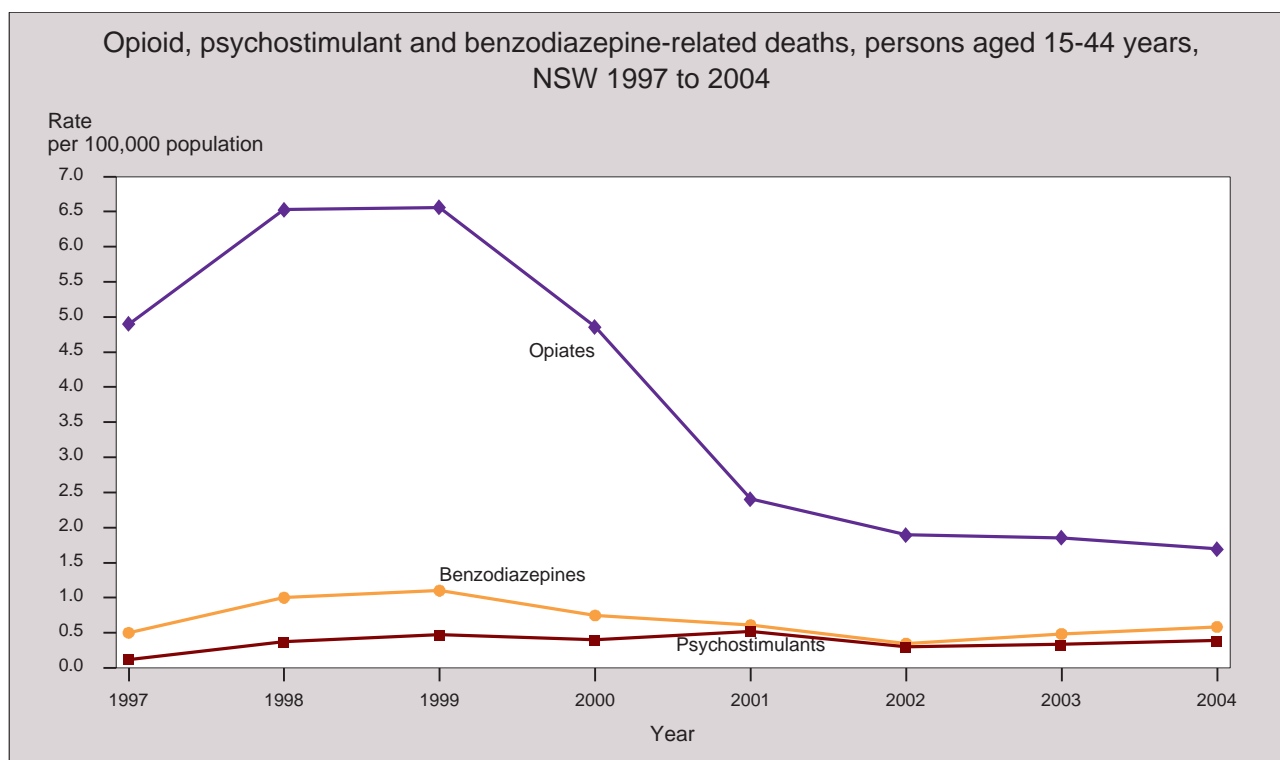


Note: Students were asked if they had ever 'smoked or used marijuana (grass, hash, cannabis, dope, mull, pot, a joint)'. Estimates are based on the following numbers of respondents: 10,026 in 1996; 7,348 in 1999; 6,180 in 2002 and 5,499 in 2005.

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

- In Australia in 2004, 7.6% of the population aged 12–15 years had used an illicit drug in the previous year, with those aged 16–17 years (20.9%) and 18–19 years (30.8%) showing the highest usage rates. Most illicit drug use in the 12–15 years age group was of marijuana/cannabis (5.2%), followed by the non-medical use of pain-killers (2.0%) (AIHW, 2006).
- Between 1996 and 2005 in NSW, the NSW School Students Health Behaviour Survey showed a large fall in the reported use in cannabis among NSW secondary school students, with 15% of students reporting having ever used cannabis in 2005 compared to 34% in 1996. In males, usage rates dropped from 37.5% in 1996 to 17.6% in 2005 and in females, the decline was from 30.7% in 1996 to 13.1% in 2005.
- The proportion of students who have ever used cannabis increased with age across all years. In 2005, 4.2% of students aged 12 years and 29% of those aged 17 years reported ever using cannabis. In 1996, the range was much greater (11.7% for those aged 12 years to 56.3% for those aged 17 years).

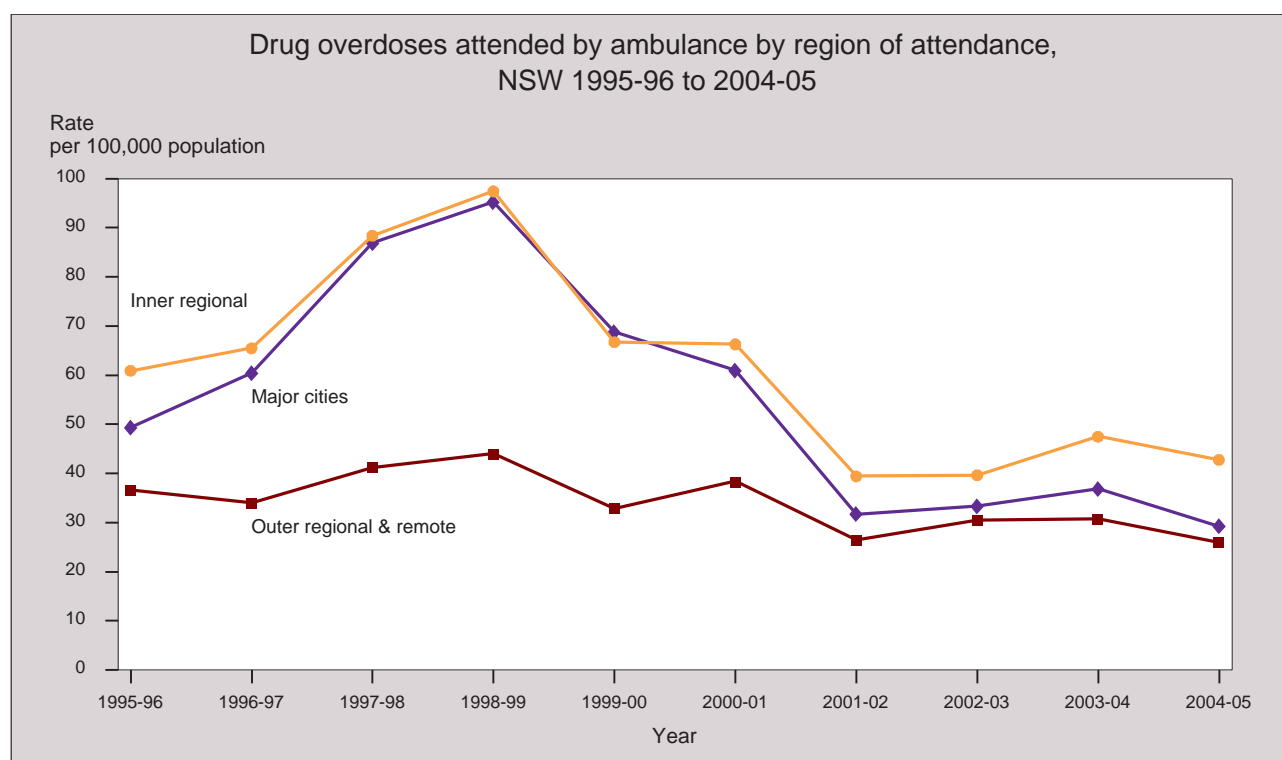
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: Deaths were classified using ICD-10. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- The report, *The burden of disease and injury in Australia, 2003* shows that illicit drugs were responsible for 2% of the total burden of disease in Australia in 2003; that the burden of disease from illicit drugs is highest in early adulthood (when addiction usually begins) and accounted for 4.7% of total disease burden in those aged 0–44 years in males (second only to alcohol) and 2.4% of total disease burden in females in this age group; that the contribution to the burden of disease from illicit drugs is dominated by mortality and morbidity from heroin in early adulthood, but is overtaken by contributions from hepatitis B and C with increasing age as the long-term effects of drug usage begin to manifest (Begg et al., in press).
- Opiate deaths represent a large proportion of illicit drug deaths in Australia, and opiate deaths from heroin, morphine or methadone are a source of public concern. Most opioid deaths are from heroin (Barker and Degenhardt, 2003).
- Opiate overdose deaths peaked in NSW in 1999, and have declined in each year following. In late 2000 there was a heroin shortage in Sydney and other Australian capital cities. There is no definitive explanation for the shortage, however, severe drought in the ‘Golden Triangle’ region of Laos, Myanmar and Thailand affected the Australian market. Policing operations have been cited as another factor (Johns, 2004). In 2004, there were 146 opiate-related deaths in NSW (77% in males and 76% in those aged 15–44 years).
- Benzodiazepines are a prescribed medication and are not illegal, however, they have been included in reporting because of their high potential for harm among injecting drug users. Psychostimulants include cocaine and amphetamines. Between 1998 and 2004, deaths associated with benzodiazepines and psychostimulants have remained fairly stable. In 2004, there were 61 deaths associated with benzodiazepines (70% in males and 64% in those aged 15–44 years); and 28 deaths were associated with psychostimulants (70% in males and 93% in those aged 15–44 years). The disease coding system (International Classification of diseases version 10 or ICD-10), which has been used from 1999, allows for deaths where opiates may be one of a number of contributing factors to be included (Jauncey et al., 2005).



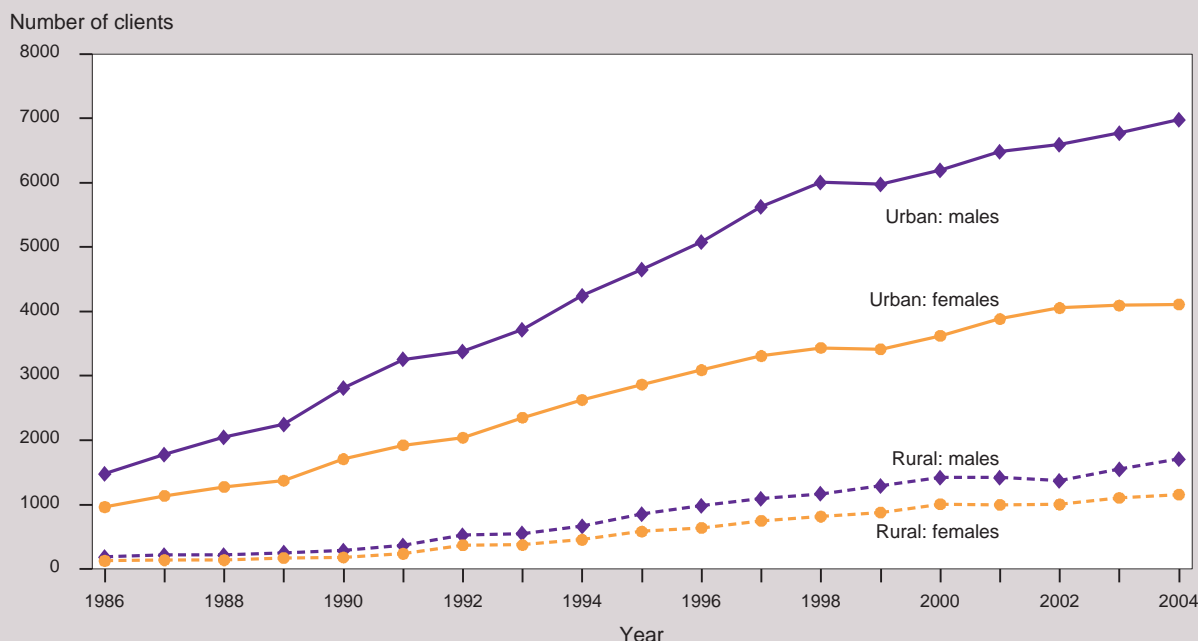
ASGC category		1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Major cities	2688	3902	4327	3162	2842	1497	1588	1770	1416
	Inner regional	839	1143	1274	883	889	535	543	656	596
	Outer regional & remote	176	216	231	173	203	141	162	163	138
NSW		3703	5261	5832	4218	3934	2173	2293	2589	2150
Rate per 100,000 population	Major cities	60.5	86.9	95.3	68.8	61.0	31.7	33.4	36.9	29.2
	Inner regional	65.5	88.4	97.4	66.7	66.3	39.4	39.6	47.5	42.8
	Outer regional & remote	34.0	41.2	44.0	32.9	38.4	26.5	30.5	30.7	26.0
	NSW	59.3	83.4	91.5	65.4	60.2	32.9	34.4	38.6	31.8

Note: Location of ambulance attendances where the Ambulance Service Protocol 28 (drug overdose and poisoning) was used and where a narcotic antagonist (such as Naloxone/Narcan) was administered. Some opiate overdose cases may not have a use of narcotic antagonist recorded because some ambulance officers are not authorised to administer a narcotic antagonist. 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.

Source: Ambulance Service of NSW case sheet database (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Non-fatal opiate overdoses are common among heroin users. Non-fatal overdoses may be defined as instances where loss of consciousness and depression of respiration occurs but is not fatal (Warner-Smith et al., 2000).
- The rate of ambulance attendance for drug overdose in NSW was at its highest in 1998-99 (91.5 per 100,000 population), and lowest in 2004-05 (31.8 per 100,000 population) in NSW. There was a large decline in the rate in 2000-01 across all regions in NSW and rates have been fairly stable since this time. The rate declined more steeply in metropolitan areas (major cities) than in inner regional areas between 2000-01 and 2001-02 (48% compared with 40%) and has been lower in metropolitan areas since 2001-02. In 2004-05, the rate of ambulance attendance for drug overdose was highest in inner regional areas and lowest in outer regional and remote areas.
- In late 2000 there was a heroin shortage in Sydney and other Australian capital cities. There is no definitive explanation for the shortage, however, severe drought in the 'Golden Triangle' region of Laos, Myanmar and Thailand affected the Australian market. Policing operations have been cited as another factor (Johns, 2004).
- Most calls to the NSW Ambulance Service occurred in larger cities, particularly in Sydney. The two most common areas in Sydney were the Fairfield Local Government Area and South Sydney, which are the areas where the largest NSW heroin markets are concentrated (Maher et al., 1998).

Clients of the NSW Methadone/Buprenorphine Program by location of treatment and sex, NSW 1986 to 2004

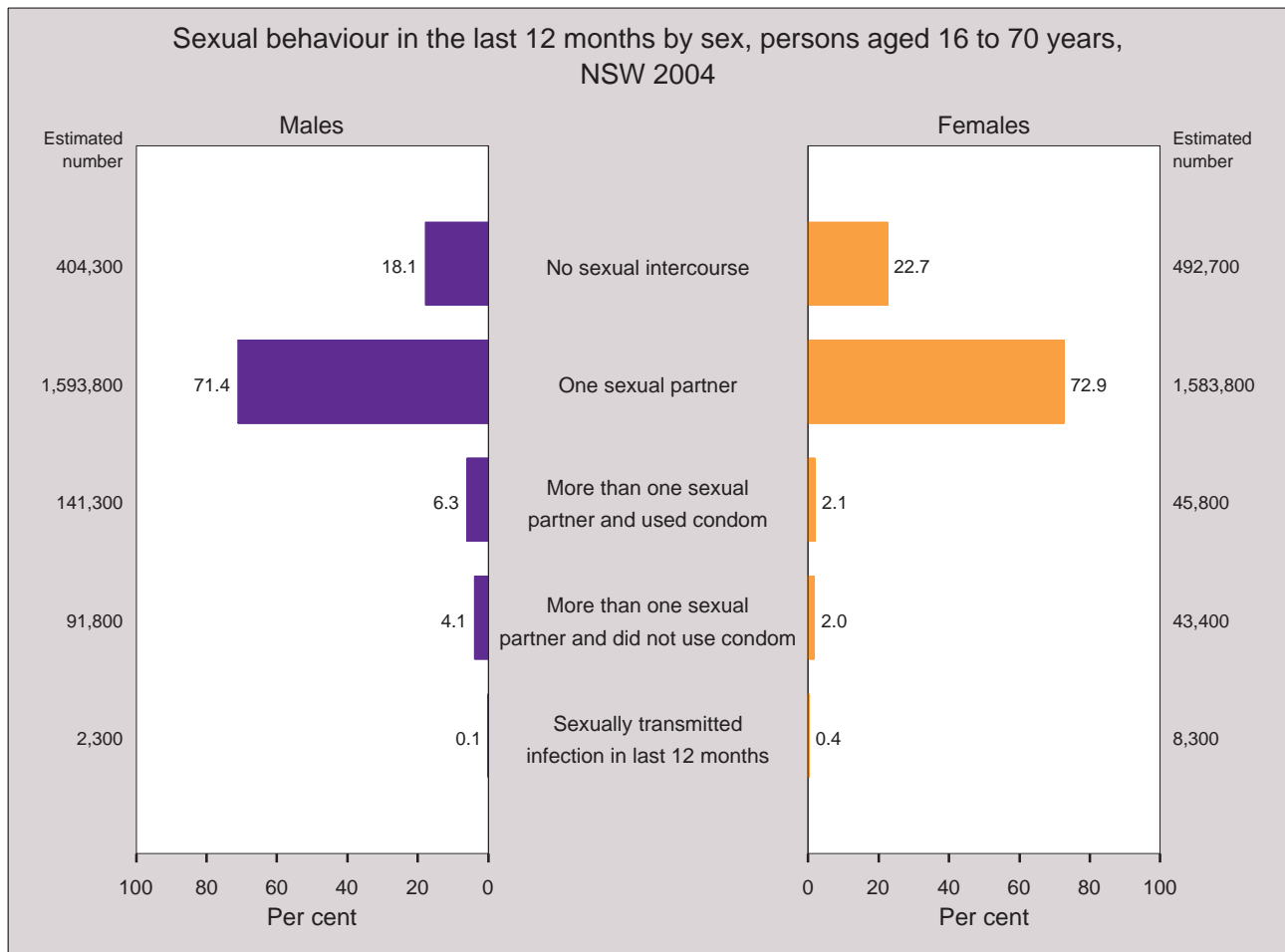


	Sex	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Urban	Persons	2441	2914	3328	3625	4521	5182	5417	6071	6871	7521
Rural	Persons	314	353	355	424	471	606	894	926	1123	1439
Justice Health	Persons	0	0	0	0	17	15	23	279	274	451
NSW	Persons	2755	3267	3683	4049	5009	5803	6334	7276	8268	9411

Note: Data extracted as at 30 June each year. Location is derived from the postcode of the dosing point. Justice Health was formerly Corrections Health Service. Health areas in metropolitan Sydney, Central Coast, Hunter and Illawarra were classified as urban.

Source: Pharmaceutical Drugs of Addiction System, NSW Department of Health.

- Methadone maintenance is an effective treatment for opioid dependence (Mattick et al., 2003). It is the major treatment used in Australia and the risk of overdose death is substantially reduced in opiate-dependent people who are enrolled in methadone treatment (Warner-Smith et al., 2000).
- The NSW Methadone/Buprenorphine Program seeks to reduce the social, economic and health harms from the use of illegal opioids (NSW Department of Health, 1999).
- In 2004, 15,523 clients (10,008 or 64% male) were on the NSW Methadone Program. The number of clients on the NSW Methadone Program has gradually increased from 2,755 (60% males) in 1986 representing an almost six-fold increase in 2004. In 2004, 71% (11,095) of methadone clients were in treatment in urban areas, with 18% in rural areas and 10% in the correctional system.
- In August 2001, buprenorphine, another opioid replacement therapy, became available as an additional treatment for opioid dependence. It has been shown to be effective in the long-term as a maintenance treatment, and in the short term as an appropriate drug for an opioid withdrawal program.
- A recent study based on court appearance records in NSW has shown that methadone maintenance programs are effective at controlling crime (Lind et al, 2004).



Note: Estimates are based on 7,769 respondents in NSW. For this indicator 298 (3.84%) were 'not stated' (Don't know or Refused). The questions used were: Have you had sexual intercourse in the last 12 months?, Have you had sexual intercourse with more than 1 person in the last 12 months?, and Did you use condoms every time you had sexual intercourse? In addition all respondents who had sexual intercourse in the last 12 months were asked: Have you been diagnosed with a Sexually Transmitted Infection (STI) in the last 12 months?. Those respondents who answered yes to having an STI in last 12 months were removed from the other 4 groups and reported separately.

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

- Unsafe sex was responsible for 0.6% of the total burden of disease in Australia in 2003, with over two-thirds of this burden associated with cervical cancer and HIV/AIDS (Begg et al., in press). The latex condom is effective as a contraceptive and provides protection against the transmission of human immunodeficiency virus (HIV) and other sexually transmitted infections (STIs), including genital warts, chlamydia, herpes and gonorrhoea.
- A person can avoid STIs in a variety of ways: by not having sex; by having sex with only one partner (who is not having unprotected sex with anyone else and does not have an STI); and by using condoms if having sex with more than one partner or if not sure their partner is free of infection (NSW Health website).
- In 2004, the NSW Population Health Survey showed that, in respondents aged 16–70 years, 3.1% (4.1% of males and 2.0% of females) reported having intercourse with more than one partner in the last 12 months, without using a condom. A further 4.2% of respondents (6.3% males and 2.1% females) reported having intercourse with more than one partner in the last 12 months, but followed “safe sex” practice by using a condom. The majority of males (71.4%) and females (72.9%) in 2004 reported having sexual intercourse with only one partner and a sizeable minority (18.1% of males and 22.7% of females) reported having no sexual intercourse in the last 12 months.
- The highest prevalence of unsafe sexual practice in NSW in 2004 was shown to be among young adults aged 16–24 years (9.6% in males and 5.9% in females) followed by those aged 25–34 years (4.9% males and 3.0% females)(CER, 2005).

For more information

Ambulance Service of NSW. Available at: www.asnsw.health.nsw.gov.au.

Australian Bureau of Statistics. *Measures of Australia's progress*. ABS Catalogue no. 1370.0. Canberra: ABS, 2006.

Australian Department of Health and Ageing. *National physical activity guidelines for Australians*. Canberra: Commonwealth of Australia, 1999. Available at: www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pubhlth-publicat-phys.htm.

Australian Government Department of Health and Ageing. *Australia's physical activity recommendations for children and young people*. Canberra: Commonwealth of Australia, 2004. Available at: www.aodgp.gov.au/internet/wcms/publishing.nsf/Content/health-pubhlth-strateg-active-recommend.htm.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Australian Institute of Health and Welfare. O'Brien K *Living dangerously: Australians with multiple risk factors for cardiovascular disease*. Bulletin no 24. AIHW Cat. No. AUS 57. Canberra: AIHW, 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10103.

Barker B, Degenhardt L. Accidental drug-induced deaths in Australia, 1997-2001. NDARC Technical Report no. 165. Sydney: National Drug and Alcohol Research Centre, UNSW, 2003.

Begg S, Vos T, Barker B. et al. *The burden of disease and injury in Australia, 2003*. Canberra: AIHW, in press. Available at www.aihw.gov.au/publications.

Booth, ML. What proportion of Australian children are sufficiently physically active? *Med J Aust* 2000b; 173: S6-S7.

Booth, ML. What strategies can be used to promote and maintain adequate levels of physical activity in Australian children? *Med J Aust* 2000a; 173: S7-S8.

Cancer Institute NSW at www.cancerinstitute.org.au.

Cancer Institute NSW. *NSW Cancer Plan 2007-2010. Accelerating the control of cancer*. Sydney: Cancer Institute NSW, 2006.

Centre for Drug and Alcohol, NSW Department of Health. Available at: www.health.nsw.gov.au/public-health/dpb.

Centre for Epidemiology and Research. 2004 Report on adult health from the New South Wales Population Health Survey. *N S W Public Health Bull*, 2005; 16(S-1). Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Collins DJ, Lapsley HM. *Counting the cost: estimates of the social costs of drug abuse in Australia in 1998-99*. National Drug Strategy Monograph Number 49. Canberra: Department of Health and Ageing, 2002.

Commonwealth of Australia. *National Alcohol Strategy 2006 - 2009*. Canberra: Ministerial Council on Drug Strategy, 2006. Available at www.alcohol.gov.au/internet/alcohol/publishing.nsf/Content/nas-06-09.

Commonwealth of Australia. *National Tobacco Strategy 2004-2009*. Canberra: Ministerial Council on Drug Strategy, 2005.

Degenhardt L, Hall W and Adelstein, BA. *Ambulance calls to suspected drug overdoses: Analysis of New South Wales patterns, July 1997 to June 1998*. Technical Report No. 94, Sydney: National Drug and Alcohol Research Centre, 2000.

Department of Health and Aged Care. *National physical activity guidelines for adults*. Canberra: Australian Government, 1999, reprinted in 2005. Available at [www.health.gov.au/internet/wcms/publishing.nsf/Content/BC3101B1FF200CA4CA256F9700154958/\\$File/adults_phys.pdf](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/BC3101B1FF200CA4CA256F9700154958/$File/adults_phys.pdf).

Doll R, Peto R, Boreham J and Sutherland I. Mortality in relation to their smoking: 50 years' observations on male British doctors. *BMJ* 2004; 328:1519-28.

Draper G, Turrell G, Oldenburg B. *Health inequalities in Australia: Mortality*. Health Inequalities Monitoring Series No. 1. AIHW Cat. No. PHE 55. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare, 2004. Available at www.aihw.gov.au/publications/index.cfm/title/10041.

- Fiore MC, Baily WC, Cohen SJ, et al. *Treating tobacco use and dependence. Clinical Practice Guideline*. Rockville MD: US Department of Health and Human Service, 2000.
- Flood V, Webb K, Lazarus R, Pang G. Use of self-report to monitor overweight and obesity in populations: Some issues for consideration. *Aust N Z J Public Health* 2000; 24: 96-99.
- Health Canada. *Canada's Physical Activity Guide to Healthy Active Living: Family Guide to Physical Activity for Youth 10-14 years of age*. Health Canada, 2002. Available at www.phac-aspc.gc.ca/pau-uap/paguide/child_youth/.
- Health Promotion Branch at www.health.nsw.gov.au/public-health/health-promotion.
- Healthy kids NSW at <http://www.healthykids.nsw.gov.au/>.
- Jauncey M, Taylor T, Degenhardt L. The definition of opioid-related deaths in Australia: implications for surveillance. *Drug and Alcohol Review* 24 (5): 401-409, 2005.
- Johns R. *Drug offences: An update on crime trends, diversionary programs and drug prisons*. Sydney, NSW Parliamentary Library Research Service. Briefing Paper No. 7/04, 2004. Available at: www.aic.gov.au/research/drugs/publications/other.html#nsw.
- Lind B, Chen S, Weatherburn D and Mattick R. The Effectiveness of Methadone Maintenance Treatment in Controlling Crime: An Aggregate Level Analysis *Issues Paper No. 24*. Sydney: NSW Bureau of Crime Statistics and Research, 2004. Available at: [www.lawlink.nsw.gov.au/bocsar1.nsf/files/bb24.pdf/\\$file/bb24.pdf](http://www.lawlink.nsw.gov.au/bocsar1.nsf/files/bb24.pdf/$file/bb24.pdf).
- Maher L, Dixon D, Lynskey M and Hall W. *Running the risks*. Sydney: National Drug and Alcohol Research Centre, 1998.
- Mattick R, Breen C, Kimber J, Davoli M. *Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence*. Cochrane Review. Cochrane Library. Volume 1, 2003 NSW Department of Health at www.health.nsw.gov.au/pubs.
- NSW Department of Health. *Eat Well NSW Strategic Directions for Public Health Nutrition 2003-2007*. Sydney: NSW Department of Health, 2002. Available at: www.health.nsw.gov.au/pubs/e/pdf/eatwellnsw.pdf.
- NSW Department of Health. *Healthy People 2010. The population health strategy for New South Wales*. Sydney: NSW Department of Health, 2006.
- NSW Department of Health. *Amphetamine, ecstasy and cocaine. A prevention and treatment plan, 2005-2009*. Sydney: NSW Department of Health, 2005.
- NSW Department of Health. *Breastfeeding in NSW: promotion, protection and support*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/policies/pd/2006/pdf/PD2006_012.pdf.
- NSW Department of Health. *NSW Government Action Plan for the Prevention of Obesity in Children and Young People 2003-07*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/obesity/adult/gap/ObesityActionPlan.pdf.
- NSW Health Department. *The NSW Drug Treatment Services Plan 2000-2005*. Sydney: NSW Health Department, 2000. Available at: www.health.nsw.gov.au/public-health/dpb/publications/pdf/drugtreatment_servicesplan.pdf.
- NSW Health Department. *The NSW Methadone Maintenance Treatment Clinical Practice Guidelines*. Sydney: NSW Health Department, 1999. Available at: www.health.nsw.gov.au/public-health/dpb/publications/pdf/methadone_clinicalpractice_guidelines.pdf.
- NSW Health at www.health.nsw.gov.au.
- NSW Premier's Department. *A new direction for NSW. State Plan. Draft for consultation*. Sydney: NSW Premier's Department, 2006. Available at www.nsw.gov.au/stateplan/Docs/DraftStatePlan.pdf.
- National Drug and Alcohol Research Centre at www.ndarc.med.unsw.edu.au/ndarc.nsf.
- National Health and Medical Research Council. *Australian Alcohol Guidelines: Health Risks and Benefits*. Canberra: NHMRC, 2001. Available at: www.nhmrc.gov.au/publications/synopses/ds9syn.htm.
- National Health and Medical Research Council. *Dietary Guidelines for all Australians*. Canberra: Commonwealth of Australia, 2003. Available at: www.nhmrc.gov.au/publications/synopses/dietsyn.htm.
- Office of Drug Policy, NSW Cabinet Office. Available at: www.druginfo.nsw.gov.au.
- Peto R, Lopez AD, Boreham J, Thun M and Heath Jr C. *Mortality from Smoking in Developed Countries 1950-*

2000. Oxford: Oxford University Press, 2004. Available at: <http://rum.ctsuo.ox.ac.uk/~tobacco>.
- Premier's Council for Active Living at www.pcal.nsw.gov.au.
- Ridolfo B, Stevenson C. *The quantification of drug-caused mortality and morbidity in Australia, 1998*. Canberra: Australian Institute of Health and Welfare, 2001. Available at www.aihw.gov.au/publications/index.cfm/title/6461.
- Shilton T. Promoting physical activity: Ten recommendations from the Heart Foundation. *A position paper for health professionals and organisations planning to develop and promote physical activity programs*. National Heart Foundation, 2001. Available at www.ausport.gov.au/fulltext/2001/nhf/promo_physi_act.asp.
- Silagy C, Lancaster T, Stead L, Mant D, Fowler G. *Nicotine replacement therapy for smoking cessation*. The Cochrane Library, Issue 3. Oxford: Update Software, 2001.
- Tracey EA, Chen S, Baker D, Bishop J, Jelfs P. *Cancer in NSW: Incidence and mortality 2004*. Sydney: Cancer Institute NSW, 2006. Available at www.cancerinstitute.org.au.
- Turrell G, Stanley L, de Looper M and Oldenburg B. *Health Inequalities in Australia: Morbidity, health behaviours, risk factors and health service use*. Health Inequalities Monitoring Series No. 2. AIHW Cat. No. PHE 72. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare, 2006. Available at www.aihw.gov.au/publications/index.cfm/title/10041.
- U.S. Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004.
- U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Young People: A Report of the Surgeon General*. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1994.
- Warner-Smith M, Lynskey M, Darke S and Hall W. *Heroin Overdose: Prevalence, Correlates, Consequences and Interventions*. Monograph No. 24, Sydney: National Drug and Alcohol Research Centre, 2000.
- World Health Organization. *Nutrition and Infant Feeding*. Available at www.who.int/child-adolescent-health/NUTRITION/infant.htm (accessed 11 Jan 2002).

2

Burden of disease

Section 2

Burden of disease

- Life expectancy in NSW continues to increase. In 2004:
 - Newborn males could expect to live for 78.9 years, while newborn females could expect to live for 83.7 years.
 - Men who have reached age 65 years can expect to live to 83.3 years of age, while women who have reached age 65 can expect to live to 86.7 years of age.
 - Although females can still expect to live longer than males, the difference between the sexes is decreasing.
- Australia has the fourth highest life expectancy in the world.
- The age standardised death rate in NSW has halved in the last 35 years. The male death rate was 49% higher than the female rate in 2004.
- More than two-thirds of premature deaths are classified as avoidable. Avoidable deaths rate has halved in the last 20 years.
- In 2004, the infant mortality rate was 4.6 per 1,000 live births in NSW and 4.7 per 1,000 live births in Australia.
- Hospital separations have increased by more than one-third over the last fifteen years but only 4% in the last 8 years. In 2004–05 the most common causes of hospital separations were: factors influencing health, maternal conditions, injury and poisoning and digestive system diseases.
- Over three-quarters of adult NSW residents rated their health as 'good' or better, and more than one-fifth reported 'excellent' health. Almost one-half of children were reported to enjoy 'excellent' health.
- The disease burden (measured by disability adjusted life years) was greater in NSW than in Australia from infectious diseases, neonatal causes, non-cancerous tumours, mental conditions, cardiovascular, chronic respiratory and genitourinary diseases.
- Ambulatory care sensitive conditions are those for which hospitalisation is considered potentially avoidable through preventive care and early disease management. Hospitalisation rates for ambulatory care sensitive conditions has remained stable in the last 16 years.
- There were almost 20,000 hospital separations for knee and hip replacement in NSW in 2004–05, and almost 80 % of those were due to osteoarthritis.
- Dementia is the highest contributor to the cost of care in residential aged care. Most people with dementia are over 65 and have other diseases.

In this chapter

- Life expectancy at birth
- Life expectancy at 65 years
- Deaths from all causes
- Deaths from all causes by health area
- Causes of death
- Potentially avoidable deaths with projections
- Infant mortality
- Hospitalisations for all causes with projections
- Causes of hospitalisation
- Self-rated health
- Disability adjusted life years in NSW
- Disability adjusted life years and health risk factors
- Hospitalisations for ambulatory care sensitive conditions
- Hospitalisations for ambulatory care sensitive conditions by local government area
- Types of ambulatory care sensitive conditions
- General practice workload and ambulatory care sensitive conditions by division of general practice
- Arthritis and other musculoskeletal conditions
- Dementia
- International rankings of life expectancy
- International rankings of infant mortality
- International rankings of overweight and obesity

Introduction

This chapter focuses on trends in life expectancy and death rates in NSW, and examines the major causes of death, hospitalisation and disability. A number of measures are used to shed light on the relative contribution of various diseases, conditions and causes of injury to this loss of life and disability. Traditional indicators, such as life expectancy, infant mortality and self-rated health status are examined first, but some traditional indicators, such as the age-adjusted death and hospitalisation rates had projections added to the trend lines. Then, newer indicators are presented, beginning with indicators which use the global burden of disease approach, from which this chapter takes its name, followed by indicators analysing ambulatory care sensitive conditions. International comparisons of three indicators are presented, including overweight and obesity. Finally, a new indicator on arthritis and other musculoskeletal conditions and another one on dementia complete the chapter.

The concepts of the burden of disease approach and ambulatory care sensitive conditions require further introduction.

The major limitation of using only death and hospitalisation data to assess the burden that particular diseases or causes of injury place on the community is that some conditions which cause substantial suffering or disability but which don't result in death or hospitalisation are overlooked. The global burden of disease approach aims to address these limitations, by using a summary health gap measure called the 'disability adjusted life year' (DALY), and by comprehensively assessing the complete spectrum of disease that occurs in a population.

The DALY aims to quantify the amount of full health lost due to disease or injury occurring in a particular period, by adding the burden arising from deaths in that period to the burden of incident (new) cases of disease or injury occurring in that same period. The burden is not simply the number of cases, but is quantified by multiplying the

number of incident cases by an estimate of relative severity of disability caused by the condition, known as the disability weight, and by the duration of the loss of health. The disability weight is measured on a scale of zero to one, and is constructed so that zero means full health and one means death. The duration of loss of health or loss of life is limited by an 'ideal' life expectancy from a life table chosen for each study.

An optional discounting factor to reflect the greater importance people, on average, place on the loss of health in the near future compared with the distant future, can also be incorporated into the calculation. Age-weighting to assign different weights based on the economic and social welfare value of people at different ages can also be incorporated. The methodology used in Australia uses discounting, but not age-weighting, in the measures given in this report.

The DALY for a cause of disease or injury is calculated separately for each age group defined and for each sex. The total burden of that disease is the sum of the DALYs for all age groups and both sexes. This additive feature of DALYs is central to its application to different aggregations and disaggregations of populations and causes of disease or injury.

The study by Begg and colleagues 'The burden of disease and injury in Australia, 2003' (Begg et al., in press) is the second complete assessment of health status of Australian population. The DALY calculated for NSW by the study are presented in this chapter.

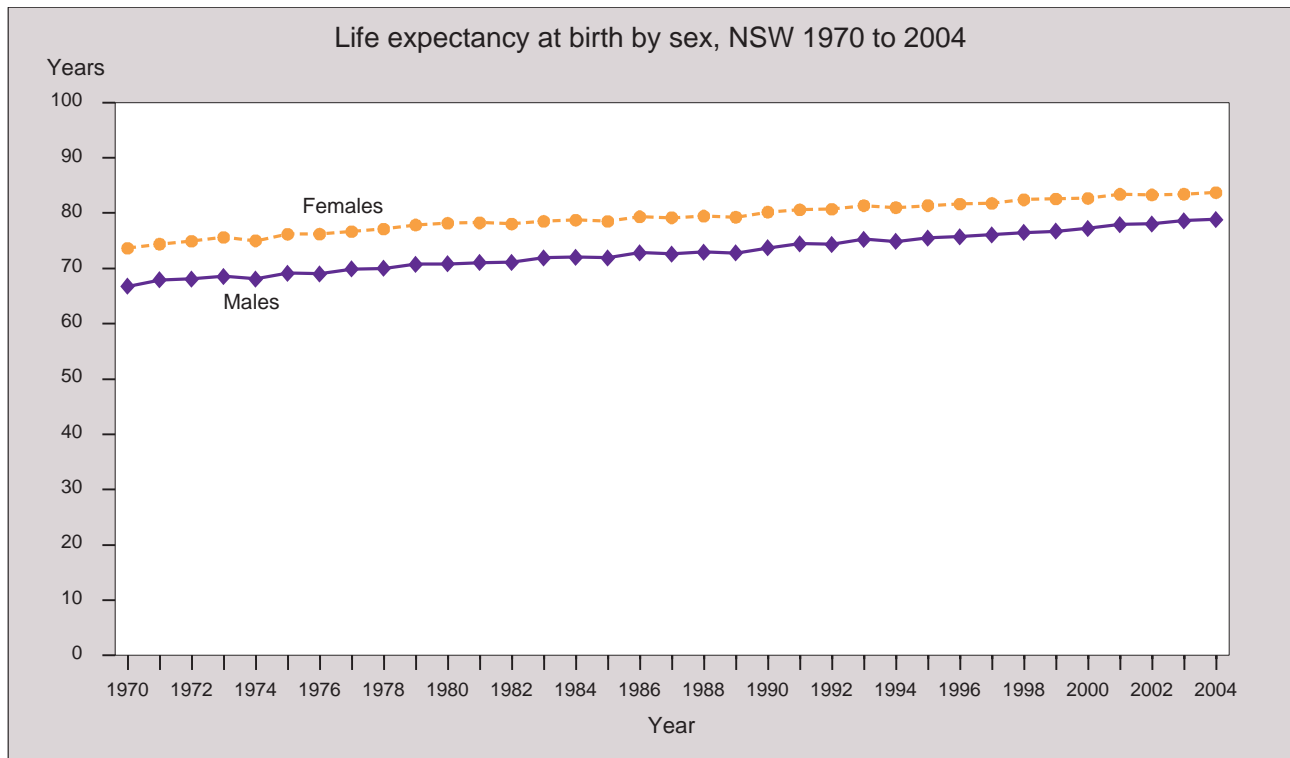
Ambulatory care sensitive conditions are those for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered in an ambulatory setting, such as primary health care, for example by general practitioners or community health centres.

Hospitalisation rates for ambulatory care sensitive conditions are used as an indicator of access to, and quality of, primary care. Other factors that influence rates include disease prevalence in the community, hospital admission and coding practices, and personal choices about seeking health care. The conditions reported here as ambulatory care sensitive are presented in three categories: vaccine-preventable conditions, acute conditions and chronic conditions.

Diabetes with complications, angina, chronic obstructive pulmonary disease, asthma and congestive heart failure usually account for around half of all ambulatory care sensitive hospitalisations in NSW. More information about these conditions can be found in other chapters of this report.

More information on the methods used for calculating life expectancy and age-adjusted death and hospitalisation rates can be found in the Methods section. The values for life expectancy that appear in this report may differ slightly from those published by the Australian Bureau of Statistics due to minor discrepancies in these methods. The ICD-10 and ICD-9 codes used for each indicator are included in the disease and procedure codes appendix.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

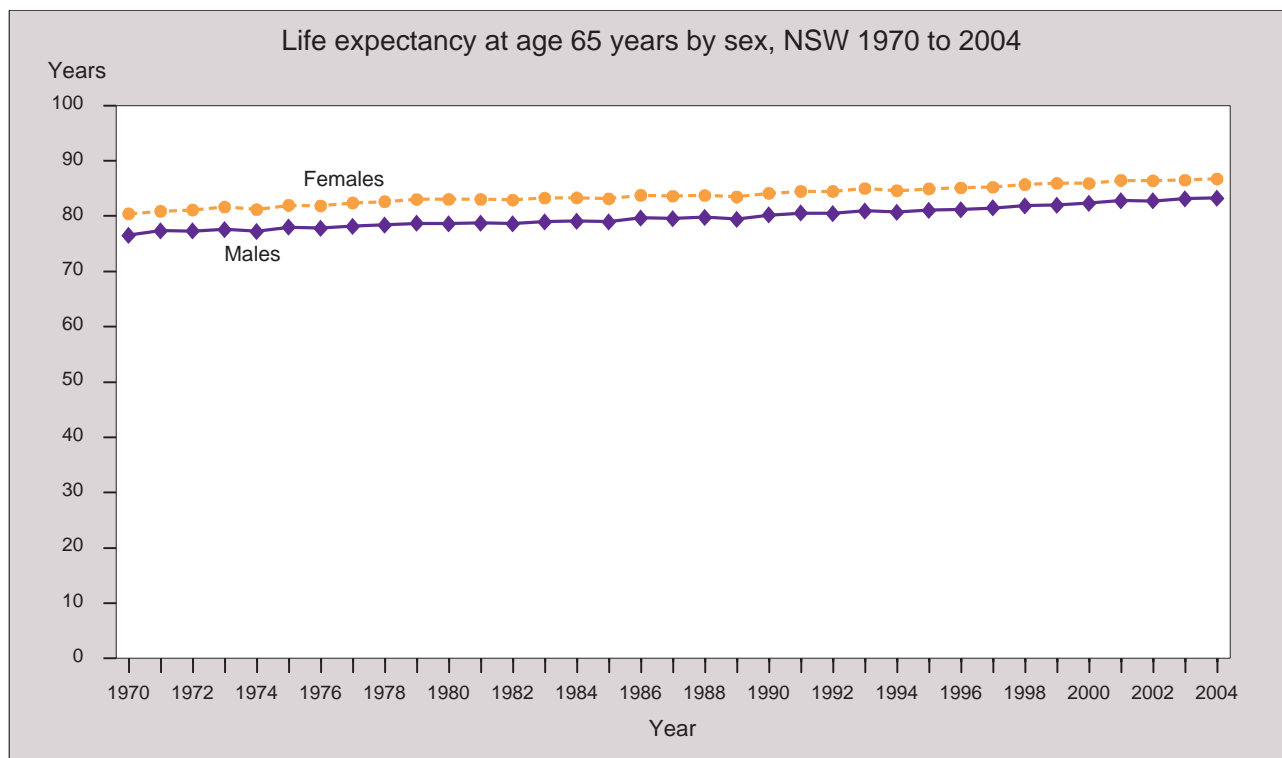


	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
NSW	Males	75.6	75.8	76.1	76.5	76.7	77.3	78.0	78.1	78.6	78.9
	Females	81.4	81.7	81.8	82.4	82.6	82.7	83.4	83.3	83.4	83.7
Australia	Males	75.7	75.8	76.2	76.6	76.9	77.4	77.9	78.1	78.5	78.8
	Females	81.5	81.7	81.8	82.4	82.6	82.8	83.3	83.1	83.6	83.8

Note: Life expectancy was calculated using the method of Chiang (see Methods section). Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- Life expectancy at birth is an estimate of the number of years a person can expect to live, on average, assuming that death rates continue at levels that prevailed in the year of their birth. This is a practical assumption, because although death rates generally do change over a person's lifetime, it is difficult to predict what these changes will be. See the Methods section for details.
- In NSW, between 1970 and 2004, life expectancy at birth steadily increased, from 66.8 to 78.9 in males, and from 73.7 to 83.7 in females. These figures are very close to those for Australia as a whole. Longer life expectancy is the result of reduced deaths in infancy, a healthier older population, and better treatment for common diseases.
- Although females can still expect to live longer than males, the difference between the sexes is decreasing. In NSW in 2004, female life expectancy was 4.8 years higher than for males. This compares with a difference of 6.9 years in 1970.
- Life expectancy at birth in Australia compares very favourably with other developed countries. Australia ranked equal fourth with Sweden at 80.6 years in both sexes in 2004. Life expectancy at birth in males was only 1.1 year behind Iceland and 0.5 years behind Japan and Switzerland. In females in 2004, life expectancy at birth was 2.6 years behind Japan, 0.8 years behind France and Spain and 0.7 years behind Switzerland (OECD, 2006).
- Life expectancy at birth for Aboriginal and Torres Strait Islander people is significantly lower than for the non-Indigenous population. In 2004, the Australian Bureau of Statistics estimated that life expectancy at birth in Aboriginal males was 60.0 years and 65.1 years in females in NSW in 1996–2001 (SCRGSP, 2005). See Chapter 3.1 for more information regarding the health status of the Aboriginal and Torres Strait Islander population of NSW.

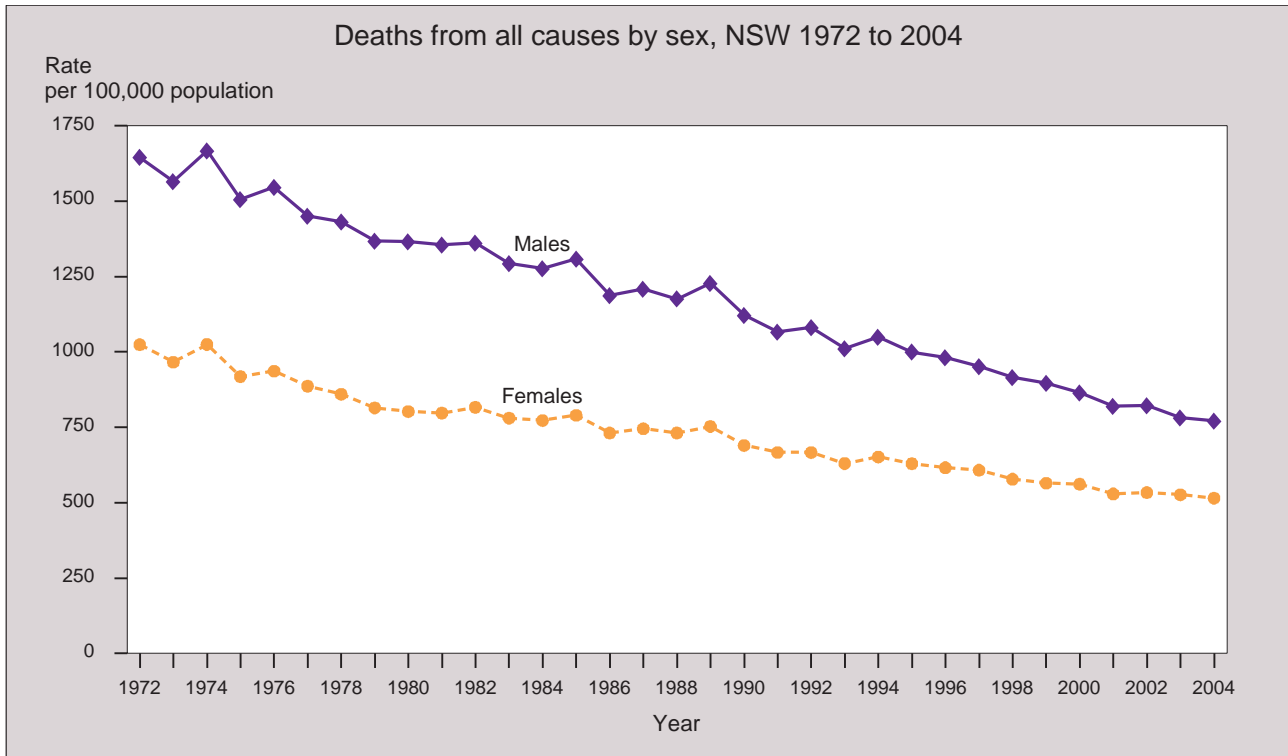


	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
NSW	Males	81.1	81.2	81.5	81.9	82.0	82.4	82.8	82.8	83.2	83.3
	Females	84.9	85.1	85.2	85.7	86.0	85.9	86.5	86.4	86.5	86.7
Australia	Males	81.2	81.3	81.6	81.9	82.2	82.5	82.8	82.8	83.2	83.4
	Females	85.0	85.1	85.3	85.8	85.9	86.1	86.4	86.3	86.6	86.8

Note: Life expectancy was calculated using the method of Chiang (see Methods section). Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- Life expectancy at 65 years of age is an estimate of the average age at death for someone who turns 65 years old in a given year, assuming that death rates prevailing in that year continue unchanged. Death rates do generally change and this assumption is more reasonable for a 65 year-old than for someone just born, because the maximum additional life span for someone aged 65 is much shorter. See the Methods section for details of the method used to calculate life expectancy.
- Life expectancy at age 65 years is influenced by lifestyle and nutritional and environmental factors, as well as access to and the quality of health services.
- In NSW between 1970 and 2004, life expectancy at age 65 years increased from 76.6 to 83.3 years for males, and from 80.4 to 86.8 years in females.
- Although women who have reached the age of 65 can still expect to live longer than men of the same age, the difference is smaller than the difference between the sexes for life expectancy at birth. This reflects the fact that males are at greater risk than women of dying before they reach the age of 65, primarily from injury, suicide and cardiovascular disease.



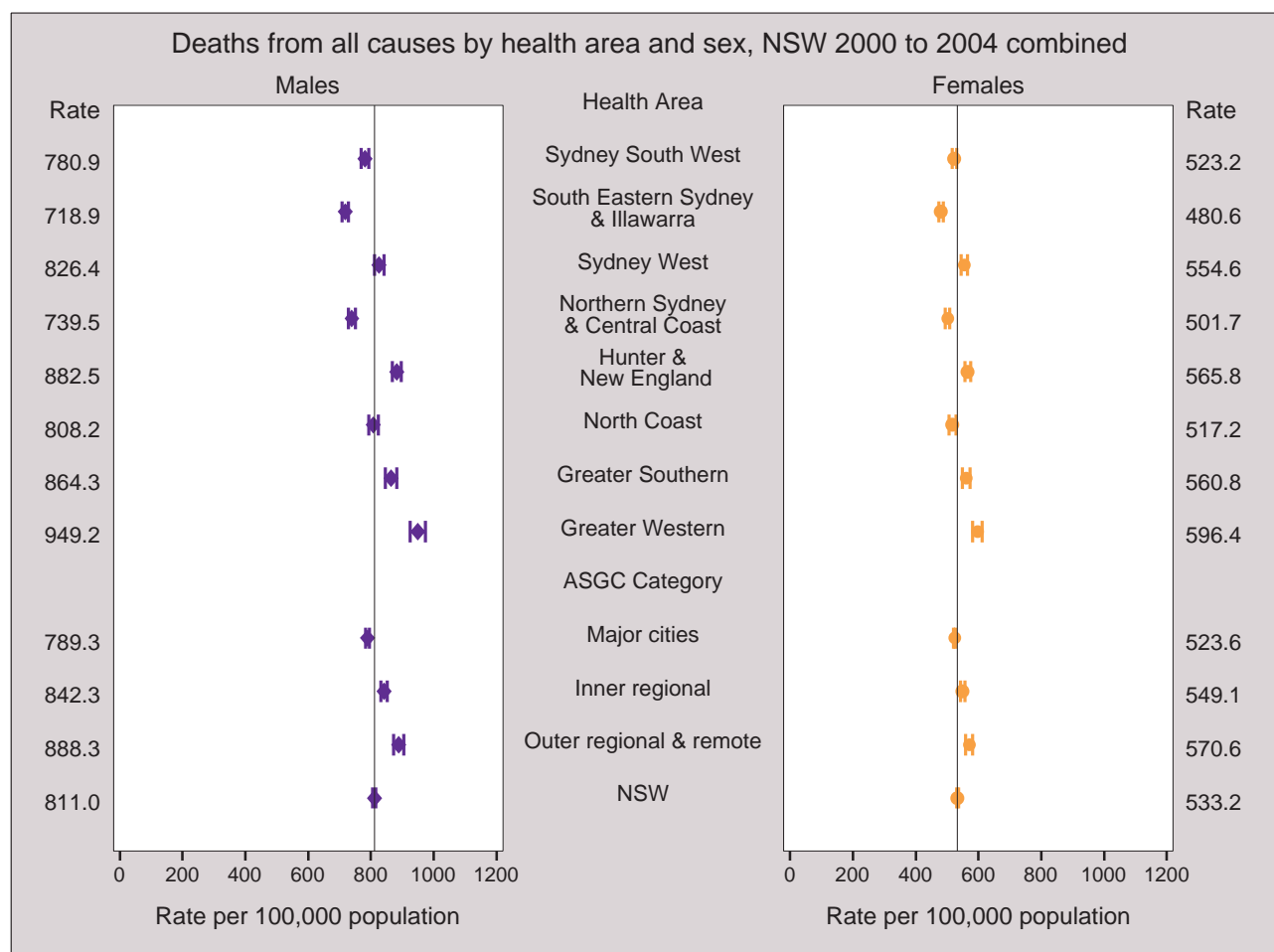
	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Males	23316	23567	23614	23446	23681	23532	23126	23828	23433	23742
	Females	21021	21249	21699	21205	21392	22034	21419	22279	22580	22626
	Persons	44337	44816	45313	44651	45073	45566	44545	46107	46013	46368
Rate per 100,000 population	Males	999.8	981.0	952.1	915.3	897.5	864.8	820.9	821.7	782.4	771.6
	Females	630.0	616.8	608.4	578.6	565.1	561.8	529.7	534.1	526.7	515.6
	Persons	786.5	772.5	756.6	724.0	709.2	694.9	657.2	659.9	641.1	629.1

Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- The age-adjusted death rate in NSW decreased by 51% over the period 1972 to 2004 (53% for males and 50% for females). Reduced deaths in infancy, a healthier older population, and better treatment for common diseases all contributed to reductions in the death rate.
- In 2004, the age-adjusted male death rate was 49% higher than the female death rate. This difference has declined steadily from 61% in 1972.
- Because of the overall reduction in death rates, the absolute number of deaths of NSW residents rose by only 9.8% between 1972 (42,222 deaths) and 2004 (46,368 deaths). This is despite a 40% increase in the NSW population over that time.

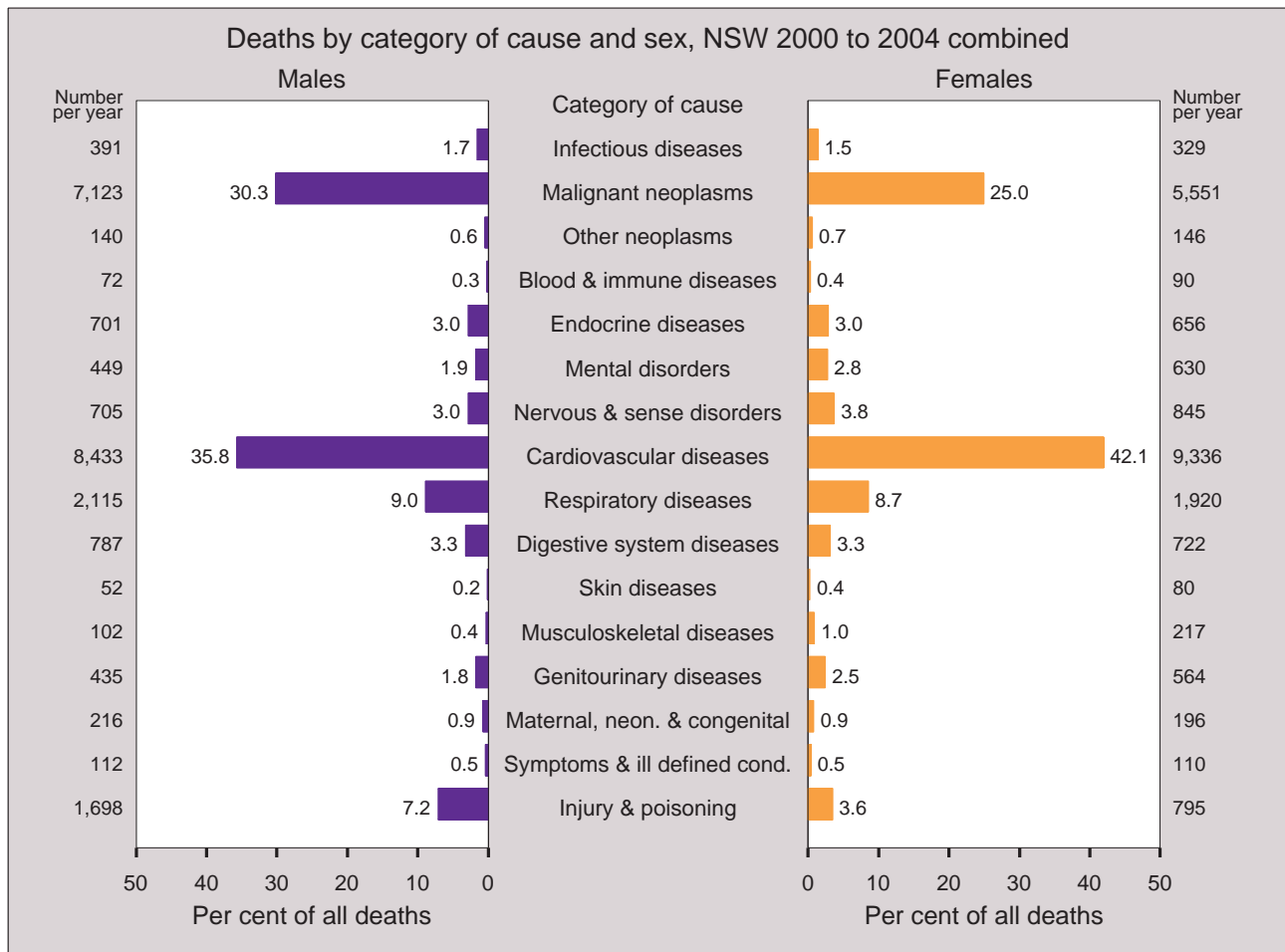
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. 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.

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

- The proportion of older people varies between geographic areas and can therefore influence death rate comparisons. Age-adjustment (also known as age-standardisation) allows comparison of death rates across geographic areas after removing the effects of the different age structures.
- In the period from 2000 to 2004, the lowest age-adjusted death rates in NSW were in the South Eastern Sydney and Illawarra, and Northern Sydney and Central Coast Area Health Services. In the South Eastern Sydney and Illawarra Area Health Service, male and female deaths rates were 13% and 11% lower than the respective death rates for all NSW. In the Northern Sydney and Central Coast Area Health Service, male and female death rates were 9% and 6% lower than the respective deaths rates for all NSW.
- In the same period, the highest age-adjusted death rates were seen in the Greater Western Area Health Service, with male and female death rates 17% and 12% higher than the respective NSW averages.
- There is a clear gradient of increasing death rates with increasing geographic remoteness.
- Variations in death rates among health areas reflect the distribution of the underlying social and economic determinants of health. Variation in death rates by socioeconomic status are examined in more detail in Chapter 3.5.

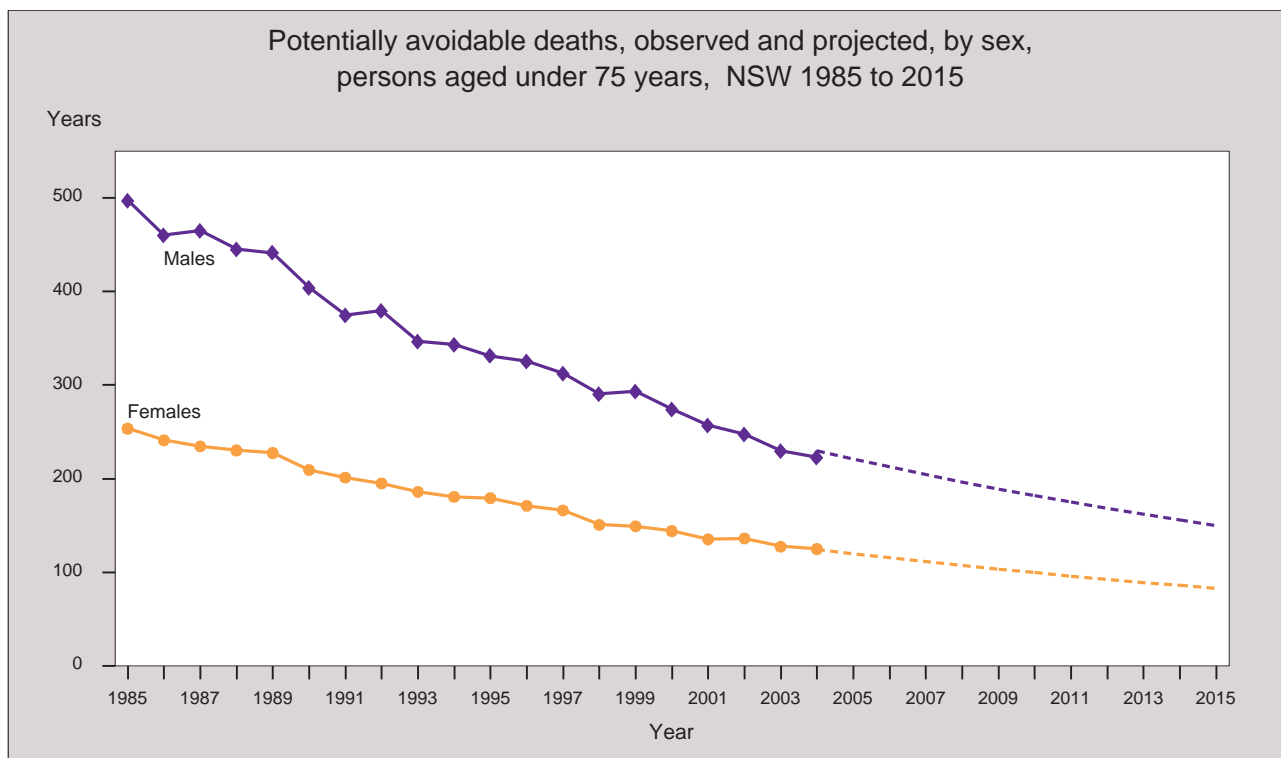


Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories, so numbers for some categories may differ from results in other chapters. See ICD Codes for diseases and procedures for details. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- In NSW between 2000 and 2004, cardiovascular disease, including ischaemic heart disease and stroke, was the leading cause of death. It was responsible for 38.9% of all deaths in NSW residents (35.8% of male and 42.1% of female deaths). The next most common cause of death were malignant neoplasms (cancers), accounting for 27.7% of all deaths (30.3% of male and 25.0% of female deaths).
- The contribution of each cause of death varies greatly across age groups. In the 0 to 4 year age group, deaths in the first 28 days of life (the neonatal period) represented 63% of deaths.
- In the 5 to 14 year age group, injury and poisoning were the leading cause of death (36.1%), followed by cancers (22.1%). However, the number of deaths in this age group was the lowest of all age groups. Among males, injury and poisoning caused 41.9% of deaths, compared with 26.5% in females.
- In the 15 to 24 year age group, injury and poisoning were the leading cause of death (67.2% of all deaths; 72.3% of male and 53.5% of female deaths).
- In males aged 25 to 44 years injury and poisoning were the leading cause of death (49.3%), while in females in this age group, cancers were the leading cause of death (37.4%).
- In the 45 to 64 year age group, cancers were the leading cause of death accounting for 46% of all deaths, 40.7% of male deaths and 55.5% of female deaths. The next most common cause of death in this age group was cardiovascular disease (24.8% of all deaths; 29.2% of male and 17.5% of female deaths).
- In persons 65 years and older, cardiovascular diseases dominated, and were responsible for 43.6% of all deaths (40.1% of male and 46.9% of female deaths). Cancers were the next most common cause (25.4% of all deaths; 29.9% of male and 21.2% of female deaths).

Potentially avoidable deaths, observed and projected, by sex, persons aged under 75 years, NSW 1985 to 2015

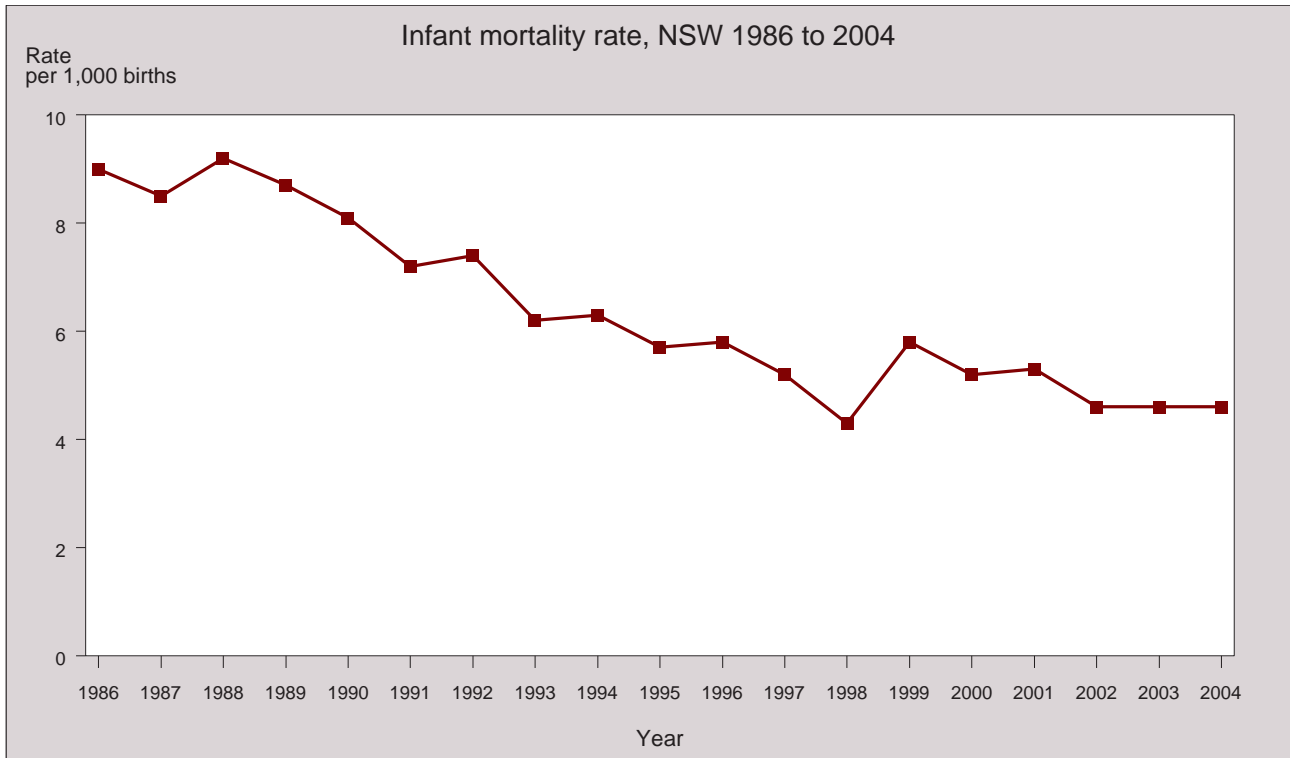


	Sex	1995	2000	2004	2005	2010	2015
Number	Persons	14814	12935	11292	11220	10260	9460
Rate	Persons	252.9	208.2	173.2	170	140	116

Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

Source: Tobias M, Jackson G. Avoidable mortality in New Zealand, 1981–97. *Aust N J Z Public Health* 2001; 25: 12–20, and ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Deaths classified as ‘avoidable’ are those that could potentially be avoided through the activities of the health and related sectors (Tobias and Jackson, 2001). See Appendices for a list of ‘avoidable deaths’ and their codes. In NSW in 2004, nearly 11,297 deaths in persons aged under 75 years were potentially avoidable (7,167 deaths in males and 4,126 deaths in females). This represented 67.4% of all deaths before age 75 years (premature deaths) and 24.4% of all deaths. Between 1985 and 2004, the rate of avoidable death fell by 53.1% (males 55.1%, females 50.7%).
- The causes of avoidable deaths can be further divided into those that may be prevented through ‘primary’, ‘secondary’ and ‘tertiary’ interventions. Primary interventions are aimed at preventing a condition developing, for example through lifestyle modification. Secondary interventions detect or respond to a condition early in its progression, such as cancer screening detects cancers early. Tertiary level interventions treat an active condition to reduce its severity and prolong life, such as heart revascularisation.
- Death rates from potentially avoidable premature deaths are substantially higher in areas of low socioeconomic status compared with areas of high socioeconomic status. See the Socioeconomic status section for more information.
- In Australia in 2001, the majority of potentially avoidable deaths were preventable through primary interventions (National Health Performance Committee, 2004).
- Projections of avoidable deaths rates are based on the assumption that past trends will continue into the future. Projections are helpful in high level planning and resources allocation, however figures forecast for the distant future are not very reliable. New diagnostic methods and treatments may accelerate the downward trend of the rates or the current public health concerns with growing rates of overweight and obesity may influence the trends the other way.

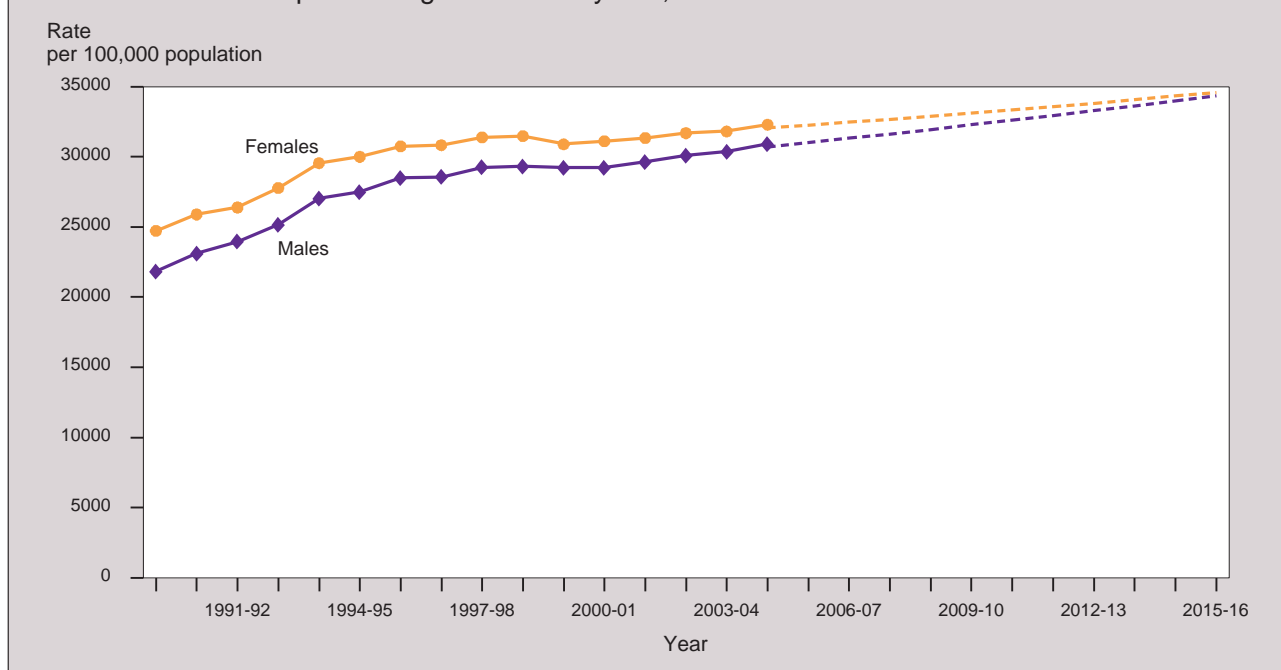


		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	NSW	498	499	451	371	504	447	449	397	398	399
	Australia	1449	1460	1341	1252	1408	1290	1309	1264	1199	1184
Rate per 1,000 births	NSW	5.7	5.8	5.2	4.3	5.8	5.2	5.3	4.6	4.6	4.6
	Australia	5.7	5.8	5.3	5.0	5.7	5.2	5.3	5.0	4.8	4.7

Note: Infant mortality rate is defined as the number of deaths in children < 1 year per 1,000 live births.
 Source: Australian Bureau of Statistics. *Deaths, Australia*. Catalogue no 3302.0. Centre for Epidemiology and Research, NSW Department of Health.

- The infant mortality rate is the number of deaths in children aged under one year per 1,000 live births. In NSW in 2004, the infant mortality rate was 4.6 per 1,000 live births. For Australia overall, it was 4.7 per 1,000 live births. Since 1986 in NSW, the rate almost halved (49% reduction), compared with a slightly smaller decline (of 46.6%) in Australia as a whole. In NSW, the rate has fluctuated between 4 and 6 per 1,000 since 1995. Over the past 100 years Australia’s infant mortality rate declined significantly. In 1904, one in 12 infants did not survive to their first birthday (an IMR of 81.8). By 2004 less than one in 200 infants did not survive their first year of life (ABS, 2006).
- Most infant deaths occur in the first four weeks of life and are recorded as neonatal deaths—see the Pregnancy and newborn section for more information. Of the 399 deaths in NSW-resident infants in 2004, 275 (68.9%) occurred in the neonatal period.
- In NSW in 2004, conditions originating in the perinatal period (last 20 weeks of pregnancy and first 4 weeks of life) accounted for 45.6% of infant deaths. These conditions include spontaneous preterm labour, infections, hypertension, haemorrhage and maternal conditions affecting the newborn. Congenital abnormalities accounted for another 26.3% and sudden infant death syndrome accounted for 4.5% (ABS, 2006). Following a National Reducing the Risks Campaign, which commenced in 1991, there has been a dramatic fall in the number of SIDS deaths. In NSW, SIDS deaths fell from 131 in 1991 to 18 in 2004.

Hospital separations, observed and projected, by sex, persons aged under 75 years, NSW 1989-90 to 2015-16

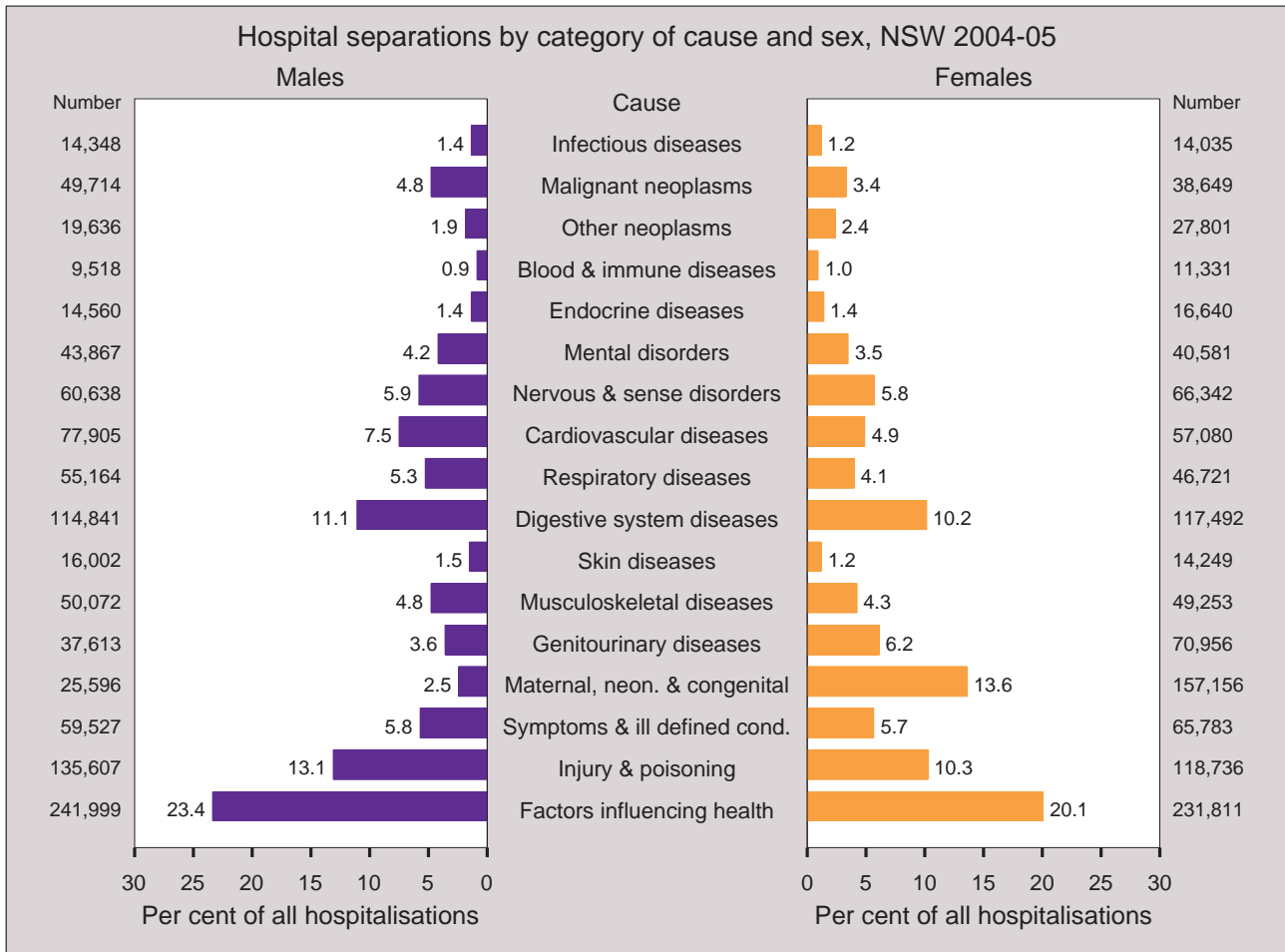


	Sex	1995-96	2000-01	2004-05	2005-06	2010-11	2015-16
Number	Persons	1796513	1976970	2188029	2221520	2490240	2817030
Rate	Persons	29400.8	29986.1	31414.3	31443	32785	34286

Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

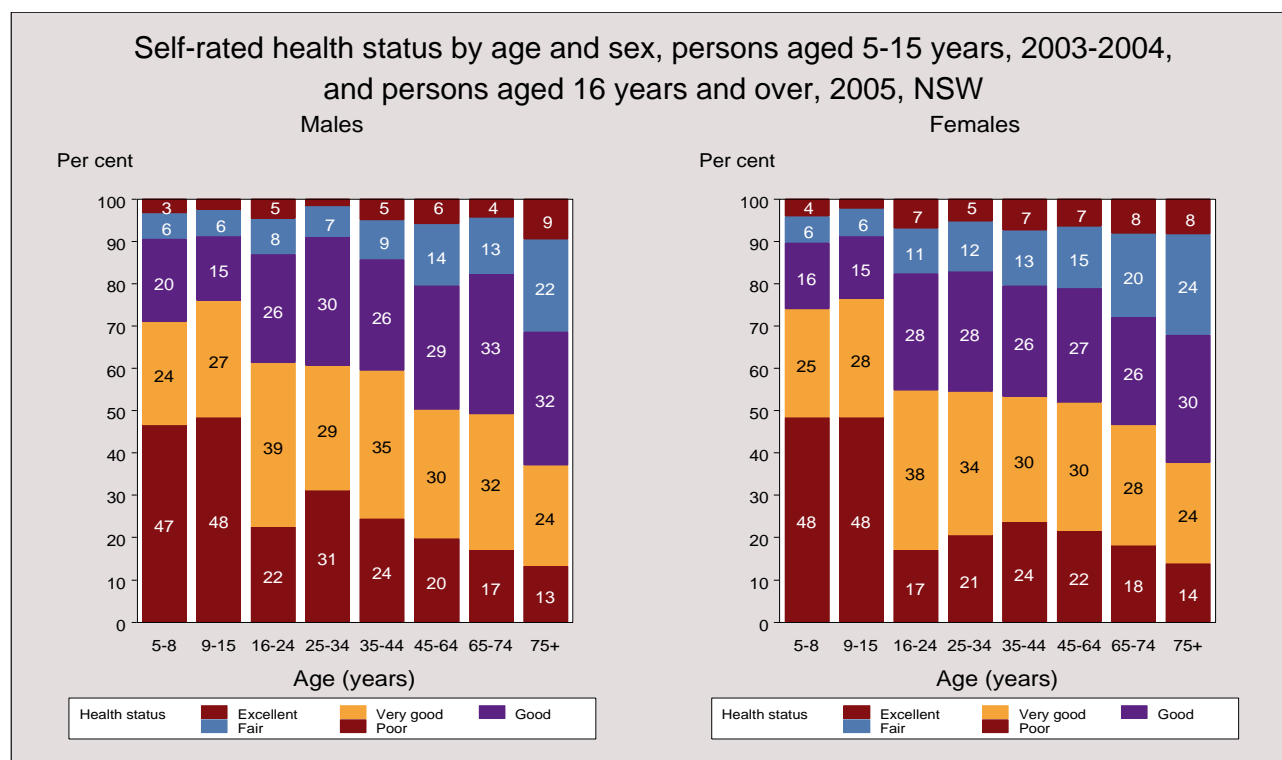
- Hospital separations are a summary measure of illness (or morbidity) in the population. A hospital separation occurs whenever a patient is admitted to hospital (including a day-only admission) and is then discharged, transferred to another hospital or dies while in hospital. Rates of hospital separations are influenced by the age structure of the population, the incidence of acute disease and injury in the population, availability of health services, and availability of treatment options for diseases and injuries.
- Age-adjustment (that is age-standardisation) allows examination of trends in hospitalisation rates without the influence of changing age patterns in the population over time. See the Methods section for more information on age-adjustment.
- Between 1989-90 and 2004-05, the age-adjusted hospital separation rate in NSW increased by 36%, but from 1997-98 the rate increased only by 4%.
- The age-adjusted female hospital separation rate has been consistently higher than the rate for males. However, the gap has decreased, with rates in 2004-05 being only 4.5% higher in females than males, compared with 13% in 1989-90. It is projected that this gap will disappear in 10 years.
- Projections of hospitalisation rates are based on the assumption that past trends will continue into the future. Projections are helpful in high level planning and resources allocation, however figures forecast for distant future are not very reliable. New diagnostic methods and treatments may allow more procedures to be performed in the outpatient setting or at patients' homes ('hospital at home') arresting the upward trend in the hospitalisation rates.
- Currently, there are numerous initiatives within the NSW Department of Health aiming at reducing the need for hospital inpatient care. At the core of these initiatives is building a strong network of primary and community health services, well-integrated with more specialised services and other parts of health system, providing safe community-based alternatives to hospital care, including providing service to people with chronic and complex conditions (DOH, 2006).



Note: Hospital separations were classified using ICD-10-AM. Grouping follows ICD-10 categories, so numbers for some categories may differ from results in other chapters. See ICD Codes for diseases and procedures for details. Numbers for 2004–05 include an estimate of the small number of interstate hospitalisations, 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.

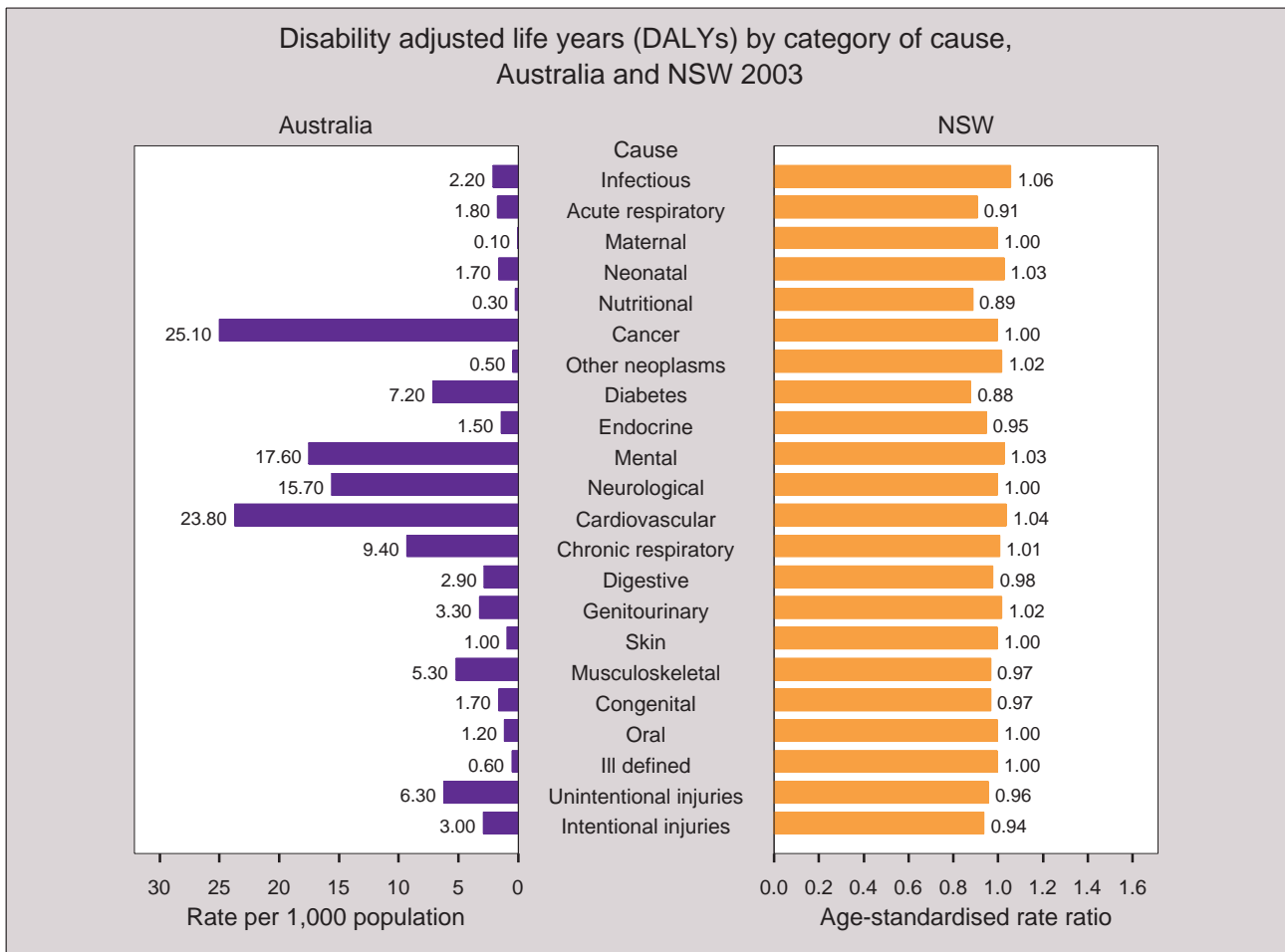
- Rates of hospital separations are influenced by the age structure of the population, the incidence of acute disease and injury in the population, availability of health services, and availability of treatment options for diseases and injuries outside hospitals.
- In 2004–05, the most common cause of hospitalisation in NSW was ‘Factors influencing health’ (21.7%). This category includes admissions of live-born infants, dialysis, symptoms and signs without a specific cause, and admissions for rehabilitation, nursing home and respite care. Follow up care after surgery, artificial openings (stoma) care, fitting of prosthetic devices, supervision of high risk pregnancies, in vitro fertilisation and admissions after contact with and exposure to communicable diseases (quarantine) also belong to this group.
- Injury and poisoning were the next biggest cause of hospitalisation (11.6%). Among males, this category accounted for 13.1% of hospitalisations. Among females it was the third most common cause (10.3%). The second most common cause among females, was maternal conditions (13.6%).
- Digestive system diseases were the next most common cause of hospitalisation, and were responsible for 10.6% of all hospitalisations (11.1% in males and 10.2% in females).



Note: Parents and carers responded on behalf of children under 16 years. Estimates are based on 6376 respondents. 6 (0.1%) were not stated (Don't know or Refused).

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

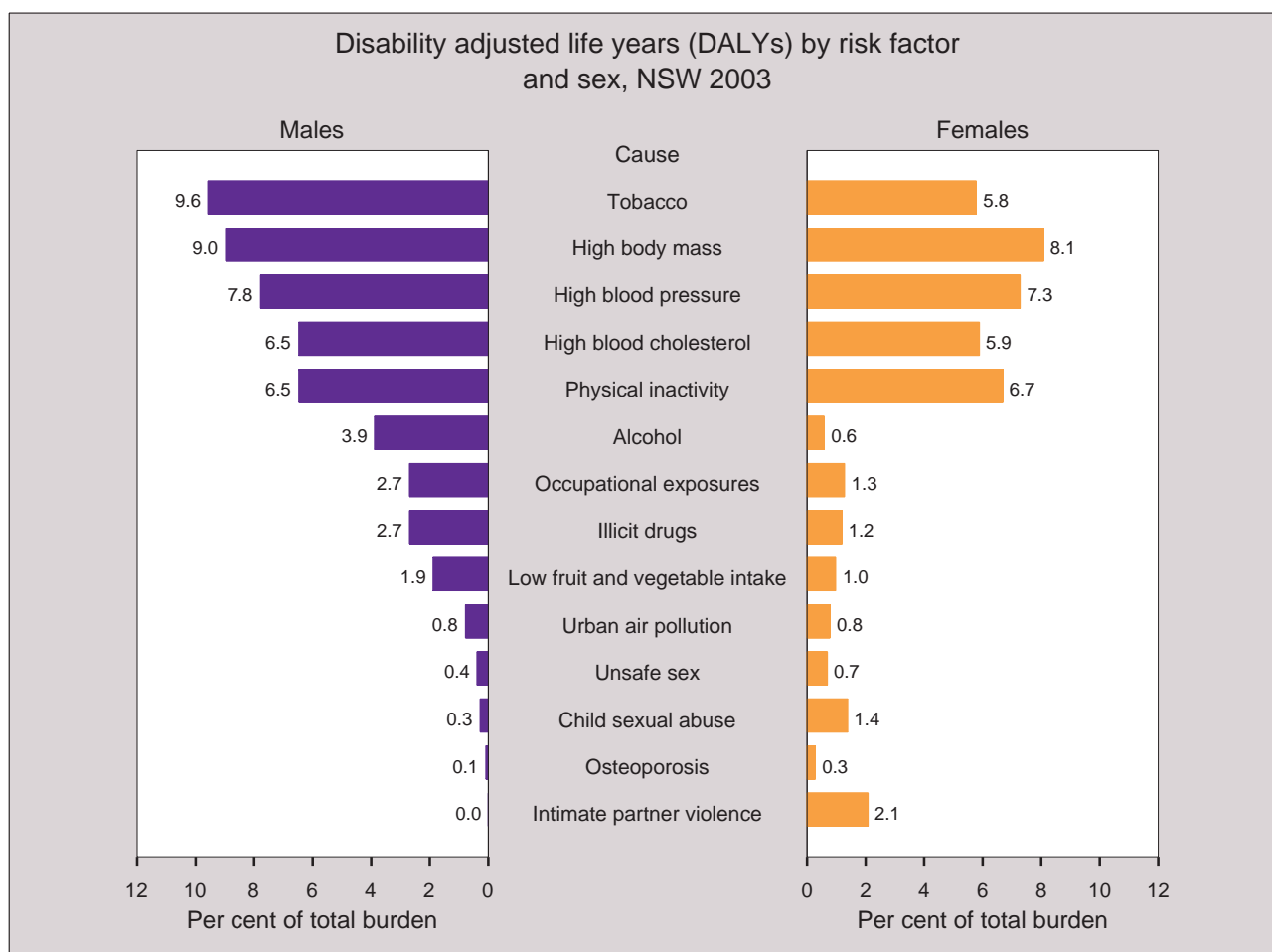
- An individual's rating of his or her own health is a fundamental measure of health status. It is believed that it reflects physical health problems (acute and chronic conditions and physical functioning) and, to a lesser extent, health behaviours and mental health problems. Longitudinal studies worldwide have consistently shown that self-rated health is a strong and independent predictor of subsequent illness and premature death.
- In the NSW Child Health Survey 2003–2004 and the NSW Health Survey 2005, males and females showed very similar patterns of self-reported health status.
- Based on rating by parents and carers, almost one-half of children (48.1%) aged under 16 years experienced excellent health, and a further one-quarter (26.7%) experienced very good health.
- Among adults more than one-fifth reported excellent health (21.3%) and just under one-third (31.6%) of respondents reported very good health. Females were less likely to report excellent, very good and good health status (78.7%) compared with males (83.5%).
- Among 16 to 24 year olds, females were much more likely to report poor health status, although this proportion was small (males 4.8%, females 7.0%).
- Among 25 to 34 year olds, the difference between males and females in reporting poor health status was especially large: 1.7% of males and 5.3% of females reported poor health.
- Among 35 to 44 year olds the sex differences in reporting health status were also present. Females were less likely to report excellent, very good and good health status (79.6%) compared with males (85.7%). Poor health was reported by 5.0% of males and 7.4% of females.
- Among 45 to 64 year olds and among males and females aged 75 years or more, the differences between sexes in self-rating health practically disappeared. The biggest difference was 2.4% in rating health as 'good' among 45–64 year olds (males 29.4% and females 37%).
- Among 65 to 74 year olds, however, the usual differences between sexes were present. Males were more likely to report excellent, very good and good health status (82.2%) compared with females (72.0%). Poor health was reported by 4.4% of males and 8.2% of females.



Note: The measure of burden of disease is DALY = disability adjusted life years. See Methods section for further explanation.

Source: 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.

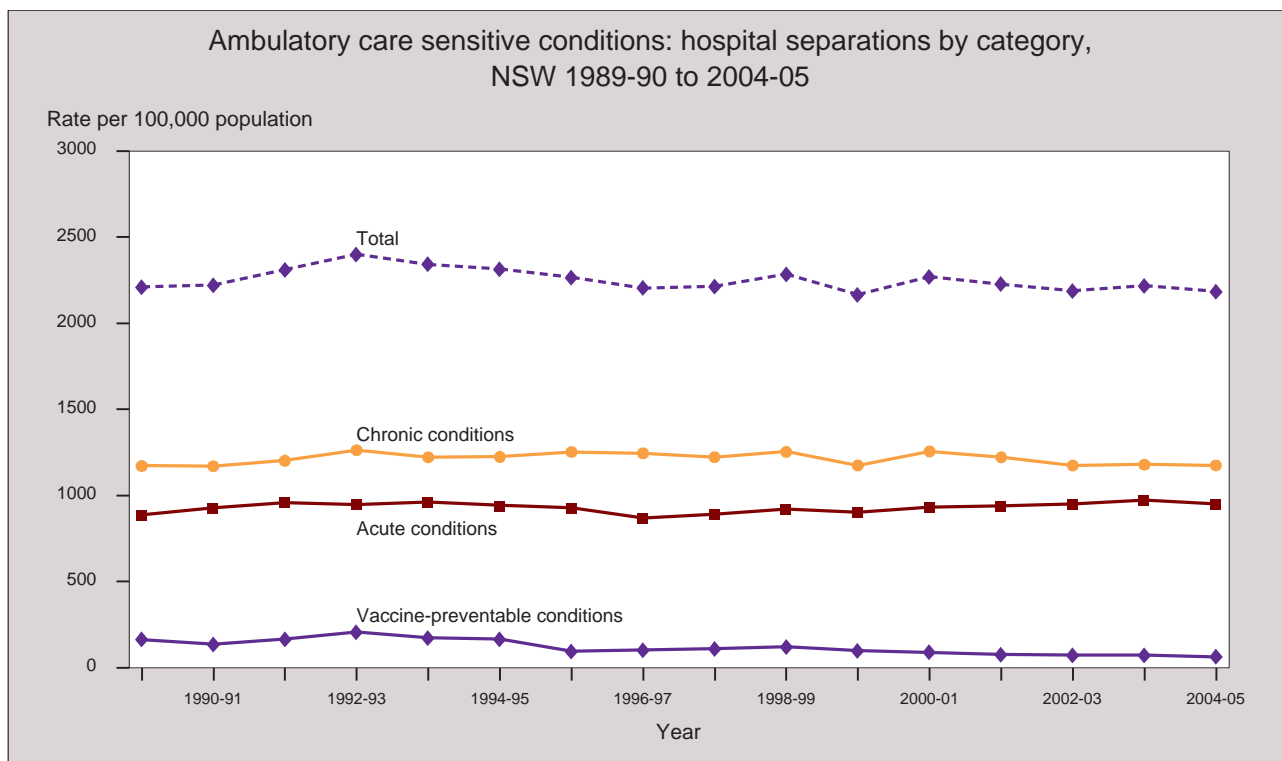
- The study by Begg and colleagues ‘The burden of disease and injury in Australia, 2003’ (Begg. et al., in press) is the second (after the study published in 1999 with 1996 data) complete assessment of health status of Australian population. Levels of mortality and disability from a comprehensive set of diseases, injuries and risk to health have been assessed and summarised.
- The main measure of burden of disease used in the study is the Disability-Adjusted Life Year (DALY). The DALY captures time lost either due to a disabling health state or death before a specified age, measured in years.
- The graphs shows a list of selected groups of causes of ill health and the corresponding burden of disease expressed as a number of DALYs (years) per 1,000 population in Australia (that is a national average) and the comparison with NSW, which is expressed as a standardised rate ratio. For example, for acute respiratory diseases the rate ratio is 0.91, which means that the rate in NSW is 0.91 of the Australian rate of 1.8 years ‘lost to health’ per 1,000 population. That is the rate is NSW is 1.6 years per 1,000.
- The lowest ratio of DALYs in NSW was calculated for diabetes at 0.88. This is probably the result of a very high national average of 7.2 years due to very high number of healthy years lost to diabetes in the Northern Territory.
- The highest ratio of 1.06 was for infectious diseases (2.2 DALYs per 1,000 population). Several conditions were calculated to be responsible for the same burden of disease in NSW as the national average, that is they were responsible for the same number of healthy years lost in NSW as in the whole of Australia and the rate ratio was 1. The total burden of disease was also the same at 132.5 years per 1,000 population in both Australia and NSW (Begg S. et al., in press).



Note: The measure of burden of disease is DALY = disability adjusted life years. See Methods section for further explanation.

Source: 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.

- Levels of mortality and disability from a comprehensive set of diseases, injuries and risk to health have been assessed and summarised in the study by Begg and colleagues *'The burden of disease and injury in Australia, 2003'* (Begg et al., in press).
- The 14 selected risk factors were together responsible for 32.5% of total burden of disease and injury in Australia in 2003. Cardiovascular disease, cancer and diabetes accounted for over two-thirds of this burden (38%, 19% and 11% respectively). Overall, males experience a slightly higher burden from these risk factors in combination than females. Mortality accounts for 63% of the burden from the 14 risk factors (Begg et al., in press).
- The 14 selected risk factors have a differential impact on health both in terms of sex and age. In persons aged 0 to 44 years, alcohol and illicit drugs are the leading cause of burden in males, while intimate partner violence and child sexual abuse are the leading causes in females. In persons aged 45 to 64 years, high body mass and tobacco are the leading causes in both sexes. In persons aged 65 years and over, high blood pressure is the leading cause in both sexes, followed by tobacco in males and high cholesterol in females (Begg et al., in press).
- Some of the risks that are reported on represent intermediate steps in a causal path between more distal risks and health outcomes. For example physical inactivity can lead to obesity, which in turn can cause hypertension or high blood cholesterol, which can ultimately lead to ischaemic health disease. In this analysis however, each risk was treated independently and the results are therefore not additive, that is the total burden from two or more risks in the same causal path is not the sum of the burden due to each risk (Begg et al., in press).



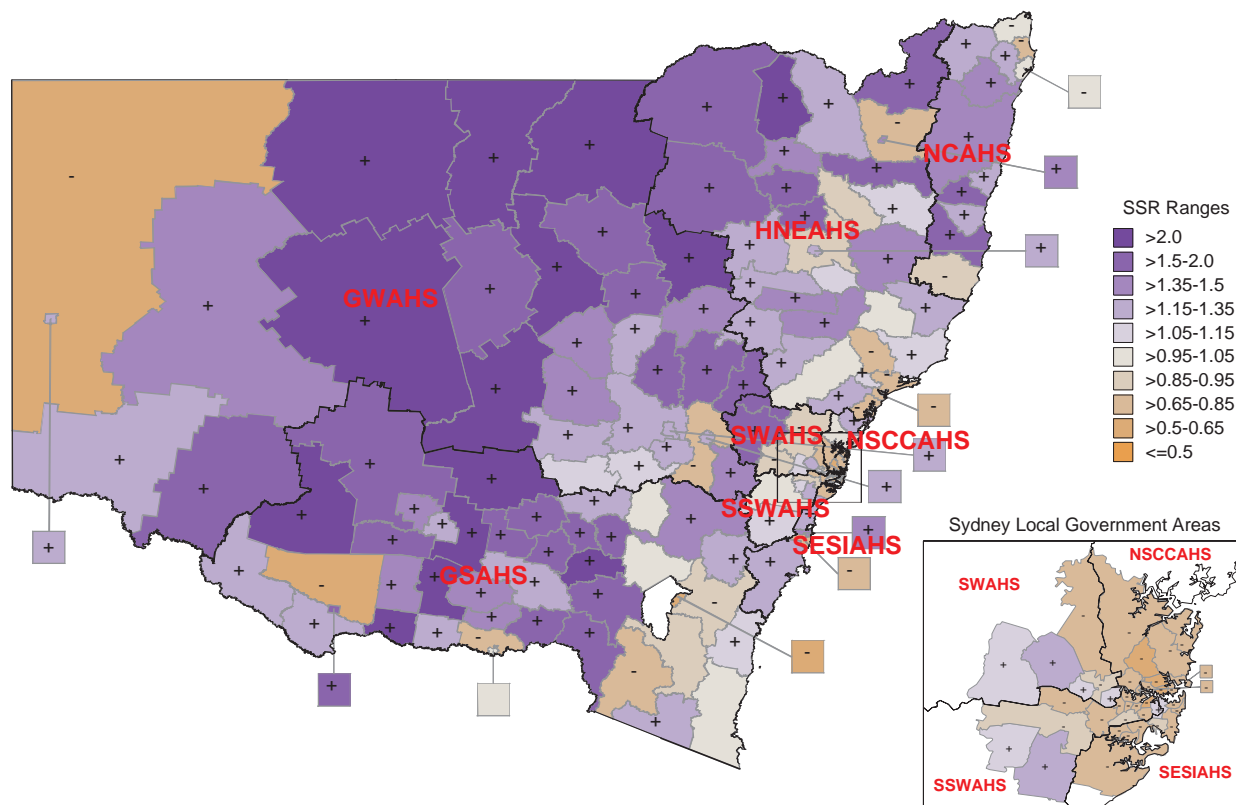
		1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Total	137504	136273	139212	145810	140556	150078	150284	149547	153623	153340
Rate	Total	2266.5	2205.4	2215.0	2284.4	2167.0	2269.5	2227.7	2188.9	2219.7	2184.7

Note: Categories are not mutually exclusive. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. 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.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST), ambulatory care sensitive hospitalisation definitions modified from Victorian Department of Human Services 2002. Centre for Epidemiology and Research, NSW Department of Health.

- Ambulatory care sensitive conditions are those for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered through primary health care.
- Hospitalisation rates for ambulatory care sensitive conditions are used as an indicator of access to, and quality of, primary care. Other factors that influence rates include disease prevalence in the community, hospital admission and coding practices, and personal choices about seeking health care.
- Three categories of ambulatory care sensitive conditions are recognised. Vaccine-preventable conditions include influenza, bacterial pneumonia, tetanus, measles, mumps, rubella, pertussis and polio-conditions. Acute conditions include dehydration and gastroenteritis, kidney infection, perforated ulcer, cellulitis, pelvic inflammatory disease, ear nose and throat infections, dental conditions, appendicitis, convulsions and epilepsy and gangrene. Although these may not be preventable, hospitalisation can be avoided through timely primary care. Chronic conditions include diabetes with complications, asthma, angina, hypertension, congestive heart failure, chronic obstructive pulmonary disease and iron deficiency anaemia and nutritional deficiencies. These may be preventable through behaviour modification and lifestyle change, but can also be managed effectively through primary care to prevent deterioration and hospitalisation.
- In NSW between 1989-90 and 2004-05, rates of hospitalisation for all ambulatory care sensitive conditions decreased by 1.2% due to a decrease in the rate for vaccine preventable conditions by 61.1%— from 164.9 separations per 100,000 in 1989-90 to 64.2 in 2004-05. Hospitalisation for chronic conditions remained the same, around 1175 separations per 100,000 and the rate for ambulatory care sensitive conditions classified as acute rose by 7.4% between 1989-90 and 2004-05.

Ambulatory care sensitive conditions: hospital separations by local government area, NSW 2003-04 to 2004-05



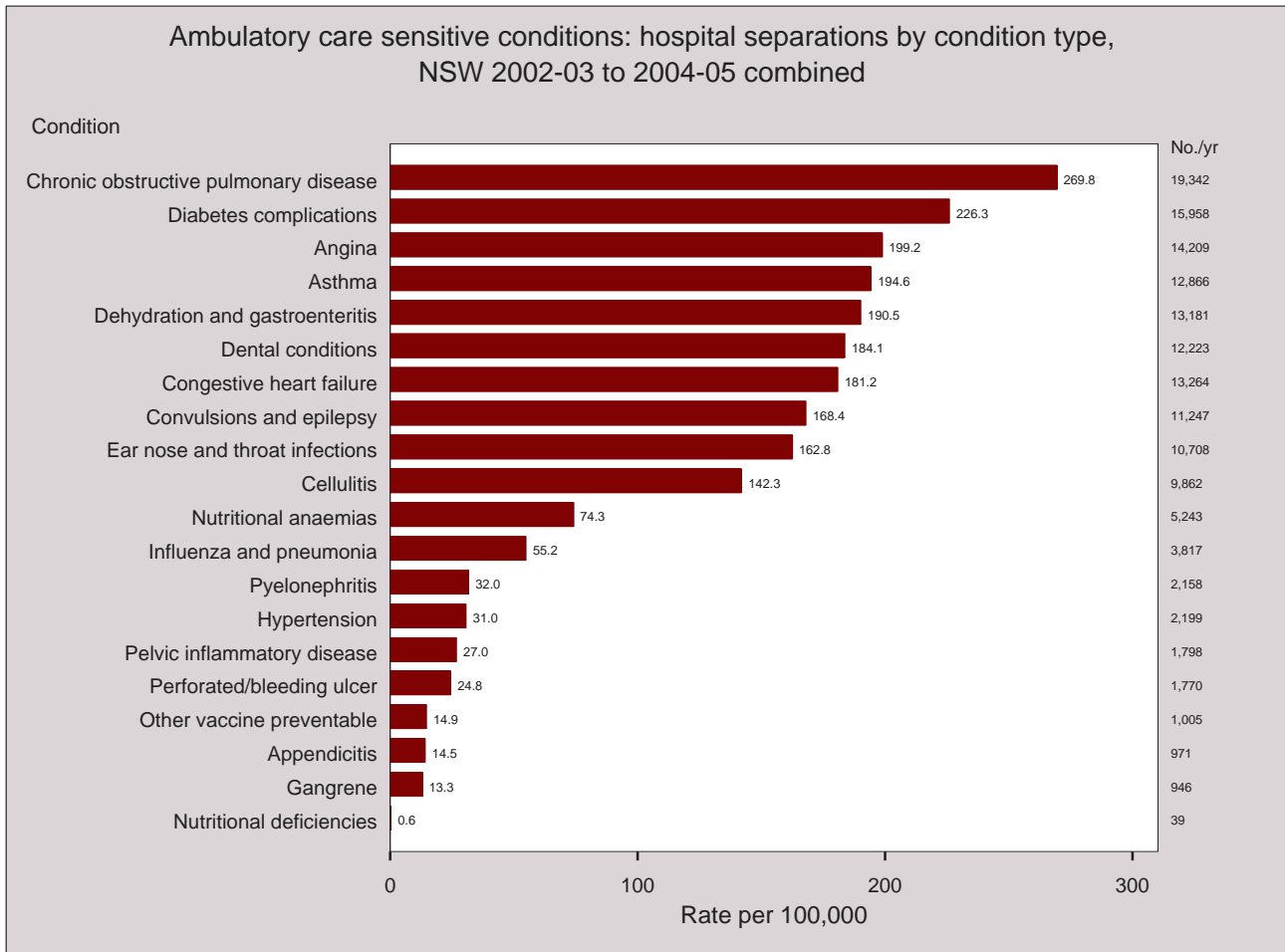
- Significantly lower than state average, + Significantly higher than state average

Note: 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). * indicates figures not provided when based on fewer than 5 cases.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST), ambulatory care sensitive hospitalisation definitions modified from Victorian Department of Human Services 2002. Centre for Epidemiology and Research, NSW Department of Health.

- Ambulatory care sensitive (ACS) conditions are those for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered in an ambulatory setting, such as primary health care (for example by general practitioners or community health centres).
- Hospitalisations for ACS conditions are used as an indicator of access to, and quality of primary care. Several studies in the United States have shown an inverse relationship between the availability of primary care and ACS condition admissions (Basu et al., 2002), although hospitalisation rates may be affected by other factors such as disease prevalence, patient compliance with treatment and patterns of seeking care. A full listing of the disease and procedure categories and codes used to define ACS conditions is presented in the Methods section.
- The smoothed Standardised Separation Ratio (sSSR, see Methods) for each LGA can be interpreted as a 'relative risk', and compared to the NSW average which is set to 100. The smoothed number of hospitalisations in NSW LGAs which were potentially avoidable ranged from 8 to more than 7,000 over the two-year period 2003–04 and 2004–05. Unincorporated Far West, Conargo and Ku-ring-gai had a sSSR for ACS hospitalisations that was less than 60% of than the state average, while four LGAs, Yallaroi, Cobar, Walgett and Brewarrina, had a sSSR that was more than 2.5 times the State average.

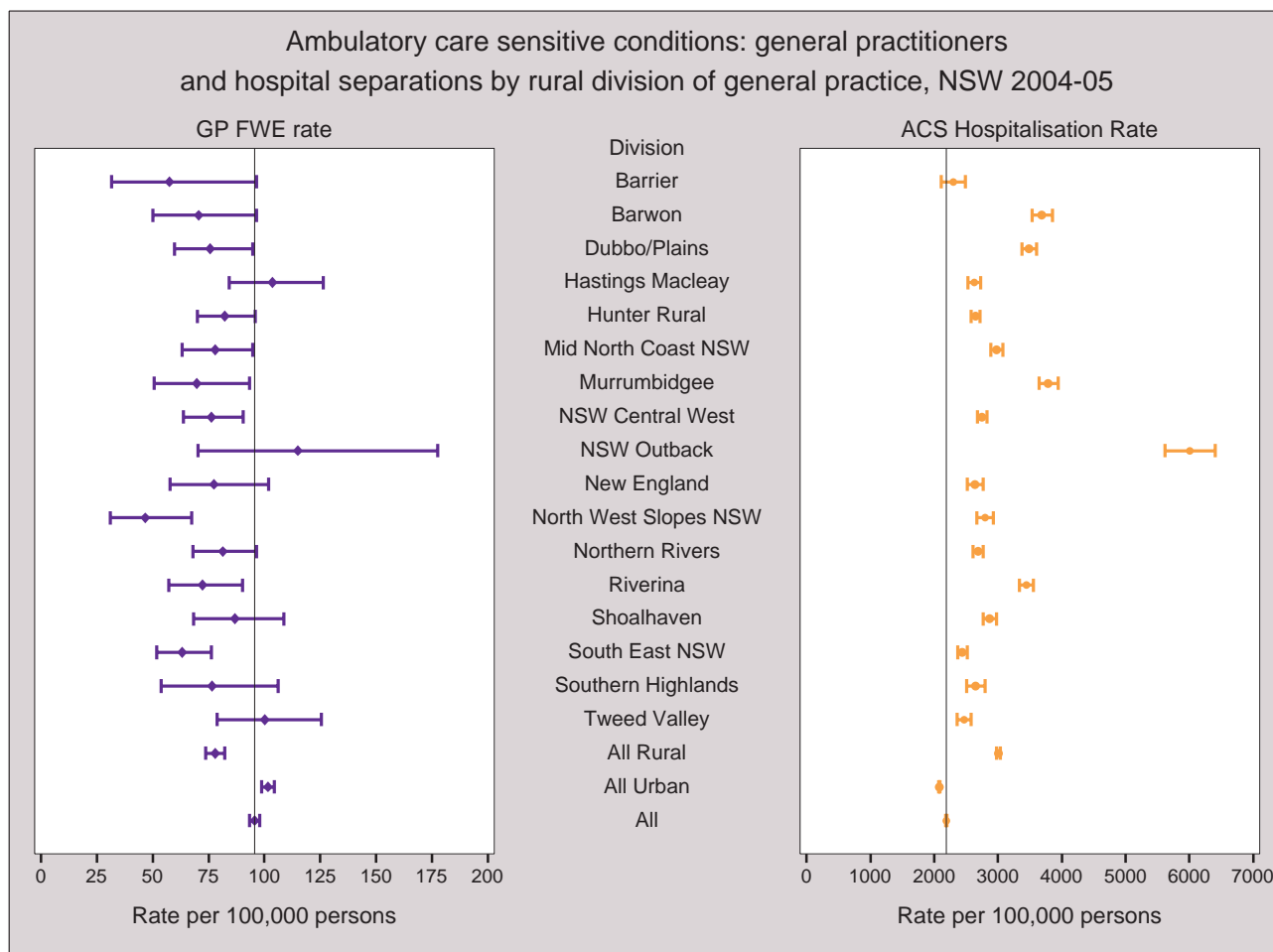
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: Numbers for 2004–05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001.

Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST), ambulatory care sensitive hospitalisation definitions modified from Victorian Department of Human Services 2002. Centre for Epidemiology and Research, NSW Department of Health.

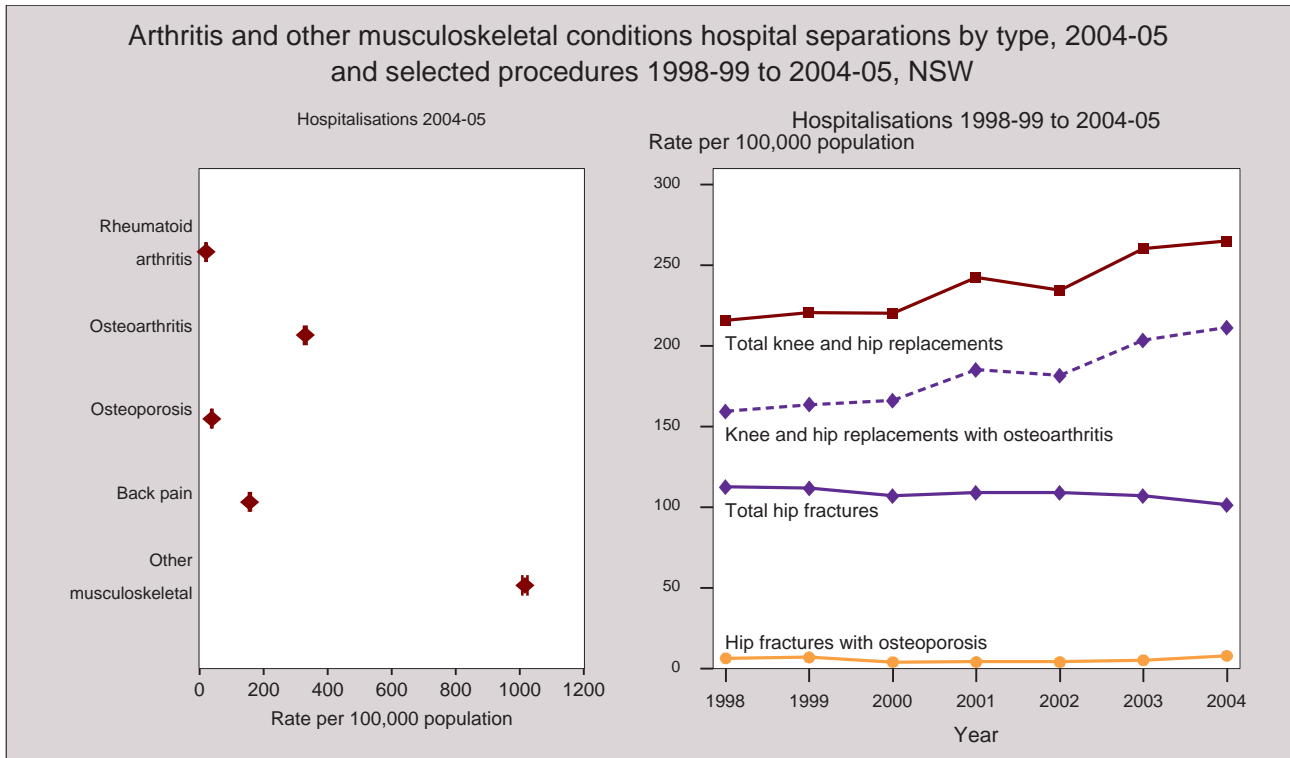
- Ambulatory care sensitive conditions are those for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered in an ambulatory setting, such as primary health care (for example by general practitioners or community health centres).
- A comparison of rates for individual conditions defined as ambulatory care sensitive provides an indication of the relative burden that they contribute. The measures of total bed days and average bed days (total bed-days/total ambulatory care sensitive hospitalisations) provide an indication of the relative severity of each condition.
- Diabetes with complications, angina, chronic obstructive pulmonary disease (COPD), asthma and congestive heart failure accounted for almost half (49.7%) of all ambulatory care sensitive hospitalisations in NSW during the period 2002–03 to 2004–05. In this period, COPD had the highest separation rate and accounted for the largest total number of bed days amongst all ambulatory care sensitive hospitalisations in NSW. Diabetes with complications used to account for the highest separation rate for potentially avoidable hospitalisations in NSW and all other Australian states and territories but this situation changed in NSW and in some national reporting due to the coding change (AIHW, 2006).
- The most common chronic conditions defined as ambulatory care sensitive hospitalisations are included in the NSW Chronic Care Program. The program aims to improve the quality of care provided for people with chronic health conditions, to improve the quality of life of people with chronic health conditions and their carers and families, and to reduce unplanned and avoidable admissions to hospital (NSW Health, 2006).



Note: FWE= full workload equivalent. Numbers for 2004–05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. The boundaries for divisions of general practice are determined by the Australian Government Department of Health and Ageing. There are currently 37 divisions of general practice in NSW.

Source: Health Wiz, Prometheus Information Pty Ltd 2003. NSW Inpatient Statistics Collection and ABS population estimates (HOIST), ambulatory care sensitive hospitalisation definitions modified from Victorian Department of Human Services 2002. Centre for Epidemiology and Research, NSW Department of Health.

- Ambulatory care sensitive conditions are those for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered in an ambulatory setting, such as primary health care .
- Hospitalisations for ambulatory care sensitive conditions are used as an indicator of access to primary care and its quality. Studies have shown an inverse relationship between the availability of primary care and ACS admissions, although hospitalisation rates may be affected by other factors such as disease prevalence, patients’ compliance and patterns of seeking care.
- A Division of General Practice is a geographically co-located group of general practitioners who have formed an organisation to work together more closely to improve health outcomes at the local level. A Division has formal boundaries that encompass a collection of postcodes. All general practitioners within those boundaries can become members of that Division, but some practitioners have chosen to belong to more than one Division.
- There is some inverse correlation between the availability of general practitioners and the hospitalisation rate at the level of division of general practice. A clear correlation exists on the broad level of grouping into urban and rural divisions of general practice.
- There are considerable differences between local populations that Divisions serve in terms of population size, age distribution, socio-economic status, cultural background and patterns of use of health services. Ratios of general practitioner full workload equivalents (FWE), and other resources, to Division populations also differ between Divisions. Consequently Divisions face different challenges in improving health outcomes.

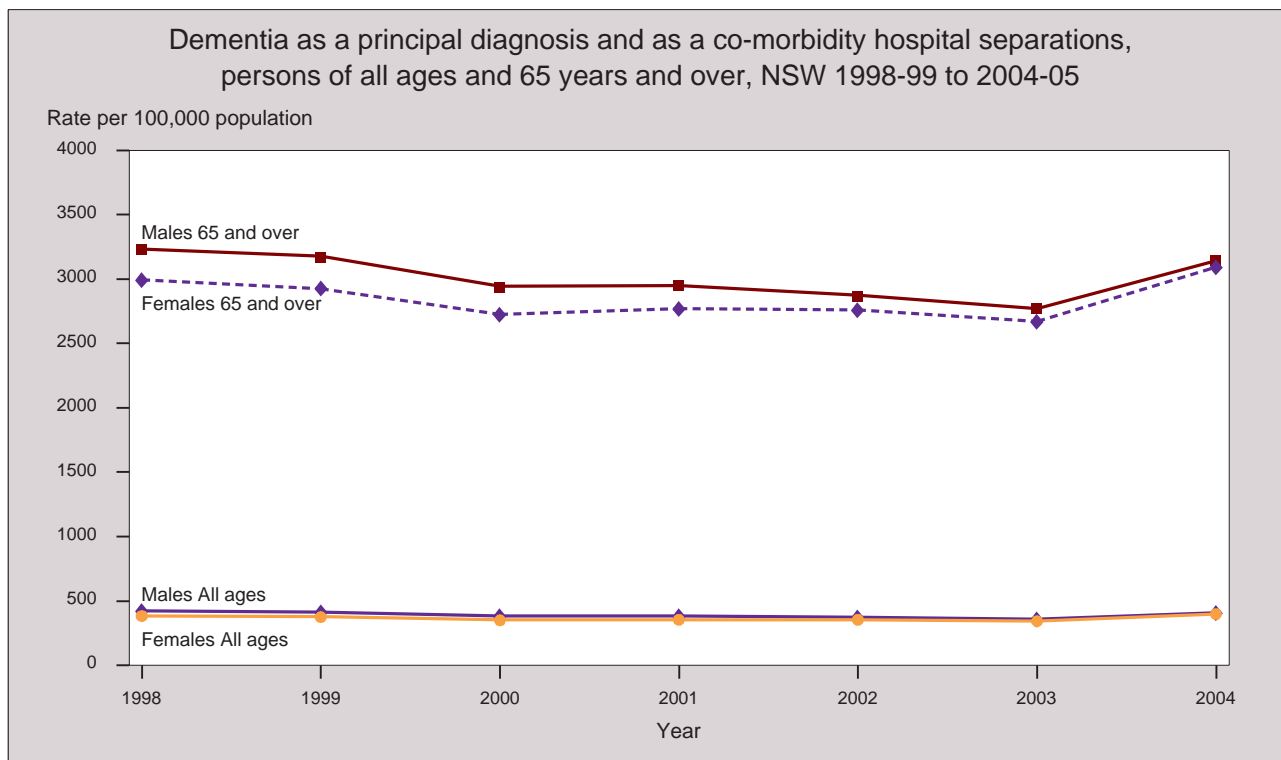


		Sex	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Total hip fractures	Persons	6972	7190	7166	7590	7831	7916	7741
Rate	Total hip fractures	Persons	112.6	111.9	107.3	109.0	109.1	107.1	101.6

Note: Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. 'With' indicates that a condition was coded in an additional diagnosis field.

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

- Arthritis and other musculoskeletal conditions are highly prevalent and place a significant burden on the community. They were responsible for about 4% of the overall disease burden in Australia (Begg S et al., in press) and were declared a national health priority in 2002. More than 6 million of Australian are estimated to have had a musculoskeletal condition in 2004-05 (AIHW, 2006).
- Hospital separations do not reflect the prevalence, as only some conditions and cases can benefit from surgery or other treatments provided in a hospital. For example, the prevalence of back pain in the community is very high, with more than 50% of persons aged 60 years and over suffering from lower back pain (Beers M, 1999), but the rate of hospitalisations for back pain (dorsalgia) is not very high (it was 156.2 per 100,000 in 2004-05 while the hospitalisation rate for coronary heart disease was 924.8 per 100,000 in the same year).
- The health impact of arthritis and musculoskeletal conditions can be reduced through early prevention and appropriate management. Joint replacement ('arthroplasty') is the most cost-effective intervention for osteoarthritis, capable of resorting patients to near normal function (AIHW, 2006). The rate of hospital separations for knee and hip replacements was 265.4 per 100,000, with 79.9% of those due to osteoarthritis, in NSW in 2004-05. The rate increased by 22.9% from 1998-99.
- Falls are a major cause of hip fractures (more than 90%) and fractures after minimal trauma (falls from standing height or less) are a hallmark of osteoporosis (AIHW, 2006). About 8% of hospital separations for hip fractures had osteoporosis identified as a co-morbidity in NSW in 2004-05.
- The NSW Chronic Care Program includes arthritis and other musculoskeletal conditions in the range of chronic conditions for which special interventions are being developed, focusing on prevention, early detection and optimal management to reduce disability and improve quality of life (NSW Health, 2006).

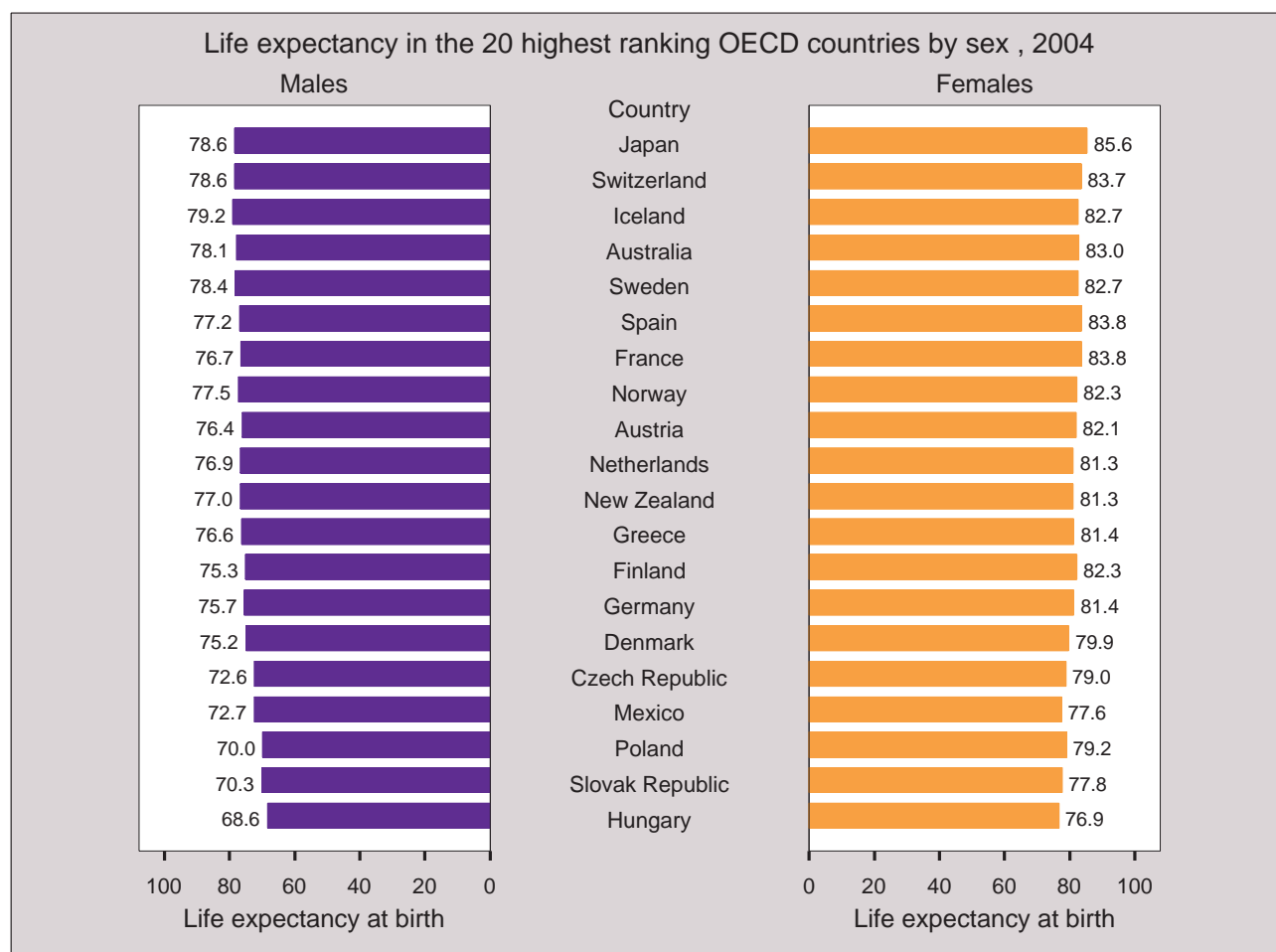


	Age (years)	Sex	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	All	Persons	24738	25123	24443	25587	26204	26125	31023
Rate	All	Persons	400.6	391.4	365.4	367.3	363.0	350.7	403.8

Note: Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Dementia was coded in 1-10 diagnosis fields.

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

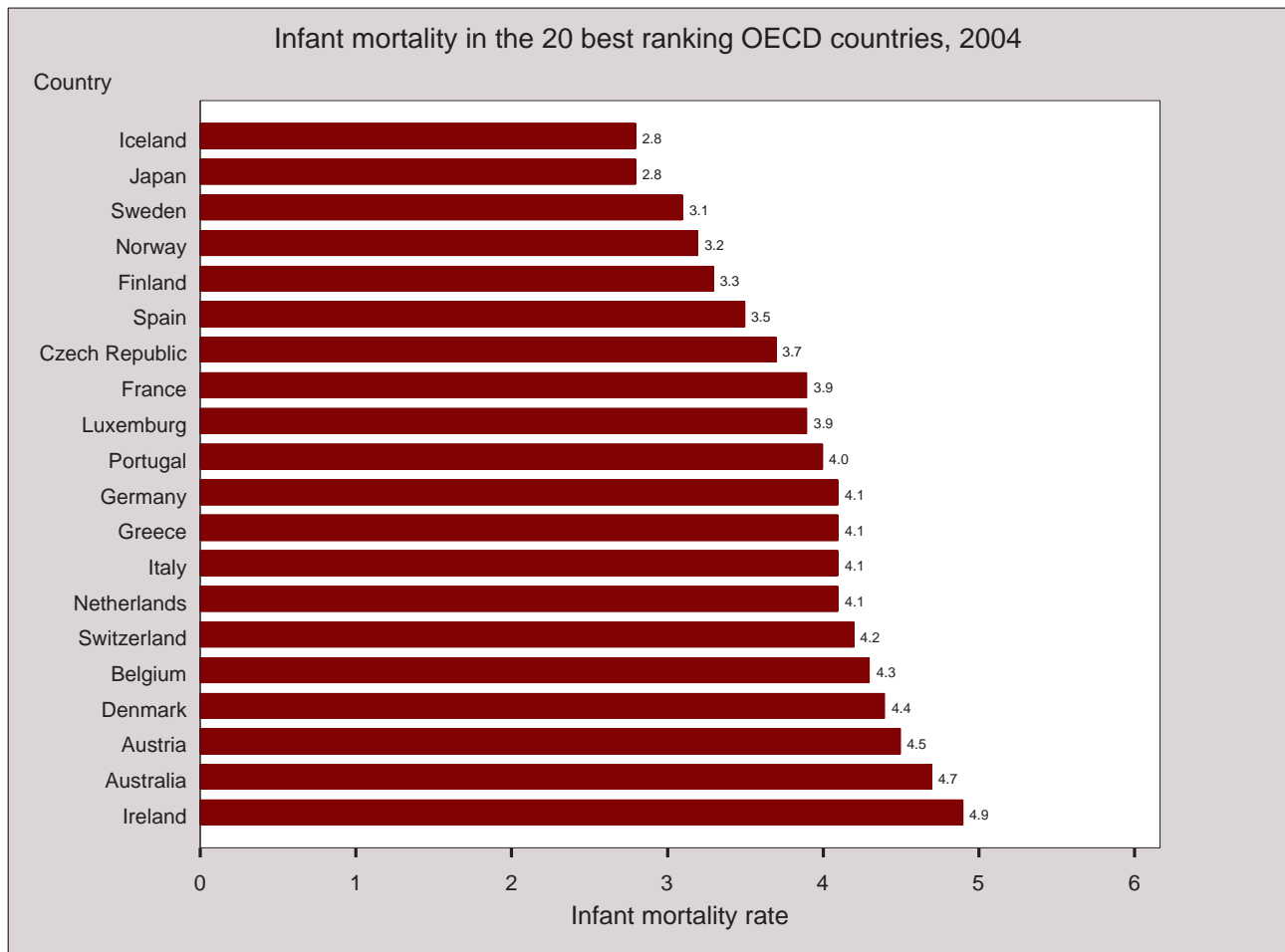
- Dementia is a major problem among older people. It is characterised by disturbed memory, thinking and is accompanied by deterioration in emotional control and social behaviour. Dementia can be caused by a number of diseases and the most common is Alzheimer’s disease, which is responsible for about 70% of cases. Other causes include cerebrovascular disease and other conditions affecting the brain (NCCH, 2006).
- Dementia is not an inevitable part of the ageing process, but it is common in the elderly and is very common in the very old. It is estimated that 6.6% of persons aged over 65 years and 30.6% of persons older than 95 years had dementia in Australia in 2004 (AIHW, 2006).
- Dementia is the greatest single contributor to the cost of care in residential aged care (AC, 2005). Most people with dementia also have other chronic health conditions but for majority (67%) it is their main disabling condition (AIHW, 2006).
- Hospital separations do not reflect the burden of dementia in the community, but account for additional burden placed on hospital resources when persons with severe dementia are admitted posing difficulties in treatment and overall management.
- There were 31,023 hospitalisations of persons with dementia in 2004-05, out of which 7.3% (2,260 separations) were specifically for dementia or conditions which are often characterised by dementia (such as Alzheimer’s or Parkinson’s disease) and where presence of dementia was noted in the hospital record. The remaining 92% of hospitalisations were for other, unrelated conditions with dementia identified as a co-morbidity, which in some way affected the hospital stay. Most of hospital separations for dementia or with dementia were in persons aged 65 years and over.
- Dementia represents a significant challenge to health, aged care and social policy. In 2005 Australian Government announced that dementia was one of the national health priorities (AIHW, 2006).



Note: Includes OECD countries where data was available for 2004. Ranking is by both sexes combined.

Source: The OECD Health Data 2006. OECD, Paris 2006.

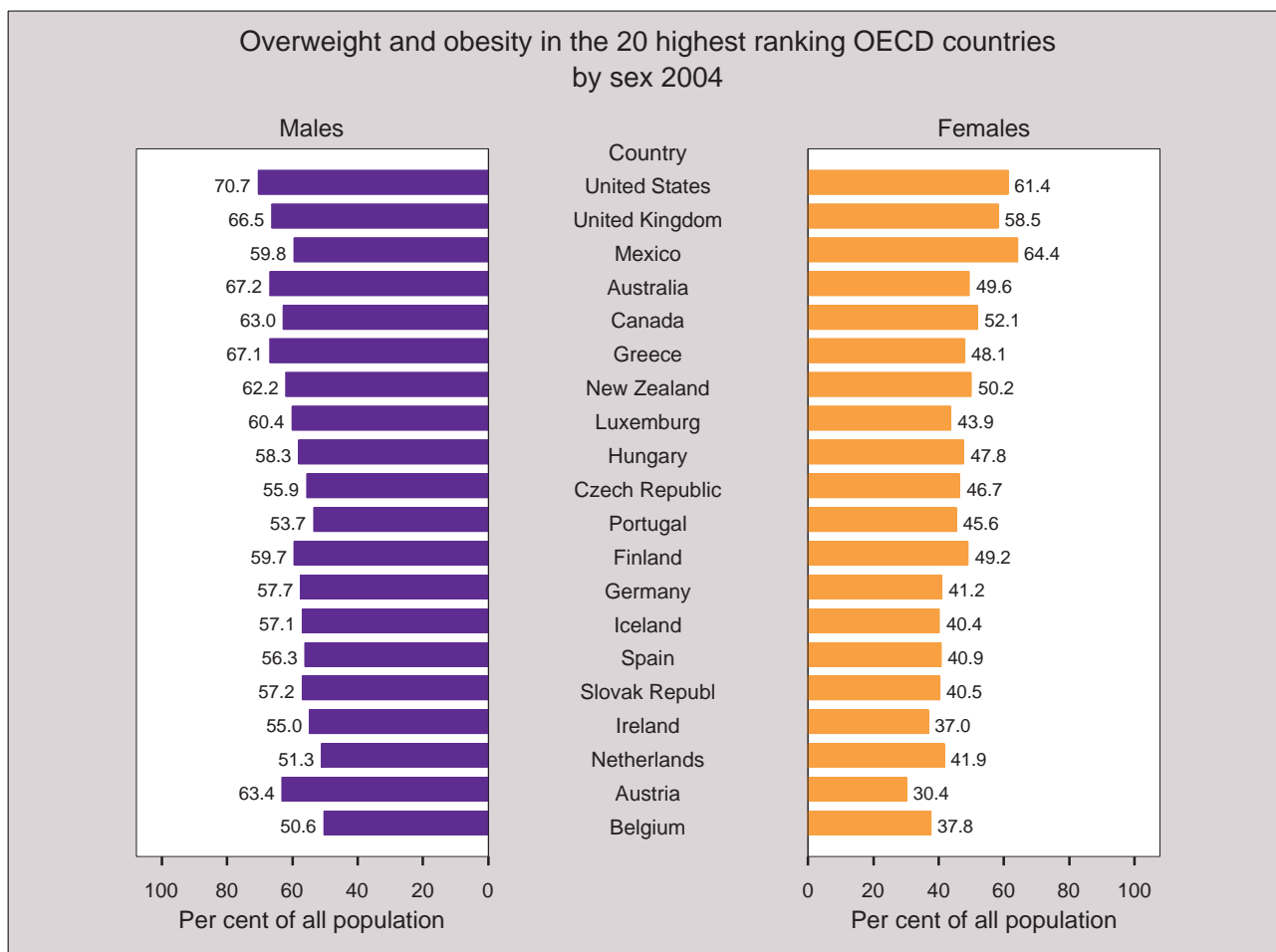
- Life expectancy at birth is an estimate of the average length of time (in years) that a person can expect to live, assuming that the prevailing rates of death for each age group will remain the same for the lifespan of that person.
- Life expectancy at birth is influenced by many factors including socio-economic status, the quality of the health system and the ability of people to access it, biomedical risk factors, social and genetic factors.
- The Australian population has one of the highest life expectancies in the world. The expected life for females was 83.0 years (fifth highest) and 78.1 for males (fifth highest) (OECD, 2006). Life expectancies are usually ranked for both sexes combined and Australia's life expectancy ranked equal fourth with Sweden (at 80.6 years) within OECD countries in 2004.
- In 2004, Iceland (79.2), Japan and Switzerland (78.6 years), and Sweden (78.4 years) had life expectancies higher than Australia in males. In females, Japan (85.6 years), France and Spain (83.8 years), and Switzerland (83.7 years) had life expectancies higher than Australia. Life expectancies in Australia were slightly higher than in countries such as Norway, Austria and New Zealand, while the United Kingdom and the United States had results much lower than Australia in previous years. These two and several other OECD countries did not publish life expectancies for 2004.
- Life expectancy at birth was calculated using the method of Chiang (see Methods section) and the most recent data available in Australia in 2006 was 78.8 years for males and 83.8 years for females born in Australia in 2004. Life expectancy in NSW was calculated to be 78.9 years in males and 83.7 years in females born in 2004.



Note: Infant mortality rate is defined as the number of deaths in children < 1 year per 1,000 live births. Includes OECD countries where data was available for 2004.

Source: The OECD Health Data 2006. OECD, Paris 2006.

- Infant mortality is an important indicator of the health of both pregnant women and newborns, and reflects a number of both social and economic factors, such as average income level, income distribution within a country, and the availability and accessibility of health services. In relation to health services, infant mortality is an indicator of the quality of antenatal care, the effectiveness of obstetric services and the quality of infant care in the hospital and in the community.
- Infant mortality in Australia is declining; with a two fold reduction in mortality rate achieved over the past two decades. In 2002, the infant mortality rate for Australia was 5.0 deaths per 1,000 live births, the fourteenth lowest for the OECD countries. The infant mortality rate in Australia is influenced by high death rates among Indigenous infants. Sweden had the lowest infant mortality rate with 2.8 deaths per 1,000 live births, followed by Finland and Japan (equal second with 3.0 deaths per 1,000 live births).
- The large reductions in infant mortality seen in the first half of the twentieth century were a result of improvements in social and public health conditions, combined with the development of mass immunisation programs and the effective use of antibiotics. More recent reductions in mortality have been attributed to the decline in deaths from sudden infant death syndrome (SIDS), following national public education campaigns commenced in the early 1990's that promoted placing babies on their back or side in such a way that they are unable to roll onto their stomach.



Note: Ranking is by both sexes combined. For 13 countries data is from 2003 or more recent; Australia is from 1999.

Source: The OECD Health Data 2006. OECD, Paris 2006.

- The growth in overweight and obesity rates is rapidly becoming a major public health concern in many developed countries.
- A number of behavioural and environmental factors contributed to this rise in rates, including falling real prices of food and more time spent being physically inactive. The relative importance of some of the factors driving obesity rates may vary across countries. It has been postulated that eating more 'snacks' per day is responsible for the increased calorie intake in the US while in the UK a reduction in physical activity might have played a larger role (OECD, 2006).
- The ranking presented here is only approximate because there are serious limitations to data comparability. Estimates from health examination are generally higher and more reliable than those coming from health surveys, but actual measures of people height and weight were taken only in Australia (58.4% of population was found overweight or obese in 1999), New Zealand, United Kingdom and United States. Data from other countries were self-reported in population-based interview surveys. The data year range is extensive (between 1999 Australia and 2005 in Finland), which is important since year-to-year differences between reports from some countries can be as high as 6% (Finland reported 53.3% of overweight or obese males in 2004 and 59.7% in 2005) (OECD, 2006).
- Using consistent measures of obesity over time, the rate of obesity has more than doubled over the past twenty years in the United States, while it has almost tripled in Australia (8% in 1980 and 22% in 1999) and more than tripled in the United Kingdom (OECD, 2006).
- In 2005, 49.9% of the NSW population was classified as overweight or obese, on the basis of self-reported height and weight. More males (57.5%) than females (42.3%) were classified as overweight or obese (CER, 2006).

For more information

Access Economics. *Dementia estimates and projections, NSW and its regions*. Report for Alzheimer's Australia NSW and NSW Health. Canberra: 2005. Available at: www.health.nsw.gov.au/pubs/2005/pdf/dementia_est.pdf.

Access Economics. Arthritis—the bottom line. *The economic impact of arthritis in Australia*. Sydney: Arthritis Australia, 2005. Available at www.arthritisaustralia.com.au/Reports.

Australian Bureau of Statistics. *Causes of Death, Australia 2004*. Catalogue no. 3303.0. Canberra: ABS, 2006. Available at [www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/\\$File/33030_2004.pdf](http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/$File/33030_2004.pdf).

Australian Bureau of Statistics. *Deaths, Australia 2004*. ABS Catalogue no. 3302.0. Canberra: ABS, 2005. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02004?OpenDocument.

Australian Divisions of General Practice website at www.adgp.com.au, includes information about the Alliance of NSW Divisions.

Australian Institute of Health and Welfare website at www.aihw.gov.au.

Australian Institute of Health and Welfare. *Arthritis and musculoskeletal conditions in Australia, 2005*. AIHW Cat. No. PHE67. Canberra: AIHW, 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10139.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Australian Institute of Health and Welfare. *Australian Hospital Statistics 2001–02. Health Services Series No. 20*. Canberra: Australian Institute of Health and Welfare, 2003.

Australian Institute of Health and Welfare. *Australian hospital statistics 2004–05*. Canberra: AIHW, 2006.

Australian Institute of Health and Welfare. *Chronic kidney disease in Australia, 2005*. AIHW Cat. No. PHE 68. Canberra: AIHW, 2005.

Australian Orthopaedic Association National Joint Replacement Registry *Annual Report 2005. Hip and knee replacements from September 1999 to December 2005*. Adelaide AOA, 2006. Available at www.dmac.adelaide.edu.au/aoanjrr/publications.jsp?section=reports.

Basu J, Friedman B, and Burstin H. Primary Care, HMO Enrollment, and Hospitalisation for Ambulatory Care Sensitive Conditions. *Med Care* 2002; 40(12): 1260–1269.

Beers MH, Berkow R. *The Merck manual of diagnosis and therapy*. West Point: Merck & Co, 1999.

Begg S, Vos T, Barker B. et al. *The burden of disease and injury in Australia, 2003*. Canberra: AIHW, in press. Available at www.aihw.gov.au/publications.

Centre for Epidemiology and Research. *2005 Report on adult health in New South Wales*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research. New South Wales Population Health Survey website at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Graves SE, Davidson D, Ingerson L, Ryan P, Griffith EC, McDermott BFJ, McElroy HJ, Pratt NL. The Australian Orthopaedic Association National Joint Replacement Registry. *MJA* Vol 180 Supplement 1 March 2004. Available at www.dmac.adelaide.edu.au/aoanjrr/publications.jsp?section=articles.

Harvard University Global Burden of Disease Unit at www.hsph.harvard.edu/organizations/bdu/.

Idler EL, Benyamini Y. Self-rated health and mortality: A review of twenty-seven community studies. *J Health Soc Behav* 1997; 38: 21–37.

Kreisfield R, Newson R. *Hip fracture injuries*. Canberra: AIHW, 2006. Available at www.nisu.flinders.edu.au/pubs/reports/2006/injcat93.php.

Mathers C, Vos T, Stevenson C. *The burden of disease and injury in Australia*. AIHW Catalogue no. PHE 17. Canberra: AIHW, 1999. Available at www.aihw.gov.au/publications/index.cfm/title/5180.

- McCallum J, Shadbolt B, Wang D. Self-rated health and survival: A 7-year follow-up study of Australian elderly. *Am J Public Health* 1994; 84: 1100–05.
- NSW Department of Health. *Fit for the future*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/futuresplanning/.
- NSW Department of Health. *NSW Chronic Disease Prevention Strategy 2003–2007*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/c/pdf/chronic_disease.pdf.
- National Centre for Classification in Health. *The International statistical classification of diseases and related health problems, 10th Revision, Australian Modification (ICD-10-AM). Volume 5*. Sydney: NCCH, 2006.
- National Health Performance Committee, 2004. *National Report on Health Sector Performance Indicators 2003*. Canberra: Australian Institute of Health and Welfare, 2004.
- Organization for Economic Cooperation and Development. *Health at a glance. OECD indicators 2005*. Paris: OECD, 2005.
- Organization for Economic Cooperation and Development. *OECD health data 2006*. Paris: OECD, 2006.
- Phillips R (editor). *The future role of the Divisions network. Report of the review of the role of Divisions of General Practice*. Canberra: Commonwealth of Australia, 2003. Available at www.health.gov.au/internet/wcms/publishing.nsf/content/health-pcd-programs-divisions-divfuture.htm.
- Tobias M, Jackson G. Avoidable mortality in New Zealand, 1981–97. *Aust N J Z Public Health* 2001; 25: 12–20.
- Victorian Department of Human Services Burden of Disease website at www.health.vic.gov.au/healthstatus/bod/bod_vic.htm.
- Victorian Government Department of Human Services. *The Victorian Ambulatory Care Sensitive Conditions Study, 2001–02*. Melbourne: VGDHS, 2004. Available at www.dhs.vic.gov.au/health/healthstatus/acsc/final-report.htm.
- Victorian Government Department of Human Services. *The Victorian ambulatory care sensitive conditions study: Opportunities for Targeted Interventions*. Melbourne: VGDHS, 2001.
- Victorian Government Department of Human Services. *The Victorian ambulatory care sensitive conditions study: Opportunities for Targeting Public Health and Health Services Intervention*. Melbourne: VGDHS, 2002.
- Victorian Government Department of Human Services. *The Victorian ambulatory care sensitive conditions study: Preliminary analyses*. Melbourne: VGDHS, 2001.

3

Health inequalities

Section 3

Aboriginal and Torres Strait Islander peoples

- Around 134,900 Aboriginal people live in NSW, making up just over 2% of the total population and 29% of the total Australian Aboriginal population.
- The relative socio-economic 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 around 40% of the population under 15 years of age compared with 20% of the non-Aboriginal population. The percentage of the Aboriginal population over the age of 65 years is just under 3%, compared with just over 13% of the non-Aboriginal population.
- Aboriginal people are more likely to die at younger ages. Those aged less than 25 years make up around 12% of deaths of Aboriginal people, compared with 2% of deaths among non-Aboriginal people. Deaths among those aged 65 years and over comprise around 38% of Aboriginal deaths, compared with 80% of non-Aboriginal deaths.
- The leading causes of death for Aboriginal people are the same as for non-Aboriginal people—cardiovascular disease and cancer. However, 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 approximately 1.5 times more likely to be admitted to hospital than 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:
 - 3 to 4 times higher for diabetes;
 - 3 to 5 times higher for chronic respiratory diseases;
 - 4 times higher for alcohol-related conditions.
- Lung cancer accounts for 17.6% of new cancer cases in Aboriginal people, almost twice the non-Aboriginal figure, while cervical cancer comprises 7.8% of new cancer cases in Aboriginal women, more than 4 times the non-Aboriginal figure.
- Current smoking rates 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 higher across all age groups.

In this chapter

- Aboriginal population pyramid
- Causes of death
- Potentially avoidable deaths
- Perinatal deaths and antenatal care
- Prematurity and low birth weight
- Causes of hospitalisation
- Hospitalisations for ambulatory care sensitive conditions
- Cardiovascular disease
- Diabetes
- Respiratory disease
- Cancer incidence
- Injury and poisoning
- Otitis media
- Child immunisation coverage
- Alcohol attributed hospitalisations
- Risk alcohol drinking and smoking

Introduction

The physical and social environments in which people live determine to a large degree whether they live productive lives relatively free of serious illness. This is particularly the case for Aboriginal people who still suffer disproportionately from some of the consequences of European settlement, in particular the impact of 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 (AIHW, 2005).

In 2001, Aboriginal and Torres Strait Islander people comprised just over 2% of the total NSW population. Torres Strait Islander people account for 6.4% of the Aboriginal population of NSW. In this report the Aboriginal population, both Aboriginal and Torres Strait Islander 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 for a range of reasons, in particular the incomplete and differential identification of Aboriginal people in administrative data collections. The resulting calculations of rates of deaths, illness and disease in Aboriginal populations must therefore be treated with caution. The Aboriginal population is relatively young, with a median age of 21 years compared to 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 (NSW Department of Aboriginal Affairs, 2004) adopts a whole-of-government approach to positively improve the lives of Aboriginal people in seven priority areas. The areas were identified in consultation with the Aboriginal communities of NSW. They are: health, education, economic development, justice, families and young people, culture and heritage, and housing and infrastructure. The focus of NSW Health as part of the 'Families and Community Cluster' tasked with implementing the Plan is on otitis media, oral health, mental health and family violence, healthy housing and living practices, and water and sewerage.

The Housing for Health Program aims to assess, repair or replace health hardware so that houses are safe and the occupants have the ability to carry out healthy living practices. It has been delivered to Aboriginal communities in NSW since 1998, through the Aboriginal Communities Development Program. The NSW Government is

committed to enhancing the Housing for Health Program to improve the health hardware in 330 houses over the next two years, and to examine models for the more effective maintenance of water and sewerage systems in discrete communities.

The NSW Aboriginal Chronic Conditions Area Health Service Standards, released in 2005, emphasise a primary health care approach, foster coordinated service delivery across the continuum of care, and promote multi-disciplinary care (NSW Health, 2005).

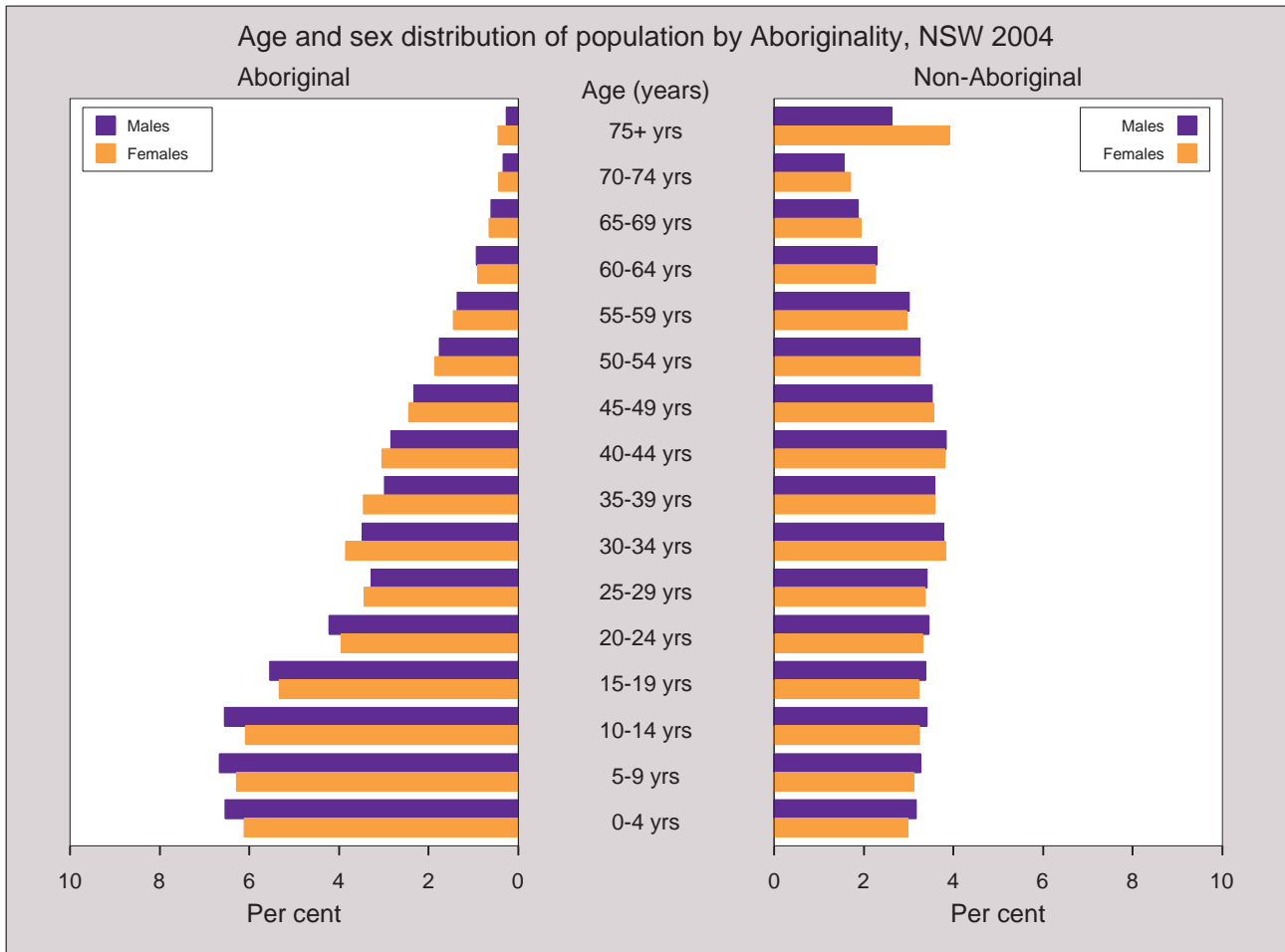
The NSW Aboriginal Maternal and Infant Health Strategy has been implemented to improve access to culturally-appropriate maternity services for Aboriginal mothers. This Strategy has been successful in addressing issues which cause under-utilisation of maternity services by Aboriginal women, such as inappropriate and inaccessible maternal health services and lack of long-term targeted Aboriginal maternal health programs. (NSW Department of Health, 2003).

Aboriginal Medical Services (AMSs) play a vital role in regard to Aboriginal health services in NSW. An AMS is a primary health care service initiated and operated by the local Aboriginal community to deliver holistic, comprehensive, and culturally appropriate health care. Aboriginal communities operate 46 AMSs in NSW, ranging from large multi-functional services to small services which rely on Aboriginal health workers.

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. Additional indicators of Aboriginal health, including indicators relating to oral health, vaccine-preventable diseases, drug and alcohol treatment services and Aboriginal prison inmates, are included in the electronic version of this report at www.health.nsw.gov.au.

In 1996–97 a change in coding practice for Aboriginal status in hospital morbidity data resulted in a disproportionately large number of hospital separations being attributed to Aboriginal people, and the artifact is evident in some of the health indicators reported in this chapter. The methods used for analysing and presenting death and hospitalisation data are described in more detail in the Methods section.

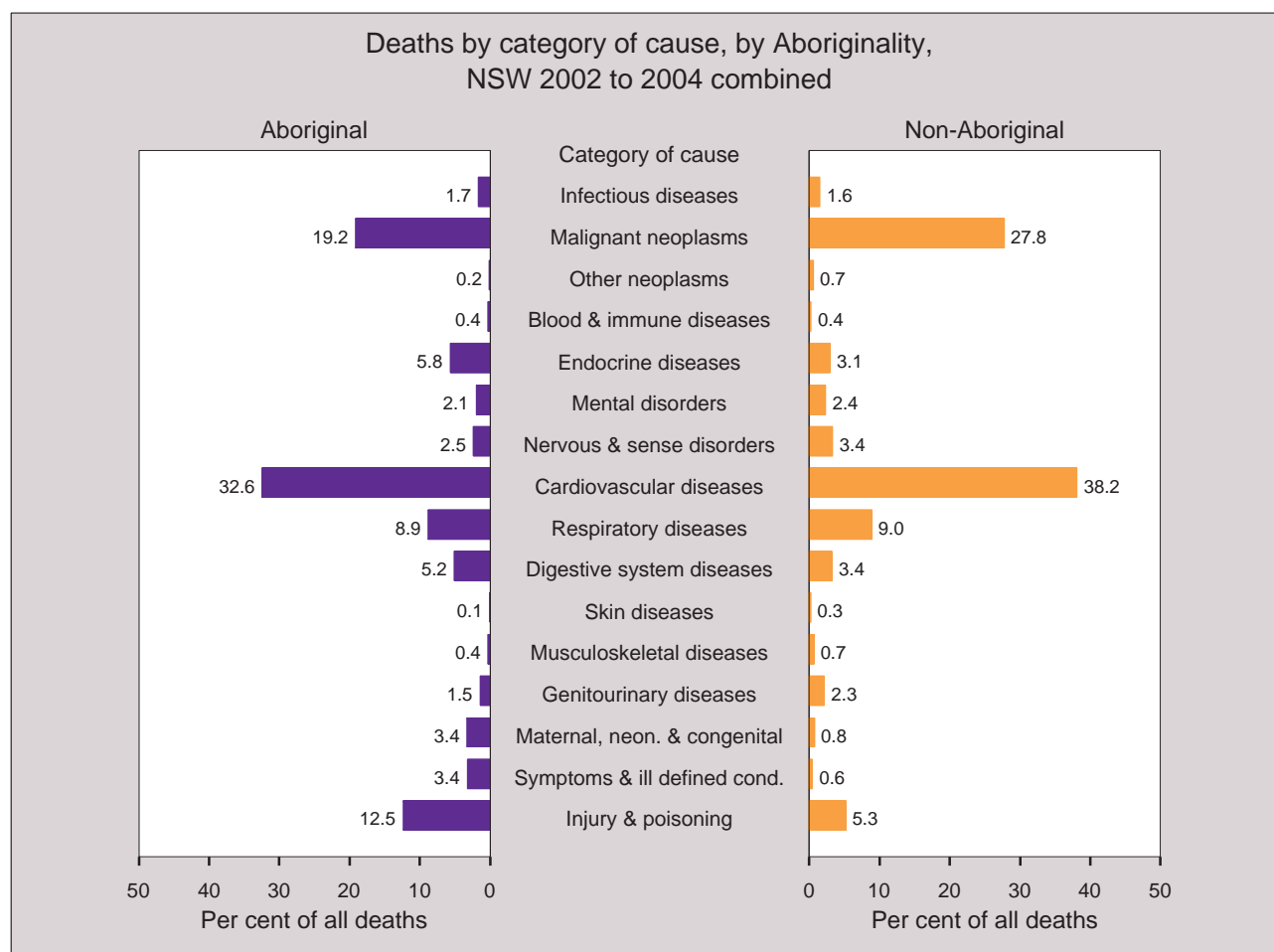
All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/



Note: Estimated residential populations based on the 2001 ABS Census of Population and Housing.

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

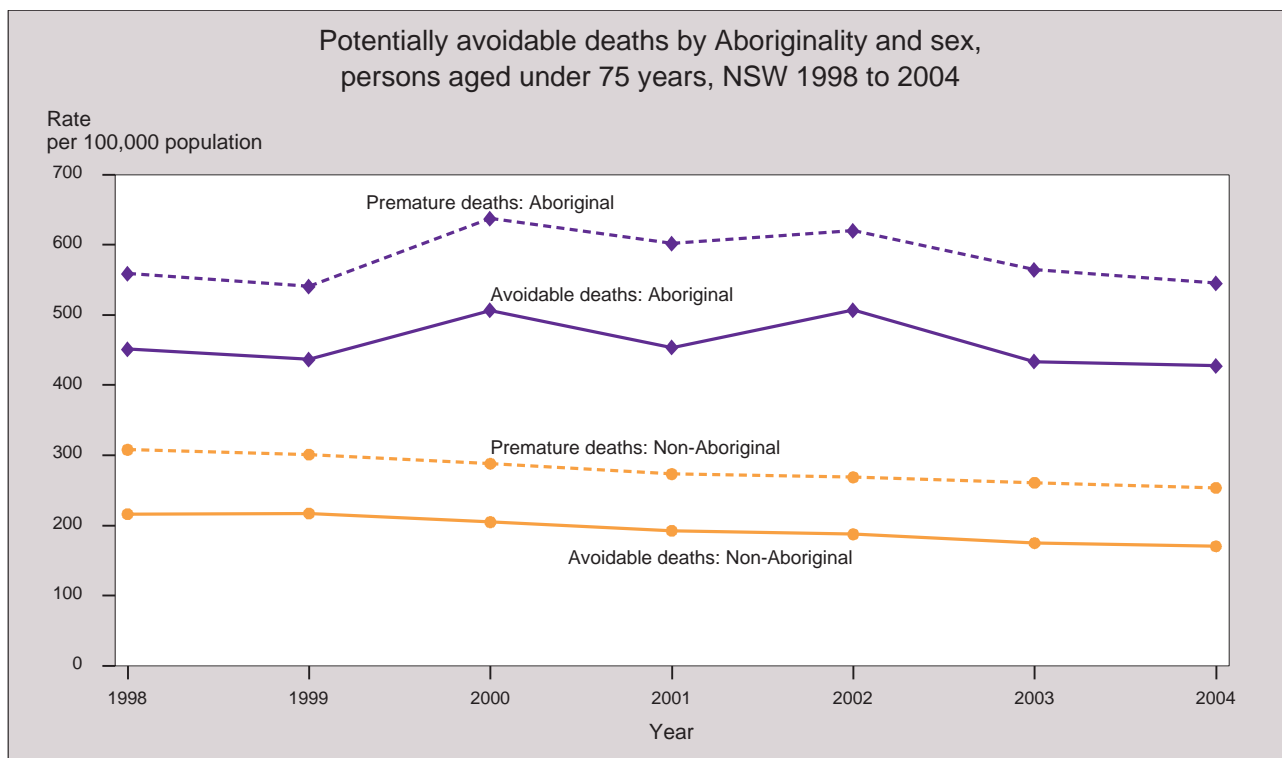
- In NSW in 2001, there were an estimated 134,888 Aboriginal people living in NSW, comprising just over 2% of the total NSW population and approximately 29% of the total Aboriginal population in Australia. While NSW has the largest number of Aboriginal people of any Australian state or territory, the Northern Territory has the highest proportion of Aboriginal people (29% of the total population) (AIHW, 2005).
- The Aboriginal population is younger, with around 40% of the population under 15 years of age compared with 20% of the non-Aboriginal population. The per cent of Aboriginal population in each 5-year group decreases with increased age, whereas in the non-Aboriginal population, there is no decrease until after the age of 45 years. The percentage of the Aboriginal population over the age of 65 years is just under 3%, compared with just over 13% in the non-Aboriginal population. There is also a substantial drop in the size of the Aboriginal population between 10–14 years and 15–19 years, reflecting a relatively high mortality rate among older teenagers.
- The Aboriginal population in Australia grew by 16% in the period between the 1996 and 2001 Censuses. Three-quarters of this intercensal increase is a ‘natural’ increase which can be explained by demographic factors (births, deaths and migration). The remaining 4% increase, or ‘unexplained’ growth is attributable to other factors such as the improvements in the Census collection methods and increased identification of people as Aboriginal (AIHW, 2003).
- The Australian Bureau of Statistics has produced experimental projections of the Aboriginal population from 2001 to 2009, based on assumptions about the ‘natural’ growth in the Aboriginal population (low series) and the ‘unexplained’ population growth (high series) (ABS, 2004).
- The Aboriginal population in NSW is projected to increase by 14% to 153,454 through natural factors (low series). Based on the high series, the population is expected to grow to 182,932, an increase of around 36% of the 2001 population.



Note: Deaths were classified using ICD-10. Grouping follows ICD-10 categories, so numbers for some categories may differ from results in other chapters. See ICD Codes for diseases and procedures for details. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- The life expectancy of Aboriginal people is estimated to be around 17 years less than the average for the Australian population. For NSW and Victoria combined, life expectancy at birth is estimated to be 60.0 years for Aboriginal males and 65.1 years for Aboriginal females (SCRGSP, 2005).
- Over the period 2000 to 2004 deaths in people aged less than 25 years made up 11.5% of deaths of Aboriginal people compared with 2.0% of deaths among non-Aboriginal people. Deaths among children aged less than 5 years accounted for 6.6% of Aboriginal deaths, compared with only 1.0% of non-Aboriginal deaths. This disparity reflects very high mortality rates among Aboriginal infants (see Perinatal deaths in this chapter).
- Aboriginal and non-Aboriginal persons have the same two leading causes of death, although they are proportionally different. In NSW in 2004, cardiovascular diseases were the main cause of death, accounting for 32.6% of all Aboriginal deaths compared to 38.2% of non-Aboriginal deaths. Malignant neoplasms were the cause of 19.2% of all Aboriginal deaths and 27.8% of all non-Aboriginal deaths. Deaths due to endocrine diseases were higher among Aboriginal persons (5.8%) than among non-Aboriginal persons (3.1%). Diabetes mellitus, which is the main disease in this category, accounted for 5.2% of Aboriginal deaths and only 2% of non-Aboriginal deaths. Injury and poisoning accounted for 12.5% of Aboriginal deaths compared with 5.3% of non-Aboriginal deaths.



		Aboriginality	Sex	1998	1999	2000	2001	2002	2003	2004
Avoidable deaths	Number	Aboriginal	Persons	315	284	326	298	336	297	294
		Non-Aboriginal	Persons	13008	13226	12609	12024	11867	11159	10998
		Total	Persons	13323	13510	12935	12322	12203	11456	11292
	Rate per 100,000 population	Aboriginal	Persons	451.1	436.9	506.6	453.8	507.1	433.7	427.4
		Non-Aboriginal	Persons	216.3	217.5	205.0	192.7	187.7	175.1	170.5
Premature deaths	Number	Aboriginal	Persons	219.5	219.9	208.2	195.5	191.1	177.9	173.2
		Non-Aboriginal	Persons	396	360	412	384	417	396	385
		Total	Persons	18517	18332	17727	17073	17005	16637	16363
	Rate per 100,000 population	Aboriginal	Persons	559.3	540.7	637.2	601.7	620.0	564.7	545.6
		Non-Aboriginal	Persons	308.1	301.3	288.2	273.5	268.9	260.9	253.9
	Total	Persons	311.6	304.1	291.9	276.8	272.7	264.4	257.2	

Note: Deaths were classified using ICD-10. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

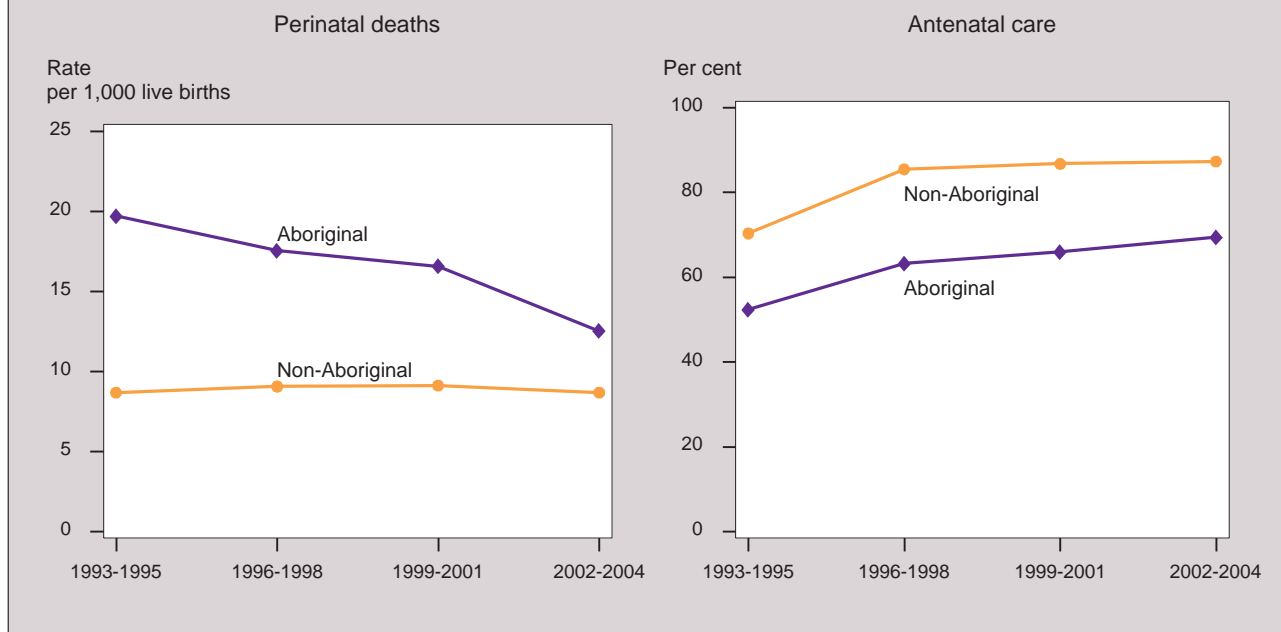
Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Premature deaths refer to those deaths that occur before age 75 years. Premature deaths can be classified as avoidable and unavoidable. Avoidable deaths are those that, theoretically, could have been avoided given current understanding of causation, and available disease prevention and health care. Conversely, unavoidable deaths are those which, at present, cannot be avoided through prevention or treatment (ABS, 2006).
- In NSW in 2004, more than three-quarters (76.4%) of all premature Aboriginal deaths were potentially avoidable compared to just over two-thirds (67.2%) of non-Aboriginal deaths. Between 1998 and 2004, rates of premature death declined by 17.6% in non-Aboriginal people, but only 2.4% in

Aboriginal people. Rates of potentially avoidable premature death declined by 21.2% in non-Aboriginal people, but only 5.3% in Aboriginal people.

- In the same period, cardiovascular diseases accounted for 33.2% of all potentially avoidable premature deaths of Aboriginal people, slightly higher than the 31.6% of non-Aboriginal deaths. Malignant neoplasms accounted for 16.4% of all potentially avoidable premature deaths of Aboriginal people but accounted for almost twice this percentage (34.2%) for non-Aboriginal people. Injuries, diabetes mellitus and neonatal causes all accounted for a higher proportion of potentially avoidable premature deaths in the Aboriginal population compared to the non-Aboriginal population.

Perinatal deaths of babies by mother's Aboriginality and first antenatal visit before 20 weeks gestation by Aboriginality, NSW 1993-1995 to 2002-2004

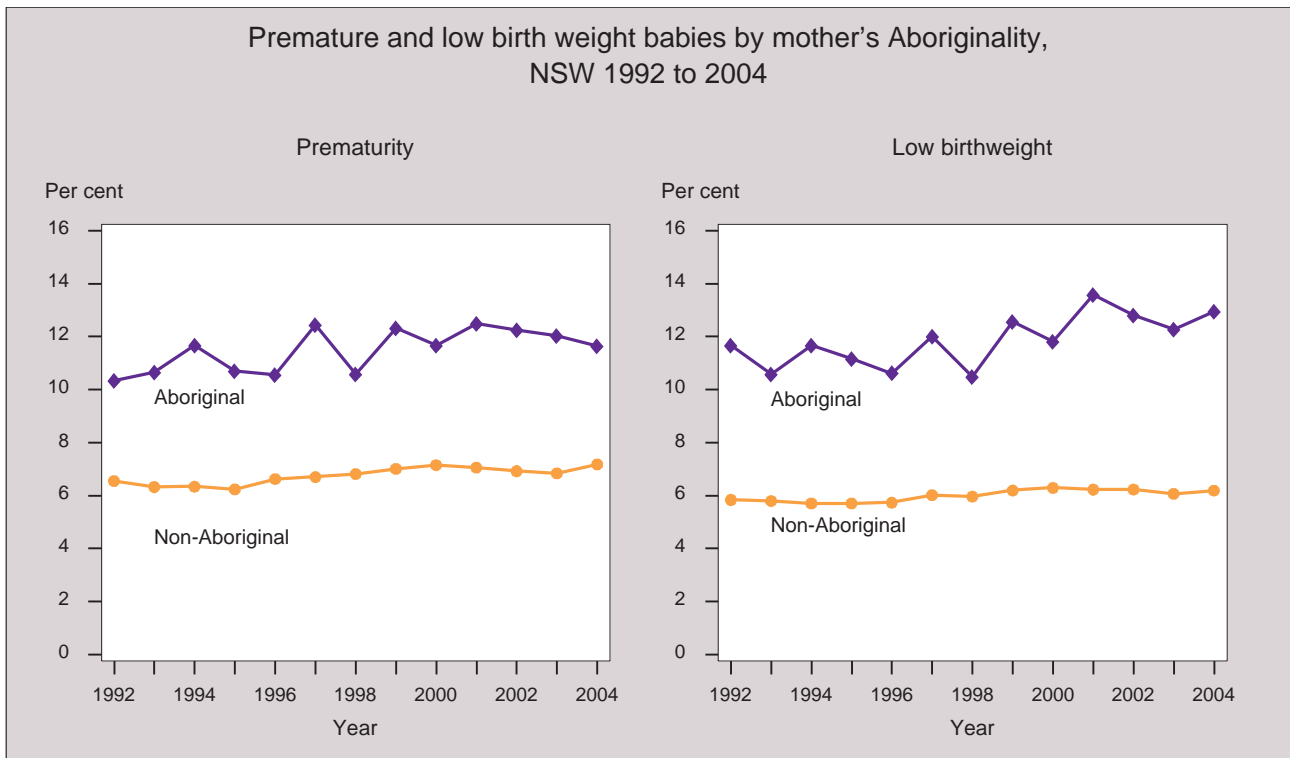


	Aboriginality	1993-1995	1996-1998	1999-2001	2002-2004
Perinatal deaths	Aboriginal	94	99	105	84
	Non-Aboriginal	2244	2313	2324	2181
	Total	2338	2412	2429	2265
Rate per 1,000 births	Aboriginal	19.7	17.5	16.6	12.5
	Non-Aboriginal	8.7	9.1	9.1	8.7
	Total	8.9	9.2	9.3	8.8
Antenatal care	Aboriginal	24	35	40	45
	Non-Aboriginal	1778	2133	2139	2127
	Total	1803	2168	2179	2172
Per cent	Aboriginal	52.4	63.2	65.9	69.5
	Non-Aboriginal	70.3	85.5	86.8	87.3
	Total	70.0	85.0	86.3	86.9

Note: Perinatal deaths include stillbirths and deaths within 28 days of birth. Babies of at least 400 grams birth weight or at least 20 weeks gestation were included. Births to mothers resident outside NSW were excluded. Births for which mother's Aboriginal status were not stated were classified as non-Aboriginal. Antenatal care (=prenatal care) should commence as early as possible in pregnancy to ensure the best outcomes for the mother and the baby.

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

- The perinatal mortality rate is the number of stillbirths and deaths within 28 days of birth, per 1,000 live births. Between 1993-95 and 2002-04, the perinatal mortality rate among babies born to Aboriginal mothers in NSW decreased from 19.7 to 12.5 per 1,000 live births but was higher than the perinatal death rate in non-Aboriginal babies (8.7 deaths per 1,000 live births in 2002-04).
- The purpose of antenatal visits is to monitor the health of both the mother and baby, provide advice to promote the health of both the mother and baby, to identify antenatal complications, and to provide appropriate intervention at the earliest time.
- Over the period 1993-95 to 2002-04 in NSW, the proportion of Aboriginal mothers who attended their first antenatal visit before 20 weeks gestation increased from just over half (52.4%) to well over two-thirds (69.5%). However, this figure remained well below that recorded in non-Aboriginal mothers (87.3% in 2002-04).
- The NSW Aboriginal Maternal and Infant Health Strategy has been implemented to improve access to culturally-appropriate maternity services for Aboriginal mothers. In those areas of NSW where the Strategy has been implemented, 78% of Aboriginal women attended their first antenatal visit before 20 weeks gestation in 2003-04, compared with 64% for these areas prior to the strategy (1996-2000).

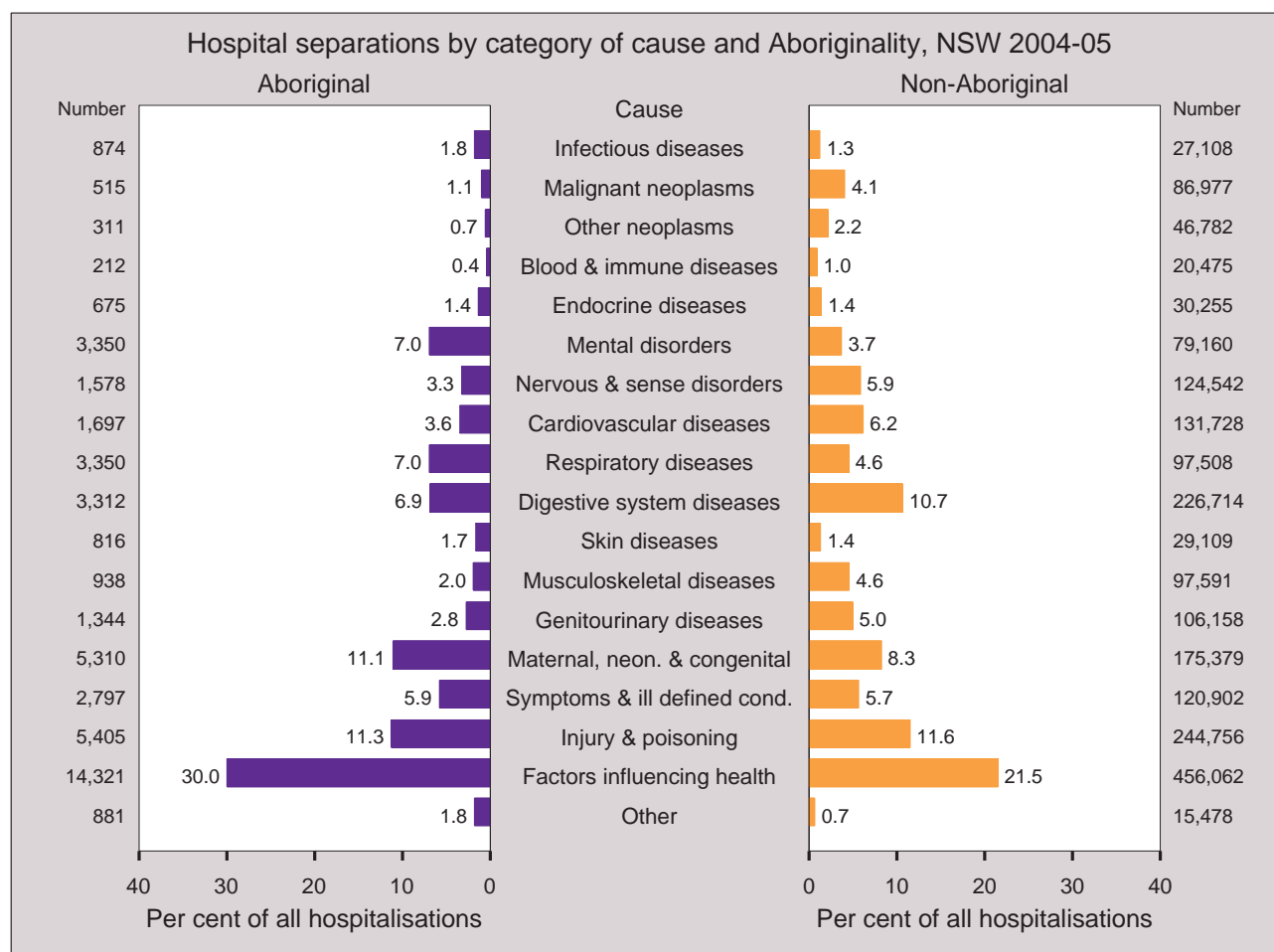


		Aboriginality	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Prematurity	Aboriginal	187	181	229	217	253	246	265	266	261	270
		Non-Aboriginal	5295	5571	5739	5702	5933	6092	5875	5766	5730	5939
		Total	5482	5752	5968	5919	6186	6338	6140	6032	5991	6209
Low birth weight	Aboriginal	Aboriginal	195	182	221	215	258	249	288	278	266	300
		Non-Aboriginal	4851	4821	5156	4986	5242	5364	5180	5187	5082	5125
		Total	5046	5003	5377	5201	5500	5613	5468	5465	5348	5425
Per cent	Prematurity	Aboriginal	10.7	10.6	12.4	10.6	12.3	11.7	12.5	12.3	12.0	11.7
		Non-Aboriginal	6.2	6.6	6.7	6.8	7.0	7.2	7.1	6.9	6.8	7.2
		Total	6.3	6.7	6.8	6.9	7.1	7.3	7.2	7.1	7.0	7.3
Low birth weight	Aboriginal	Aboriginal	11.2	10.6	12.0	10.5	12.6	11.8	13.6	12.8	12.3	12.9
		Non-Aboriginal	5.7	5.7	6.0	6.0	6.2	6.3	6.2	6.2	6.1	6.2
		Total	5.8	5.8	6.1	6.1	6.3	6.4	6.4	6.4	6.2	6.4

Note: Births for which gestational age was less than 37 weeks were classified as premature. Infants with a birth weight less than 2,500 grams were classified as low birth weight. Infants who were at least 400 grams birth weight or at least 20 weeks gestation were included. Births to mothers resident outside NSW were excluded.

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

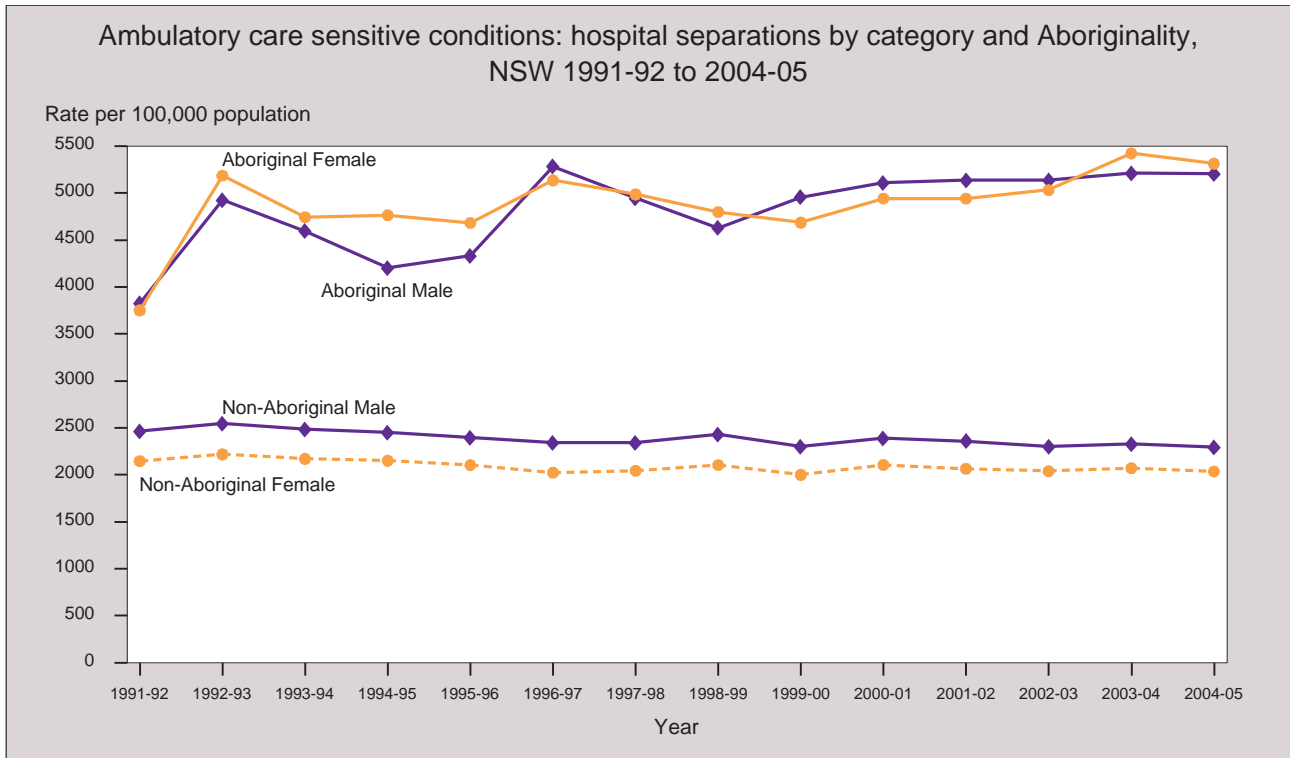
- Premature birth before 37 weeks' gestation is associated with many neonatal problems that cause significant morbidity and mortality in newborn babies and may sometimes be associated with long-term disabilities (NHMRC, 1997).
- In 2004 in NSW, 2,308 babies were born to Aboriginal mothers, comprising 2.7% of all births. Maternal Aboriginality is also under-reported to the NSW Midwives Data Collection. For 2003, it has been estimated that of all babies born to Aboriginal mothers, only 67% were reported as having an Aboriginal mother (CER, 2005).
- Since 1992, the rates of low birth weight and prematurity in Aboriginal babies have been greater than 10%, and were 12.9% and 11.7% respectively in 2004. These were higher than the rates of low birth weight and prematurity in non-Aboriginal babies, which were 6.2% and 7.2% respectively in 2004.
- Smoking in pregnancy and being a teenage or older (over 35 years) mother are risk factors for both low birthweight and premature babies. In 2004, rates of smoking in the second half of pregnancy (the greatest risk period) were 55.2% in Aboriginal mothers and 14.2% in non-Aboriginal mothers; more than one in five (21.4%) Aboriginal mothers, and only 4% of non-Aboriginal mothers, were teenagers; and Aboriginal mothers (9.6%) were only half as likely as non-Aboriginal mothers (19.9%) to be aged 35 years or more. years (CER, 2005).



Note: Numbers for 2004–05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Grouping follows ICD-10 categories, so numbers for some categories may differ from results in other chapters. See ICD Codes for diseases and procedures for details. Records where Aboriginal status was not stated were classified as non-Aboriginal. Rates were age-adjusted using the Australian population as at 30 June 2001.

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

- Hospital separations are a summary measure of illness in the population. Rates of hospital separations are influenced by the age structure of the population, the incidence of disease and injury, the availability of health services, and the availability of treatment options for diseases and injuries.
- Aboriginal status is likely to be substantially under-reported in NSW hospital morbidity data. Despite this, age-adjusted hospital separation rates for all causes combined were much higher among Aboriginal people than non-Aboriginal people over the period 1993–94 to 2004–05. In 2004–05, 2.2% of all hospitalisations in NSW were for Aboriginal people. Age-adjusted hospital separation rates in Aboriginal people were around one and a half times greater (48,741 and 48,856 per 100,000 population in Aboriginal males and females respectively), than in the non-Aboriginal population (30,718 and 32,093 per 100,000 in non-Aboriginal males and females).
- In 2004–05 the most common groups of conditions causing hospitalisation of Aboriginal people were: ‘factors influencing health’, mainly renal dialysis (30.0%); injury (11.3%); maternal conditions, including childbirth (11.1%); mental disorders and respiratory diseases (both at 7.0%); and digestive system diseases (6.9%).
- ‘Factors influencing health’ (mainly renal dialysis), maternal conditions, respiratory diseases and mental disorders accounted for greater proportions of hospitalisations among Aboriginal than non-Aboriginal people. Conversely, neoplasms, cardiovascular diseases, digestive system diseases, genitourinary diseases and musculoskeletal conditions accounted for greater proportions of hospitalisations among non-Aboriginal people, reflecting the older age structure of the non-Aboriginal population.

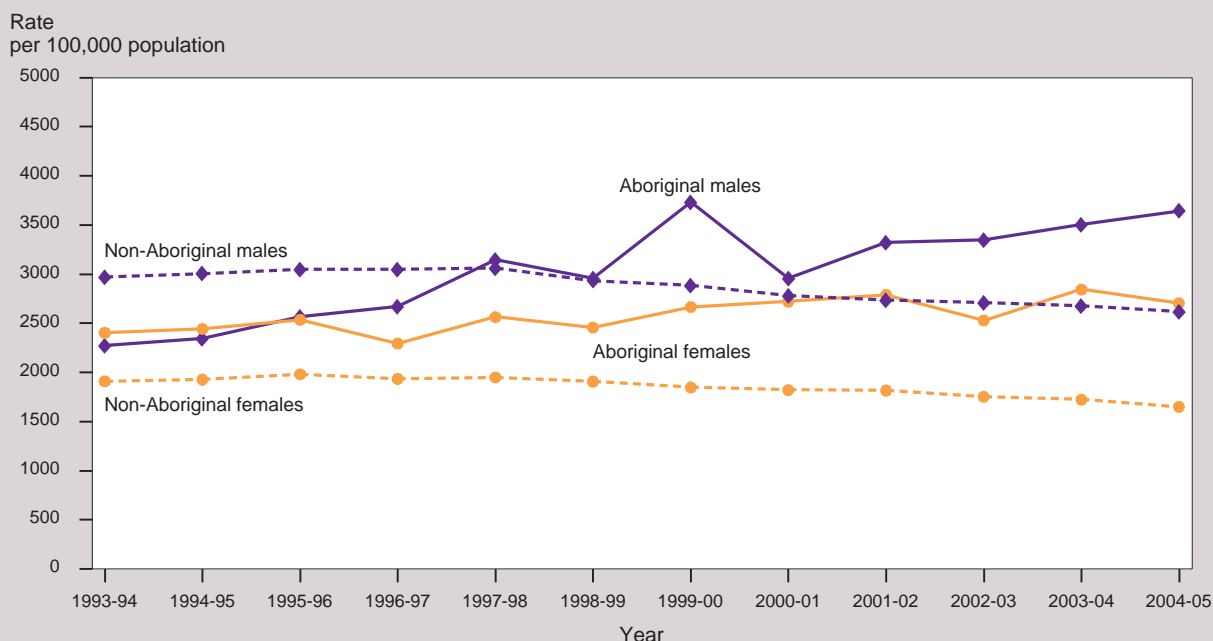


Note: Hospital separations were classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

- Ambulatory care sensitive conditions are those for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered in a primary health care setting such as a general practitioner’s surgery or community health centre.
- Hospitalisation rates for ambulatory care sensitive conditions are used as an indicator of access to, and quality of, primary care. Other factors that influence rates include disease prevalence in the community, hospital admission and coding practices, and personal choices about seeking health care.
- Ambulatory care sensitive conditions can be categorised as vaccine-preventable, acute and chronic. Vaccine-preventable conditions include influenza, bacterial pneumonia, tetanus, measles, mumps, rubella, pertussis and polio. Acute conditions for which hospitalisation can be avoided through adequate and timely primary care include dehydration and gastroenteritis, kidney infection, perforated ulcer, cellulitis, pelvic inflammatory disease, ear nose and throat infections, dental conditions, appendicitis, convulsions and epilepsy, and gangrene. Chronic conditions which may be managed effectively through primary care to prevent deterioration and hospitalisation include diabetes complications, asthma, angina, hypertension, congestive heart failure, chronic obstructive pulmonary disease, and iron deficiency anaemia and nutritional deficiencies.
- In NSW over the period 1991-92 to 2004-05, rates of hospitalisation for ambulatory care sensitive conditions in Aboriginal people were consistently more than double those in non-Aboriginal people, both overall and across the vaccine-preventable, acute and chronic categories.
- Rates of hospitalisation for ambulatory care sensitive conditions increased by 29.0% in Aboriginal people over this period. The major contributor to this increase was chronic conditions, which increased by 76.1%, while the less common acute and vaccine-preventable conditions decreased by 9.6% and 54.6%, respectively. In non-Aboriginal people rates of hospitalisation for ambulatory care sensitive conditions decreased by 12.2% overall, 3.4% for chronic conditions, 15.4% for acute conditions and 61.5% for vaccine-preventable conditions.
- The increase in Aboriginal hospitalisation rates for ambulatory care sensitive conditions reflects, at least in part, an improvement in the recording of Aboriginality in hospital data over this period.

Cardiovascular disease hospital separations by Aboriginality and sex, NSW 1993-94 to 2004-05

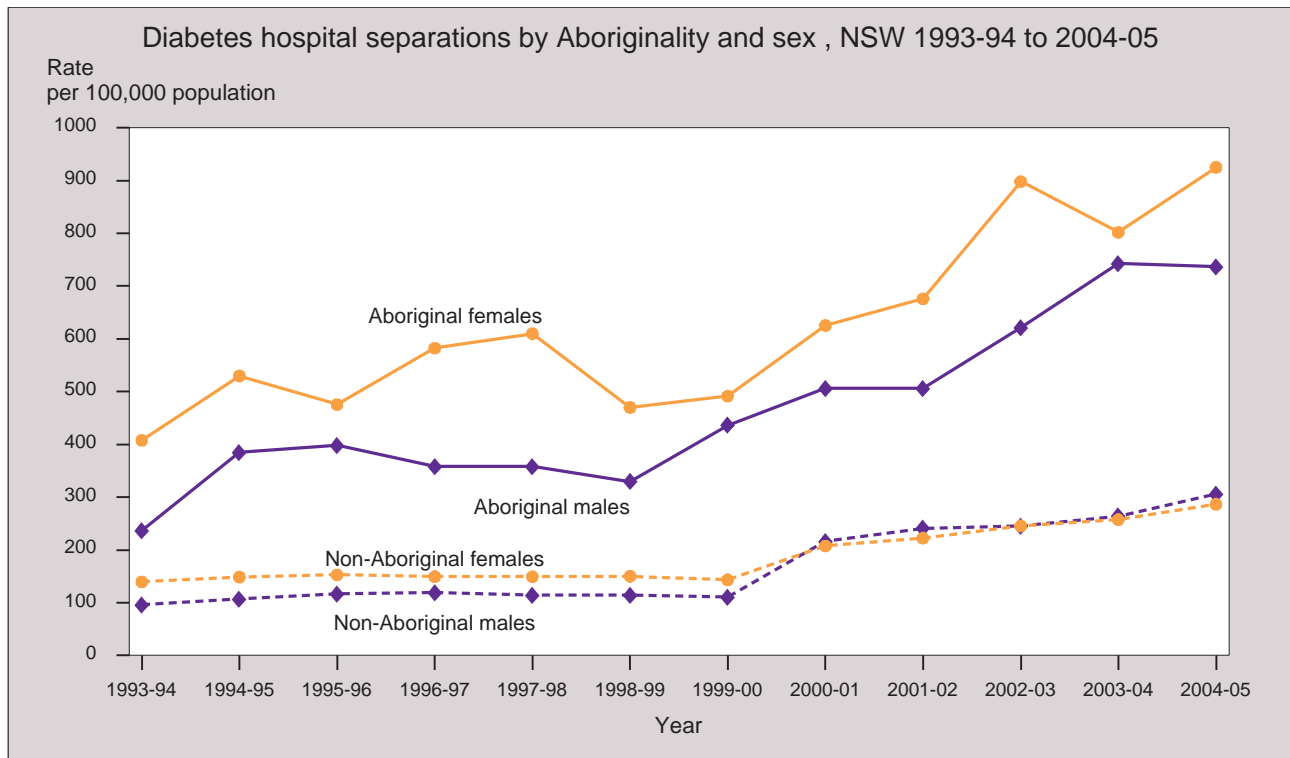


	Aboriginality	Sex	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Aboriginal	Persons	1364	1528	1481	1699	1642	1746	1767	1851	1883
	Non-Aboriginal	Persons	147161	151901	150359	150301	149953	151955	151918	153030	151305
	Total	Persons	148525	153429	151840	152000	151595	153701	153685	154881	153188
Rate per 100,000 population	Aboriginal	Persons	2490.1	2834.4	2690.7	3120.0	2857.3	3052.3	2914.7	3129.8	3143.2
	Non-Aboriginal	Persons	2451.8	2469.1	2388.4	2333.3	2272.9	2248.4	2203.1	2174.7	2108.8
	Total	Persons	2455.5	2474.8	2393.6	2342.0	2280.5	2257.3	2212.3	2184.8	2119.3

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 2004-05 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.

- Coronary heart disease and stroke are the major forms of cardiovascular disease causing death and illness in NSW. They share a number of behavioural risk factors which are more prevalent in the Aboriginal population than the non-Aboriginal population. These include tobacco smoking, physical inactivity, poor diet and heavy alcohol consumption.
- The 2004-05 National Aboriginal and Torres Strait Islander Health Survey reported that Aboriginal adults were more likely than their non-Aboriginal counterparts to be classified as overweight or obese (64.4% compared with 51.4%) and more than twice as likely to be current smokers (47.6% compared with 20.8%) (ABS, 2006).
- The Aboriginal hospitalisation rate for cardiovascular disease increased by 33% between 1993-94 and 2004-05, while the non-Aboriginal rate decreased by 12% over this period. The increase in the rate in Aboriginal people reflects, at least in part, an improvement in the recording of Aboriginality in hospital data over this period.
- In NSW in 2004-05, the age-adjusted hospitalisation rate for cardiovascular diseases in Aboriginal people was 1.5 times (1.6 times for males; 1.3 times for females) the rate in non-Aboriginal people.
- The NSW Aboriginal Vascular Health Program works in collaboration with Area Health Services and Aboriginal Community Controlled Health Services to prevent and manage conditions including diabetes, heart disease, stroke, hypertension and kidney disease among Aboriginal people. These conditions share common risk factors, and common approaches are needed to address them in Aboriginal communities (NSW Department of Health, 2004).



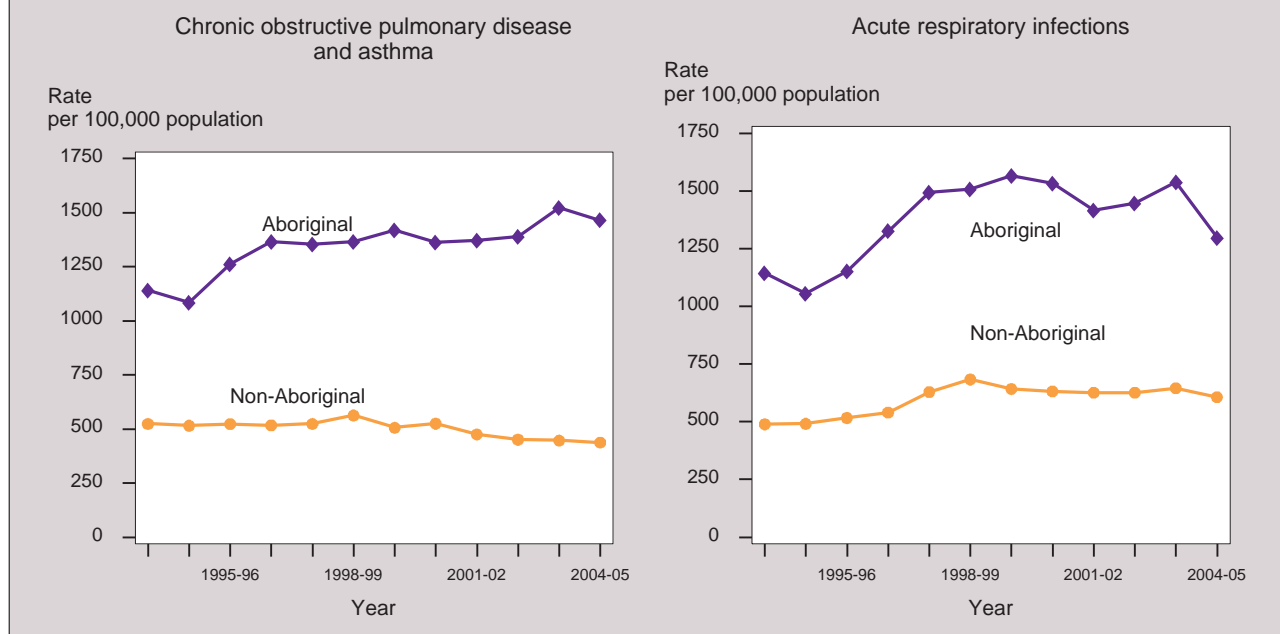
	Aboriginality	Sex	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Aboriginal	Persons	293	322	338	306	346	407	438	567	594	577
	Non-Aboriginal	Persons	8042	8197	8144	8264	8074	13727	15308	16536	17821	20661
	Total	Persons	8335	8519	8482	8570	8420	14134	15746	17103	18415	21236
Rate per 100,000 population	Aboriginal	Persons	436.9	477.8	490.1	407.5	460.0	570.3	601.4	773.2	769.7	843.8
	Non-Aboriginal	Persons	133.8	133.9	131.1	131.3	126.4	209.6	229.0	243.1	258.1	293.5
	Total	Persons	136.8	137.3	134.6	134.2	129.9	213.4	233.0	248.9	263.9	298.7

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 2004-05 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.

- Diabetes is a significant health problem for Aboriginal Australians. While Type 1 (early onset, insulin dependent) diabetes is rare among Aboriginal people, Type 2 diabetes mellitus (later onset, usually non-insulin dependent) has a high prevalence among Aboriginal people. The onset of diabetes occurs earlier among Aboriginal people, which leads to a greater burden of illness associated with the complications of diabetes.
- In NSW over the period 2002-2005 combined, 10.6% of Aboriginal people aged 16 years and over reported having diabetes or high blood sugar (7.6% in the general population). Diabetes or high blood sugar increased with age from 4.5% in the 16-24 year age group to 27.9% in the 65-74 year age group (CER, 2006a and 2006b).
- In NSW over the period 1993-94 to 2004-05, age-adjusted hospitalisation rates for a primary diagnosis of diabetes were three to four times higher among Aboriginal people than non-Aboriginal people. In 2004-05, the hospitalisation rate for diabetes mellitus in Aboriginal people was 843.8 per 100,000 population, compared with 293.5 per 100,000 in non-Aboriginal people.
- The Aboriginal hospitalisation rate for diabetes increased more steeply between 1993-94 and 2004-05 than the non-Aboriginal rate. This may reflect, at least in part, an improvement in the recording of Aboriginality in hospital data over this period.
- The NSW Aboriginal Vascular Health Program works in collaboration with Area Health Services and Aboriginal Community Controlled Health Services to prevent and manage conditions including diabetes, heart disease, stroke, hypertension and kidney disease among Aboriginal people (NSW Department of Health, 2004).

Chronic respiratory disease and acute respiratory infection hospital separations by Aboriginality and sex, NSW 1993-94 to 2004-05

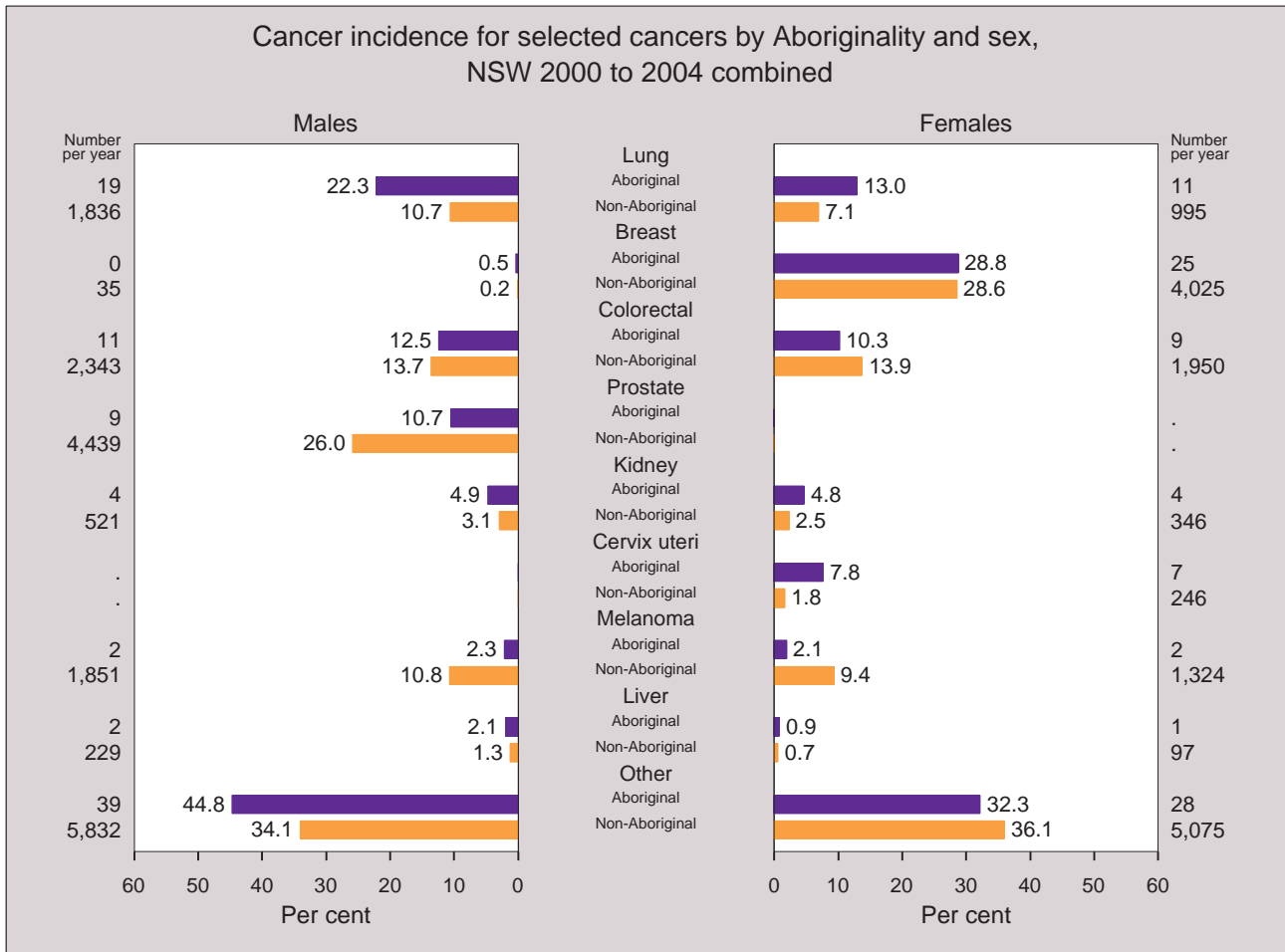


Hospitalisation		Aboriginality	Sex	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Number	Total	Aboriginal	Persons	2704	2916	3272	2977	3247	2979	2915	3120	2918
	Total	Non-Aboriginal	Persons	64886	71736	78492	73361	75092	72459	71655	73299	70971
	Total	Total	Persons	68068	74711	81764	76338	78339	75438	74570	76419	73885
Rate per 100,000 population	Total	Aboriginal	Persons	2690.7	2848.4	2872.4	2985.5	2893.5	2787.3	2833.6	3060.5	2762.1
	Total	Non-Aboriginal	Persons	1057.6	1152.9	1246.3	1148.5	1156.7	1101.9	1077.3	1092.4	1044.9
	Total	Total	Persons	1085.6	1175.4	1270.8	1171.1	1182.6	1123.9	1099.6	1116.6	1067.0

Note: Chronic respiratory diseases here includes only chronic obstructive pulmonary disease and asthma. Records where Aboriginal status was not stated were classified as non-Aboriginal. 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 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

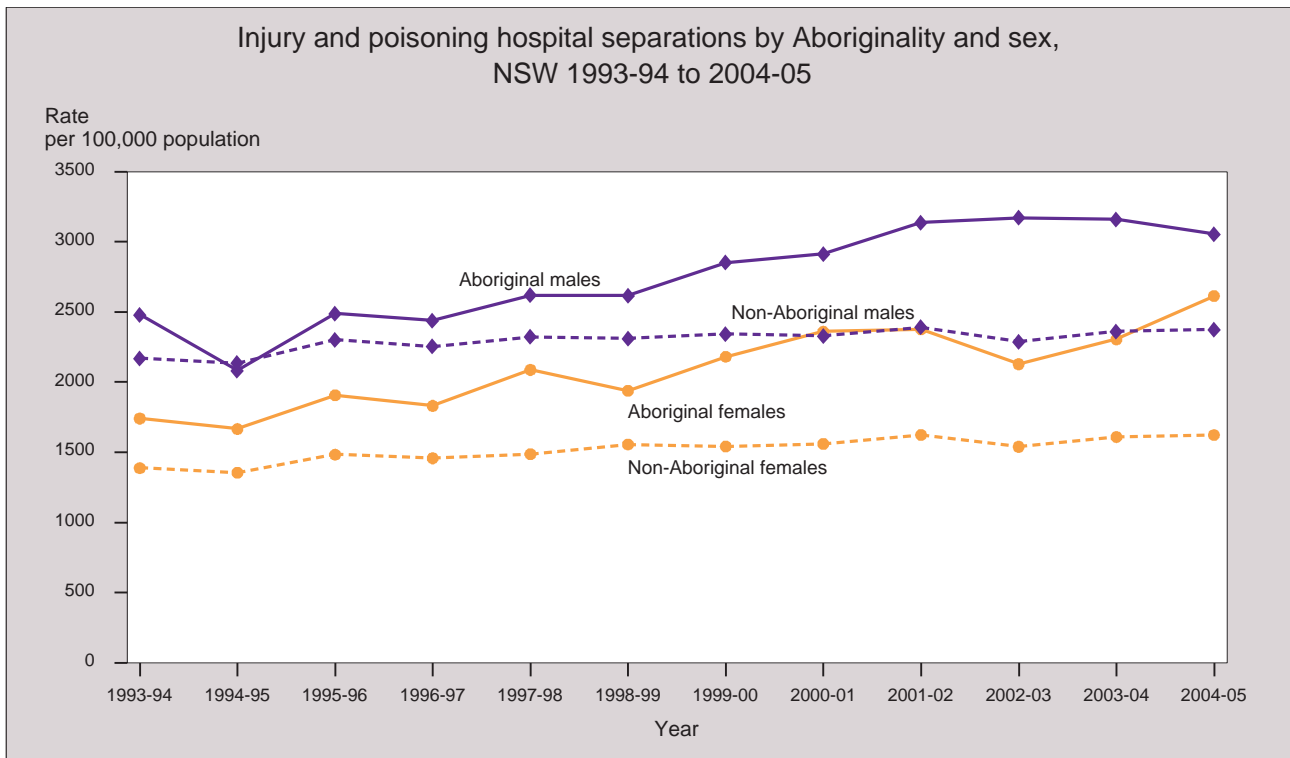
Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Acute respiratory infections are a major health problem for Aboriginal people. Pneumonia is a serious complication of these illnesses, especially in persons with a pre-existing heart or lung disease. The National Aboriginal Pneumococcal and Influenza Immunisation Program provides free vaccines to Aboriginal people.
- The acute respiratory diseases included in this analysis are acute upper respiratory infections, influenza and pneumonia. In NSW in 2004-05, the hospitalisation rate for acute respiratory infections among Aboriginal people was approximately twice that of non-Aboriginal people. At 1,298 per 100,000 population (compared with 607 per 100,000 for non-Aboriginal people) this rate represented a 15.6% decrease on the previous year.
- The chronic respiratory diseases included in this analysis are asthma and chronic obstructive pulmonary disease (COPD). Cigarette smoking is the most important risk factor for COPD. In NSW over the period 2002 to 2005 combined, 16% of Aboriginal people aged 16 years and over reported having current asthma (10.4% in the general population) (CER, 2006a, 2006b).
- Over the period 1993-94 to 2004-05 in NSW, age-adjusted hospitalisation rates for chronic respiratory diseases for Aboriginal people were around three times higher than for non-Aboriginal people. The Aboriginal hospitalisation rate increased by 28% between 1993-94 and 2004-05, while the non-Aboriginal rate decreased by 16% over this period. This reflects, at least in part, an improvement in the recording of Aboriginality in hospital data over this period.



Note: Cancers were classified by ICD-10. Records where Aboriginal status was not stated were classified as non-Aboriginal.
 Source: NSW Central Cancer Registry incidence data and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Cancer is an important and increasing health problem for Aboriginal Australians. Several factors may at least partly explain differences between cancer incidence and mortality rates for the Aboriginal and non-Aboriginal populations. These include very high prevalence of tobacco smoking and hepatitis B carriage, low Pap test rates, early onset of child bearing, high numbers of pregnancies and births, and a different diet from other Australians (Condon et al., 2004).
- In NSW in the period 2000 to 2004 combined, around 17.6% of all new cases of Aboriginal cancers registered in NSW were lung cancer; 14.7% were female breast cancer (28.8% of all Aboriginal female cancers); 11.4% were colorectal cancer; and 5.3% were prostate cancer (10.7% of all Aboriginal male cancers).
- While the most common cancer types were similar in the non-Aboriginal population, the relative burden differed. In NSW in the period 2000–2004 prostate cancers were the most common type of new cancer registered for non-Aboriginal males accounting for 26.0% of all new cancer cases compared to 10.7% of Aboriginal male new cancer cases. Cervical cancers represented a higher proportion of new cases of cancer among Aboriginal women accounting for 7.8% of all female Aboriginal cancer cases compared to 1.8% of non-Aboriginal female new cancer cases. By contrast, melanoma of the skin made up a greater proportion of cases in the non-Aboriginal population (10.2%) compared with the Aboriginal population (2.2%).
- The NSW Aboriginal Chronic Conditions Area Health Service Standards were released in 2005 to facilitate improved Aboriginal health outcomes in NSW. The Standards aim to optimise the accessibility and appropriateness of health services and programs for the prevention and management of chronic conditions including cancer (NSW Health 2005).



	Aboriginality	Sex	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Aboriginal	Persons	2481	2746	2718	2985	3282	3388	3339	3506	3722
	Non-Aboriginal	Persons	114598	118967	122247	124368	126496	132483	127571	133849	136302
	Total	Persons	117079	121713	124965	127353	129778	135871	130910	137355	140015
Rate per 100,000 population	Aboriginal	Persons	2148.8	2350.8	2277.0	2524.5	2653.0	2757.8	2635.9	2727.4	2861.5
	Non-Aboriginal	Persons	1876.3	1924.8	1954.6	1962.4	1965.4	2028.4	1931.8	2004.9	2017.3
	Total	Persons	1881.1	1932.3	1961.3	1972.2	1979.1	2042.4	1946.4	2020.1	2035.2

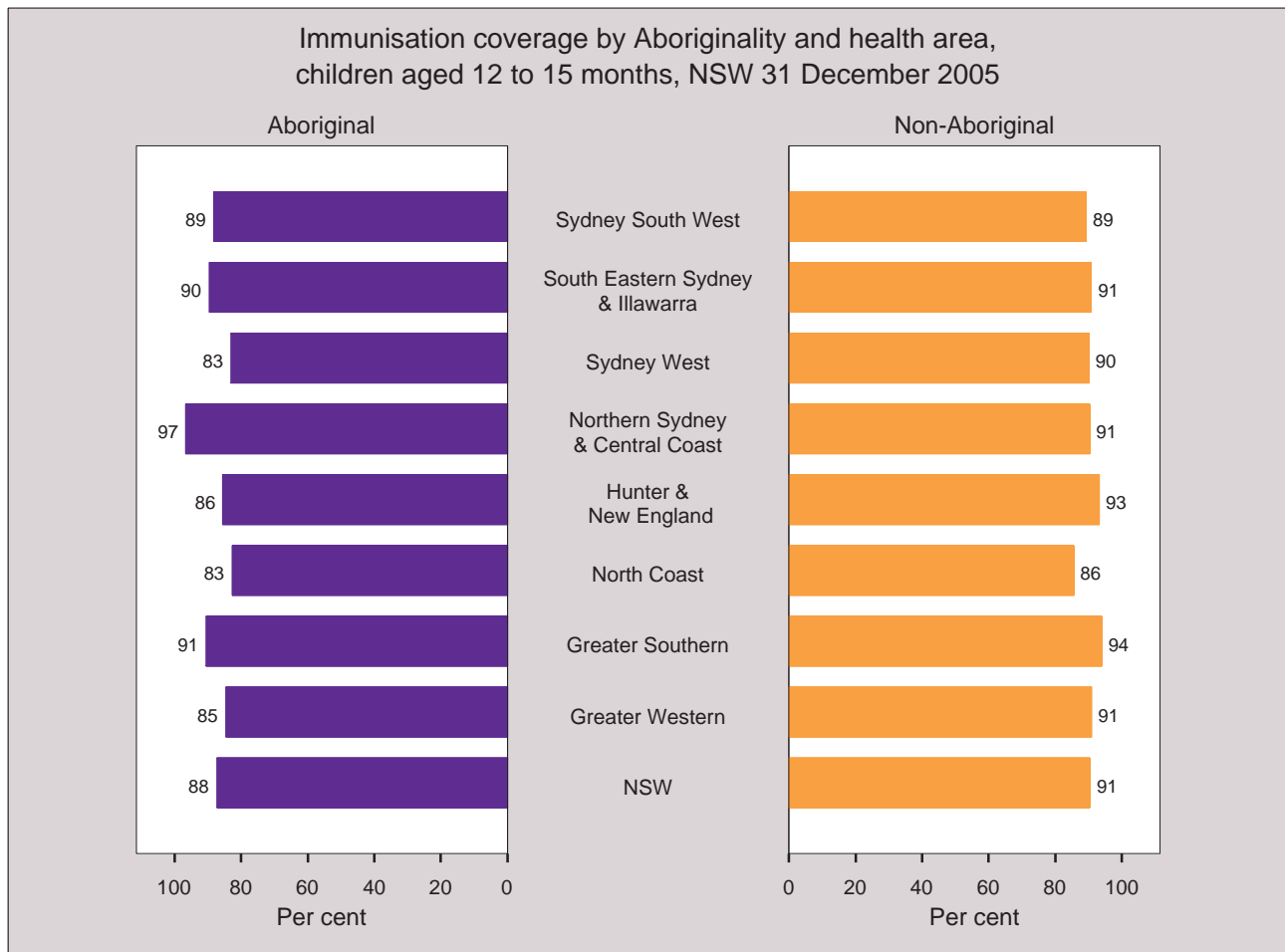
Note: Hospital separations were classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Records relating to acute hospital transfer and statistical discharge were excluded. 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.

- Injury and poisoning are large contributors to morbidity, especially in the first half of the life span (AIHW, 2004). Risk factors for injury include age, sex, alcohol use and socioeconomic status. Nationally, in 2003-04, as in previous years, the most commonly recorded external causes for injury in Aboriginal people resulting in hospitalisation were assault, accidental falls, transport-related injuries and complications of medical or surgical. Hospitalisations recorded for injury due to assault were seven and 31 times higher in Aboriginal males and females respectively (AIHW, 2005).
- In NSW, hospitalisation rates for injury and poisoning among Aboriginal people were consistently higher than the rates in non-Aboriginal people over the period 1993-94 (2,105 and 1,799 per 100,000 population respectively) to 2004-05 (2,861 and 2,017 per 100,000 respectively). The Aboriginal:

non-Aboriginal ratio increased from 1.2:1 to 1.4:1 over this period. Hospitalisation rates were higher in males than in females in both Aboriginal and Non-Aboriginal people, but this difference was less marked in Aboriginal people. In 2004-05, the male:female ratios for hospitalisations for injury and poisoning were 1.2:1 and 1.5:1 for the Aboriginal and non-Aboriginal populations, respectively.

- The *NSW Aboriginal Safety Promotion Strategy* covers all aspects of safety promotion—seeking to reduce harm, to increase the sense of well-being and to provide opportunities for Aboriginal people to take greater control of initiatives aimed at enhancing community safety. Primarily the strategy addresses unintentional injury, intentional self-harm, violence, the need for safe environments and the need to feel safe (NSW Department of Health, 2003).



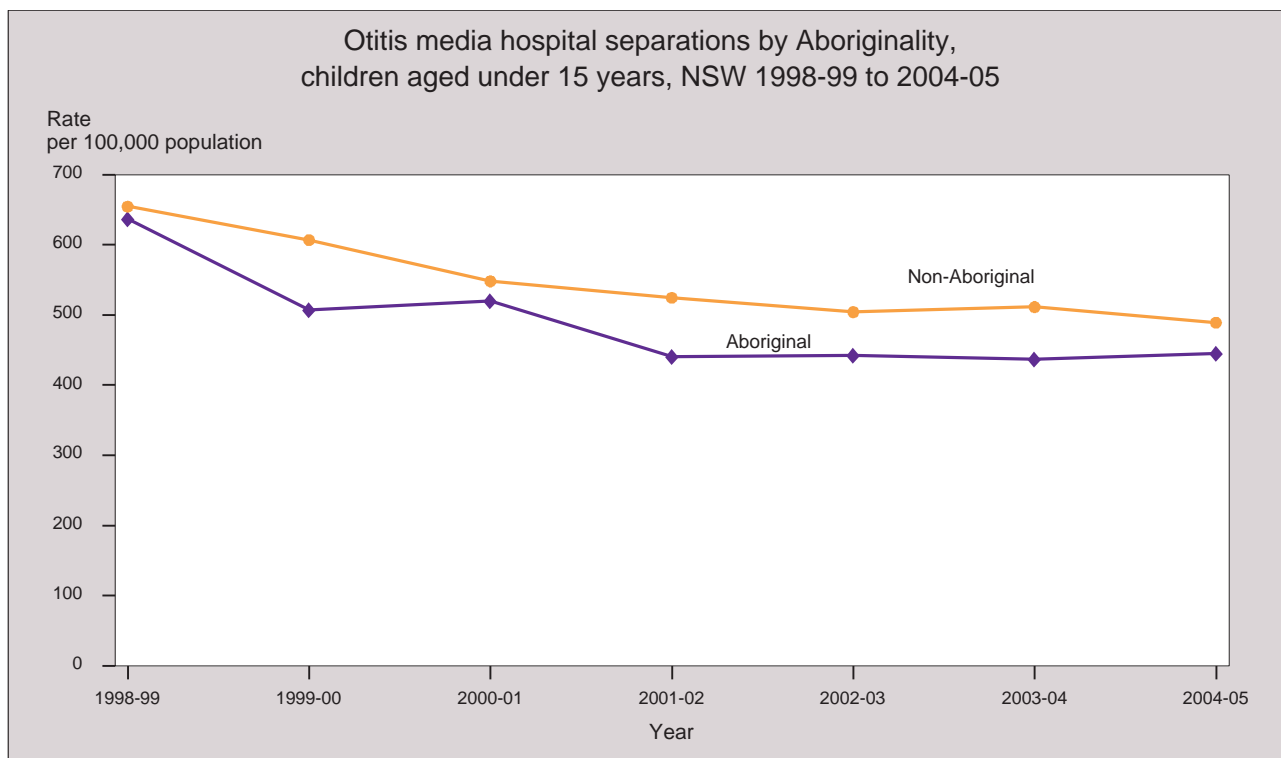
Note: These figures may be less than actual coverage due to under-reporting.

Source: Australian Childhood Immunisation Register. Health Insurance Commission, Perth (unpublished data).

- The Australian Childhood Immunisation Register (ACIR) provides information on the immunisation status of all Australian children under seven years of age. Historically, immunisation coverage data on Aboriginal children was not provided to NSW Health. The release of these data, at Local Government Area level, to NSW Area Health Services in May 2005 has facilitated efforts to increase immunisation coverage for Aboriginal children.
- In NSW, at the end of December 2005, 88% of Aboriginal children aged 12 to less than 15 months were fully immunised, an increase from 86% in 2003. Coverage for non-Aboriginal children was 91%. Comparative national coverage was 86% and 91%. Among children aged 24 to 27 months, 89% of Aboriginal and 92% of non-Aboriginal children were fully immunised at the end of December 2005. Vaccination coverage data indicate that delayed vaccination of Aboriginal and Torres Strait Islander infants may be an important contributor to a higher rate of pertussis among Aboriginal infants (Menzies et al., 2004).
- However, immunisation rates for Aboriginal and non-Aboriginal children vary substantially among health areas. In December 2005, data for the Northern Sydney and Central Coast Area Health Service demonstrated coverage rates of 97% of Aboriginal children aged 12 to 15 months fully immunised, compared to 91% of non-Aboriginal children. However, the Sydney South West Area Health Service obtained a coverage rate of 89% for both Aboriginal and non-Aboriginal children.
- These data may underestimate immunisation coverage by approximately 3%, as a result of children being vaccinated late or service providers failing to forward information to the ACIR.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

Otitis media hospital separations by Aboriginality, children aged under 15 years, NSW 1998-99 to 2004-05

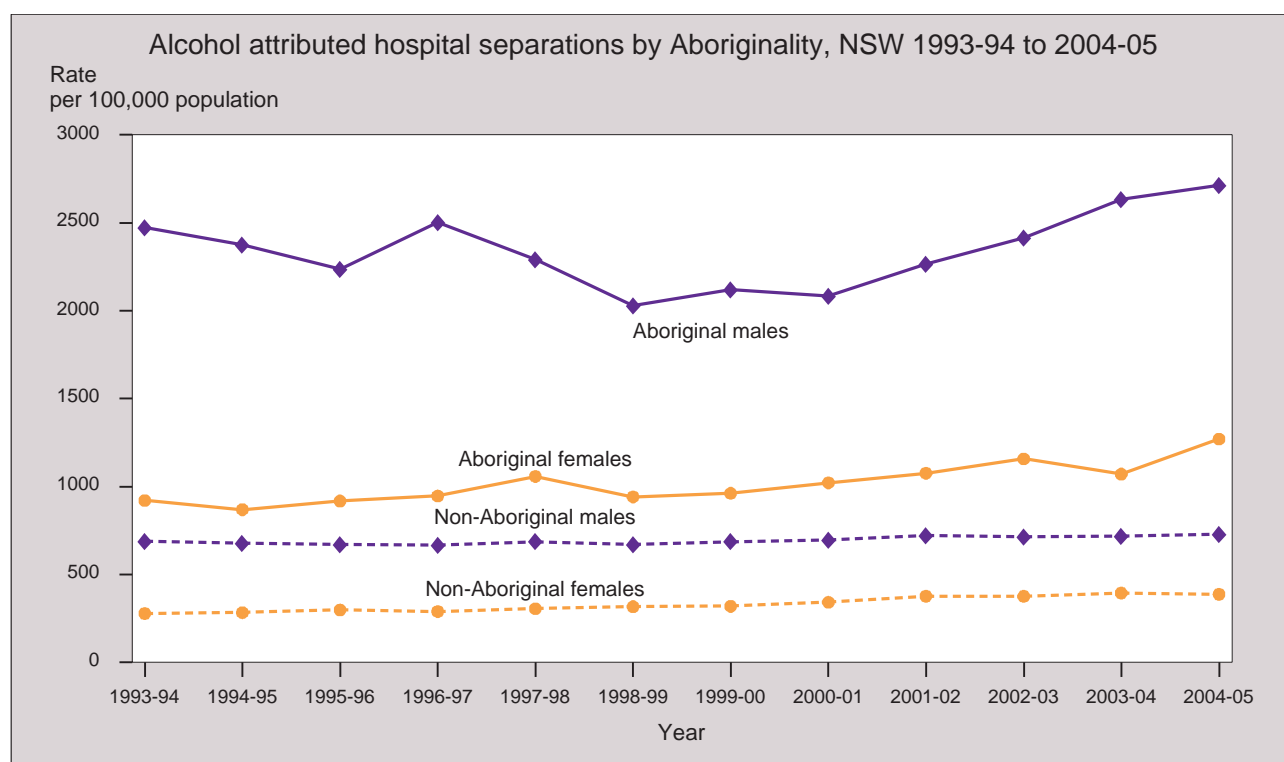


	Aboriginality	Sex	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Aboriginal	Persons	349	282	288	243	243	240	245
	Non-Aboriginal	Persons	8437	7823	7099	6771	6445	6486	6181
	Total	Persons	8786	8105	7387	7014	6688	6726	6425
Rate per 100,000 population	Aboriginal	Persons	636.3	507.4	520.2	440.2	442.6	436.5	444.8
	Non-Aboriginal	Persons	654.6	606.8	548.0	524.5	504.2	511.4	489.0
	Total	Persons	653.5	602.6	546.8	520.9	501.5	508.3	487.0

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 2004-05 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.

- Otitis media (middle ear infection) in children commonly follows an upper respiratory tract infection. Similarly to the common cold, it is difficult to prevent but is readily treated. Repetitive unresolved episodes of otitis media can lead to perforations of the ear drum, hearing loss, and particularly with younger children delayed speech development, reduced learning ability and reduced social interaction.
- The World Health Organisation has stated that prevalence of otitis media greater than 4% in a population indicates a massive public health problem. Otitis media affects up to ten times this proportion of children in many Aboriginal communities in Australia (AIHW, 2005). In NSW, the rate of hospitalisation for otitis media over the period 1998-99 to 2004-05 was lower for Aboriginal than non-Aboriginal children. Although hospitalisation rates are lower, the prevalence of otitis media in Aboriginal communities is significantly higher, with more severe impacts. This may be due to reduced access to treatment services in Aboriginal communities, particularly those in rural and remote localities.
- The NSW Health Otitis Media Screening Program for 0-6 year old Aboriginal children aims to provide 65,000 free otitis media checks between 2004-05 and 2007-08. The program focuses on early detection, treatment and management of otitis media as well as community education and awareness. Over 9,000 individual children were screened in the first year (2004-05) of the program alone. Screening outcome data will be collected from 1 July 2006 to assist in identifying longer term morbidity and problem areas.

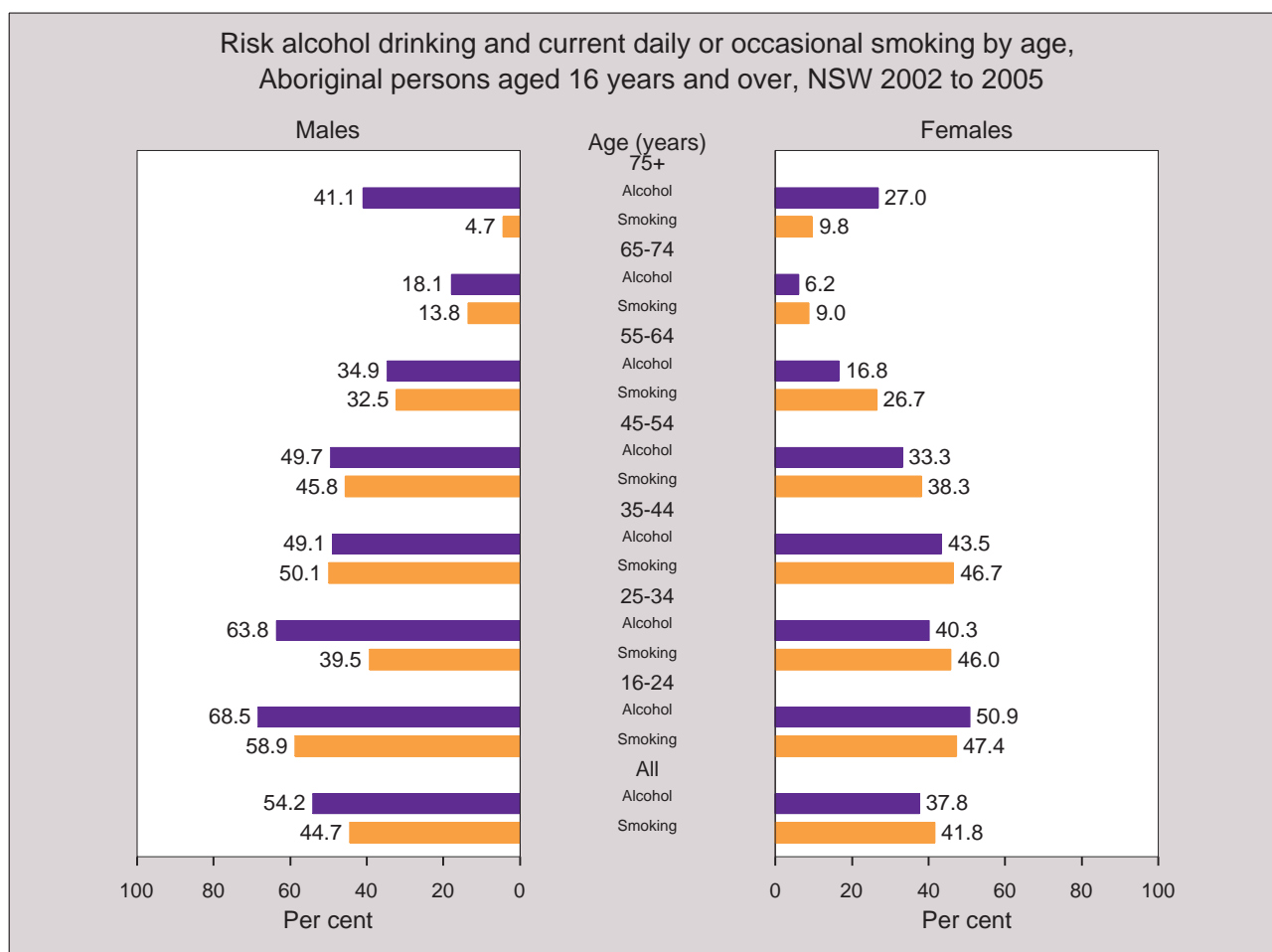


	Aboriginality	Sex	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Aboriginal	Persons	1512	1618	1582	1480	1525	1590	1756	1886	1970	2197
	Non-Aboriginal	Persons	28814	28825	30339	30615	31683	33288	35780	35965	37164	37853
	Total	Persons	30326	30443	31921	32095	33208	34879	37536	37851	39134	40042
Rate per 100,000 population	Aboriginal	Persons	1568.4	1714.4	1660.4	1472.2	1524.7	1529.6	1647.1	1759.4	1811.5	1965.7
	Non-Aboriginal	Persons	480.8	474.0	492.0	489.2	498.5	515.4	545.4	540.7	551.9	554.8
	Total	Persons	498.5	493.3	510.3	505.6	515.3	532.5	564.3	561.3	573.5	579.2

Note: Excludes conditions where low to moderate alcohol consumption has an apparent overall protective effect. Hospital separations attributable to alcohol were calculated using age- and sex-specific aetiologic fractions from AIHW, 2001. Hospital separations were classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Records where Aboriginal status was not stated were classified as non-Aboriginal. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Rates were age-adjusted using the Australian population as at 30 June 2001.

Source: Australian Institute of Health and Welfare (aetiologic fractions), 2001. NSW Department of Health Inpatient Statistics Collection (ISC) data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Diseases caused by risky and high risk drinking include some cancers, heart disease and stroke, liver disease, pancreatitis, gastritis and dementia. Misuse of alcohol is also a significant contributor to assaults, road injuries, domestic violence, suicide, and social disruption (Department of Health and Aged Care, 2001).
- In NSW over the period 2002-2005 combined, 54.2% of Aboriginal males and 37.8% of Aboriginal females aged 16 years and over reported risk alcohol drinking (37.2% of males and 27.3% of females in the general population) (CER, 2006a, 2006b). Risk alcohol drinking was more frequently reported by Aboriginal adults across all age groups, but this difference was especially marked in young adults aged 16-24 years (CER, 2006a).
- In the period 1993-94 to 2004-05 in NSW, the rate of hospitalisations attributable to alcohol was consistently around four times higher in Aboriginal compared to non-Aboriginal people. The male:female ratios for alcohol-related hospitalisations were 2.1:1 and 1.9:1 for the Aboriginal and non-Aboriginal populations, respectively.
- The Outcomes of the NSW Summit on Alcohol Abuse: Changing the Culture of Alcohol Use in NSW set out the approach of the NSW Government to dealing with alcohol abuse. This has included a set of recommendations derived from a forum of Aboriginal community leaders entitled 'Talking about grog' planned for implementation over four years from 2003 (NSW Government, 2003).



Note: Risk alcohol drinking by age estimates are based on 894 respondents in NSW. For this indicator 24 (2.61%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those people who meet 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. Current daily or occasional smoking by age estimates are based on 930 respondents in NSW. For this indicator 0 (0%) were 'not stated' (Don't know or Refused) in NSW. The indicator includes those who smoked daily or occasionally.

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

- Smoking is a leading preventable cause of mortality and morbidity in New South Wales. It is the main cause, or a significant cause, of many diseases including cancer and cardiovascular disease.
- In NSW over the period 2002 to 2005 combined, 44.7% of Aboriginal males and 41.8% of Aboriginal females aged 16 years and over reported they were current smokers (22.7% for males and 17.6% for females in the general population) (CER, 2006a, 2006b).
- Alcohol affects health in a number of ways, including: acute physical effects, such as intoxication and alcohol overdose; chronic physical effects, such as cirrhosis of the liver, heart disease, brain damage, and memory loss; and the effects of alcohol consumption on the health of others, such as road trauma caused by drink-driving and alcohol-related violence (English et al., 1995).
- In NSW over the period 2002 to 2005 combined, just under one-half (45.9%) of Aboriginal adults engaged in risk alcohol drinking, as defined by the NHMRC Australian Alcohol Guidelines. A significantly greater proportion of males (54.2%) than females (37.8%) engaged in risk alcohol drinking (CER, 2006a). This compares with general population figures for 2005 of 37.2% for males and 27.3% for females (CER, 2006b). Reported risk alcohol drinking was more prevalent in Aboriginal adults than in the general population across all age groups, but this difference was especially marked in young adults aged 16–24 years of both sexes. There was some geographical variation in risk drinking among Aboriginal adults, with a greater proportion of urban residents (50.0%) than rural residents (45.1%) engaging in risk alcohol drinking (CER, 2006a).

For more information

Australian Bureau of Statistics and Australian Institute of Health and Welfare. *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples*. ABS Catalogue no. 4704.0. Canberra: ABS, 2003.

Australian Bureau of Statistics and Australian Institute of Health and Welfare. *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples*. ABS Catalogue no. 4704.0. Canberra: ABS, 2005.

Australian Bureau of Statistics. *Causes of Death, Australia 2004*. ABS Catalogue no. 3303.0. Canberra: ABS, 2006. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3303.02004?OpenDocument.

Australian Bureau of Statistics. *Deaths, Australia 2004*. ABS Catalogue no. 3302.0. Canberra: ABS, 2005. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02004?OpenDocument.

Australian Bureau of Statistics. *Experimental estimates and projections, Indigenous Australians. 30 June 1991 to 30 June 2009*. Catalogue no. 3238.0. Canberra: ABS, 2004.

Australian Bureau of Statistics. *National Aboriginal and Torres Strait Islander health survey 2004-05*. Catalogue no. 4715.0.55.005. Canberra: ABS, 2006. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/4715.0.55.005?OpenDocument>.

Australian Bureau of Statistics. *Corrective Services, September Quarter 2003*. Catalogue no. 4512.0. Canberra: ABS, 2003.

Australian Bureau of Statistics. *Indigenous profile. New South Wales*. Catalogue no. 2002.0. Canberra: ABS, 2002. Available at: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyCatalogue/B144F2B755B76FB9CA2570B90016B93D?OpenDocument>.

Australian Bureau of Statistics. *Measures of Australia's progress*. ABS Catalogue no. 1370.0. Canberra: ABS, 2006.

Australian Bureau of Statistics. *National Aboriginal and Torres Strait Islander Health Survey: New South Wales 2004-05*. ABS Cat. No. 4715.1.55.005. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4715.1.55.0052004-05?OpenDocument>.

Australian Bureau of Statistics. *Population Characteristics, Aboriginal and Torres Strait Islander Australians, New South Wales*. Catalogue no. 4713.1.55.001. Canberra: ABS, 2003. Available at: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyCatalogue/E7D2C93A98D3611BCA2570BF007B06B8?OpenDocument>.

Australian Health Ministers' Advisory Committee. *Oral health of Australians: National planning for oral health improvement: final report* Adelaide: South Australian Department of Human Services, 2001.

Australian Institute of Health and Welfare at www.aihw.gov.au.

Australian Institute of Health and Welfare. *Australia's health 2004*. Canberra: AIHW, 2004. Available at: www.aihw.gov.au/publications/index.cfm/title/10014.

Australian Institute of Health and Welfare. *Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2005*. The Aboriginal and Torres Strait Islander Health Series. AIHW Catalogue no. IHW-11. Canberra: AIHW, 2005. Available at <http://www.aihw.gov.au/publications/ihw/hwaatsip05/hwaatsip05.pdf>.

Australian Institute of Health and Welfare. *Alcohol and other drug treatment services in Australia: findings from the National Minimum Data Set 2004-05*. Bulletin no. 44. AIHW cat. no. AUS 81. Canberra: AIHW, 2006.

Australian Institute of Health and Welfare. *Alcohol and other drug treatment services in New South Wales 2004-05: Findings from the national minimum data set*. Canberra: AIHW, 2006. Available at <http://www.aihw.gov.au/publications/index.cfm/title/10331>.

Australian Institute of Health and Welfare. *Australian Hospital Statistics 2004-05. Health Services Series No. 26*. Canberra: Australian Institute of Health and Welfare, 2006. Available at <http://www.aihw.gov.au/publications/index.cfm/title/10305>.

Australian Institute of Health and Welfare. *Chronic kidney disease in Australia, 2005*. AIHW Cat. No. PHE 68. Canberra: AIHW, 2005.

- Australian Institute of Health and Welfare. *Expenditures on health for Aboriginal and Torres Strait Islander peoples, 2001-02*. Health and Welfare's Expenditure Series no. 23 AIHW cat. no. HWE 30. Canberra: AIHW, 2005.
- Australian Institute of Health and Welfare. *National summary of the 2001 and 2002 jurisdictional reports against the Aboriginal Torres Strait Islander health performance indicators*. Canberra: AIHW, 2004.
- Butler T and Milner L. *The 2001 Inmate Health Survey*. Sydney, NSW Corrections Health Service, 2003.
- Butler T. *Preliminary findings of the NSW Inmate Health Survey*. Sydney: NSW Corrections Health Service, 1997.
- Centre for Epidemiology and Research. *2005 Report on adult health in New South Wales*. Sydney: NSW Department of Health, 2006b. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.
- Centre for Epidemiology and Research. *2002-2005 Report on Adult Aboriginal Health from the New South Wales Population Health Survey*. Sydney: NSW Department of Health, 2006a. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.
- Centre for Epidemiology and Research. Communicable Diseases Report, NSW, for May-June 2004. *N S W Public Health Bull* 2004; 15(7-8).
- Centre for Epidemiology and Research. New South Wales Adult Health Survey 2002. *N S W Public Health Bull* 2003; 14(S-4). Available at www.health.nsw.gov.au/public-health/phbsup/adult_health_survey.pdf.
- Centre for Epidemiology and Research. New South Wales Mothers and Babies 2004. *N S W Public Health Bull* 2005; 16(S-4). Available at www.health.nsw.gov.au/public-health/phbsup/mdc04.html.
- Condon, J. *Cancer, Health Services and Indigenous Australians. Aboriginal and Torres Strait Islander Primary Health Care Review: Consultant Report No. 5*. Canberra: Department of Health and Ageing, 2004.
- Corben S. *NSW Inmate Census 2001: Summary of characteristics*. Statistical Publication no. 23. Sydney: NSW Department of Corrective Services, 2002.
- Corben S. *NSW Inmate Census 2003: Summary of characteristics*. Statistical Publication no. 25. Sydney: NSW Department of Corrective Services, 2004.
- Department of Health and Aged Care. *National Alcohol Strategy. A Plan for Action 2001 to 2003-04*. Canberra: Department of Health and Aged Care, 2001.
- English DR, Holman CDJ, Milne MG, et al. *The quantification of drug caused morbidity and mortality in Australia*. Canberra: Commonwealth Department of Human Services and Health, 1995.
- Laws PJ, Sullivan EA. *Australia's mothers and babies 2001*. Sydney: AIHW National Perinatal Statistics Unit, 2004.
- Mathers C, Vos T, Stevenson C. *The burden of disease and injury in Australia*. AIHW Catalogue no. PHE 17. Canberra: AIHW, 1999. Available at www.aihw.gov.au/publications/index.cfm/title/5180.
- Menzies R, McIntyre P, Beard F. *Communicable Diseases Intelligence: Vaccine preventable diseases and vaccination coverage in Aboriginal and Torres Strait Islander People, Australia, 1999 to 2002*. Canberra: Department of Health and Ageing, 2004.
- Morris P. A systematic review of clinical research addressing the prevalence, aetiology, diagnosis, prognosis and therapy of Otitis Media in Australian Aboriginal children. *J Paediatr Child Health* 1998; 34: 487-497.
- NSW Department of Aboriginal Affairs. *Introducing Indigenous Australia. Background briefing*. Sydney: DAA, 2004. Available at www.daa.nsw.gov.au.
- NSW Department of Aboriginal Affairs. *NSW Aboriginal Affairs Plan 2003-2012. Two ways together. Partnerships: A new way of doing business with Aboriginal people*. Sydney: DAA, 2004.
- NSW Department of Health Working Party on Ear Disease in Aboriginal Children. Guidelines on the prevention and control of otitis media and its sequelae in Aboriginal children. *Med J Aust* 1996; 164: S1-S17.
- NSW Department of Health. *Aboriginal Safety Promotion Strategy*. Sydney: NSW Department of Health, 2003. Available at: www.health.nsw.gov.au/pubs/a/pdf/ab_safety.pdf.
- NSW Department of Health. *Aboriginal Communities Development Program - Housing for health*. Sydney:

- NSW Department of Health, 2004. Available at www.health.nsw.gov.au/public-health/ehb/aborig/hfh.html.
- NSW Department of Health. *Evaluation of the NSW Aboriginal Vascular Health Program*. Sydney: NSW Department of Health, 2004. Available at www.health.nsw.gov.au/pubs/2004/ab_evaluation.html.
- NSW Department of Health. *NSW Aboriginal Chronic Conditions Area Health Service Standards*. Sydney: NSW Department of Health 2005. Available at http://www.health.nsw.gov.au/policies/pd/2005/pdf/PD2005_588.pdf.
- NSW Department of Health. *NSW Aboriginal Chronic Disease Service Framework*. Sydney, NSW Department of Health (in press). Available at www.health.nsw.gov.au/sd/igfs/hp/avhp/CDSF.pdf.
- NSW Department of Health. *NSW Aboriginal Maternal and Infant Health Strategy Evaluation. Final report 2005*. Sydney: NSW Department of Health, 2006. Available at http://www.health.nsw.gov.au/pubs/2006/evaluation_maternal.html.
- NSW Department of Health. *NSW Otitis Media Strategic Plan for Aboriginal Children*. Sydney: NSW Department of Health, 2000.
- NSW Department of Health. *The NSW Aboriginal perinatal health report*. Sydney: NSW Department of Health, 2003.
- NSW Government. *NSW summit on alcohol abuse. Talking about grog. Recommendations*. Sydney: NSW Government, 2003.
- National Advisory Committee on Oral Health. *Healthy Mouths Healthy Lives Australia's National Oral Health Plan 2004-2013*. South Australia, South Australian Department of Health, 2004.
- National Centre for Aboriginal and Torres Strait Islander Statistics (NCATSIS) at www.abs.gov.au.
- National Health Performance Committee, 2004. *National Report on Health Sector Performance Indicators 2003*. Canberra: Australian Institute of Health and Welfare, 2004.
- National Health and Medical Research Council. *Australian Alcohol Guidelines: Health Risks and Benefits*. Canberra: NHMRC, 2001. Available at: www.nhmrc.gov.au/publications/synopses/ds9syn.htm.
- National Health and Medical Research Council. *The Australian Immunisation Handbook. 8th edition*. Canberra: NHMRC, 2003.
- National Health and Medical Research Council. *Clinical practice guidelines: care around preterm birth*. Canberra: NHMRC, 1997.
- National communicable disease data are published in *Communicable Disease Intelligence*. Available at [http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Communicable+Diseases+Intelligence+\(CDI\)-1](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Communicable+Diseases+Intelligence+(CDI)-1).
- Office of Aboriginal and Torres Strait Islander Health (OATSIH), Department of Health and Ageing at www.health.gov.au/internet/wcms/publishing.nsf/Content/Office+for+Aboriginal+and+Torres+Strait+Islander+Health-11p.
- Standing Committee on Aboriginal and Torres Strait Islander Health and Statistical Information Management Committee. *National summary of the 2003 and 2004 jurisdictional reports against the Aboriginal Torres Strait Islander health performance indicators*. Cat no. IHW 16. Canberra: AIHW, 2006.
- The *NSW Public Health Bulletin* includes monthly reports of notifiable communicable diseases. Available at www.health.nsw.gov.au/public-health/phb/phb.html.
- The Australian Indigenous Health *InfoNet* at www.healthinfonet.ecu.edu.au.
- Trewin D, Madden R. *The Health and welfare of Australia's Aboriginal and Torres Strait Islander peoples 2005*. ABS Catalogue no. 4704.0 and AIHW Catalogue No. AIHW14. Canberra: AIHW and ABS, 2005. Available at www.aihw.gov.au/publications/iHW/hwaatsip05/hwaatsip05.pdf.
- Victorian Government Department of Human Services. *The Victorian ambulatory care sensitive conditions study: Opportunities for Targeting Public Health and Health Services Intervention*. Melbourne: VGDHS, 2002.

Country of birth

- Almost 1 in 3 NSW residents was born overseas and around 1 in 5 speaks a language other than English at home. Resident populations born in South Africa, India, China, Korea, New Zealand, and Fiji all grew by 20% or more between 1996 and 2001, as did populations speaking Hindi, Indonesian, Korean, Chinese, Serbian and Vietnamese languages at home.
- In the financial year 2004–05, 98,548 new settlers arrived in NSW under the Migration and Humanitarian programs. China (16.7%) was the largest contributor, followed by the United Kingdom (12.1%), India (9.8%) and Indonesia (6.3%).
- In the same year, 4,469 settlers arrived in NSW under the Humanitarian Program. Sudan (1,440) contributed the greatest number, followed by Iraq (980), Afghanistan (402), Liberia (251), Sierra Leone (243) and Iran (228). Refugees of African background arriving during that period had major health needs.
- 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:
 - 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, countries of the former Yugoslavia and India);
 - have high rates of self-reported overweight and obesity (males and females born in Italy; females born in Greece);
 - have high rates of 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);
 - have high rates of hospitalisation for coronary heart disease (Lebanon, Fiji and India) and cardiac revascularisation procedures (Fiji, Lebanon, India and Greece);
 - have high rates of tuberculosis (India, the Philippines, Vietnam, China, Hong Kong, Korea and Fiji);
 - have high rates of self-reported psychological distress (males and females born in Lebanon and Greece; females born in Italy).
- Compared with people born in many overseas countries, people born in Australia:
 - have high age-adjusted death rates from all causes combined;
 - have high self-reported overweight and obesity and risk alcohol drinking rates;
 - are more likely to have premature babies.

In this chapter

- Fluency in English
- Category of entrants
- Humanitarian entrants
- Premature births and ante-natal care
- Deaths from all causes
- Risk alcohol drinking
- Smoking
- Overweight and obesity
- Diabetes
- Heart disease
- Cancer
- Tuberculosis
- Psychological distress

Introduction

Nearly one in three NSW residents was born overseas and around one in five 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, initially from Eastern Europe, then from the United Kingdom and Northern Europe, Greece, Italy, and Yugoslavia. These were 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 (the difference between permanent and long-term arrivals and permanent and long-term departures) into Australia in the 2004–05 financial year was 110,095, of which NSW received the largest share (33.3%), closely followed by Victoria (29.4%) (ABS, 2006).

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.

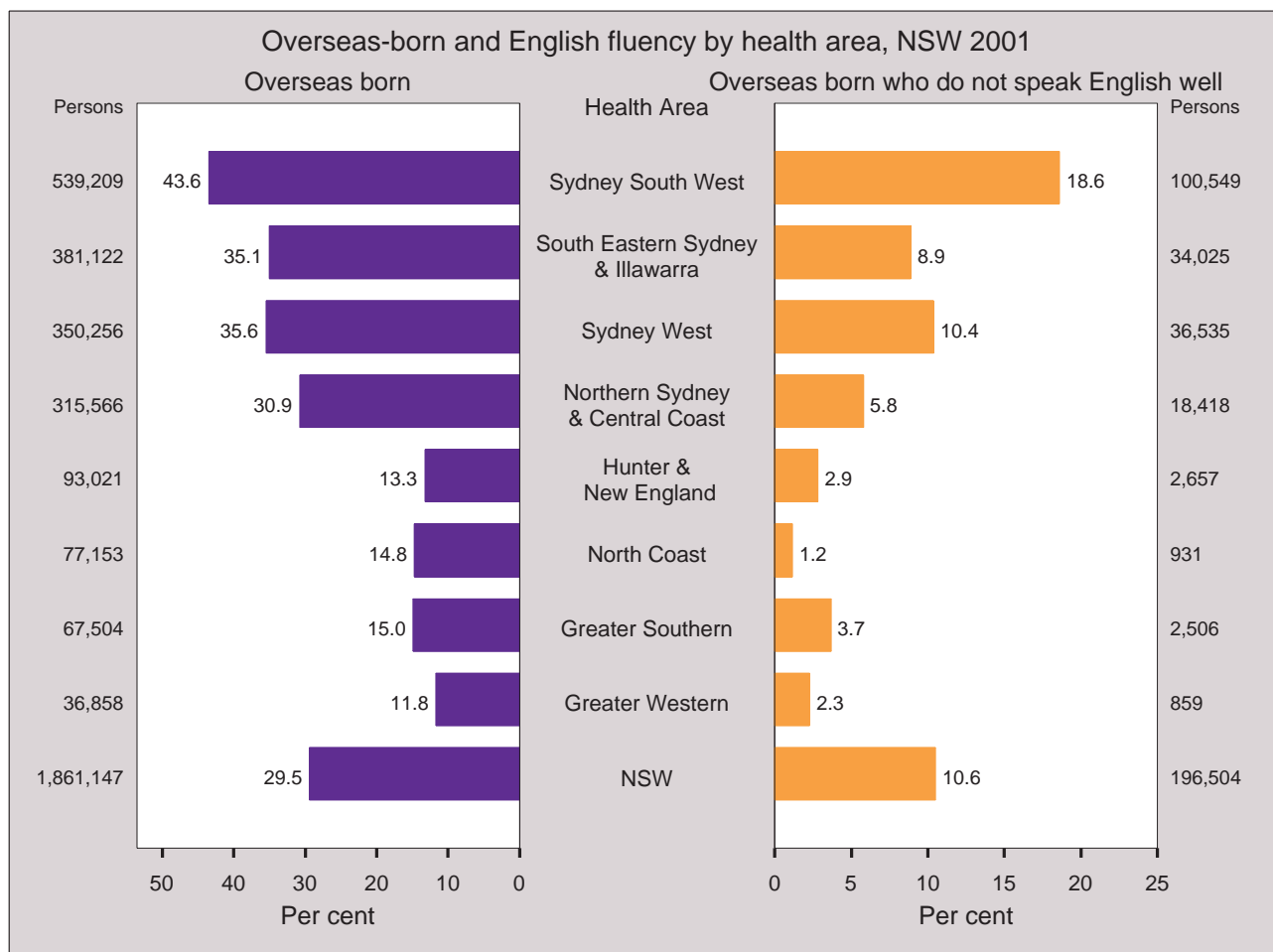
The health experiences and needs of people of refugee background are very different from those of other overseas-born residents of NSW. Experiences of persecution, psychological trauma, disrupted access to health care and other adverse effects of conflict contribute to their health needs. Health issues 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.

In 1999 the NSW Department of Health published the document *Strategic Directions for Refugee Health Care in NSW*. This provided a framework to guide the NSW health system in developing health services appropriate to the needs of refugees.

In addition to Area and state-wide multicultural health services, there are two state-wide health services, each with a different focus, which specifically target persons of refugee background in NSW. The NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS) was established in 1988. It provides a holistic range of professional services to facilitate the healing process for refugees who have been exposed to torture and trauma. The NSW Refugee Health Service was established by the NSW Department of Health in 1999 to help protect and promote the health of refugees. The service works in collaboration with Area Health Services, statewide multicultural health services and other agencies to improve access to health care for refugees and to foster more appropriate health care.

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

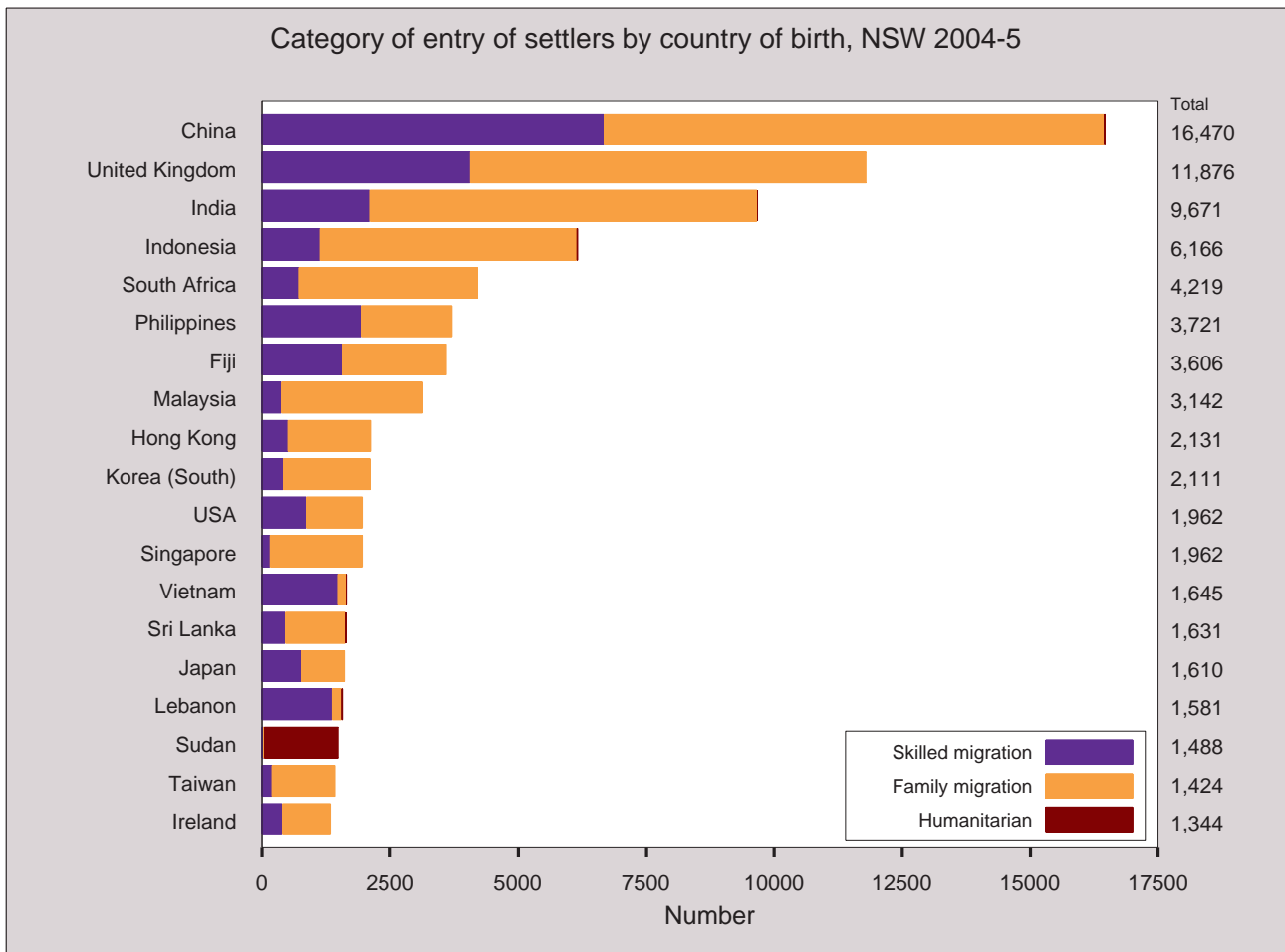
More information on the methods used for analysing data is given in the Methods section.



Note: 39.0% of NSW residents who were born overseas spoke only English at home. Data shown are persons who did not speak only English at home, and who speak English “not well” or “not at all”. 14.1% of overseas-born residents did not state either the language spoken at home or proficiency in English.

Source: ABS 2001 Census Basic Community Profile (HOIST). Centre for Epidemiology and Surveillance, NSW Department of Health.

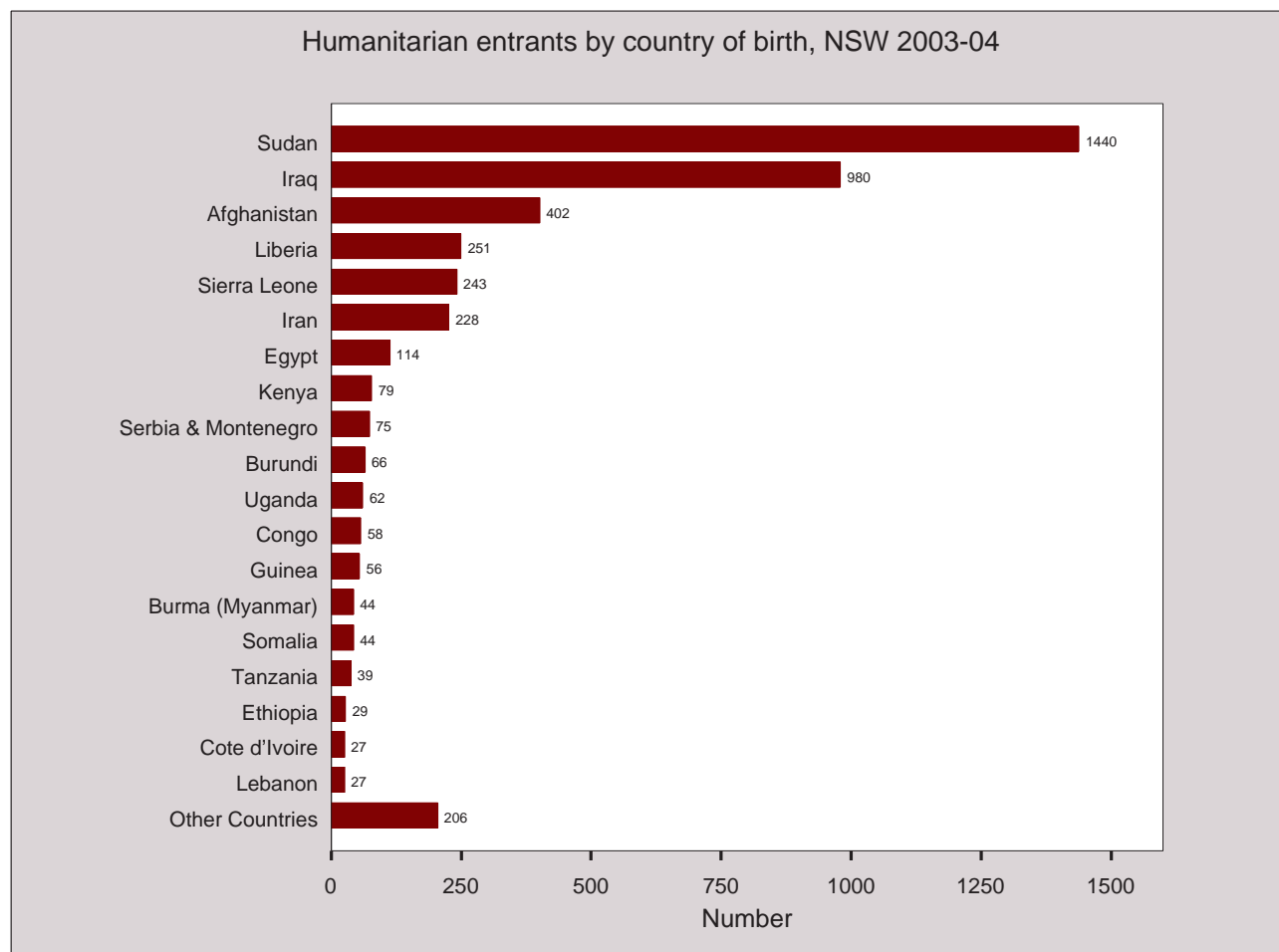
- In 2001, 30.1% of the NSW population was born overseas. This proportion was greater in urban than in rural areas of the state, and ranged from 11.8% in the Greater Western Area Health Service to 43.6% in the Sydney South West Area Health Service. Around one-third or more of residents of the Sydney South West, South Eastern Sydney and Illawarra, Sydney West and Northern Sydney and Central Coast Area Health Services were born overseas, and these four areas together accounted for 85% of all overseas-born residents of the state.
- A total of 196,504 overseas-born NSW residents (10.6% of all overseas-born residents) reported that they did not speak English well, or did not speak English at all. English language fluency of overseas-born residents varied among health areas, reflecting the settlement patterns of country-of-birth groups. Rates of limited English language fluency varied from 18.6% of all overseas-born people in the Sydney South West Area Health Service (100,549 residents), to 1.2% of all overseas-born resident of the North Coast Area Health Service (931 residents).



Note: These data relate to permanent migrants arriving under the Humanitarian Program or under the Skilled, Family or Special Eligibility streams of the Migration Program.

Source: The Department of Immigration and Multicultural Affairs (DIMA) Settlement database.

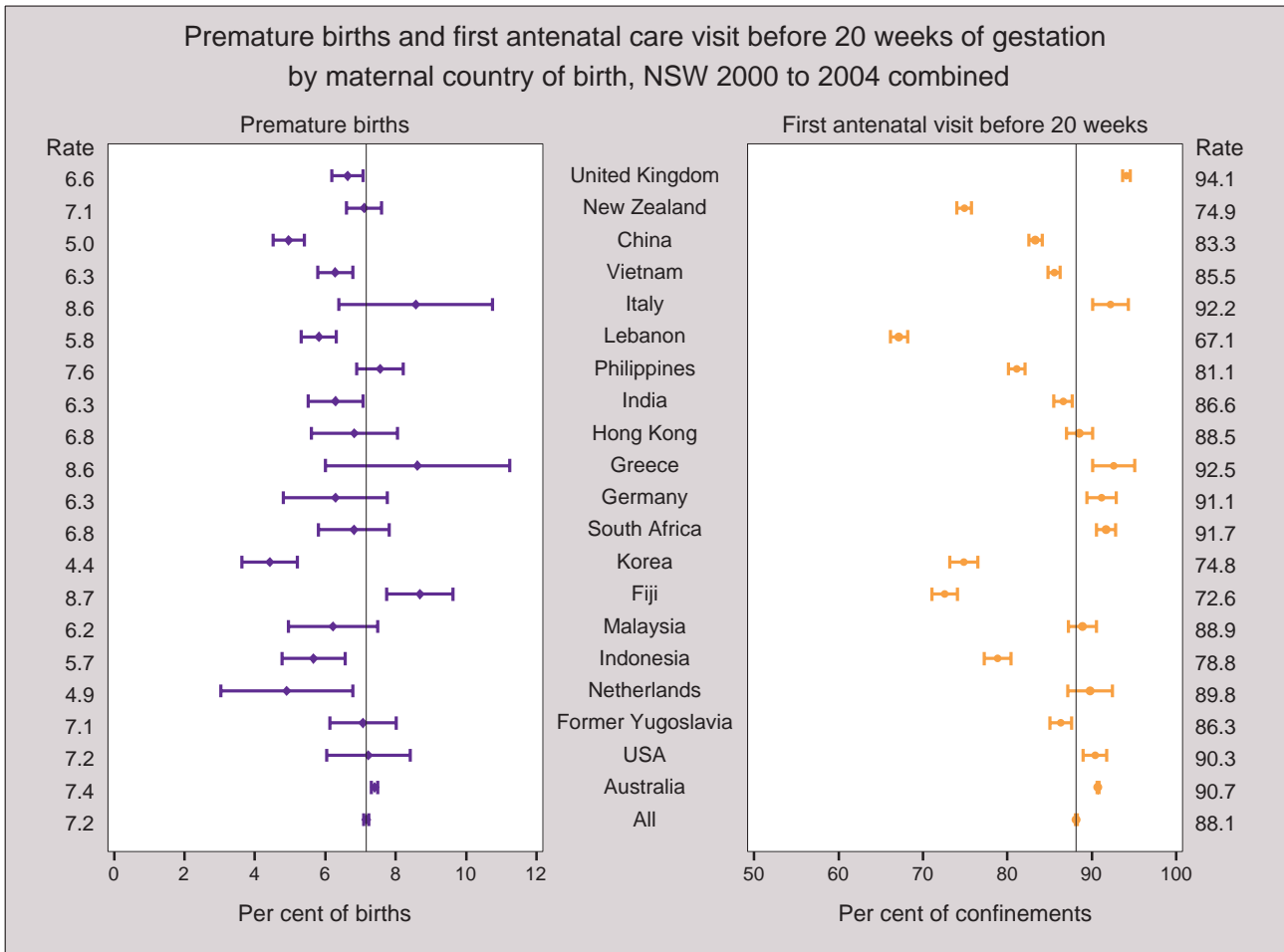
- Settlers comprise people arriving in Australia who hold permanent visas, New Zealand citizens who indicate an intention to settle, and certain other people who are eligible to settle (eg. overseas-born children of Australian citizens). Most settlers arrive under the Migration and Humanitarian programs operated by the Australian Government Department of Immigration and Multicultural Affairs.
- The Migration Program has several permanent visa sub-classes. The Family stream comprises migrants who are sponsored by a relative who is an Australian citizen or permanent resident. The Skill stream includes migrants with occupational skills or special talents for which there is demand in Australia. The Humanitarian Program includes several categories of migrants who are subject to persecution, discrimination or gross violation of human rights in their home country, or who are otherwise determined to be in real need.
- In the financial year 2004–05, a total of 98,548 new settlers arrived in NSW under the Migration and Humanitarian programs. China (16.7%) was the largest contributor of settlers, followed by the United Kingdom (12.1%), India (9.8%) and Indonesia (6.3%).
- Around 60% of these settlers arrived under the Skilled migration stream, 35% under the Family stream, and 4.5% under the Humanitarian Program. Family migrants predominated among settlers born in some countries with long histories of large-scale migration to Australia, such as Vietnam and Lebanon, while skilled migrants predominated among settlers born in most other countries, in particular Singapore, Malaysia, Taiwan, South Africa and Indonesia.
- In 2004–05, 4,469 settlers arrived in NSW under the Humanitarian Program, including 1,440 (32.2%) from Sudan. More information about humanitarian entrants, and the health of people from refugee backgrounds, is given in the Humanitarian entrants page in this chapter.



Note: These data relate to permanent migrants arriving under the Humanitarian Program, where the Australian Government sets a quota of places each year for people from different regions of the world. Birth countries listed as Egypt or Lebanon most likely represent children born to refugees in exile in those countries.

Source: The Department of Immigration and Multicultural Affairs (DIMA) Settlement database.

- New South Wales is home to a number of different categories of people who are refugees or have refugee-like backgrounds. These include migrants under the Department of Immigration and Multicultural Affairs' Humanitarian Program, asylum seekers, and Temporary Protection Visa holders.
- The Humanitarian migration program caters for migrants who are subject to persecution, discrimination or gross violation of human rights in their home country, or who are otherwise determined to be in real need. Country of origin profiles shift each year depending on international conflicts, United Nations requests and Australian government decisions on intake. Entrants under the Humanitarian Program are permanent residents and have full access to Medicare. As with other migrants, health screening done overseas will have largely excluded people with active tuberculosis, HIV infection and conditions likely to exceed a certain threshold of health expenditure.
- Certain health conditions are more prevalent in people of refugee background. The Longitudinal Survey of Immigrants to Australia (Vanden-Heuvel and Wooden, 1999) showed that, compared with other migrants, humanitarian entrants were more likely to rate their own health as less than good, and to have visited health care providers in the previous four weeks. A relatively greater proportion of humanitarian entrants suffered from a minor mental health disorder.
- In the financial year 2004–05, 4,469 settlers arrived in NSW under the Humanitarian Program. Sudan (1,440) contributed the greatest number of humanitarian entrants, followed by Iraq (980), Afghanistan (402), Liberia (251), Sierra Leone (243) and Iran (228). Data from the NSW Refugee Health Service indicate that refugees of African background arriving during that period had major health needs, including high prevalence of malaria, schistosomiasis, skin and scalp infections, eye problems, musculoskeletal conditions and gastrointestinal problems.

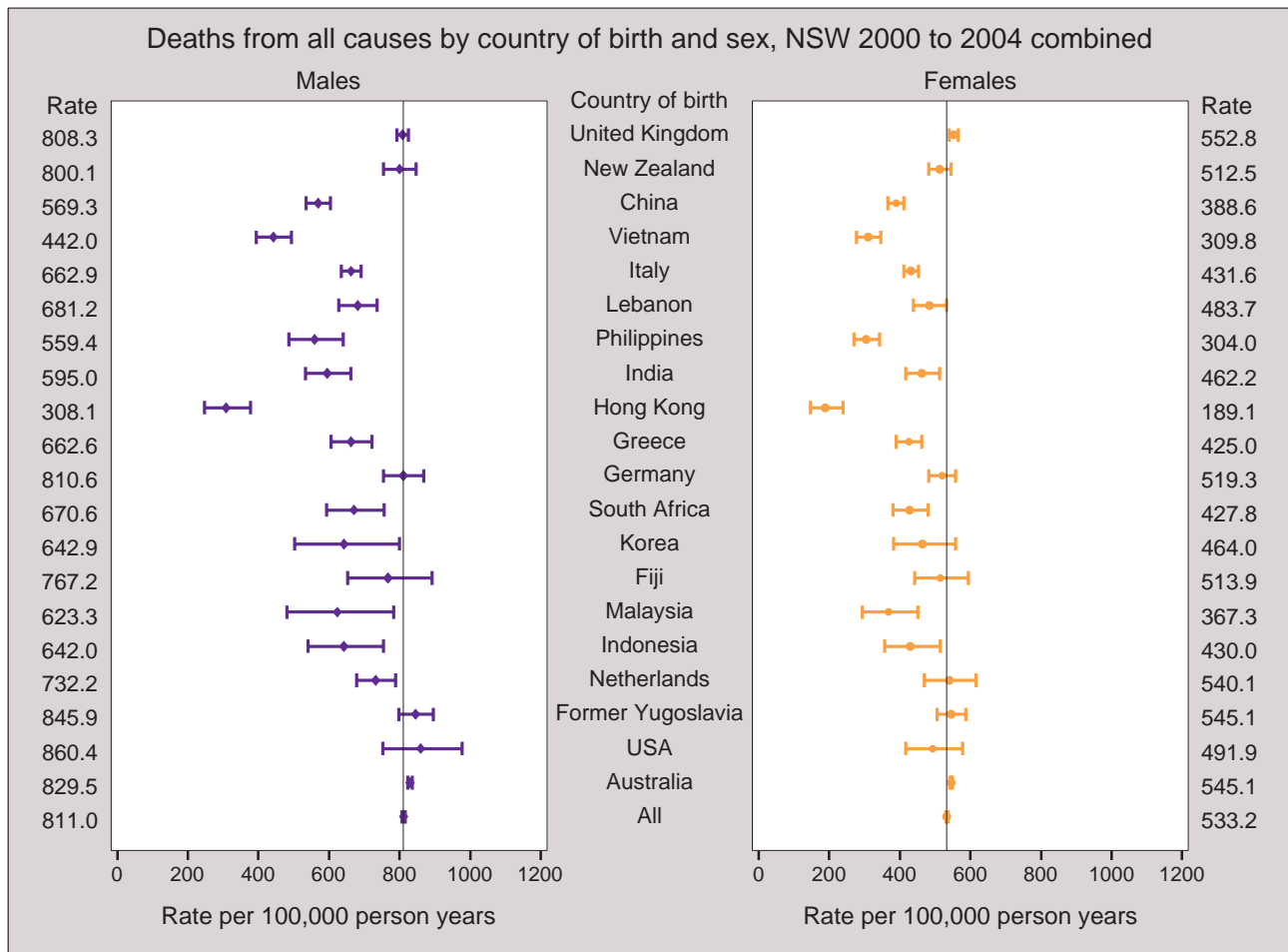


Note: Premature birth: less than 37 weeks gestation. Rates of prematurity include stillbirths and livebirths of at least 20 weeks gestation or 400 grams birth weight.

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

- A premature or preterm birth is a birth occurring before 37 weeks gestation. Preterm babies are more likely to die than term babies, and to suffer complications such as respiratory conditions, infection, and intra-cerebral haemorrhage.
- Over the 5-year period 2000 to 2004, 7.2% of all NSW babies were born before 37 weeks gestation. Rates of prematurity for most overseas-born groups were lower than the state average. Babies of mothers born in Fiji (8.9%) and Australia (7.4%) were more likely than the state average to be born prematurely.
- Early antenatal care allows the early detection and management of problems during pregnancy, and is associated with better outcomes for both mothers and babies.
- Over the 5-year period 2000 to 2004, 88.1% of all NSW mothers had their first antenatal visit before 20 weeks gestation. This figure varied according to mothers' country of birth, with mothers born in Lebanon (67.1%), Fiji (72.6%), Korea (74.8%), New Zealand (74.9%), Indonesia (78.8%), the Philippines (81.1%), China (83.3%), Vietnam (85.5%), countries of the former Yugoslavia (86.3%) and India (86.6%) being less likely than the state average to have an antenatal visit in the first half of pregnancy.

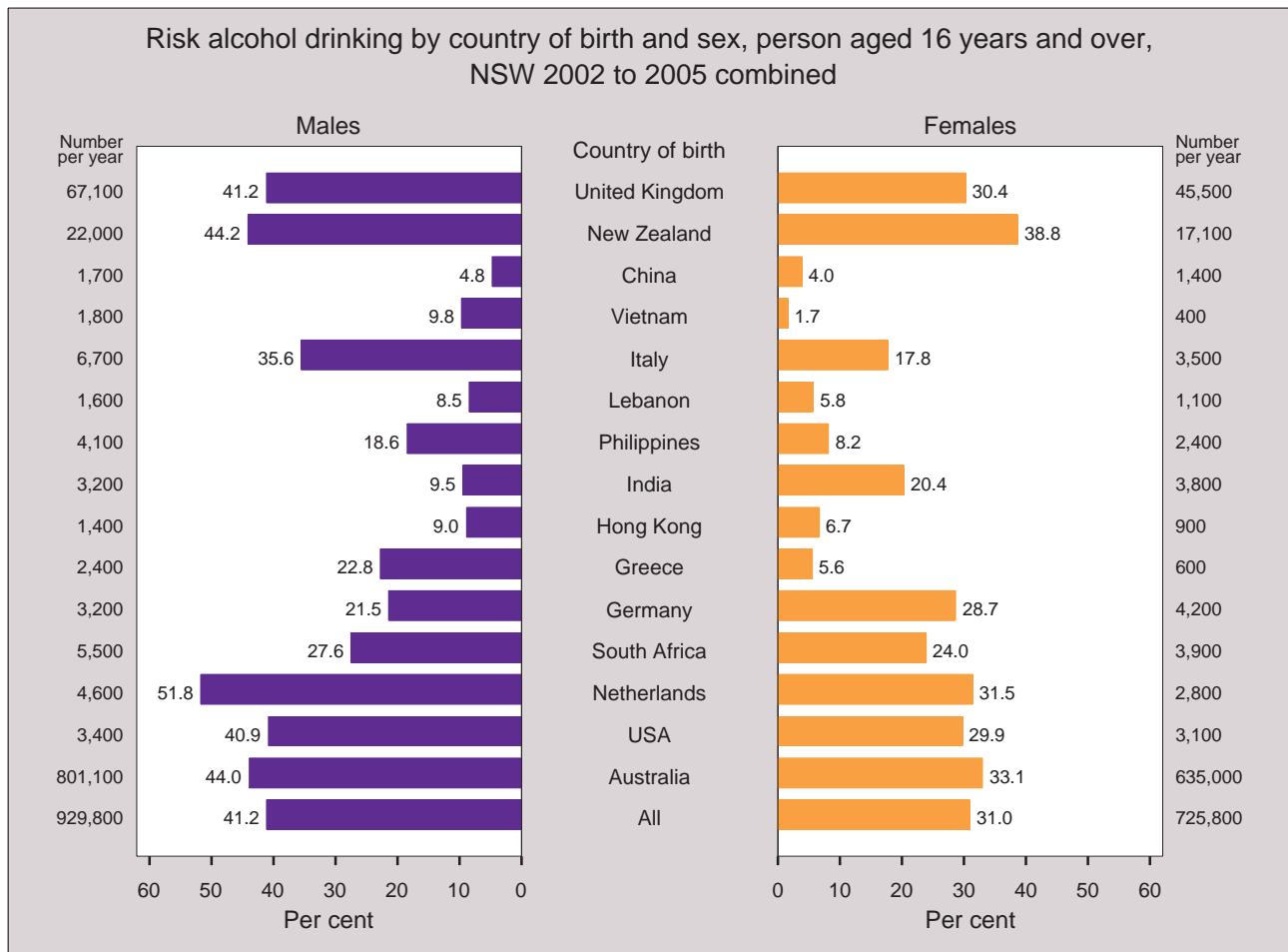
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

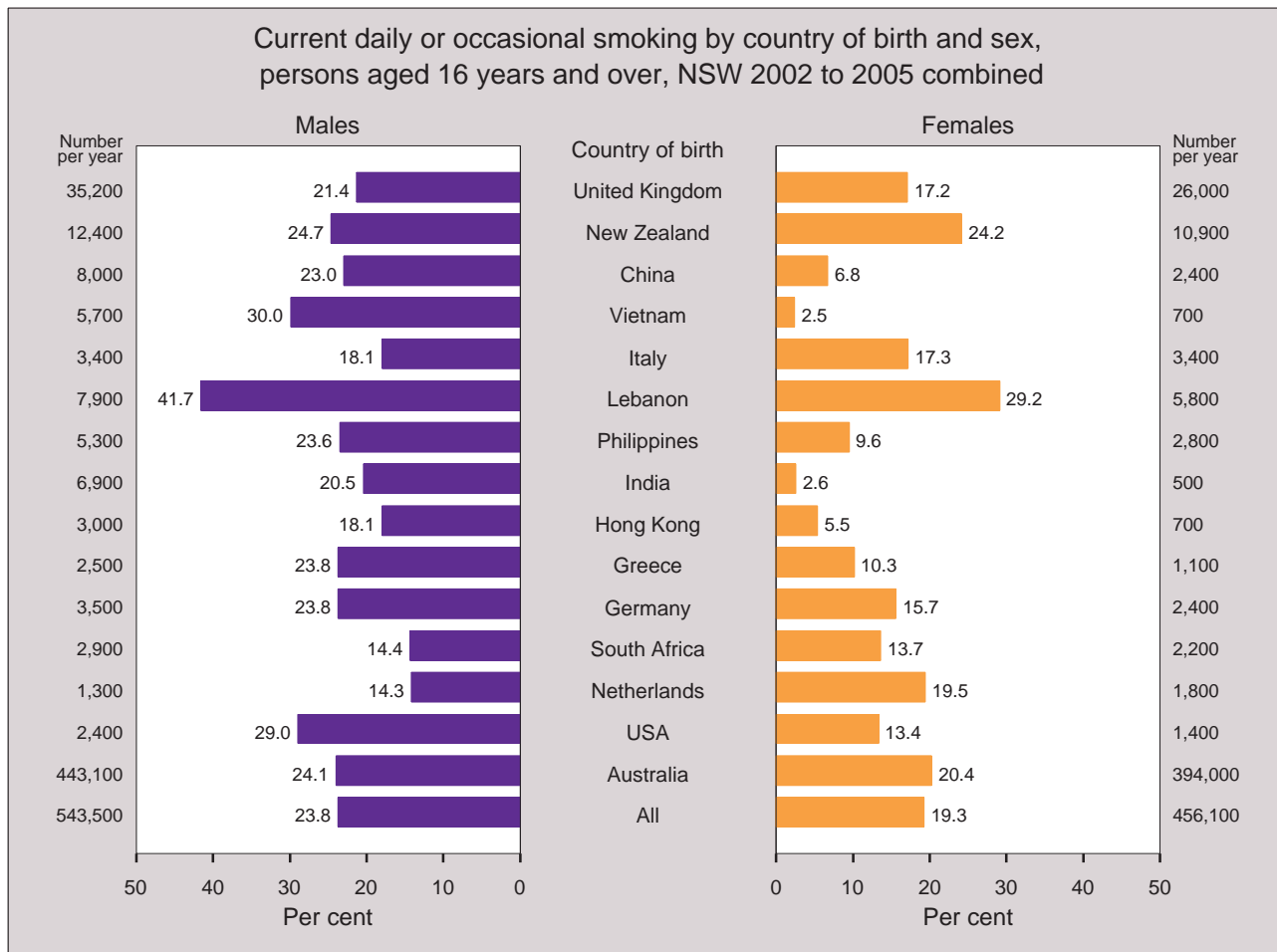
- In the 5-year period 2000 to 2004, age-adjusted death rates among NSW residents born in most overseas countries were lower than in the Australian-born. Death rates among males born in Hong Kong (247 per 100,000) and Vietnam (394 per 100,000) were less than half the rate in Australian-born males (830 per 100,000). Females born in Hong Kong (147 per 100,000), the Philippines (269 per 100,000) and Vietnam (276 per 100,000) also had death rates around half or less those of Australian-born females (541 per 100,000). In general, NSW residents born in countries of South East Asia had lower death rates than residents of other backgrounds, while death rates among people born in the United Kingdom were similar to those of the Australian-born.
- Death rates from some causes are higher among certain groups of overseas-born Australians. Females born in the United Kingdom and Ireland have a higher death rate from cancers, specifically breast cancer, while both males and females aged over 65 years and born in Asia and continental Europe have higher mortality from diabetes mellitus (AIHW, 2004).
- Low death rates among overseas-born residents reflect 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. Migrants from many countries have a lower prevalence than the Australian-born of health risk factors such as overweight and obesity and alcohol consumption at risk levels. The relative health advantage that migrants have over Australian-born people tends to decrease with length of residence in Australia (AIHW, 2004).



Note: 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. The questions used to define the indicator were: How often do you usually drink alcohol?, On a day when you drink alcohol, how many standard drinks do you usually have?, In the past 4 weeks have you had more than [7–10 if male/5–6 if female] drinks in a day?, and In the past 4 weeks how often have you had [11+ if male/7+ if female] drinks in a day? The questions used to define the 1997 and 1998 indicator were: How often do you have an alcoholic drink of any kind?, On a day when you have alcoholic drinks, how many standard drinks do you usually have?, and On the last occasion you had more than [4 if male/2 if female] drinks in a day, how many drinks did you actually have? Estimates are based on 43,474 respondents. 483 (1.1%) were not stated (Don't know or Refused).

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

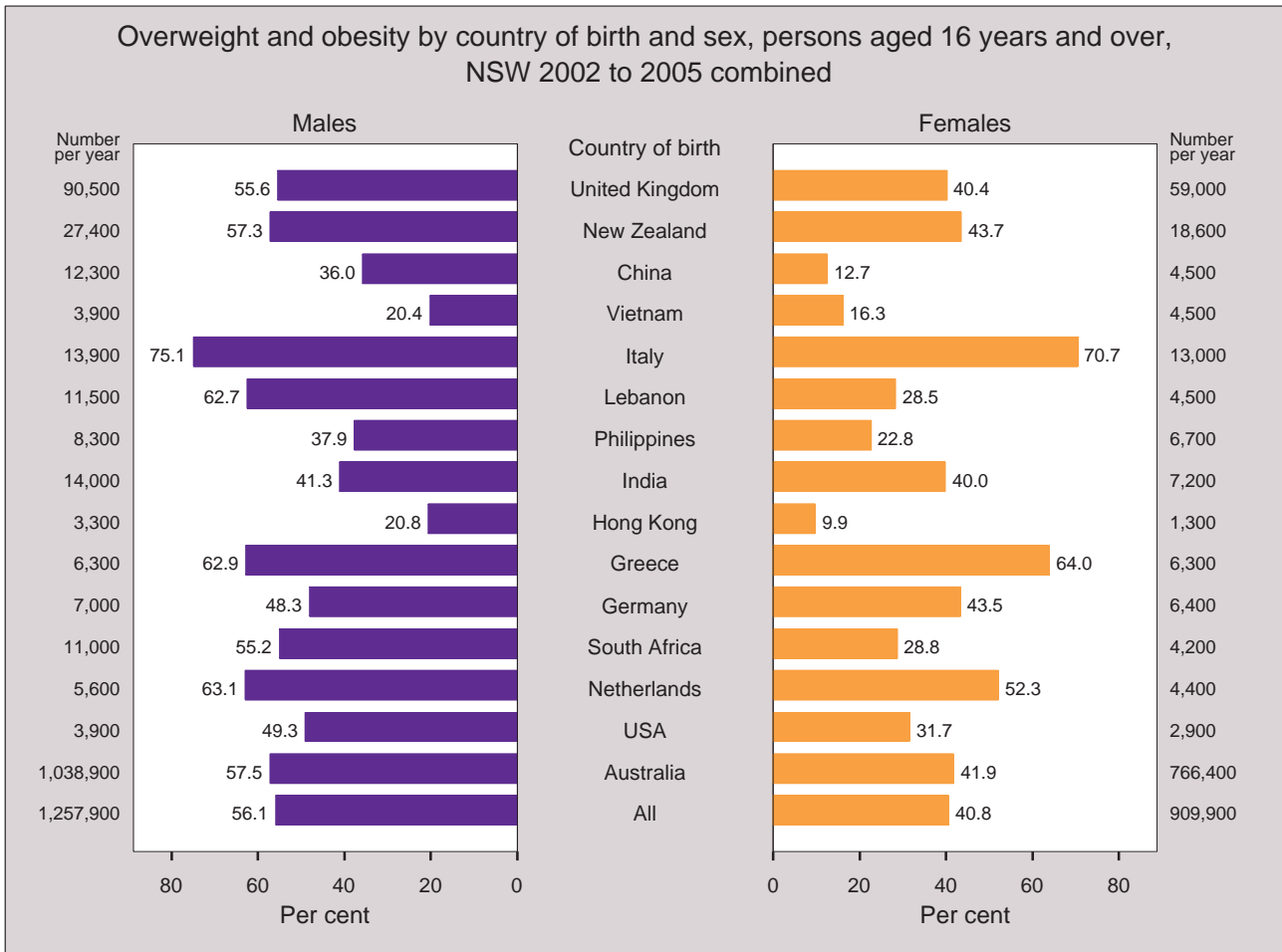
- Alcohol affects health in a number of ways, including acute physical effects such as intoxication and alcohol overdose; chronic physical effects, such as liver cirrhosis, heart disease, brain damage, and memory loss; and effects upon the health of others, such as alcohol-related road trauma and violence (English et al., 1995). Alcohol abuse is also associated with crime and social problems, and lost productivity.
- In the period 2002 to 2005, self-reported risk drinking behaviours (as defined in the footnote to the table) among NSW residents aged 16 years and over varied according to country of birth. Both male and female NSW residents who were born in Australia, and females who were born in New Zealand, were more likely than those born in other countries to report risk drinking behaviour. People born in many Asian countries, in particular, reported low rates of risk drinking behaviours.
- Among men, reported rates of risk drinking behaviour ranged from less than 10% among those born in China, Lebanon, Hong Kong, India and Vietnam to 44% among the Australian- and New Zealand-born. Among women, rates ranged from less than 5% among women born in Vietnam, China, Greece, Lebanon, Hong Kong and the Philippines to 38% in the Australia-born and 42% in the New Zealand-born.



Note: The indicator includes those who smoked daily or occasionally. The question used to define the indicator was: Which of the following best describes your smoking status: Smoke daily, Smoke occasionally, Do not smoke now, but I used to, I have tried it a few times but never smoked regularly, or I have never smoked? Estimates are based on 43,939 respondents. 18 (0.04%) were not stated (Don't know or Refused).

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

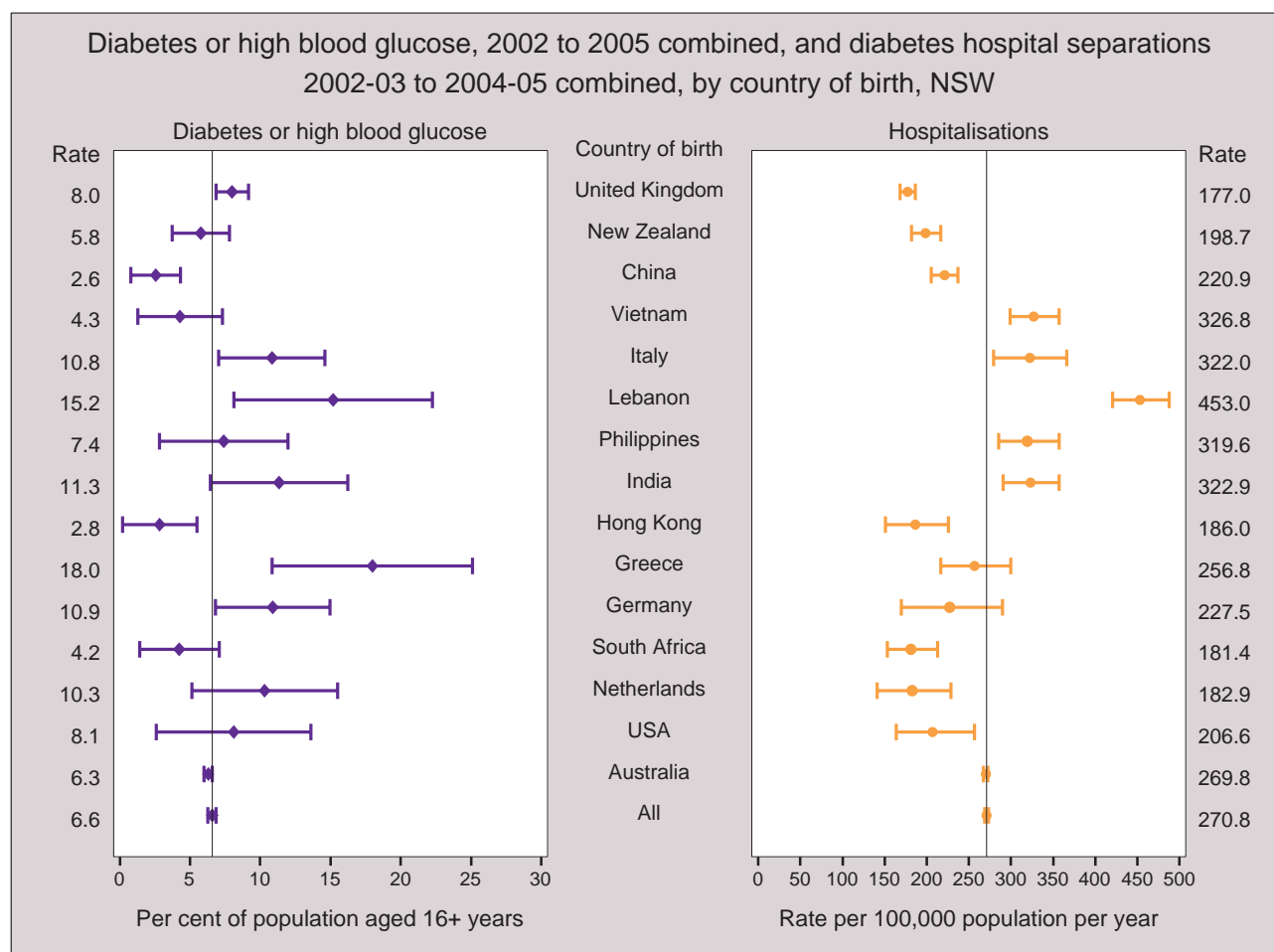
- Smoking is the main cause or a significant cause in many diseases including cancer and cardiovascular disease, the leading causes of death in NSW.
- In the period 2002 to 2005, self-reported rates of current smoking in men ranged from 14.3% among men born in the Netherlands and 14.4% among men born in South Africa to 41.7% among men born in Lebanon. In women, current smoking rates ranged from 2.5% among women born in Vietnam and 2.6% among women born in India to 24.2% among the New Zealand-born and 29.2% among the Lebanese-born.
- The prevalence of self-reported smoking was significantly higher than in the general population among men born in Lebanon. Self-reported smoking was significantly less common than in the general population among women born in China, Vietnam, the Philippines, India, Hong Kong and Greece.
- High smoking rates among the Lebanese-born are reflected in high rates of hospitalisation for coronary heart disease in this country-of-birth group (see Heart disease in this chapter).



Note: The indicator includes those with a Body Mass Index (BMI) of 25 or higher. The questions used to define the indicator were: How tall are you without shoes? and How much do you weigh without clothes or shoes? BMI is calculated as follows: BMI = weight (kg)/height²(m). Categories for this indicator include overweight (BMI between 25 and 29.9) and obese (BMI of 30 and over). Estimates are based on 42,103 respondents. 1851 (4.21%) were not stated (Don't know or Refused).

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

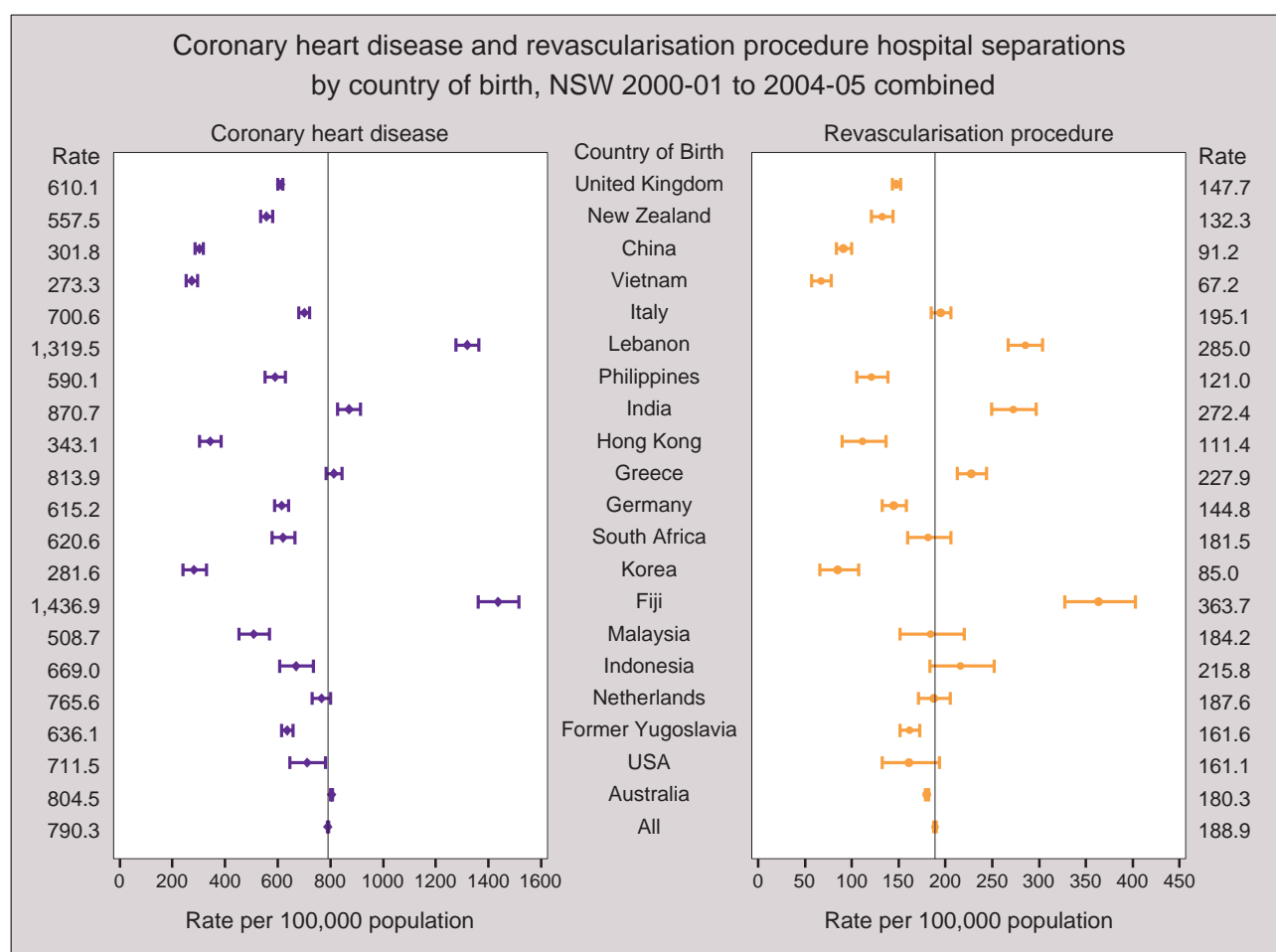
- Overweight or obesity is influenced by diet and physical activity. It predisposes people to cardiovascular disease, stroke, and diabetes.
- In the period 2002 to 2005, the prevalence of self-reported overweight and obesity among men ranged from 20.4% in men born in Vietnam and 20.8% in men born in Hong Kong, to 74.6% in the Italian-born. Among women, it ranged from 9.9% in the Hong Kong-born to 64.0% in the Greek-born and 70.0% in the Italian-born.
- The prevalence of self-reported overweight or obesity was significantly higher than in the general population among men and women born in Italy and women born in Greece. Self-reported overweight or obesity was significantly less common than in the general population among men and women born in China, Vietnam, the Philippines and Hong Kong, and men born in India.
- Self-report underestimates the true prevalence of overweight and obesity. It is not known whether the accuracy of self-report varies among country-of-birth groups.



Note: Diabetes and high blood glucose rates do not include women with gestational diabetes. The questions used to define the indicator were: Have you ever been told by a doctor or hospital you have diabetes?, Have you ever been told by a doctor or hospital you have high blood glucose?, and, if female, Were you pregnant when you were first told you had diabetes or high blood glucose?, and Have you ever had diabetes or high blood glucose apart from when you were pregnant? Estimates are based on 43,805 respondents. 13 (0.03%) were not stated (Don't know or Refused). Numbers of hospitalisations for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001.

Source: NSW Health Surveys 2002 to 2005 (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

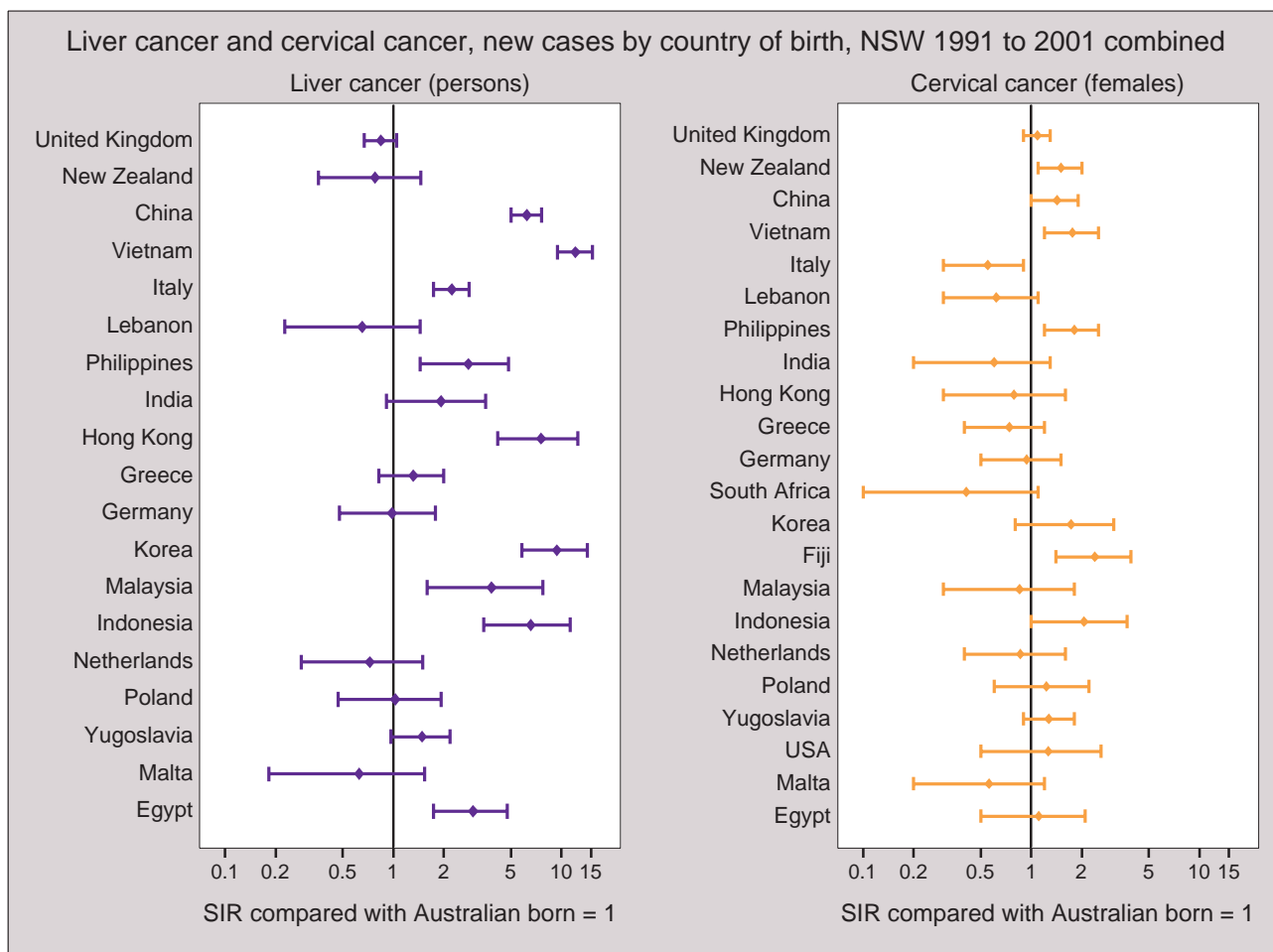
- Type 2 diabetes is the predominant form of diabetes in Australia. Complications of diabetes, such as visual and renal impairment, leg and foot ulcers and circulatory disorders are often responsible for hospitalisation.
- In the period 2002 to 2005, the prevalence of self-reported diabetes or high blood glucose varied with country of birth. Prevalence ranged from less than 3% among people born in China and Hong Kong, to 10.9% in the Italian-born, 15.2% in the Lebanese-born and 18% in the Greek-born.
- In the period 2000-01 to 2004-05, hospitalisation rates for diabetes also varied according to country of birth. Rates in people born in Lebanon were 1.7 times those in the Australian-born. People born in Vietnam, Italy, the Philippines and India also had higher hospitalisation rates than their Australian-born counterparts. Relatively low rates were recorded in people born in the United Kingdom, New Zealand, China, Hong Kong, South Africa, the Netherlands and the United States of America.
- The survey data presented here excludes women who reported diabetes or high blood sugar only during pregnancy, while hospitalisation rates also include admissions for diabetes during pregnancy. High hospitalisation rates for people born in Lebanon, India, the Philippines and Vietnam reflect high rates for both type 2 and gestational diabetes. Women born in Lebanon, Vietnam, Italy and the Philippines had hospitalisation rates for gestational diabetes that were around 3 or more times those for Australian-born women. Hospitalisation rates for gestational diabetes among women born in China were also more than 3 times greater than in Australian-born women, but rates for type 2 diabetes were lower for the Chinese-born.



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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- Coronary heart disease is caused by blockages in the coronary arteries that supply blood to the heart muscle. It is responsible for almost one-quarter of years of life lost due to premature death in NSW. Revascularisation procedures (coronary artery bypass graft, and angioplasty with and without stenting) are used to restore adequate blood flow to blocked coronary arteries.
- Hospitalisation rates for coronary heart disease in NSW in the five year period 2000-01 to 2004-05 varied markedly according to country-of-birth. Hospitalisation rates for people born in Lebanon, Fiji and India were much higher than for the Australian-born. People born in all other major countries-of-birth recorded lower hospitalisation rates for coronary heart disease than the Australian-born, with particularly low rates recorded for people born in many countries of South East Asia.
- Variations in the incidence of coronary heart disease by country-of-birth reflect differences in levels of risk factors (such as smoking, physical activity, obesity and high blood pressure), environmental factors and genetic predisposition.
- Hospitalisation rates for revascularisation procedures also varied with country-of-birth. Again, the highest rates were recorded for people born in Fiji, Lebanon and India. The Greek-born also had a higher rate of these procedures than the Australian-born. Variations in rates of hospital admission by country of birth may be influenced by the inclusion of non-residents who have travelled to Australia for treatment, but who are not included in the resident population used to calculate rates. This is more likely to apply for those countries that are close to Australia, such as Fiji.



Note: Cancers were classified by ICD-9 up to 1998 and by ICD-10 from 1999 onwards. Standardised incidence ratios (SIR) were calculated based on the Australian born population as the comparison population.

Source: Supramaniam R, O'Connell D, Tracey E, Sitas F. *Cancer incidence by country of birth in New South Wales 1991 to 2001*. Sydney: The Cancer Council NSW, 2006.

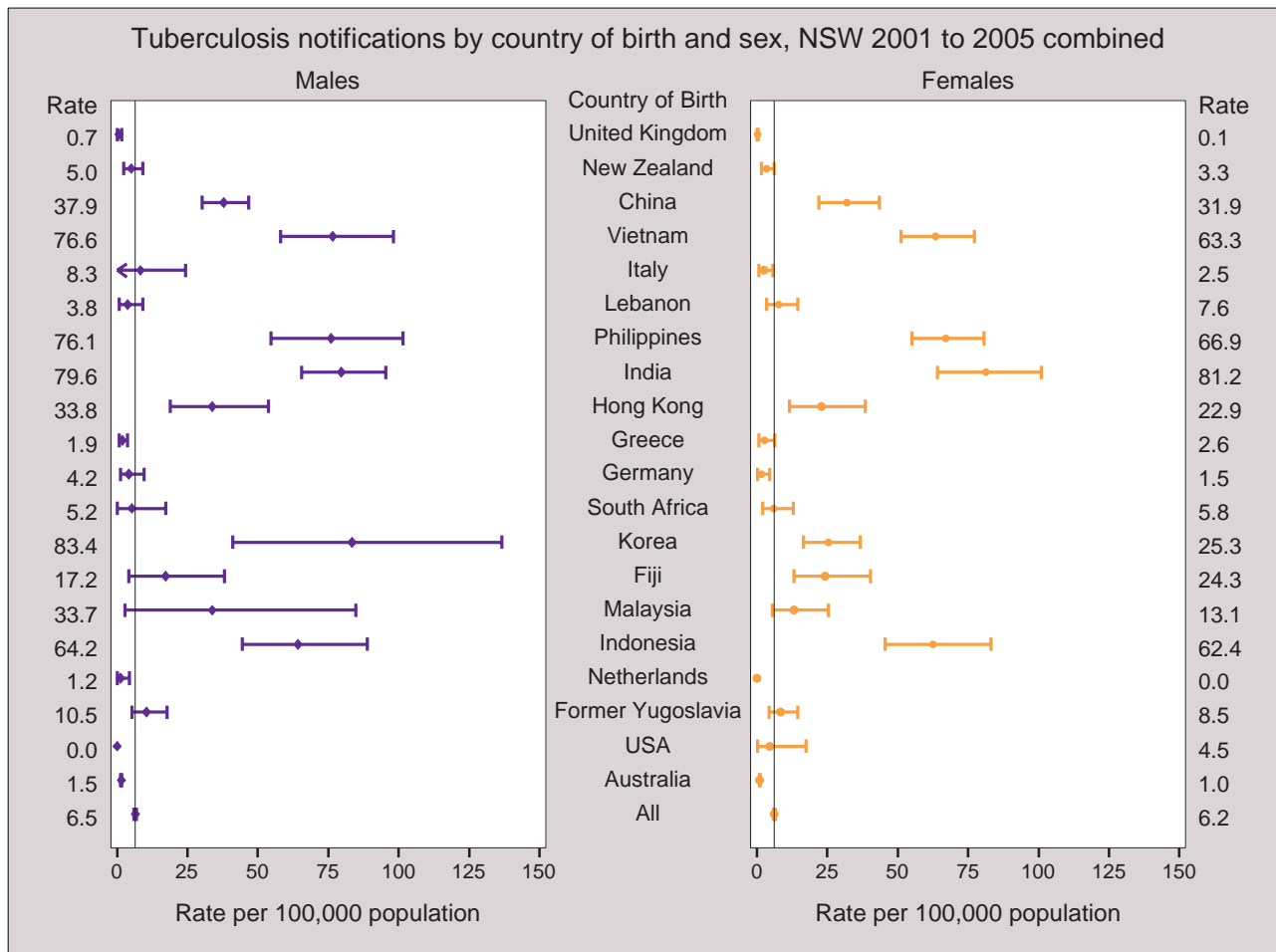
- The incidence and mortality of most types of cancer vary greatly across the world. People who migrate continue some of the lifestyle behaviours typical of their former homeland. However, over time, cancer incidence patterns among migrants begin to resemble those of their new host country.
- Information on the incidence of the 20 most common cancers for the 25 most prevalent countries of birth is presented in the Cancer Council NSW report *Cancer incidence by country of birth in NSW 1991 to 2001* (Supramaniam et al., 2006). The data presented here come from that report, and illustrate patterns for two cancers that exhibit important variations in incidence according to country of birth.
- In the 11-year period 1991 to 2001, 1,070 cases of liver cancer were diagnosed in overseas-born residents of NSW. The incidence of liver cancer in people born in Vietnam and Korea was around 10 or more times that in the Australian-born, while the incidence rate in people born in Hong Kong, Indonesia and China was more than five times the rate for the Australian-born. Incidence was also elevated in people born in Malaysia, Egypt and the Philippines. These variations reflect differences in exposure to risk factors for liver cancer, most importantly chronic infection with the hepatitis B and hepatitis C viruses (Montalto et al., 2002).
- In the same period, 1,021 cases of cervical cancer were diagnosed in overseas-born female residents of NSW. The incidence of cervical cancer in females born in Fiji and Indonesia was more than twice that in Australian-born females, while the incidence rate in females born in the Philippines, Vietnam and New Zealand was more than 1.5 times the rate for the Australian-born. Incidence was also elevated in females born in China. These variations are consistent with low rates of ever having had a Pap test reported by women born in South-East Asia (Taylor et al., 2001).

Liver cancer and cervical cancer, new cases by country of birth, NSW 1991–2001 combined

Country of Birth	Liver Cancer Total number of new cases (persons)	Liver Cancer SIR compared with Australian born (persons)		LL 95% CI	UL 95% CI	Cervical Cancer Total number of new cases (females)	Cervical Cancer SIR compared with Australian born (females)		LL 95% CI	UL 95% CI
		Liver Cancer SIR	Australian born				Cervical Cancer SIR	Australian born		
United Kingdom	141	0.8	0.7	0.7	1.0	254	1.1	0.9	0.9	1.3
New Zealand	15	0.8	0.4	0.4	1.5	73	1.5	1.1	1.1	2.0
China	157	6.2	5.0	5.0	7.6	64	1.4	1.0	1.0	1.9
Vietnam	119	12.1	9.5	9.5	15.3	53	1.8	1.2	1.2	2.5
Italy	116	2.2	1.7	1.7	2.8	29	0.6	0.3	0.3	0.9
Lebanon	9	0.7	0.2	0.2	1.5	19	0.6	0.3	0.3	1.1
Philippines	20	2.8	1.4	1.4	4.8	58	1.8	1.2	1.2	2.5
India	16	1.9	0.9	0.9	3.5	10	0.6	0.2	0.2	1.3
Hong Kong	24	7.6	4.2	4.2	12.5	12	0.8	0.3	0.3	1.6
Greece	36	1.3	0.8	0.8	2.0	26	0.7	0.4	0.4	1.2
Germany	17	1.0	0.5	0.5	1.8	26	0.9	0.5	0.5	1.5
South Africa	N/A	N/A	.	.	.	5	0.4	0.1	0.1	1.1
Korea	35	9.4	5.8	5.8	14.3	17	1.7	0.8	0.8	3.1
Fiji	N/A	N/A	.	.	.	27	2.4	1.4	1.4	3.9
Malaysia	12	3.8	1.6	1.6	7.7	10	0.9	0.3	0.3	1.8
Indonesia	21	6.6	3.5	3.5	11.2	17	2.1	1.0	1.0	3.7
Poland	26	1.8	0.8	0.8	3.4	34	2.1	1.0	1.0	3.8
Yugoslavia	43	1.5	1.0	1.0	2.2	58	1.3	0.9	0.9	1.8
USA	N/A	N/A	.	.	.	11	1.3	0.5	0.5	2.6
Malta	7	0.6	0.2	0.2	1.5	9	0.6	0.2	0.2	1.2
Egypt	28	3.0	1.7	1.7	4.8	15	1.1	0.5	0.5	2.1
Australia	N/A	1.0	.	.	.	N/A	1.0	.	.	.

Note: Cancers were classified by ICD-9 up to 1998 and by ICD-10 from 1999 onwards. Standardised incidence ratios (SIR) were calculated based on the Australian born population as the comparison population. LL/UL 95%CI = lower and upper limits of the 95% confidence interval for the point estimate.

Source: Supramaniam R, O'Connell D, Tracey E, Sitas F. *Cancer incidence by country of birth in New South Wales 1991 to 2001*. Sydney: The Cancer Council NSW, 2006.



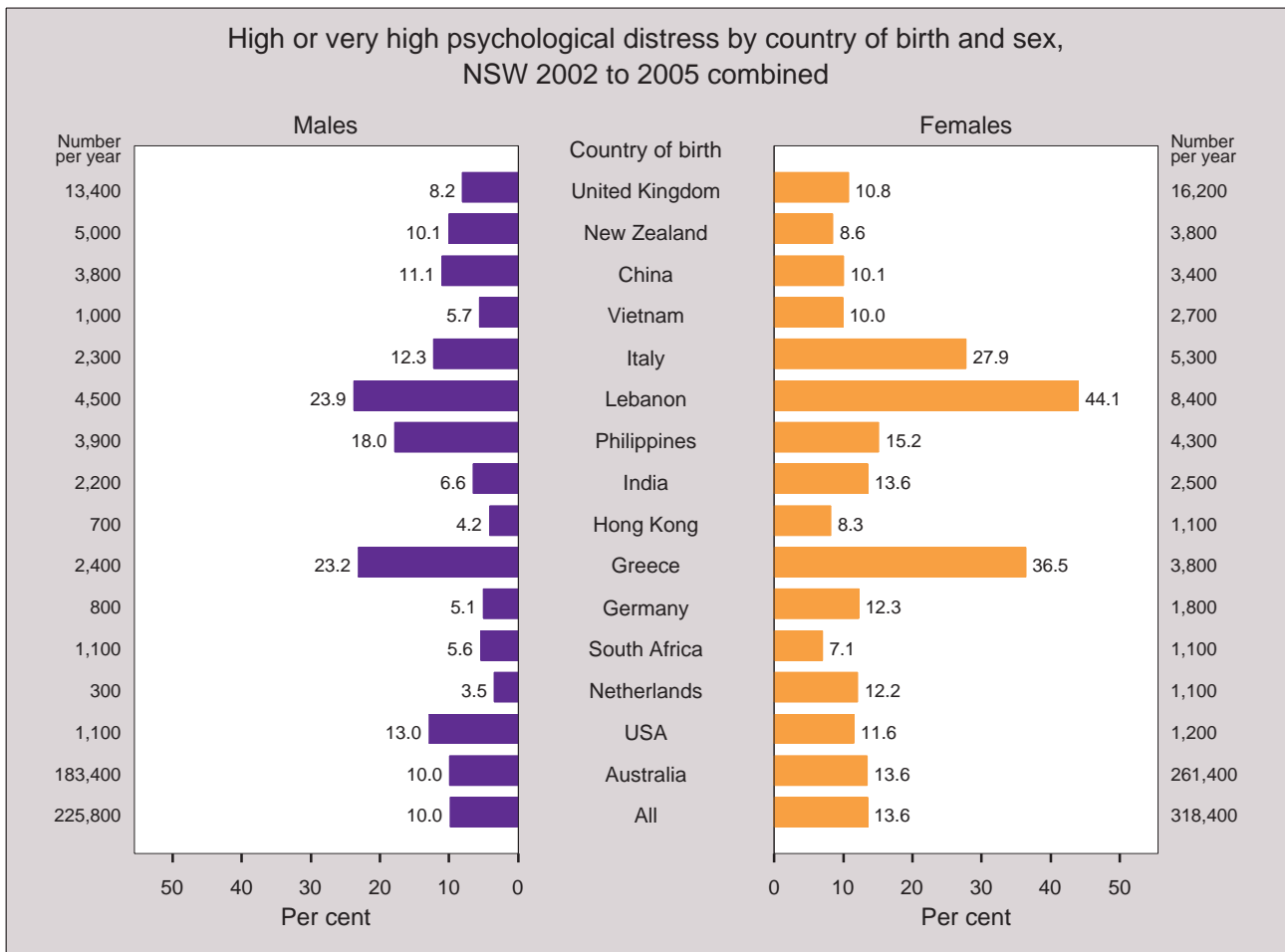
Note: Rates were age-adjusted using the Australian population as at 30 June 2001.

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

- Tuberculosis (TB) is caused primarily by the bacterial organism *Mycobacterium tuberculosis*. TB can present in a variety of ways, most commonly as pulmonary disease characterised by a chronic cough, weight loss, fevers, and night sweats.
- Before World War II, TB was a major cause of illness and death in the Australian community. The subsequent development of effective antibiotic treatment, chest x-ray screening, and preventive therapy, have reduced the burden of disease in NSW to one of the lowest in the world.
- All doctors, laboratories, and hospitals are required by law to notify cases of TB to the NSW Department of Health. In the period 2001 to 2005, 2,109 cases of TB were notified. Among major country-

- of-birth groups, the highest notification rates were recorded for people born in Indonesia, India, the Philippines and Vietnam. People born in China, Hong Kong, Korea and Fiji also had higher notification rates than the Australian-born. These variations in notification rates according to country of birth reflect variations in the prevalence of TB in migrants' countries of origin.
- A network of chest clinics exists throughout NSW to provide directly supervised therapy for people with TB, and to identify, screen, and treat people at risk of infection.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: The indicator includes those with a Kessler 10 (K10) score of 22 or above. The K10 is a 10-item questionnaire that measures the level of psychological distress in the most recent 4-week period. Estimates are based on 43,550 respondents. 407 (0.93%) were not stated (Don't know or Refused) in NSW.

Source: NSW Health Surveys 2002 to 2005 (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- The NSW Health Survey uses a 10-item questionnaire, Kessler 10 (or K10), to yield a measure of psychological distress, based on questions about negative emotional states experienced by respondents in the four weeks prior to interview. A very high level of psychological distress, as shown by the K10, may indicate a need for professional help (ABS, 2003). This does not mean, however, that all individuals scoring high in the K10 questionnaire have diagnostic levels of anxiety and depressive disorders.
- In the period 2002 to 2005, the prevalence of high or very high psychological distress among men ranged from 3.5% in those born in the Netherlands and 4.2% in men born in Hong Kong, to 23.2% in the Greek-born and 23.9% in the Lebanese-born. Among women, prevalence ranged from 7.1% in the South African-born to 36.5% in the Greek-born and 44.1% in the Lebanese-born.
- The prevalence of self-reported psychological distress was significantly higher among men and women born in Lebanon and Greece and women born in Italy than in the general population. Self-reported psychological distress was significantly less common among men born in Hong Kong and the Netherlands, and women born in the United Kingdom, New Zealand and South Africa, than in the general population.

For more information

Australian Bureau of Statistics website at www.abs.gov.au.

Australian Bureau of Statistics. *Australian social trends 2002*. Canberra: ABS, 2002.

Australian Bureau of Statistics. *Information Paper: Use of the Kessler Psychological Distress Scale in ABS Health Surveys*. Catalogue no. 4817.0.55.001. Canberra: ABS, 2003. Available at www.abs.gov.au.

Australian Bureau of Statistics. *Migration, Australia 2004–05*. ABS Catalogue no. 3412.0. Canberra: ABS, 2006.

Australian Institute of Health and Welfare Dental Statistics and Research Unit. *Adult access to dental care: Migrants*. AIHW Catalogue no. DEN 33. Adelaide: AIHW DSRU, 1998.

Australian Institute of Health and Welfare. *Australia's health 2004*. Canberra: AIHW, 2004. Available at: www.aihw.gov.au/publications/index.cfm/title/10014.

Australian Institute of Health and Welfare: Draper G, Turrell G, Oldenburg B. *Health inequalities in Australia: Mortality*. Health Inequalities Monitoring Series no. 1 AIHW Catalogue no. PHE 55. Canberra: Queensland University of Technology and the AIHW, 2004.

Australian Institute of Health and Welfare: Holdenson Z et al. *A picture of diabetes in overseas-born Australians*. Bulletin no. 9. AIHW Catalogue no. AUS 38. Canberra: AIHW, 2003.

Centre for Epidemiology and Research, NSW Department of Health. NSW Adult Health Survey 2003. *N S W Public Health Bull* 2004; 15(S-4). Available at: www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research. New South Wales Mothers and Babies 2004. *N S W Public Health Bull* 2005; 16(S-4). Available at www.health.nsw.gov.au/public-health/phbsup/mdc04.html.

Centre for Epidemiology and Research. New South Wales Population Health Survey website at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Flack J, Colagiuri S. *ANDIAB 2004: Australian national diabetes information audit and benchmarking*. Canberra: National Association of Diabetes Centres (NADC), 2005.

Gill T, King L, Webb K. *Best options for promoting healthy weight and preventing weight gain in NSW*. Sydney: NSW Centre for Public Health Nutrition, University of Sydney, 2005.

Injury Prevention and Policy Unit website at www.health.nsw.gov.au/public-health/health-promotion/injury-prevention/.

Kingsford Smith D, Szuster F. Aspects of tooth decay in recently arrived refugees. *Aust N Z J of Public Health* 2000; 24: 623–626.

Kricker A, Bell J, Coates M, Taylor R, Armstrong BK. *Cancer of the cervix in NSW in 1972 to 1992*. Sydney: NSW Cancer Council, 1996.

Laws PL, Sullivan EA. *Australia's mothers and babies 2003*. Perinatal Statistics Series no. 16. AIHW Catalogue no. PER 29. Sydney: AIHW National Perinatal Statistics Unit, 2005. Available at <http://www.npsu.unsw.edu.au/ps16high.htm>.

Marks G, Coyne, T and Pang G for the Australian Food and Nutrition Monitoring Unit. *Type 2 Diabetes Costs in Australia: The potential impact of changes in diet, physical activity and levels of obesity*. Canberra: Commonwealth Department of Health and Ageing, 2001. Available at www.health.gov.au/pubhlth/strateg/food/pdf/diabetes.htm.

Mathers C. *Health differentials among adult Australians aged 25–64 years*. Australian Institute of Health and Welfare: Health Monitoring Series no. 1. Canberra: Australian Government Publishing Service, 1994.

Montalto G, Cervello M, Giannitrapani L et al. Epidemiology, risk factors, and natural history of hepatocellular carcinoma. *Ann NY Acad Sci* 2002; 963:13–20.

Multicultural Mental Health Australia website at <http://www.mmha.org.au/>.

NSW Centre for Public Health Nutrition. *Report on the weight status of NSW: 2003*. Sydney: CPHN, 2003. Available at: www.cphn.biochem.usyd.edu.au.

NSW Department of Health. www.health.nsw.gov.au/public-health/health-promotion/tobacco.

National Heart Foundation website at www.heartfoundation.com.au.

National communicable disease data are published in *Communicable Disease Intelligence*. Available at [http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Communicable+Diseases+Intelligence+\(CDI\)-1](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Communicable+Diseases+Intelligence+(CDI)-1).

Rowland B, Toumbourou JW, Stevens C. *Prevention issues for communities characterised by cultural and linguistic diversity*. Prevention research evaluation report Number 8. Melbourne: Drug Info Clearinghouse, 2003.

Strong K, Trickett P, Bhatia K. The health of overseas-born Australians 1998. *Aust Health Rev* 1998; 21: 124–133.

Supramaniam R, O'Connell D, Tracey E, Sitas F. *Cancer incidence by country of birth in New South Wales 1991 to 2001*. Sydney: The Cancer Council NSW, 2006.

Taylor R, Mamoon HA, Morrell SL, Wain GV. Cervical screening in migrants to Australia. *Aust NZ J of Public Health* 2001; 25: 55–61.

The *NSW Public Health Bulletin* includes monthly reports of notifiable communicable diseases. Available at www.health.nsw.gov.au/public-health/phb/phb.html.

The Department of Immigration and Multicultural Affairs Settlement Database online request facility website at <http://www.immi.gov.au/living-in-australia/delivering-assistance/settlement-database/index.htm>.

The Department of Immigration and Multicultural Affairs website at www.immi.gov.au.

The Drug and Alcohol Multicultural Education Centre (DAMEC). *NSW Directory of alcohol and other drug services, programs and resources for people of non-English speaking background*. Sydney: DAMEC, 2005.

The National Injury Surveillance Unit website at: www.nisu.flinders.edu.au.

Tracey E, Roder D, Bishop J, Chen S, Chen W. *Cancer in NSW: Incidence and mortality 2003*. Sydney: Cancer Institute NSW, 2005. Available at www.cancerinstitute.org.au.

Transcultural Mental Health Centre website at <http://www.tmhc.nsw.gov.au/>.

Vanden Heuvel A, Wooden M. *New Settlers Have Their Say: How immigrants fare over the early years of settlement*. Canberra: Department of Immigration and Multicultural Affairs, 1999.

Rural and remote populations

- 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, socio-economic disadvantage, shortage of health care providers, lower levels of access to health services, greater exposure to injury risks, and poor health among Aboriginal people.
- The population of NSW is highly urbanised. Less than 1% of the total population live in areas classified as 'remote' or 'very remote', according to Australian Standard Geographic Classification Remoteness categories.
- Aboriginal people comprise almost one-third of the population of very remote areas.
- Compared with people who live in major cities, people who live in remote or very remote areas:
 - can expect to live just under 4 fewer years in remote areas and 11 fewer years in very remote areas;
 - are more likely to die prematurely, and from causes classified as '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.

In this chapter

- Demography
- Life expectancy
- Potentially avoidable deaths
- Hospitalisations for ambulatory care sensitive conditions
- Injury
- Health care access
- Overweight and obesity
- Premature deaths
- Self-sufficiency

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 Aboriginal health needs (AIHW, 2004a). Other chapters in this report present breakdowns of health measures according to health area of residence, and compare grouped urban and rural health areas. Although useful for highlighting areas for action, such analyses do not explore the effect of remoteness on health, because they do not take into account the actual distances that individuals live from health and other facilities and services.

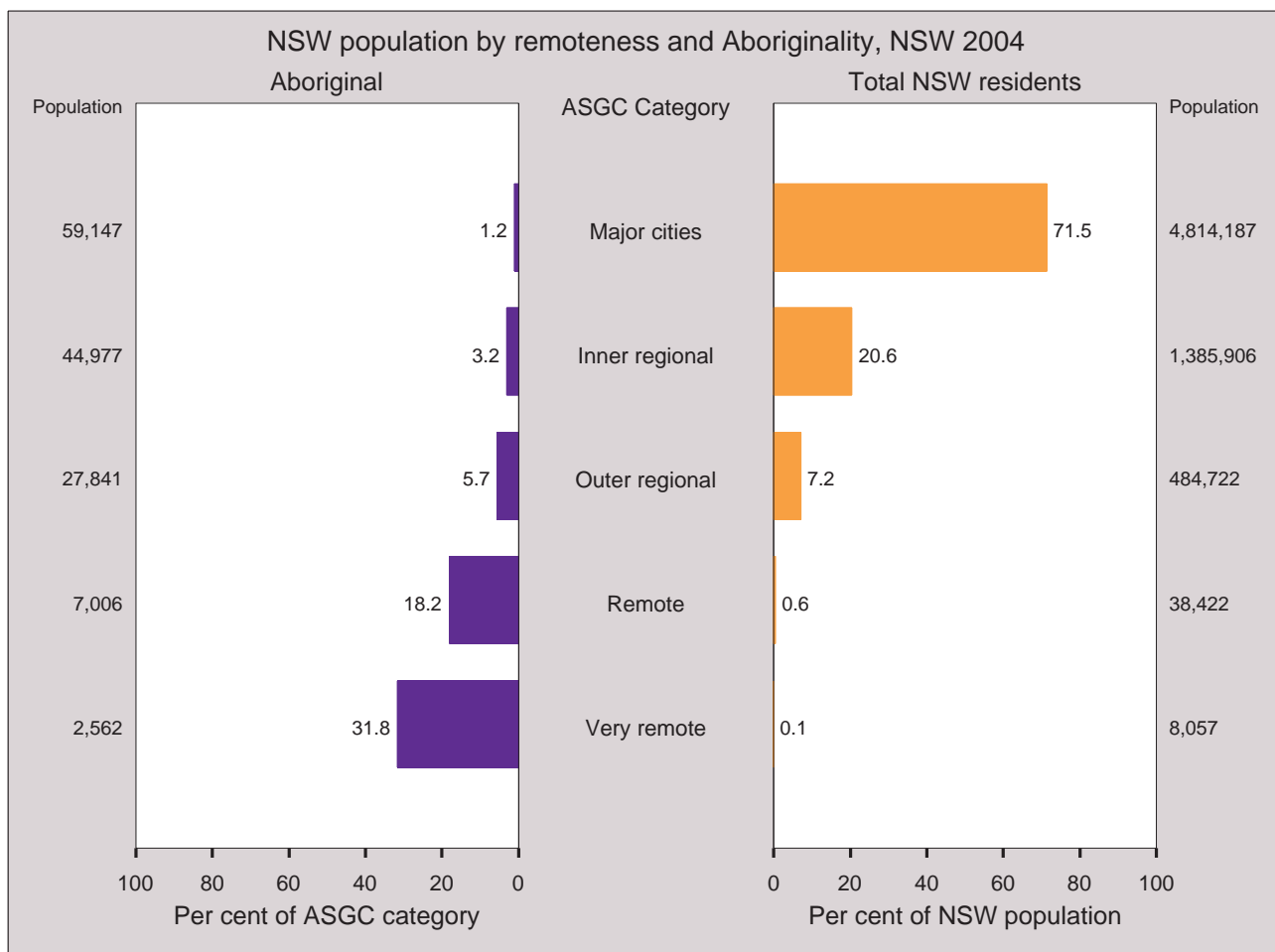
This chapter presents a range of health indicators for NSW according to Australian Standard Geographical Classification (ASGC) Remoteness categories, NSW health areas, and Regional Co-ordination Management Group (RCMG) regions.

ASGC Remoteness was released in 2001 by the ABS, based on the Accessibility-Remoteness Index of Australia Plus (ARIA+) index, which was developed by the National Key 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; SLAs) can then be made on the basis of the ASGC Remoteness categories allocated to the CDs making up that area. ASGC Remoteness categorises areas as 'major cities', 'inner regional', 'outer regional', 'remote' and 'very remote' (AIHW, 2004b).

There are 10 RCMG regions in NSW which were defined by the NSW Premier's Department as part of the Regional Coordination Program (RCP). RCMG regions are aggregates of Local Government Areas (LGAs). RCMG regions were implemented to help coordinate NSW government effort at a regional level to maximise benefits to local communities.

NSW Health is working to improve the provision of health services in small rural and remote communities through providing telehealth services; rural nursing initiatives such as the Nurse Practitioner Services; workforce initiatives such as the Area of Need Program; transport initiatives such as the Isolated Patients' Travel and Accommodation Scheme and implementation of the Transport for Health Initiative; health service infrastructure development through the NSW Rural Hospital and Health Service Program.

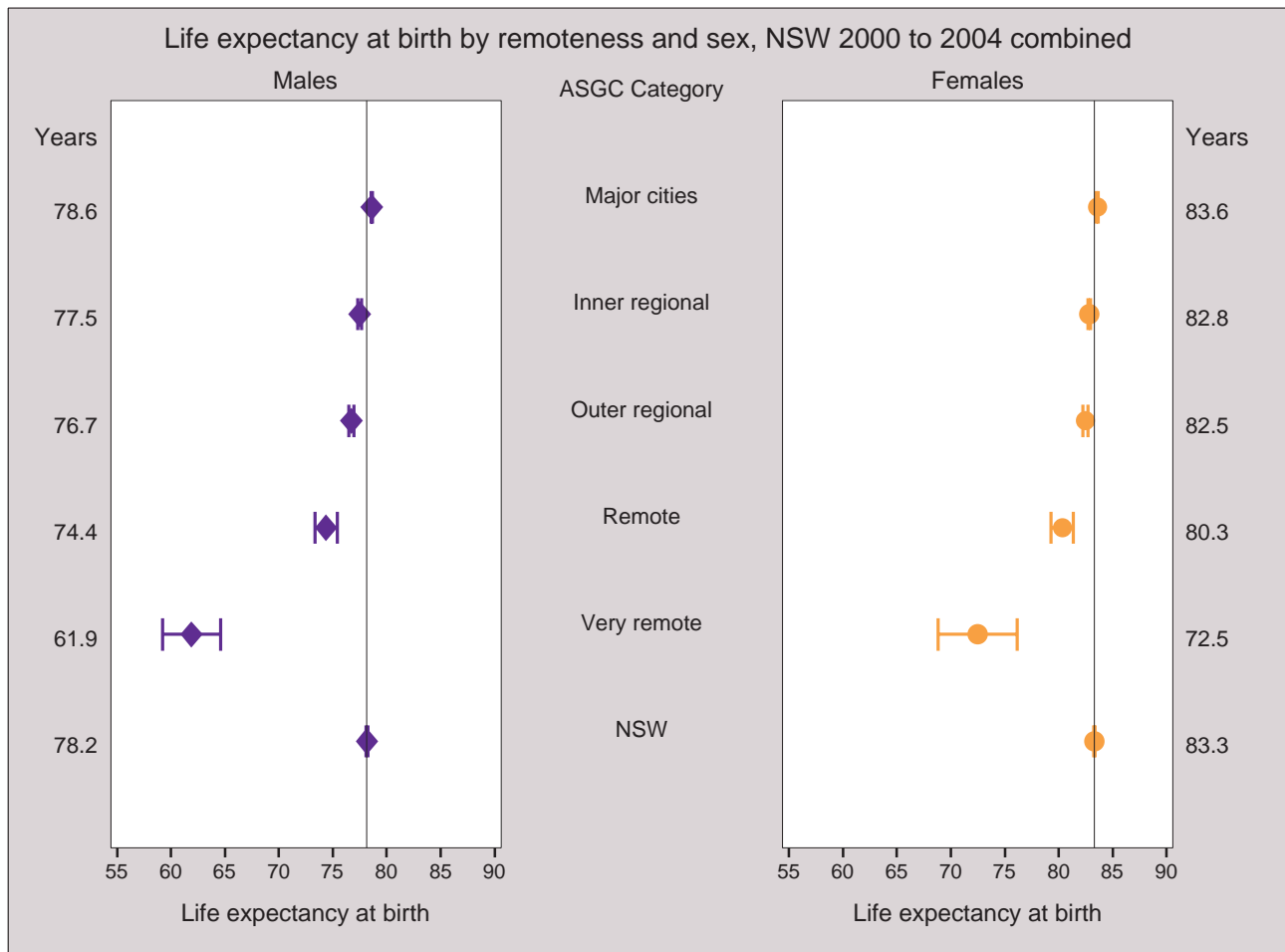
The NSW Rural Health Report, released in September 2002, was developed by a group of clinicians, health service managers and consumers. In response, the NSW Government released the NSW Rural Health Plan which included initiatives to address three fundamental issues: attracting and retaining health care professionals; providing certainty and security for services provided in rural areas; and providing services closer to where rural people live. Since the release of the Plan, a range of clinical services in rural NSW have been expanded including renal, critical care and cardiology services with the opening of three cardiac catheterisation laboratories, orthopaedics and additional oncology clinics. The NSW Institute of Rural Clinical Services and Teaching was established to support rural health staff by facilitating the networking of services and clinicians and providing opportunities to trial new models of services delivery and undertake collaborative research. The NSW Rural Health Priority Taskforce was established in 2003 to monitor and advise on progress in implementing the NSW Rural Health Plan.



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. 'Aboriginal' is used here to refer to both Aboriginal and Torres Strait Islander people.

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

- The population of NSW is highly urbanised. An estimated 46,479 people (0.69 % of the population) live in areas classified as remote or very remote according to ASGC categories.
- Areas classified as remote or very remote are clustered in the west and northwest of the state. The very remote category now comprises the Statistical Local Areas (SLAs) of Bourke and Lord Howe Island, 68% of Central Darling, 42% of Brewarinna, 9% of Cobar, and 5% of Walgett.
- Two SLAs (Bogan and Coonamble) are classified as 100% remote and 19 SLAs including Walgett (95%), Cobar (91%), Carrathool (67%), Brewarinna (58%), Lachlan (48%), Central Darling (32%), Warren (30%), Hay (21%), Coonabarabran (18%), Moree Plains (18%) and Balranald(16%) have a varying proportion of Census Collection Districts (CDs) classified as remote.
- Among the new NSW health areas, only three (Greater Western, Greater Southern, and Hunter and New England) include SLAs that are classified as at least partly remote or very remote.
- Aboriginal people continue to make up an increasing proportion of the population with increasing remoteness, and comprise 32% of the population of very remote areas. However, it is important to also note that less than 1 in 10 (6.8%) Aboriginal people in NSW live in 'remote' or very remote areas.

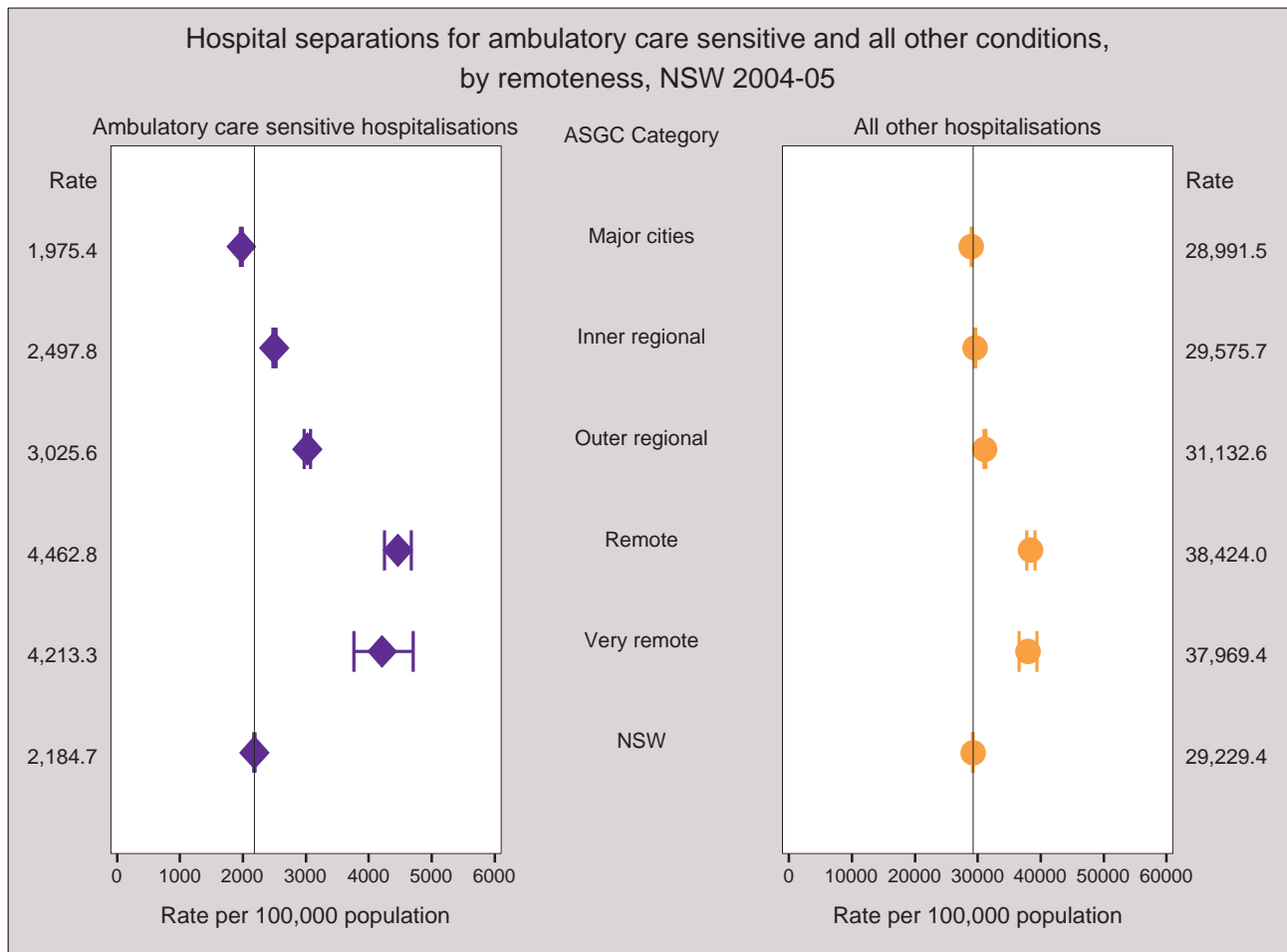


Note: Statistical Local Areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score. Abridged current life tables using Chiang's method were used to calculate point estimates and confidence intervals for life expectancy (see Methods section). Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. 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.

- Life expectancy at birth is an estimate of the average length of time (in years) that a person born now can expect to live, assuming that the current 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, because of changes in social and economic conditions, lifestyle and environmental factors, the quality of health care, and possibly the emergence of new diseases. However, because no-one knows what the death rates in 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.
- In NSW in the period 2000 to 2004, life expectancy at birth decreased with remoteness, and was lower in males across all areas of the state. In males, it ranged from 61.9 years in very remote areas, 74.4 years in remote to 78.6 years in major cities. In females, the corresponding range was 72.5 years in very remote areas, 80.3 years in remote areas and 83.6 years in major cities.
- Differences in life expectancy according to remoteness category reflect higher death rates from many causes in rural and remote areas. The high proportion of Aboriginal people in remote areas acts to lower the average life expectancy in these areas. The migration of the frail aged towards less remote areas is likely to have the opposite effect and to increase calculated average life expectancy in remote areas (AIHW, 2004).

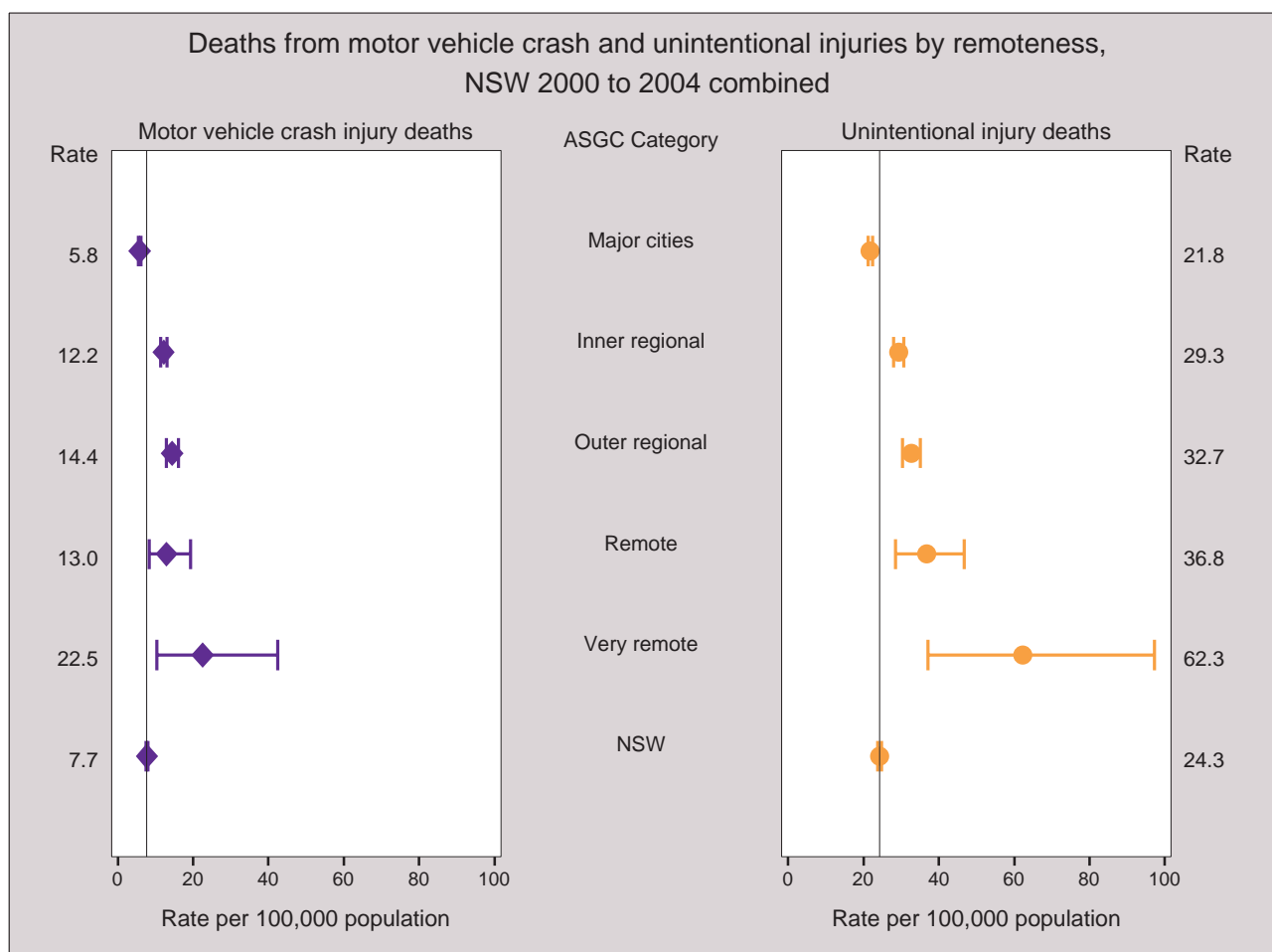
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



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. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Figures include an estimate of the small number of interstate hospitalisations of NSW residents, data for which were unavailable at the time of production.

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

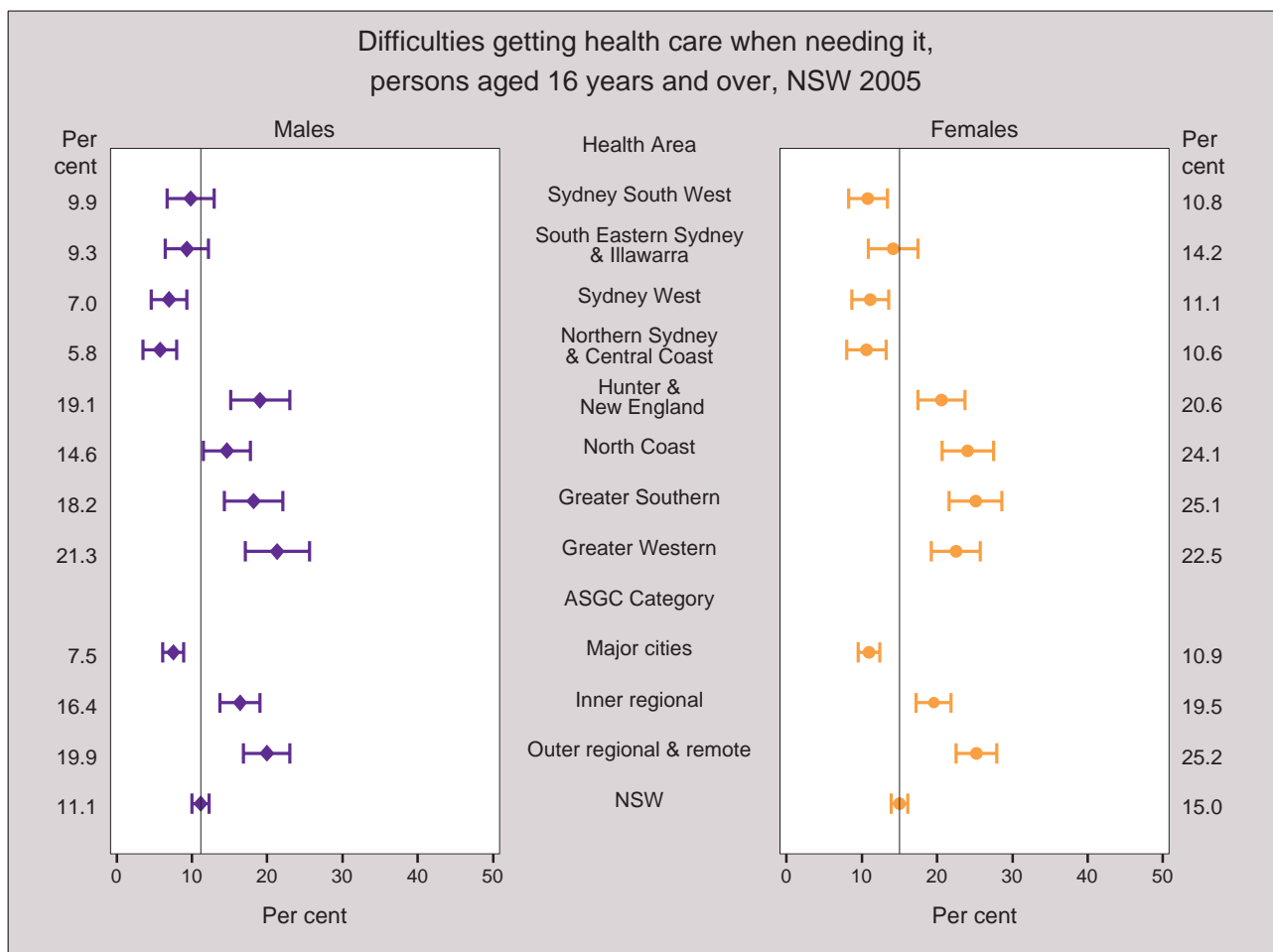
- Ambulatory care sensitive conditions are those for which hospitalisation is thought to be avoidable through prevention and/or early disease management. Hospitalisation rates for these conditions are used as an indicator of access to, and quality of, primary care. However, they are also influenced by other factors, including disease prevalence, hospital admission practices, and personal choices about seeking health care. The ambulatory care sensitive conditions considered here include potentially preventable acute, chronic and vaccine preventable conditions such as asthma, congestive heart failure, angina, chronic obstructive pulmonary disease and diabetes complications (see Methods).
- In NSW in 2004–05, hospitalisation rates for ambulatory care sensitive conditions increased with remoteness. The rate among residents of very remote areas was 2.2 times higher compared to the rate for residents of major cities. Hospitalisation rates for all other conditions also increased with remoteness, though less markedly with the rate 1.3 times higher among residents of very remote areas than for residents of major cities. Hospitalisations for ambulatory care sensitive conditions made up 10.0% of all hospitalisations in very remote areas compared to only 6.2% in major cities.
- Increasing rates of hospitalisation for ambulatory care sensitive conditions with increasing remoteness reflect barriers to accessing general practice, other primary care and specialist services in remote areas. These include geographic isolation, transport difficulties, shortages of general practitioners, limited after hours services, and lack of bulk-billing practices. Other factors contributing to this gradient include the higher prevalence of many health conditions among Aboriginal people, and a greater propensity to admit to hospital people who come from remote areas.



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. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

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

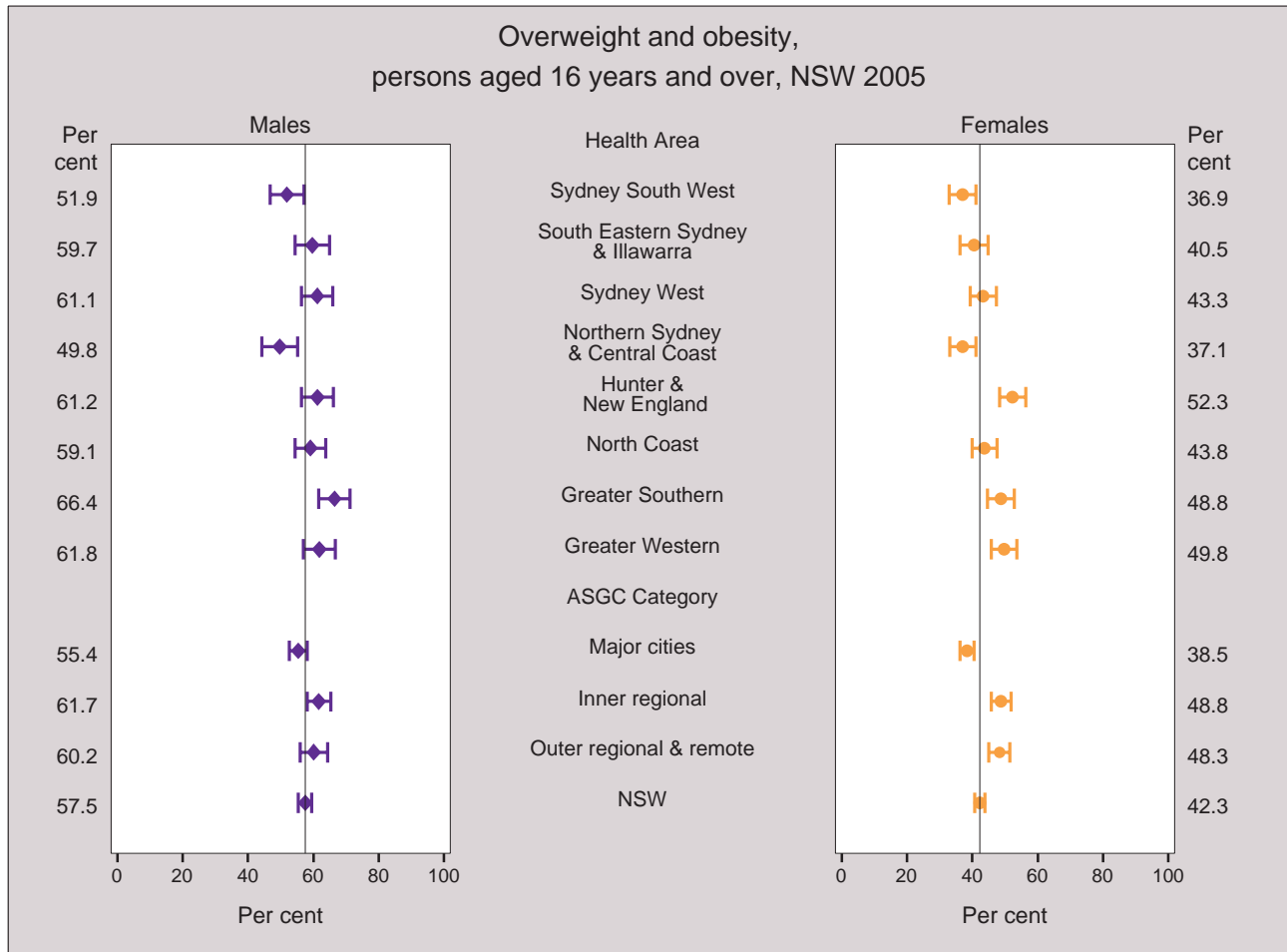
- In NSW over the period 2000 to 2004 combined, death rates from a range of injuries increased with increasing remoteness. The rate of death from all categories of injury and poisoning combined was 2.0 times higher in very remote areas than in major cities, while the death rate from motor vehicle crash injuries was 2.9 times higher, and the death rate from all unintentional injuries was 2.6 higher in very remote areas.
- Almost two-thirds (64%) of the road traffic crash fatalities recorded by the NSW Roads and Traffic Authority (RTA) in 2002 related to crashes on country roads. Most of these crashes (43% of all fatalities) were on country non-urban roads, and the remainder (21% of all fatalities) were on country urban roads (RTA, 2003),
- The pattern of increasing mortality from injury with increasing remoteness was more marked in males. The male death rate from motor vehicle crashes in remote or very remote areas was almost 5 times the female death rate, but was only 3 times higher in major cities.
- High rates of death from injury in Aboriginal people contributes to the gradient seen (AIHW, 2003). In remote and very remote areas, the death rate from motor vehicle crash injuries was 1.7 times higher in Aboriginal than in non-Aboriginal people. However, the death rate in non-Aboriginal people in these areas was still twice that in major cities.



Note: The indicator includes those who had difficulties getting health care when they needed it. It excludes those who said they do not need health care. The question used to define the indicator was: Do you have any difficulties getting health care when you need it? Estimates are based on 11,201 respondents. 34 (0.3%) were not stated (Don't know or Refused). Postcodes were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

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

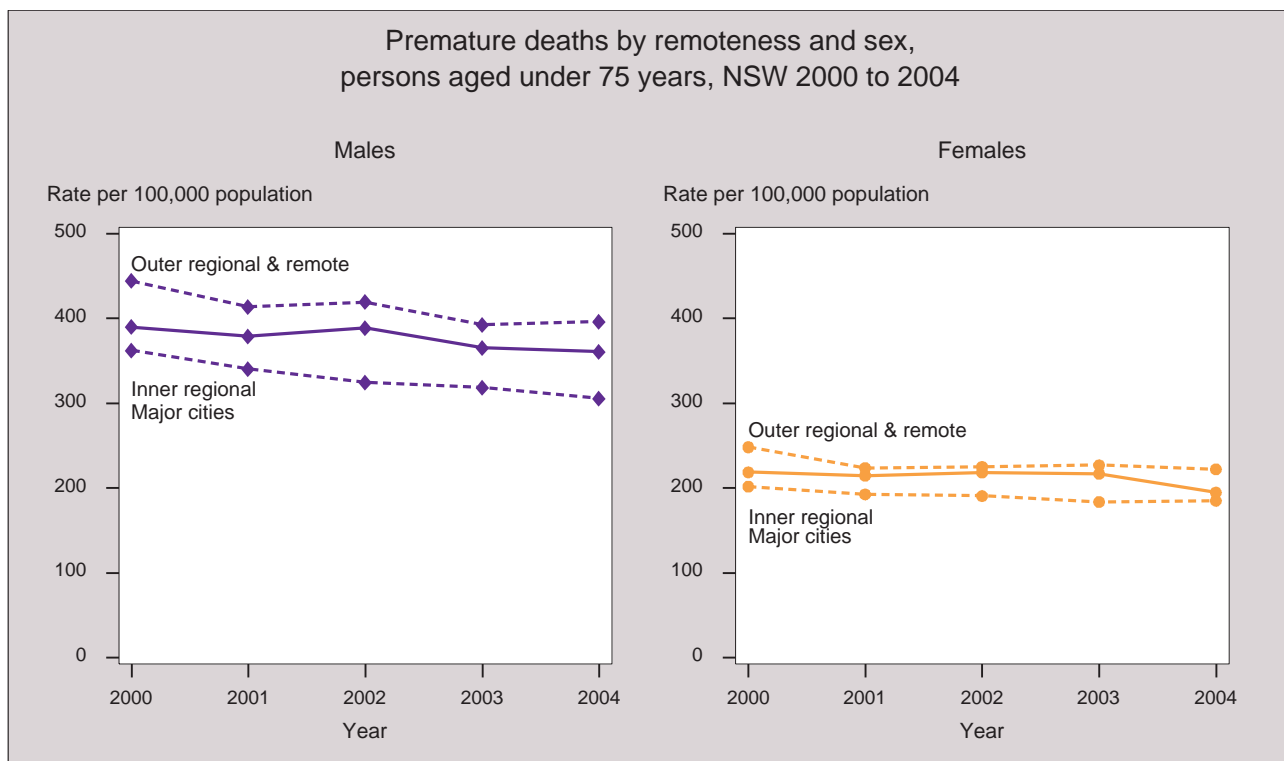
- Difficulty getting health care when it is needed reflects both the availability and accessibility of health care services.
- Respondents to the NSW Population Health Survey in 2005 were asked 'Do you have any difficulties getting health care when you need it?'. Those who responded in the affirmative were asked to describe the difficulties they had.
- After excluding respondents who said they did not need health care, 13.1% of people reported having difficulties getting health care. Females (15.0%) were more likely than males (11.1%) to report difficulties in getting health care. The most frequently reported difficulties were waiting time for a general practitioner appointment, difficulty in accessing specialists, and transport problems (Centre for Epidemiology and Research, 2006).
- Compared with the state average, difficulties getting health care were less likely to be reported by residents of the Sydney South West (10.1%), Sydney West (9.1%) and Northern Sydney and Central Coast (8.3%) Health Areas, and more likely to be reported by residents of the Greater Western (21.9%), Greater Southern (21.8%), North Coast (19.5%) and Hunter and New England (19.8%) Health Areas.
- Reporting of difficulties in getting health care increased with remoteness. Almost one-quarter (24.7%) of people living in outer regional and remote areas reported difficulty getting health care when needing it, whereas this was reported by fewer than 1 in 10 (8.9%) residents of major cities.



Note: The indicator includes those with a Body Mass Index (BMI) of 25 or higher. The questions used to define the indicator were: How tall are you without shoes? and How much do you weigh without clothes or shoes? BMI is calculated as follows: $BMI = \text{weight (kg)} / \text{height}^2(\text{m})$. Categories for this indicator include overweight (BMI between 25 and 29.9) and obese (BMI of 30 and over). Estimates are based on 11,078 respondents. 422 (3.67%) were not stated (Don't know or Refused). Postcodes were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

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

- The prevalence of overweight and obesity is increasing worldwide. Being overweight or obese increases the risk of developing diabetes, cardiovascular disease, some cancers, gallstones, osteoarthritis, obstructive sleep apnoea and impaired psychosocial functioning (NSW CPHN, 2003).
- Respondents to the NSW Population Health Survey 2005 were asked their height and weight and their answers were used to estimate Body Mass Index (BMI), and to classify their body weight.
- Based on self-reported height and weight, just over half (51.1%) of NSW residents aged 16 years and over were classified as overweight or obese. Overweight or obesity was more frequently reported by males (57.5%) than females (42.3%).
- Compared with the state average, a greater proportion of residents of the Greater Southern (57.5%), Hunter and New England (56.7%) and Greater Western (55.9 per cent) Area Health Services were classified as overweight or obese. The reported prevalence of overweight and obesity was significantly lower than the state average for residents of the Northern Sydney and Central Coast (43.2%) and Sydney South West (44.8%) Area Health Services.
- The reported prevalence of overweight and obesity was lower in major cities (46.8%) than in inner regional (55.1%) and outer regional and remote areas (55.2%).
- The results presented here underestimate the true prevalence of overweight and obesity, because they rely on self-report of height and weight. A validation study of 1997 NSW Health Survey data reported that the prevalence of overweight and obesity was underestimated by 23% for men and 15% for women (Flood et al., 2000).

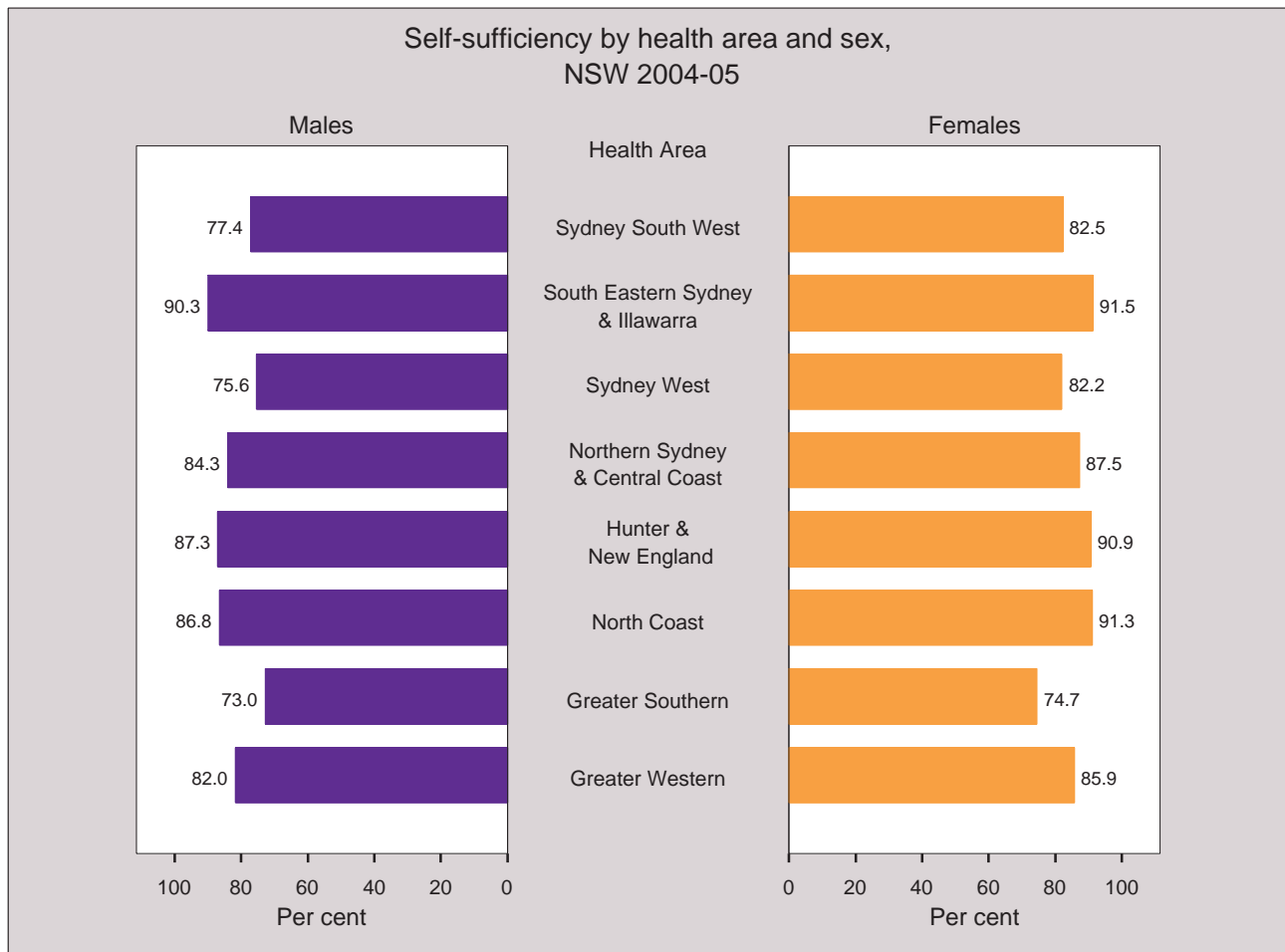


	ASGC Category	Sex	2000	2001	2002	2003	2004
Number	Major cities	Persons	11953	11429	11182	10968	10840
	Inner regional	Persons	4158	4137	4305	4183	4045
	Outer regional & remote	Persons	1976	1858	1882	1842	1835
	NSW	Persons	18139	17457	17422	17033	16748
Rate per 100,000 population	Major cities	Persons	280.1	264.8	256.0	249.5	244.1
	Inner regional	Persons	303.2	296.0	302.9	290.3	276.6
	Outer regional & remote	Persons	349.1	321.3	324.8	312.1	311.1
	NSW	Persons	215.1	203.9	200.6	194.2	188.7

Note: Deaths were classified using ICD-10. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. 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.

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

- In NSW between 2000 and 2004, rates of premature death (before the age of 75 years) fell across all areas of the state, for both sexes.
- In major cities, the rate of premature death fell by an average of 2.7% per annum in the five-year period. The average annual decrease was greater in males (3.3%) than females (1.7%).
- A similar overall rate of decline (2.3% per annum) was recorded in outer regional and remote areas, but in these areas the average annual decrease was similar in males (2.3%) and females (2.2%).
- In males, the absolute difference between rates of premature death between outer regional and remote areas and major cities increased over the period, from 82 to 90 per 100,000. In relative terms, too, this 'gap' widened. In 2000, the male rate of premature death in outer regional and remote areas was 1.22 times greater than the rate in major cities. By 2004, this had increased to 1.29 times.
- However for females, the 'gap' in premature death rates between major cities and outer regional and remote areas declined over the period, both in absolute and relative terms. The difference in female death rates decreased from 46 to 37 per 100,000. In 2000, the female rate of premature death in outer regional and remote areas was 1.22 times greater than the rate in major cities, while in 2004, this had decreased to 1.20 times.



Note: Self-sufficiency of an Area Health Service is defined as the ratio of public hospital acute inpatient activity (separations, bed-days or AR-DRG weighted separations) provided in an Area Health Service to residents of that Area Health Service, to the total demand for public hospital activity by residents of that Area. Numbers for 2004–05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

Source: FlowInfo. Statewide Services Development Branch, NSW Department of Health.

- Self sufficiency is defined as the ratio of public hospital acute inpatient activity provided in an Area Health Service to residents of that Area Health Service, to the total demand for public hospital activity by residents of that Area (NSW Department of Health, 2000).
- In NSW in 2004–2005, self sufficiency was higher for females than for males across all health areas. North Coast Health Area had the highest self sufficiency for females (91.3%) and South Eastern Sydney and Illawarra Health Area had the highest self sufficiency for males (90.3%).
- Greater Southern AHS had the lowest self sufficiency for both males (73%) and females (74.7%), followed by Sydney West (75.6% and 82.2% for males and females, respectively).
- Low self sufficiency indicates residents in a particular health area seek hospital care outside that area. It should be noted that some of these patient flows are considered to be ‘natural’, such as where a patient living near a border may attend a hospital in another health area, as it is closer to their home. For example, Australian Capital Territory, a regional centre, is located in the middle of the Greater Southern Area Health Service. This is likely to have a decisive role in the low self sufficiency result in this health area. Other patient flows, however, are caused by other factors, which may include referral patterns of general practitioners to specialist services, inadequate infrastructure, inadequate medical workforce, and patient choice.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/

For more information

Alter DA, Tu JV, Austin PC, Naylor CD. Waiting times, revascularization modality, and outcomes after acute myocardia infarction in all hospitals with and without revascularization facilities in Canada. *J Am Coll Card*. 2003 Aug 6;42(3):410–9.

Australian Bureau of Statistics. *ASGC Remoteness Classification: Purpose and Use Census Paper No. 03/01 2003*. Available at www.abs.gov.au.

Australian Bureau of Statistics. *Measures of Australia's progress*. ABS Catalogue no. 1370.0. Canberra: ABS, 2006.

Australian Government Department of Health and Ageing and the National Key Centre for Social Applications of Geographical Information Systems (GISCA), *Accessibility-Remoteness Index of Australia*, Occasional papers series no 5. Canberra: Department of Health and Aged Care, 1999.

Australian Institute of Health and Welfare. *Australia's health 2004*. Canberra: AIHW, 2004. Available at: www.aihw.gov.au/publications/index.cfm/title/10014.

Australian Institute of Health and Welfare. *Medical labour force 2001*. Canberra: AIHW, 2003. Available at www.aihw.gov.au/publications/index.cfm/criteria/medical_labour_force_2001.

Australian Institute of Health and Welfare. *Rural, Regional and Remote Health: A guide to remoteness classifications* AIHW Catalogue PHE 53, Canberra: AIHW, 2004. Available at www.aihw.gov.au.

Australian Institute of Health and Welfare. *Rural, Regional and Remote Health: A study on mortality*. AIHW Cat No. PHE 45. Canberra: AIHW, 2003. Available at www.aihw.gov.au/publications/index.cfm/title/9411.

Australian Institute of Health and Welfare. *Rural, regional and remote health: mortality trends 1992–2003*. AIHW Cat. No. PHE 71. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10276.

Centre for Epidemiology and Research. *2005 Report on adult health in New South Wales*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Ellis C, et al Acute Coronary Syndrome patients in New Zealand receive less invasive management when admitted to hospitals without invasive facilities. *NZ Med J* 2004 July 09; 117(1197):U954.

Flood V, Webb K, Lazarus R, Pang G. Use of self-report to monitor overweight and obesity in populations: Some issues for consideration. *Aust N Z J Public Health* 2000; 24: 96–99.

NSW Centre for Public Health Nutrition. *Report on the weight status of NSW: 2003*. Sydney: CPHN, 2003. Available at: www.cphn.biochem.usyd.edu.au.

NSW Department of Health. *NSW Health Services Comparison Data Book 1998–1999*. Sydney. NSW Department of Health, 2000. Available at www.health.nsw.gov.au/pubs/h/yb9899/.

NSW Health *Rural health* at www.health.nsw.gov.au/rural.

NSW Roads and Traffic Authority. Preliminary Traffic Accident Data for January 2003, Monthly Bulletin. Sydney: NSW Roads and Traffic Authority, Road Strategy Branch, 2001.

NSW Rural Health Plan September 2002. Available at www.health.nsw.gov.au/rural/pdf/ruralresponse.pdf.

NSW Rural Hospital and Health Service Program. Available at www.asset.gov.com.au/ruralhospitals/.

National Health Performance Committee. *National report on Health Sector Performance Indicators 2003*. AIHW Catalogue no. HWI 78. Canberra: AIHW, 2004. Available at www.aihw.gov.au/publications/index.cfm/title/10085.

National Health and Medical Research Council and Natural Resource Management Ministerial Council. *Australian Drinking Water Guidelines 2004*. Canberra: NHMRC, 2004. Available at: www.nhmrc.gov.au/publications/synopses/eh19syn.htm.

National Key Centre for Social Applications of Geographical Information Systems at www.gisca.adelaide.edu.au.

Organization for Economic Cooperation and Development. *Health at a glance. OECD indicators 2005*. Paris: OECD, 2005.

The New South Wales Premier's Department website at www.premiers.nsw.gov.au.

Tobias M, Jackson G. Avoidable mortality in New Zealand, 1981–97. *Aust N J Z Public Health* 2001; 25: 12–20.

Victorian Government Department of Human Services. *The Victorian Ambulatory Care Sensitive Conditions Study, 2001–02*. Melbourne: VGDHS, 2004. Available at www.dhs.vic.gov.au/health/healthstatus/acsc/finalreport.htm.

Wearne SM et al. Training our future rural medical workforce. *MJA* 2004;180(3):101–102.

World Health Organization. *Obesity: Preventing and managing the global epidemic: Report of a WHO consultation* WHO Technical Report Series 894. Geneva: World Health Organization, 2000.

Socioeconomic status

- In NSW and Australia, as in most other countries, there are differences between socioeconomic groups in many measures of mortality and morbidity, partly due to differences in the determinants of health (both social and behavioural) between groups but also due to inequalities in the health system.
- Life expectancy has increased and rates of premature death have declined among all socioeconomic groups over the past 20 years in NSW.
- In this period those living in statistical local areas in the upper quintile of socioeconomic class have maintained substantially lower rates of premature death than the remaining 80% of the population.
- Furthermore, the steepest decline in death rates has been among the highest socioeconomic group, resulting in an increase in the relative 'gap' between this group and the rest of the population.
- The relative gap between the lowest socioeconomic group and the middle 60% of the population appears to be narrowing, at least for males.
- A similar pattern was also seen for:
 - deaths from causes classified as 'potentially avoidable' through primary, secondary, and tertiary health system interventions;
 - teenage mothers.
- A different pattern exists for hospitalisations that can potentially be avoided through prevention and early disease management. Over the nine years to 2004–05, the relative gap in rates of these hospitalisations was the same for the lowest and highest socioeconomic groups, but the gap between the lowest socioeconomic group and the rest of the population appears to be closing, at least for females.
- The gap in life expectancy has been stable over the last 20 years.
- Smoking and overweight and obesity show a similar pattern of sustained differences between the highest and lowest socioeconomic groups over time. Smoking prevalence was higher in both males and females in the lowest socioeconomic group compared with the highest and females, but not males, in the lowest socioeconomic group were more likely to be overweight or obese.

In this chapter

- Life expectancy
- Premature deaths
- Potentially avoidable deaths
- Hospitalisations for ambulatory care sensitive conditions
- Teenage mothers
- Smoking
- Overweight and obesity

Introduction

The health of all Australians has improved enormously over the 20th century, with life expectancy for both males and females over this time increasing by about 20 years (ABS, 2006). This chapter examines the unequal distribution of health outcomes among different socioeconomic groups in NSW and whether these inequalities have changed over time.

The effect of the socioeconomic gradient on health is well documented. Over a number of countries and under different health systems, a gradient exists: as socioeconomic disadvantage increases, there is a simultaneous increase in mortality from both avoidable and other causes and morbidity, as well as changes in behaviours and risk factors that affect health outcomes, such as the level of smoking, exercise and type of diet (Berkman et al., 2000; Turrell et al., 2006). The health burden in the Australian population attributable to socioeconomic disadvantage is large and much of this burden is potentially avoidable (Turrell et al., 2006).

The term “socioeconomic position” means the social and economic factors that influence what position individuals and groups hold within the structure of society that may have an influence on their health (Lynch et al., 2000). 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 (incorporating a number of measures) of poverty or deprivation (Lynch et al., 2000). The Index of Relative Socioeconomic Disadvantage (IRSD) is one of the Socioeconomic Indexes for Areas (SEIFA) developed by the Australian Bureau of Statistics based on census data. The IRSD includes the main measures of disadvantage, ie low income, high unemployment, low levels of education and unskilled occupations, along with other measures which have also been shown to be associated with disadvantage such as the proportion of Aboriginal people or those with low English fluency in an area, and multiple families living in the one house (Adhikari P, 2006). The IRSD provides a score for a geographic area (such as a Statistical Local Area), which is weighted to the population in that area. The scores for areas are ranked for the whole of Australia. The advantages of using these scores is that health outcomes (such as deaths or risk factors) can be compared for the populations of different areas based on the overall socioeconomic status of that area. The disadvantages are that these area scores may hide pockets of disadvantage within the largest geographic areas and the IRSD does not include other socioeconomic measures which may be important—such as accumulated wealth, or the community infrastructure of an area or differences in the cost of living in some areas compared to others (Adhikari P, 2006).

In Australia, the total burden of disease, as measured by disability-adjusted life years (DALY) and using the IRSD, increases with decreasing socioeconomic status, with the most disadvantaged populations having a 31% greater burden than the most advantaged populations. In absolute terms, mental disorders (14%), cardiovascular disease (12%), diabetes (10%) and injuries (10%) contribute most to the disparities in health among socioeconomic groups (Begg et al., in press). Males and females in the most disadvantaged areas in Australia had significantly higher all-cause death rates in the period 1998–2000, with the relative differences in the least and most disadvantaged areas being largest among adolescent males and young adult males (89%), smallest for males aged 75 years and over (10%), largest among female children aged 0–14 years (62%) and smallest for females aged 75 years and over (4%) (Draper et al., 2004). Differences in health-related factors such as smoking and obesity were consistently higher among the most disadvantaged areas of Australia compared with the least disadvantaged area (Turrell et al., 2006).

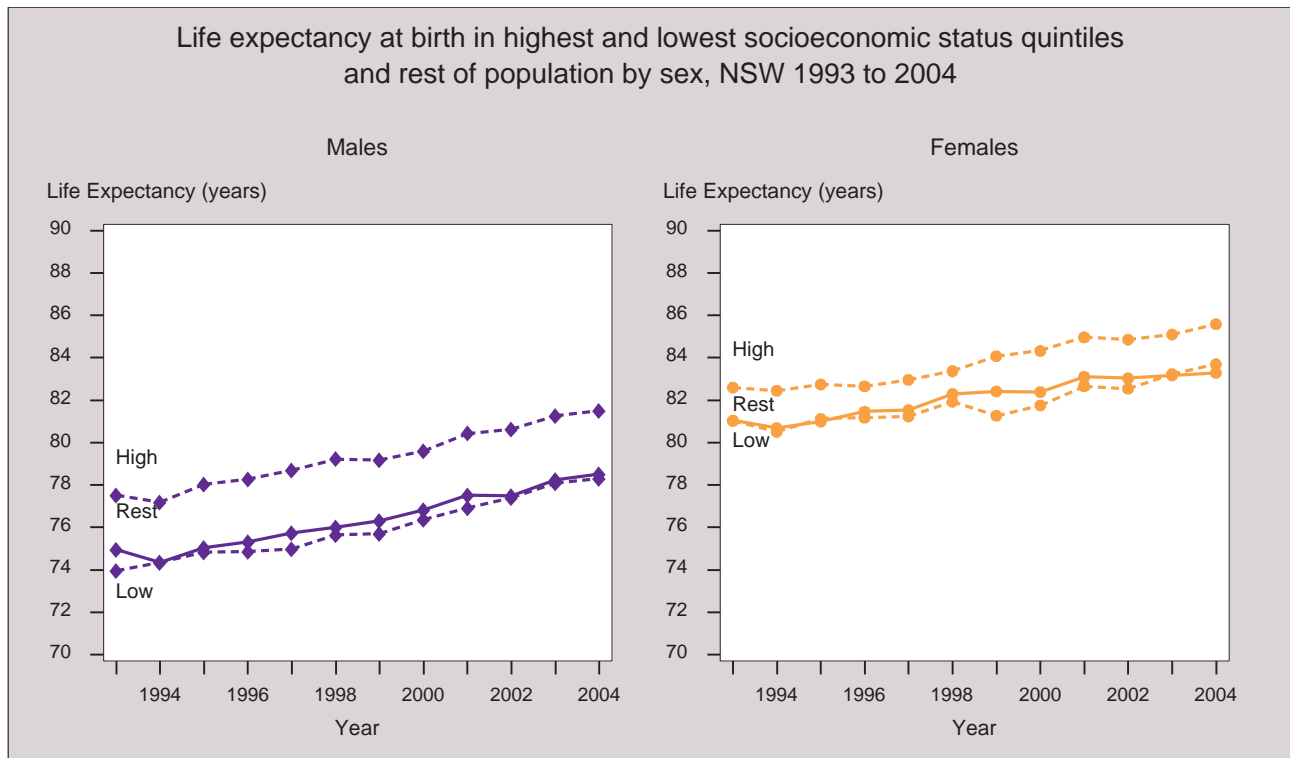
This chapter considers the trends across socioeconomic groups in NSW of several key health indicators, many of which relate to various forms of potentially avoidable conditions. These include premature mortality from all causes (death before the age of 75, potentially avoidable deaths, potentially avoidable hospitalisations, life expectancy, teenage pregnancy, smoking and obesity. Potentially avoidable deaths refer to deaths before the age of 75 years that 'should not occur in the presence of effective and timely health care' (Nolte and McKee 2004). Deaths amenable to primary prevention could be avoided based on current knowledge of the causes of the disease and consequent promotion of healthy lifestyle (such as healthy eating, and encouraging exercise) or legislative change (for instance against smoking in public buildings). Those amenable to secondary prevention could have been prevented by vaccination, screening or other early intervention practices. Tertiary preventable causes of death could be prevented by timely medical intervention. These categories are based on the work of Jackson and Tobias (2001). Avoidable hospitalisations refer to those conditions where hospitalisation could be avoided by timely primary health care (by GP services or community health centres). As this primary care is usually in the form of a 'walk in' consultation, these conditions are referred to as 'ambulatory-care sensitive' hospitalisations (VGDHS, 2002).

Both the absolute change in rates of these indicators over time and the relative rate of change between socioeconomic groups are presented. Such information is an important and ongoing requirement to assess the success of any initiative aiming to reduce the current level of inequality.

In 2004, NSW Health implemented the Health and Equity Statement "*In All Fairness*" (NSW Health 2004). It aims to address health inequalities both through the development of policies and programs that address health inequalities, and the integration with other government and non-government agencies which aim to improve social cohesion and other aspects of community life in a way that addresses some of the 'midstream' and 'upstream' causes of the socioeconomic gradient.

The methods used in the 2006 report are largely the same as those used for the 2004 report. There have been some minor improvements in the modelling of trends over time and also in the assignment of the SEIFA index of relative socioeconomic disadvantage to statistical local areas (SLAs) over time. The assignment of an index of relative socioeconomic disadvantage to SLAs is used to separate these areas into the socioeconomic groupings. Further details on the Methods used in this report can be found in the Methods section.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



SES group	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Lowest quintile	Persons	77.9	77.9	78.0	78.7	78.4	79.0	79.8	80.0	80.6	81.0
Rest of population	Persons	78.0	78.4	78.6	79.1	79.3	79.6	80.3	80.2	80.7	80.9
Highest quintile	Persons	80.5	80.6	81.0	81.4	81.8	82.1	82.9	82.9	83.3	83.7
NSW	Persons	78.5	78.7	79.0	79.5	79.7	80.0	80.7	80.7	81.2	81.5

Note: Life expectancy was calculated using the method of Chiang (see Methods section). Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

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

- The life expectancy of a person born in NSW in 2004 was 81.5 years, 83.9 years for a female and 79.0 years for a male. This is similar to the national life expectancy calculated for persons born in 2002 to 2004 of 83.0 years for a female and 78.1 years for a male (AIHW 2006).
- These average figures hide inequalities relating to socioeconomic status (SES). In NSW, males born in statistical local areas in the quintile of least disadvantage (the highest SES group) are expected to live an average of about 3 years longer than those in the lower four quintiles of disadvantage (lower SES groups). For females the difference between the upper quintile and the lower four quintiles is about 2 years. In comparison, non-Aboriginal people in NSW are expected to live 17 years longer than Aboriginal people (see Aboriginal and Torres Strait Islander peoples chapter).
- In the 12 years between 1993 and 2004, life expectancy increased for all SES groups for both males and females. The increase was greater for males than for females across SES groups, with averages of 3.8 years for males and 2.5 years for females.
- Based on a linear regression analysis of life expectancy over time by the highest, lowest and middle three (rest) SES groups, there is no evidence of a trend towards a widening or narrowing of the gap between the three SES groups over the 12 years, for either males or females.
- In NSW life expectancy has increased at a uniform rate across socioeconomic groups, leaving a continuing discrepancy between the highest SES group and the rest of the population. In Victoria, using similar methods, the gap in life expectancy at birth between the highest and lowest SES groups narrowed for both males and females in the period between 1996 and 1999 (Magnus et al., 2001).

Deaths, premature, in highest and lowest socioeconomic status quintiles and rest of population by sex, persons aged under 75 years, NSW 1985 to 2004



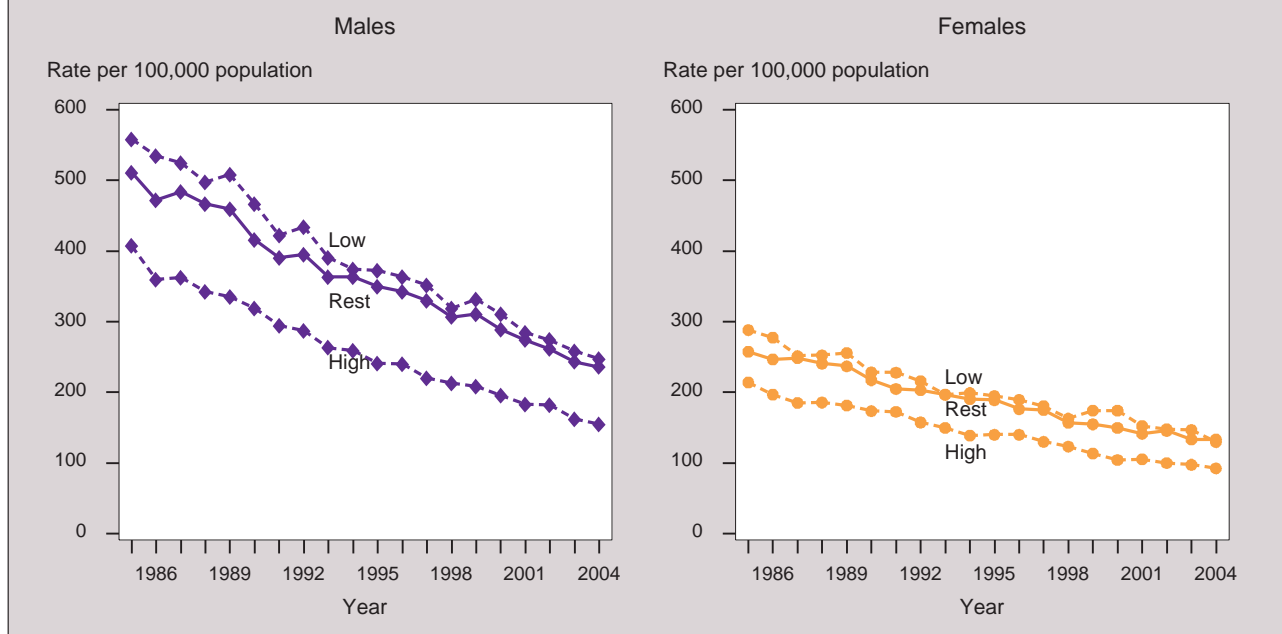
	SES group	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Lowest quintile	Persons	4427	4455	4277	3378	3299	3161	3093	3111	2988
	Rest of population	Persons	11896	11897	11606	12377	12057	11575	11622	11300	11244
	Highest quintile	Persons	3145	3011	2963	2886	2731	2689	2654	2582	2485
	NSW	Persons	19505	19409	18913	18692	18139	17457	17422	17033	16748
Rate per 100,000 population	Lowest quintile	Persons	361.7	357.8	339.1	338.0	326.1	306.1	294.9	293.9	278.9
	Rest of population	Persons	343.0	338.3	326.0	319.7	307.6	290.9	288.3	277.7	273.3
	Highest quintile	Persons	256.7	244.2	238.7	227.0	213.3	207.9	203.3	196.8	188.4
	NSW	Persons	329.4	323.4	311.6	304.1	291.9	276.8	272.7	264.4	257.2

Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

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

- In NSW between 1985 and 2004, death rates before the age of 75 years in NSW fell across all socioeconomic status (SES) groups for both males and females. In males, death rates fell by 54% in the highest SES group, by 47% in the lowest group and by 45% in the rest of the population. In females, rates fell by 46% in the highest SES group, by 46% in the lowest SES group and by 39% in the rest of the population.
- In absolute terms, the 'gap' in rates of premature death between the highest and lowest SES groups narrowed over the 20-year period. The difference in death rates decreased from 178 to 128 per 100,000 in males, and from 85 to 46 per 100,000 in females.
- To compare the relative rate of decline in premature deaths among SES groups, a statistical model adjusting for age, was fitted to the data (see the Methods section). The fitted curves give estimated trends in death rates over time. In males, the decline over 20 years in premature deaths was significantly more rapid in the highest SES group (3.9% per year) than in either the lowest SES group (3.5%), or the rest (middle 60%) of the population (3.2%). The decline in death rate in the middle group was significantly slower than in the lowest SES group.
- In females, the decline in premature deaths was also significantly faster in the highest SES group (3.2% per year) than in the middle group (2.7%), but did not differ from the trend rate of decline in the lowest SES group (2.9%). The rate of decline in lowest SES and middle groups did not differ significantly from each other.

Deaths, potentially avoidable, in highest and lowest socioeconomic status quintiles and rest of population by sex, persons aged under 75 years, NSW 1985 to 2004



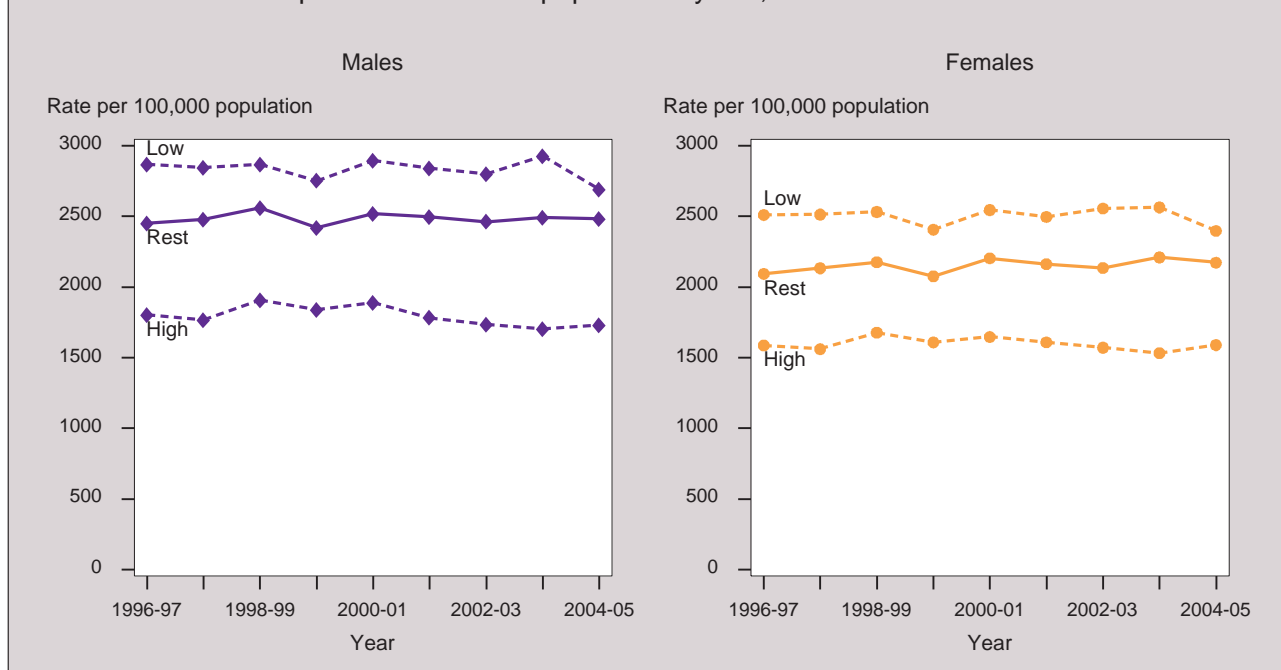
	SES group	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Lowest quintile	Persons	3409	3363	3292	3024	2516	2452	2254	2210	2143	2022
	Rest of population	Persons	9160	8924	8807	8213	8940	8558	8219	8159	7614	7570
	Highest quintile	Persons	2277	2293	2136	2063	2028	1902	1852	1826	1698	1624
	NSW	Persons	14846	14580	14235	13300	13484	12912	12325	12195	11455	11216
Rate per 100,000 population	Lowest quintile	Persons	282.3	275.1	265.1	240.0	251.9	242.2	218.4	210.9	202.5	188.4
	Rest of population	Persons	266.8	257.1	250.6	230.6	231.4	218.5	206.9	202.7	187.4	183.9
	Highest quintile	Persons	187.6	186.9	173.0	166.0	159.2	148.5	142.7	139.6	129.0	122.7
	NSW	Persons	253.4	246.1	237.4	219.1	219.5	207.8	195.5	190.9	177.9	172.1

Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

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

- Deaths classified as ‘avoidable’ are those that could *potentially* be avoided through the activities of the health and related sectors in preventing disease through health promotion, detecting and managing disease early through screening and follow-up, or intervening with treatments to increase survival (Tobias and Jackson, 2001). In 2004, 67% of all premature deaths (deaths before 75 years) were due to potentially avoidable causes, compared to 80% in 1985. In this period, the *rate* of avoidable death fell by 56% in males and by 51% in females.
- In absolute terms, the ‘gap’ in rates of avoidable death between the highest and lowest SES groups narrowed over the 20-year period. The difference in death rates decreased from 151 to 93 per 100,000 population in males, and from 74 to 37 per 100,000 population in females.
- In males, the relative rate of decline in avoidable deaths was significantly faster in the highest SES group (with a trend of 4.7% per year) than in either the lowest SES group (4.2%), or the rest (middle 60%) of the population (3.9%). There was no significant difference in decline in death rate between the middle group and the the lowest SES group.
- In females, the decline in avoidable deaths was also significantly faster in the highest SES group (4.2% per year) than in either of the other groups, while the rate of decline in the lowest SES (3.7%) and middle groups (3.6%) did not differ significantly.
- In 2004, ischaemic heart disease and stroke contributed over a third of all avoidable deaths, with lung cancer and colorectal cancer the next largest contributing causes.

Ambulatory care sensitive hospital separations in highest and lowest socioeconomic status quintiles and rest of population by sex, NSW 1996-97 to 2004-05

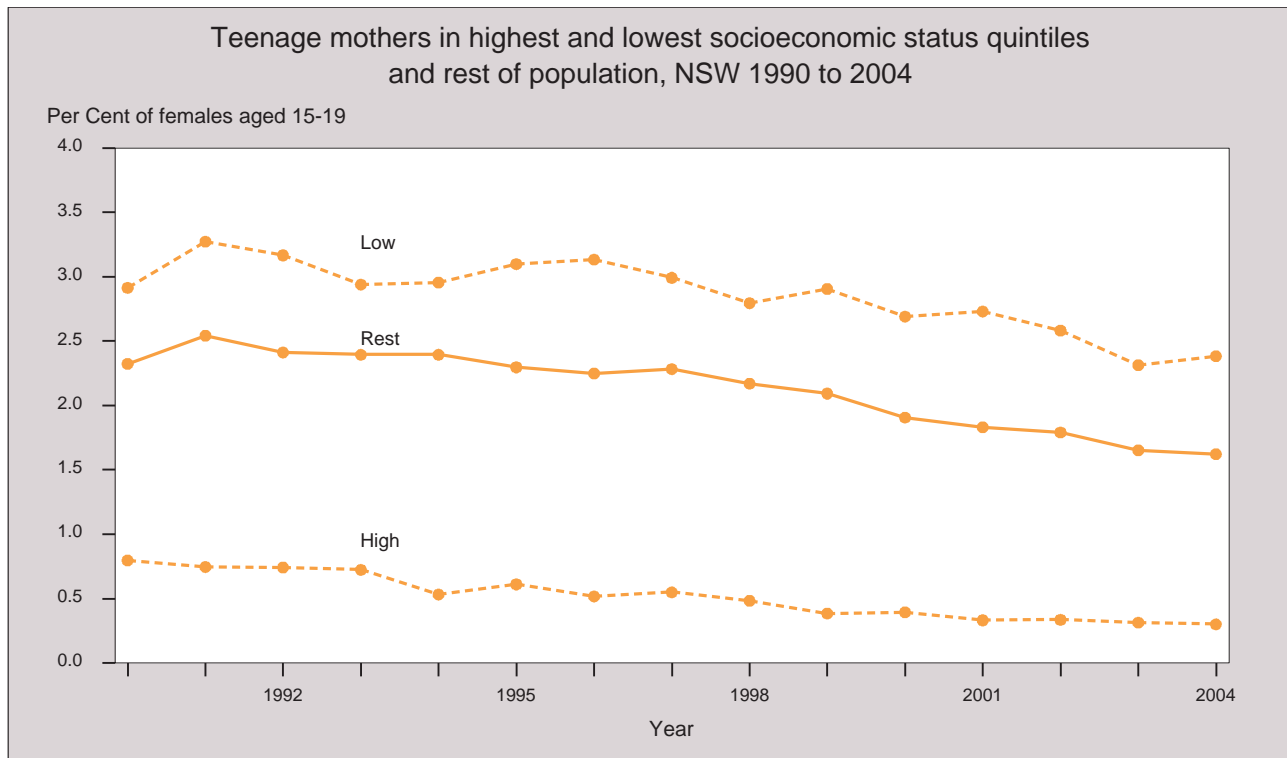


	SES group	Sex	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Lowest quintile	Persons	34219	35164	30677	32992	33155	33449	34850	32790
	Rest of population	Persons	84053	87631	87097	93592	94290	94307	97863	98401
	Highest quintile	Persons	21531	23493	23349	24387	23831	23502	23202	23970
	NSW	Persons	139803	146288	141123	150971	151276	151258	155915	155162
Rate per 100,000 population	Lowest quintile	Persons	2657.6	2683.5	2553.4	2696.7	2655.7	2664.4	2725.9	2526.2
	Rest of population	Persons	2281.8	2341.7	2225.1	2341.6	2308.4	2278.1	2332.3	2307.3
	Highest quintile	Persons	1641.0	1769.6	1700.8	1745.3	1678.8	1637.8	1600.1	1648.5
	NSW	Persons	2224.4	2291.8	2175.8	2283.0	2242.4	2214.0	2252.8	2210.8

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 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

Source: Ambulatory care sensitive hospitalisations definitions were modified from Victorian Department of Human Services, 2002. ABS Socio Economic Indices for Areas and NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Ambulatory care sensitive hospitalisations are those that may potentially be avoided by early disease management delivered through ambulatory care settings.
- In NSW in 2004-05, the rate of hospitalisation for ambulatory care sensitive conditions in the lowest socioeconomic status (SES) group was 52% higher in males and 46% higher in females than in the highest SES group, compared to 59% and 58% higher respectively in 1996-97. The rate for the rest of the population compared to the highest SES group for males and females respectively increased from 36% and 32% higher in 1996-97, to 43% and 37% higher in 2004-05.
- For males, the relative change in rates is very similar for the lowest, middle and highest SES groups (1.4%, 1.0% and 1.7% per year respectively). There were no significant differences between SES groups in the trend. The rate of reduction in females was not significantly different for the high and middle (rest of the population) SES groups (1.0% and 0.3% per year respectively). The relative improvement in the lowest SES group (1.1% per year) was significantly better than for the middle SES group, but did not differ significantly from the highest SES group.
- The ability to statistically identify a narrowing of the difference between the lowest SES group and the rest of the population for females, but not males, is a consequence of greater underlying variability in the data for males.



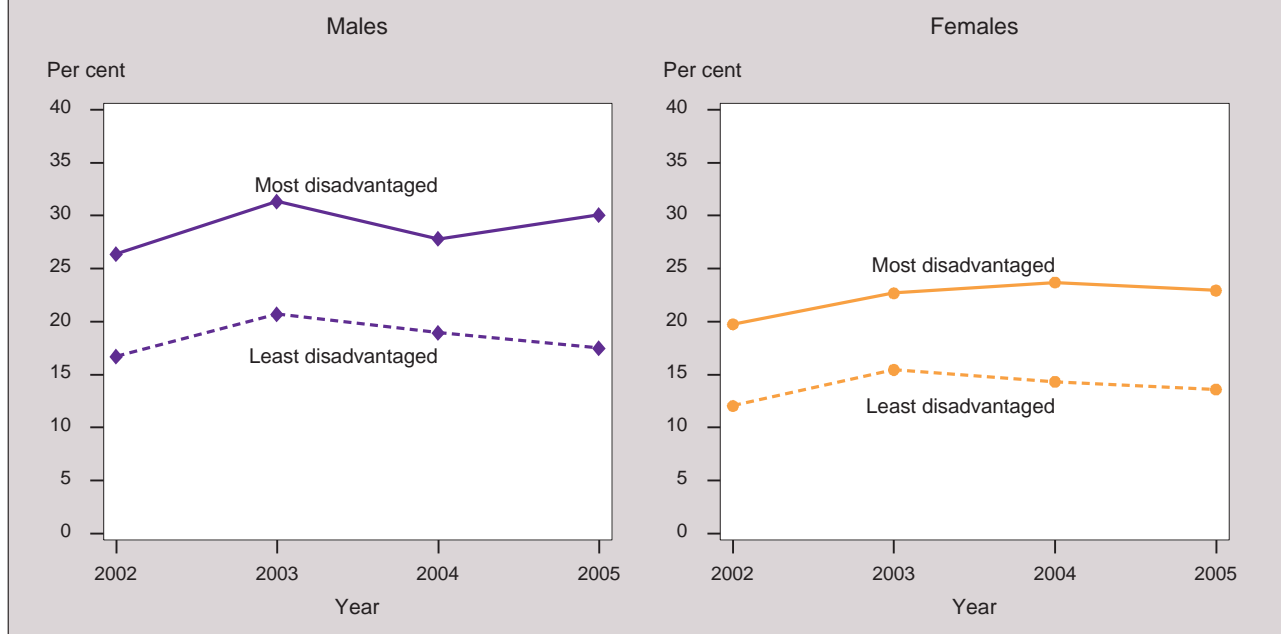
SES group		1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Lowest quintile	1296	1201	1137	1331	1250	1285	1215	1093	1129
	Rest of population	2754	2840	2720	2569	2390	2340	2298	2142	2107
	Highest quintile	220	232	203	161	167	144	147	138	133
	NSW	4270	4273	4060	4061	3807	3769	3660	3373	3369
Per cent of females aged 15-19	Lowest quintile	3.1	3.0	2.8	2.9	2.7	2.7	2.6	2.3	2.4
	Rest of population	2.2	2.3	2.2	2.1	1.9	1.8	1.8	1.7	1.6
	Highest quintile	0.5	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3
	NSW	2.1	2.1	2.0	1.9	1.8	1.7	1.7	1.5	1.5

Note: The percentage of teenage mothers is the number of livebirths among women aged less than 20 years as a proportion of the female population aged 15-19 years.

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

- The health risks of pregnancy and childbirth are higher for new mothers in their teenage years than for mothers aged in their twenties. For the mother, there is a higher risk of some medical complications, such as high blood pressure; and, for the baby, there is a greater risk of low birthweight, prematurity, and stillbirth.
- Between 1990 and 2004, the percentage of teenagers who had babies decreased overall from 2.1% to 1.5% of all young women aged 15-19 years. This decline was seen across all socioeconomic status (SES) groups, with rates declining from 0.8% to 0.3% of women in the highest SES group, from 2.9% to 2.4% of young women in the lowest SES group, and from 2.3% to 1.6% in the rest (middle 60%) of the population. The absolute gap between the highest and lowest SES groups, which was 2.1% in 1990, peaked at 2.6% in 1996, and has since returned to 2.1%. In 2004 a teenage girl in the lowest SES group was 8 times more likely to have a child than one in the highest SES group, compared with 3.6 times in 1990. This marked difference between SES groups is due to the much faster relative rate of decline in teenage mothers in the highest SES quintile.
- When the relative change in rate is statistically modelled, the highest SES quintile has a relative decrease of 8.1% per year, compared with 1.8% per year for the lowest SES group and 2.9% per year for the rest of the population. The difference between all SES groups is highly significant.
- Therefore, although the percentage of teenage mothers has declined overall in the last 11 years in NSW, the trend is for an increasing relative gap between the highest and the other two SES groups, and between the middle and the lowest SES group.

Current daily or occasional smoking, persons aged 16 years and over, NSW 2002 to 2005



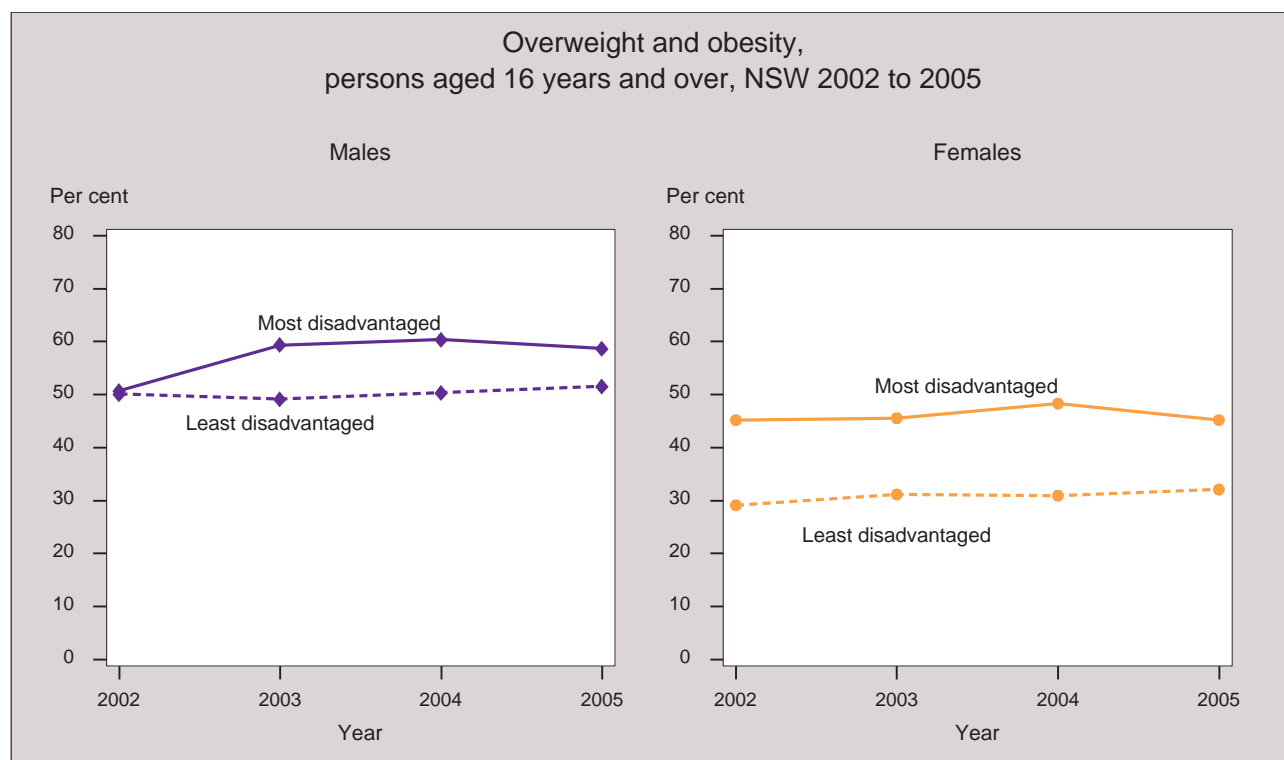
SES group	Sex	2002	2003	2004	2005
Lowest quintile	Persons	22.9	27.1	25.6	26.5
4th Quintile	Persons	24.8	21.9	22.3	20.9
3rd Quintile	Persons	21.7	22.5	22.5	20.3
2nd Quintile	Persons	21.2	20.6	18.9	15.5
Highest quintile	Persons	14.3	17.8	16.7	15.6
NSW	Persons	21.5	22.3	20.9	20.1

Note: Current smoking includes daily and occasional use. Estimates based on 13,002 respondents. 6 (0.05%) 'not stated' (Don't know or Refused) for current smoking status.

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

- In Australia between 1989–90 and 2001, the prevalence of smoking in adults was significantly higher over time in both males and females in the highest quintile of socioeconomic status (SES) compared with the lowest SES quintile (Turrell et al., 2006).
- In NSW smoking rates declined significantly in males from 27.2% in 1997 to 22.6% in 2005 and from 20.9% in 1997 to 17.6% in 2005 in females. While smoking rates have declined in all SES groups over this period, the decline has been greater in the highest SES group (from 20.0% in 1997 to 15.6% in 2005, a statistically significant decrease) than in the lowest SES group (from 27.6% in 1997 to 26.5% in 2005, not a statistically significant difference). In each of these years there was a significant difference in smoking rates between the highest and lowest SES groups of around 10% in males (22.1% and 31.2% in 1997 and 17.5% and 30.1% in 2005); and 6–8% in females (18.0% and 23.9% in 1997 and 13.6% and 22.9% in 2005). In both males and females in NSW there was a gradient of increasing smoking rates with decreasing socioeconomic status between 1997 and 2005.
- Tobacco was responsible for 8% of the total burden of disease in Australia in 2003, with lung cancer, chronic obstructive pulmonary disease, and ischaemic heart disease accounting for three-quarters of this burden (Begg et al., in press). Socioeconomic differences in current smoking rates will therefore perpetuate these differences in morbidity and mortality outcomes into the future.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



SES group	Sex	2002	2003	2004	2005
Lowest quintile	Persons	47.9	52.7	54.1	51.9
4th Quintile	Persons	50.2	53.3	51.9	55.6
3rd Quintile	Persons	46.6	48.5	52.8	52.8
2nd Quintile	Persons	42.6	43.9	45.4	47.2
Highest quintile	Persons	39.2	39.4	41.1	42.1
NSW	Persons	45.9	48.4	48.4	49.9

Note: Estimates for 1997 and 1998 are based on over 16,500 respondents for each year. Estimates for 2002 onwards are based on around 9,000 to 12,000 respondents for each year. Less than 5% were not stated (Don't know or Refused). The indicator includes those with a Body Mass Index (BMI) of 25 or higher. The questions used to define the indicator were: 'How tall are you without shoes?' and 'How much do you weigh without clothes or shoes?' BMI is calculated as follows: $BMI = \text{weight (kg)} / \text{height}^2(\text{m})$. Categories for this indicator include overweight (BMI between 25 and 29.9) and obese (BMI of 30 and over).

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

- In Australia between 1989–90 and 2001, the prevalence of obesity in adults aged over 24 years was significantly higher over time in both males and females in the highest quintile of socioeconomic status (SES) compared with the lowest SES quintile (Turrell et al., 2006).
- In NSW rates of overweight and obesity increased significantly in males from 49.7% in 1997 to 57.5% in 2005 and from 34.5% in 1997 to 42.3% in 2005 in females. While rates of overweight and obesity have increased for all SES groups over this period, the increase has been lower in the highest SES group (from 36.6% in 1997 to 42.1% in 2005, a statistically significant increase) than in the lowest SES group (from 44.8% in 1997 to 51.9% in 2005, also a statistically significant increase). In each of these years there was no significant difference in rates of overweight and obesity between the highest and lowest SES groups in males (47.2% and 50.4% in 1997 and 51.6% and 58.7% in 2005); but differences between the highest and lowest SES groups were statistically significant in females (26.3% and 38.6% in 1997 and 32.1% and 45.2% in 2005). In both males and females in NSW there was a gradient of increasing rates of overweight and obesity with decreasing socioeconomic status between 1997 and 2005.
- High body mass was responsible for 9% of the total burden of disease in Australia in 2003, with Type 2 diabetes and ischaemic heart disease accounting for more than three-quarters of this burden (Begg et al., in press). Socioeconomic differences in current rates of overweight and obesity will therefore perpetuate these differences in morbidity and mortality outcomes into the future.

For more information

Adhikari P. *Socio-economic indexes for areas: Introduction, use and Future directions*. ABS Catalogue no. 1351.0.55.015. Canberra: ABS, 2006.

Australian Bureau of Statistics at www.abs.gov.au.

Australian Bureau of Statistics. *Australian Social Trends 2005*. Catalogue no. 4102.0. Canberra: ABS, 2005. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4102.02005?OpenDocument>.

Australian Bureau of Statistics. *Measures of Australia's progress*. ABS Catalogue no. 1370.0. Canberra: ABS, 2006.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Begg S, Vos T, Barker B. et al. *The burden of disease and injury in Australia, 2003*. Canberra: AIHW, in press. Available at www.aihw.gov.au/publications.

Berkman LF, Kawachi I (Editors). *Social epidemiology*. New York: Oxford University Press, 2000.

Centre for Epidemiology and Research. New South Wales Mothers and Babies 2003. *N S W Public Health Bull* 2004; 15(S-5). Available at www.health.nsw.gov.au/public-health/phbsup/mdc03.html.

Draper G, Turrell G, Oldenburg B. *Health inequalities in Australia: Mortality*. Health Inequalities Monitoring Series No. 1. AIHW Cat. No. PHE 55. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare, 2004. Available at www.aihw.gov.au/publications/index.cfm/title/10041.

Holland WW, Fitzgerald AP, Hildrey SJ, Phillips SJ. Heaven can wait. *J Public Health Med* 1994; 16(3): 321–30.

Jackson G, Tobias M. Potentially avoidable hospitalisations in New Zealand, 1989–98. *Aust N Z J Public Health* 2001; 25(3): 212–219.

Lynch J, Kaplan G in Berkman LF, Kawachi I (Editors). *Social epidemiology*. New York: Oxford University Press, 2000.

Magnus A, Vos T, Begg S. Improvement in the life expectancy of Victorians. *Health of Victorians. The Chief Health Officer's Bulletin* 2001; 1(1): 16–19.

NSW Department of Health. *In All Fairness*. NSW Health and Equity Statement. Sydney: NSW Department of Health, 2004.

Nolte E and McKee M. *Does healthcare save lives? Avoidable mortality revisited*. Nuffield Trust. London. 2004.

Office of National Statistics. *Trends in life expectancy by social class, 1972–1999*. London: UK Office of National Statistics, 2002. Available at www.statistics.gov.uk.

Racine AD and Joyce TJ. 2004. *The Disappearing Income Gradient in New York City Birth Outcomes: Thirteen years of Convergence From 1988 to 2001*. *Pediatrics* 114(1) 51–57 2004.

Taylor R. Mediation of the effects of social and economic status on health and mortality: The roles of behaviour and constitution. *The social origins of health and wellbeing*. Eckersley R, Dixon J, Douglas B (editors). Cambridge: Cambridge University Press, 2002.

Tobias M and Jackson G. Avoidable mortality in New Zealand, 1981–97. *Aust N Z J Public Health* 2001; 25(1): 12–20.

Turrell G and Mathers CD. Socioeconomic inequalities in all-cause mortality in Australia: 1985–97 and 1995–97. *Int J Epidemiol* 2000b; 29: 231–239.

Turrell G, Stanley L, de Looper M and Oldenburg B. *Health Inequalities in Australia: Morbidity, health behaviours, risk factors and health service use*. Health Inequalities Monitoring Series No. 2. AIHW Cat. No. PHE 72. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare, 2006. Available at www.aihw.gov.au/publications/index.cfm/title/10041.

Victorian Government Department of Human Services. *The Victorian ambulatory care sensitive conditions study: Opportunities for Targeting Public Health and Health Services Intervention*. Melbourne: VGDHS, 2002.

Victorian Government Department of Human Services. *The Victorian ambulatory care sensitive conditions study: Preliminary analyses*. Melbourne: VGDHS, 2001.

Wanless D. *Securing Good Health for the Whole population, Final report*. HM Treasury, London, 2004.

Wood E, Sallar AM, Schechter MT, Hogg RS. Social inequalities in male mortality amenable to medical intervention in British Columbia. *Soc Sci Med* 1999; 48(12): 1751–8.

World Health Organization. *The World Health Report 2000. Health Systems: Improving Performance*. Geneva: WHO, 2000.

4

Health priority areas

Cardiovascular disease

- Cardiovascular disease causes about 17,500 deaths and 155,000 hospitalisations of NSW residents each year. Coronary heart disease and stroke are the two major conditions contributing 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 more than 8,700 deaths in 2004, or about 24 deaths every day. Coronary heart disease was the principal reason for nearly 55,000 hospitalisations in 2004–05.
- Stroke caused more than 4,500 deaths in NSW in 2004. Stroke was the principal reason for over 18,000 hospitalisations in 2004–05.
- Heart failure was the principal cause nearly 900 deaths in NSW in 2004 and a contributing cause in many more. Heart failure was the principal reason for nearly 12,800 hospitalisations in 2004–05.
- Peripheral vascular disease caused nearly 850 deaths in NSW in 2004. Peripheral vascular disease was the principal reason for nearly 8,300 hospitalisations in 2004–05.
- If hospitalisation and death rates follow the same trend as the last 15 to 20 years, by 2015, hospitalisation rates for all cardiovascular diseases will be 19% lower than in 2004–05 and death rates will be 33% lower than in 2004. The overall number of hospitalisations are, however, projected to increase to around 157,000 by 2015 due to the ageing of the population. Despite this, the number of deaths is projected to fall to around 16,200 by 2015.
- In the treatment of coronary heart disease, more than 10,000 percutaneous angioplasty procedures (with and without stents) were performed in 2004–05, more than double the 4,100 more invasive coronary artery bypass graft procedures.

In this chapter

- Deaths and hospitalisations with projections
- Deaths by condition
- Deaths by local government area
- Deaths by health area
- Hospitalisations by condition
- Acute coronary syndrome hospitalisations
- Cardiovascular disease procedures
- Aortic aneurysm deaths and hospitalisations

Introduction

Cardiovascular (or circulatory) diseases comprise all diseases of the heart and blood vessels. In 2004, circulatory diseases were responsible for 37.5% of all deaths in New South Wales, more than any other group of diseases. This proportion has been in decline since 1970, when nationally cardiovascular diseases were responsible for more than half of deaths. In the 2004–05 National Health Survey, 18% of respondents reported one or more long-term conditions of the circulatory system. The most prevalent condition was hypertensive disease (11% of respondents) (ABS, 2006).

Among cardiovascular 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, thrombophlebitis (such as deep vein thrombosis), haemorrhoids and varicose veins.

The main underlying problem in coronary heart disease, stroke, heart failure and peripheral vascular disease is atherosclerosis, a build-up of plaque (fat, cholesterol and other substances) on the inner lining of arteries. In coronary heart disease (or ischaemic heart disease) the plaque blocks the coronary arteries that supply blood to the heart muscle. A sudden complete blockage of the coronary artery, usually through clot formation at the site of an arterial plaque that causes inflammation of the artery wall, causes a myocardial infarction (heart attack), leading to the death of part of the heart muscle. Stroke, or cerebrovascular disease, refers to sudden blockage of blood vessels supplying the brain (ischaemic stroke), or bleeding into the brain (haemorrhagic stroke), often resulting in brain damage and impairment of functions such as movement and communication. Heart failure occurs when the heart becomes less able to pump blood around the body. Most heart failure is congestive heart failure, and is associated with a build-up of fluid in the lungs, legs, liver and other organs and tissues. Peripheral vascular disease (PVD or peripheral artery disease) encompasses diseases of arteries outside the heart and brain. It is most commonly caused by plaque deposits, but also refers to conditions such as aortic aneurysms and aortic dissections.

Cardiovascular disease was made a NSW state priority area in 1995 and national health priority area in 1996, as part of an initiative to reduce its effect in Australia by improving prevention, screening, treatment, follow-up, and rehabilitation services.

The four major causes of death from cardiovascular disease share a number of behavioural risk factors such as tobacco smoking, physical inactivity, poor diet, heavy alcohol consumption; and physiological risk factors such as high blood pressure, elevated blood lipids, diabetes mellitus, and obesity. Risk factors for cardiovascular diseases are also shared with other chronic diseases such as diabetes and chronic obstructive pulmonary diseases, so coordination of prevention, early detection and other strategies for these conditions will lead to better outcomes for a range of diseases.

In NSW, two of the measures of success in the *State Plan: A New Direction for New South Wales* (NSW Premier's Department, 2006), are a reduction in avoidable hospital admissions of aged people and people with chronic illnesses and a reduction in smoking rates, unhealthy alcohol consumption and obesity. The NSW Chronic Care Program, established in 2000, recognises a significant overlap in the management of chronic conditions. The Program aims to improve the quality of care provided for people with chronic health conditions, to improve the quality of life of people with chronic health conditions and their carers and families, and to reduce unplanned and avoidable admissions to hospital (NSW Health, 2006). The *NSW Clinical Service Framework for Heart Failure* outlines best practice standards for the prevention and diagnosis of, and care for, people with chronic heart failure (NSW Department of Health, 2003 a and b). The NSW Health Chronic Care Collaborative conducted in 2004 was successful in improving the care of people with heart failure through enhanced implementation of the Clinical Service Framework for Heart Failure. Current work of the NSW Chronic Care Program in relation to people with CVD now includes not only those with heart failure but also long-term management of those who have had an acute coronary syndrome event. *Rehabilitation for chronic disease volumes 1 and 2* (NSW Health, 2006) describes and provides recommendations to guide safe and therapeutic interventions for people with chronic disease, including people with cardiovascular disease. This work is supported with advice from the Cardiovascular Clinical Expert Reference Group, a multidisciplinary group of health professionals and consumers.

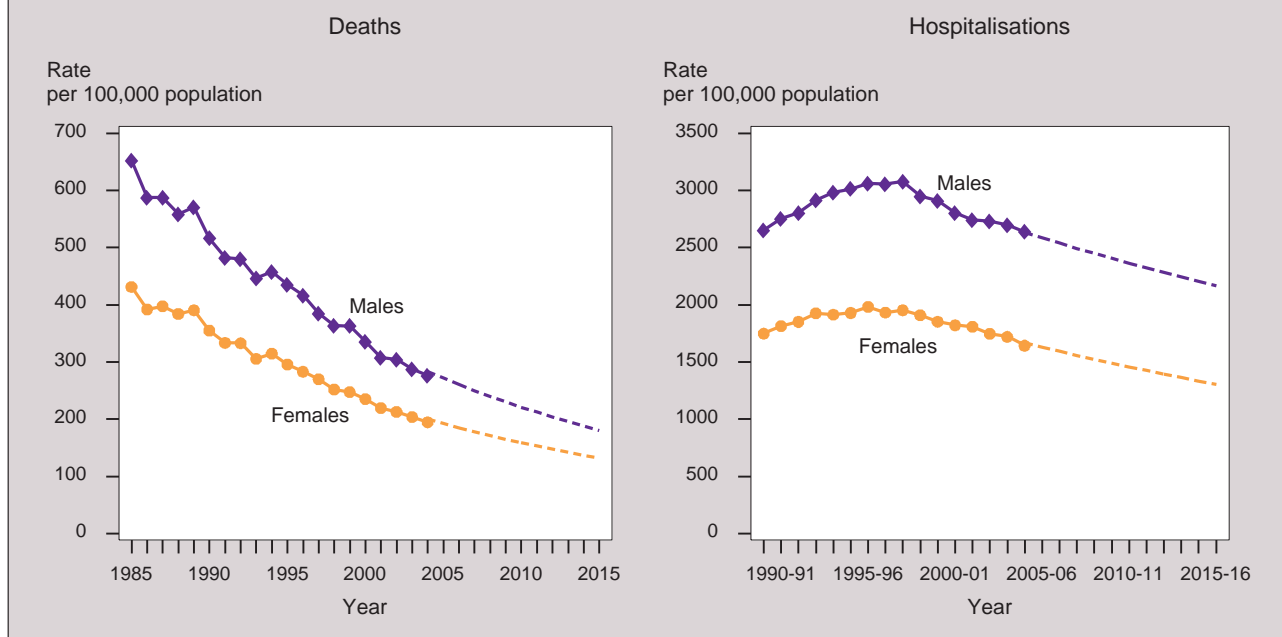
To address needs in the critical care area, a coordinated system of cardiology networks has been developed in NSW by the *Greater Metropolitan Clinical Taskforce Cardiology Services Network* to link local hospitals with a major hospital offering interventional cardiology and/or cardiac surgery, to expedite referrals and to provide access to high level facilities and clinical expertise (NSW Health website).

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. Coronary heart disease is also reviewed from the perspective of hospitalisations for acute coronary syndrome. Finally data on abdominal aortic aneurysms, which can be another cause of sudden death from cardiovascular disease, is presented.

The methods used for analysing and presenting death and hospitalisation data are described in more detail in the Methods section.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

Cardiovascular disease deaths 1985 to 2015, and hospital separations 1989-90 to 2015-16, observed and projected by sex, NSW

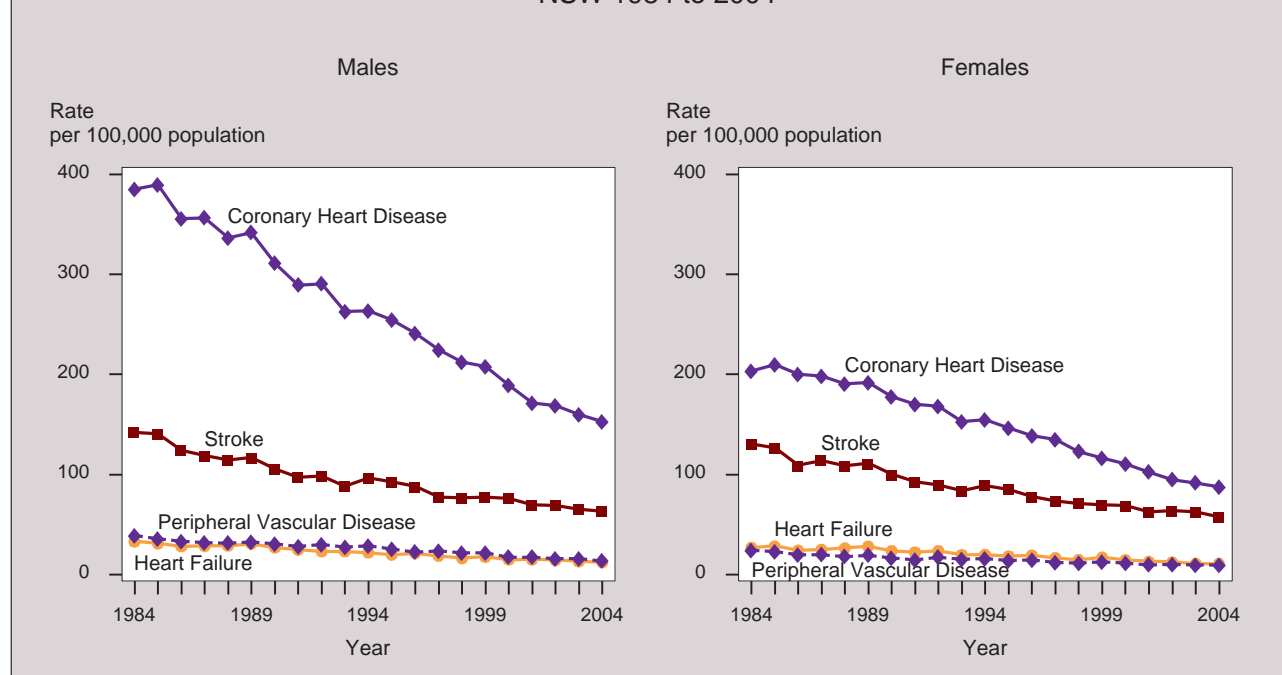


		Sex	1995	2000	2004	2005	2010	2015
Deaths	Number	Persons	19592	18387	17379	17650	17000	16190
	Rate	Persons	356.3	280.9	232.0	229	188	155
		Sex	1995-96	2000-01	2004-05	2005-06	2010-11	2015-16
Hospitalisations	Number	Persons	146546	151595	153188	153890	155250	156960
	Rate	Persons	2484.3	2281.8	2113.9	2082	1890	1718

Note: 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 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

- In 2004, cardiovascular diseases (CVD) accounted for 17,379 deaths (37.5% of all deaths) in NSW, or around 48 deaths each day. The number of deaths has declined in the past 20 years from 21,600 in 1985 and is projected to decline further to 16,200 in 2015. The age-adjusted rate of deaths due to cardiovascular diseases has declined 55.8% since 1985 and is projected to decline further in 2015. These reductions in the mortality of cardiovascular diseases are a major contributor to the improvements in life expectancy of the people of NSW.
- In 1985, similar numbers of males (10,785) and females (10,815) died from cardiovascular diseases in New South Wales. However, the age-adjusted rate of deaths from cardiovascular diseases of males consistently exceeds that of females, although this differential is narrowing.
- The number of hospital separations with cardiovascular diseases as the principal diagnosis rose from 112,904 in 1989-90 to reach a plateau at about 153,000 in 2001-02. It is projected to rise slowly to about 157,000 in 2014-15. Similarly, the age-adjusted rate of hospital separations for cardiovascular diseases also rose from 1989-90, but peaked in 1995-96 and has declined since then. It is projected to decline further in 2015-16.
- Nationwide, cardiovascular diseases are the most expensive group of diseases in terms of direct health costs (AIHW 2004e). A significant challenge for the future is the increasing prevalence of obesity and other risk factors which will result in increased rates of deaths and hospitalisations from cardiovascular disease compared to those projected from the current figures (AIHW 2004b, 2004c).

Cardiovascular disease deaths by sex,
NSW 1984 to 2004

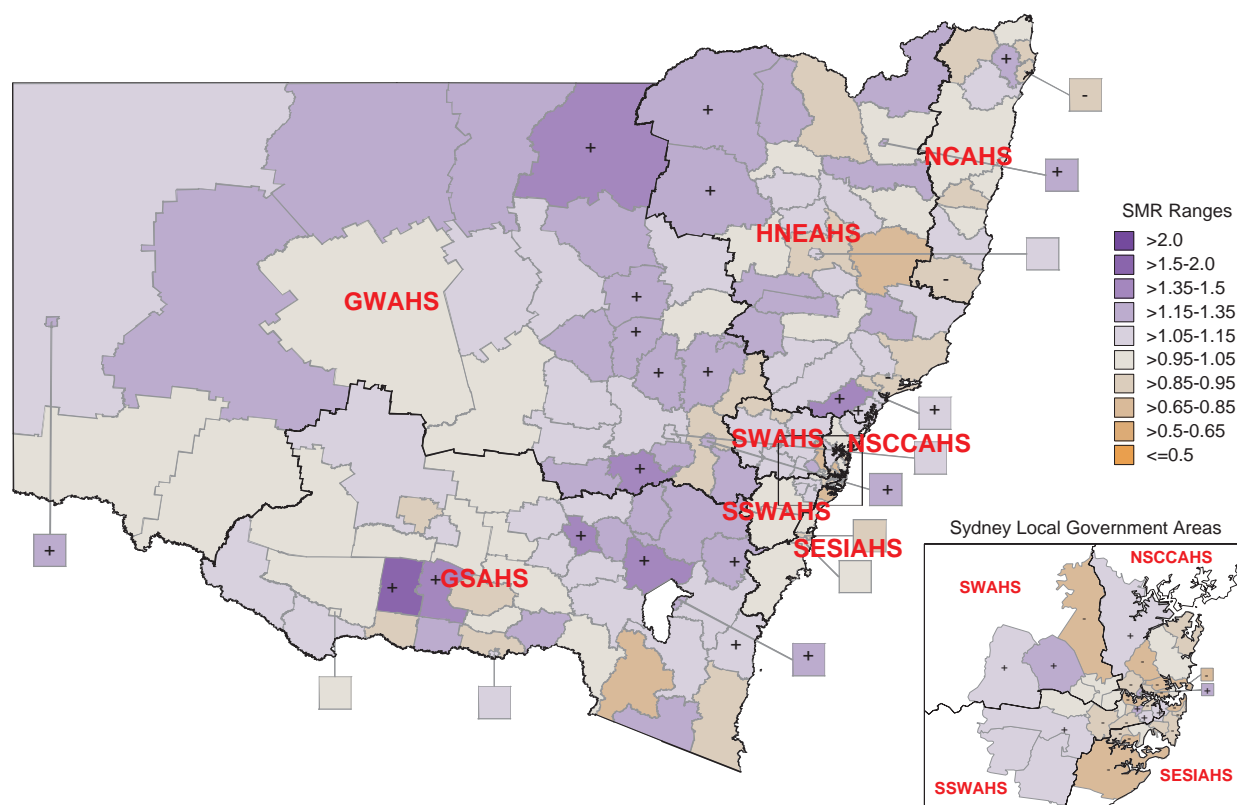
		Sex	1997	1998	1999	2000	2001	2002	2003	2004
Number	Coronary Heart Disease	Persons	10362	9959	9911	9537	9094	8977	8845	8722
	Heart failure	Persons	1002	924	1083	965	944	949	877	876
	Stroke	Persons	4466	4489	4605	4761	4510	4720	4715	4585
	Peripheral Vascular Disease	Persons	984	957	1029	923	886	882	875	844
	Others	Persons	2161	2093	2238	2201	2256	2379	2279	2351
	All Cardiovascular Disease	Persons	18975	18422	18866	18387	17690	17907	17591	17378
Rate per 100,000 population	Coronary Heart Disease	Persons	174.3	162.3	156.4	145.4	133.8	127.6	122.0	116.9
	Heart failure	Persons	17.5	15.5	17.4	14.8	13.9	13.4	11.9	11.5
	Stroke	Persons	76.5	74.1	73.3	72.8	66.2	66.8	64.5	60.8
	Peripheral Vascular Disease	Persons	16.7	15.6	16.3	14.1	13.0	12.5	12.0	11.3
	Others	Persons	36.5	34.2	35.4	33.6	33.3	33.9	31.6	31.6
	All Cardiovascular Disease	Persons	321.4	301.7	298.8	280.8	260.2	254.1	242.1	232.0

Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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 was the most common cause of death in NSW in 2004, accounting for 37.5% (17,379) of all deaths. The types of cardiovascular disease (CVD) that caused the most deaths in NSW in 2004 were coronary heart disease (50.2%), stroke (26.4%), heart failure (5.0%) and peripheral vascular disease (4.9%).
- In NSW, between 1984 and 2004, deaths from all cardiovascular disease declined by around 58% in males (from 652.9 to 276.3 per 100,000) and by around 55% in females (428.4 to 194.7 per 100,000), with the decline in coronary heart disease rates alone of around 60% in males and 57% in females over this period.
- While more females (9,111) than males (8,268) died from cardiovascular disease in 2004, the male to female ratio of the age-adjusted death rates was 1.42:1 (or 42% higher in males), as females die at older ages. For coronary heart disease, the age-adjusted male to female ratio was 1.75:1 (75% higher in males) but only 1.1:1 for stroke (10% higher in males) in 2004. About 90% those who die from heart failure in NSW are over 75 years of age.
- Reductions in some risk factors (including smoking, saturated fats in the diet, and levels of blood pressure) and improved survival (from advances in medical treatment, emergency, surgical care, rehabilitation and follow-up care) and have both contributed to reducing death rates from cardiovascular disease. (AIHW 2004a).

Cardiovascular disease deaths by local government area, person of all ages, NSW 2003 and 2004 combined



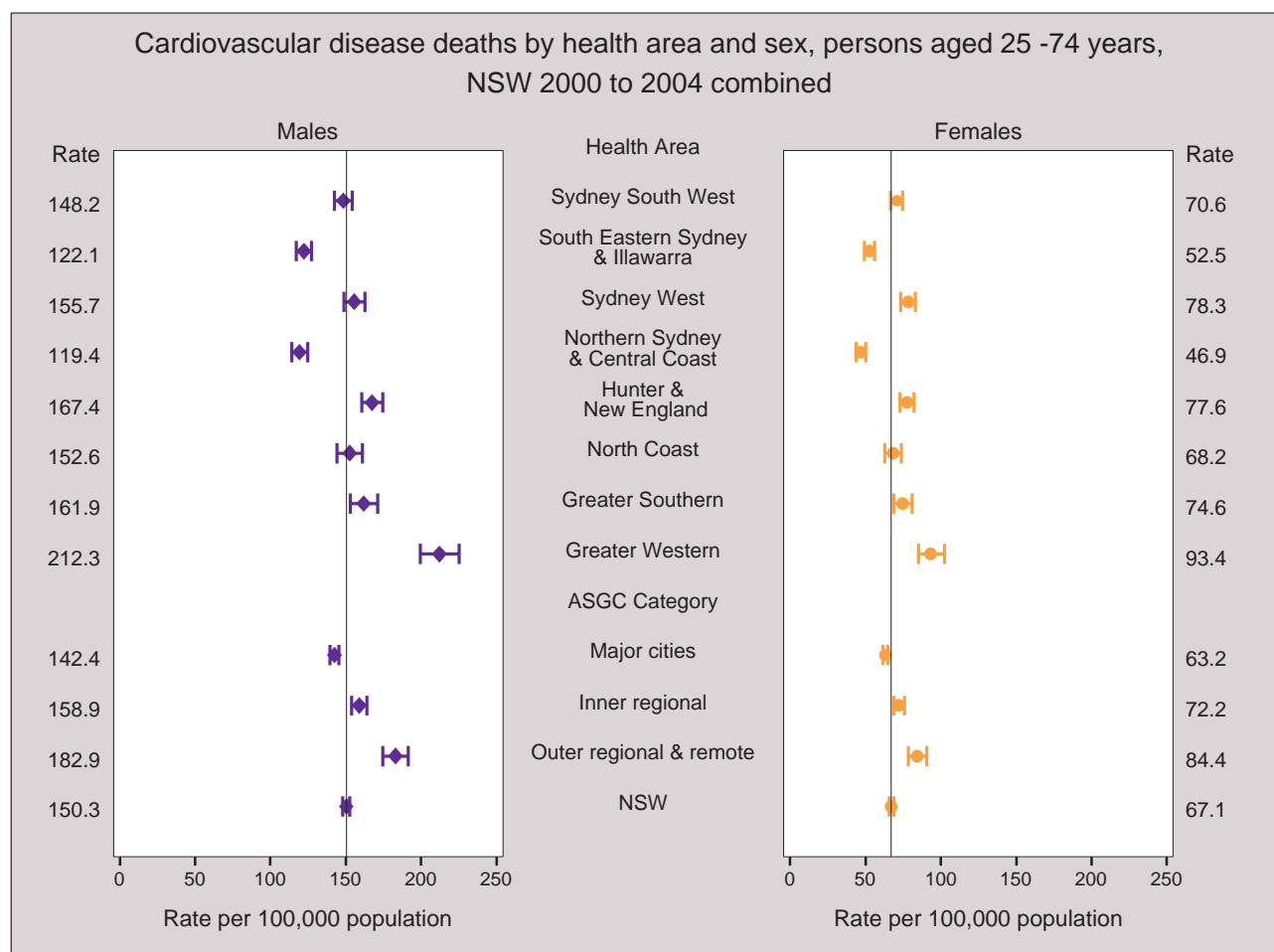
- Significantly lower than state average, + Significantly higher than state average

Note: Deaths were classified using ICD-10. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. 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). * indicates figures not provided when based on fewer than 5 cases.

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

- Cardiovascular disease was the most common cause of death in NSW in 2004, accounting for 37.5% (17,379) of all deaths.
- The smoothed Standardised Mortality Ratio (sSMR, see Methods) for each LGA can be interpreted as a 'relative SMR', and compared to the NSW average which is set to 100. The sSMR for deaths from cardiovascular disease ranged from 69.3 in Woollahra LGA to 175.5 in the Jerilderie LGA. The range in the smoothed average number of deaths per year was from less than 5 in four LGAs (Nundle, Brewarrina, Conargo and Unincorporated Far West) to 617 deaths per year in Lake Macquarie LGA. Seven LGAs (Cootamundra, Jerilderie, Cowra, Yass Valley, Urana, Walgett, and Cessnock LGAs) had a rate more than a third higher than the state average. Woollahra LGA had a rate 30% less than the state average.
- Rates of cardiovascular disease deaths were significantly lower than the state average in 19 LGAs (16 were in the greater Sydney metropolitan area) and 30 LGAs (22 of which were in rural and remote areas) had rates significantly greater than the state average.
- Geographic variation in the distribution of deaths from cardiovascular disease would be partly associated with variation in disease prevalence, as well as differentials in the availability of emergency and surgical care and rehabilitation and follow-up care (AIHW 2004).

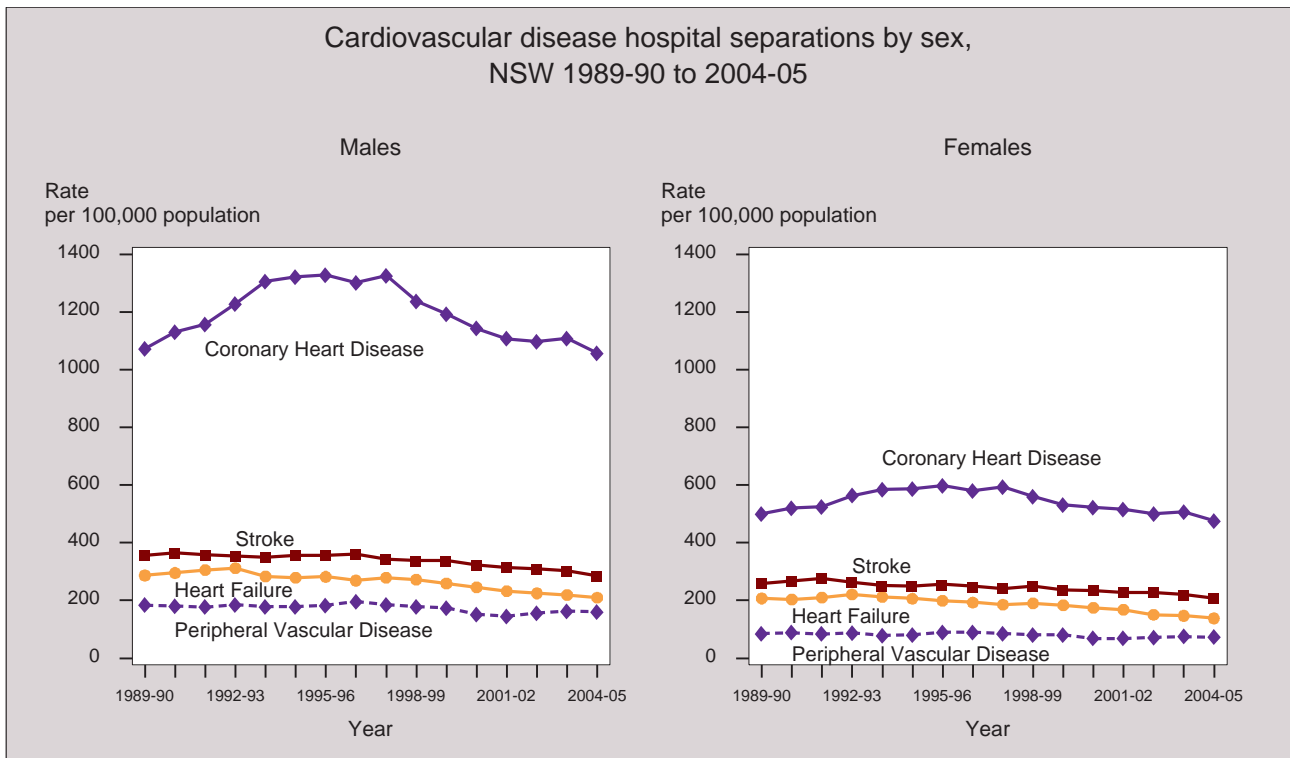
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. 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.

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

- In the period 2000 to 2004, there was substantial geographic variation in rates of premature death from cardiovascular disease in adults aged between 25 and 74 years in NSW.
- Residents of the major cities in New South Wales had lower than average age-adjusted rates of premature death from cardiovascular disease, whilst residents of the remainder of the state, particularly outer regional and remote areas, had higher than average rates. This is reflected in the health areas, with Northern Sydney and Central Coast and South Eastern Sydney and Illawarra Area Health Services having the lowest age-adjusted rates of premature death from cardiovascular disease. The highest rates of premature death were recorded in the Greater Western Area Health Service. The ratio of the highest rates (Greater Western):lowest rates (Northern Sydney and Central Coast) for males was 1.78:1 (78% higher) and for females was 1.99:1 (almost double).
- Although premature death rates from cardiovascular disease were relatively low in metropolitan areas, almost two-thirds (2,804 per year) of all premature deaths from cardiovascular disease (4,404 per year) occurred among residents of metropolitan areas, reflecting the concentration of the NSW population in the Sydney area. The higher death rates in inner regional and outer regional and remote areas reflect differences in socioeconomic conditions, in the prevalence of risk factors, and in access to and use of health services. They are also influenced by the high rates of cardiovascular disease among Aboriginal people, particularly in remote areas.



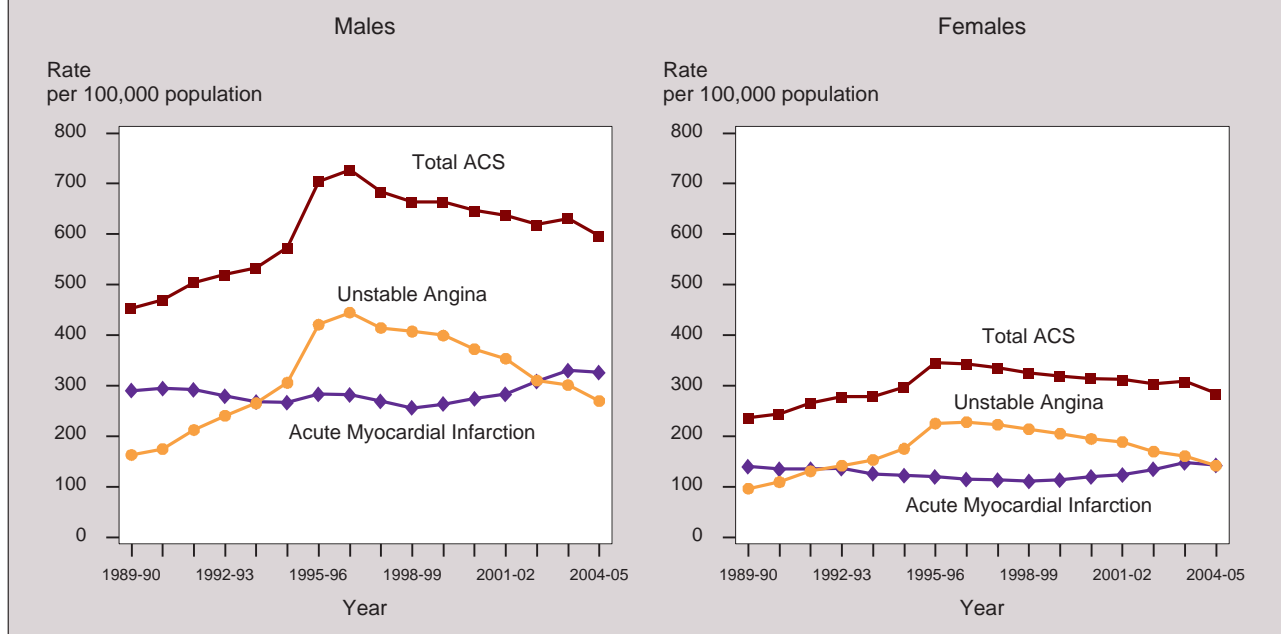
		Sex	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Coronary Heart Disease	Persons	58595	56114	54976	54430	54720	54702	56473	54729
	Heart failure	Persons	13825	14252	13996	13793	13614	13062	13100	12771
	Stroke	Persons	17652	18302	18280	18345	18446	18661	18562	17984
	Peripheral Vascular Disease	Persons	8123	7927	8069	7113	7165	7708	8288	8266
	Others	Persons	55234	55245	56679	57914	59756	59552	58458	59419
All Cardiovascular Disease		Persons	153429	151840	152000	151595	153701	153685	154881	153188
Rate per 100,000 population	Coronary Heart Disease	Persons	944.0	884.1	847.1	819.0	799.3	785.8	795.2	754.5
	Heart failure	Persons	226.3	226.8	216.2	206.1	196.6	183.4	179.0	170.1
	Stroke	Persons	286.6	289.6	281.7	274.7	267.7	264.8	257.5	243.8
	Peripheral Vascular Disease	Persons	129.9	124.1	123.4	106.1	103.2	109.6	115.2	112.5
	Others	Persons	890.1	872.0	876.3	875.9	882.6	865.5	834.7	833.2
All Cardiovascular Disease		Persons	2477.0	2396.7	2344.7	2281.8	2249.5	2209.2	2181.7	2113.9

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- Cardiovascular diseases were the principal reason for 153,188 hospitalisations of NSW residents (7.0% of all hospitalisations) in 2004-05. More than one-third of these hospitalisations were for coronary heart disease (35.7%), 11.7% were for stroke, 8.4% were for heart failure and 5.4% were for peripheral vascular disease.
- In NSW, the hospitalisation rate for cardiovascular disease for males was 1.6 times the female rate in 2004-05. For coronary heart disease the hospitalisation rate for males was around 2.2 times the rate for females.
- In the 2004-05 National Health Survey, approximately 2% of adults reported they had angina or other coronary heart disease and 1.3% reported they had heart failure (ABS 2006). It has been estimated that 49,800 major coronary events (heart attack or unstable angina) occurred in Australia in 2003 in people aged 40-90 years, of which less than half were fatal (AIHW 2006a).
- Trends in hospitalisations for cardiovascular disease do not directly reflect the incidence of disease. They are based on episodes rather than people (one person can be hospitalised multiple times) and include elective admissions for diagnostic or surgical procedures. They are influenced by the death rate before reaching hospital, and by hospital admission practices.

Acute coronary syndrome hospital separations by sex, NSW 1989-90 to 2004-05



		Sex	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Acute Myocardial Infarction	Persons	11651	11587	11407	11983	12846	13688	15198	16765	16853
	Unstable Angina	Persons	20033	19514	19423	19274	18552	18333	16542	16211	14731
	Total	Persons	31684	31101	30830	31257	31398	32021	31740	32976	31578
Rate per 100,000 population	Acute Myocardial Infarction	Persons	193.8	187.8	180.7	185.2	193.5	200.0	217.7	235.3	231.3
	Unstable Angina	Persons	331.0	314.5	306.0	297.0	279.1	268.0	237.6	228.3	203.3
	Total	Persons	524.8	502.2	486.7	482.2	472.6	468.0	455.3	463.6	434.5

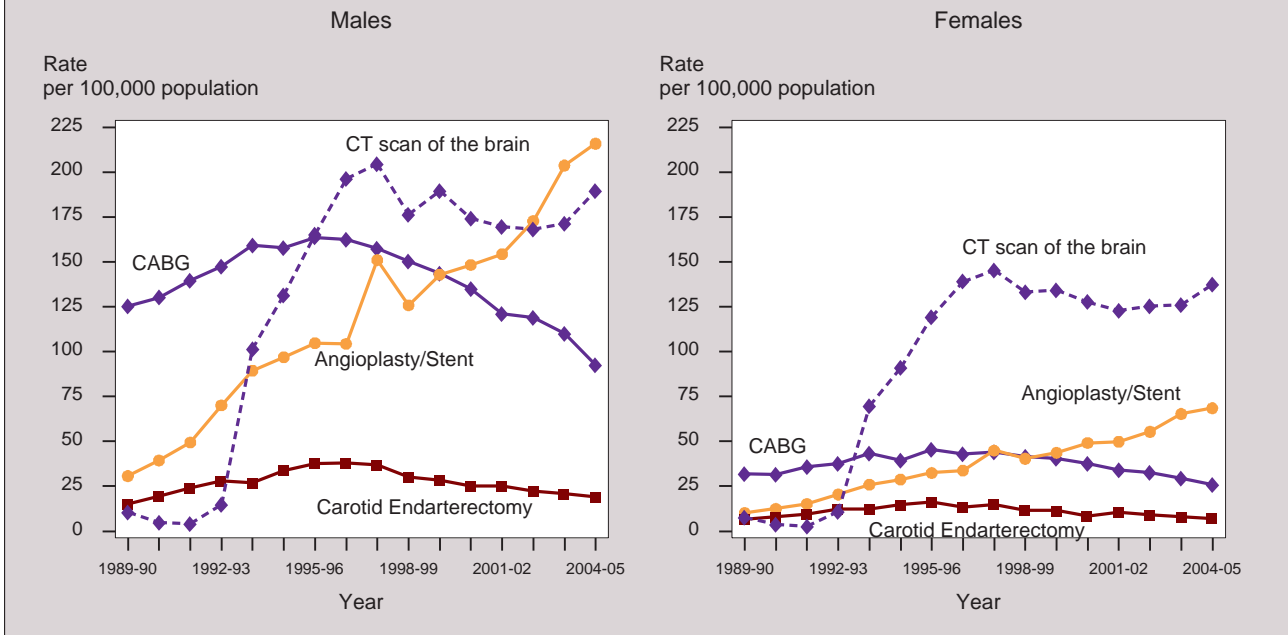
Note: Hospital separations were classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

- Acute coronary syndrome (ACS) is a term that is used to describe an individual’s first presentation at hospital with acute myocardial infarction (AMI, a heart attack) or unstable angina as a clinical emergency. Unstable angina is characterised by chest discomfort at rest, new onset of pain with exertion, or angina that is more frequent, of longer in duration or lower in threshold than before. The condition is accompanied by severe chest discomfort and is fundamentally due to acute myocardial ischemia, or inadequate blood flow to the heart (AIHW, 2004).
- In 2004-05 there were 31,499 hospitalisations due to ACS in NSW, of which nearly 64% were for

males. Slightly more than half of the ACS separations were due to AMI (53%). While the age-adjusted rate of AMI has been relatively stable in the past 20 years, the absolute number of hospitalisations has climbed from 10,894 in 1989-90 to 16,810 in 2004-05. In contrast, the rate and number of hospitalisations for unstable angina peaked in 1996-97 and has been declining since. Part of the explanation for this pattern, consistent with the overall decline in hospitalisations for coronary heart disease, is improved diagnosis and better management of ACS both in hospital and in community settings (AIHW 2004).

Cardiovascular disease procedures, hospital separations by sex, NSW 1989-90 to 2004-05



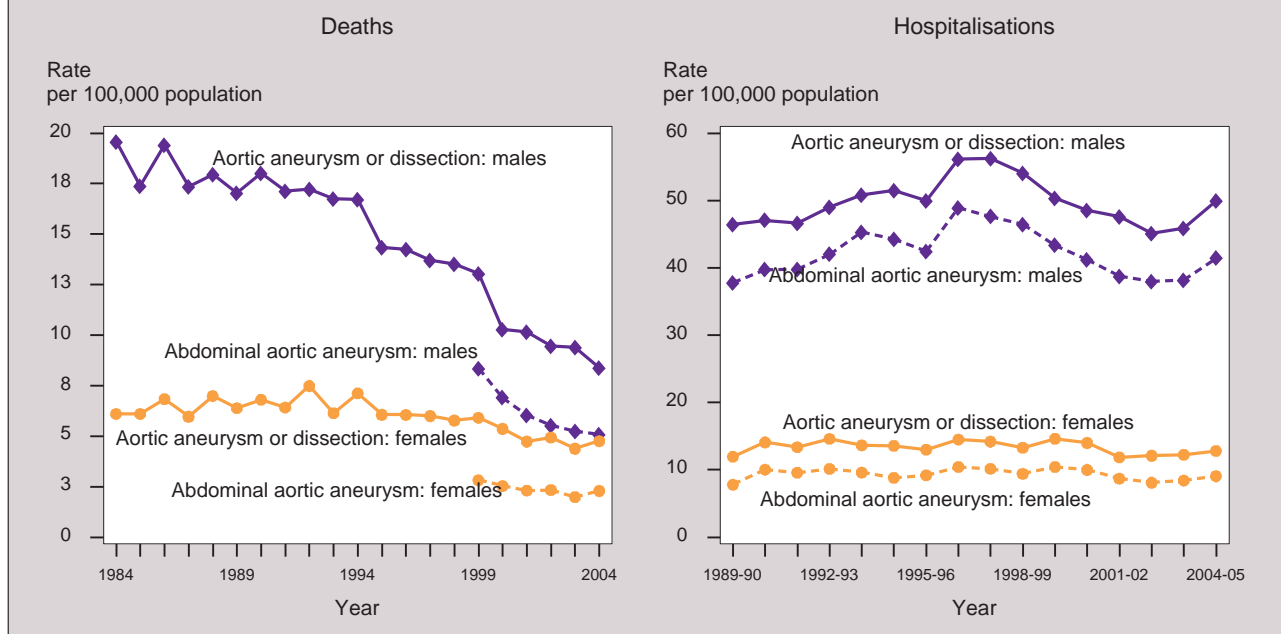
		Sex	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	CABG	Persons	6156	6170	5979	5874	5616	5195	5127	4805	4173
	Angioplasty/Stent	Persons	4136	6006	5220	5948	6458	6867	7765	9326	10073
	Carotid Endarterectomy	Persons	1518	1564	1287	1268	1076	1185	1052	984	918
	CT Scan of the Brain	Persons	9879	10561	9669	10329	9920	9928	10239	10597	11946
Rate per 100,000 population	CABG	Persons	100.4	98.4	93.5	90.1	84.4	75.9	74.1	68.1	58.0
	Angioplasty/Stent	Persons	68.2	96.6	82.2	91.9	97.5	100.5	112.2	132.2	140.1
	Carotid Endarterectomy	Persons	24.5	24.8	19.9	19.2	16.0	17.2	15.1	13.8	12.6
	CT Scan of the Brain	Persons	164.3	171.3	153.0	159.2	148.4	143.9	144.9	146.6	161.3

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- Revascularisation procedures are used to restore adequate blood flow to blocked coronary arteries. Coronary artery bypass grafting (CABG) involves open heart surgery to graft blood vessels to bypass blocked coronary arteries. Percutaneous transluminal coronary angioplasty (PTCA) involves inserting a catheter with a balloon into the coronary artery to clear blockages. Stents (expanding metal tubes) may be inserted during the procedure to hold the artery open and prevent re-blockage.
- Carotid endarterectomy is the surgical removal of plaque from the carotid arteries in the neck, which supply blood to the brain, and may help to prevent stroke. A computerised tomographic (CT) scan of the brain is used to diagnose the cause of stroke and aids decisions about treatment.
- In the financial year 2004-05 4,159 CABG and 10,069 PTCA procedures were performed in NSW. The rate of CABG procedures increased gradually in NSW between 1989-90 and 1995-96, before declining by more than 40% up to 2004-05. In contrast, the rate of PTCA procedures has steadily increased and by 2004-05 PTCA was nearly 2.5 times as common as CABG.
- There were 918 carotid endarterectomies carried out in NSW in 2004-05. The rate of carotid endarterectomies reached a peak in 1995-96 and has since halved in 2004-05.
- In NSW in 2004-05 there were 11,943 CT scans of the brain among people hospitalised with a principal diagnosis of stroke.

Aortic aneurysms and dissections deaths 1984 to 2004, and hospital separations 1989-90 to 2004-05, by sex, NSW



			Sex	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	Abdominal aortic aneurysm	Persons			322	284	262	256	241	259
		Total	Persons	548	559	564	492	476	479	468	470
	Rate	Abdominal aortic aneurysm	Persons			5.0	4.3	3.8	3.6	3.3	3.5
		Total	Persons	9.1	9.0	8.8	7.5	7.0	6.8	6.5	6.3
Hospitalisations	Number	Abdominal aortic aneurysm	Persons	1671	1664	1645	1600	1527	1502	1560	1730
		Total	Persons	2055	2019	2005	1967	1930	1890	1963	2167
	Rate	Abdominal aortic aneurysm	Persons	26.5	25.8	25.0	23.7	22.0	21.3	21.6	23.5
		Total	Persons	32.7	31.4	30.5	29.2	27.8	26.9	27.3	29.5

Note: 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 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

- An aortic aneurysm is an abnormal swelling of the aorta, often associated with a weakness in the wall of the aorta. Aortic aneurysms may be abdominal (the most common) or thoracic, depending on whether the aneurysm is below or above the diaphragm. Most intact aneurysms are symptomless. Beyond a diameter of 6 cm an aortic aneurysm has a high probability of rupture and a high mortality rate, even with prompt treatment.
- An aortic dissection is caused when blood penetrates between the layers in the wall of the aorta through a tear in its inner layer. For both aortic aneurysm and dissections, repair requires major surgery, but the mortality from elective repair is significantly reduced compared to emergency repair (Ashton 2002).
- Recorded deaths rates from aortic aneurysms and dissections have more than halved in males, but have remained steady in females for the last 20 years. In 2004, there were 470 deaths (just over half in males) from aortic aneurysms and dissections and 2,169 hospitalisations in 2004-05 (three-quarters in males). There has been no decline in the hospital rate for either sex since 1989-90.
- More than 60% of recorded deaths from aortic aneurysms and dissections occur in hospital. Non-hospital deaths from a ruptured aneurysm may be under-estimated as they may be misclassified as coronary heart disease (Lindholt 2005).

For more information

Access Economics. *The shifting burden of cardiovascular disease in Australia*. National Heart Foundation, 2005. Available at: www.heartfoundation.com.au/media/nhfa_shifting_burden_cvd_0505.pdf.

Ashton HA, Buxton MJ. The multicentre aneurysm screening study (MASS) into the effect of abdominal aortic aneurysm screening on mortality in men: a randomised controlled trial. *The Lancet* 360(16):1531–1539, 2002.

Australian Bureau of Statistics. *Causes of Death, Australia 2004*. Catalogue no. 3303.0. Canberra: ABS, 2006. Available at [www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/\\$File/33030_2004.pdf](http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/$File/33030_2004.pdf).

Australian Bureau of Statistics. *National Health Survey 2004–05: Summary of results*. ABS Cat. NO. 4364.0. Canberra: ABS, 2006. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.02004-05?OpenDocument.

Australian Institute of Health and Welfare and National Heart Foundation of Australia. *The relationship between overweight, obesity and cardiovascular disease*. CVD Series no. 23. AIHW Cat. No. CVD 29. Canberra: AIHW, 2004b. Available at www.aihw.gov.au/publications/index.cfm/title/10078.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006b. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Australian Institute of Health and Welfare. *Field B. Heart Failure...what of the future?* Bulletin no 6. AIHW Cat. No. AUS 34. Canberra: AIHW, 2003a. Available at www.aihw.gov.au/publications/index.cfm/title/8925.

Australian Institute of Health and Welfare. *Health care expenditure on cardiovascular diseases 2000–01*. CVD Data briefing No.1. Canberra: AIHW, 2004e. Available at www.aihw.gov.au/publications/index.cfm/title/10046.

Australian Institute of Health and Welfare. *Heart, stroke and vascular diseases, Australian Facts: 2004*. AIHW Catalogue no. CVD 27. Canberra: AIHW and Heart Foundation of Australia (Cardiovascular Disease Series No. 22), 2004a. Available at www.aihw.gov.au/publications/index.cfm/title/10005.

Australian Institute of Health and Welfare. *Mortality over the twentieth century in Australia: Trends and patterns in major causes of death*. Mortality Surveillance Series no. 4. AIHW cat. no. PHE73. Canberra: AIHW, 2006a. Available at: www.aihw.gov.au/publications/index.cfm/title/10154.

Australian Institute of Health and Welfare. *Physical Activity, Diet and Body Weight: Results from the 2001 National Health Survey. Risk Factors Data Briefing No. 1*. Canberra: AIHW, 2004d. Available at www.aihw.gov.au/publications/index.cfm/title/10000.

Australian Institute of Health and Welfare. Davies J, Senes S. *Coronary angioplasty in Australia 1999*. AIHW Cat. No. CVD 19. Canberra: AIHW and National Heart Foundation of Australia, 2002. Available at www.aihw.gov.au/publications/index.cfm/title/7473.

Australian Institute of Health and Welfare. O'Brien K *Living dangerously: Australians with multiple risk factors for cardiovascular disease*. Bulletin no 24. AIHW Cat. No. AUS 57. Canberra: AIHW, 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10103.

Australian Institute of Health and Welfare. O'Brien K & Webbie K. *Health, wellbeing and body weight: characteristics of overweight and obesity in Australia, 2001*. Bulletin No. 13. AIHW Cat. No. AUS 43. Canberra: AIHW, 2004c. Available at www.aihw.gov.au/publications/index.cfm/title/9932.

Davies J, Senes S. *Cardiac surgery in Australia 1999*. Cardiovascular Disease Series No. 21. AIHW Cat. No. CVD 22. Canberra: AIHW and National Heart Foundation of Australia, 2003. Available at www.aihw.gov.au/publications/index.cfm/title/8582.

Fleming C, Whitcock EP, Beil TL, Lederle FA. Screening for abdominal aortic aneurysm: a best-evidence systematic review for the US preventive services task force. *Annals of Internal Medicine* 142: 203–211, 2005.

Lindholt JS, Juu S, Fastig H, Henneberg EW. Screening for abdominal aortic aneurysms: single centre randomised controlled trial. *British Medical Journal* 330:750–754, 2005.

NSW Department of Health. *NSW Clinical Service Framework for Heart Failure: A practice guide for the prevention, diagnosis and management of Heart Failure in NSW, Volume 2*. Sydney: NSW Department of Health, 2003b. Available at www.health.nsw.gov.au/pubs/c/pdf/heartfailure_2.pdf.

NSW Department of Health. *NSW Clinical Service Framework for Heart Failure: Overview of the framework and its standards, Volume 1*. Sydney: NSW Department of Health, 2003a. Available at www.health.nsw.gov.au/pubs/c/pdf/heartfailure_1.pdf.

NSW Department of Health. *NSW Chronic Care Program: Phase Three: 2006–2009, NSW Chronic Disease Strategy: Executive Summary*. Sydney: NSW Department of Health, 2006.

NSW Department of Health. *NSW Chronic Care Program: Phase Two 2003–2006. Strengthening health care for people with chronic illness*. Sydney: NSW Department of Health, 2004. Available at www.health.nsw.gov.au/pubs/2005/pdf/chronic_care2.pdf.

NSW Premier's Department. *A new direction for NSW. State Plan. Draft for consultation*. Sydney: NSW Premier's Department, 2006. Available at www.nsw.gov.au/stateplan/Docs/DraftStatePlan.pdf.

National Health Performance Committee. *National report on Health Sector Performance Indicators 2003*. AIHW Catalogue no. HWI 78. Canberra: AIHW, 2004. Available at www.aihw.gov.au/publications/index.cfm/title/10085.

Norman PE, Jamrozik K, Lawrence-Brown MM, Le MTQ, Spencer CA, Tuohy RJ, Parsons RW, Dickinson JA. Population based randomised controlled trial on impact of screening on mortality from abdominal aortic aneurysm. *British Medical Journal* 329: 1259–1264, 2004.

- In NSW in 2005, 8.3% of males and 6.9% of females aged 16 years and over reported having diabetes or high blood sugar. It is likely that there are also many people with diabetes in NSW who are not yet aware they have it.
- Diabetes prevalence increases with age and socioeconomic disadvantage and is more prevalent among Aboriginal and Torres Strait Islander peoples, 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 2005, around 60% of people with diabetes reported following a special diet, 40% reported taking tablets to manage their diabetes, around 14% required insulin injections, and 11% reported 'not doing anything'.
- Control of risk factors for cardiovascular disease is particularly important for people with diabetes. In NSW in 2005, people with diabetes reported similar rates of current smoking to those without diabetes (around 20%); had higher levels of inadequate physical activity (55% compared with 47%); and reported a higher rate of overweight and obesity (71% compared with 46%).
- While diabetes was the principal cause of 2.2% of all deaths in NSW in 2004, 2,419 or 5.2% 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 96% between 1989–90 and 2004–05. Hospitalisation rates were highest in the North Coast Area Health Service and lowest in the South Eastern Sydney and Illawarra Area Health Service.
- While Type 2 diabetes accounts for up to 90% of all diabetes cases in the community, it accounts for only around 68% of all hospitalisations for diabetes. Type 1 diabetes accounts for around 23% of hospitalisations and gestational diabetes around 7%. Hospitalisation rates for Type 1 diabetes have however been stable over the last five years while those for Type 2 diabetes have risen by 69%.
- The complications of diabetes include poor blood circulation and nerve function in the limbs, eye problems, and kidney failure. There were 794 hospital admissions for lower extremity amputations and 7,872 hospitalisations for eye complications in people with diabetes in 2004–05.

In this chapter

- Diabetes prevalence
- Diabetes management
- Cardiovascular risk factors
- Diabetes deaths
- Diabetes hospitalisations and persons hospitalised
- Diabetes hospitalisations by health area
- Hospitalisations by type of diabetes
- Complications of diabetes
- Amputations
- Eye complications

Introduction

Diabetes mellitus is a group of closely related chronic conditions characterised by high blood sugar (glucose) levels. It is caused by a deficient production of insulin, resistance to its action or both. Insulin is a hormone produced in the pancreas that helps glucose to enter body cells for energy metabolism (AIHW, 2004). 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.

There are three main forms of diabetes mellitus: Type 1 diabetes, Type 2 diabetes and gestational diabetes. Diabetes secondary to other disorders forms a minor fourth group.

Type 1 diabetes results from autoimmune destruction of the cells that produce insulin and sufferers require insulin injections for survival. It is estimated to be present in 10–15% of people with diabetes, and is the most common form of diabetes in children. It is thought that Type 1 diabetes is caused by a combination of genetic and environmental factors (Barr et al., 2006), 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 affects primarily 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 (AIHW, 2006). While the actual metabolic causes for this condition are not yet completely understood, in most cases Type 2 diabetes can be prevented, or at least delayed, through the modification of its major risk factors including overweight and obesity and physical inactivity (AIHW, 2004).

In the past, Type 1 diabetes was called ‘insulin-dependent diabetes mellitus’ (IDDM) or ‘juvenile-onset’ and Type 2 diabetes was called ‘non-insulin-dependent diabetes mellitus’ (NIDDM). However, as insulin is often used to treat patients with Type 2 diabetes, the old terminology has been discouraged by the WHO since 2000 (NCCH, 2000).

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, however the affected women are at increased risk of developing diabetes mellitus Type 2 later in life. The risk factors are similar to those for Type 2 diabetes (AIHW, 2004).

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 (Barr et al., 2006). Consequently, diabetes predisposes those suffering from it to many severe conditions, including cardiovascular disease, as well as visual loss, amputations and renal failure (Barr et al., 2006). Many people with Type 2 diabetes sustain damage from complications that develop before the disease is diagnosed (AIHW, 2002).

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. Evidence-based guidelines have been published in NSW (NSW Health, 1996 and 2004) and nationally (ACDS, 2001; NHMRC, 2005) to guide clinical efforts in diabetes management.

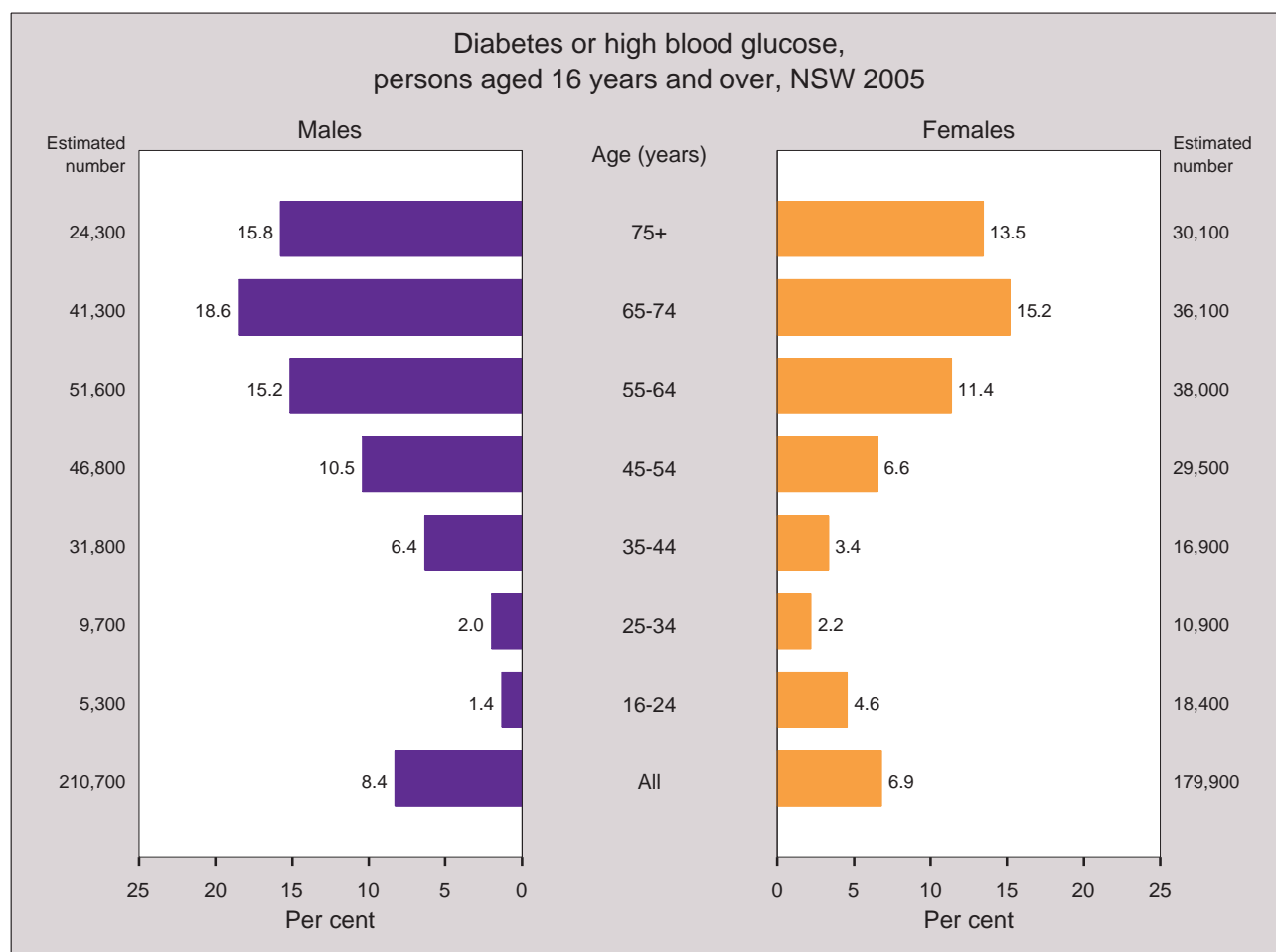
Diabetes and its associated complications contribute significantly, both directly and indirectly, to mortality, morbidity, poor quality of life of sufferers and carers and the cost of health care. Experts agree that diabetes now represents one of the most challenging public health problems of the 21st century worldwide (Barr et al., 2006). Diabetes and cardiovascular conditions together are the causes of about one-third of all years of life lost due to premature death and about one-fifth of all years lost to premature death or lived with a disability in NSW.

The harm caused by diabetes can best be reduced by preventing the onset of Type 2 diabetes. Prevention through the modification of risk factors— particularly through lifestyle changes—is a goal of the National Diabetes Strategy (CDHA, 1999), which was endorsed in 1999 by all State and Commonwealth health ministers. This aim has also been emphasised in the National Service Improvement Framework for Diabetes (NHPAC, 2006a). Because Type 2 diabetes shares a number of risk factors with cardiovascular diseases the coordination of prevention strategies is essential to ensure consistent messages, pooling of resources, and better health outcomes. To that effect, the National Public Health Partnership developed a *National Chronic Disease Strategy* (NHPAC, 2006b), and the NSW Department of Health is implementing a chronic disease prevention strategy as part of *Healthy People 2010, the Population Health Strategy for New South Wales* (NSW Health, 2006a).

In NSW, two of the measures of success in the *State Plan: A New Direction for New South Wales* (NSW Premier's Department, 2006), are a reduction in avoidable hospital admissions of aged people and people with chronic illnesses and a reduction in smoking rates, unhealthy alcohol consumption and obesity. The NSW Chronic Care Program, established in 2000, recognises a significant overlap in management of chronic conditions. The Program aims to improve the quality of care provided for people with chronic health conditions, to improve the quality of life of people with chronic health conditions and their carers and families, and to reduce unplanned and avoidable admissions to hospital (NSW Health, 2006b).

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. The methods used for analysing and presenting death and hospitalisation data are complex and are described in more detail in the Methods section.

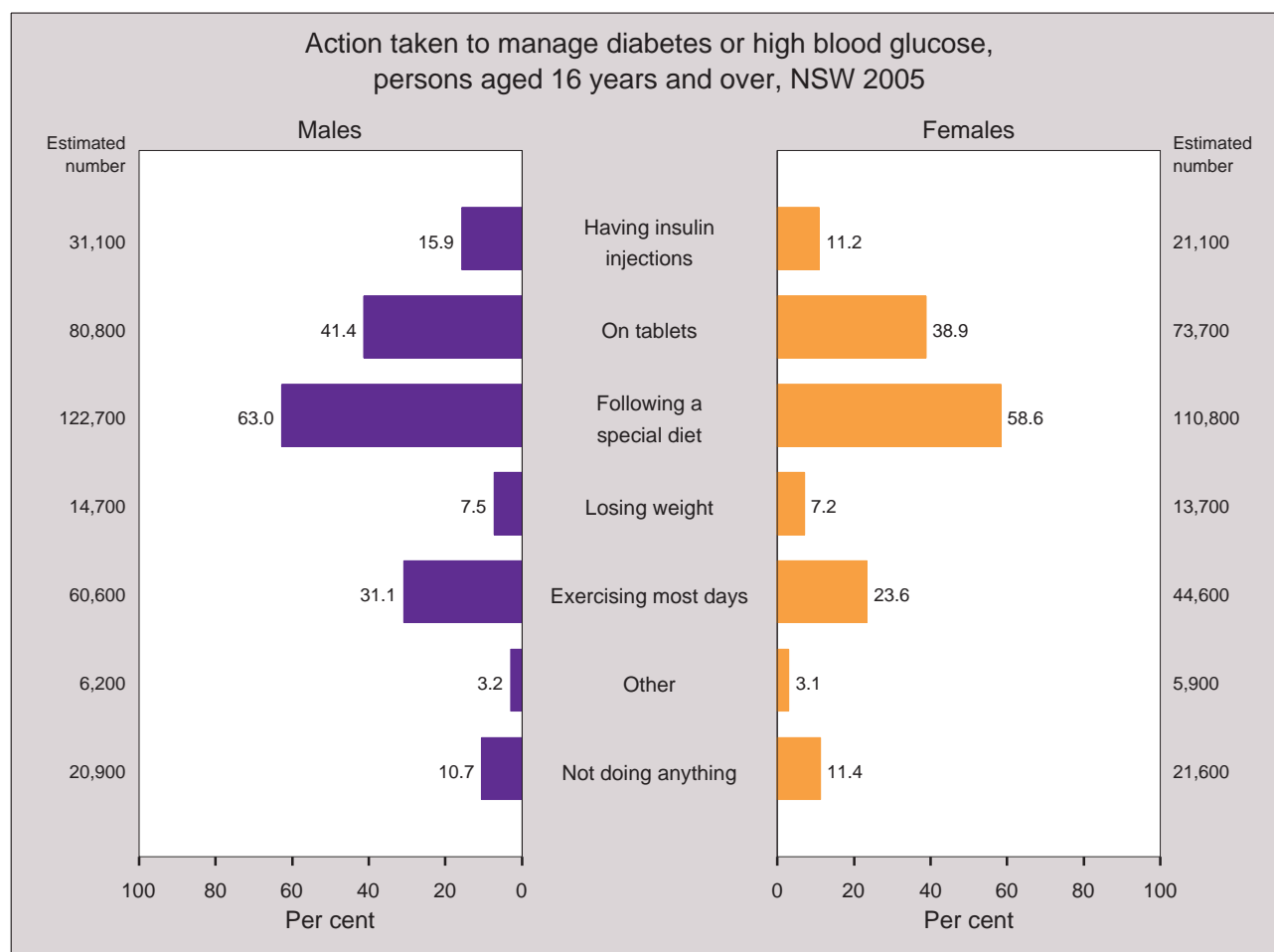
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: The indicator includes those who either had diabetes or high blood glucose but did not have gestational diabetes. The questions used to define the indicator were: Have you ever been told by a doctor or hospital you have diabetes?, Have you ever been told by a doctor or hospital you have high blood glucose?, and, if female, Were you pregnant when you were first told you had diabetes or high blood glucose?, and Have you ever had diabetes or high blood glucose apart from when you were pregnant? Estimates are based on 11,457 respondents. 5 (0.04%) not stated for having diabetes or high glucose levels.

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

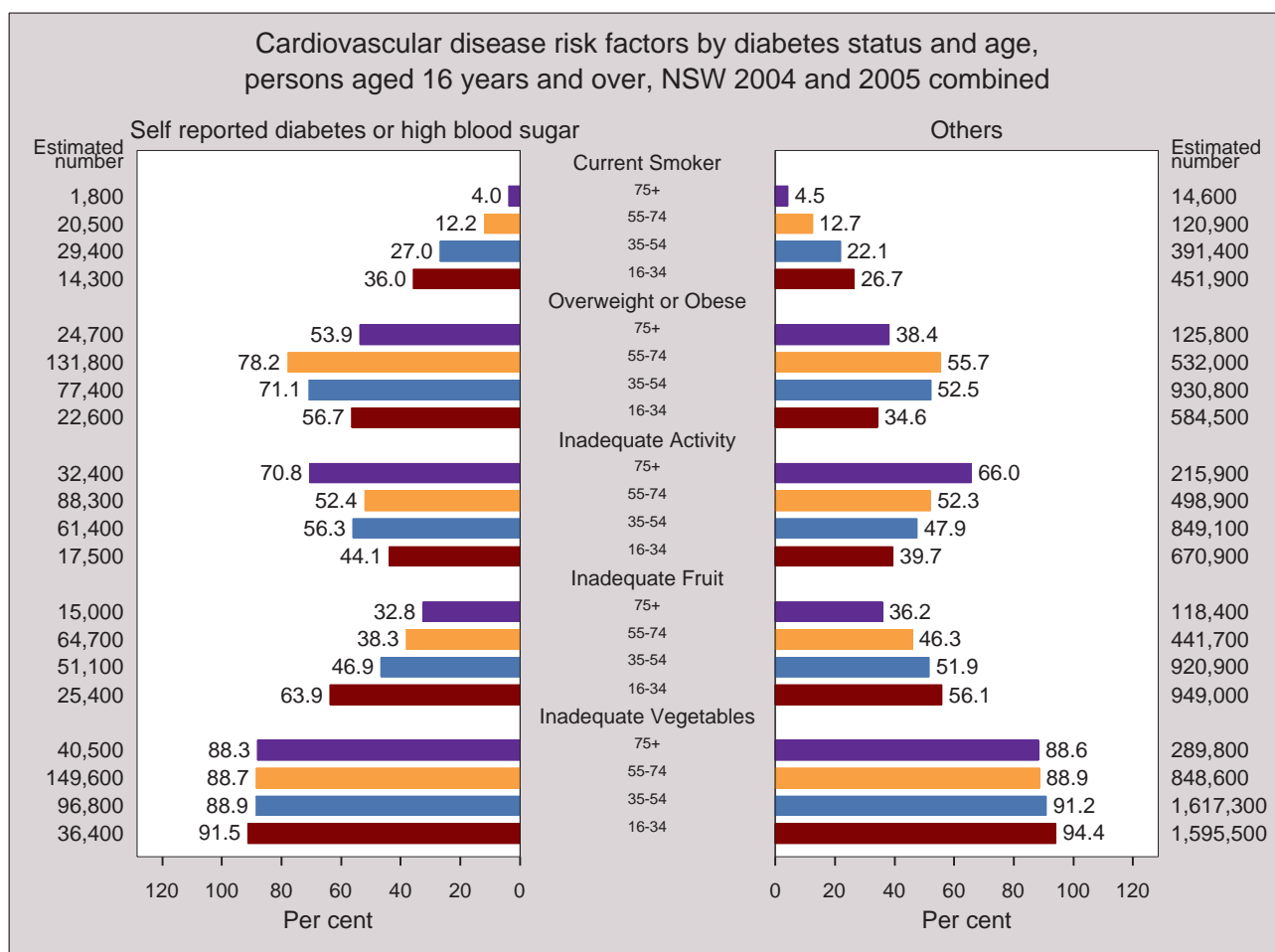
- In 2005, 8.3% of males and 6.9% of females in NSW aged over 16 years reported having doctor-diagnosed diabetes or high blood sugar (glucose). This was a significant increase from the 1997 figures of 5.2% in males and 4.2% in females. Australian studies suggest the prevalence of diabetes has more than doubled over the past 20 years (Barr et al., 2006).
- The prevalence of self-reported diabetes increases with age. In NSW in 2005, it ranged from 3.0% of persons aged 16–24 years, to 16.8% of persons aged 65–74 years, decreasing slightly in those aged over 75 years. The prevalence of diabetes also varies with socioeconomic status and increases with increasing disadvantage. Across Australia, Aboriginal people have a significantly higher prevalence of diabetes than the general population (ABS, 2006).
- It is generally accepted that estimates based on self-report underestimate the true prevalence of diabetes (AIHW, 2004). According to the National Health Survey 2004–05 the prevalence of diabetes in NSW in 2005 was 3.5% (ABS, 2006). The baseline component of AusDiab study conducted during 1999–2000 in Australia reported that diabetes prevalence was 7.4%. This was a very significant finding because the study used physical examination, assessment of life style parameters and blood and urine testing on a nationally representative sample of adults (Barr et al., 2006).
- The AusDiab 2004–05 study estimated that every year 8 persons in every 1,000 adults developed diabetes in NSW (Barr et al., 2005), which is the most accurate estimate of diabetes incidence in NSW.



Note: The questions used were: Have you ever been told by a doctor or hospital you have diabetes?, Have you ever been told by a doctor or hospital you have high blood glucose? and What are you doing now to manage your diabetes or high blood glucose? Estimates are based on 1,157 respondents. 6 (0.52%) were not stated (Don't know or Refused).

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

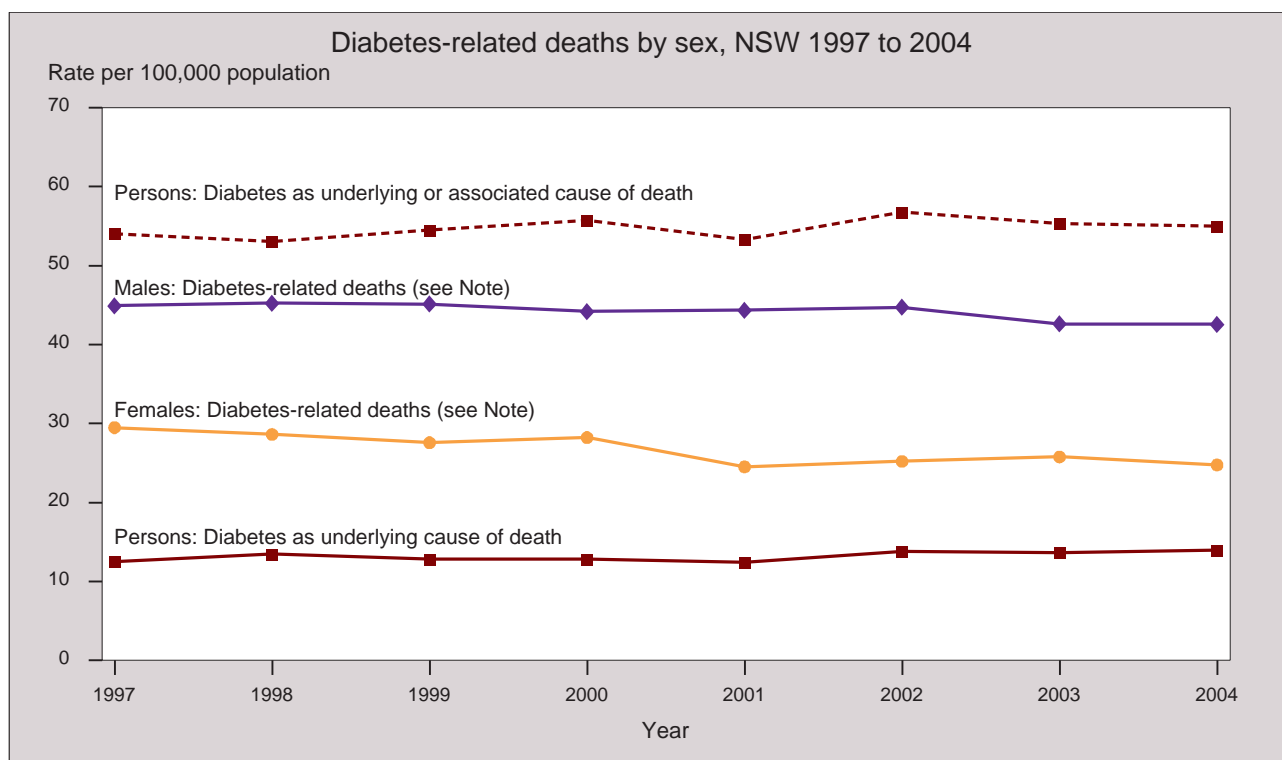
- In the NSW Health Survey 2005, people reporting doctor-diagnosed diabetes or high blood sugar (glucose) were asked about the actions they take to manage their condition. The majority (60.8%) reported following a special diet, 40.2% reported taking tablets to manage their diabetes, 13.6% required insulin injections, and 11.1% reported 'not doing anything'. Males reported using more management methods at the same time than females.
- Persons with Type 1 diabetes require insulin injections for survival. A biennial survey of specialist diabetes services in Australia reported that persons with Type 2 diabetes most usually managed their condition by taking tablets (47%) (Flack and Colagiuri, 2005). In general, only people with pre-diabetes conditions—either impaired glucose tolerance (IGT) or impaired fasting glucose (IFG) can follow a special diet as the only treatment. In NSW in 2005, the estimated incidence of IGT and IFG was 15/1,000 population/year and 9/1,000 population/year, respectively (Barr et al., 2005).
- Only 27.4% of respondents to the NSW Health Survey with diabetes or high blood glucose levels, reported exercising most days. Appropriate diet and exercise not only help the control of blood glucose levels, but also help control weight and blood pressure and decrease the risk of cardiovascular diseases such as heart attack and stroke.
- The risk of cardiovascular disease is substantially increased in people with diabetes due to the effects of high blood glucose levels and also the higher prevalence of other risk factors for cardiovascular disease, including high blood pressure, high blood cholesterol, insufficient physical activity and obesity, in people with diabetes (Barr et al., 2006).



Note: The questions used were: Have you ever been told by a doctor or at a hospital that you have diabetes?, Have you ever been told by a doctor or at a hospital that you have high sugar levels in your blood or urine (HBS)?. This indicator excludes women reporting previous diabetes/HBS during pregnancy. Estimates are based on 25,531 respondents. 6 (<0.01%) not stated for having diabetes or high blood sugar.

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

- The risk of cardiovascular disease is substantially increased in people with diabetes due to the effects of high blood glucose levels and also the higher prevalence of other risk factors for cardiovascular disease in those with diabetes (Barr et al., 2006). These risk factors include high blood pressure, high blood cholesterol, insufficient physical activity and obesity (AIHW, 2004). Smoking is also an important risk factor for cardiovascular disease.
- In the 2004 and 2005 NSW Health Surveys, 17.1% of people with self-reported diabetes or high blood glucose reported being a current smoker compared with 20.3% of those without diabetes, although this difference was not statistically significant. Levels of inadequate physical activity were significantly higher in the diabetes group (54.1%) compared with the non-diabetic group (47.3%).
- Overall 70.9% of those with diabetes reported being overweight or obese, compared with 46.5% of those without diabetes, a finding that applied to every age group. More people with diabetes reported inadequate fruit and vegetable intake than those without diabetes. However, about half of the entire adult population in NSW diabetes report eating the recommended intake of fruit and an overwhelming majority (92.1%) report lower than recommended consumption of vegetables.
- National guidelines for the care of people with Type 2 diabetes recommend regular assessment for the presence of cardiovascular disease or risk factors for cardiovascular disease (ACDS, 2001). Intensive management of any risk factors is recommended, including the use of medication to lower blood pressure and blood cholesterol where required.

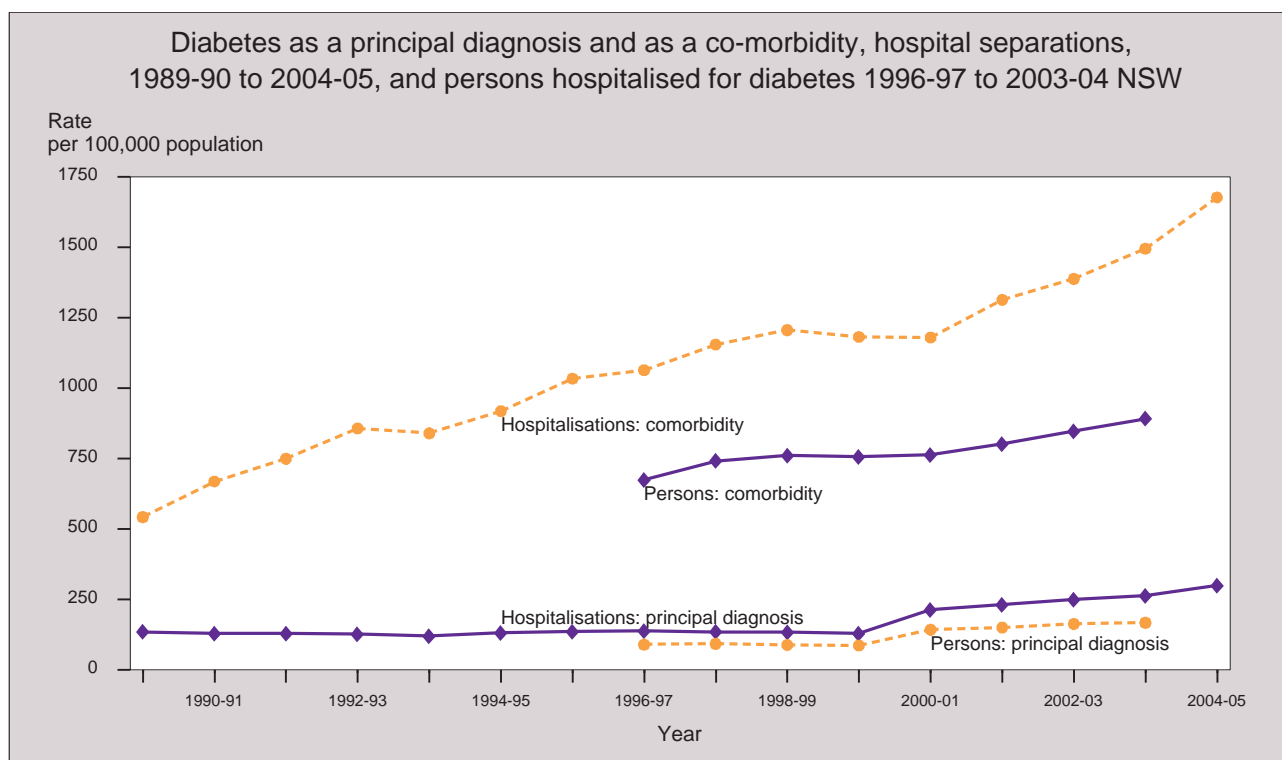


	Cause of death	Sex	1997	1998	1999	2000	2001	2002	2003	2004
Number	Diabetes-related deaths	Persons	2154	2220	2244	2310	2260	2357	2378	2419
	Underlying cause	Persons	747	834	822	846	846	966	979	1035
	Associated cause	Persons	2498	2462	2666	2824	2780	3009	2992	3026
	Underlying or associated cause	Persons	3245	3296	3488	3670	3626	3975	3971	4060
Rate per 100,000 population	Diabetes-related deaths	Persons	36.0	35.8	35.1	35.1	33.2	33.6	33.0	32.7
	Underlying cause	Persons	12.5	13.5	12.8	12.8	12.4	13.8	13.6	14.0
	Associated cause	Persons	41.5	39.6	41.7	42.8	40.9	43.0	41.7	41.0
	Underlying or associated cause	Persons	54.0	53.1	54.5	55.7	53.3	56.7	55.3	55.0

Note: An underlying cause of death is often called a 'principal' cause and an associated cause 'contributing'. 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. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- There were 1,035 deaths (14 deaths per 100,000 population) in NSW in 2004 where diabetes was an underlying (principal) cause of death. Diabetes was the 6th most common cause of death in Australia in 2004 (ABS, 2006) and the 8th most common cause of death in NSW in 2000 to 2004 combined.
- Diabetes often causes death indirectly by being a significant risk factor for common causes of death such as cardiovascular and kidney disease. There were 4,060 deaths (55 deaths per 100,000 population) in NSW in 2004 where diabetes was either an underlying or an associated cause of death. This is an overestimate, however, of deaths caused by diabetes because deaths from conditions unlikely to be complications of diabetes (such as cancers or accidents) are also included (AIHW, 2005).
- To better reflect the contribution of diabetes to death rates, 'diabetes-related deaths' are counted. These are those deaths where diabetes was either the underlying or an associated cause of death, when the underlying cause of death was a commonly recognised complication of diabetes (AIHW, 2005). There were 2,419 diabetes-related deaths in NSW in 2004 (32.7 deaths per 100,000 population).
- Regardless of the method used to estimate diabetes deaths, the death rate was always greater in males than in females, by between 1.5 and 1.8 times.
- Across Australia, the death rate from diabetes is higher in people in remote areas and in the most socioeconomically disadvantaged areas than in the general population (CER, 2005; AIHW, 2002) and is higher in Aboriginal than non-Aboriginal people (AIHW, 2005).

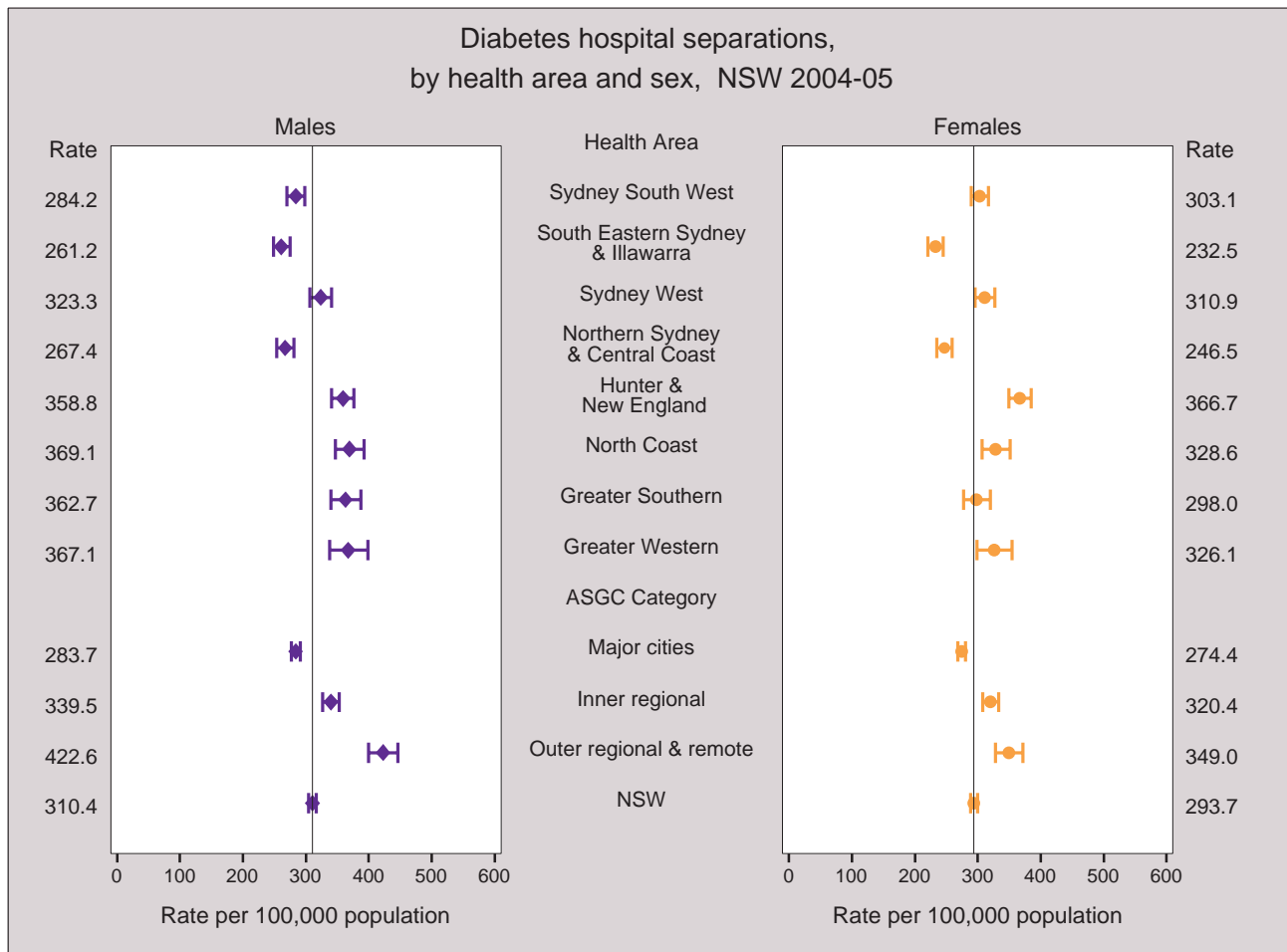


	Diagnosis category	Type of count	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Principal diagnosis	Hospitalisations	8570	8420	14134	15746	17103	18415	21236
		Persons	5638	5596	9431	10127	11180	11645	
	Comorbidity	Hospitalisations	76721	76828	78409	89589	96237	105642	120879
		Persons	48376	49103	50688	54564	58739	62906	
Rate per 100,000 population	Principal diagnosis	Hospitalisations	134.2	129.9	213.4	232.1	248.8	263.9	298.9
		Persons	88.2	86.3	142.4	149.9	162.9	167.3	
	Comorbidity	Hospitalisations	1205.6	1181.1	1178.9	1312.7	1387.3	1494.3	1676.2
		Persons	760.3	755.2	762.6	802.4	847.8	891.4	

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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 mellitus can lead to short- and long-term health problems that require hospitalisation. Persons with severe or multiple complications and persons with diabetes which is difficult to control may be hospitalised several times in one year.
- Diabetes mellitus can lead to a range of complications, which fall into several categories, such as renal, visual, neurological, circulatory. If present, these conditions are recorded in the hospital records classification together with the type of diabetes, for example as a 'Type 2 diabetes mellitus with advanced renal disease'.
- In NSW in 2004-05, there were 21,236 hospitalisations with diabetes recorded as the principal diagnosis with or without complications (a rate of 298.9 per 100,000 population) and 120,879 hospitalisations with diabetes as a co-morbidity, again, with or without complications (a rate of 1,676.2 per 100,000).
- People who were hospitalised at least once for diabetes (either as a principal diagnosis or co-morbidity) in the financial year 2003-04 had on average 1.7 hospitalisations in that year.
- The rate of diabetes-related hospitalisations rose between 1989-90 and 2004-05. It is only partially due to the rising prevalence of diabetes. Mostly it reflects the many changes to coding rules in hospital statistics made in that time (Phillips, 2003).



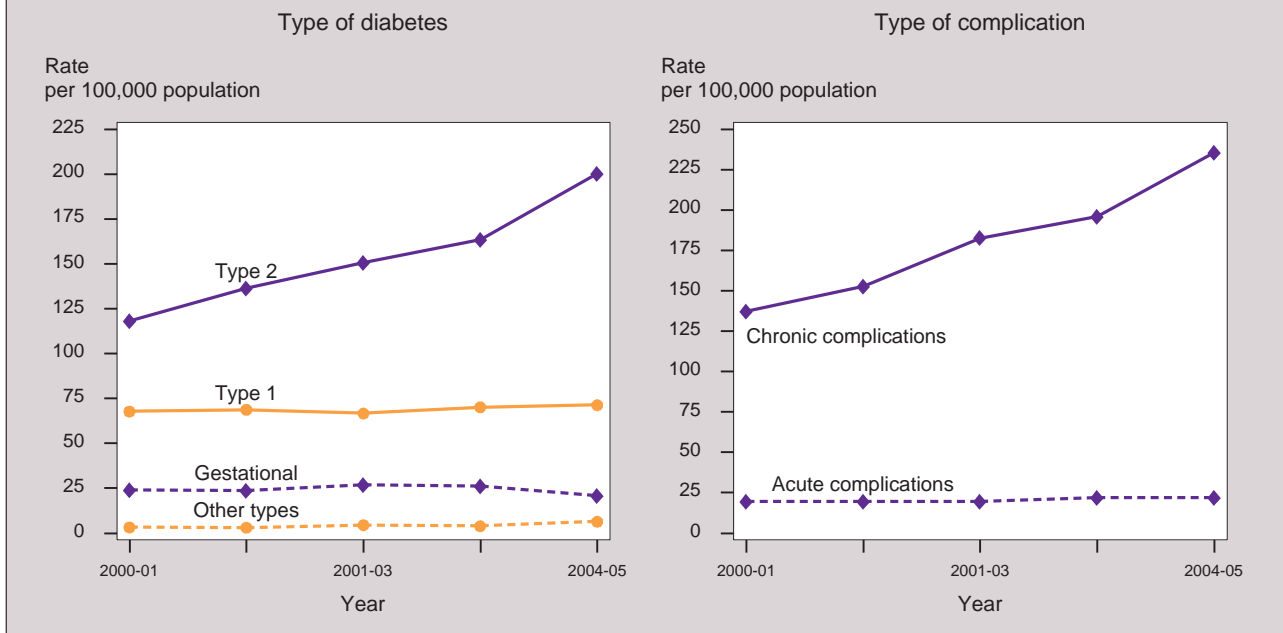
Note: Diabetes coded in the first diagnosis field only is included. Gestational and diabetes in pregnancy are included. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers include an estimate of the small number of interstate hospitalisations of NSW residents, data for which were unavailable at the time of production. 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.

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

- Diabetes mellitus can lead to short-term and long-term health problems that require hospitalisation. Persons with severe or multiple complications and persons with diabetes that is difficult to control may be hospitalised several times in one year.
- In NSW in 2004–05 there were 21,236 hospitalisations with diabetes mellitus recorded as the principal diagnosis. This included Type 1, Type 2, gestational and other types of diabetes.
- The age-standardised rate of hospitalisations with diabetes as the principal diagnosis varied among health areas, ranging from 242.7 per 100,000 in the South Eastern Sydney and Illawarra Health Area to 359.3 per 100,000 in the Hunter and New England Health Area. Hospitalisation rates with diabetes as the main reason for admission were the lowest in metropolitan areas of NSW and the highest in outer regional and remote areas (almost 1.5 times greater than in metropolitan areas).
- The prevalence of self-reported diabetes does not vary greatly on a geographic basis, but it is higher among those from lower socioeconomic backgrounds, Aboriginal and Torres Strait Islander people, and some groups of overseas-born Australians (AIHW, 2004). Geographic variations in hospitalisation rates for diabetes may relate to later diagnosis of diabetes in some areas; differentials in access to primary health care services; and greater likelihood of being hospitalised, rather than being treated as an ambulatory patient, in more remote areas.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/

Diabetes hospital separations by type of diabetes
and by type of complications, NSW 2000-01 to 2004-05



Note: 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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

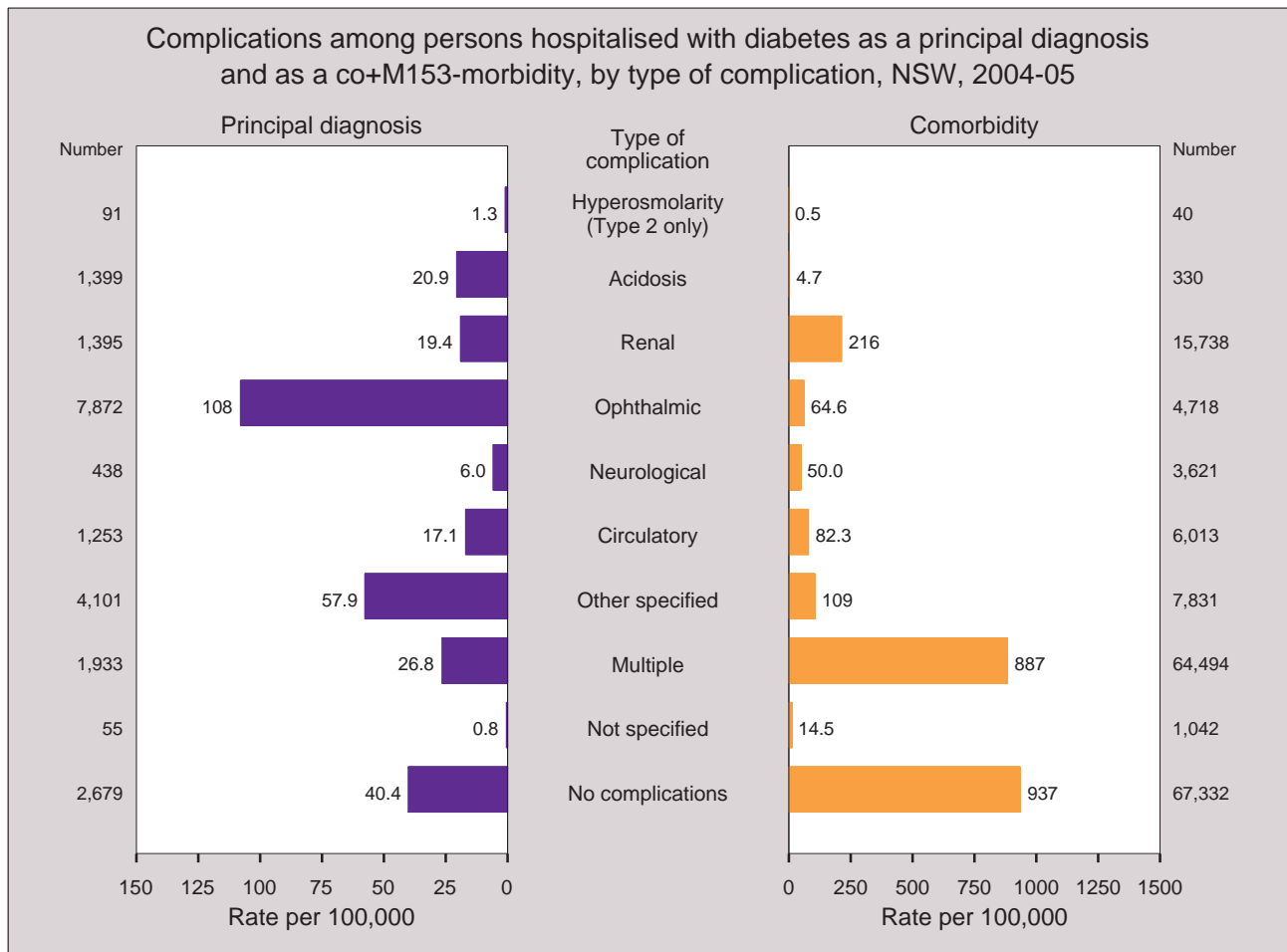
- Diabetes mellitus represents a collection of closely related conditions characterised by high blood glucose levels resulting from defects in secretion of the hormone insulin, the actions of insulin, or both (AIHW, 2004). The three main types of diabetes are: Type 1, Type 2 and gestational diabetes. The fourth, minor group includes diabetes secondary to other conditions, for example diseases of the pancreas or drug-induced or chemical-induced diabetes.
- Prevalence data suggests that Type 2 diabetes accounts for about 85-90% of all diabetes cases (AIHW, 2004). However, in NSW in 2004-05, hospitalisations for Type 2 diabetes constituted only 68.4% of all hospitalisations for diabetes. Diabetes Type 1 accounted for 23.0% of hospitalisations, gestational diabetes for 6.5% and other types for 2% of hospitalisations.
- While the rate of hospitalisations for Type 2 diabetes have risen since 2000-01, hospitalisation rates for Type 1 diabetes have been relatively stable, while hospitalisation rates for gestational diabetes have decreased. The over-representation of Type 1 diabetes in hospital statistics may be due to the earlier onset of Type 1 diabetes and increased incidence of complications.
- Diabetes mellitus can also lead to chronic (long term) complications. In NSW in 2004-05, 94% of diabetes hospitalisations were for diabetes with a complication. The main acute complication was ketoacidosis. In 2004-05 almost 93% of acute complications were for ketoacidosis and 78% of these were in people with Type 1 diabetes.
- Chronic complications of diabetes mellitus fall into several categories, such as renal, visual (ophthalmic), neurological and circulatory. Leading reasons for admission for chronic complications in NSW in 2004-5 were ophthalmic complications (46%), multiple causes (mainly foot ulcers) (11%), and renal disease (8%).

Diabetes hospital separations by type of diabetes and by type of complication, NSW, 2000–01

		Diabetes or complication type	Sex	2000–01	2001–02	2002–03	2003–04	2004–05	
Number	Type 1	Males		2250	2302	2324	2384	2403	
		Females		2202	2288	2172	2382	2484	
		Persons		4452	4590	4496	4766	4887	
	Type 2	Males		4376	5261	5512	6265	7785	
		Females		3518	4121	5024	5392	6748	
		Persons		7894	9382	10536	11658	14534	
	Gestational	Females		1571	1566	1765	1715	1370	
	Other types	Males		108	102	139	125	149	
		Females		109	106	167	151	297	
		Persons		217	208	306	276	446	
	All diabetes types	Males		6734	7665	7975	8774	10338	
		Females		7400	8081	9128	9640	10897	
		Persons		14134	15746	17103	18415	21236	
	Acute complications	Males		597	601	636	723	738	
		Females		675	705	667	750	752	
		Persons		1272	1306	1303	1473	1491	
	Chronic complications	Males		5148	5932	6778	7472	9077	
		Females		4005	4550	5928	6403	7940	
		Persons		9153	10482	12706	13876	17017	
	No complications	Males		919	1052	521	550	496	
		Females		2661	2748	2505	2466	2184	
		Persons		3580	3800	3026	3016	2679	
	Not specified	Males		70	80	40	29	32	
		Females		59	78	28	21	23	
		Persons		129	158	68	50	55	
	Rate per 100,000 population	All complication types	Males		6734	7665	7975	8774	10338
			Females		7400	8081	9128	9640	10897
Persons				14134	15746	17103	18415	21236	
Type 1		Males		70.7	71.0	70.8	72.0	71.3	
		Females		65.6	67.7	63.2	68.9	72.0	
		Persons		67.8	68.7	66.7	70.3	71.4	
Type 2		Males		144.6	168.0	174.5	193.2	234.6	
		Females		95.8	109.4	131.7	138.9	171.4	
		Persons		118.3	136.5	150.8	163.5	200.2	
Gestational		Females		47.9	47.5	53.6	52.3	41.7	
Other types		Males		3.5	3.2	4.3	3.8	4.4	
		Females		3.2	3.0	4.7	4.2	8.6	
		Persons		3.3	3.1	4.5	4.0	6.5	
All diabetes types		Males		218.7	242.2	249.6	269.0	310.4	
		Females		212.5	227.7	253.2	264.3	293.7	
		Persons		213.4	232.1	248.8	263.9	298.9	
Acute complications		Males		18.4	18.4	19.3	21.7	22.0	
		Females		20.8	21.3	20.0	22.3	22.4	
		Persons		19.6	19.7	19.6	22.0	22.2	
Chronic complications		Males		168.7	188.5	213.1	229.8	272.7	
		Females		110.0	122.1	157.1	167.1	204.6	
		Persons		137.3	152.8	182.6	195.8	235.6	
No complications		Males		29.3	32.8	15.9	16.6	14.8	
		Females		80.1	82.1	75.3	74.2	66.1	
		Persons		54.6	57.2	45.6	45.4	40.4	
Not specified		Males		2.2	2.5	1.2	0.9	1.0	
		Females		1.7	2.2	0.9	0.6	0.7	
	Persons		2.0	2.4	1.0	0.8	0.8		
All complication types	Males		218.7	242.2	249.6	269.0	310.4		
	Females		212.5	227.7	253.2	264.3	293.7		
	Persons		213.4	232.1	248.8	263.9	298.9		

Note: 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 2004–05 include an estimate of the small number of interstate hospitalisations, 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.

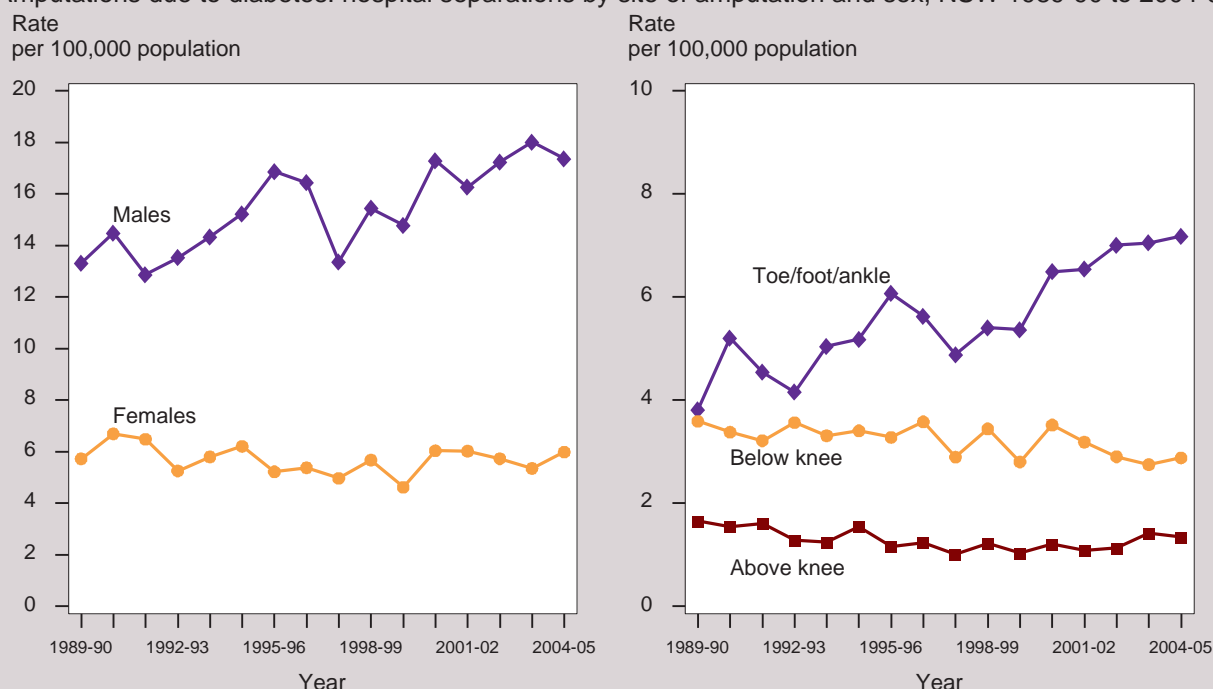


Note: Diabetes was the principal reason for hospitalisation when it was coded in the first diagnosis field; it was a comorbidity when it was coded in the 2nd–10th diagnosis field and was not the principal diagnosis. Gestational and diabetes in pregnancy are not included. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers include an estimate of the small number of interstate hospitalisations of NSW residents, 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 mellitus represents a collection of closely related conditions characterised by high blood glucose levels resulting from defects in secretion of hormone insulin, the actions of insulin, or both (AIHW, 2004).
- Diabetes can lead to acute and chronic complications. The graph illustrates the difference in distribution of complications between diabetes as a main reason for admission to hospital and when admissions are for something else and diabetes mellitus is a comorbidity.
- In NSW in 2004–05, leading complications among people hospitalised with diabetes as a principal diagnosis were visual (or ophthalmic, 42%), other specified complication (22%—mainly diabetes with poor control), multiple complications (10%—mainly foot ulcers) and acidosis (8%).
- Among people hospitalised for reasons other than diabetes, but with diabetes identified as a comorbidity, diabetes with no complications was the main category (40%), followed by diabetes with multiple complications (38%—mainly diabetes with features of insulin resistance).
- Sustained, individualised management substantially reduces the risk of complications in people with diabetes. The treatment focuses on prevention of hyperglycaemia, which is responsible for most of the long term microvascular complications of diabetes, while avoiding the risk of blood glucose levels becoming too low (hypoglycaemia).
- In NSW in 2004–05 (and only in that year), any condition that a patient had was coded in hospital records, irrespective whether it impacted on the hospital stay in any way. Consequently, the diabetes hospitalisation numbers and rates in 2004–05 are a more accurate estimate of the true burden of diabetes in the community, than data in other years.

Amputations due to diabetes: hospital separations by site of amputation and sex, NSW 1989-90 to 2004-05

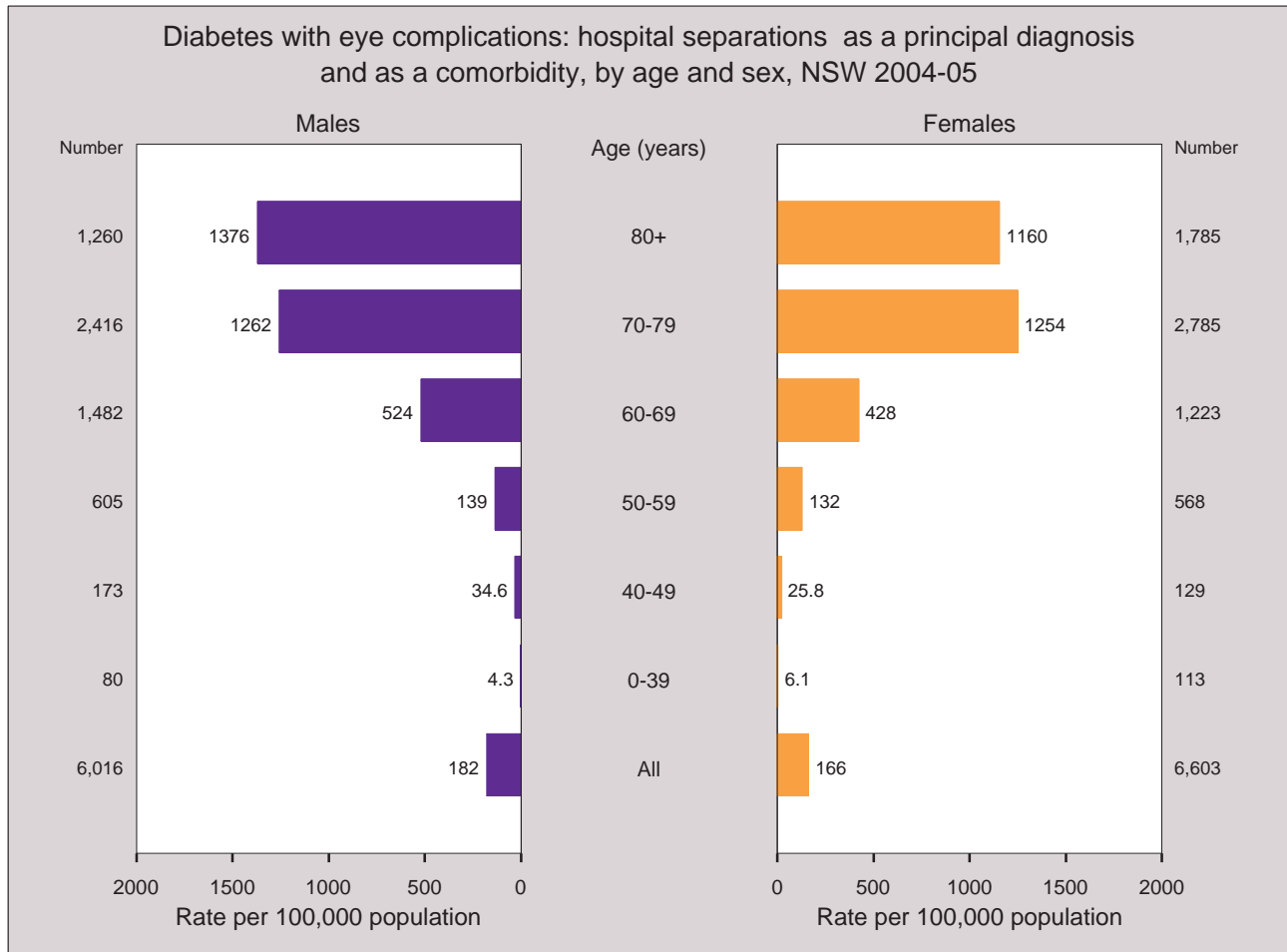


	Amputation	Sex	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Toe/foot/ankle	Persons	343	350	432	453	486	499	520
	Below knee	Persons	220	183	236	223	203	197	209
	Above knee	Persons	78	68	81	75	80	102	101
Rate per 100,000 population	NSW	Persons	641	601	749	751	769	798	828
	Toe/foot/ankle	Persons	5.4	5.4	6.5	6.5	7.0	7.1	7.2
	Below knee	Persons	3.4	2.8	3.5	3.2	2.9	2.8	2.9
	Above knee	Persons	1.2	1.0	1.2	1.1	1.1	1.4	1.4
	NSW	Persons	10.1	9.2	11.2	10.8	11.0	11.2	11.4

Note: Hospitalisations were included where diabetes was coded in any of the first 5 diagnosis fields and lower limb amputation was the first procedure listed. 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 2004-05 include an estimate of the small number of interstate hospitalisations, 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 can cause impaired peripheral circulation or nerve function and sensation, foot deformity, and increased susceptibility to infection. These factors can lead to lower limb ulcers and amputation (ACDS, 2001). Lower limb amputation has a significant impact on mobility, activities of daily living and length of rehabilitation.
- In NSW in 2004-05 there were 828 hospitalisations for lower limb amputations with diabetes as a comorbidity (a rate of 11.4 per 100,000 population). The male rate was almost three times the female rate (17.4 per 100,000 compared to 6.0 per 100,000 population).
- Over the last 12 years, the rate of lower limb amputations with diabetes as a comorbidity has shown a slightly increasing trend in males. Fluctuations in the rates may be due to hospital coding changes, particularly since 1999-00 (Phillips, 2003).
- In 2004-05, amputations below the level of the ankle accounted for approximately 63% of lower limb amputations with diabetes as a comorbidity, 24% were between the foot and knee (“below knee”) and 12% above the knee. The increase in the total lower limb amputation rate with diabetes as a comorbidity is mainly due to an increase in the rate of toe amputations, particularly in males.
- Good diabetes management, including regular assessment of feet by a podiatrist and self-care, can help prevent amputations (ACDS, 2001; NSW Health, 2004). In Australia in 2004, almost 33% of patients of specialist diabetic clinics were identified as having a ‘high risk foot’ and 25% were recorded as having seen a podiatrist in the previous 12 months (Flack et al., 2005).



Note: Hospitalisations were included where ophthalmic complications of diabetes were coded in any of the first 10 diagnosis fields. Gestational and diabetes in pregnancy are not included. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers include an estimate of the small number of interstate hospitalisations of NSW residents, 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 mellitus is a leading cause of blindness in the community. In surveys, persons with diabetes report blindness 5 times more frequently than persons without diabetes (AIHW, 2002).
- About 85% of all people with diabetes eventually develop some degree of retinopathy (damage to the retina). Fortunately, unless retinopathy progresses unchecked, vision may not be severely affected. Retinopathy can be particularly severe in persons with Type 1 diabetes. The degree of retinopathy is highly correlated with the duration of diabetes. Diabetes mellitus can also cause cataracts.
- In 2004–05 there were 12,620 hospitalisations where diabetes with ophthalmic (eye) complications was a principal or an additional diagnosis (one of any first 10 diagnoses). In 61% of these hospitalisations a procedure for a cataract was performed, and 96% of these hospitalisations were in people aged 50 years or older.
- Ophthalmic complications of diabetes do not always lead to hospitalisation, consequently hospital data does not provide a reliable estimate of the burden of eye damage due to diabetes in the community. In Australia in 2004, just over 1% of patients of specialist diabetes clinics were blind (Flack et al., 2005). About 65% of all patients of the clinics were assessed by either an ophthalmologist (55.3%) or an optometrist (16.4%) in the previous year. Almost 30% of those assessed had a some degree of ophthalmic abnormality (Flack et al., 2005).
- People with diabetes should have their eyes checked at diagnosis and then at least every 2 years; those with signs of eye damage should then have their eyes checked at least yearly, if not more often, by an ophthalmologist (NHMRC, 1997).

For more information

Australasian Paediatric Endocrine Group. *Clinical practice guidelines: Type 1 diabetes in children and adolescents. Approved by the NHMRC on 9 March 2005.* Canberra: Australian Government Department of Health and Ageing, 2005. Available at www.nhmrc.gov.au/publications/_files/cp102.pdf.

Australian Bureau of Statistics. *Causes of Death, Australia 2004.* Catalogue no. 3303.0. Canberra: ABS, 2006. Available at [www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/\\$File/33030_2004.pdf](http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/$File/33030_2004.pdf).

Australian Bureau of Statistics. *National Aboriginal and Torres Strait Islander health survey 2004–05.* Catalogue no. 4715.0.55.005. Canberra: ABS, 2006. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/4715.0.55.005?OpenDocument>.

Australian Bureau of Statistics. *New South Wales in focus, 2006.* Catalogue no. 1338.1. Canberra: ABS, 2006. Available at www.abs.gov.au/Ausstats/abs@.nsf/39433889d406eeb9ca2570610019e9a5/bb2fefbe6917e9b4ca25719a007ed7ce!OpenDocument.

Australian Centre for Diabetes Strategies. *National evidence based guidelines for the management of Type 2 diabetes mellitus. Primary prevention, case detection and diagnosis. Endorsed by the NHMRC 14 December 2001.* Sydney: Diabetes Australia Guidelines Development Consortium, 2001. Available at www.nhmrc.gov.au/publications/synopses/di7todi13syn.htm.

Australian Institute of Health and Welfare. *Australia's health 2006.* AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Australian Institute of Health and Welfare. *Diabetes: Australian Facts 2002.* AIHW Catalogue no. CVD 20 Diabetes Series no. 3. Canberra: AIHW, 2002. Available at www.aihw.gov.au/publications/cvd/daf02/index.html.

Australian Institute of Health and Welfare. *Heart, stroke and vascular diseases: Australian facts 2004.* AIHW Catalogue no. CVD 27. Cardiovascular Disease Series no. 22. Canberra: AIHW and National Heart Foundation of Australia, 2004. Available at www.aihw.gov.au/publications/index.cfm/title/10005.

Australian Institute of Health and Welfare. *Incidence of Type 1 diabetes in Australians under 40 years: a snapshot of National Diabetes Register data for 2004.* Catalogue no. AUS 75. Canberra: AIHW, 2006. Available at www.aihw.gov.au/publications/index.cfm/title/10291.

Barr ELM, Cameron A, Shaw JE, Zimmet PZ. *The Australian diabetes, obesity and lifestyle study (AusDiab). Five year follow-up. Results for New South Wales.* Melbourne: International Diabetes Institute, 2005.

Barr ELM, Magliano DJ, Zimmet PZ, Polkinghorne KR, Atkins RC, Dunstan DW, Murray SG, Shaw JE. *AusDiab 2005. The Australian diabetes, obesity and lifestyle study. Tracking the accelerating epidemic: its causes and outcomes.* Melbourne: International Diabetes Institute, 2006.

Centre for Epidemiology and Research. 2004 Report on adult health from the New South Wales Population Health Survey. *N S W Public Health Bull*, 2005; 16(S-1). Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Commonwealth Department of Health and Aged Care. *National Diabetes Strategy, 2000–2004.* Canberra: CD-HAC, 1999. Available at www.health.gov.au/internet/wcms/publishing.nsf/content/pq-diabetes-pubs-strat.

Dixon T, Webbie K. *Diabetes-related deaths 2001–2003.* Bulletin No. 32. AIHW Cat. No. AUS 69. Canberra: Australian Institute of Health and Welfare, 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10221.

Flack J, Colagiuri S. *ANDIAB 2004: Australian national diabetes information audit and benchmarking.* Canberra: National Association of Diabetes Centres (NADC), 2005.

Information on recommended dietary intakes of nutrients, dietary guidelines and guides to healthy eating are available from the National Health and Medical Research Council site at www.nhmrc.gov.au/publications/subjects/nutrition.htm.

NSW Department of Health. *Healthy People 2010. The population health strategy for New South Wales.* Sydney: NSW Department of Health, 2006.

NSW Department of Health. *Lower limb ulcers in diabetes: a practical approach to diagnosis and management*. Sydney: NSW Department of Health, 2004. Available at www.health.nsw.gov.au/pubs/2004/lowerlimb_diabetes.html.

NSW Department of Health. *NSW Chronic Disease Prevention Strategy 2003–2007*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/c/pdf/chronic_disease.pdf.

NSW Department of Health. *Improving diabetes care and outcomes: Principles of care and guidelines for the clinical management of diabetes mellitus*. Sydney: NSW Department of Health, 1996. Available at www.health.nsw.gov.au/public-health/diabetes/diabguid.html.

NSW Department of Health. *NSW Chronic Care Program: Phase Three: 2006–2009, NSW Chronic Disease Strategy: Executive Summary*. Sydney: NSW Department of Health, 2006.

NSW Premier's Department. *A new direction for NSW. State Plan. Draft for consultation*. Sydney: NSW Premier's Department, 2006. Available at www.nsw.gov.au/stateplan/Docs/DraftStatePlan.pdf.

National Centre for Classification in Health. *The International statistical classification of diseases and related health problems, 10th Revision, Australian Modification (ICD-10-AM). Volume 5*. Sydney: NCCH, 2004.

National Health Priority Action Council. *National service improvement framework for diabetes*. Canberra: Australian Government Department of Health and Ageing, 2006. Available at www.health.gov.au/internet/wcms/publishing.nsf/Content/pq-ncds-diabetes.

National Health Priority Action Council. *National Chronic Disease Strategy*. Canberra: Australian Government Department of Health and Ageing, 2006. Available at www.health.gov.au/internet/wcms/publishing.nsf/Content/pq-ncds.

Phillips G. *The impact of ICD coding standard changes for diabetes hospital morbidity data*. Catalogue no. CVD26. Canberra: AIHW, 2003. Available at www.aihw.gov.au/publications/index.cfm/title/9410.

- Cancer is the leading cause of disease burden in Australia, accounting for just under one-fifth of years of healthy life lost due to premature death, disease, and injury.
- In NSW in 2004, there were 34,092 new cases of cancer (56% in males), and 13,100 deaths from cancer (56% in males). Between 1995 and 2004, the incidence rate for all cancers was stable in males and rose by 8% in females but death rates fell by 16% in males and 10% in females. In both males and females the death rates from cancer in 2004 are the lowest since the NSW Cancer Registry began operation in 1972.
- In 2004 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 cancer death;
 - Breast cancer was the third leading cause of new cases of cancer and 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 screening program commenced in NSW in August 2006. In its first phase the program targets persons aged 55 to 65 years.
- Cervical cancer had been decreasing in incidence since 1972 and was the fourteenth most common female cancer in 2004. 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 women aged 20–69 years who had a Pap test between 2003–2004 in NSW was 56.8%.

In this chapter

- All cancers with projections
- New cases by leading type of cancer
- Deaths by leading type of cancer
- Survival by leading type of cancer
- New cases by division of general practice
- Colorectal cancer screening
- Breast cancer screening
- Cervical cancer screening

Introduction

Cancers are a major cause of mortality in Australia and also contribute much to morbidity and disability (AIHW, 2006). Cancer was the leading cause of disease burden in Australia in 2003, accounting for 19% of the total burden of disease, with lung, colorectal, breast, and prostate cancer responsible for half of this burden (Begg et al., in press).

Cancer is a group of diseases in which abnormal cells proliferate and spread out of control after being affected by a carcinogen or random gene mutation, and form a mass called a tumour or neoplasm. Tumours may be benign (non-invasive), but cancers are malignant (invasive) tumours, which spread to other parts of the body (metastasise) (AIHW, 2004). Cancer can develop from most types of cells in different parts of the body, each with its own pattern of growth and spread. Some invade and spread quickly, while others may remain in the body for years without showing any symptoms. Causal factors for many cancers remain unknown and most cancers have a unique set of factors responsible for their onset, but a number share risk factors. These include smoking (responsible for the greatest number of preventable cancers), dietary influences, infectious agents, radiation (including ultraviolet radiation), as well as genetic factors. Some cancers can be prevented through the avoidance of known risk factors. Risk of death for many cancers can be reduced by screening, early detection and treatment, and appropriate management and follow-up (Tracey et al., 2006). Cancer was made a state priority area in 1995 and national health priority area in 1996, as part of an initiative to reduce its impact in Australia.

Cancer registration is a fundamental tool of cancer monitoring. Australian states and territories are required by legislation to maintain a cancer registry. This requirement has resulted in cancer being the only major disease for which almost complete coverage of incidence data (that is, data on new cases) is available (AIHW, 2004). In NSW, notification of cancer is a statutory requirement for all public and private hospitals, and pathology laboratories.

The NSW Central Cancer Registry has been operating since 1972 and is based at the Cancer Institute NSW. The Registry collects and reports annually on cancer cases and deaths in NSW on behalf of the NSW Department of Health. The registry reports on notifiable cases of invasive cancer. Basal and squamous cell carcinoma of skin (non-melanocytic skin cancers), which are the most common type of cancer, are not notifiable and are not included in the Registry reports. The latest published data are for cases diagnosed in 2004. Information presented in this report on relative survival and trends over the past decade are based on results presented in the annual report *Cancer in NSW Incidence and Mortality 2004* (Tracey et al., 2006). The percentage change in trends is calculated using a generalised linear model approach (Tracey et al., 2006).

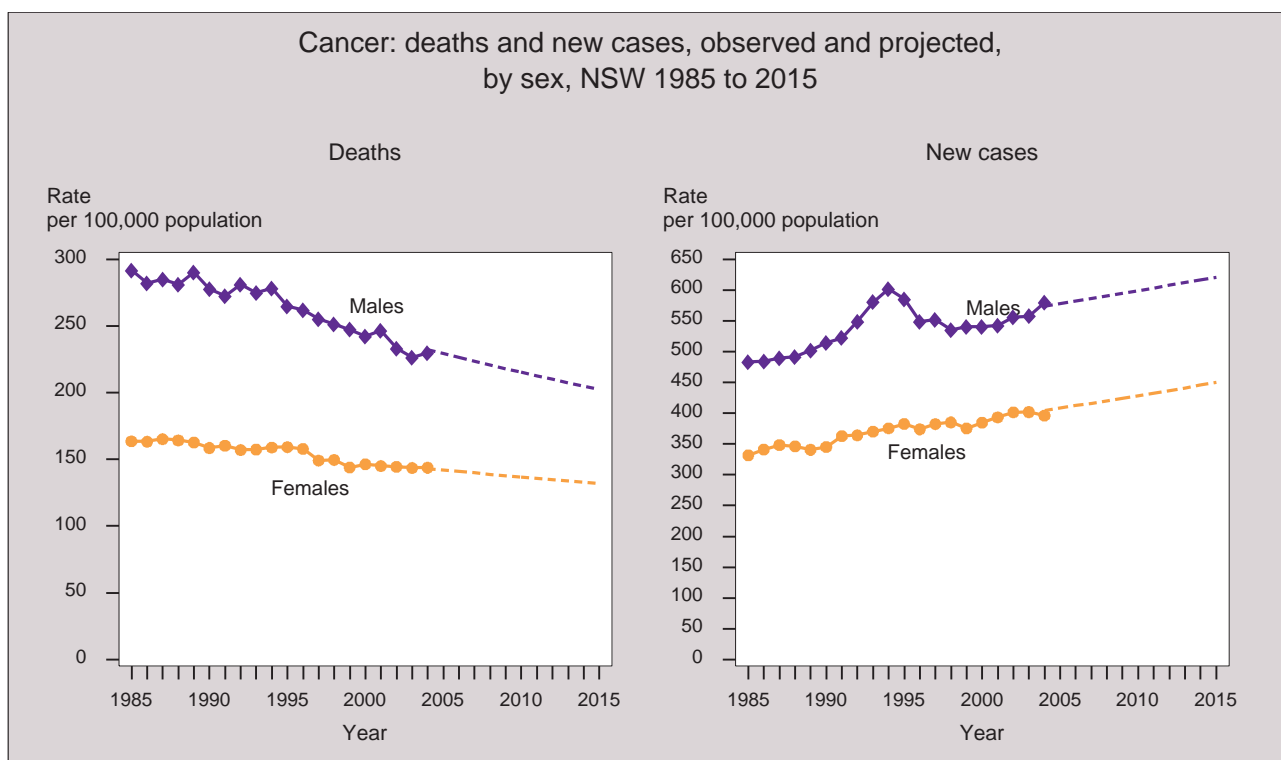
During the period covered by the Registry, there has been a large increase in the number of new cancers registered, as well as a change in the rankings of individual cancers. In 1972, the 4 most common cancers in males were lung, colorectal, prostate, and stomach; and in females were breast, colorectal, melanoma, and cervical cancers (Coates et al., 2001). By 2004, the rank order had changed to prostate, colorectal, melanoma, and lung cancers in males; and breast, colorectal, melanoma, and lung cancer in females (Tracey et al., 2006).

The NSW Government established the Cancer Institute NSW in 2003, in recognition of the importance of accelerating improvements in cancer control in NSW. In 2006, the Cancer Institute NSW prepared its second plan, 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 (Cancer Institute NSW, 2006). The Cancer Institute NSW is responsible for the NSW Pap Test Registry as well as the Central Cancer Registry. In July 2005, the Cancer Institute NSW assumed responsibility for the management of the breast and cervical screening programs and is supporting the staged introduction of bowel cancer screening in NSW, which began in August 2006.

This chapter contains an analysis of the incidence and mortality of 6 cancers. These are lung; colorectal (large bowel); melanoma of the 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. Additionally, oral cancer is discussed in Oral health chapter of this Report. Further detail on these and other cancers can be found in the web-based version of *The health of the people of New South Wales* report at www.health.nsw.gov.au and in publications of the Cancer Institute NSW. The methods used for analysing and presenting data are described in more detail in the Methods section. Deaths data presented here are from the Australian Bureau of Statistics mortality collection. The ABS death data was used to maintain consistency with other chapters of the report, however, generally the CCR figures for cancer are more reliable than the ABS cancer data, because the CCR data is verified against cases' histopathological reports while the ABS data is sourced only from the information on death certificates.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/

Cancer: deaths and new cases, observed and projected, by sex, NSW 1985 to 2015

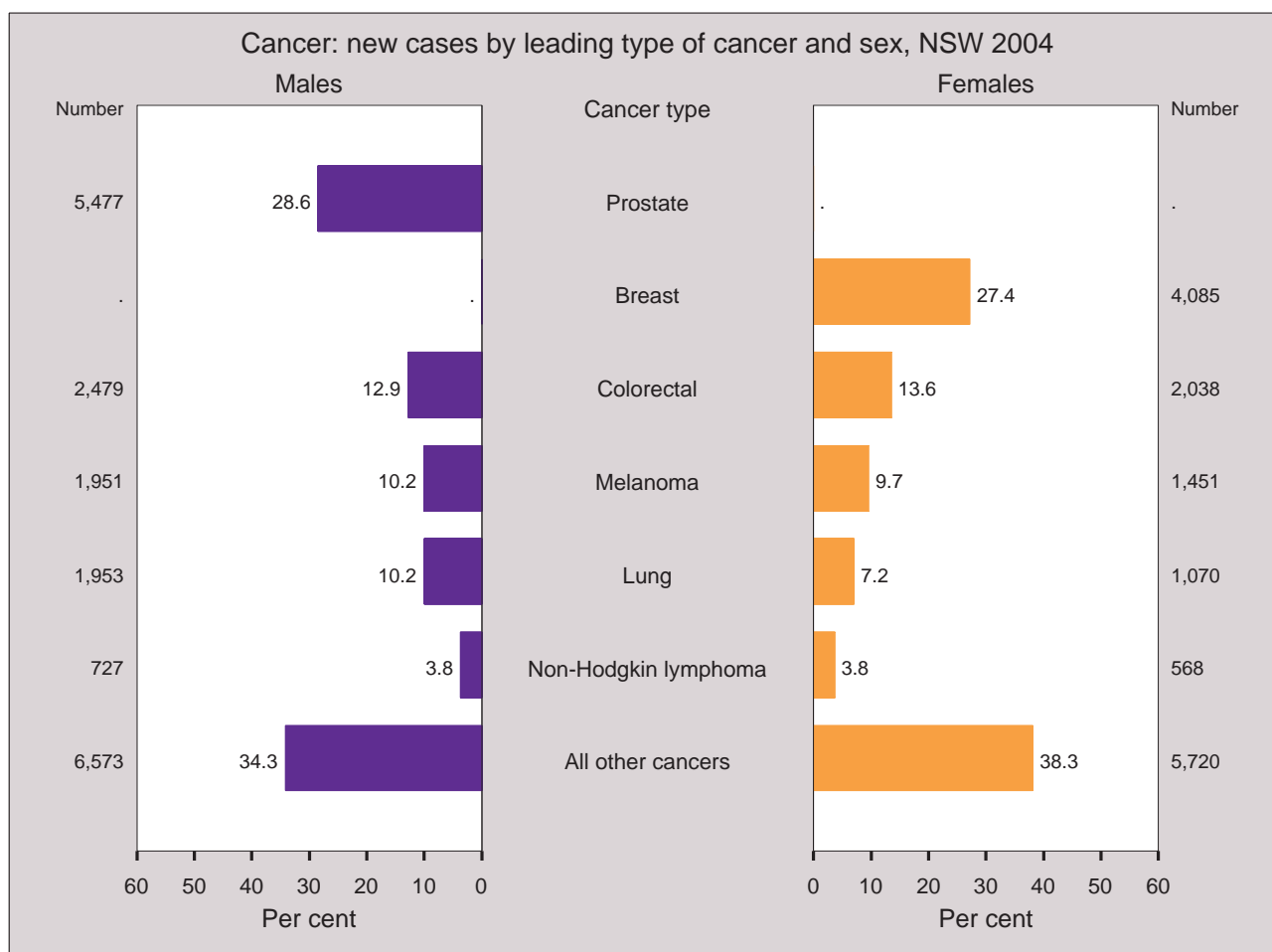


		Sex	1995	2000	2004	2005	2010	2015
Deaths	Number	Persons	11663	12275	13100	13290	14230	15320
	Rate	Persons	201.3	186.5	180.4	179	171	163
Cases	Number	Persons	27324	29526	34092	35180	40860	47650
	Rate	Persons	465.3	449.7	476.8	483	505	528

Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

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

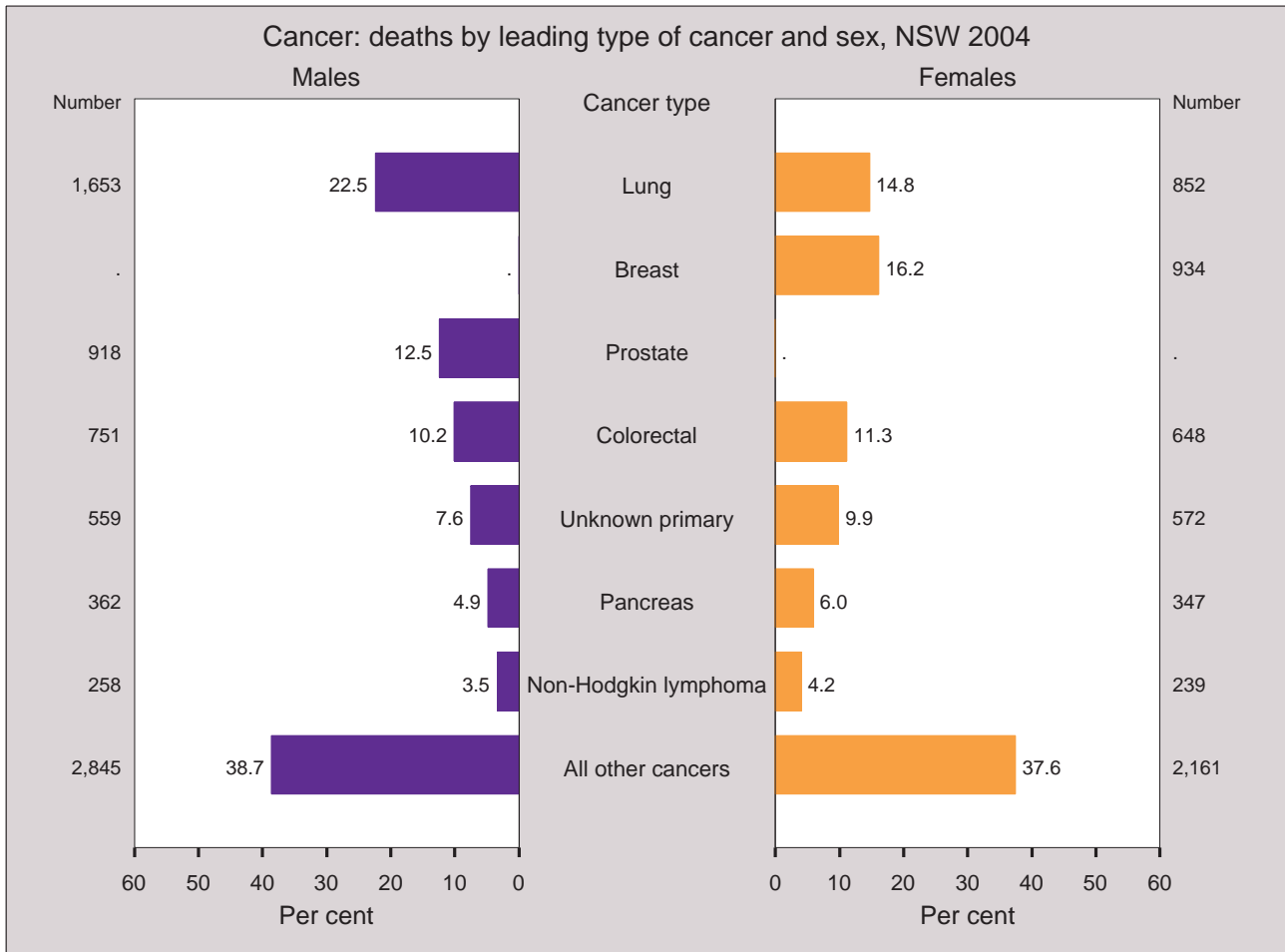
- In NSW in 2004, there were 34,092 new cases of cancer (56% in males) and 13,100 deaths from cancer (56% in males).
- In the period between 1995 and 2004, the age-standardised incidence rates of all cancers combined rose by 8% in females. There was no significant trend in males although there was a sharp increase in incidence rates in the last 2 years of data largely due to the influence of prostate cancer (Tracey et al., 2006).
- The increased incidence rate for cancers overall in NSW is believed to be due to factors including earlier diagnosis of some cancers as a result of screening; a real rise in new cases of some cancers; and improved notification of cancer cases. Reduced death rates reflect successful treatment of some cancers and the cumulative effect of small decreases in deaths for other cancers.
- Death rates fell by 16% in males and 10% in females in the period 1995 to 2004 (Tracey et al., 2006). In both males and females the mortality rate in 2004 is similar to the rates in 2003, which were the lowest since the NSW Cancer Registry began operation in 1972.
- Projections can be used to help set priorities for research and cancer control activities and to assist health planners in allocating resources. Projections depend on mathematical modelling of trends in the past and the assumption that these trends will continue in the future. The resulting projections will be inaccurate if new factors arise that affect cancer incidence rates, for example the introduction or change in the use of the screening test or changes in exposure to risk factors. Projections decline in certainty with time, that is, projections for 2010 are likely to be closer to the observed than those for 2015 (Tracey et al., 2005).



Note: Cases were classified by ICD-10.

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

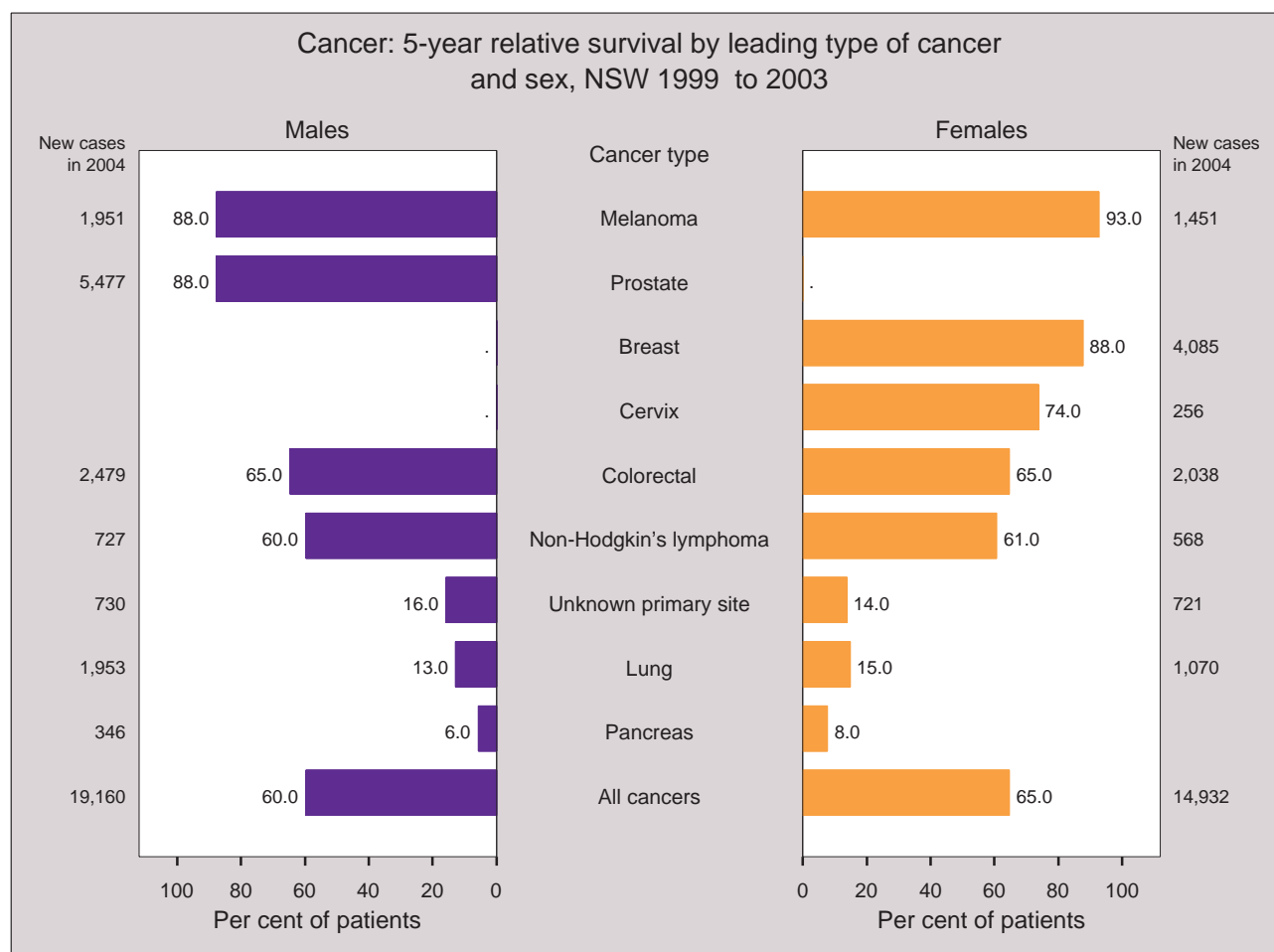
- Cancer is a diverse group of diseases in which some of the body's cells become defective, begin to multiply out of control, can invade or damage the tissue around them, and can also spread (metastasise) to other parts of the body to cause further damage. Cancers are a large cause of mortality in Australia and also contribute much to morbidity and disability (AIHW, 2006).
- Cancers are classified according to the organ in which they originate (primary site). Even when cancers spread to other organs (secondary cancers or metastases) it is usually possible to ascertain the origin of the malignant cells.
- In 2004 there were 34,092 new cancers diagnosed in NSW (19,160 in males and 14,932 in females). This number excludes the non-melanoma skin cancers (basal and squamous cell cancers), which are not notified to the registry. It is estimated that there are about 142,000 cases of non-melanoma skin cancer a year in NSW (Tracey et al., 2006).
- The graph shows the 7 most common cancers in NSW. The most frequently diagnosed cancers in NSW in 2004 were prostate cancer in males (at 28.6% of all cancers in males) and breast cancer in females (at 27.4%).
- The category 'Unknown primary site of cancer' includes cancers originating in ill-defined sites of the digestive tract, respiratory system, head and neck area and cancers where site could not be specified. A substantial variety of cancers is included there and it is not appropriate to consider them as a group for all purposes, for example a combined 5-year relative survival is not meaningful from a patient point of view.
- Non-Hodgkin lymphoma is a cancer of lymphoid cells in sites of immune system, including lymph nodes, bone marrow, spleen, liver and digestive tract.



Note: Deaths were classified using ICD-10. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

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

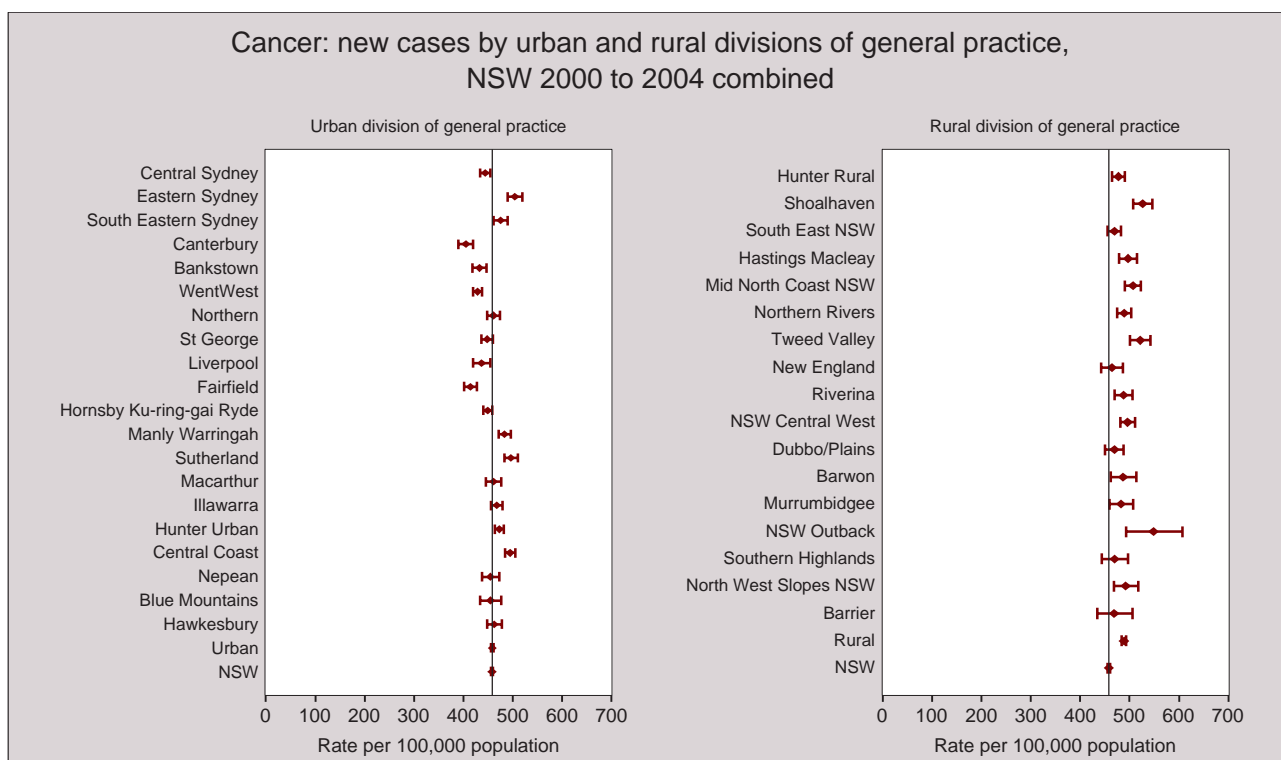
- Cancers are a large cause of mortality in Australia and also contribute much to morbidity and disability (AIHW, 2006).
- In 2004 there were 13,100 deaths from cancer (7,346 in males and 5,753 in females), according to the Australian Bureau of Statistics mortality data. The NSW Central Cancer Registry (CCR) reports different figures: 12,686 deaths (7,126 in males and 5,560 in females).
- Generally, the CCR figures for cancer are more reliable than the ABS cancer data, because the CCR data is verified against cases' histopathological reports while the ABS data is sourced only from the information on death certificates. The ABS death data was used to maintain consistency with other chapters of the report.
- The graph shows the 7 most frequent causes of cancer death in NSW in 2004. The most frequent cancer death was from lung cancer (at 22.5% in males and 14.8% in females). In females alone the most frequent cause of cancer death was breast cancer at 16.2%. Cancers that are the most common cause of cancer death are usually also the most commonly diagnosed cancers, however not in the same order.
- For example, prostate cancer, which is ranked first among new cancer cases 28.6% of new cases in males), is ranked third among causes of cancer death (12.7%). This is because the survival after diagnosis is very high with 88% of men surviving at least 5 years after diagnosis and majority of prostate cancer sufferers dying of other causes.
- The exception is cancer of pancreas, which caused 5.5% of cancer deaths in NSW in 2004 while it constituted only 2% of new cases in the same year and did not feature in the top seven new cases of cancer. The reason for this discrepancy is the exceptionally aggressive nature of pancreatic cancer—only 7% of persons diagnosed with this cancer survive 5 years after diagnosis.



Note: Relative survival is the ratio of observed survival to that which would be expected in the absence of the cancer.

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

- The '5-year survival rate' is the proportion of cancer patients who have not died from their cancer five years after being diagnosed with cancer. It is an important indicator of the burden of cancer, and in particular, the variation in prognosis that exists between different cancer types (Tracey et al., 2006). The relative 5-year survival of most common cancers is presented in the graph with the addition of cancer of pancreas, for which the death rates are relatively high and cervical cancer, which is preventable.
- Among the most common cancers, melanoma has the highest survival at 90% (93% in females and 88% in males). Some less common cancers have even better 5-year survival rates: cancer of the testis 96%, thyroid 94% and lip 91% (Tracey et al., 2006).
- Lung cancer is the fifth most frequently diagnosed cancer (9.1% of all new cases) and the most frequent cause of death from cancer (22% of all cancer deaths). The 5-year survival rate from lung cancer is relatively low as only 14% of patients survive longer than 5 years after diagnosis.
- Survival rate is particularly poor for cancer of pancreas (with 7% surviving past 5 years) and mesothelioma, cancer arising from the membrane lining the chest and abdominal cavities and adjacent organs (about 5% patients survive longer than 5 years after diagnosis).
- The 5-year survival rates in NSW have improved over the years. For all cancer cases diagnosed in the period 1994–2000, the 5-year survival rate was 61% (Yu et al., 2003). This improved to 63% for cases diagnosed in the period 1999–2003. For example, breast cancer cases diagnosed in the period 1994–2000 experienced survival of 85% but the more recent figure is 88%.
- The NSW 5-year survival rate from all cancers was 63%. Together with the United States at 65%, this was at the high end of the range among developed countries (Tracey et al., 2006).

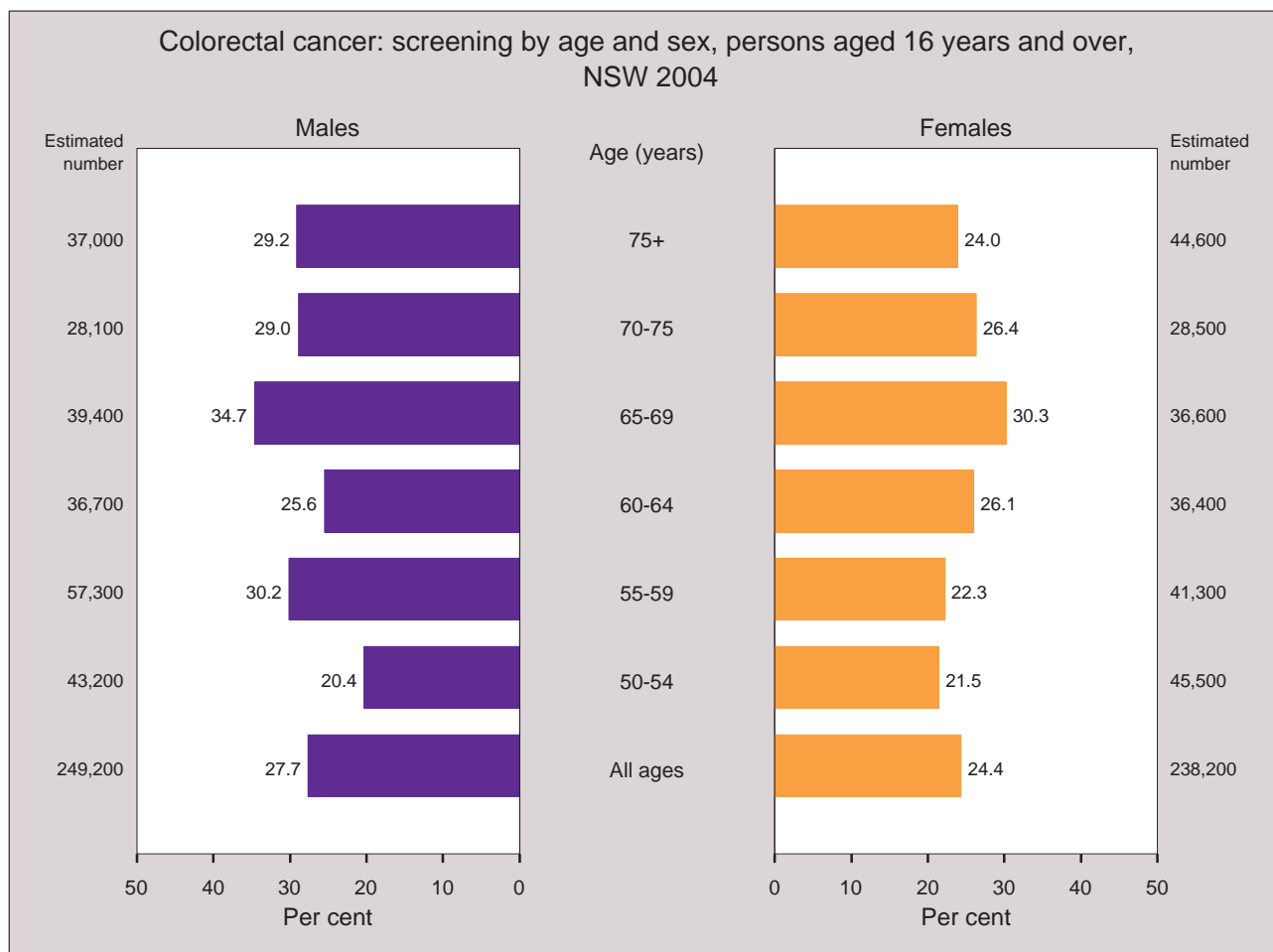


Note: The boundaries for divisions of general practice are determined by the Australian Government Department of Health and Ageing. There are currently 37 divisions of general practice in NSW.

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

- In 2004 there were 34, 092 new cancers diagnosed in NSW (19,160 in males and 14,932 in females) and 13,100 deaths from cancer (7,346 in males and 5,753 in females).
- Divisions of General Practice are the key infrastructure for integrated, quality primary health care services delivered through general practice in Australia. A division of general practice is a group of general practitioners who work together to improve health outcomes at the local level. About 95% of general practitioners are members of their local division. There are currently 37 Divisions of General Practice in NSW and the peak body for these Divisions in NSW is the Alliance of NSW Divisions. The Alliance aims to support and enhance the work of NSW Divisions of General Practice particularly in the planning and implementation of health services at a state and national level (NSW Alliance website).
- There are differences between local populations that divisions serve in terms of population size, age distribution, socioeconomic status, cultural background, and patterns of health service use. Because workloads and other resources differ, each division faces different challenges in improving health outcomes.

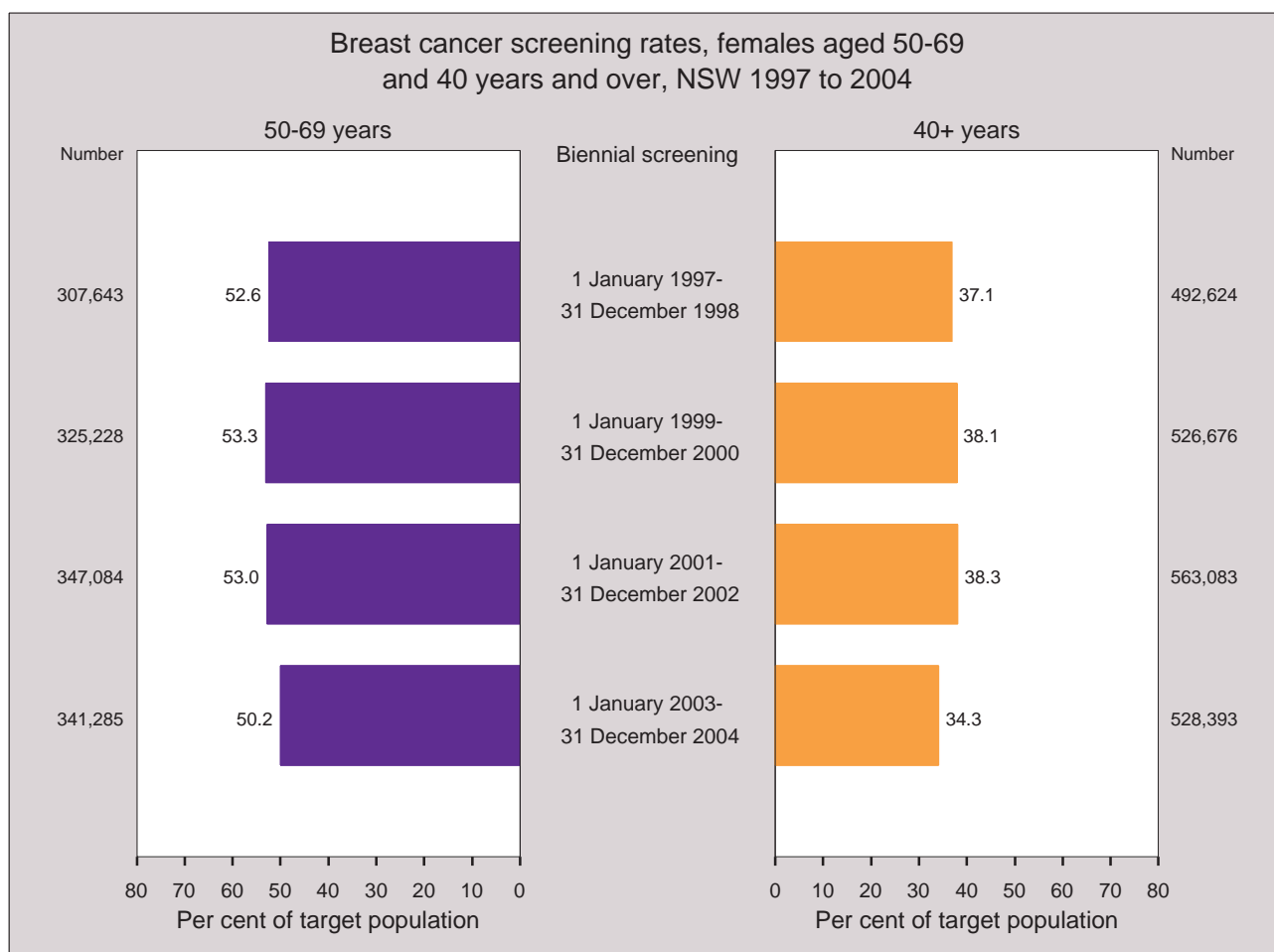
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: The indicator includes those people 50 years or over who have had a screening test (Faecal occult blood test, sigmoidoscopy or colonoscopy) for colorectal cancer in the last 5 years. It does not include those who had an investigation carried out for reasons other than for screening purposes. Estimates are based on 8,916 respondents. 24 (0.27%) were 'not stated' (Don't know or Refused).

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

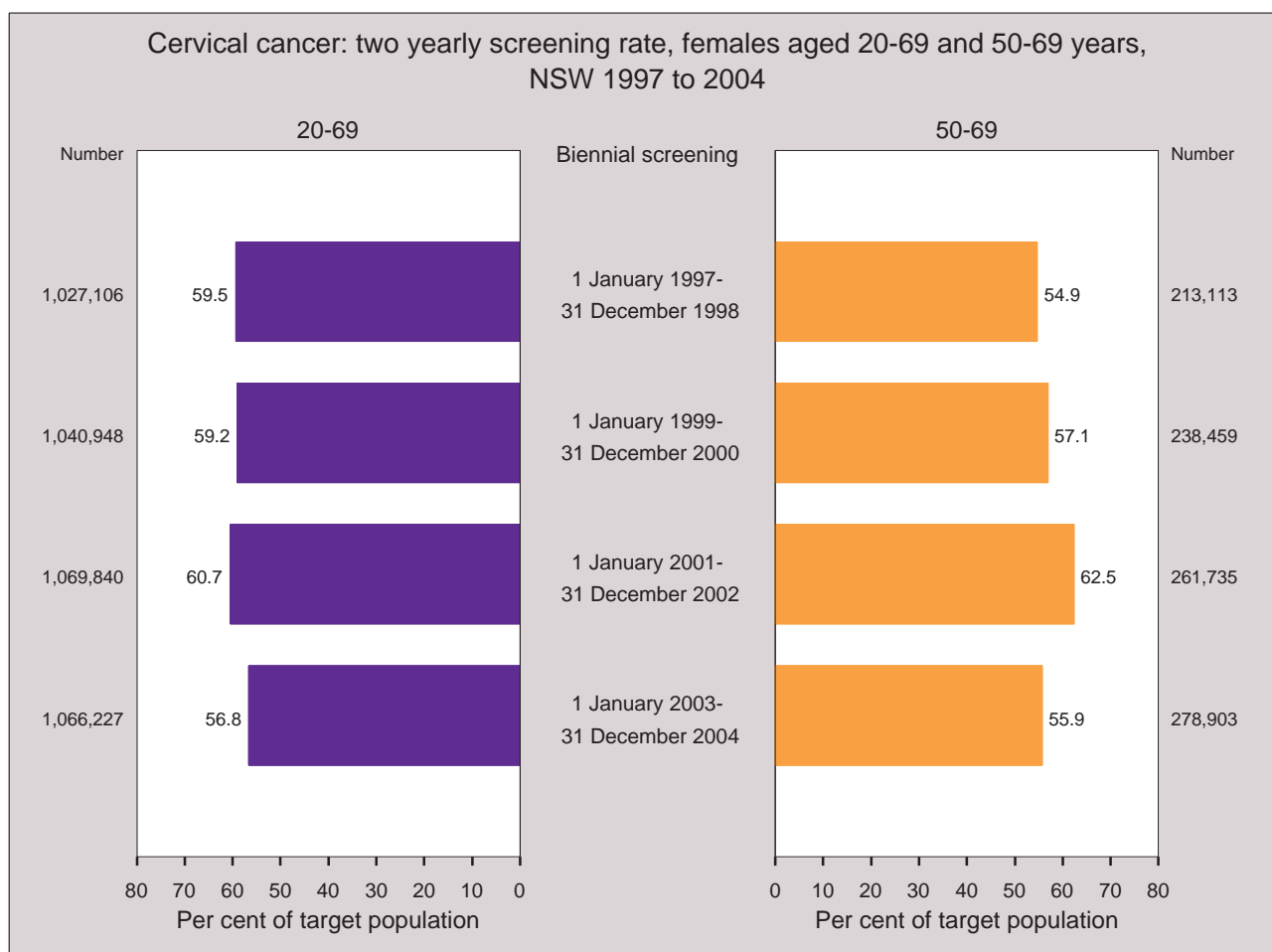
- The aim of screening for cancer is to reduce mortality and disability from the disease. Mortality, and not 5-year survival, is the outcome indicator for screening, because survival may be extended purely as a consequence of the cancers being diagnosed earlier, before symptoms are apparent.
- In 2004, 26% of respondents aged over 50 years (27.7% of males and 24.4% of females) reported having a faecal test for screening purposes in the previous 5 years. Within this group, 26.3% of respondents aged 55–59 years and 25.8% of respondents aged 60–64 reported having a test in the previous 5 years.
- Previously, in the 1997 and 1998 NSW Health Surveys, 2.9% of respondents aged 40–79 years (3.6% of males and 2.2% of females) reported having a faecal test for screening purposes in the last 12 months. Together these survey results suggest that the baseline for the introduction of a biennial screening program in NSW is very low considering that the program aims to achieve participation rates of above 50% for the target age groups of 55 and 65 year olds every two years.
- Clinical trials of bowel cancer screening suggest screening based on Faecal Occult Blood Test (FOBT), when fully implemented, will reduce mortality from bowel cancer by 15–30%, the equivalent of 240–480 lives saved each year in NSW. A bowel screening program commenced in NSW in August 2006, and the NSW Cancer Plan supports its implementation with a range of activities (CI NSW, 2006). In its first phase the program targets persons aged 55 and 65 years.



Note: Rates are expressed as the percentage of the eligible female population and age-standardised to the Australian population at 30 June 1991 for 1997–1998 and 1999–2000, at 30 June 2001 for 2001–2002 and at 30 June 2003 for 2003–2004.

Source: BreastScreen NSW and ABS population estimates.

- Mammographic screening is seen as the best population-based method to reduce mortality and morbidity attributable to breast cancer, by detecting early-stage breast cancer.
- The NSW Cancer Plan includes a target to increase participation in the age group 50–69 years by 4% per year during the four years of the NSW Cancer Plan so that over 70% of women aged 50–69 years should have 2 yearly mammograms by 2010 (CI NSW, 2006).
- The two-yearly screening rate for breast cancer in women aged 50–69 years in NSW for 2003–2004 was 50.2%. This is a decrease from around 53% reported in the three biennial periods 1997–1998, 1999–2000 and 2001–2002.
- The breast screening program in NSW was recently reorganised and rejuvenated with an aim to encourage more women to participate in routine screening (CI NSW, 2006). Also, there is some evidence that a large proportion of women in the target group underwent mammographic screening with private providers, who do not report to BreastScreen and are currently not included in the database. Under the Cancer Plan 2007–2010 the monitoring of private mammography will be improved (CI NSW, 2006).
- The latest audit of breast screening data shows that participation by women aged 50–69 years in breast cancer screening increased by nearly five percentage points over the previous twelve months. Across NSW 363,369 women participated in breast screening in the two years to January 2006 (CI NSW, 2006).
- Women over 40 can be screened upon request. When 40 to 49 year-olds are included in the data, the rate of breast screening also shows a decrease from around 38% in the previous two biennial periods 2001–2002 and 1999–2000 to 34% in 2003–2004.



Note: The biennial screening rate was calculated by the NSW Cervical Screening Program (CSP) from the number of women aged 20–69 years who had a Pap test at least once during a two-year reporting period, as a percentage of the target population of eligible NSW women residents aged 20–69 years. The target population was derived from the Estimated Resident Female Population of NSW by taking an average of the populations across all age groups in the 2-year period. Populations were obtained from the Australian Bureau of Statistics (ABS), and adjusted for the proportion of women estimated to have undergone a hysterectomy.

Source: NSW Cervical Screening Program and the NSW Pap Test Register.

- A population screening program using the Pap test results in lower incidence and mortality from cervical cancer in the population. This is because the Pap test is very effective at detecting precancerous lesions in the cervix and regular two-yearly testing with appropriate follow-up treatment can prevent cervical cancer from developing in most cases (NSW Cervical Screening Program, 2004). This results in both a reduction in cancer incidence and death rates.
- A population-based screening program was introduced nationally in 1991. Currently the target for the NSW Cervical Screening Program is to screen 75% of women at risk every two years. The rate of screening of the target population of 20–69 year-olds was 56.8% in 2003–2004. The rate of screening decreased from 60.7% in 2001–2002, an increase from 59.2% in 1999–2000.
- The Pap Test register data indicates that about 90% of women in NSW have had a Pap test in the last 5 years, 73% within the last 3 years and nearly 60% within the last two years. The NSW Cervical Screening Program has initiated a number of new programs to increase the participation rate, especially of two-yearly screening (CI NSW, 2006).
- Increased participation in Pap testing by women who seldom have or never had Pap Tests is of particular concern. The Cervical Screening Program will aim to increase participation rate in this hard to reach group by 3% per annum during the duration of the Cancer Plan 2007–2010 (CI NSW, 2006).
- The first cervical cancer vaccine is a major medical breakthrough and is now available in Australia. The vaccine is an additional method of preventing cervical cancer and will be most useful for the next generation of women. Medical authorities urge all women aged 20–69 years to continue with regular two yearly Pap test screening (CI NSW, 2006).

For more information

Australian Divisions of General Practice at www.adgp.com.au, includes information about the Alliance of NSW Divisions.

Australian Health Technology Advisory Committee. *Prostate cancer screening*. Canberra: Commonwealth Department of Health and Family Services, 1996.

Australian Institute of Health and Welfare and Australasian Association of Cancer Registries. *Cancer in Australia 2001*. AIHW Catalogue no. CAN 23. Canberra: AIHW, 2004.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Begg S, Vos T, Barker B. et al. *The burden of disease and injury in Australia, 2003*. Canberra: AIHW, in press. Available at www.aihw.gov.au/publications.

Cancer Institute NSW at www.cancerinstitute.org.au.

Cancer Institute NSW. *NSW Cancer Plan 2007–2010. Accelerating the control of cancer*. Sydney: Cancer Institute NSW, 2006.

Cancer Institute NSW. *The NSW Cancer Plan 2004–2006 A Discussion paper*. Sydney: Cancer Institute NSW, 2004.

Centre for Epidemiology and Research. *2005 Report on adult health in New South Wales*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research. New South Wales Mothers and Babies 2004. *N S W Public Health Bull* 2005; 16(S-4). Available at www.health.nsw.gov.au/public-health/phbsup/mdc04.html.

Coates M, Tracey EA. *Cancer in NSW: Incidence and mortality 1999. Featuring 30 years of cancer registration*. Sydney: The Cancer Council NSW, 2001.

NSW Health. *A Clinical Service Framework for Optimising Cancer Care in NSW 2003*. NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/c/pdf/cancercare_guide.pdf.

National Breast Cancer Centre. *Clinical practice guidelines for the management of early breast cancer. Second edition*. Canberra: NHMRC, 2001; and *Clinical practice guidelines for the management of advanced breast cancer*. Canberra: NHMRC, 2001.

National Health and Medical Research Council. *Guidelines for the prevention, early detection, and management of colorectal cancer*. Canberra: NHMRC, 1999.

National Health and Medical Research Council. *Screening to prevent cervical cancer: Guidelines for the management of asymptomatic women with screen detected abnormalities*. Canberra: NHMRC, 2005.

Smith DP, Armstrong BK, Saunders R. *Patterns of Prostate Specific Antigen testing in Australia 1992 to 1996*. Sydney: NSW Cancer Council, 1998.

Supramaniam R, Smith DP, Coates MS, Armstrong BK. *Survival from cancer in NSW in 1980 to 1995*. Sydney: NSW Cancer Council, 1999.

The Cancer Council New South Wales at www.cancercouncil.com.au.

Tracey E, Roder D, Bishop J, Chen S, Chen W. *Cancer in NSW: Incidence and mortality 2003*. Sydney: Cancer Institute NSW, 2005. Available at www.cancerinstitute.org.au.

Tracey EA, Baker D, Rogers K, Jelfs P, Bishop J. *Cancer Risks in New South Wales: 2006*. Sydney: Cancer Institute NSW, in press.

Tracey EA, Chen S, Baker D, Bishop J, Jelfs P. *Cancer in NSW: Incidence and mortality 2004*. Sydney: Cancer Institute NSW, 2006. Available at www.cancerinstitute.org.au.

Yu XQ, O'Connell D, Gibberd R, Smith D, Armstrong B. *Cancer survival, incidence and mortality by area health service in NSW 1994 to 2000*. Sydney: The Cancer Council NSW, 2003.

Respiratory disease

- Respiratory diseases, including lung cancer, were together responsible for around 14% of all deaths in NSW in the period 2000 to 2004, and just over 5% of hospital separations in 2004–05.
- Three respiratory diseases—chronic obstructive pulmonary disease, lung cancer, and asthma—were among the 20 leading causes of the overall burden of disease in NSW in 2004.
- Chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema, was responsible for over 1,700 deaths in 2004 and over 18,000 hospitalisations in 2004–05.
- More than 90% of people who died from influenza and pneumonia in 2004 were aged 65 years and over.
- More than 50% of hospitalisations for influenza and pneumonia were of people aged 65 years and over.
- In 2005, around 9% of adult males and 12% of adult females had asthma, and in 2003 and 2004 just under 17% of boys and almost 13% of girls aged 2–15 years had asthma. Asthma was responsible for 124 deaths in 2004 and around 13,000 hospitalisations in 2004–05.
- In 2004, 73% of all deaths from chronic obstructive pulmonary disease and 83% of all lung cancer deaths were attributable to smoking. In 2004–05, smoking caused around 75% of all hospitalisations for chronic obstructive pulmonary disease and lung cancer.

In this chapter

- Deaths and hospitalisations
- Influenza and pneumonia
- Current asthma
- Asthma hospitalisations
- Death and hospitalisation attributable to smoking

Introduction

The respiratory system includes the airways, the lungs, the respiratory centre of the central nervous system, the chest wall and the pulmonary circulation. This chapter focuses on chronic respiratory diseases, specifically asthma, chronic obstructive pulmonary disease, asbestosis, and respiratory tuberculosis, where preventive measures and better management of conditions can reduce both the burden of disease and associated healthcare costs. Acute diseases, such as influenza and pneumonia, are also included.

Influenza and pneumonia are acute respiratory diseases that can be very severe and, in persons at high risk, can lead to death. Influenza and pneumonia are usually presented together because influenza can lead to pneumonia and in most cases of hospitalisation and death from pneumonia, the responsible organism is not identified. In years identified as influenza epidemic years, the number of deaths from influenza increases but the most substantial increase occurs in the number of deaths from unspecified pneumonia and bronchopneumonia.

Asthma is a chronic inflammatory disease causing episodes of wheezing, breathlessness and chest tightness due to widespread narrowing of the airways within the lungs and obstruction of airflow. The symptoms of an episode are usually reversible, either spontaneously or with treatment (AIHW, 2006). Asthma is a significant public health problem in Australia and it is estimated that Australian prevalence rates are among the highest in the world, along with New Zealand and the UK (ACAM, 2005; GINA, 2004). The prevalence of asthma varies between age groups and sexes, but overall around 10–12% of adults and 14–16% of children and teenagers currently have asthma in Australia (ACAM 2005).

While there was evidence of an increase in the prevalence of asthma between the 1980s and 1990s (Wilson et al 2001, Peat et al 1994) more recent studies in children show no further increase in the prevalence of asthma, (Robertson et al 2004) and possibly a decrease in the prevalence of asthma symptoms (Toelle et al 2004). In Australia in 2004, asthma was estimated to account for 2.3% of the disease burden, 0.3% of years of life lost due to premature mortality and 4% of years of 'health' life lost due to poor health or disability (AIHW, 2006 after Begg et al., in press).

Chronic obstructive pulmonary disease (COPD) is a serious, long-term respiratory disease that affects mainly older people who have been exposed to tobacco smoke. It is characterised by airflow obstruction, which is persistent and largely irreversible (ACAM, 2006) and which limits the capacity to undertake activities of daily living. Chronic bronchitis and emphysema are the two main conditions comprising COPD. Each condition can occur on its own, but they often co-exist in an individual. In Australia in 2004, COPD was estimated to account for 3.6% of the disease burden, 3.7% of years of life lost due to premature mortality and 3.5% of years of 'healthy' life lost due to poor health or disability (AIHW, 2006).

Pneumoconioses are diseases originating from an accumulation of dust in the lungs. Most pneumoconioses are occupationally acquired and the one discussed here is asbestosis. Asbestosis is a fibrosis of the lungs resulting from the long-term inhalation of asbestos dust in the mining, milling, manufacturing, application (for example of insulation) or removal of asbestos products. Asbestosis does not appear to be a significant public health problem when compared to the burden of disease created by other respiratory diseases. It warrants special attention because its development is not related to lifestyle risks, such as smoking, and because it is totally preventable, primarily by effective dust suppression in the work environment. People exposed to asbestos who are also smokers, however, do have a higher risk of lung cancer when compared with the risk of either asbestos exposure alone or smoking alone. Advances in occupational health and safety have already reduced the incidence of asbestosis, and with

time are likely to eliminate it. However, due to the time taken for chronic respiratory problems to develop, the health impact of historic exposures to asbestos will continue for some time.

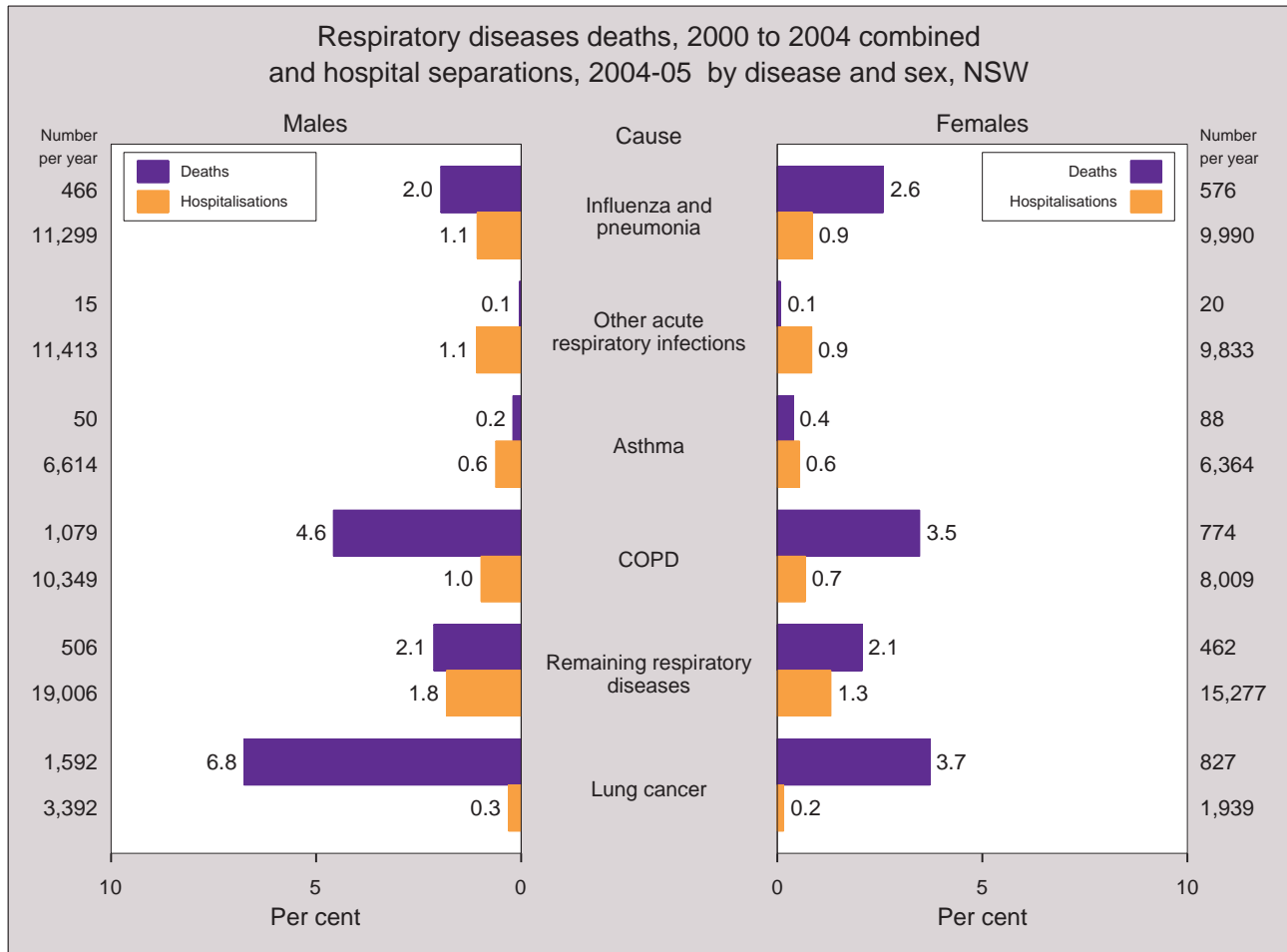
Tuberculosis (TB) is caused by the bacterial organism *Mycobacterium tuberculosis*. TB can present in a variety of ways, most commonly as pulmonary disease characterised by a chronic cough, weight loss, fevers and night sweats. Despite the increasing burden from respiratory tuberculosis globally, it is not a major 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 (Li et al., 2004). In the 5 year period 2000–2005, 61 people died of respiratory tuberculosis in NSW. Most cases occur in people born in high prevalence countries (Li et al., 2004) and the majority of cases are treated in the outpatient setting of hospitals.

Cigarette 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, although hospital separation rates for lung cancer decreased in males and females in NSW in recent years. Lung cancer is discussed in more detail in the Cancer chapter.

In NSW, two of the measures of success in the State Plan: A New Direction for New South Wales (NSW Premier's Department, 2006), are a reduction in avoidable hospital admissions of aged people and people with chronic illnesses and a reduction in smoking rates, unhealthy alcohol consumption and obesity. The NSW Chronic Care Program, established in 2000, recognises a significant overlap in the management of chronic conditions. The Program aims to improve the quality of care provided for people with chronic health conditions, to improve the quality of life of people with chronic health conditions and their carers and families, and to reduce unplanned and avoidable admissions to hospital (NSW Health, 2006).

The methods used for analysing and presenting respiratory diseases data are described in more detail in the Methods section.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

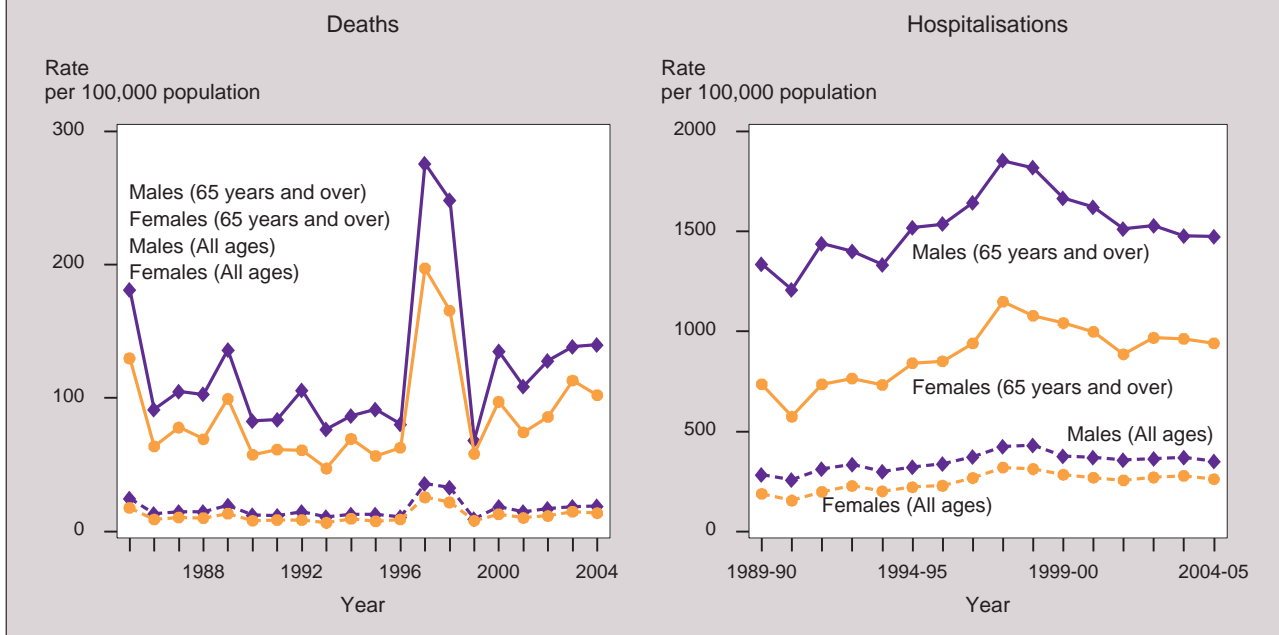


Note: Deaths and hospital separations were classified using ICD-10-AM. Numbers of deaths for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. Hospitalisations for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

- Respiratory diseases were responsible for 14.1% of deaths in 2000 to 2004 combined and for 5.2% of all hospitalisations in 2004-05.
- Between 2000 and 2004 lung cancer constituted 5.3% of all deaths in NSW, however it was responsible for only 0.2% of all hospitalisations in 2004-05. The other main cause of death among respiratory diseases was chronic obstructive pulmonary disease (COPD), which accounted for 4.1% of all deaths in the relevant years. In contrast, however, COPD was also a substantial contributor to hospitalisation, being the main cause of 0.8% of all hospitalisations in 2004-05.
- Tobacco smoking is the main risk factor for both lung cancer and COPD.
- Influenza and pneumonia caused 2.3% of all deaths and 1% of hospital separations and was a substantially more important cause of death and hospitalisation among the very young and older age groups.
- The category 'remaining respiratory diseases' contributes substantially to both all deaths (2.2%) and hospital separations (2.1%). The leading cause of death was aspiration pneumonia due to food and vomit in the respiratory tract and affected mostly the elderly (almost 50% of cases were in persons aged 85 years and over). Chronic tonsillitis and unspecified acute infections of the lower respiratory tract were chiefly responsible for hospitalisations, affecting the younger more than the older age groups.
- Deaths from asthma constituted the smallest proportion of all deaths (0.3%). Asthma was also responsible for a small proportion of all hospital separations. A feature of asthma is that it is relatively more common in younger age groups. In contrast, deaths and hospital separations for lung cancer and COPD show the more common pattern of increasing rates with increasing age.

Influenza and pneumonia deaths 1985 to 2004 and hospital separations 1989-90 to 2004-05, persons of all ages and 65 years and over, NSW

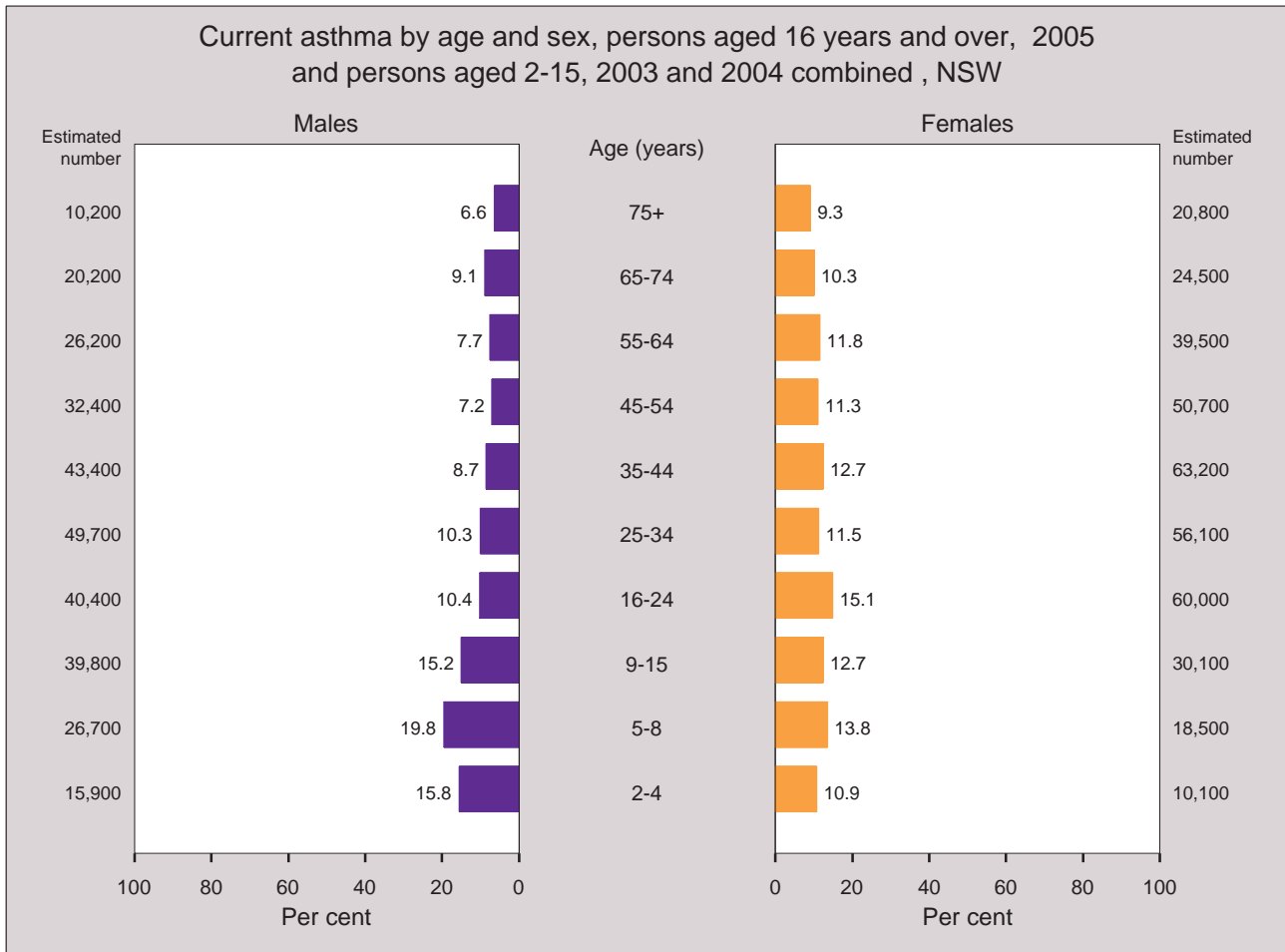


		Age (years)	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	All ages	Persons	549	1692	1559	543	998	815	974	1217	1209
	Rate	All ages	Persons	9.8	29.5	26.1	8.7	15.3	12.0	13.8	16.6	16.0
Hospitalisation	Number	All ages	Persons	19095	22663	23047	20943	20727	20291	21333	22115	21290
	Rate	All ages	Persons	311.5	362.5	362.0	322.8	312.5	299.5	310.3	318.1	300.1

Note: 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 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

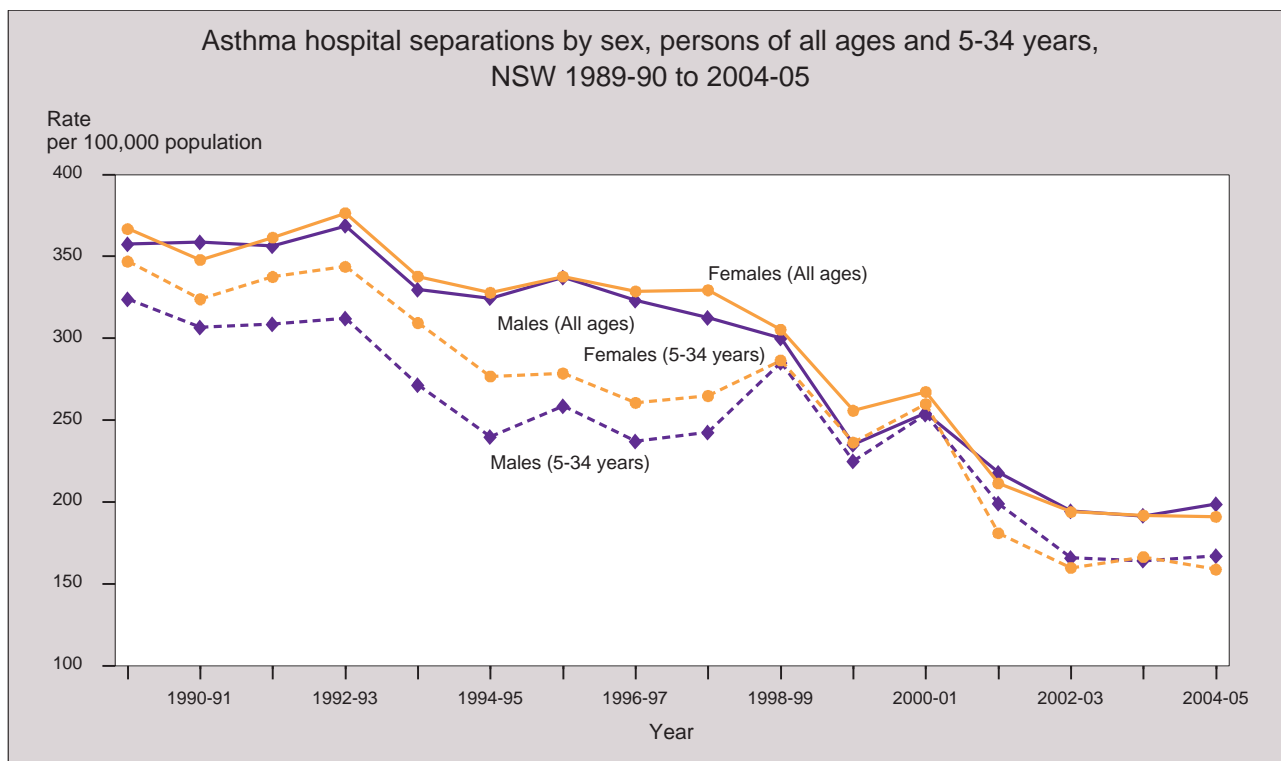
- Influenza and pneumonia are acute respiratory infections that can be very severe, and in persons in high risk groups can lead to death. They are usually presented together as influenza can lead to pneumonia.
- The term influenza, or 'flu', is commonly and incorrectly used to refer to any respiratory infection.
- Severe virus-related complications of influenza require hospitalisation and threaten life most frequently in the very young and elderly (children under 1 year old and persons over 65) and among persons with chronic heart or, especially, lung conditions. Appropriate antibacterial therapy decreases the mortality rate from secondary bacterial pneumonia.
- The main factors predisposing to pneumonia include upper respiratory tract viral infections, alcoholism, institutionalisation, tobacco smoking and heart failure.
- There were 1,209 deaths from influenza and pneumonia in 2004 and almost 93% of these were in persons aged 65 years and over.
- The death rates peaked in 1997 and 1998 at 226.2 (1,692 deaths) and 196.6 (1,559 deaths) per 100,000 population respectively. These years correspond with the identified epidemics of influenza and pneumonia in NSW (CDB, 1998; Viboud et al., 2004).
- There were 21,290 hospitalisations for influenza and pneumonia in 2004-05 and 51.1% of those were in persons 65 years and over. The rates peaked in the years 1997-98 and 1998-99, corresponding with the years of a surge in deaths attributed to influenza and pneumonia. Other epidemics (for example in years 1989, 1994) have also been reflected in the trend data.



Note: The indicator includes those who had symptoms of asthma or treatment for asthma in the last 12 months. Estimates are based on 11,474 respondents. 26 (0.23%) were not stated (Don't know or Refused). The indicator includes those respondents who had children with symptoms of asthma or had taken treatment for asthma in the last 12 months. Estimates are based on 6,696 respondents. 5 (0.07%) were not stated (Don't know or Refused).

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

- Asthma is a chronic inflammatory disorder of the airways that results in obstruction of airflow in response to a range of triggers. It is estimated that Australian prevalence rates are among the highest in the world, along with New Zealand and the UK (ACAM, 2005; GINA, 2004). It is also estimated that about 30–40% of Australians will have symptoms consistent with asthma at some time in their lives (NAC, 2002). The prevalence of asthma varies between age groups and sexes.
- In the 2005 NSW Health Survey, 8.8% of adult males and 12.0% of adult females reported having current asthma. This was 10.4% of all persons, a slight increase from 10.1%, which was reported in NSW in 1997 and 1998. Among children aged 2–15 years, 16.5% of boys and 12.6% of girls were reported to have current asthma in 2003 and 2004.
- Children aged 2–15 years were reported to have higher rates of asthma (14.7%) than adults aged 16 years and over (10.4%). In males, the prevalence of asthma was much higher during childhood than in adulthood (16.5% to 8.8%)
- Asthma prevalence is difficult to measure. Different results are obtained from self-reported population surveys, compared to samples based on documented history of wheezing or other symptoms in the previous 12 months and a positive airway hyper-responsiveness test (ACAM 2005).
- The overall prevalence of asthma increased during the 1980s and early-to-mid-1990s. However, in recent years there is some evidence that this trend has plateaued and may even have reversed in children (ACAM, 2005). The prevalence of asthma is higher among Aboriginal females than among non-Aboriginal females and lower in people from non-English speaking backgrounds (AIHW, 2006).
- Written asthma management plans are recommended as part of the National Guidelines for the management of asthma (NAC 2002).

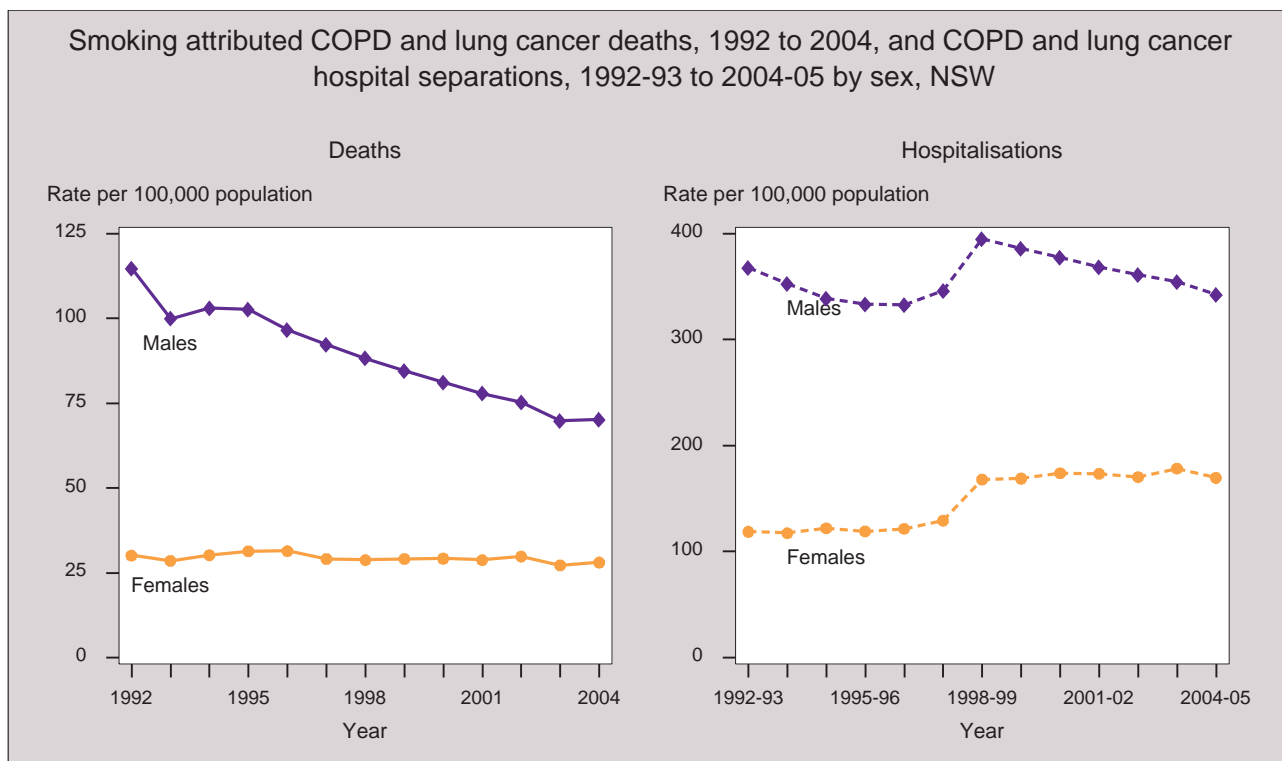


	Age (years)	Sex	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	5-34	Persons	7212	6724	6869	7784	6307	7072	5265	4512	4576	4503
	All ages	Persons	21275	20695	20540	19628	16012	17191	14269	12928	12780	12978
Rate	5-34	Persons	268.8	249.2	254.1	286.5	231.1	257.1	190.6	163.3	165.7	163.3
	All ages	Persons	338.8	326.9	322.2	304.3	246.9	262.3	216.1	195.7	193.2	196.3

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- Hospitalisation rates for asthma decreased by 45.9% for all ages and by 51.3% in people aged from 5-34 years in NSW between 1989-90 and 2004-05. The diagnosis of asthma is most reliable in those aged 5-34 years. Consequently, the declining trend in hospitalisations in this age group is generally seen as evidence that the decrease in hospitalisations is real, rather than an artefact of the data collection method (ACAM, 2006).
- Within the long time trend of decreasing hospital separation rates in those aged 5-34 years, there were two major increases. In 1998-99 the hospitalisation rates increased by around 12.8% over the previous year and in 2000-01 there was an 11.6% increase. While substantial increases in presentations with severe asthma symptoms to emergency departments were reported in the summers of 1998 and 2000, this is a common summer occurrence and would not therefore account for these peaks.
- In Australia, the self-reported prevalence of asthma in all ages has increased from 8.5% in 1989-90 (ABS, 1997) to 10.2% in 2004-05 (ABS, 2006) and so the decrease in hospitalisations in the same period may reflect the impact of improvement in asthma management outside of hospitals, as well as gradual changes in coding practices.
- Written asthma management plans are recommended as part of the National Guidelines for the management of asthma (NAC 2002). They enable people with asthma to recognise a deterioration in their condition and initiate appropriate treatment, thereby reducing the severity of acute episodes. In 2005, 49.7% of males and 43.2% of females with symptoms of asthma in the previous 12 months stated that they had a written asthma management plan (CER 2005).



			Sex	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	COPD	Persons	1485	1322	1423	1416	1327	1384	1318	1283
		Lung cancer	Persons	1910	2045	1959	1970	2043	2048	1930	2082
		All	Persons	3395	3367	3382	3386	3369	3432	3249	3366
	Rate	COPD	Persons	24.4	21.1	22.2	21.4	19.4	19.7	18.3	17.4
		Lung cancer	Persons	30.8	32.3	30.3	29.8	30.1	29.5	27.3	28.8
		All	Persons	55.2	53.4	52.4	51.2	49.5	49.2	45.5	46.2
Hospitalisations	Number	COPD	Persons	9722	12521	12890	13330	13489	13583	13828	13502
		Lung cancer	Persons	4227	4485	4260	4219	4247	4172	4403	4379
		All	Persons	13949	17007	17151	17549	17737	17755	18232	17881
	Rate	COPD	Persons	155.1	195.7	196.9	198.8	196.1	193.4	192.6	184.0
		Lung cancer	Persons	67.3	69.9	65.0	63.1	62.0	59.8	61.8	60.4
		All	Persons	222.5	265.6	262.0	261.9	258.1	253.2	254.4	244.5

Note: COPD=chronic obstructive pulmonary disease. Deaths and hospital separations attributable to smoking were calculated using age and sex-specific aetiologic fractions from AIHW, 2001. 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. Deaths are for calendar years. Hospitalisations are for financial years. Numbers for 2004 include estimates of the small number of deaths and interstate hospitalisations, data for which were unavailable at the time of production.

Source: Australian Institute of Health and Welfare (aetiologic fractions), 2001. NSW Inpatient Statistics Collection data and ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Tobacco smoking is the leading preventable cause of all morbidity and premature mortality.
- In 2004 in NSW, there were 3,366 deaths from COPD and lung cancer attributable to smoking. The 1,283 deaths from COPD attributable to smoking represented 72.4% of all COPD deaths and the 2,082 lung cancer deaths attributable to smoking represented 83.1% of all lung cancer deaths. Together, COPD and lung cancer deaths attributable to smoking comprised 50.8% of all deaths attributable to smoking and 7.2% of all deaths in NSW in 2004.
- In 2004-05 in NSW, 17,881 hospitalisations for COPD and lung cancer (13,502 and 4,379 hospitalisations respectively) were attributable to smoking. This represented 75.4% of all hospitalisations for these diseases (73.5% for COPD and 82.0% for lung cancer), 32.1% of all hospitalisations caused by smoking and 0.8% of all hospitalisations.
- The differences in the magnitude and pattern of rates may be explained by different patterns in the uptake and cessation of smoking between males and females.

For more information

Australian Bureau of Statistics website at www.abs.gov.au.

Australian Bureau of Statistics. *Causes of Death, Australia 2004*. Catalogue no. 3303.0. Canberra: ABS, 2006. Available at [www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/\\$File/33030_2004.pdf](http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/68D51845F3970A92CA25713000705D3A/$File/33030_2004.pdf).

Australian Bureau of Statistics. *National Health Survey 2004–05: Summary of results*. ABS Cat. NO. 4364.0. Canberra: ABS, 2006. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.02004-05?OpenDocument.

Australian Centre for Asthma Monitoring (ACAM). *Asthma in Australia 2005*. AIHW Asthma Series 2. AIHW Cat. No. ACM6. Canberra, AIHW, 2005.

Australian Centre for Asthma Monitoring. *Asthma and chronic obstructive pulmonary disease among older people in Australia: deaths and hospitalisations*. AIHW cat. no. ACM 7. Canberra: AIHW, 2006. Available at www.aihw.gov.au/publications/index.cfm/title/10338.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Australian Institute of Health and Welfare. *Chronic respiratory diseases in Australia: their prevalence, consequences and prevention*. AIHW Cat. No. PHE 63. Canberra: AIHW, 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10149.

Beers MH, Berkow R. *The Merck manual of diagnosis and therapy*. West Point: Merck & Co, 1999.

Centre for Epidemiology and Research. New South Wales Population Health Survey website at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Communicable Diseases Branch. NSW influenza surveillance. *N S W Public Health Bull* 1998; 9 (5) 65–67. Available at www.health.nsw.gov.au/public-health/phb/phb.html.

Downs SH, Marks GB, Sporik R, Belosouva EG et al. Continued increase in the prevalence of asthma and atopy. *Archives of Disease in Childhood* 2001; 84(1): 20–23.

Ferguson DA, Berry G, Jelihovsky T, Andreas SB, Rogers AJ, Fung SC, Grimwood A, Thompson R. The Australian Mesothelioma Surveillance Program 1979–1985.

Gibson PG, Coughlan J, Wilson AJ, Abramson M, Bauman A, Hensley MJ et al. *Self-management education and regular practitioner review for adults with asthma (Cochrane Review)*. Oxford: The Cochrane Library, 1999. Available at <http://www.cochrane.org.au>.

Global Initiative for Asthma (GINA). *Global burden of asthma*. Geneva: GINA, 2004. Available at www.ginasthma.com/ReportItem.asp?intId=94.

Global Initiative for Chronic Obstructive Lung Disease. *Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease*. Bethesda: National Heart, Lung and Blood Institute, 2005. Available at www.goldcopd.com.

Goumas C, O'Connell D, Smith D, Armstrong BK. *Lung cancer in NSW in 1973 to 1998*. Sydney: The Cancer Council NSW, 2002.

Jalaludin BB, Smith MA, Chey T, Orr NJ, Smith WT, and Leeder SR. Risk factors for asthma deaths: A population based, case-control study. *Aust N Z J Public Health* 1999; 23: 595–600.

Leigh J, Driscoll T, Hendrie L. *The Incidence of Mesothelioma in Australia 1996 to 1998, Australian Mesothelioma Register Report 2001*. Sydney: National Occupational Health and Safety Commission, 2001.

Leigh J, Hull B, Davidson P. *Annual Mesothelioma Register Reports 1990 to 1996 and 1998 to 2001*. Sydney: National Occupational Health and Safety Commission, 1990 to 1996, 1998 to 2001.

Li J, Roche P, Spencer J et al. Tuberculosis notifications in Australia, 2003. *Communicable Diseases Intelligence* 2004; 28, 4:464–473.

- Lincoln D, Muscatello D. Time trends in emergency department presentations of children with acute severe asthma in NSW. *N S W Public Health Bull* 2002; 11(12): 293–295.
- National Asthma Council. *Asthma Management Handbook 2002*. Melbourne: NAC, 2002. Available at www.nationalasthma.org.au. Next edition due late 2006.
- Peat JK, Toelle BG, Gray EJ et al. Prevalence and severity of childhood asthma and allergic sensitisation in seven climactic regions of New South Wales. *Med J Aust* 1995; 163: 22–26.
- Peat JK, van den Berg RH, Green WF et al. Changing prevalence of asthma in Australian children. *BMJ*. 1994; 308(6944): 1591–1596.
- Ridolfo B, Stevenson C. *The quantification of drug-caused mortality and morbidity in Australia, 1998*. Canberra: Australian Institute of Health and Welfare, 2001. Available at www.aihw.gov.au.
- Robbins SL, Cotran RS. *Pathologic basis of disease*. Philadelphia: WB Saunders Company, 1979.
- The NSW Department of Health website at www.health.nsw.gov.au/pubs/subs/sub_asthma.html.
- The National Asthma Council website at www.nationalasthma.org.au.
- Tossavainen A, Takahashi K. *Epidemiological trends for asbestos-related cancers*. In: People and Work Research Reports. FIOH. Helsinki 36: 26–30, 2000.
- Viboud C, Boelle PY, Pakdaman K, Carrat F, Valleron AJ, Flahault A. Influenza epidemics in the United States, France, and Australia, 1972–1997. *Emerging infectious diseases* 2004; 10 (1). Available at www.cdc.gov/ncidod/EID/vol10no1/02-0705.htm.
- Wilson DH, Adams RJ, Appleton SL et al. Prevalence of asthma and asthma action plans in South Australia: Population surveys from 1990 to 2001. *Medical Journal of Australia* 2001; 178: 483–485.

Injury and poisoning

- There are around 3,400 injury-related deaths and 140,000 injury-related hospitalisations each year in NSW.
- Injury and poisoning is the leading cause of death among people aged 1 to 45 years.
- The most common causes of injury-related deaths are suicide, motor vehicle crashes, falls and poisoning.
- The most common causes of injury-related hospitalisations are 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;
 - alcohol-related injuries;
 - drowning;
 - firearm-related deaths.
- Hospitalisation rates have decreased for:
 - unintentional poisoning;
 - scalds in young children.
- Hospitalisation rates have increased for:
 - injuries to motorcycle riders;
 - fall-related injuries;
 - injuries caused by interpersonal violence;
 - 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.

In this chapter

- Deaths with projections
- Leading causes of deaths
- Hospitalisations with projections
- Leading causes of injury hospitalisations
- Motor vehicle crash deaths and hospitalisations
- Motor vehicle crash injuries by road user type
- Alcohol attributed injury deaths and hospitalisations
- Fall-related deaths
- Drowning deaths and hospitalisations
- Unintentional poisoning hospitalisations
- Interpersonal violence-related deaths and hospitalisations
- Firearm injury deaths and hospitalisations
- Burn and scald injury hospitalisations
- Sports and leisure injury hospitalisations
- Workplace injury hospitalisations

Introduction

In 2000, around 5 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 (Peden et al, 2002).

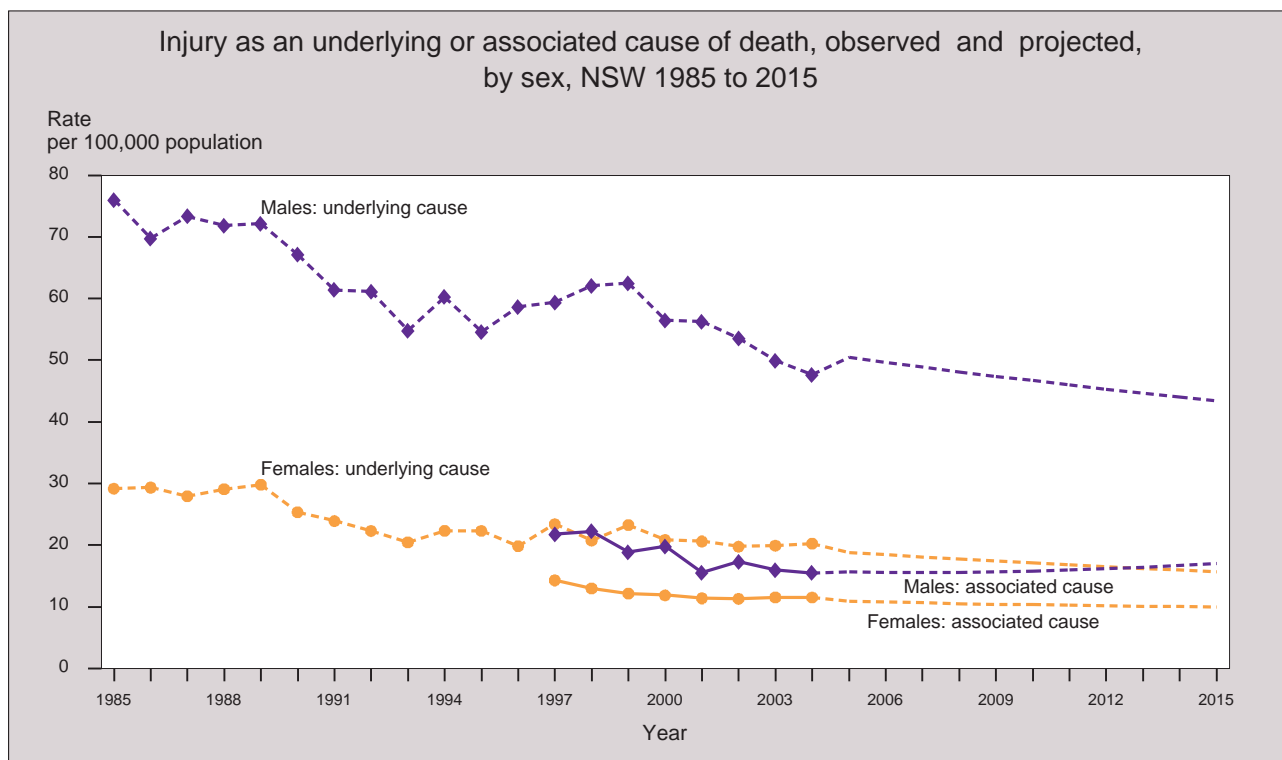
In Australia, injury remains a leading cause of death, illness, and disability. In 2002, injuries (including poisoning) accounted for 6% of all deaths (Kreisfeld et al, 2004). Injury was the leading cause of death in people aged 1–44 years, and caused half of all deaths in this age group. A total of 7,820 deaths (5,271 males and 2,549 females) were registered as being due to injury or poisoning and 31.3% of these deaths were of males aged between 20 and 44 years (Kreisfeld et al, 2004).

Approximately 436,513 hospital separations in Australia in 2001–02 were attributed to injury and poisoning (Kreisfeld et al, 2004). Nationwide, inpatient health system costs due to injury are \$4.0 billion per annum, around 8.0% of total recurrent health expenditure (AIHW, 2005). In NSW, the total direct health-system cost due to injuries is estimated to be around \$1.16 billion per year (Potter Forbes and Aisbett, 2003).

Injuries are 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, and seat-belt and drinking-driving legislation and other measures have greatly increased road safety.

The NSW Department of Health contributed to the development of National Injury Prevention and Safety Promotion Plan: 2004–2014 (NPHP 2004), which identifies priority population groups and issues for injury prevention and aims to build capacity through partnerships and development of the injury prevention and safety promotion workforce. This plan is accompanied by complementary plans that focus on the needs of Aboriginal people (National Aboriginal and Torres Strait Islander Safety Promotion Strategy (NPHP 2004)), and falls prevention in the elderly (National Falls Prevention for Older People Plan: 2004 Onwards (NPHP 2004)). The collaboration of governments, the private sector and communities is emphasised in order to create safer environments and cultures.

This chapter describes trends in deaths and hospitalisations due to injury and poisoning in NSW. For details of the methods used for analysing death and hospitalisation data, refer to the Methods section. Note that in this chapter hospitalisation data excludes those records ending with transfer or “statistical discharge”, in order to reduce multiple counting of hospitalisation episodes relating to the same incident of injury.

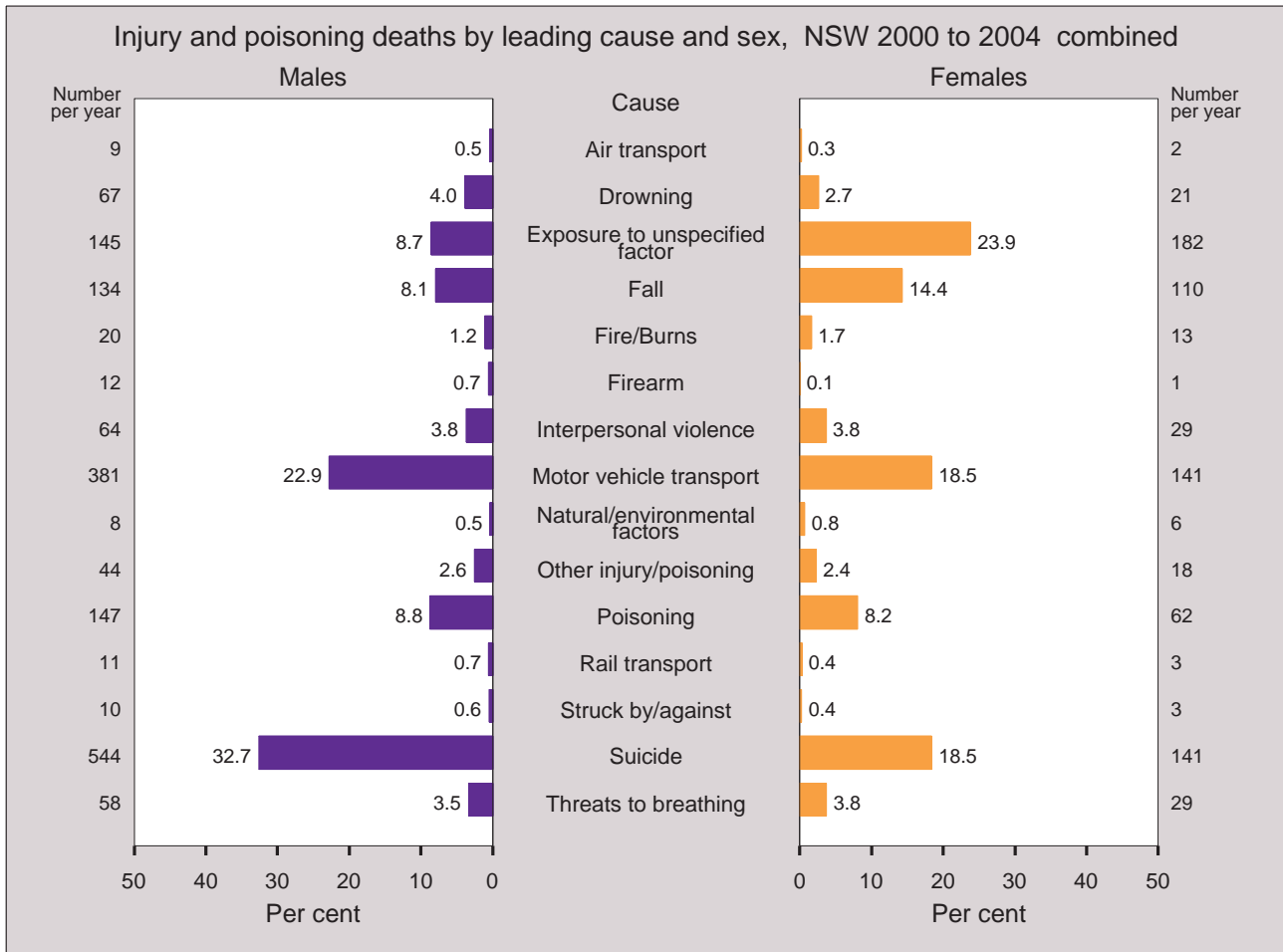


	Cause of death	Sex	1995	2000	2004	2005	2010	2015
Number	Injury as underlying cause	Persons	2278	2467	2348	2410	2410	2410
	Injury as associated cause	Persons		1020	995	1000	1140	1340
	Total	Persons		3487	3343	3410	3550	3750
Rate per 100,000 population	Injury as underlying cause	Persons	37.9	37.9	33.7	34	32	29
	Injury as associated cause	Persons		15.7	13.4	13	13	13
	Total	Persons		53.6	47.1	47	44	43

Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, that were unavailable at the time of production. Data on associated causes of death are available only from 1997.

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

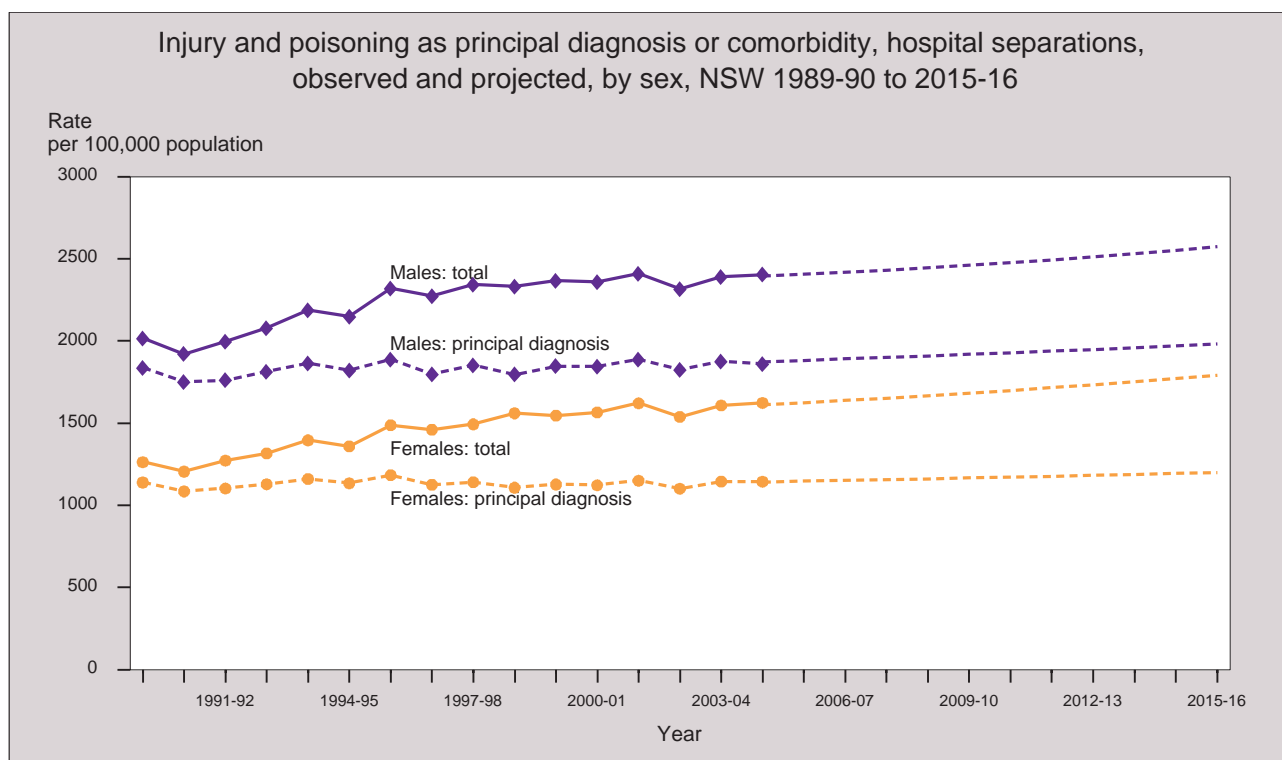
- In 2004, 3,343 people died in NSW due to injury and poisoning, a death rate of 47.1 per 100,000 people. For the majority of these deaths (2,348) injury or poisoning was recorded as the underlying cause of death, with the remainder (995) having injury or poisoning recorded as a contributing cause of death.
- Males have a substantially higher rate of death from injury and poisoning than females. In 2004 the injury death rate for males was 63.2 per 100,000 compared to a rate of 31.8 per 100,000 for females. Compared with other states in Australia, In 2002, NSW had the fourth highest age-adjusted rate of injury and poisoning deaths in males, and the lowest death rate in females (Kreisfeld et al, 2004).
- The four most common causes of injury-related deaths during 2000 to 2004 were suicide (28%), motor vehicle crashes (22%), falls (10%), and poisoning (9%).
- The overall death rate from injury and poisoning declined between 1985 and 2004. However, injury and poisoning remains the leading cause of death in people aged 1–44 years (Schmertmann et al, 2004). In NSW over the period 1986 to 2002 there were declines in the rate of deaths due to: motor vehicle transport, interpersonal violence, drowning, fire/burns, natural/environmental factors, rail transport, air transport, machinery and firearms (Schmertmann et al, 2004). Death rates increased for poisoning and showed no significant change for mechanisms such as falls and suicide.
- It is projected that there will be 3,750 deaths from injury and poisoning in the year 2015.
- Indigenous Australians have more than double the rate of injury deaths than non-indigenous Australians (Trewin and Madden, 2005).



Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- In NSW in the period 2000–2004, the leading causes of death from injury and poisoning were suicide (28.3% of injury/poisoning deaths), and motor vehicle crashes (21.5%) followed by “exposure to an unspecified factor” (13.5%), falls (10.1%) and poisoning (8.6%).
- The most common causes of injury deaths vary somewhat by age group and sex. In the 0–14 year age group, motor vehicle crashes (35.6%), drowning (20.8%), unintentional threats to breathing (such as choking and accidental strangulation or suffocation, 11.2%), and interpersonal violence (7.4%) were the leading causes of injury death in both sexes. Motor vehicle crashes and drowning contributed slightly higher proportions of injury deaths in males than in females in this age group.
- For both the 15–44 year and 45–64 year age groups, suicide, motor vehicle crashes, and unintentional poisonings were the leading causes of injury death in both sexes. While the proportions of injury deaths due to these causes were similar for males and females, the actual numbers of deaths were much higher for males. Interpersonal violence was the next most common cause for the 15–44 year olds and falls for the 45–64 year old group.
- In persons aged 65 years and over, “exposure to unspecified factors” (34.9%), falls (22.7%), motor vehicles crashes (13.1%) and suicide (13.0%) were the most common causes of injury death. Suicide was responsible for 19.3% of male injury deaths in this age group, compared with only 6.4% of female deaths. “Exposure to unspecified factors” was responsible for a far higher proportion of female deaths than of male deaths. A high proportion of deaths in this “unspecified factor” category have a fracture as a contributing cause of death, and it is likely that a large number of these deaths are in fact due to falls (Kreisfeld et al, 2004).

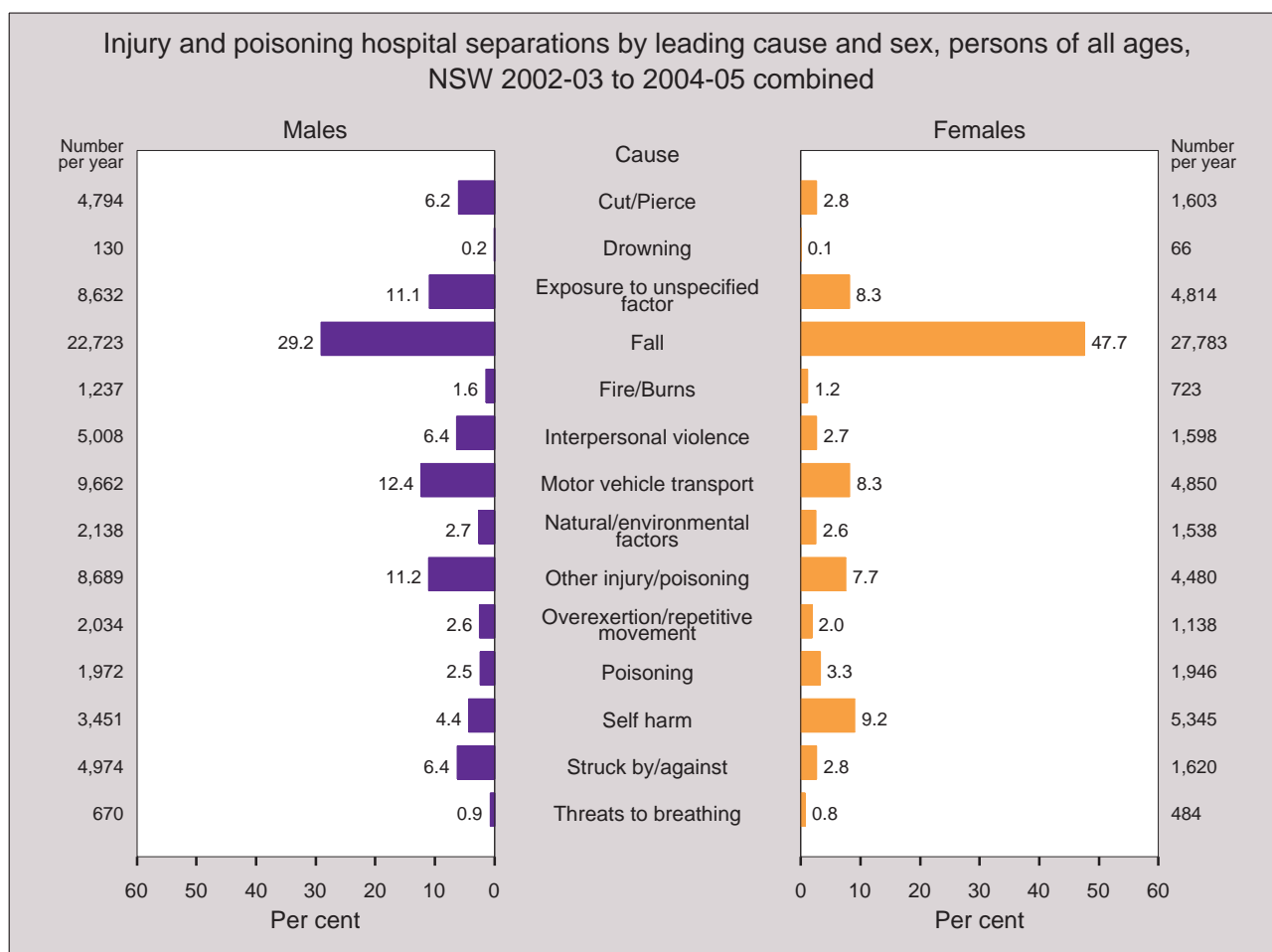


	Diagnosis category	Sex	1995-96	2000-01	2004-05	2005-06	2010-11	2015-16
Number	Principal	Persons	95577	97958	103264	105240	113270	121560
	Co-morbidity	Persons	22337	31820	36736	36770	43790	53880
	Total	Persons	117914	129778	139999	142010	157050	175440
Rate per 100,000 population	Principal	Persons	1553.3	1498.0	1513.9	1526	1560	1599
	Co-morbidity	Persons	370.4	482.9	515.3	505	540	594
	Total	Persons	1923.7	1980.9	2029.1	2031	2100	2193

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 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. All injuries known to be intentional were classified as self harm or interpersonal violence, regardless of the cause of the injury.

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

- In 2004-05 there were almost 140,000 hospitalisations of NSW residents as a result of injury or poisoning, giving a hospitalisation rate of around 2,029 per 100,000 people. Males had a higher injury hospitalisation rate than females (2,404 per 100,000 for males compared with 1,623 per 100,000 for females).
- The majority of injury or poisoning hospitalisations have a principal diagnosis of injury and poisoning (103,264 in 2004-05), but there are also a substantial number of hospitalisations where injury or poisoning is an additional diagnosis (36,736 in 2004-05). 'Rehabilitation' was the most common principal diagnosis for these hospitalisations.
- Rates of hospitalisation for injury vary by age group. The highest rates of hospitalisation are in people aged 65 years or older (most commonly due to falls) and those aged 15-24 years (most commonly due to motor vehicle crashes and falls) (Hayen and Mitchell, 2006).
- Nationally during 2001-02 there were 333,449 hospitalisations with an injury principal diagnosis, a rate of 1,717.6 per 100,000 population. This represented 5.2% of all hospitalisations in Australia (Berry et al, 2006).
- During the period 1989-90 to 2004-05, the overall hospitalisation rate for injury and poisoning in NSW rose gradually. In NSW, if recent trends in injury hospitalisation rates continue, it is projected that in the year 2015-16 there will be 175,440 hospitalisations due to injury and poisoning, a rate of 2,193 per 100,000 population. Males will continue to have higher rates of injury hospitalisations than females.

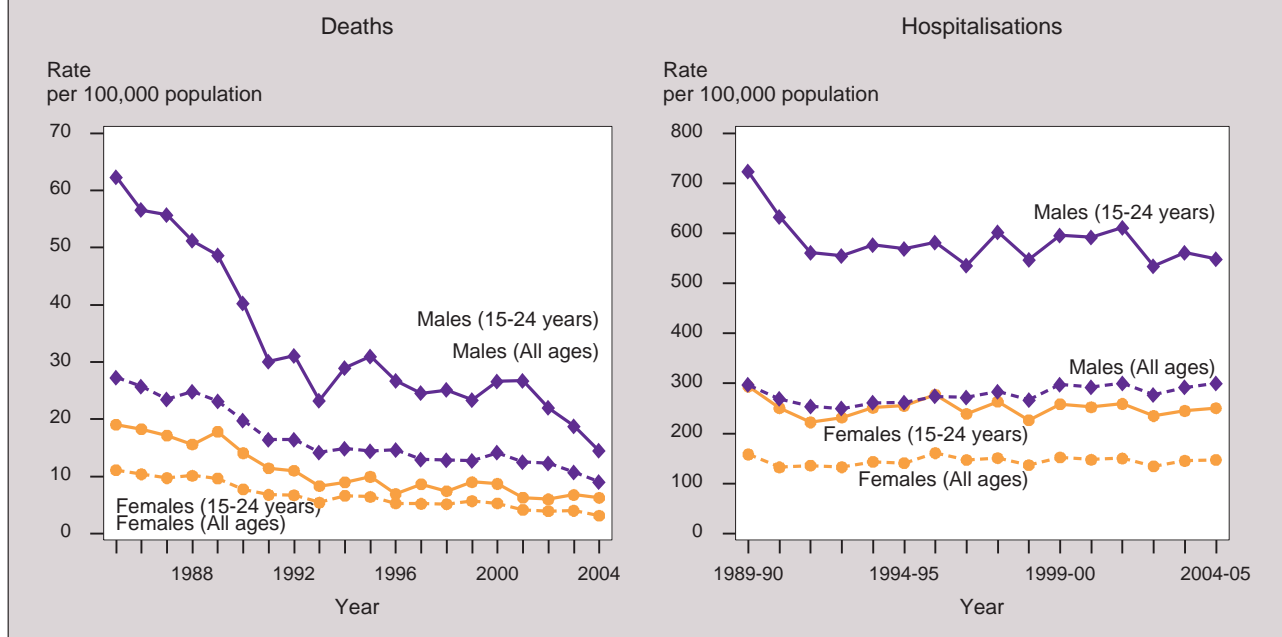


Note: Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production. Records relating 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.

- During the period 2002-03 to 2004-05, the most common specified causes of injury-related hospitalisations were falls (37% of injury-related hospitalisations), motor vehicle crashes (11%), self-harm (7%), and interpersonal violence (5%). There was also a substantial proportion of injury-related hospitalisations due to exposure to 'unspecified factors' (10%). The pattern of injury causes varied with sex and age.
- In the 0-14 age group the most common specified causes of hospitalisations for both sexes were falls (41%), being unintentionally struck by or against an object or person (8%), motor vehicle crashes (7%), and cut/pierce (4%). In the 15-44 year age group, the most common cause of injury hospitalisation in males was motor vehicle crash (16%) but in females it was self-harm (23%). Falls were a common cause in both males (15%) and females (16%). Motor vehicle crashes were the next most common cause in females (15%). Interpersonal violence was responsible for a greater proportion of injury-hospitalisations in males (11%) than in females (7%).
- Among 45-64 year olds the most common specified cause of hospitalisation was falls (38% in females and 26% in males) followed by motor vehicle transport (12% in males and 11% in females), self-harm (5% in males and 10% in females). Unintentional cutting or piercing injuries caused 7% of injury hospitalisations in males and 3% in females.
- Among people aged 65 years and over fall was the most common cause of hospitalisation in both sexes at 72%, followed by motor vehicle crashes (5%). This is the one age-group where there are greater numbers of females than males hospitalised as a result of injury. The age-standardised rate of injury hospitalisation is also greater in females than males in this age-group (Hayen and Mitchell, 2006).

Motor vehicle crash deaths 1985 to 2004 and hospital separations 1989-90 to 2004-05, by sex, persons of all ages and 15-24 years, NSW



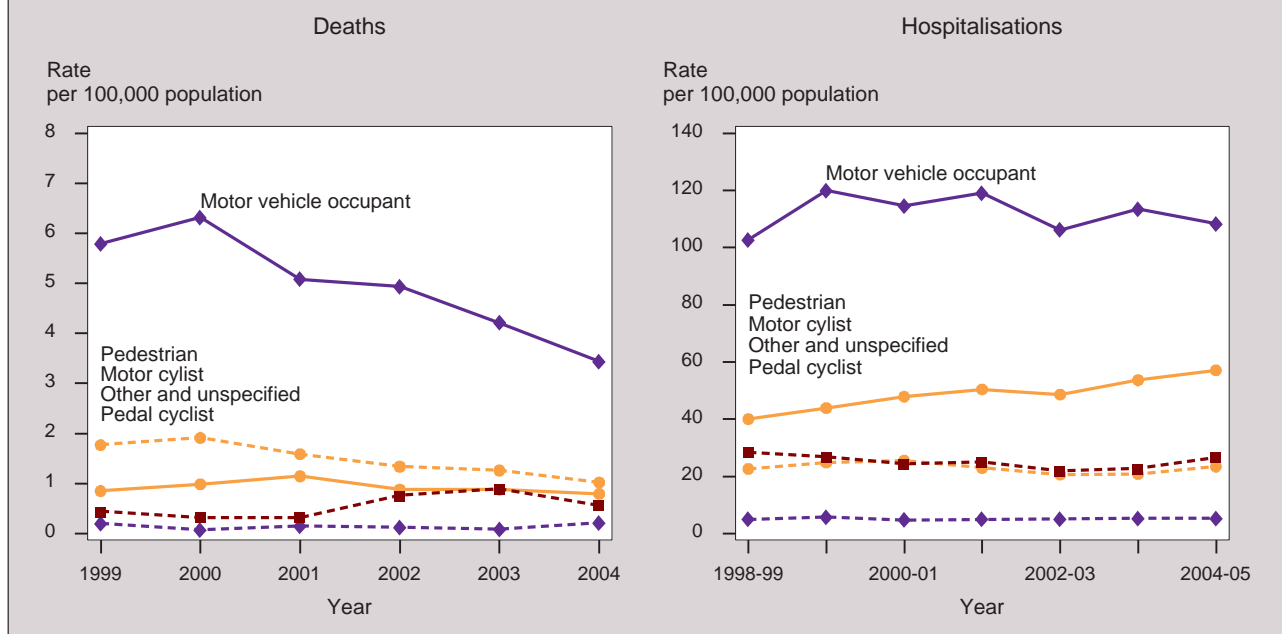
		Age (years)	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	15-24	Persons	152	146	143	141	155	147	126	117	96
		All ages	Persons	608	563	563	581	624	545	535	495	410
	Rate	15-24	Persons	17.0	16.7	16.4	16.3	17.9	16.7	14.2	12.9	10.5
		All ages	Persons	9.8	9.0	8.9	9.1	9.6	8.3	8.0	7.3	6.0
		Age (years)	Sex	1996-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Hospitalisations	Number	15-24	Persons	3429	3790	3367	3721	3721	3879	3483	3697	3687
		All ages	Persons	13148	13720	12912	14515	14369	14941	13697	14670	15162
	Rate	15-24	Persons	390.0	436.4	390.1	430.7	425.7	438.8	388.2	406.7	402.8
		All ages	Persons	209.5	216.8	202.6	225.4	220.6	225.4	206.2	219.1	224.0

Note: Deaths were classified using ICD-10 from 1999 onwards. Hospital separations were classified using ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 and 2004-05 include estimates of the small number of deaths and interstate hospitalisations, that were unavailable at the time of production.

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

- Motor vehicle transport was the second leading cause of injury death in NSW. The rate of deaths due to motor vehicle crashes has declined substantially in NSW, particularly in males aged 15-24 years. Nevertheless, those aged 15-24 years, together with those over 80 years, had the highest rates of death due to motor vehicle crashes (Schmertmann et al, 2004).
- The hospitalisation rate for injuries due to motor vehicle crashes was also the highest in 15-24 year olds in NSW in 2004-05.
- The number of people killed in road crashes in NSW in 2004 was the lowest since 1947, despite large increases in the size of the NSW population and the usage of motor vehicles. A wide-range of road safety initiatives are likely to have contributed to these improvements including legislation for compulsory seat-belt and helmet use, drink-driving laws, improved enforcement methods, improvements to vehicle design and roads and increased public awareness (FORS, 1998). Advances in emergency retrieval and trauma management also reduce the numbers of fatalities following a crash.
- The NSW Government has developed the Road Safety 2010 ten-year strategic framework in order to further reduce the death and injury caused by motor vehicle crashes. At a national level there is also The National Road Safety Strategy 2001-2010.

Motor vehicle crash deaths 1999 to 2004 and injury hospital separations, 1998-99 to 2004-05, by road user type, NSW



		Road user	Sex	1999	2000	2001	2002	2003	2004
Deaths	Number	All	Persons	581	624	545	535	495	410
	Rate	All	Persons	9.1	9.6	8.3	8.0	7.3	6.0
		Road user	Sex	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Hospitalisations	Number	All	Persons	14515	14369	14941	13697	14670	15162
	Rate	All	Persons	225.4	220.6	225.4	206.2	219.1	224.0

Note: Deaths were classified using ICD-10 from 1999 onwards. Hospital separations were classified using ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 and 2004-05 include estimates of the small number of deaths and interstate hospitalisations, that were unavailable at the time of production.

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

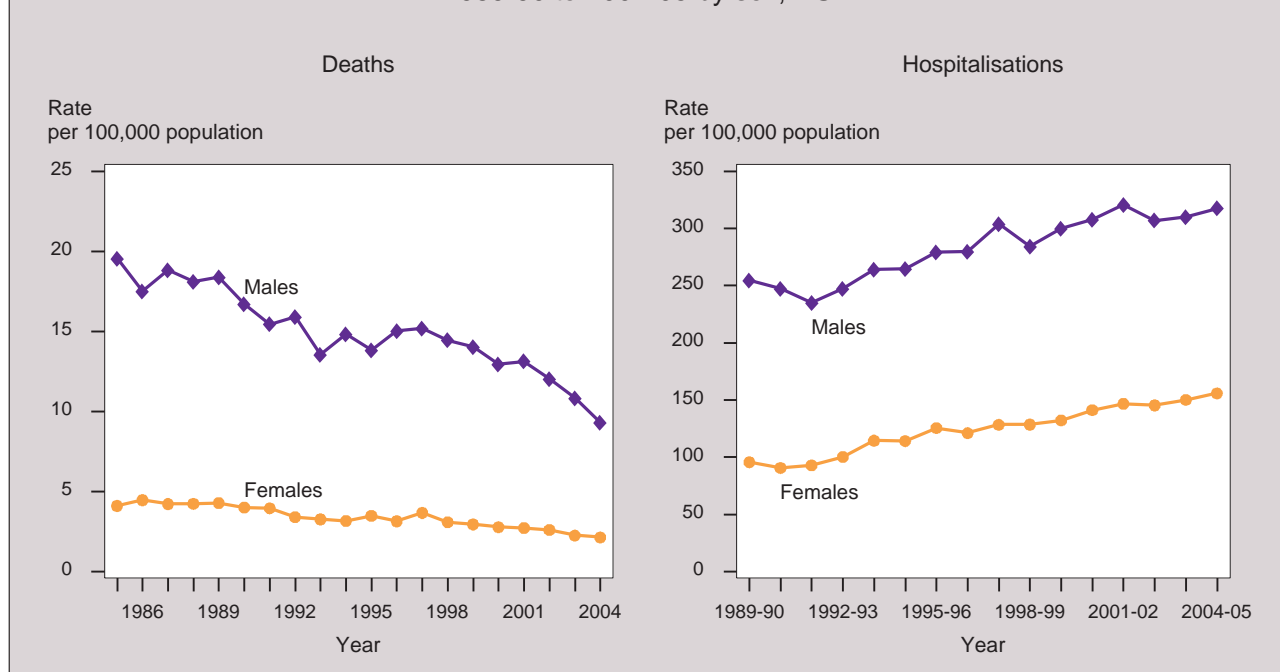
- In 2004 the greatest number of deaths due to motor vehicle crashes in NSW residents were among motor vehicle occupants (234), followed by pedestrians (71), motor cyclists (53) and pedal cyclists (14). There were also 38 deaths where the person's mode of transport was 'other or unspecified'. Motorcycles have a much higher risk of being involved in a crash than do cars (RTA, 2005; ATSB, 2006).
- The rate of death declined substantially for motor vehicle occupants in NSW from 1999 to 2004, with less obvious changes in the rates for other road users. As these rates are calculated among the whole population, and not only among those who engaged in these activities, they are influenced by both the number of each road user type as well as the level of risk to each road user type.
- In the year 2004-05 there were 15,162 hospitalisations of NSW residents for injuries due to motor

vehicle crashes, a hospitalisation rate of 224 per 100,000 population. The greatest number of these hospitalisations were for motor vehicle occupants (7,377), followed by motor cyclists (3,786), pedestrians (1,599) and pedal cyclists (359). There were also 1,821 hospitalisations where the injured person's mode of transport was 'other or unspecified'.

- The NSW Government's Road Safety 2010 framework, together with the National Road Safety Strategy 2001-2010, aims to reduce the death and injury caused by motor vehicle crashes.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

Alcohol attributed injury deaths 1985 to 2004, and hospital separations, 1989-90 to 2004-05 by sex, NSW

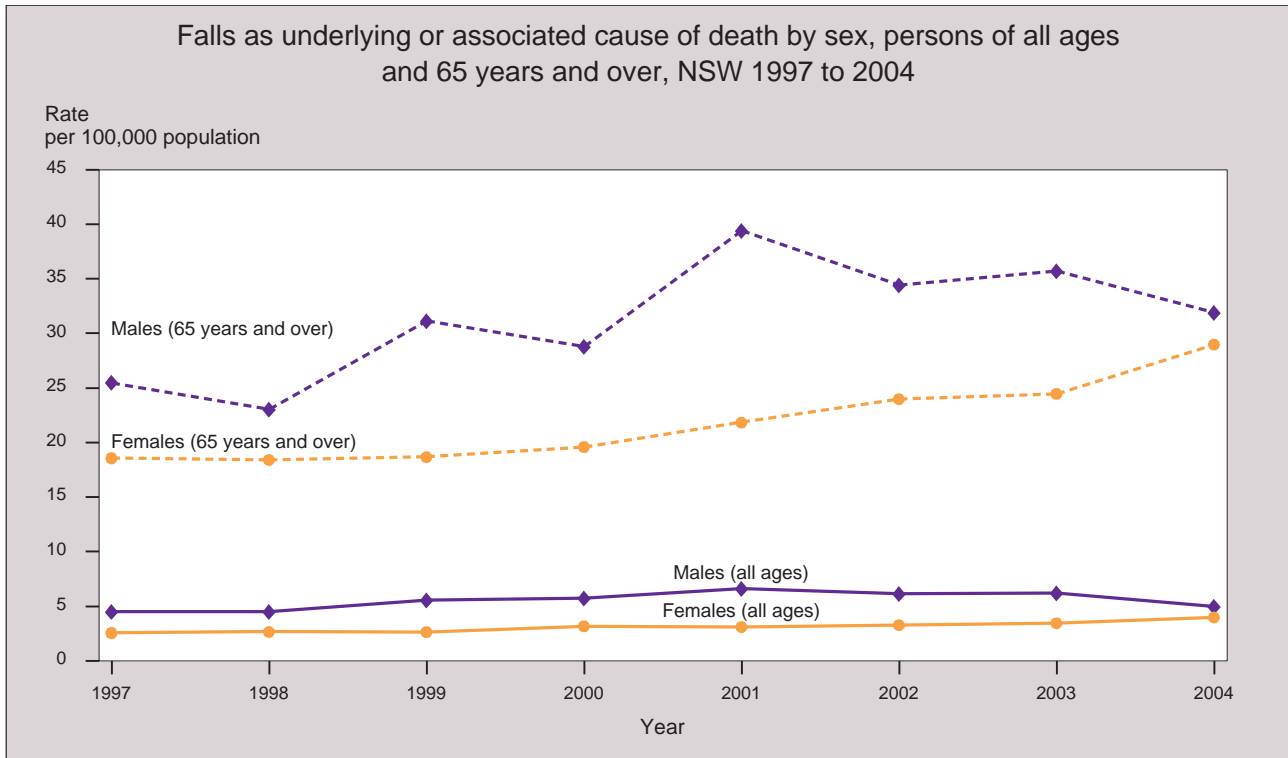


		Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	Persons	551	577	543	533	503	513	481	432	385
	Rate	Persons	8.9	9.2	8.6	8.3	7.8	7.8	7.2	6.4	5.7
Hospitalisations	Number	Persons	12392	13478	12973	13750	14490	15312	15003	15455	16082
	Rate	Persons	198.7	214.1	204.1	213.6	221.9	231.1	223.6	227.5	233.8

Note: Deaths and hospital separations attributable to alcohol were calculated using age- and sex-specific aetiologic fractions from AIHW, 2001. 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. Numbers for 2004 and 2004-05 include estimates of the small number of deaths and interstate hospitalisations, that were unavailable at the time of production. Rates were age-adjusted using the Australian population as at 30 June 2001. Deaths are for calendar years. Hospitalisations are for financial years.

Source: Australian Institute of Health and Welfare (aetiologic fractions), 2001. NSW Inpatient Statistics Collection data and ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Alcohol use increases the risk of a range of injuries, particularly motor vehicle and motorcycle crashes, falls, interpersonal violence and water-related injury (Pointer et al, 2003). Alcohol slows down functioning of the brain, causing loss of balance, reduced ability to judge speed and distance, impaired decision-making, and increased aggression. Even low levels of alcohol can affect performance and judgement (NHMRC, 2001).
- In 2004, there were 385 deaths from injury attributed to alcohol in NSW residents, with 80% of these in males. The rate of injury deaths attributable to alcohol declined, particularly in males, between 1985 and 2004.
- In contrast, there has been a steady increase in injury-related hospitalisations attributable to alcohol in NSW over the period 1989-90 to 2004-05. In 2004-05, there were 16,082 alcohol-related injury hospitalisations. The rate of alcohol-related injury hospitalisations was 233.8 per 100,000 population, with the rate in males double that in females.
- The National Alcohol Strategy 2006 – 2009 focuses on reducing the prevalence of drinking to intoxication, for example through targeting alcohol availability, service practices and social norms, and also on minimising impacts when intoxication does occur for example through strategies to further reduce drink driving. Actions to address alcohol-related injury are also included in both The National Injury Prevention Plan (NPHP, 2004) and the National Aboriginal and Torres Strait Islander Peoples Safety Promotion Strategy (NPHP, 2004).



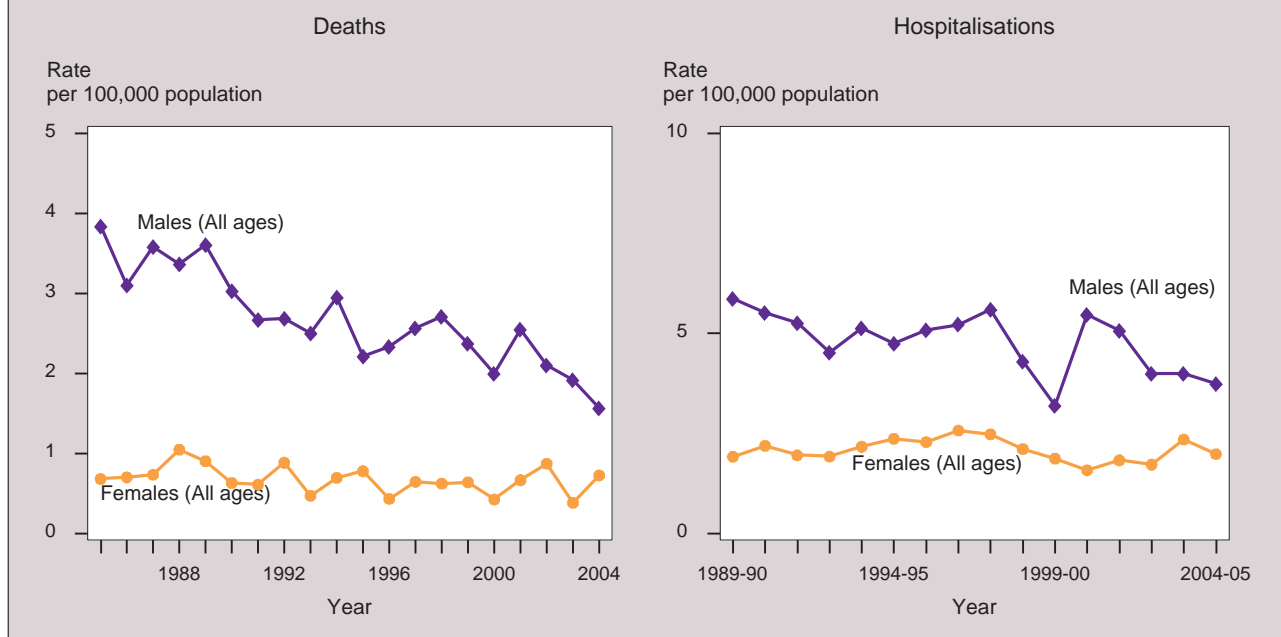
	Age (years)	Sex	1997	1998	1999	2000	2001	2002	2003	2004
Number	65 and over	Persons	158	156	187	189	244	251	268	291
	All ages	Persons	205	218	250	281	312	322	340	336
Rate	65 and over	Persons	21.3	20.2	23.5	23.0	28.5	28.3	29.1	30.5
	All ages	Persons	3.5	3.5	3.9	4.3	4.6	4.6	4.7	4.5

Note: Deaths were classified using ICD-10. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production. Data include deaths where falls were the principal (underlying) cause or a contributing (associated) cause of death. Data on associated causes of death are available only from 1987.

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

- In the period 2000 to 2004, unintentional fall-related deaths accounted for 10% of all injury related deaths in NSW. In 2004, a fall was recorded as the underlying or associated cause of death in 336 NSW residents (4.5 deaths per 100,000 population). This is likely to be an underestimate of the actual number of deaths associated with falls, particularly in older people (Kreisfeld et al, 2004). Overall, the rate of fall-related deaths in NSW increased over the period 1997 to 2004.
- Older people are at the highest risk of a fall-related death (Kreisfeld et al, 2004; Schmertmann et al, 2004). In 2004, 87% of all fall-related deaths were in people aged 65 years and older (31 deaths per 100,000 population).
- In NSW, no other single cause of injury, including road trauma, costs the health system more than fall-related injury. In NSW the total lifetime cost of fall related injury in 1998–99 was estimated at \$644 million (Potter Forbes, et al., 2003). This figure includes direct costs to the health system of \$333 million and mortality and morbidity costs of \$311 million.
- The NSW Department of Health is implementing a management policy to reduce fall-related injury among older people, which aims to establish a long-term coordinated approach to falls prevention in the community, supported aged care, and acute care settings. Strategies include increasing physical activity to avoid reductions in strength and balance in older people and assessing and managing falls risk factors in those older people at immediate risk of fall injury. Partnerships will be required between those government and private groups whose activities impact on the lives of older people, such as all levels of the health system, aged-care providers, local government and the fitness and leisure industry. The NSW Department of Health also contributed to the development of the National Falls Prevention for Older People Plan: 2004 onwards (NPHPH, 2004).

Unintentional drowning deaths 1985 to 2004 and near drowning hospital separations 1989-90 to 2004-05 by sex, NSW

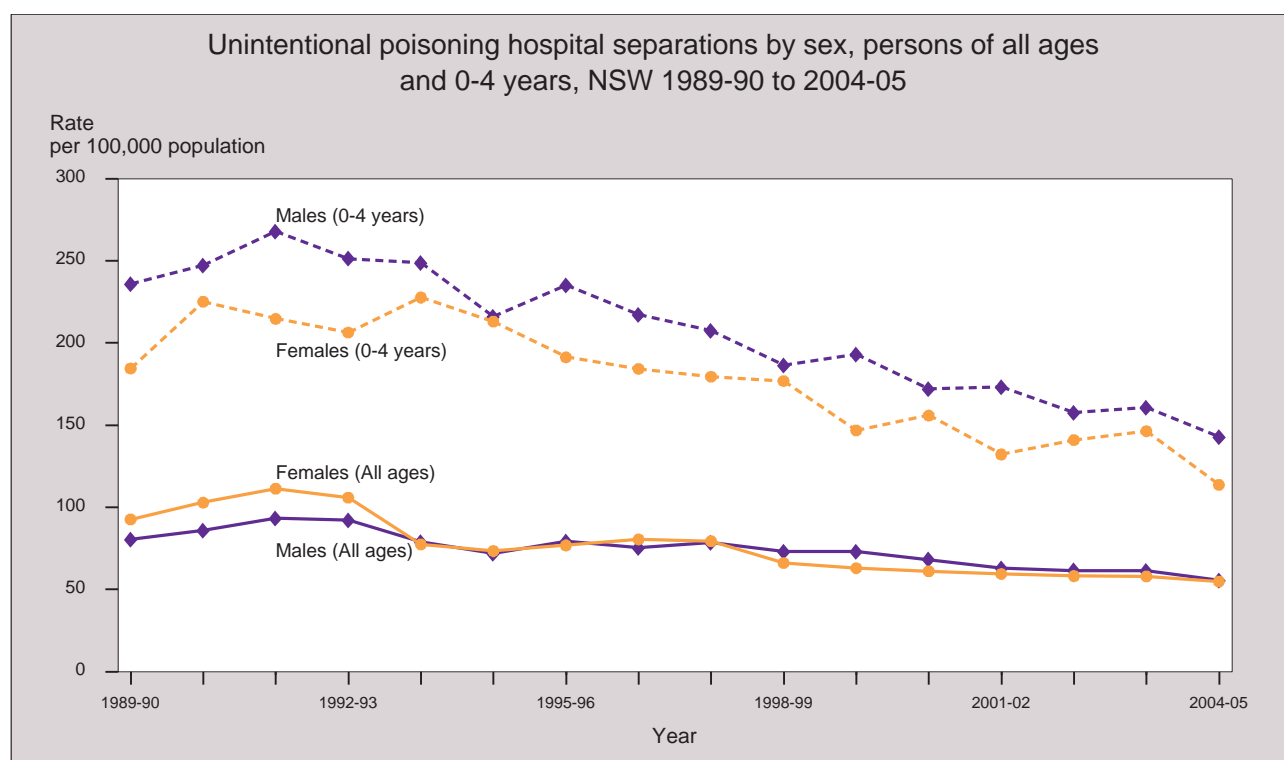


		Age (years)	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	0-4	Persons	7	17	18	16	14	11	17	11	13
		All ages	Persons	83	102	104	96	79	107	98	76	78
	Rate	0-4	Persons	1.6	3.9	4.1	3.7	3.2	2.5	3.9	2.6	3.1
		All ages	Persons	1.4	1.6	1.6	1.5	1.2	1.6	1.5	1.1	1.2
Hospitalisations	Number	0-4	Persons	92	98	76	68	116	118	74	84	78
		All ages	Persons	252	260	207	165	235	230	189	210	189
	Rate	0-4	Persons	20.9	22.3	17.4	15.6	26.5	27.1	17.2	19.6	18.3
		All ages	Persons	3.9	4.0	3.2	2.5	3.5	3.5	2.9	3.2	2.9

Note: 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 2004 and 2004-05 include estimates of the small number of deaths and interstate hospitalisations that were unavailable at the time of production.

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

- In 2004, there were 78 deaths caused by drowning in NSW residents and 13 of these deaths (16.7%) were in children under 5 years. The drowning death rate decreased substantially in males, from 3.9 deaths in 1985 to 1.6 deaths per 100,000 population in 2004, but it still remained much higher than the drowning death rate in females in 2004 (0.7 deaths per 100,000).
- Out of 189 hospitalisations following near-drowning, 78 (41.3%) were in children under 5 years.
- The most common location of drownings and near-drownings leading to hospitalisation in children under 5 years were swimming pools and bathtubs (Williamson et al., 2002; Hayen et al., 2006). Natural water, such as the ocean and lakes, were a common location for drowning and near-drownings in adolescents and adults, along with swimming pools (Schertmann et al., 2004).
- The NSW Department of Health is a member of the NSW Water Safety Advisory Council. The Council brings together government agencies and peak water safety groups to work together to ensure there is a strategic and coordinated management of water safety in NSW. The Australian Water Safety Council has developed the National Water Safety Plan 2004-07. The plan focuses on water safety education, water safety research, improving risk management practices at a range of aquatic locations and targeting action at specific population groups at highest risk of drowning.



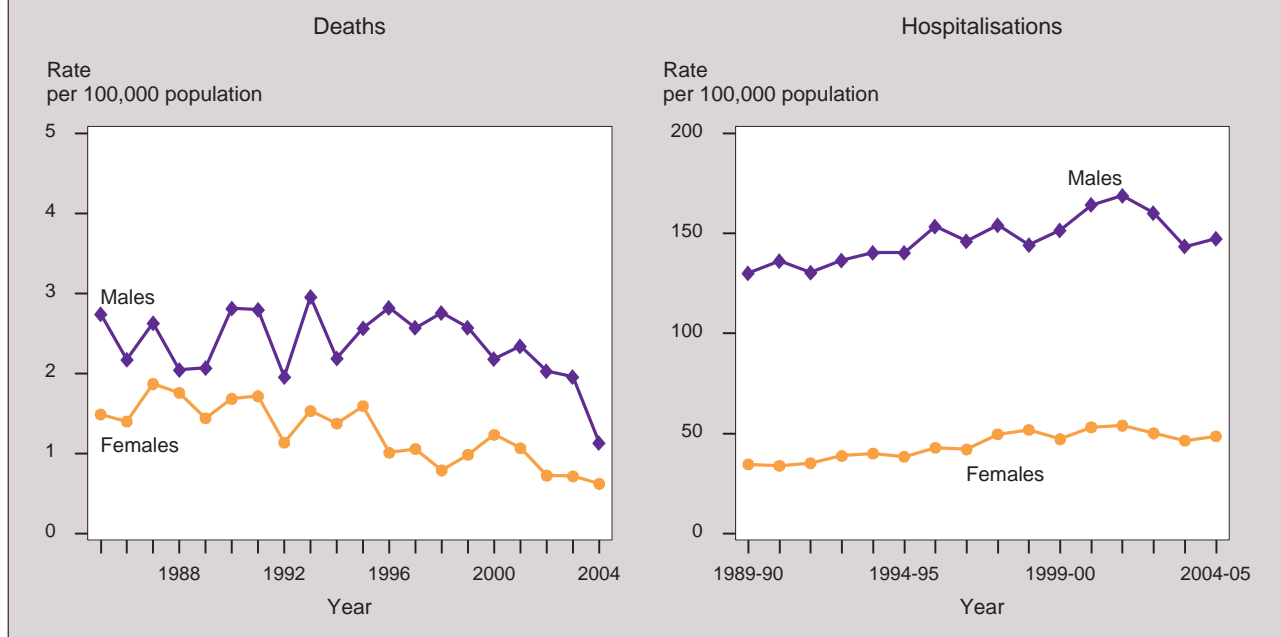
	Age (years)	Sex	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	0-4	Persons	940	885	851	795	743	718	667	644	658	548
	All ages	Persons	4903	4936	5030	4473	4398	4243	4048	3997	4015	3743
Rate	0-4	Persons	213.8	201.2	193.8	181.9	170.6	164.2	153.2	149.6	153.8	128.8
	All ages	Persons	78.1	77.9	78.8	69.6	68.0	64.7	61.1	60.0	59.9	55.2

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- There were 3,743 hospitalisations due to unintentional poisoning in NSW residents in 2004-05. Hospitalisation rates declined from 86.5 in 1989-90 to 55.2 hospitalisations per 100,000 population in 2003-04.
- Children aged 0-4 years had the highest rates of hospitalisation for unintentional poisoning, followed by young adults aged 15 to 29 years and elderly people aged 85 years and over (Hayen and Mitchell, 2006).
- From 1998-99 to 2004-05, the most common category of agents specified in records of hospitalisation for poisoning in children under 5 years were sedative-hypnotic and psychotropic drugs (including anti-depressants) (18.8%) and non-opioid analgesics (including paracetamol) (15.0%). In young adults aged 15-24 years, the most common specified agents of poisoning were sedative-hypnotic drugs (31.9%) and narcotics and hallucinogens (16.6%). A further 6% percent of hospitalisations were due to alcohol poisoning. The most common category of agents specified for those aged 65 years and over was sedative-hypnotic and psychotropic drugs (16.4%)
- Child-resistant packaging is a substantial measure in reducing the risk of poisoning of young children (O'Connor, 2001). However such packaging is not entirely child-proof and care must be taken to ensure toxic substances are stored in places not accessible to young children. In the event of possible poisoning, the NSW Poisons Information Centre (PIC) provides a twenty-four telephone hotline service offering expert advice on how to respond following ingestion of or exposure to toxic substances, to both the public and health professionals.

Interpersonal violence-related deaths 1985 to 2004 and hospital separations 1989-90 to 2004-05 by sex, NSW



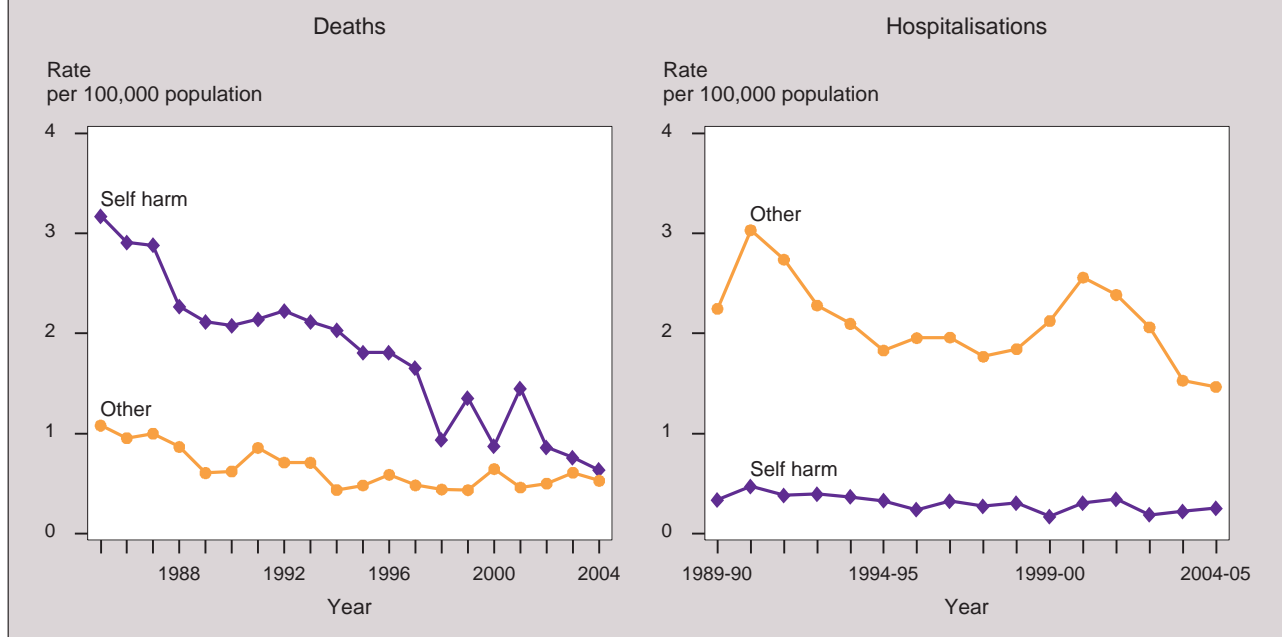
		Sex	1995	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	Persons	128	114	113	116	110	112	91	89	59
	Rate	Persons	2.1	1.8	1.8	1.8	1.7	1.7	1.4	1.3	0.9
		Sex	1995-96	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Hospitalisations	Number	Persons	6255	6526	6296	6429	7088	7360	6959	6312	6547
	Rate	Persons	98.6	102.2	98.2	99.8	109.0	111.8	105.5	95.2	98.3

Note: 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 2004 and 2004-05 include estimates of the small number of deaths and interstate hospitalisations that were unavailable at the time of production..

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

- In 2004, 59 NSW residents died as a result of interpersonal violence (homicide). The death rate in males was almost twice that in females. People aged 30-34 years had the highest death rate in both sexes between 2000 to 2004. While the number of deaths fluctuated considerably from year to year, there was a downward trend in the NSW murder rate, particularly since 1999 (Moffatt et al, 2006).
- Across Australia homicides most commonly occurred as a result of a dispute on residential premises. Females were most likely to be killed by a male intimate partner, while males were most commonly killed by a friend or acquaintance. Young children were most commonly killed by a parent or other family member (Mouzos, 2005).
- In 2004-05, there were 6,547 hospitalisations of NSW residents as a result of interpersonal violence and 78% of those hospitalised were males. Rates of hospitalisation were gradually increasing for both sexes.
- The prevention of violence involves a broad range of agencies including those within the crime prevention, welfare and health sectors. NSW Health initiatives include the NSW Policy for Identifying and Responding to Domestic Violence (NSW Department of Health, 2003). This includes a 'statement of principles' that underpin all departmental policies, programs and procedures on domestic violence. The Policy aims to reduce the incidence of domestic violence through primary and secondary prevention approaches, and to minimise the trauma that people living with domestic violence experience.

Firearm injury deaths 1985 to 2004 and hospital separations 1989-90 to 2004-05 by intent, NSW



		Intent	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Deaths	Number	All	Persons	146	133	88	115	99	126	91	93	79
	Rate	All	Persons	2.4	2.1	1.4	1.8	1.5	1.9	1.4	1.4	1.2
		Intent	Sex	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Hospitalisations	Number	All	Persons	143	130	138	148	186	181	149	116	114
	Rate	All	Persons	2.3	2.0	2.2	2.3	2.9	2.7	2.2	1.8	1.7

Note: 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 2004 and 2004-05 include estimates of the small number of deaths and hospitalisations that were unavailable at the time of production.

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

- In 2004, there were 79 deaths of NSW residents from firearms. Males had a rate of death from firearms seven times greater than females.
- Over the period 2000 to 2004, the most common cause of the firearm deaths were suicides (65%), followed by homicides (23%), unintentional firearm deaths (13%) and undetermined intent or the result of legal intervention (1%). Ninety percent of all firearm deaths were in males. The death rate decreased by almost three quarters from 1985 to 2004, mostly due to a decrease in the rate of firearm related suicides.
- In 2004-05, there were 114 hospitalisations of NSW residents for firearm injuries and 109 of those hospitalised (87.7%) were males. The pattern of intent was different than in firearm-related deaths. The

most common type of firearm-related hospitalisation was for unintentional firearm injuries (42%), followed by firearm-related assaults (40%) and intentional self-harm (12%). The age patterns for hospitalisations during the period 1995-6 to 2004-05 was similar to the pattern for deaths. Males aged 70 years or over had the highest hospitalisation rate for firearm-related self-harm (1.1 per 100,000) and males aged 15-29 years had the highest hospitalisation rate for injuries from firearm related assaults (4.5 per 100,000). Males 15-34 years (3.6 per 100,000) had the highest hospitalisation rate for unintentional firearm injury.

Burn and scald injury hospital separations by sex, persons of all ages and children 0-4 years, NSW 1989-90 to 2004-05

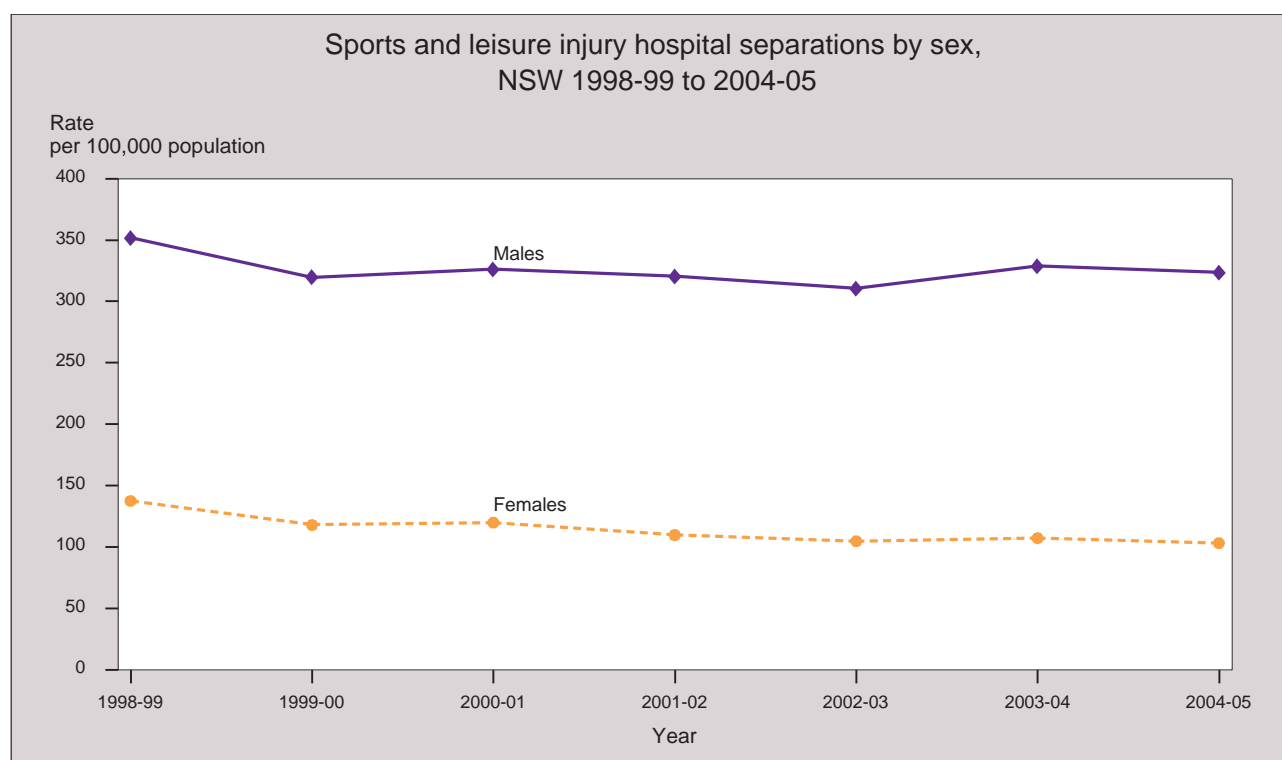


	Diagnosis	Age (years)	Sex	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Scalds	0-4	Persons	820	643	735	706	662	610	508	535	340
	All burns	All ages	Persons	2252	2299	2481	2400	2433	2322	2032	2073	1776
Rate per 100,000	Scalds	0-4	Persons	186.5	146.4	168.2	162.1	151.4	140.1	118.0	125.0	79.9
	All burns	All ages	Persons	35.1	35.8	38.4	37.0	37.1	35.1	30.7	31.3	26.6

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- In 2004-05, there were 1,776 hospitalisations of NSW residents for injuries resulting from burns and scalds. In recent years there has also been an average of 34 deaths per year from this cause. The rate of hospitalisation for burns was 1.6 times higher in males than in females.
- From 2000-01 to 2004-05 in NSW, children 0-4 years old had the highest rates of hospitalisations for burns (161.3 per 1000,000, 76% for scalds), followed by persons aged 85 years and older (49.6, 50% for scalds) and males aged 15-24 years (41.4 per 100,000, 24% for scalds). National data indicate that young males were more commonly burnt by highly flammable materials such as petrol, while young children were often burnt in the home by hot beverages, hot tap water, and saucepans of hot liquids including fats and oils (Harrison et al., 2006).
- In 2004-05 approximately half of all burns hospitalisations were for scalds, and over half (63%) of these scalds were in children aged 0-4 years.
- The hospitalisation rate for scalds in 0-4 year olds has declined over the past five years. The sharp increase in the hospitalisation rate for scalds in this age group between 1994-95 and 1996-97 was largely due to a change in admission practices and patterns of care rather than an increase in the actual rate of burns and scalds in the community.
- A wide range of actions can be taken to reduce the risk of burns. Smoke alarms are now compulsory in all homes in NSW. Standards and regulations that reduce hazards include reducing the temperature of water delivered to bathing areas and reducing flammability of clothing. Increasing community awareness of potentially hazardous situations, such as hot liquid in reach of young children, and ways to avoid these, is also important, as is public awareness of specific first aid recommendations (McCormack et al, 2003).



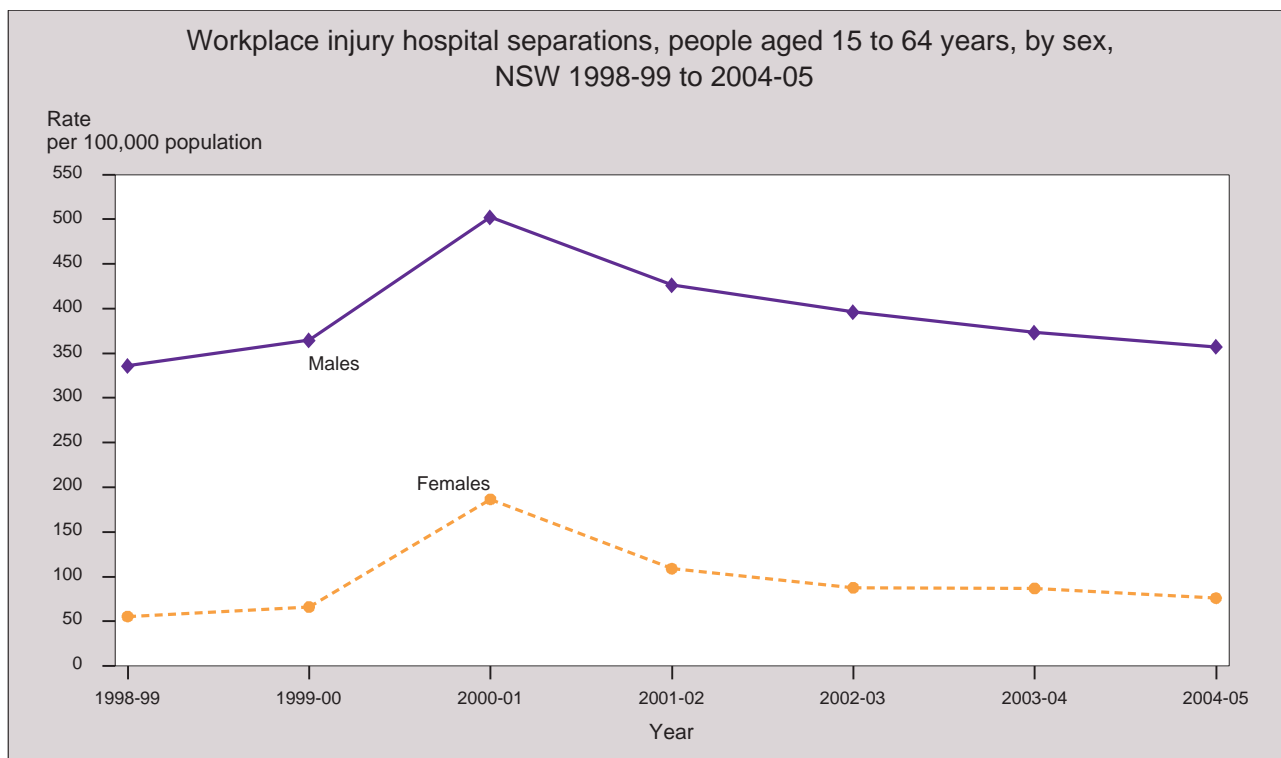
Sex		1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Persons	15715	14169	14595	14263	13759	14503	14285
Rate	Persons	246.2	220.3	224.6	216.8	209.2	219.8	215.3

Note: Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- In 2004-05, there were 14,285 hospitalisations of NSW residents identified as due to sport and recreation injuries. The hospitalisation rate for these injuries was around three times higher among males (323.7 per 100,000) than females (103.3 per 100,000). Changes to the coding systems used in hospitalisation data make it difficult to accurately describe trends in sporting injuries separately from other recreation related injuries.
- In NSW the activities most commonly related to sport and recreation hospitalisations are football codes (32% of all hospitalisations), and cycling, motorcycling, skating and rollerblading, equestrian sports, netball and ice and snow sports (Boufous et al 2006). The number of hospitalisations is related to the number of people involved in each activity as well as the level of injury risk involved in the activity.
- Hospitalisation rates for sport and recreation injuries were highest among 10 to 19 year olds, and decline with age in adults. This pattern may reflect participation levels.
- One strategy for reducing the risk of sport injuries is the development of local sport safety plans for community sport clubs, involving assessment and management of a wide range of factors that impact on injury risk. One initiative currently under evaluation in NSW is the Youthsafe SafeClub initiative, which works with community sport administrators to increase the capacity of community sports clubs to develop such risk management plans.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Sex		1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	Persons	8343	9268	14991	11797	10764	10319	9797
	population	196.3	215.9	345.0	268.1	242.5	230.6	217.3

Note: Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- In 2004-05, there were 9,797 hospitalisations of NSW residents aged 15 to 64 years identified as due to workplace injuries. The male hospitalisation rate (357.2 per 100,000) for these injuries was over four times the female rate (76.0 per 100,000). Because hospitalisation rates for workplace injury were calculated amongst all residents aged 15 to 64 years, the rates are an underestimate of the true rate of injury in the working population. In 2001, approximately 60% of people aged 15 years and over in NSW were in paid employment (ABS, 2003).
- For males, the highest rates of hospitalisation following a workplace injury were among those aged 25-44 years. For females, the highest rates occurred in those aged 45-54 years. Among hospitalisations identified as being work-related, the most common principal diagnoses were open wounds, fractures and muscular or tendon injuries of the wrist or hand, and back pain (Muscatello at al., 2001).
- There were a total of 49,749 'employment injuries' (injuries arising as a result of employment and occupational diseases) reported to Workcover NSW in 2004-05. These included 125 work-related deaths, of which 62 were the result of traumatic injury while at work, 40 due to traumatic injury while away from work (such as when commuting), and 23 were from diseases caused or aggravated by work. Industries with the highest fatality rates were agriculture, forestry and fishing and transport and storage.
- The New South Wales Occupational Health and Safety Act 2000 aims to protect the health, safety and welfare of people at work. It lays down general requirements for health, safety and welfare, which must be met at all places of work in New South Wales. The Act covers self-employed people as well as employees and employers (Workcover NSW, 2001).

For more information

Australian Bureau of Statistics. *Census of Population and Housing: Selected Education and Labour Force Characteristics for Statistical Local Areas, New South Wales and Jervis Bay (no. 2017.1)*. Canberra: ABS, 2003. Available at www.abs.gov.au/.

Australian Bureau of Statistics. *Injury in Australia: A Snapshot, 2004–05*. Cat. No. 4825.0.55.001. Canberra: ABS, 2006. Available at www.abs.gov.au/ausstats/abs@.nsf/mf/4825.0.55.001?OpenDocument.

Australian Government Department of Health and Aged Care. *LIFE: A framework for prevention of suicide and self-harm in Australia*. Canberra: AGDHAC, 2002. Available at www.health.gov.au/internet/wcms/publishing.nsf/Content/mental-suicide-life-build.

Australian Government Department of Health and Ageing. *Sport Safety in Australia an update July 2003*. Canberra: AGDHA, 2003. Available at www.health.gov.au/internet/wcms/Publishing.nsf/Content/phd-pub-injury-sportssafety-cnt.htm.

Australian Institute of Criminology at www.aic.gov.au.

Australian Institute of Health and Welfare. *Health system expenditure on disease and injury in Australia, 2000–01 (Second Edition)*. AIHW Catalogue no. HWE 28. Canberra: AIHW, 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10128.

Australian Transport Council. *The National Road Safety Strategy 2001–2010*. Canberra: ATSB, 2001. Available at www.atcouncil.gov.au/documents/atcnrss.aspx.

Australian Transport Safety Bureau. *Road fatalities Australia: 2005 Statistical Summary*. Canberra: ATSB, 2006. Available at www.atsb.gov.au/publications/2006/pdf/rda_ss_2005.pdf.

Australian Water Safety Council. *National Water Safety Plan 2004–07*. Sydney: AWSC, 2004. Available at www.watersafety.com.au/Report.htm.

Berry J, Harrison J. *Hospital separations due to injury and poisoning, Australia 2001–02*. AIHW cat. No INJCAT 78. Canberra: AIHW, 2006. Available at www.nisu.flinders.edu.au/pubs/reports/2006/injcat78.php.

Boufous S, Dennis R, Finch C. *A profile of hospitalisations and deaths due to sport and leisure injuries in New South Wales, 2000–2004*. Sydney: NSW Injury Risk Management Research Centre, University of NSW, 2006. Available at www.irmrc.unsw.edu.au/Publications/centrereports.asp.

Boufous S, Williamson A. *Work-related injury in New South Wales. Hospitalisation and Workers' Compensation datasets: A comparative analysis*. Australian and New Zealand Journal of Public Health. 2003; 27(3): 352–357. Available at www.phaa.net.au/anzjph/journalpdf_2003/june_2003.htm.

Chikritzhs T, Catalano P, Stockwell T, Donath, S, Ngo H, Young D & Matthews S. *Australian Alcohol Indicators: Patterns of Alcohol Use and Related Harms for Australian States and Territories, 1990–2001*. Perth WA: National Drug Research Institute, Curtin University of Technology, 2003. Available at: www.ndri.curtin.edu.au/pdfs/naip/naipaaifullreport.pdf.

Commonwealth of Australia. *National Alcohol Strategy 2006 – 2009*. Canberra: Ministerial Council on Drug Strategy, 2006. Available at www.alcohol.gov.au/internet/alcohol/publishing.nsf/Content/nas-06-09.

Cripps R, Carman J. *Falls by the elderly in Australia: Trends and data for 1998*. Injury Research and Statistics Series (AIHW cat no. INJCAT 35). Canberra: Australian Institute of Health and Welfare, 2001. Available at www.aihw.gov.au/publications/index.cfm/title/7177.

Cripps R, Steel D. *Childhood poisoning in Australia*. AIHW cat. no. INJCAT 90. Canberra: AIHW, 2006. Available at: www.nisu.flinders.edu.au/pubs/reports/2006/injcat90.php.

Driscoll T, Mitchell R. Fatal work injuries in New South Wales. *NSW Public Health Bulletin 2002*; 13 (5): 95–99. Available at www.health.nsw.gov.au/public-health/phb/HTML2002/may02html/phbmay02.pdf.

Driscoll T, Steenkamp M, Harrison J. *Alcohol and water safety - National Alcohol Strategy 2001 to 2003–04 Occasional Paper*. Canberra: Commonwealth Department of Health and Ageing, 2003. Available at www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-pubhlth-publicat-document-alcwater-cnt.htm.

Federal Office of Road Safety. *The History of Road Fatalities in Australia, Monograph 23*. Canberra: FORS, 1998. Available at www.atsb.gov.au/publications/1998/Stats_Aust_8.aspx.

- Flood L, Harrison J. *NISU Briefing-Hospitalised basketball and netball injuries*. AIHW cat. No INJCAT 84. Canberra: AIHW, 2006. Available at www.nisu.flinders.edu.au/pubs/reports/2006/injcat84.php.
- Flood L, Harrison J. *Hospitalised sports injury, Australia 2002–03*. AIHW cat. No INJCAT 79. Canberra: AIHW, 2006. Available at www.nisu.flinders.edu.au/pubs/reports/2006/injcat79.php.
- Harrison J, Steel D. *Burns and scalds*. AIHW cat. no. INJCAT 92. Canberra, Australian Institute of Health and Welfare, 2006. Available at www.nisu.flinders.edu.au/pubs/reports/2006/injcat92.php.
- Hayen A, Mitchell R. *A Description of Interpersonal Violence-Related Hospitalisations In New South Wales*. NSW Public Health Bulletin 2006; 17 (1–2) 8–12. Available at www.health.nsw.gov.au/public-health/phb/HTML2006/janfeb06html/article3p8.html.
- Hayen A, Mitchell R. *NSW injury profile: a review of injury hospitalisations during 1989–1990 to 2003–2004*. Sydney: NSW Injury Risk Management Research Centre, University of NSW, 2006. Available at www.irmrc.unsw.edu.au/Publications/centrereports.asp.
- Helps Y, Harrison J. *Injury deaths, Australia, 1999; with a focus on the transition from ICD-9 to ICD-10* AIHW cat. No INJCAT 67. Canberra: AIHW, 2005. Available at www.nisu.flinders.edu.au/pubs/reports/2005/injcat67.php.
- Helps Y, Harrison J. *Reported injury mortality of Aboriginal and Torres Strait Islander people in Australia, 1997–2000*. AIHW cat. No INJCAT 66. Canberra: AIHW, 2004. Available at www.nisu.flinders.edu.au/pubs/reports/2004/injcat66.php.
- Injury Prevention and Policy Branch, NSW Department of Health at www.health.nsw.gov.au/public-health/health-promotion/injury-prevention/.
- Kreisfeld R, Newson R, Harrison J. *Injury deaths, Australia 2002*. AIHW cat. No INJCAT 65. Canberra: AIHW, 2004. Available at www.nisu.flinders.edu.au/pubs/reports/2004/injcat65.php.
- Kreisfeld R. *Firearm deaths and hospitalisations in Australia*. Canberra: AIHW, 2005. Available at www.nisu.flinders.edu.au/briefs/firearm_deaths_2005.php.
- Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozano R (eds). *World report on violence and health*. Geneva: WHO, 2002. Available at www.who.int/violence_injury_prevention/violence/world_report/en/index.html.
- Mann J, Apter A, Bertolote J, Beautrais A et al. *Suicide prevention strategies. A systematic review*. Journal of the American Medical Association (JAMA), 2005, 294(16), 2064–2074.
- McCormack R, La Hei E, Martin H. *First-aid management of minor burns in children: a prospective study of children presenting to the Children's Hospital at Westmead, Sydney*. MJA 2003 178 (1): 31–33.
- McDonald D. *Violence as a Public Health Issue*. Trends and Issues in Crime and Criminal Justice no. 163. Canberra: Australian Institute of Criminology, 2000. Available at www.aic.gov.au/publications/tandi/tandi163.html.
- Moffatt S, Goh D, Poynton S. *New South Wales recorded crime statistics 2005*. Sydney: NSW Bureau of Crime Statistics and Research, 2006. Available at http://www.lawlink.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/pages/bocsar_crime_stats.
- Moffatt S, Poynton S. *An Update of long-term trends in property and violent crime in New South Wales: 1990–2005. Issue paper number 32*. Sydney: NSW Bureau of Crime Statistics and Research, 2006. Available at [www.agd.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/vwFiles/bb32.pdf/\\$file/bb32.pdf](http://www.agd.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/vwFiles/bb32.pdf/$file/bb32.pdf).
- Mouzos J, Rushforth C. *Firearm-related deaths in Australia, 1991–2001*. Trends and issues in crime and criminal justice, no. 269. Canberra: Australian Institute of Criminology, 2003. Available at www.aic.gov.au/publications/tandi2/tandi269.pdf.
- Mouzos J. *Homicide in Australia: 2003–2004. National Homicide Monitoring Program Annual Report*. Research and Public Policy Series No. 66. Canberra: Australian Institute of Criminology, 2005. Available at www.aic.gov.au/publications/rpp/66/.
- Muscattello D, Mitchell R. Identifying work-related injury and disease in routinely collected NSW hospitalisation data. *N S W Public Health Bull* 2001; 12(7): 195–198. Available at www.health.nsw.gov.au/public-health/phb/phb.html.
- NSW Bureau of Crime Statistics and Research at www.lawlink.nsw.gov.au/bocsar.

- NSW Child Death Review Team. *Annual Report 2004*. Sydney: NSW Commission for Children and Young People, 2005. Available at www.kids.nsw.gov.au/publications/cdrt2004.html NSW dd.
- NSW Department of Health. *Aboriginal Safety Promotion Strategy*. Sydney: NSW Department of Health, 2003. Available at: www.health.nsw.gov.au/pubs/a/pdf/ab_safety.pdf.
- NSW Department of Health. *Policy for identifying and responding to domestic violence*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/p/pdf/policy_dom_violence.pdf.
- NSW Department of Health. *We can all make a difference: NSW Suicide Prevention Strategy*. Sydney: NSW Department of Health, 1999. Available at www.health.nsw.gov.au/health-public-affairs/publications/suicide/suicide.pdf.
- NSW Injury Risk Management Centre at www.irmc.unsw.edu.au.
- NSW Roads and Traffic Authority (RTA). *Road Safety 2010*. Sydney: RTA, 1999. Available at www.rta.nsw.gov.au/roadsafety/downloads/roadsroads1_d11.html.
- NSW Roads and Traffic Authority (RTA). *Road traffic crashes in New South Wales-Statistical Statement: year ended 31 December 2004*. Sydney: RTA, 2005. Available at: www.rta.nsw.gov.au/roadsafety/downloads/accidentstats2004.pdf.
- NSW Sporting Injuries Committee at www.sportinginjuries.nsw.gov.au/3_cover_page.asp.
- National Drug and Alcohol Research Centre at www.ndarc.med.unsw.edu.au/ndarc.nsf.
- National Health and Medical Research Council. *Australian Alcohol Guidelines: Health Risks and Benefits*. Canberra: NHMRC, 2001. Available at: www.nhmrc.gov.au/publications/synopses/ds9syn.htm.
- National Occupational Health and Safety Commission. *National OHS Strategy 2002–2012*. Canberra, National Occupational Health & Safety Commission, 2002. Available at www.ascc.gov.au/ascc/healthsafety/ohsstrat-egy/nationalohsstrategy2002–2012.htm.
- National Public Health Partnership (NPHP) *The National Aboriginal and Torres Strait Islander Safety Promotion Strategy* Canberra: NPHP, 2004. Available at www.nphp.gov.au/publications/sipp/atsi.pdf.
- National Public Health Partnership. *The National Falls Prevention for Older People Plan: 2004 Onwards*. Canberra: NPHP, 2004. Available at www.nphp.gov.au/publications/sipp/fallplan.pdf.
- National Public Health Partnership. *The National Injury Prevention and Safety Promotion Plan: 2004–2014*. Canberra: NPHP, 2004. Available at www.nphp.gov.au/publications/sipp/nipspp.pdf.
- O'Connor P. *Accidental poisoning of preschool children from medicinal substances, Australia*. Injury Research and Statistics Series. AIHW cat no. INJCAT 39. Canberra: AIHW, 2001. Available at www.nisu.flinders.edu.au/pubs/reports/2001/injcat39.pdf.
- Ozanne-Smith J, Day L et al. *Childhood poisoning: Access and prevention*. *Journal of Paediatrics and Child Health*, 2001, 37: 262–265.
- Ozanne-Smith J, Routley V, Scott I, Scott G. *Pharmaceutical poisoning to 0–19 year olds. National Public Health Partnership Planning and Practice Framework Trial*. Melbourne: Monash University Accident Research Centre, 2002. Available at www.monash.edu.au/muarc/reports/muarc193.html.
- Peden M, McGee K, Sharma G. *The injury chart book: a graphical overview of the global burden of injuries*. Geneva: WHO, 2002. Available at www.who.int/violence_injury_prevention/publications/other_injury/chartb/en/index.html.
- Pidd K, Berry J, Harrison J, Roche A, Driscoll T, Newson R. *Alcohol and work patterns of use, workplace culture and safety*. AIHW Cat. No. INJCAT 82. Canberra: Australian Institute of Health and Welfare, 2006. Available at www.nisu.flinders.edu.au/pubs/reports/2006/injcat82.php.
- Pointer S, Harrison J, Bradley C. *National Injury Prevention Plan priorities for 2004 and beyond: Discussion paper*. Adelaide: AIHW, 2003. Available at www.nisu.flinders.edu.au/pubs/reports/2003/injcat55.php.
- Potter Forbes M, Abelson P, Driscoll T. *Valuing the mortality and morbidity of work related injury and illness: a life cycle costing of incidents reported in NSW in 2000–2001*. NSW Injury Risk Management Research Centre, The University of New South Wales, 2006. Available at www.irmc.unsw.edu.au/Publications/centrereports.asp.
- Potter Forbes M, Aisbett C. *Injury costs: A valuation of the burden of injury in NSW 1998–1999*. Sydney:

NSW Injury Risk Management Research Centre, University of NSW, 2003. Available at www.irmrc.unsw.edu.au/Publications/centrereports.asp.

Ridolfo B, Stevenson C. *The quantification of drug-caused mortality and morbidity in Australia, 1998*. Canberra: Australian Institute of Health and Welfare, 2001. Available at www.aihw.gov.au/publications/index.cfm/title/6461.

Routley V, Ashby K, Lough J. *Adult poisoning overview - Victoria*. 'Hazard' 39, 1–20. Melbourne: Monash University Accident Research Centre, 2001. Available at www.monash.edu.au/muarc/VISU/hazard/haz39.pdf

Routley V, Chai S, Lam J, Ozanne-Smith J. *Unintentional poisoning in early childhood by broad geographic region*. 'Hazard' 47, 11–15. Melbourne: Monash University Accident Research Centre, 2001. Available at www.monash.edu.au/muarc/VISU/hazard/haz47.pdf.

SafeWaters at www.safewaters.nsw.gov.au.

Schmertmann M, Finch C, Williamson A. *NSW injury profile: a review of injury deaths for 1998–2002*. Sydney: NSW Injury Risk Management Research Centre, University of NSW, 2004. Available at www.irmrc.unsw.edu.au/publications/centrereports.asp.

Schmertmann M, Finch C. *A Demographic Profile Of Deaths Due To Interpersonal Violence In New South Wales*. NSW Public Health Bulletin 2005; 17 (1–2) 4–7. Available at www.health.nsw.gov.au/public-health/phb/HTML2006/janfeb06html/article2p4.html.

Smartplay NSW at www.smartplay.com.au/nsw/about.asp.

Sportsafe at www.sma.org.au/information/sportsafe.asp.

Standing Committee on Recreation and Sport. *Participation in exercise, recreation and sport annual report 2004*. Canberra: SCORS, 2005. Available at www.ausport.gov.au/scorsresearch/erass2005.asp

Staysafe (NSW Parliament's Joint Standing Committee on Road Safety) at www.parliament.nsw.gov.au/prod/parliament/Committee.nsf/0/1A5E1DF230CB6A1F4A2563E000050584.

The National Injury Surveillance Unit at: www.nisu.flinders.edu.au.

The Royal Life Saving Society Australia (NSW Branch). *The New South Wales Drowning Report 2005*. Sydney: RLSA, 2006. Available at www.safewaters.nsw.gov.au/assets/pdf/NSW%20Drowning%20Report%202005.pdf.

Trewin D, Madden R. *The Health and welfare of Australia's Aboriginal and Torres Strait Islander peoples 2005*. ABS Catalogue no. 4704.0 and AIHW Catalogue No. AIHW14. Canberra: AIHW and ABS, 2005. Available at www.aihw.gov.au/publications/ihw/hwaatsip05/hwaatsip05.pdf

Williams S, Poynton S. *Firearms and violent crime in New South Wales, 1995–2005. Crime and Justice Bulletin no.98*. Sydney: NSW Bureau of Crime Statistics and Research, 2006. Available at [www.lawlink.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/vwFiles/CJB98.pdf/\\$file/CJB98.pdf](http://www.lawlink.nsw.gov.au/lawlink/bocsar/ll_bocsar.nsf/vwFiles/CJB98.pdf/$file/CJB98.pdf).

Williamson A, Irvine P, Sadural S. *Analysis of drownings involving children aged five years and under in NSW*. Sydney: NSW Water Safety Taskforce, 2002. Available at www.dsr.nsw.gov.au/assets/pubs/water/sw_drown01.pdf.

Williamson A, Schmertmann M. *Patterns of drowning and near drowning in NSW*. NSW Public Health Bulletin 2002; 13(4): 78–80. Available at www.health.nsw.gov.au/public-health/phb/HTML2002/april02html/pat-drown.html.

Workcover NSW. *New South Wales Workers Compensation Statistical Bulletin 2004/05*. Sydney, WorkCover New South Wales, 2005. Available at www.workcover.nsw.gov.au/Publications/WorkersComp/Claims/statistical_bulletin_04_05.htm.

World Health Organisation. *World Report on Road Traffic Injury Prevention*. Geneva: WHO, 2004. Available at www.who.int/world-health-day/2004/infomaterials/world_report/en/.

Youthsafe - SafeClub at www.youthsafe.org/safeclub.html.

- 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, 591 people died by suicide in 2004. This was almost 5% fewer than in the previous year. Males accounted for almost 80% of suicides in 2004.
- In 2004–05, there were more than 10,000 hospitalisations of NSW residents for attempted suicide. Females accounted for 60% of these hospitalisations.
- In 2005, less than 1.0% of NSW children aged 17 years or less 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 third talked to someone but found it not at all helpful.

In this chapter

- Psychological distress categories
- Psychological distress by age
- Suicide deaths
- Suicide attempts
- Psychological distress in secondary school students
- Psychological distress in secondary school students and action taken

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 (AIHW, 2006). Mental ill health is 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 (Begg et al., in press).

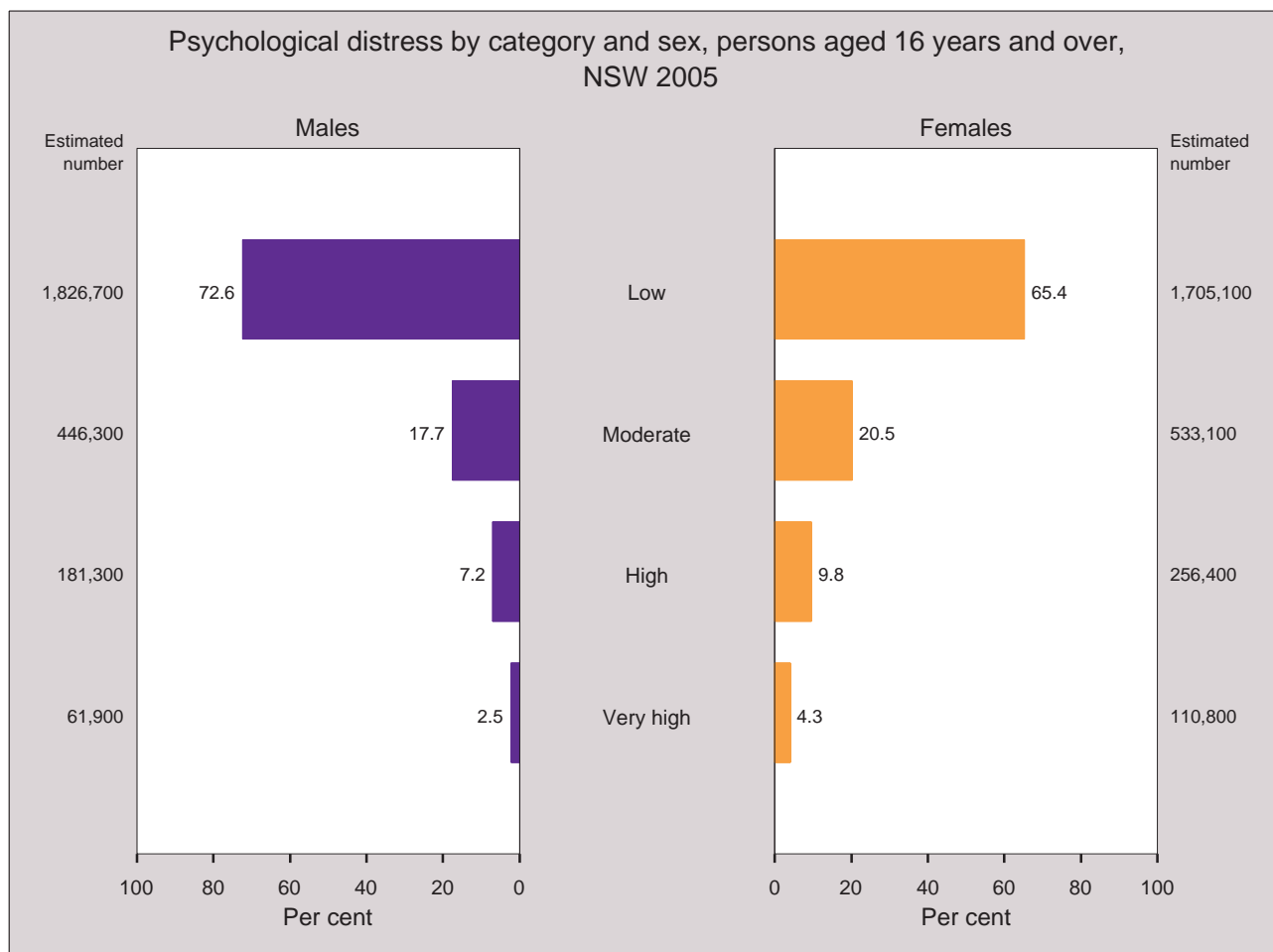
This chapter uses data from the *NSW Population Health Survey* at the NSW Department of Health, to describe the burden of psychological distress in the community. It provides information on the effect of these disorders on the ability of people to work, study and manage their day-to-day activities.

The chapter also provides information from the *NSW School Students Health Behaviours Survey* conducted in 2005 (formerly a NSW part of the Australian Secondary Schools' Alcohol and Drugs Surveys) on psychological distress among young people. Updated information on the prescribing of stimulants for attention deficit hyperactivity disorder (ADHD) in children is also provided. The chapter also presents updated information on trends in suicide and attempted suicide.

Mental health initiatives in NSW are focussed on promotion, prevention and early intervention strategies, alongside clinical care. By using epidemiological information and evidence of effective mental health care it is possible to identify who needs mental health services in NSW and what mental health interventions are appropriate for each age group (NSW Health, 2003).

NSW has a range of early intervention, prevention and promotion initiatives in place to cover the age spectrum. These include: *Integrated Perinatal and infant care* focusing on the pre-natal and antenatal 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; and the *Early Psychosis Program* for young people with first onset psychosis. 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.

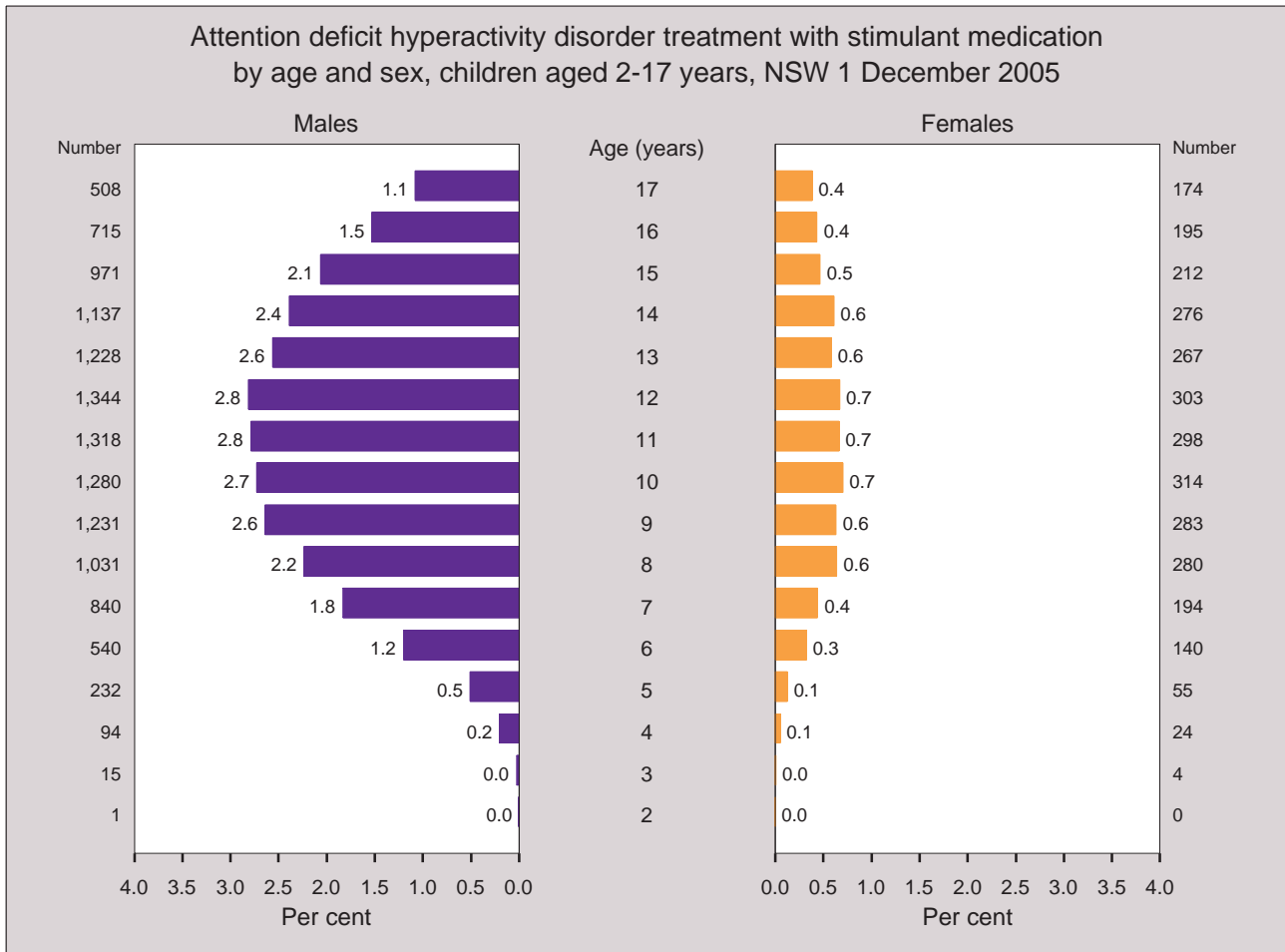
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: 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 11,388 respondents. 112 (0.97%) were not stated (Don't know or Refused) in NSW.

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

- Psychological distress has a major effect on the ability of people to work, study, and manage their day-to-day activities. In Australia in 2004–05, the most common mental and behavioural problems reported in the National Health Survey were mood (affective) problems and anxiety-related problems, each of which were reported by approximately 4% of males and 6% of female respondents (ABS, 2006).
- The NSW Health Survey uses a 10-item questionnaire, the Kessler 10 (or K10), to yield a measure of psychological distress, based on questions about negative emotional states experienced by respondents in the four weeks prior to interview, producing results which can be compared with national figures. There is a strong association between K10 scores and the diagnosis of anxiety and depression based on the Composite International Diagnostic Interview (CIDI) used by medical services (ABS, 2003).
- In 2005, around two-thirds of the NSW population aged 16 years and over reported low levels of psychological distress (72.8% of males and 65.6% of females). High or very high levels of psychological distress were more commonly reported in NSW by females (13.7%) than by males (9.4%). This pattern is consistent with the findings of national surveys (ABS, 2006). Physical problems were the cause of psychological distress all or most of the time in the 16.3% of males and 19.8% of females reporting moderate, high and very high levels of psychological distress in the NSW Health Survey 2005 (CER, 2006).



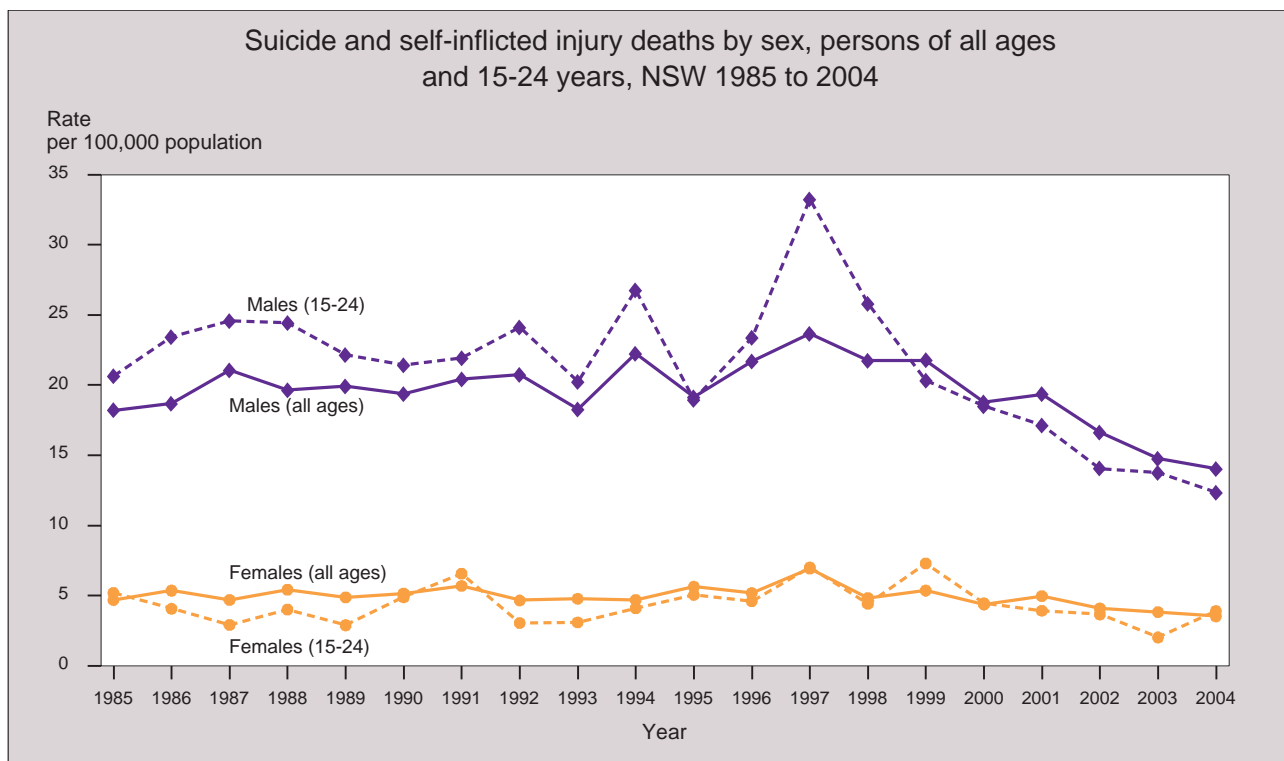
Note: Data are based on authorities issued to specialist doctors for individual patients and prescriptions written by specialist doctors granted a general authority to prescribe to patients who meet specified criteria.

Source: Pharmaceutical Drugs of Addiction System, Pharmaceutical Service Branch, NSW Department of Health, and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Department of Health.

- Attention deficit hyperactivity disorder (ADHD) is a chronic condition, characterised by the symptoms of inattention, hyperactivity, and impulsivity. As these behaviours can be seen to some degree in most children at some time, diagnosis of ADHD requires assessment by an experienced clinician. Children with ADHD may experience difficulties at school, social problems, and long-term consequences such as poor academic achievement and antisocial behaviour (Salmelainen, 2002). ADHD may affect up to 11% of Australian children aged 6–17 years, and boys are affected at least twice as frequently as girls (Sawyer et al., 2000).
- Up to 90% of children who are treated with stimulant medication experience a reduction in symptoms. In NSW, the prescribing of stimulant medication for treatment of ADHD is restricted to specialist prescribers.
- The rate of treatment with stimulant medication in 2005 was 0.97% of all children aged 2–17 years, which was lower than the rates in 2000 and 2003.

The highest rates of treatment occur in children aged 10–13 years, and the treatment rate for boys is about 4 times that for girls. A significant proportion of children continue to experience ADHD symptoms into adulthood. Physical hyperactivity is much less evident in adult ADHD.

- In 2005, the treatment rate for adults (ie. persons aged 18 year or over) was 0.09%, representing about 9 per 10,000 adults. The rate of treatment for men was about 2 times that for women (Salmelainen, 2004).
- ADHD symptoms can also be treated with atomoxetine and antidepressants. Non-medication treatments include behavioural parent training and classroom interventions. Adults with ADHD may also gain benefit from other strategies such as environmental restructuring (eg. using a daily planner, using a checklist), communication skills training, and anger management training (Salmelainen, 2004).



	Age (years)	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	15-24	Males	90	107	150	115	90	82	77	64	64	58
		Females	23	20	30	19	31	19	17	16	9	17
	All ages	Males	572	656	732	677	681	593	624	544	489	470
		Females	176	161	218	155	173	145	167	140	131	121
Rate per 100,000	15-24	Males	19.0	23.4	33.2	25.8	20.3	18.5	17.2	14.1	13.8	12.4
		Females	5.1	4.6	7.0	4.4	7.3	4.5	3.9	3.7	2.0	3.9
	All ages	Males	19.2	21.7	23.7	21.7	21.8	18.8	19.4	16.6	14.8	14.1
		Females	5.6	5.2	6.9	4.8	5.4	4.4	5.0	4.1	3.9	3.5

Note: Deaths were classified using ICD-9 up to 1998 and ICD-10 from 1999 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, 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.

- The figures presented here are by year of occurrence and differ from reports based on year of registration of death, such as the annual reports by the Australian Bureau of Statistics.
- The rate of suicide can fluctuate considerably from year to year, especially in small population groups.
- In NSW in 2004, the death rate from suicide was 8.7 per 100,000 population (14.1 deaths per 100,000 in males and 3.5 in females), the lowest in 20 years. The death rate from suicide has decreased gradually from the high rates recorded in 1997 of 15.1 per 100,000 population (23.7 deaths per 100,000 population in males and 6.9 in females). The suicide death rate in males aged 15-24 years dropped by more than half, from 33.2 deaths per 100,000 in 1997 to 12.4 in 2004. In general, death rates from suicide are about three to four times greater in males than in females. This difference is thought to be due mostly to males using more lethal methods than females (OECD, 2003).
- The current suicide rates in Australia (16.8 in males and 4.3 in females in 2004) are among the lowest since collections began in 1907 (excluding the World War II period). The restrictions placed on gun ownership have been credited with a positive impact on the suicide rates in Australia.
- A whole of government suicide prevention strategy has been implemented in NSW, along with a range of other early intervention and prevention in mental health strategies which will contribute to a reduction in mental health problems (NSW Department of Health, 2003).



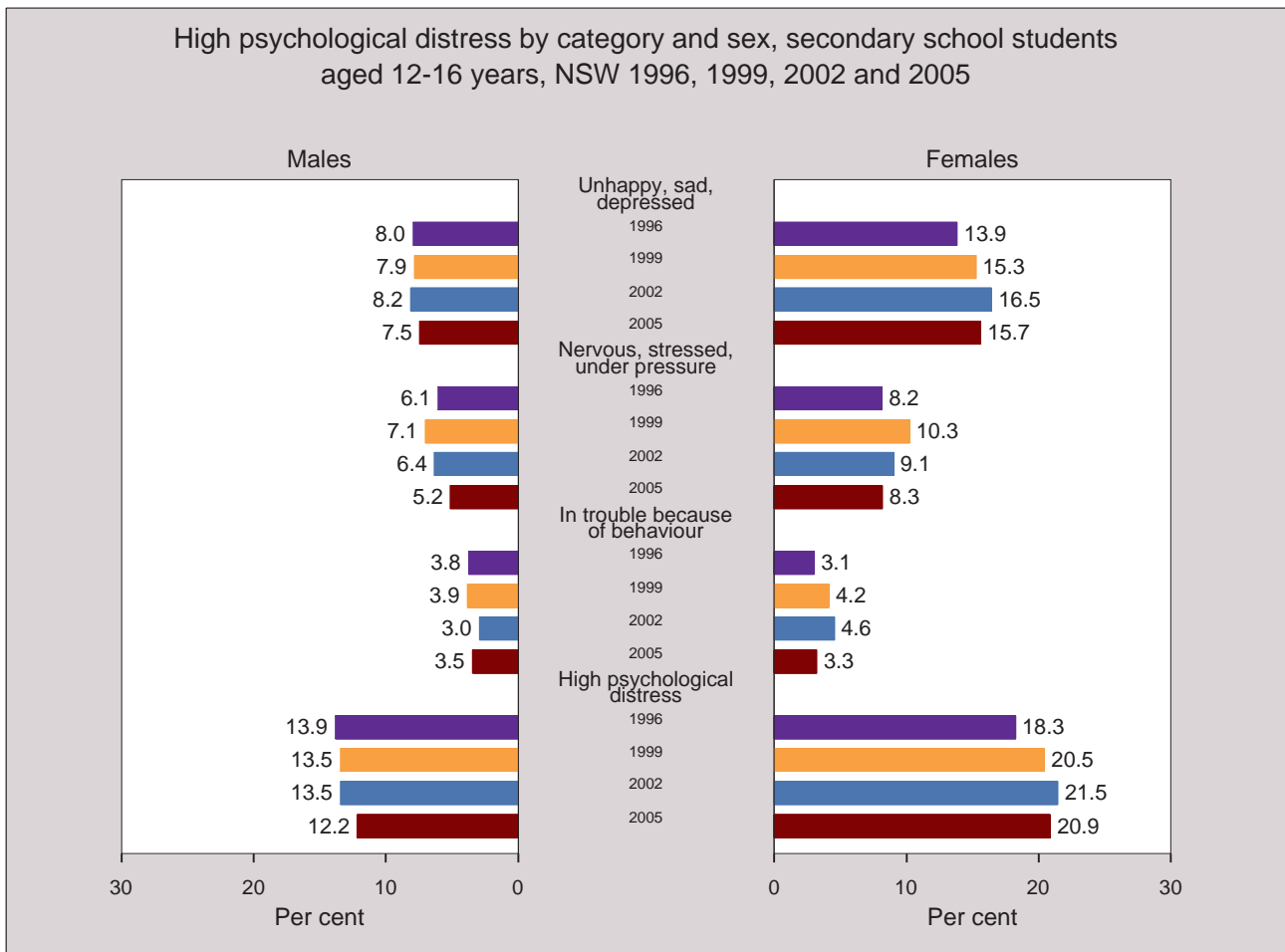
	Age (years)	Sex	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Number	15-24	Males	744	716	808	850	805	840	800	776	908	925
		Females	1201	1232	1174	1286	1370	1637	1630	1765	1911	2159
	All ages	Males	2960	2934	3533	3694	3565	3874	3966	3813	4012	4109
		Females	4123	4117	4373	4422	4622	5344	5574	5773	6008	6290
Rate per 100,000	15-24	Males	161.2	158.1	181.6	192.6	182.3	188.5	177.1	169.0	194.6	197.1
		Females	275.3	284.7	276.4	304.8	324.2	382.4	377.2	403.3	431.9	485.3
	All ages	Males	94.7	93.0	111.6	116.0	110.8	119.4	120.8	115.5	121.0	122.8
		Females	132.6	131.1	138.1	138.8	144.0	165.0	170.4	175.5	181.6	189.5

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- In the 1997 National Survey of Mental Health and Wellbeing, 3.5% of respondents aged 18 and over reported suicidal thoughts in the previous 12 months, and about 12% of that group also reported having made a suicide attempt (Pirkis et al., 2000). This corresponds to about 18,000 attempts in NSW in a year by people aged 18 and over. The 2004-05 National Health Survey reported that 4% of all adults reported experiencing very high levels of psychological distress (ABS, 2006).
- Most people who contact health services after a suicide attempt are seen by emergency departments. They may or may not be admitted as hospital inpatients, and the injury may or may not be recorded as intentional. In recent years, there have been more than 10,000 hospital separations per year following suicide attempts.
- Hospitalisation rates for suicide attempts are consistently higher in females than in males, while the death rates from suicide are about 3-4 times greater in males than in females. This is mostly due to males using more lethal methods than females.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

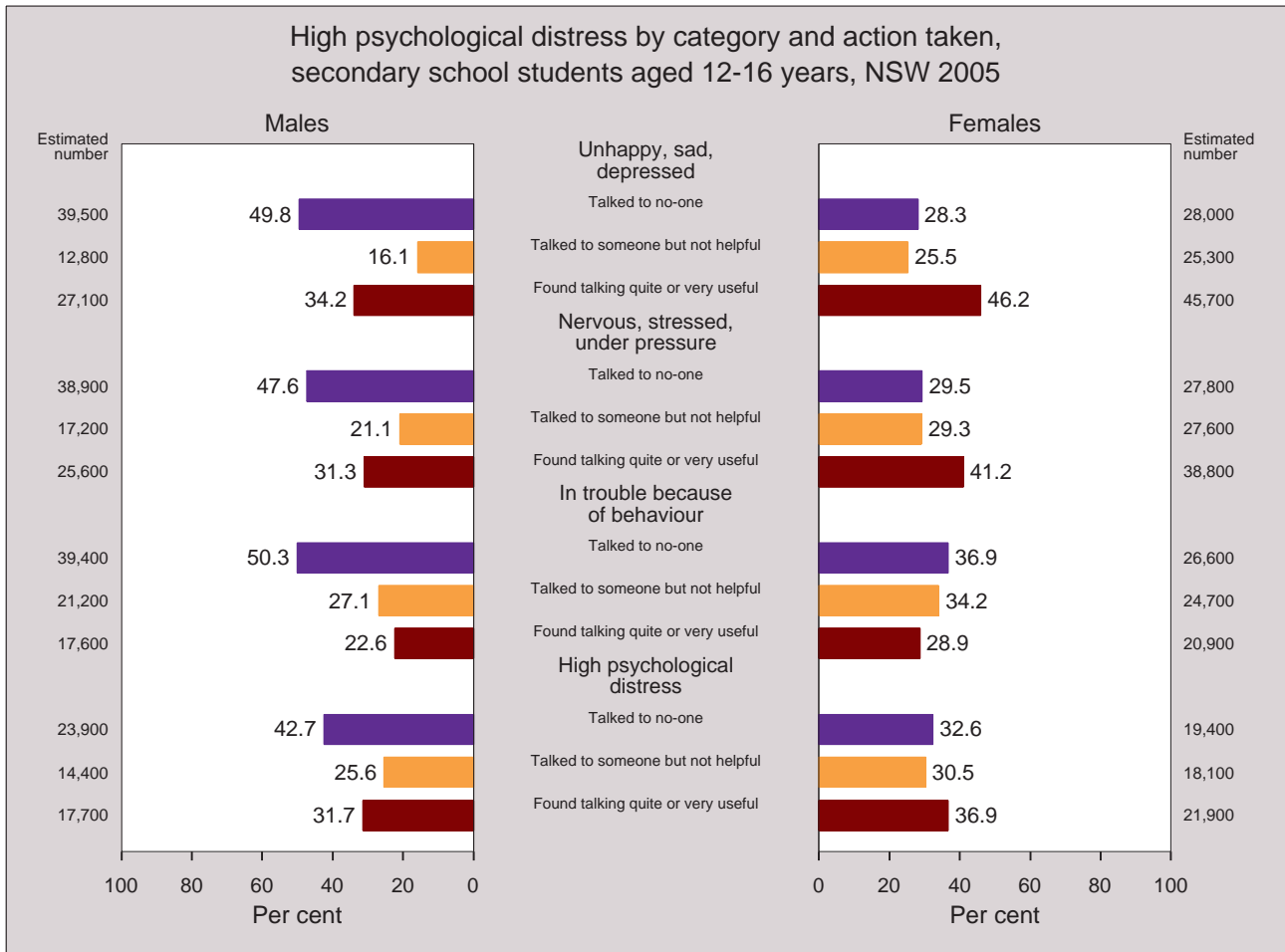


Response	Sex	1996	1999	2002	2005
Unhappy, sad, depressed	Persons	11.1	12.0	12.3	11.6
Nervous, stressed, under pressure	Persons	7.2	8.9	7.8	6.7
In trouble because of behaviour	Persons	3.4	4.1	3.8	3.4
High psychological distress	Persons	16.3	17.4	17.5	16.6

Note: Estimates based on 4,847 respondents in 1996, 3651 in 1999, 3506 in 2002 and 2732 in 2005. High psychological distress defined as response of 'almost more than I can take' to one or more of the following 3 questions: How bad was it for you, when you were feeling unhappy, sad or depressed/nervous, stressed or under pressure/in trouble because of your behaviour?'

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

- Psychological distress refers to a range of feelings experienced by people who may have identifiable mental health problems such as anxiety or mood disorders, or who may be highly stressed for situational reasons. High psychological distress has been shown to be associated with increased rates of substance use and poor school performance (NSW Health, 2004).
- In 2005 psychological distress in the NSW School Students Health Behaviours Survey was identified by questions that asked if the student had experienced feelings of depression, anxiety, or stress from being in trouble about their behaviour in the last 6 months. Those who had experienced a problem were asked 'how bad' it was for them at the time. A student who responded 'almost more than I can take' to any of the 3 problems was considered to have experienced high psychological distress.
- Using this definition, high psychological distress was reported by 16.6% of secondary school students in 2005 and was reported more commonly by females than males (20.9% versus 12.2%). The proportion of females reporting high psychological distress increased from 18.3% in 1996 to 21.5% in 2002 and subsequently decreased to 20.9% in 2005. There was a decrease in the male rate over the same period from 13.9% in 1996 to 12.2% in 2005.



Note: Estimates based on 5596 respondents who reported high psychological distress. Respondents choose 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%.

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

- Psychological distress refers to a range of feelings experienced by people who may have identifiable mental health problems such as anxiety or mood disorders, or who may be highly stressed for situational reasons.
- High psychological distress was reported by 17.5% of students in the NSW School Students Health Behaviours Survey in 2005. Secondary school students who experience distressing problems at a level they describe as 'almost more than I can take' are, by their own account, near the end of their own coping resources. They are likely to be at greater risk of mental ill-health if there is no relief from this experience either at home or at school.
- Talking about problems may help to relieve psychological distress, or may lead to contact with services that can assist the young person. However, 37.5% of students experiencing high psychological distress talked to no-one. Of those who reported high psychological distress and did talk to someone, more than a half (55%) found this quite or very helpful. Consistently, however, more than one third of students reported talking to no-one when experiencing feelings of depression (37.8%), being nervous and under pressure (37.9%) or being in trouble because of behaviour (43.9%). This is a particularly vulnerable group of young people.
- One of the aims of the *NSW School-Link initiative* (NSW Health, 2003) is to improve access to services such as school counsellors and mental health services so that students with mental health problems receive help as early as possible, including programs which prevent the development of mental health problems.

For more information

Australian Bureau of Statistics. *Information Paper: Use of the Kessler Psychological Distress Scale in ABS Health Surveys*. Catalogue no. 4817.0.55.001. Canberra: ABS, 2003. Available at www.abs.gov.au.

Australian Bureau of Statistics. *Mental health and wellbeing of adults, Australia 1997*. Catalogue no. 4360.0. Canberra: ABS, 1997. Available at www.abs.gov.au.

Australian Bureau of Statistics. *National Health Survey 2004–05: Summary of results*. ABS Cat. NO. 4364.0. Canberra: ABS, 2006. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.02004-05?OpenDocument.

Australian Bureau of Statistics. National Health Survey 2001: Mental health. ABS Catalogue no. 4811.0. Canberra: ABS 2003.

Australian Government of Health and Aged Care's suicide prevention information available at Suicide prevention, national suicide prevention strategy www.health.gov.au/internet/wcms/publishing.nsf/Content/mental-suicide and at Healthinsite www.healthinsite.gov.au/topics/Suicide_Prevention.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Begg S, Vos T, Barker B. et al. *The burden of disease and injury in Australia, 2003*. Canberra: AIHW, in press. Available at www.aihw.gov.au/publications.

Centre for Epidemiology and Research. *2005 Report on adult health in New South Wales*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

NSW Department of Health. *Early Psychosis Program* website at www.health.nsw.gov.au/policy/cmh/psych.html.

NSW Department of Health. *Integrated Perinatal and infant care (IPC)*. Sydney: NSW Department of Health, 2003. Available at http://www.health.nsw.gov.au/pubs/i/pdf/infant_care.pdf. More information about the IPC program available at www.health.nsw.gov.au/policy/cmh/peri.html.

NSW Department of Health. *New South Wales: A New Direction for Mental Health*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/pubs/2006/pdf/mental_health.pdf.

NSW Department of Health. *Policy guidelines for the management of patients with possible suicidal behaviour for NSW Health staff and staff in private health facilities*. Sydney: NSW Department of Health Circular 92/31, 1998.

NSW Department of Health. *Improving mental health and wellbeing in NSW*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/i/pdf/well_improve.pdf.

NSW Department of Health. *NSW School link initiative*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/s/pdf/well_school-link.pdf.

NSW Department of Health. *Suicide prevention in NSW*. Sydney: NSW Department of Health, 2003. Available at www.health.nsw.gov.au/pubs/s/pdf/well_suicide.pdf.

NSW Department of Health. The health behaviours of secondary school students in New South Wales 2002. *N S W Public Health Bull* 2004; 15(S-2).

Organization for Economic Cooperation and Development. *Health at a glance. OECD indicators 2003*. Paris: OECD, 2003.

Pirkis J, Burgess P, Dunt D. Suicidal ideation and suicide attempts among Australian adults. *Crisis* 2000; 21: 16–25.

Policy Division. *The NSW Whole of Government Suicide Prevention Strategy*. Sydney: NSW Department of Health, 1999.

Policy Division. *We need to know more: NSW suicide data report*. Sydney: NSW Department of Health, 1999. Available at www.health.nsw.gov.au/pubs/.

Salmelainen P. Trends in the prescribing of stimulant medication for the treatment of Attention Deficit Hyper-

activity Disorder in adults in NSW. *N S W Public Health Bull* 2004; 15(S-3). Available at www.health.nsw.gov.au/public-health/phb/bulletinsupplements.html.

Salmelainen P. Trends in the prescribing of stimulant medication for the treatment of Attention Deficit Hyperactivity Disorder in children and adolescents in NSW. *N S W Public Health Bull* 2002; 13(S-1). Available at www.health.nsw.gov.au/public-health/phb/bulletinsupplements.html.

Sawyer M, Arney FM, Baghurst PA et al. *Mental health of young people in Australia*. Canberra: Commonwealth Department of Health and Aged Care, 2000.

Sawyer MG, Arney FM, Baghurst PA, Clark JJ, Graetz BW, Kosky RJ et al. *The Mental Health of Young People in Australia: The Child and Adolescent Component of the National Survey of Mental Health and Wellbeing*. Canberra: Australian Government Publishing Service, 2000.

Steenkamp M, Harrison J. *Suicide and hospitalised self-harm in Australia. Injury Research and Statistics Series*. AIHW Catalogue no. INJCAT 30. Adelaide: Australian Institute of Health and Welfare, 2000.

- Overall, oral health in NSW is good by world standards. However, oral health varies with age, and among population subgroups.
- Among children:
 - around one-third have evidence of tooth decay;
 - more than one-third do not visit a dentist each year;
 - hospitalisations for the removal or restoration of teeth have increased in recent years with an increasing proportion 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.
- Oral health is worse in areas with no access to a fluoridated community water supply.

In this chapter

- Tooth loss
- Hospitalisation for removal or restoration of teeth in children
- Treatment type in children
- Access to fluoridated water
- Acceptance of fluoridation of water supply

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 their satisfaction with their appearance (AIHW, 2006).

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 (AHMAC, 2001). 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.

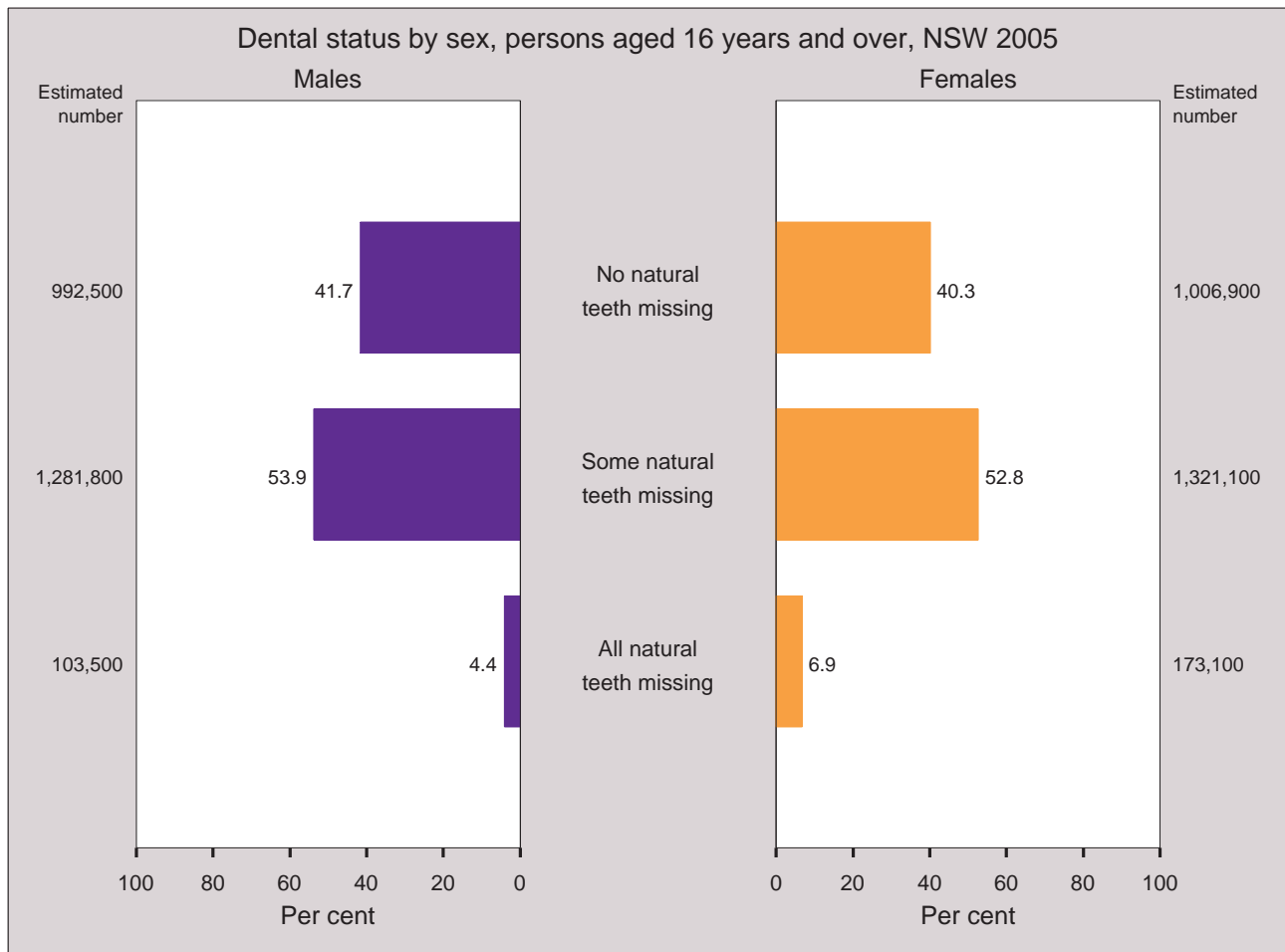
Currently, public health effort is focused on identifying disadvantaged populations that require special attention, and, in the NSW population as a whole, on oral health promotion, disease prevention and improving access to services (NACOH, 2004). This chapter presents an overall picture of the oral health of the people of NSW.

Water fluoridation is the most effective, cost-effective, equitable and safe means of providing protection from tooth decay (ADA, 2004; ARCPOH, 2006). 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 8.7% in 2006 to 6.7% in 2007.

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 came from the NSW Inpatient Statistics Collection. Data on dental ambulatory care sensitive conditions came from the NSW Inpatient Statistics Collection with ambulatory care sensitive hospitalisation definitions from the Victorian Department of Human Services. Data on water fluoridation by health area has been supplied by the NSW Centre for Oral Health Strategy.

More information on the methods used for analysing data is given in the Methods section.

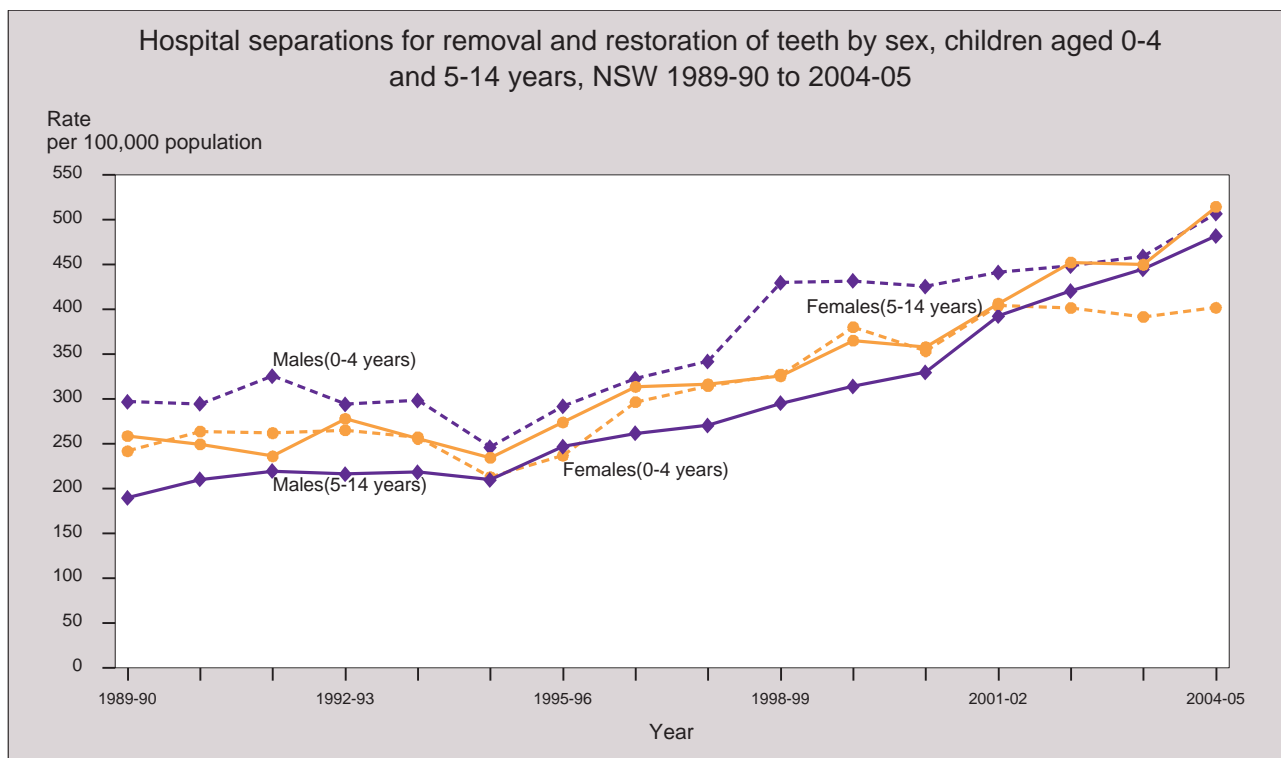
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: The question used was: Are any of your natural teeth missing? Estimates are based on 11,489 respondents. 11 (0.1%) were not stated (Don't know or Refused) in NSW.

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

- One of the measures of overall oral health in adults is the number of remaining natural teeth. Good oral health can be described as having 20 or more teeth (AIHW, 2006).
- Dental caries (tooth decay) and periodontal diseases (gum diseases) are two of the five most prevalent health conditions in Australia. Both are preventable but if not treated early, will result in tooth loss. About 90% of all tooth loss can be attributed to these two oral health conditions (AHMAC, 2001). The loss of a tooth indicates failure of all preventive and restorative efforts (AIHW, 2003).
- In 2005, among NSW residents aged 16 years and over, 41.0% reported that they had all of their natural teeth, 53.3% reported that they had some teeth missing and 5.7% reported that they had all teeth missing. A higher proportion of females (6.9%) than males (4.4%) had all their natural teeth missing (edentulism). As expected, rates of edentulism increased with age. Among respondents aged 55 years and over, rates of edentulism ranged from 8.4% (in 55 to 64 years olds) to 19.7% (in those aged 75 years and older) in males and 9.6% to 31.9% respectively in females. In age groups from 16 to 44 years only small proportion of males (from 0.3% to 1.1%) and females (from 0.3% to 1.3%) had all their natural teeth missing.
- Over the years, the proportion of people who had all their natural teeth missing decreased substantially in NSW from 8.2% in 1998, to 5.7% in 2005 (CER, 2006). This may be due to a trend towards fewer extractions, and a higher mean number of functional teeth in younger age groups (AHMAC, 2001).



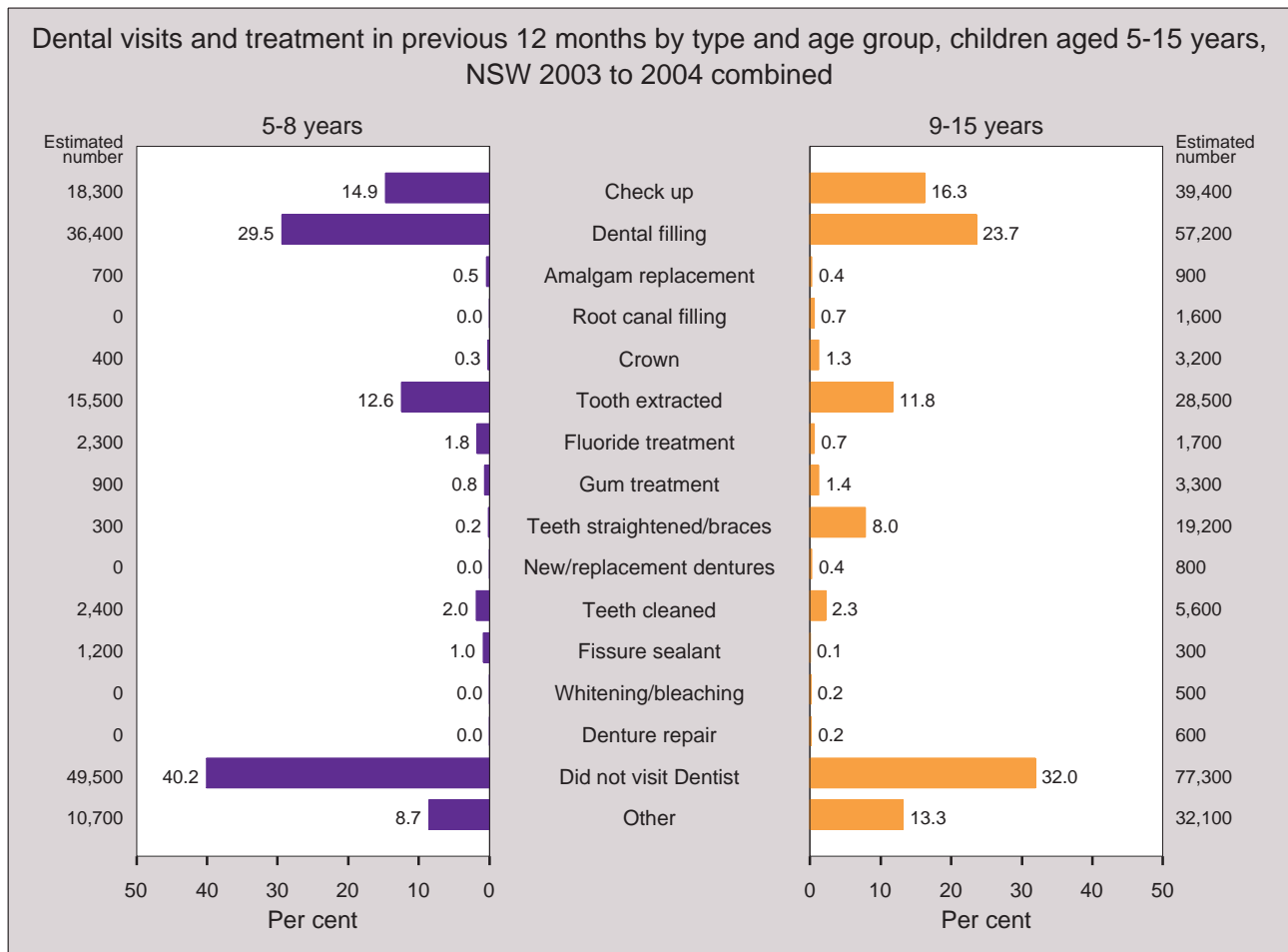
	Age (years)	Sex	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number	0-4	Persons	1165	1362	1442	1659	1770	1707	1841	1831	1823	1940
	5-14	Persons	2259	2514	2585	2760	3043	3103	3621	3940	4014	4470
	0-14	Persons	19691	20428	20345	21166	22183	22320	26778	27540	27495	28936
Rate per 100,000 population	0-4	Persons	265.0	309.7	328.4	379.6	406.3	390.3	423.0	425.4	426.1	455.8
	5-14	Persons	260.1	286.8	292.6	309.8	338.9	343.1	399.2	435.8	447.0	497.6
	0-14	Persons	309.3	320.2	319.0	330.9	344.8	343.8	409.5	419.1	416.2	436.1

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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- Hospitalisation rates for the removal or restoration of teeth among children under the age of five years increased by 68.8% between 1989-90 and 2004-05. The rates for both males and females remained fairly steady until 1994-95 and then increased each year.
- In the period between 1989-90 to 2004-05 the hospitalisation rate for the restoration of teeth among children aged 0-4 years almost doubled, and the rate for removal of teeth increased by 56% in the same period. The need for extractions and fillings is dictated by dental caries. In this age group, early feeding patterns and prolonged daily use of nursing bottles contributes to dental caries.
- Hospitalisation rates for the removal or restoration of teeth among children aged 5-14 years increased by 122.9% over the period 1989-90 to 2004-05. Poor dietary and oral hygiene practices are likely to be major contributing factors to dental caries at this age. Some children may be admitted because dental procedures may be difficult to perform in outpatient settings at this age.
- The proportion of hospitalisations for removal and restoration of teeth in children aged 0-4 years in public hospitals decreased from 57.7% in 2000-01 to 51.6% in 2004-05. Similarly, for those aged 5-14 years, this proportion decreased from 39.3% in 2000-01 to 33.7% in 2004-05. Consequently, the rate of hospitalisations increased in private hospitals.

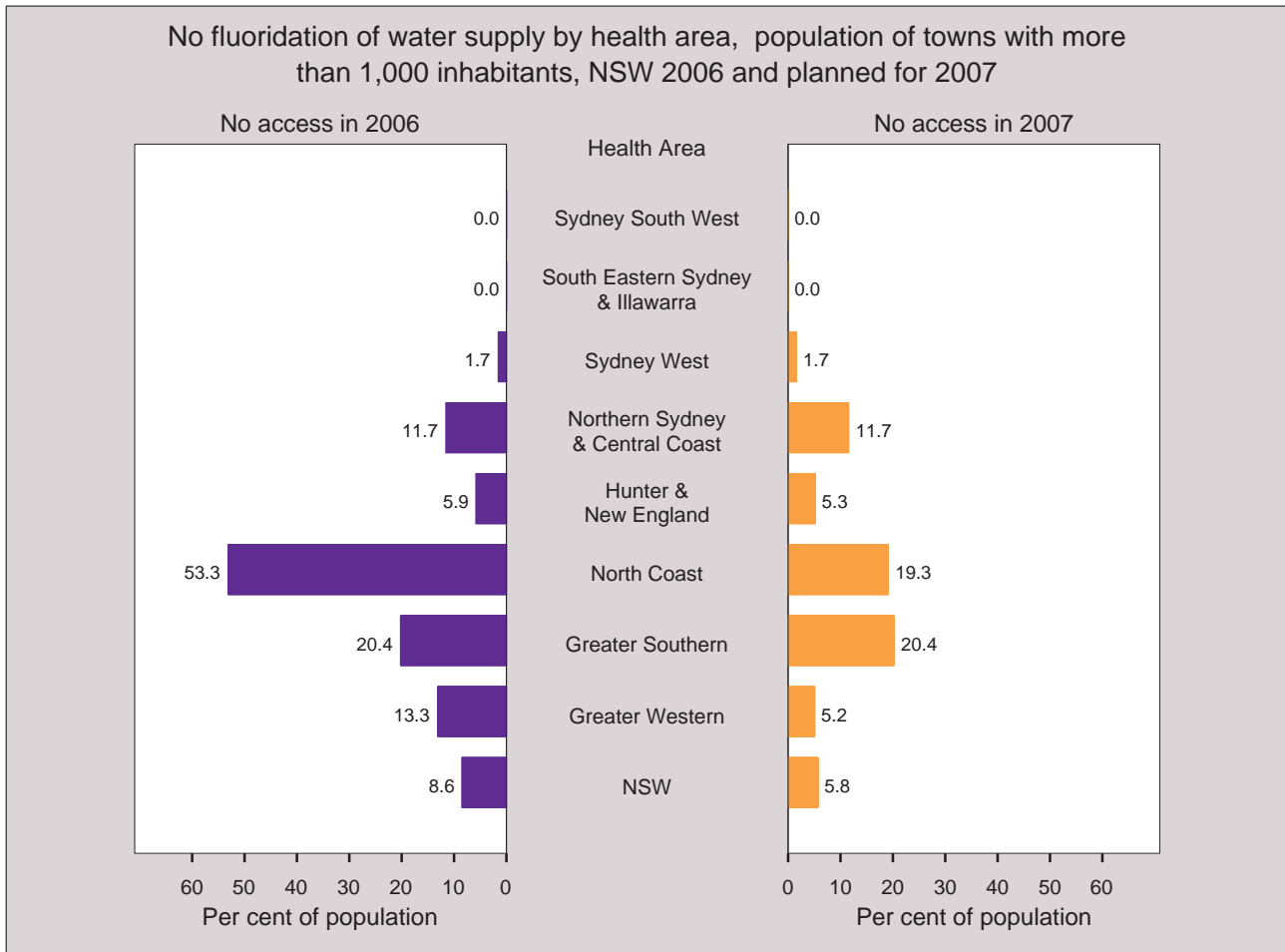
All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/



Note: The questions used for this indicator were: In the last 12 months, how often has [child] had a toothache or other problem with his/her mouth or dentures? Very often, often, sometimes, hardly ever or never, What was the most recent problem [child] had? and What treatment did [child] receive for the most recent oral health problem he/she had? Estimates based on 1,977 respondents. 0 (0%) were not stated (Don't know or Refused) in NSW. 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.

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

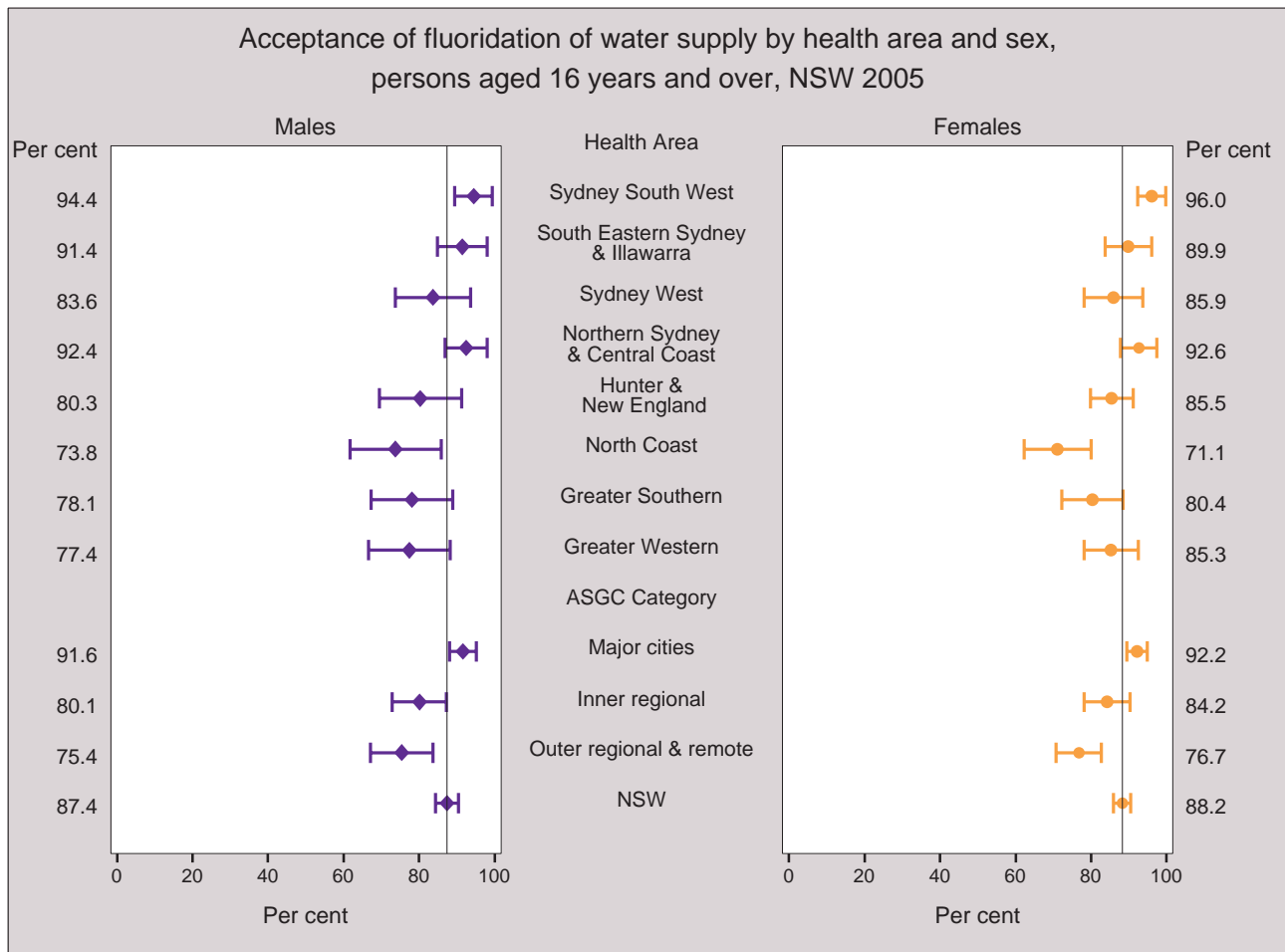
- The oral health of NSW children has improved over recent decades, with a dramatic decline in the dental caries (tooth decay) experience.
- In the NSW Population Health Survey 2003–04, more than half of the children aged 5–8 years (59.8%) and 9–15 (68%) were reported to have had a dental visit or treatment in the previous 12 months. The most frequent dental visits reported were for dental fillings (25.7%), check ups (15.8%) and extractions (12.1%).
- The main differences between the age groups were that younger children were reported to have had more dental fillings (29.5% younger to 23.7% older) and fluoride treatment (1.8% younger to 0.7% older), while braces were reported more frequently in the older age group (8.0% older to 0.2% younger)(CER, 2006).
- Most children who had a dental treatment reported visiting a private dental practice (52.9% in younger children and 70.3% in older children). Treatment from a school dental service was also common, with 25.1% of treatments occurring at school in younger children and 14.3% in older children. The children of mothers older than 25, with tertiary qualifications and English speaking background were more likely to be reported as having visited a dentist in the previous 12 months (CER, 2006). This finding is consistent with national studies which provided evidence of differential access to dental services according to country of birth, language spoken at home, insurance status and mother's educational status (AHMAC, 2001; AIHW, 2000). School dental services were utilised more by children who are less advantaged (AIHW, 2000).



Note: Numbers and percentages concern population in towns with more than 1,000 inhabitants in NSW.

Source: The NSW Health Water Unit and Centre for Oral Health Strategy Water Fluoridation Database, NSW Department of Health.

- Water fluoridation is the most cost-effective, equitable and safe means of providing protection from tooth decay (ADA, 2004; ARCPOH, 2006). In 2006, 9.7% of the total population in NSW did not have access to fluoridated community water supplies, or 8.6% of the population living in towns with more than 1,000 inhabitants.
- In 2006, the North Coast Area Health Service has the largest proportion of the population (53.3% of those living in towns with more than 1,000 inhabitants) that do not have access to fluoridated community water supplies, followed by Greater Southern (20.4%) and Greater Western Area Health Services (13.3%).
- Concerned local councils in the most affected health areas had either already voted for fluoridation or had been directed to fluoridate, and the proportion of the population with no access to fluoridated community water supplies will decrease in 2007. Overall, it is anticipated that by 2007, only 6.7% of the total population of NSW and 5.8% of the NSW population living in towns with more than 1,000 inhabitants will remain using unfluoridated community water supplies.
- The US Centers for Disease Control and Prevention rates water fluoridation as one of 'Top 10 Public Health Measures of the Twentieth Century' alongside the eradication of poliomyelitis and smallpox (CDC, 1999).
- In the 1950's, prior to water fluoridation, dental caries levels in children in NSW were one of the highest in the world, with children aged 12 years having a mean of 9–10 decayed, missing and filled teeth (9–10 DMFT) (Barnard, 1956). In 2000, the results in NSW were the best in the developed countries at 0.73 DMFT (AIHW, 2003; OECD, 2006). This dramatic decline in dental caries has been attributed mainly to water fluoridation (70%), the use of fluoride toothpaste (26%) and to fluoride tablets (2%) (Spencer, 1986). Despite the availability of fluoride toothpaste, children living in unfluoridated areas have significantly higher dental decay rates than those living in fluoridated areas (Armfield, 2005).



Note: The indicator includes those who either agree with or would agree to having fluoride added to their water supply. The questions used to define the indicator were: Has fluoride been added to your public water supply?. If the respondent answered Yes: Do you agree with adding fluoride to your public water supply to prevent tooth decay? If the respondent answered No, Don't know, or Refused: Would you be in favour of adding fluoride to your water supply to prevent tooth decay? Estimates are based on 1,773 respondents. 311 (14.92%) were not stated (Don't know or Refused).

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

- Water fluoridation delivers the most cost-effective and socially equitable means of providing protection from tooth decay (ADA, 2004; ARCPOH 2006). Children living in unfluoridated areas have significantly higher dental decay rates than those living in fluoridated areas despite the availability of fluoride toothpaste (Armfield 2005).
- In 2005, 87.8% of NSW residents responding to the NSW Population Health Survey supported fluoridation of the community water supply. Respondents in the major cities indicated highest support (91.9%), followed by inner regional (82.1%). Respondents in the outer regional and remote areas of NSW indicated the lowest support (76.2%).
- The health area with the highest support was the Sydney South West Area Health Service (95.1% persons). The lowest was in the North Coast Area Health Service, where only 71.1% of female respondents to the survey and 73.8% of male respondents supported fluoridation.
- Fluoridation of the community water supply helps protect against dental decay, but fluoride consumed excessively in early childhood can cause dental fluorosis, which is a disorder of dental enamel affecting the appearance of teeth. Excessive consumption of fluoride usually takes place when children who drink fluoridated water are also inappropriately given fluoride supplements or inadvertently ingest toothpaste containing fluoride. Fluoride programs in Australia seek to strike a balance by improving the oral health of children with a low level of side-effects (AIHW, 2006).

For more information

Armfield J. Public Water Fluoridation and Dental Health in New South Wales. *Aust New Zealand Journal of Public Health*, 2005. 29: 477–483.

Australian Dental Association at www.ada.org.au.

Australian Dental Association. *Policy statement: Community oral health promotion. Fluoride use*. ADA, 2004.

Australian Health Ministers' Advisory Committee. *Oral health of Australians: National planning for oral health improvement: final report* Adelaide: South Australian Department of Human Services, 2001.

Australian Institute of Health and Welfare Dental Statistics and Research Unit. *Access to dental services of Australian children and adolescents. Research report*. Adelaide: AIHW, January 2000.

Australian Institute of Health and Welfare Dental Statistics and Research Unit. *Child Dental Health Survey, New South Wales, 2000*. Adelaide: AIHW, 2003.

Australian Institute of Health and Welfare Dental Statistics and Research Unit. *Child Dental Health Survey, New South Wales 2000*. Adelaide: AIHW, 2003.

Australian Institute of Health and Welfare Dental Statistics and Research Unit. *National Dental Telephone Interview Survey 2002*. AIHW cat, no. DEN 128. Adelaide: AIHW, 2003.

Australian Institute of Health and Welfare. *Australia's health 2006*. AIHW cat. no. AUS 73. Canberra: AIHW, 2006. Available at: www.aihw.gov.au/publications/index.cfm/title/10321.

Australian Institute of Health and Welfare. Dental Statistics and Research Unit at www.adelaide.edu.au/spdent/dsru/.

Australian Research Centre for Population Oral Health (ARCPOH), Dental School, The University of Adelaide, South Australia. The Use of Fluorides in Australia: Guidelines. *Australian Dental Journal*, 2006. 51: (2) 195–199.

Barnard PD. *Dental survey of state schoolchildren in NSW. January 1954–June 1955. Special Report Series No 8*. National Health and Medical Research Council, 1956.

Centers for Disease Control and Prevention. Fluoridation of drinking water to prevent dental caries. *MMWR*, 1999. 48(41): 933–40.

Centre for Epidemiology and Research. New South Wales Population Health Survey at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

National Advisory Committee on Oral Health (NACOH) to Australian Health Ministers' Conference. *Healthy mouths healthy lives: Australia's national oral health plan 2004–2013* Adelaide: Government of South Australia, 2004.

Organization for Economic Cooperation and Development. *OECD health data 2006*. Paris: OECD, 2006.

Spencer AJ. Contribution of fluoride vehicles to change in caries severity in Australian adolescents. *Community Dent Oral Epidemiol*, 1986. 14:238–41.

Victorian Government Department of Human Services. *The Victorian ambulatory care sensitive conditions study, 2001–02*. Melbourne: VGDHS, July 2004.

Pregnancy and the newborn period

- Overall, NSW mothers and babies enjoy very good health, though Aboriginal and Torres Strait Islander mothers and babies, and those from socioeconomically disadvantaged areas, continue to have poorer health.
- In 2004, 85,626 births were registered in NSW.
- The birth rate in NSW is declining, but not as steeply as in Australia as a whole. 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;
 - mothers aged 35 years and over account for 20% of all births;
 - just under a half of mothers aged less than 35 years and almost two-thirds of mothers aged over 35 years, take folate supplements, both one month before and in the first trimester of pregnancy, as recommended to prevent neural tube defects;
 - around 75% make their first antenatal visit before 16 weeks and 88% before 20 weeks gestation;
 - around 16% 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 birthweight, with babies born to teenage mothers having the highest rates of prematurity (9%) and low birth-weight (8%);
 - around 15% are admitted to a neonatal special care nursery and 2.8% are admitted to neonatal intensive care;
 - fewer than 2% are reported to have a congenital abnormality;
 - the rate of perinatal deaths has slowly declined, although rates remain higher in rural areas.

In this chapter

- Fertility and births
- Maternal folate
- Prenatal diagnosis
- Perinatal mortality and antenatal care
- Prematurity and low birth weight
- Neonatal morbidity
- Smoking in pregnancy by local government area

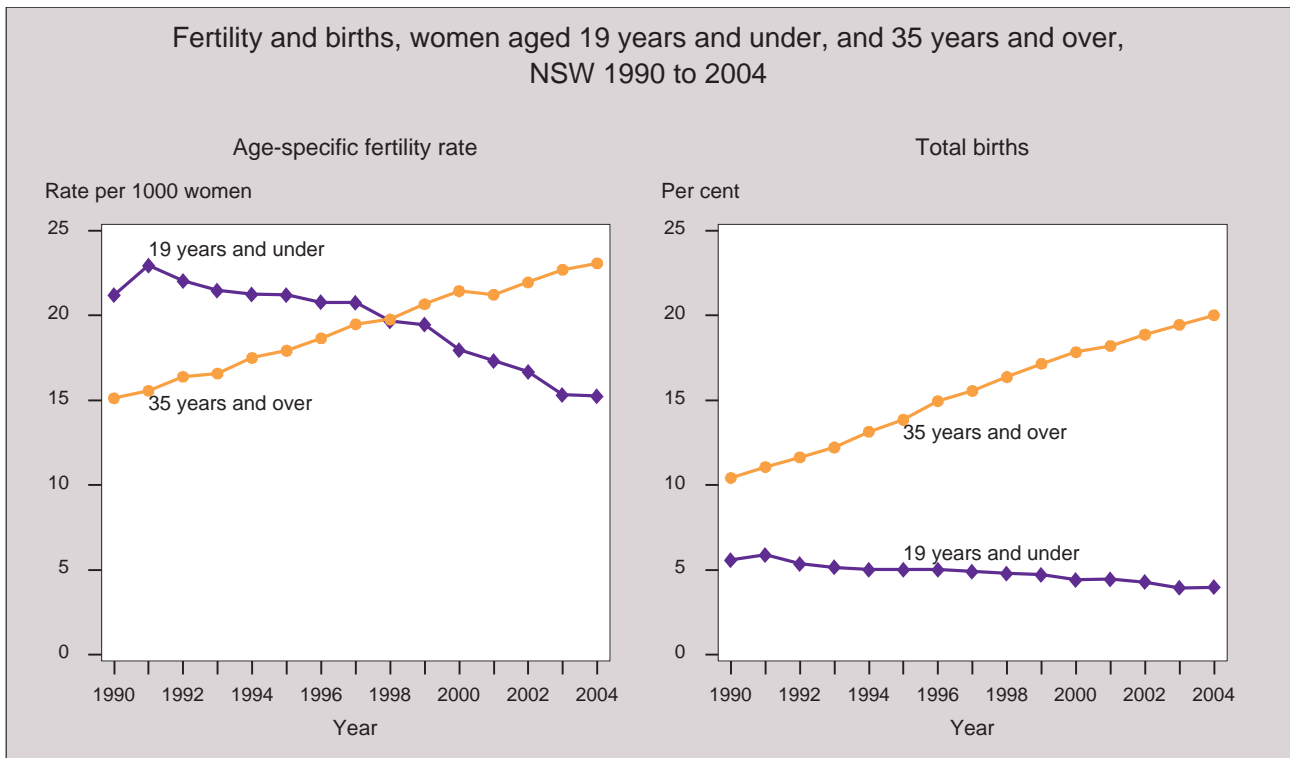
Introduction

The health of NSW mothers and babies is generally good by world standards. Maternal deaths are rare, and perinatal mortality rates continue to decline. This chapter presents information on the main indicators of maternal and perinatal health, including trends in fertility rates, teenage pregnancy, prenatal diagnosis, low birthweight, prematurity, neonatal morbidity, and perinatal mortality, and in addition, information on periconceptional folate supplementation.

Aboriginal and Torres Strait Islander mothers and babies, and those from socioeconomically disadvantaged areas and some country-of-birth groups, continue to experience worse outcomes than other NSW mothers and babies. More information on these health differentials and some country-of-birth groups are given in the chapters on Aboriginal and Torres Strait Islander peoples, socioeconomic status and country of birth.

As well as data on births and deaths obtained from the Australian Bureau of Statistics, this chapter uses data from the NSW Midwives Data Collection, the NSW Birth Defects Register, NSW Inpatient Statistics Collection, NSW Cytogenetic Laboratories, and the NSW Health Survey 2005. More information on these data collections and the analytic methods used is given in the Methods section.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/

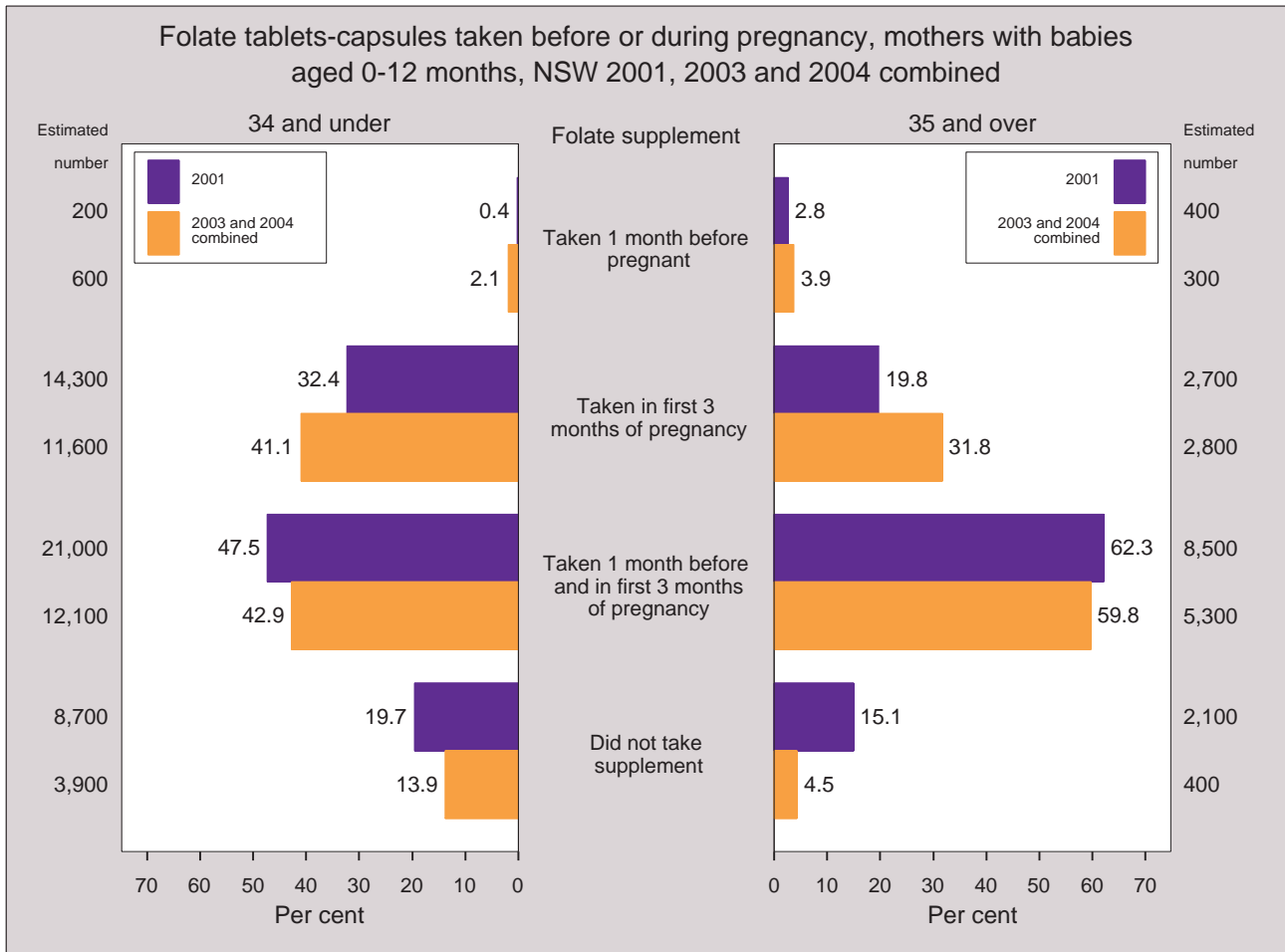


	Maternal age (years)	1998	1999	2000	2001	2002	2003	2004
Number of live births	19 and under	4093	4092	3846	3779	3656	3380	3376
	20–34 years	67522	67780	67915	65966	65654	65806	64656
	35 and over	14014	14856	15542	15514	16124	16695	17016
	All ages	85710	86756	87327	85320	85490	85891	85065
Age-specific fertility rate per 1000 women	19 and under	19.7	19.5	18.0	17.3	16.7	15.3	15.3
	20–34 years	96.4	97.1	97.2	93.9	93.1	92.5	91.0
	35 and over	19.8	20.7	21.4	21.2	22.0	22.7	23.1
	All ages	53.0	53.3	53.3	51.7	51.5	51.5	51.0

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 livebirths 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. 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.

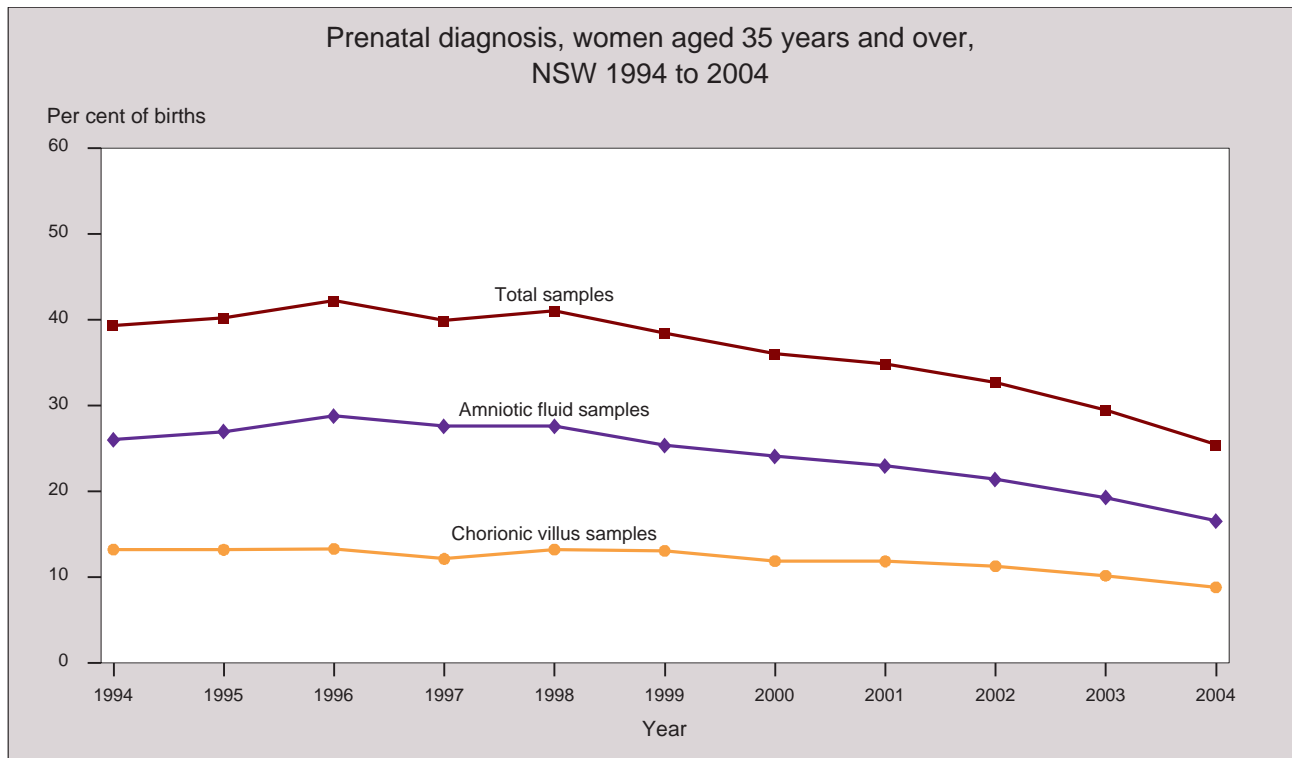
- Teenage pregnancy continues to be a problem in Australia because of the increased risk of adverse outcomes. For the teenage mother (that is under 20 years old), there is a higher risk of medical complications such as high blood pressure. For the baby, there is a greater risk of low birthweight, prematurity, and stillbirth (Van der Klis et al, 2002 and Skinner et al, 2003).
- The teenage fertility rate (the number of livebirths per 1,000 female population) in Australia in 2004 was 16.3 per 1,000 which is the lowest since 1921 (ABS 2004). In NSW, the teenage fertility rate stood at 15.3 per 1,000 women in 2004, down from a peak of 22.9 per 1,000 women in 1991.
- Between 1990 to 2004, the proportion of births (including stillbirths and livebirths) in NSW to women 35 years and older increased from 10.4% to 20.0%, while the proportion to teenage mothers decreased from 5.6% to 4.0%.
- The total fertility rate (TFR) is the average number of babies that a woman can expect to bear during her reproductive life. The TFR in Australia peaked at 3.5 babies per woman in 1961, but has since declined to 1.75 in 2002, rebounding slightly to 1.77 babies per woman in 2004. Since 1993, in NSW, the TFR has declined from 1.91 to 1.79 with a minimum of 1.76 in 2001 (ABS 1997, 2004).
- Replacement level fertility is the level that needs to be sustained in the long term to ensure that a population replaces itself. Since 1976, Australia has had fertility rates below replacement level. In Australia, the TFR required for replacement is about 2.1 babies per woman (ABS, 2004).



Note: Estimates based on 489 respondents in the 2001 Child Health Survey and 263 respondents in the 2003 and 2004 Adult Health Surveys. In all cases mothers of babies less than 12 months old were asked about their usage of folate supplements during their pregnancy.

Source: NSW Child Health Survey 2001 and NSW Population Health Surveys 2003 and 2004 (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Folate (also known as folic acid) is a B group vitamin and is found naturally in foods such as fresh vegetables and fruit, orange juice, legumes, nuts, liver, and yeast. It is also present in fortified products such as breads and breakfast cereals, and can be taken in supplement (tablet or capsule) form.
- Folate supplementation before pregnancy and in the first three months of pregnancy reduces the incidence of neural tube defects (such as spina bifida, anencephaly, and encephalocele) by almost three-quarters (Lumley et al, 2001). In NSW, neural tube defects were reported in 71 pregnancies in 2003.
- In the combined 2003 and 2004 NSW Health Surveys, about half (47%) of mothers of infants aged less than 12 months reported taking folate supplements both one month before and in the first trimester of pregnancy, similar to the percentage reported in the 2001 Child Health Survey. However, in 2003 and 2004, a greater percentage of mothers (39% compared with 30% in 2001) reported that they took folate supplements in the first three months of pregnancy, while a smaller percentage of mothers (12%, compared with 19% in 2001) reported that they had not taken folate supplements at all.
- Among mothers of infants aged less than 12 months in the 2003 and 2004 surveys, 12% reported that they had changed their diet to increase folate intake both in the month before and in the first three months of pregnancy. A further 23% of mothers reported increasing their dietary folate in the first three months of pregnancy. Nearly 18% of mothers reported no change in their diet as they considered it contained enough folate, while a further 45% simply reported that they did not change their diet.



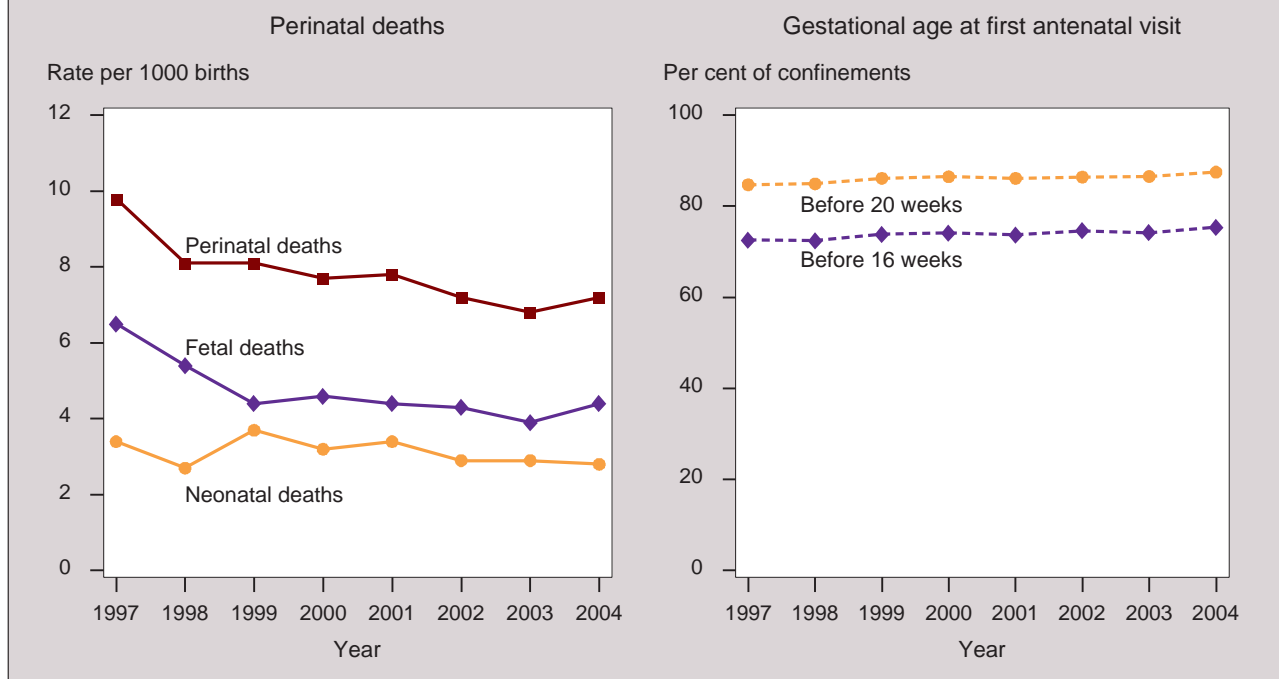
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Amniotic fluid samples	3007	3264	3722	3781	3903	3797	3781	3588	3470	3242	2843
	Chorionic villus samples	1528	1597	1720	1664	1867	1958	1865	1853	1831	1712	1512
	Other samples	14	6	11	21	25	4	2	4	1	3	1
	Total samples	4549	4867	5453	5466	5795	5759	5648	5445	5302	4957	4356
Per cent	Amniotic fluid samples	26.0	27.0	28.8	27.6	27.6	25.4	24.1	23.0	21.4	19.3	16.6
	Chorionic villus samples	13.2	13.2	13.3	12.1	13.2	13.1	11.9	11.9	11.3	10.2	8.8
	Other samples	0.1	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Total samples	39.3	40.2	42.2	39.9	41.0	38.5	36.0	34.8	32.7	29.5	25.4

Note: The total number of samples is greater than the number of women tested as some women may have more than one sample taken. 'Other samples' include fetal blood and placental tissue. Samples taken in other states were excluded.

Source: NSW cytogenetic laboratories data, Statewide Services Development Branch, and NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- The risk of some chromosomal abnormalities in babies, particularly Down syndrome, increases with increasing maternal age. In NSW over the period 1994 to 2002, the rate of chromosomal abnormalities was 7.8 per 1,000 births for mothers aged 40–44 years compared to a rate of 1.5 per 1,000 births for mothers aged 20–24 years (NSW Birth Defects Register, unpublished data).
- Prenatal diagnostic services should be made available to women with an increased risk of a genetic or chromosomal disorder, including women aged 35 years and over (Human Genetics Society of Australia, 2004). The most common types of procedures carried out for cytogenetic testing are amniocentesis (sampling of the amniotic fluid surrounding the baby by aspiration of fluid through the mother's abdomen) and chorionic villus sampling (CVS) (taking a sample from the placenta).
- The number of cytogenetic samples taken for prenatal diagnosis among women aged 35 years and over in NSW rose from 4,549 in 1994 to 5,795 in 1998, but has since declined to 4,356 in 2004. This pattern of change was seen for both amniocentesis and CVS but the former was twice as common.
- Similarly, the number of cytogenetic samples taken as a percentage of babies born to women aged 35 years and over rose to a high of 42% in 1996 and declined to 25% in 2004. This recent decline is probably due to greater use of less invasive procedures such as ultrasound examination of 'nuchal translucency', a screening test for Down syndrome.

Perinatal deaths and gestational age at first antenatal visit, NSW 1997 to 2004

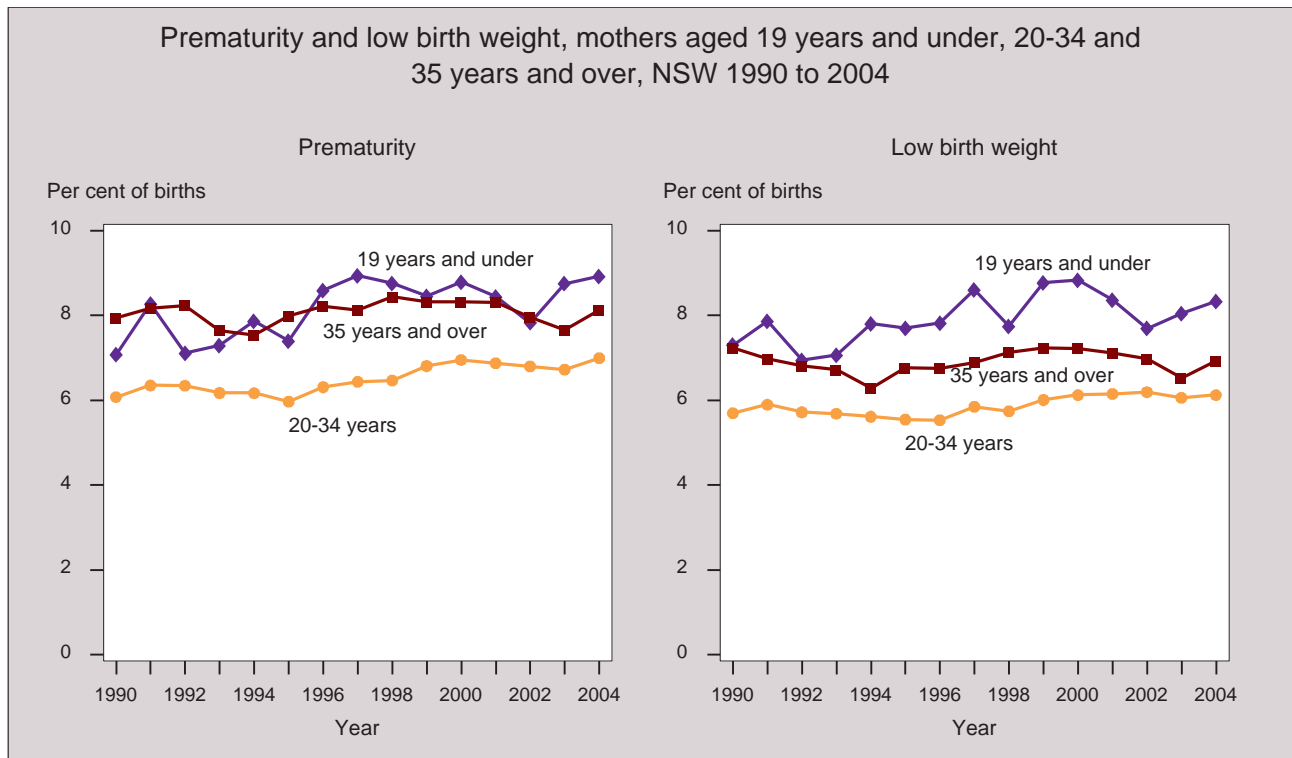


		1997	1998	1999	2000	2001	2002	2003	2004
Perinatal mortality									
NSW	Number of perinatal deaths	861	695	705	675	664	626	587	617
	Perinatal mortality rate	9.8	8.1	8.1	7.7	7.8	7.2	6.8	7.2
Australia	Number of perinatal deaths	2321	2090	2133	2076	2092	2019	2020	2048
	Perinatal mortality rate	9.2	8.3	8.5	8.3	8.4	8.0	8.0	8.0
Gestational age at first antenatal visit									
Before 16 weeks	Number of confinements	63088	61608	63506	64138	62177	63124	63111	63530
	Per cent of confinements	72.6	72.4	73.9	74.2	73.7	74.6	74.2	75.4
Before 20 weeks	Number of confinements	73666	72257	74077	74803	72704	73116	73615	73775
	Per cent of confinements	84.8	84.9	86.2	86.5	86.2	86.4	86.6	87.5

Note: Perinatal deaths include infants and fetuses weighing at least 400 gms, or at least 20 weeks gestation if birth weight is unknown. Fetal and perinatal mortality rates are per 1,000 total births (including stillbirths). The neonatal mortality rate is per 1,000 live births. Mortality data are by year of death registration.

Source: Australian Bureau of Statistics. Causes of Death, Australia, 1996–2004. Catalogue no. 3303.0. Canberra: ABS, 1996–2004. NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- Perinatal deaths include stillbirths (also termed fetal deaths) and deaths in the first 4 weeks of life (neonatal deaths).
- Over the period 1997–2004, perinatal mortality decreased in NSW and Australia, with fetal death rates declining more steeply than neonatal death rates. In NSW, of the 617 perinatal deaths in 2004, 378 (61%) were stillbirths and 239 (39%) were neonatal deaths.
- The most common causes of perinatal death in NSW in 2004 were unexplained antepartum death (30%), congenital abnormality (19%) and spontaneous preterm labour (less than 37 weeks gestation) (19%); while the most common causes of neonatal deaths were extreme prematurity (35%), congenital abnormality (29%) and neurological disease (17%) (CER, 2005).
- Improvements in perinatal mortality are related to women commencing antenatal care earlier, improvements in obstetric and paediatric care with increasing referral of high risk pregnancies to centres with appropriate specialist services, the availability of genetic counselling and genetic education services, and improved availability of prenatal diagnosis to detect problems such as spina bifida.
- The proportion of NSW mothers commencing antenatal care in the first half of pregnancy has increased gradually in recent years. In 2004, 75% of mothers had their first antenatal visit before 16 weeks gestation, and 88% had their first visit before 20 weeks gestation.



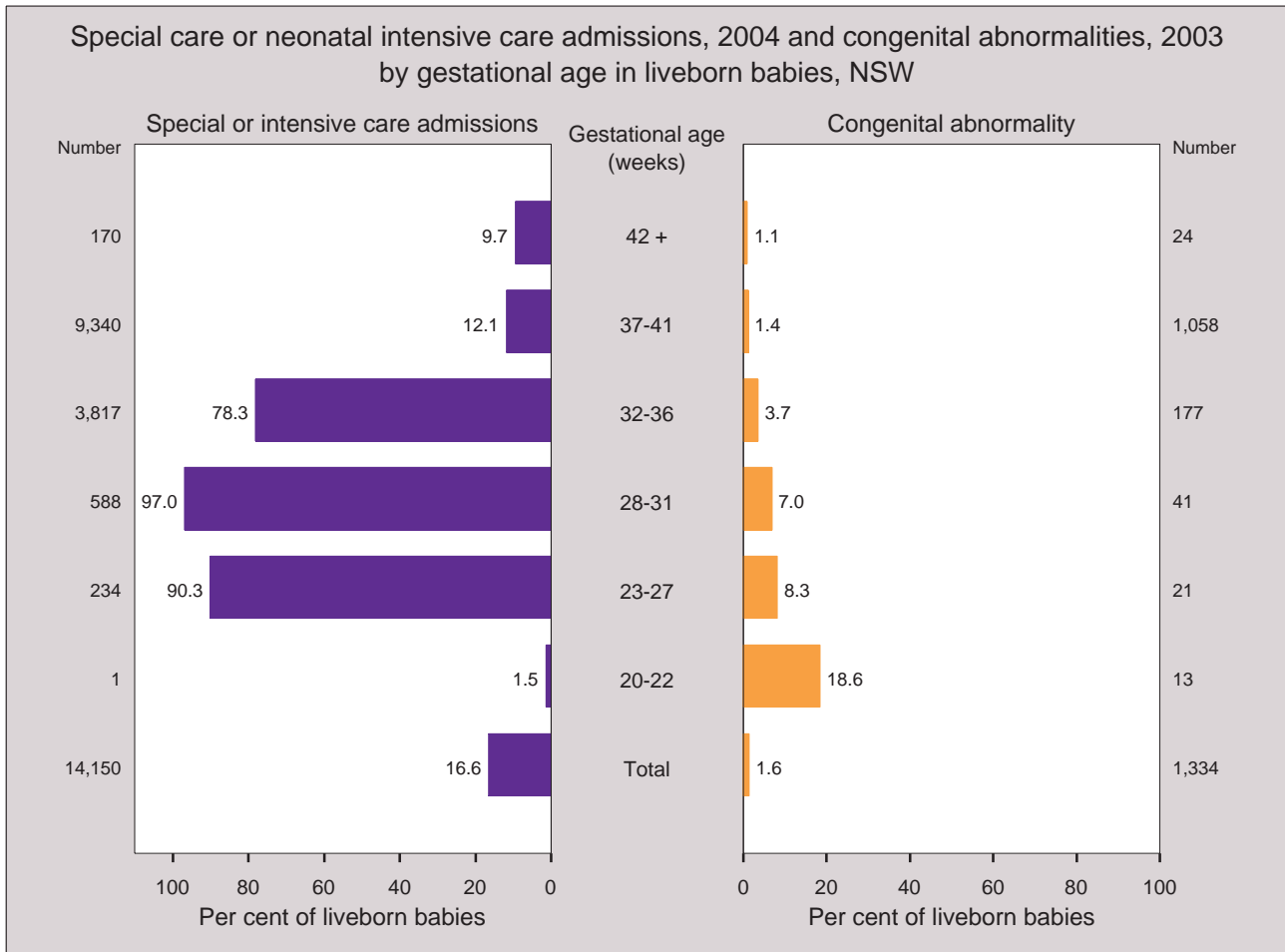
		Maternal age (years)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Low birth weight	All ages	5091	5038	5414	5233	5541	5661	5511	5507	5383	5457
Per cent	Low birth weight	All ages	5.8	5.8	6.1	6.1	6.3	6.4	6.4	6.4	6.2	6.4
Number	Premature	All ages	5529	5796	6011	5954	6236	6400	6185	6072	6035	6247
Per cent	Premature	All ages	6.3	6.7	6.8	6.9	7.1	7.3	7.2	7.1	7.0	7.3

Note: Low birth weight: less than 2,500 grams. Premature birth: less than 37 weeks gestation. Rates of prematurity and low birth weight include stillbirths and livebirths of at least 400 grams or 20 weeks gestation. Babies born in NSW to mothers normally resident interstate were included in the analysis. Mothers with unknown ages were included in "All ages".

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

- A premature or preterm birth is a birth occurring before 37 weeks gestation. Preterm infants have higher rates of mortality and morbidity than infants born at term. The risk of respiratory conditions, infection, or intra-cerebral haemorrhage, increases with increasing prematurity. Over the period 1990 to 2004, rates of prematurity varied between 6.3% and 7.3% of all births. Of births in 2004, 605 (0.7%) were born at 20–27 weeks gestation, 667 (0.8%) at 28–31 weeks, and 4975 (5.8%) at 32–36 weeks.
- A baby’s birth weight is an important outcome measure of the health of the mother and her care during pregnancy. Low birth weight is defined as less than 2,500 grams. In NSW, rates of low birth weight have remained steady, ranging from 6.0% in 1990 to 6.4% in 2004. Of all babies born in 2004, 609 (0.7%) weighed less than 1,000 grams, 558 (0.7%) weighed between 1,000 grams and 1,499 grams, and 4,290 (5.0%) weighed between 1,500 grams and 2,499 grams.
- Since 1990, the rate of prematurity have been consistently highest in babies born to mothers less than 20 years old (8.9% in 2004) and lowest for babies of mothers aged 20 to 34 years (7.0%), with the rate for babies of mothers aged 35 years or more occupying an intermediate position (8.1% in 2004).

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at www.health.nsw.gov.au/public-health/chorep/

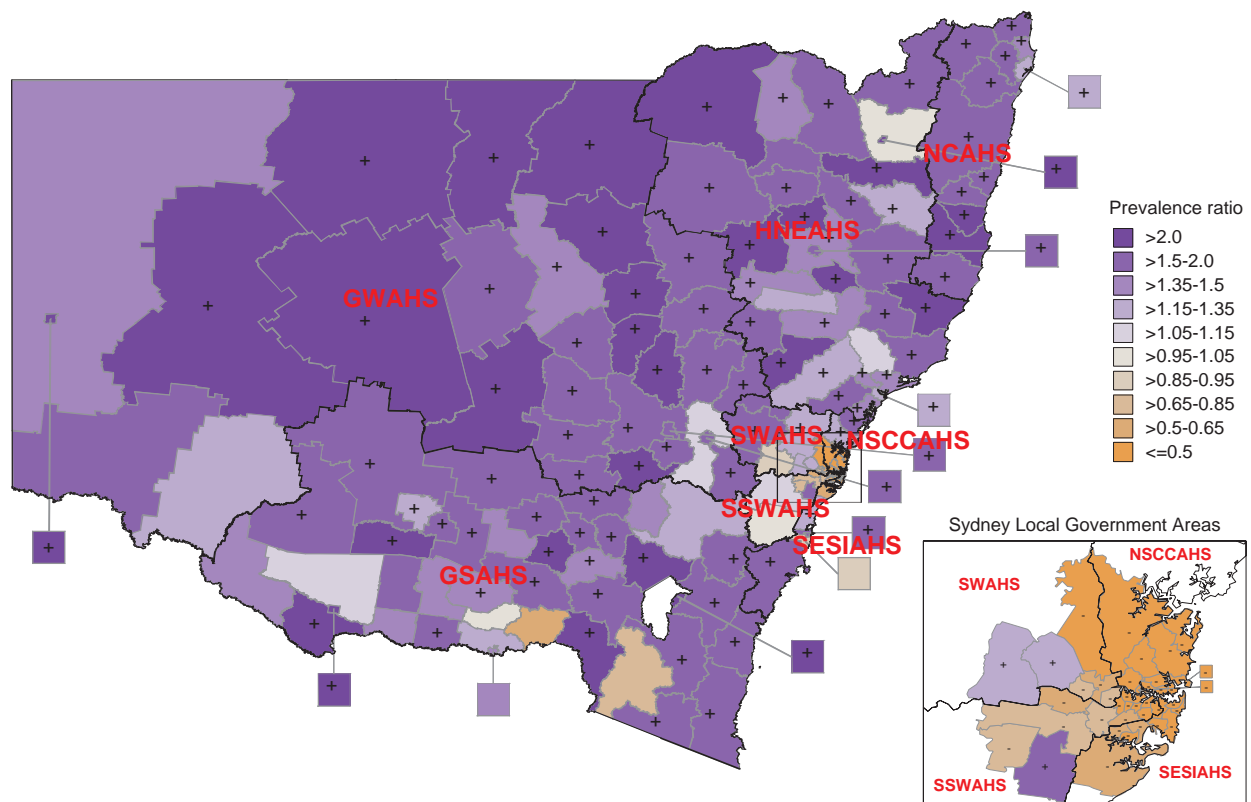


Note: Babies born in NSW to mothers resident interstate were included in the analysis.

Source: NSW Midwives Data Collection and NSW Birth Defects Register (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- In 2004, 14.7% of newborn infants were admitted to a neonatal special care nursery and 2.8% were admitted to neonatal intensive care. Overall, 32.8% of infants admitted to a special care nursery or neonatal intensive care were premature (less than 37 weeks gestation), and the highest rate of admission was among babies born at 28–31 weeks gestation (97.0%).
- The Neonatal Intensive Care Units (NICUS) data collection provides information on newborn infants admitted to a neonatal intensive care unit in NSW or ACT for one of the following reasons: gestational age less than 32 weeks; birth weight less than or equal to 1,500 grams; mechanical ventilation for 4 hours or more; central venous line inserted for 4 hours or more; or major surgery. In 2004, there were 2,231 infants registered in NICUS. The majority of mothers (88%) of babies registered in NICUS had an antenatal complication. Common antenatal complications were: preterm labour (45%), pregnancy induced hypertension (18%), fetal distress (17%), antepartum haemorrhage (17%) and intrauterine growth restriction (10%). Three quarters of the infants (75%) were premature (less than 37 weeks gestation), 41% were very premature (less than 32 weeks gestation) and 12% were extremely premature (less than 28 weeks gestation). Seventeen per cent of infants had a major congenital abnormality, a decrease from 22% in 1992. The majority of infants without a major congenital abnormality (88%) required assistance with ventilation. The main indication for assisted ventilation was respiratory distress syndrome.
- In 2003, 1.6% of liveborn babies were reported to have a congenital abnormality. The rate of congenital abnormalities was highest among very premature infants, although the absolute number was highest among those reaching full term (37+ weeks). The most common congenital abnormalities were of the cardiovascular system (such as ventricular and atrial septal defects and heart valve defects), followed by musculoskeletal abnormalities (such as congenital dislocation of the hips and polydactyly) and genitourinary abnormalities (such as hypospadias and undescended testis).

Smoking at all during pregnancy by local government area, NSW 2002 to 2004 combined



- Significantly lower than state average, + Significantly higher than state average

Note: Bayesian smoothing was used to calculate the smoothed percentages and prevalence ratios (see Methods). * indicates figures not provided when based on fewer than 5 cases.

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

- Smoking during pregnancy doubles the risk of having a low-birthweight baby and significantly increases the risk of perinatal mortality, sudden infant death syndrome and other adverse pregnancy outcomes including placenta praevia, abruptio placentae, ectopic pregnancy and preterm premature rupture of the membranes (Walsh, Lowe and Hopkins, 2001).
- In the three-year period 2002 to 2004, an average of 15.4% of NSW mothers reported smoking during pregnancy.
- Compared to the NSW level of 100, the smoothed Prevalence Ratio (see Methods) for smoking during pregnancy ranged from 13.2 in Willoughby LGA to 309.1 in Brewarrina LGA. Rates of smoking during pregnancy were more than twice the state average in 29 of the 166 LGAs, all in rural and remote areas (eight LGAs in Hunter and New England Area Health Service, two in the North Coast Area Health Service, seven in the Greater Southern Area Health Service and 12 in the Greater Western Area Health Service). Conversely, there were 24 LGAs, all in the Sydney region, where the prevalence ratio for smoking during pregnancy was less than half the state average.
- Smoking rates in NSW are highest among young adults, people in the lowest socioeconomic groups and Aboriginal people (CER, 2006). In 2004, around 57% of Aboriginal mothers reported smoking at some time during pregnancy, compared to 14% of non-Aboriginal mothers (CER, 2005). The variation in rates of smoking during pregnancy among LGAs reflects the geographic distribution of mothers from these high-risk groups.

For more information

Abeywardana S. *The Report of the Australian and New Zealand Neonatal Network*. 2003. Sydney: ANZNN, 2005.

Australian Bureau of Statistics. *Australian Social Trends 2005*. Catalogue no. 4102.0. Canberra: ABS, 2005. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4102.02005?OpenDocument>.

Australian Bureau of Statistics. *Births, Australia 1997*. Catalogue no. 3301.0. Canberra: ABS, 1998. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3301.01997?OpenDocument.

Australian Bureau of Statistics. *Births, Australia 1999*. Catalogue no. 3301.0. Canberra: ABS, 2000. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3301.01999?OpenDocument.

Australian Bureau of Statistics. *Births, Australia 2004*. Catalogue no. 3301.0. Canberra: ABS, 2005. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3301.02004?OpenDocument>.

Australian Bureau of Statistics. *Causes of Death, Australia 2004*. ABS Catalogue no. 3303.0. Canberra: ABS, 2006. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3303.02004?OpenDocument.

Australian Bureau of Statistics. *Deaths, Australia 2004*. ABS Catalogue no. 3302.0. Canberra: ABS, 2005. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02004?OpenDocument.

Australian Institute of Health and Welfare, National Perinatal Statistics Unit. Grayson N, Hargreaves J & Sullivan EA, 2005. *Use of routinely collected national datasets for reporting on induced abortion in Australia*. AIHW Catalogue no. PER 30. Available at www.npsu.unsw.edu.au/ps17high.htm.

Australian Institute of Health and Welfare. *Australia's health 2004*. Canberra: AIHW, 2004. Available at: www.aihw.gov.au/publications/index.cfm/title/10014.

Australian Institute of Health and Welfare. *Australia's young people: Their health and wellbeing 2003*. AIHW Catalogue no. PHE 50. Canberra: AIHW, 2004. Available at <http://www.aihw.gov.au/publications/index.cfm/title/9569>.

Better Health Channel, Victoria. Folate for women. Available at www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Folate_for_women?open.

Centre for Epidemiology and Research, NSW Department of Health. NSW Adult Health Survey 2003. *N S W Public Health Bull* 2004; 15(S-4). Available at: www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research, NSW Department of Health. New South Wales Child Health Survey 2001. *N S W Public Health Bull* 2002; 13(S-4). Available at: www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research. *2005 Report on adult health in New South Wales*. Sydney: NSW Department of Health, 2006. Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research. 2004 Report on adult health from the New South Wales Population Health Survey. *N S W Public Health Bull*, 2005; 16(S-1). Available at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Centre for Epidemiology and Research. New South Wales Mothers and Babies 2004. *N S W Public Health Bull* 2005; 16(S-4). Available at www.health.nsw.gov.au/public-health/phbsup/mdc04.html.

Human Genetics Society of Australasia. *Joint HGSA-RANZCOG Prenatal diagnosis policy*. Statement No. C-Obs 5. Available at www.ranzcog.edu.au/publications/statements/C-obs5.pdf.

Laws PJ, Grayson N, Sullivan EA. *Smoking and pregnancy*. AIHW Cat. No. PER 33. Sydney: AIHW National Perinatal Statistics Unit, 2006. Available at <http://www.npsu.unsw.edu.au/Smoking%20and%20pregnancy%20for%20web.pdf>.

Laws PL, Sullivan EA. *Australia's mothers and babies 2003*. Perinatal Statistics Series no. 16. AIHW Catalogue no. PER 29. Sydney: AIHW National Perinatal Statistics Unit, 2005. Available at <http://www.npsu.unsw.edu.au/ps16high.htm>.

Lumley J, Watson L, Watson M, Bower C. Periconceptional supplementation with folate and/or multivitamins for preventing neural tube defects. *The Cochrane Database of Systematic Reviews* 2001, Issue 3. Art. No.: CD001056. DOI: 10.1002/14651858.CD001056.

Mahomed K. Folate supplementation in pregnancy. *The Cochrane Database of Systematic Reviews*, 1997, Issue 3. Art. No.: CD000183. DOI: 10.1002/14651858.CD000183.

NSW Department of Health. *Guidelines for testing for Genetic Disorders*. Sydney: NSW Department of Health Circular no. 1997/48, 2005. Available at www.health.nsw.gov.au/policies/GL/2005/pdf/GL2005_012.pdf.

NSW Department of Health. *Specialised Testing for Genetic Disorders. Part 2: Guidelines for Specialised Testing for Genetic Disorders..* Sydney: NSW Department of Health, 2000. Available at www.health.nsw.gov.au/health-public-affairs/publications/gentest/.

National Health and Medical Research Council. *Clinical Practice Guidelines: Care around Preterm Birth*. Canberra: NHMRC, 2000.

Perinatal Society of Australia and New Zealand. *Clinical Practice Guideline for Perinatal Mortality Audit*. PSANZ, 2005. Available at www.npsu.unsw.edu.au/ps17high.htm.

Skinner SR, Hickey M. Current priorities for adolescent sexual and reproductive health in Australia. *Med J Aust* 2003; 179: 158–161. Available at www.mja.com.au/public/issues/179_03_040803/ski10035_fm.html.

The Genetics Education Program at www.genetics.com.au.

Van der Klis KAM, Westernberg L, Chan A, Dekker G, Keane R. Teenage pregnancy: Trends, characteristics and outcomes in South Australia and Australia. *Aust NZ J Public Health* 2002; 26: 125–131.

Walsh RA, Lowe JB, Hopkins PJ. Quitting smoking in pregnancy. *Med J Aust* 2001; 175: 320–323.

Communicable diseases

- At the end of 2005, 91% of children aged 12–15 months were fully immunised, similar to the national figure of 91%.
- Five cases of measles were notified in 2005, the lowest number recorded since 1991.
- In 2005, 1,562 cases of gonorrhoea were notified with 89% of these in males.
- In 2005, 5,800 cases of pertussis (whooping cough) were notified, a marked increase over the previous three years.
- In 2005, 11,232 cases of chlamydia infection were notified. Notifications for chlamydia infection have risen steeply since June 1999 and it is now the most frequently notified communicable disease.
- There were 390 cases of HIV infection and 97 cases of AIDS were notified in 2005, representing declines from the figures for 2003 and 2004.
- Notifications of hepatitis B and hepatitis C continue to decline, with 2757 and 4447 notifications respectively in 2005.

In this chapter

- Notifications of communicable diseases
- Hospitalisation for communicable diseases
- Deaths from communicable diseases
- Immunisation of children by health area
- Measles
- Pertussis
- Chickenpox
- Influenza
- Pneumococcal disease
- Gonorrhoea
- Chlamydia
- Infectious syphilis
- HIV and AIDS
- HIV and hepatitis C in needle and syringe programs
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Meningococcal disease
- Salmonellosis

Introduction

In NSW, communicable diseases are monitored using information supplied by doctors, hospitals and laboratories, as well as through routinely collected hospital admissions data (NSW Inpatient Statistics Collection) and deaths data (Australian Bureau of Statistics mortality collection).

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 treatment of contacts. Notifications also provide valuable information that is used for planning and evaluation of prevention programs.

Disease-specific data on notifications for NSW are regularly updated on NSW Health's Infectious Diseases web page www.health.nsw.gov.au/infect/diseases.html, and are published in the NSW Public Health Bulletin www.health.nsw.gov.au/public-health/phb/phb.html.

Doctors, hospital staff, and laboratory staff reported more than 39,000 cases of notifiable communicable diseases among NSW residents in 2005.

The number of cases of communicable diseases that are notified is almost always less than 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, notifications provide valuable information on patterns of communicable diseases in NSW.

Hospital separations provide another indicator of communicable disease activity in the population. When interpreting these data, it should be noted that: people will be counted more than once if they were admitted more than once for the same condition; a communicable disease may appear on the admission record even though it occurred in the past or was not the primary reason for admission; and only a (varying) proportion of people with communicable diseases are admitted to hospital.

Causes of death in the ABS mortality data are coded from death certificates. While rigorous standards are applied in coding, accuracy of the underlying cause of death depends on the accuracy of the death certification.

Notifications of communicable diseases, NSW, 2001 to 2003

Disease	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
Adverse event after immunisation	111	177	219	184	106	1.7	2.7	3.3	2.8	1.6
Anthrax*	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Arboviral infection-Barmah Forest*	401	395	451	403	448	6.1	5.9	6.7	5.9	6.5
Arboviral infection-other/not specified*	71	79	74	42	55	1.1	1.2	1.1	0.6	0.8
Arboviral infection-Ross River*	717	181	494	701	588	10.9	2.7	7.3	10.4	8.5
Botulism	0	0	0	1	0	0.0	0.0	0.0	0.0	0.0
Brucellosis*	1	2	3	7	3	0.0	0.0	0.0	0.1	0.0
Chancroid	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Chlamydia trachomatis-congenital pneumonia	16	15	22	30	50	0.2	0.2	0.3	0.5	0.8
Chlamydia trachomatis-other sexually transmitted	4457	5764	7711	9947	11182	68.4	88.1	116.8	150.1	168.6
Cholera*	1	1	0	1	0	0.0	0.0	0.0	0.0	0.0
Cryptosporidiosis*	194	306	203	355	847	2.9	4.7	3.1	5.5	13.0
Diphtheria*	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Foodborne illness in 2 or more related cases	56	41	1071	550	309	#	#	#	#	#
Gastroenteritis in an institution	775	1752	3583	12784	1395	#	#	#	#	#
Giardiasis*	966	860	1027	1230	1444	14.7	13.0	15.6	18.6	21.7
Gonorrhoea*	1355	1506	1316	1430	1562	20.7	22.9	20.0	21.6	23.5
Granuloma inguinale(Donovanosis)	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Haemolytic uraemic syndrome	2	7	5	9	11	0.0	0.1	0.1	0.1	0.2
Haemophilus influenzae type b*	7	10	6	4	7	0.1	0.2	0.1	0.1	0.1
Hepatitis A*	196	146	124	137	79	3.0	2.2	1.9	2.1	1.2
Hepatitis B*	4559	3547	2836	2808	2757	69.6	53.7	42.7	42.1	41.0
Hepatitis C*	8679	6698	5243	4923	4447	132.6	101.6	79.0	74.1	66.3
Hepatitis D*	11	9	12	14	15	0.2	0.1	0.2	0.2	0.2
Hepatitis E*	6	6	5	8	7	0.1	0.1	0.1	0.1	0.1
Hepatitis-viral, type not specified*	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
HIV-acquired immune deficiency syndrome (AIDS)	102	117	146	100	97	1.6	1.8	2.2	1.5	1.4
HIV-Human immunodeficiency virus*	340	393	413	407	392	5.1	6.0	6.2	6.1	5.9
Influenza*	244	1009	855	1008	1411	3.7	15.2	12.9	14.9	20.8
Legionnaires' disease*	68	44	59	80	88	1.0	0.6	0.9	1.1	1.3
Leprosy	4	0	2	5	1	0.1	0.0	0.0	0.1	0.0
Leptospirosis*	65	39	39	39	34	1.0	0.6	0.6	0.6	0.5
Listeriosis*	12	11	28	30	25	0.2	0.2	0.4	0.4	0.3
Lymphogranuloma venereum	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Malaria*	154	103	118	98	203	2.4	1.6	1.8	1.5	3.0
Measles	30	7	18	12	5	0.5	0.1	0.3	0.2	0.1
Meningococcal disease	231	216	199	149	140	3.5	3.3	3.0	2.3	2.1
Mumps*	28	29	35	64	109	0.4	0.4	0.5	1.0	1.6
Pertussis (whooping cough)	4438	2011	2770	3565	5800	67.9	30.5	41.8	53.0	84.3
Plague	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Pneumococcal infection (invasive)*	444	861	797	902	639	6.7	12.8	11.8	13.2	9.2
Polio	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Psittacosis*	38	155	87	81	120	0.6	2.3	1.3	1.2	1.7
Q fever*	144	309	288	223	142	2.2	4.7	4.3	3.3	2.0
Rabies, lyssavirus*	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Rubella-congenital*	0	0	1	1	0	0.0	0.0	0.0	0.0	0.0
Rubella-other*	58	35	23	17	10	0.9	0.5	0.3	0.3	0.2
Salmonella infection (non-typhoid)*	1641	2092	1829	2127	2169	24.9	31.8	27.7	32.1	32.5
Shigellosis*	133	82	57	96	133	2.0	1.2	0.9	1.5	2.0
Syphilis-congenital	3	3	7	0	7	0.0	0.0	0.1	0.0	0.1
Syphilis-infectious	66	128	241	301	242	1.0	1.9	3.7	4.5	3.6
Syphilis-other*	473	513	583	737	593	7.2	7.6	8.6	10.8	8.6
Tetanus	0	0	1	0	1	0.0	0.0	0.0	0.0	0.0
Tuberculosis*	414	447	376	425	444	6.3	6.7	5.6	6.3	6.5
Typhoid and paratyphoid*	42	36	37	48	27	0.6	0.5	0.6	0.7	0.4
Typhus (epidemic)	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Verotoxin-producing Escherichia coli (E. coli)*	1	6	3	5	16	0.0	0.1	0.0	0.1	0.2
Viral haemorrhagic fever	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Yellow fever	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0

Note: * =laboratory confirmed cases only. Anthrax, influenza, invasive pneumococcal infection, psittacosis and shigellosis became notifiable in 2001. Chancroid, chlamydia trachomatis, giardiasis, and granuloma inguinale became notifiable in late 1998. Botulism, cryptosporidiosis, haemolytic uraemic syndrome and verotoxin producing *E. coli* became notifiable in late 1997.

=Age adjusted rates not calculable. Rates were age-adjusted using the Australian population as at 30 June 2001.

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.

Hospitalisations for communicable diseases, NSW, 2000-01 to 2004-05

Disease	2000-01	01-02	02-03	03-04	04-05	00-01	01-02	02-03	03-04	04-05
Adverse event after immunisation	51	64	50	41	68	0.8	1.0	0.8	0.6	1.0
Arboviral infection-other/not specified	27	25	31	21	21	0.4	0.4	0.4	0.3	0.3
Arboviral infection-Ross River	38	20	23	29	20	0.6	0.3	0.3	0.4	0.3
Botulism	1	0	0	2	0	0.0	0.0	0.0	0.0	0.0
Brucellosis	5	11	6	15	5	0.1	0.2	0.1	0.2	0.1
Chancroid	0	0	1	1	1	0.0	0.0	0.0	0.0	0.0
Chickenpox	556	594	447	561	483	8.5	9.0	6.8	8.5	7.3
Chlamydia trachomatis-congenital pneumonia	0	0	0	0	2	0.0	0.0	0.0	0.0	0.0
Chlamydia trachomatis-other sexually transmitted	61	61	62	80	125	0.9	0.9	0.9	1.2	1.9
Cholera	0	1	5	3	4	0.0	0.0	0.1	0.0	0.1
Cryptosporidiosis	67	71	51	38	75	1.0	1.1	0.8	0.6	1.2
Escherichia coli (E. coli)-enterohaemorrhagic	1	1	6	0	2	0.0	0.0	0.1	0.0	0.0
Giardiasis	181	193	152	163	172	2.8	2.9	2.3	2.4	2.5
Gonorrhoea	44	67	63	36	41	0.7	1.0	1.0	0.5	0.6
Haemolytic uraemic syndrome	128	165	339	239	201	1.9	2.5	5.2	3.7	3.1
Haemophilus influenzae meningitis	5	11	4	5	5	0.1	0.2	0.1	0.1	0.1
Hepatitis A	120	145	112	87	72	1.8	2.2	1.7	1.3	1.0
Hepatitis B	1415	1150	1054	855	1001	21.6	17.3	15.7	12.7	14.7
Hepatitis C	5179	4426	4245	3811	4022	79.2	66.8	63.8	56.9	59.3
Hepatitis D	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Hepatitis E	1	4	10	4	5	0.0	0.1	0.2	0.1	0.1
Hepatitis-viral, type not specified	468	521	367	292	288	7.2	7.9	5.6	4.4	4.3
HIV-acquired immune deficiency syndrome (AIDS)	1537	1340	1535	1282	1334	23.6	20.3	23.2	19.1	19.6
Influenza	1186	853	1062	1228	598	18.0	12.8	15.9	18.5	8.8
Legionnaires' disease	28	47	36	52	69	0.4	0.7	0.5	0.7	1.0
Leprosy	14	13	11	2	11	0.2	0.2	0.2	0.0	0.2
Leptospirosis	16	20	17	16	12	0.2	0.3	0.3	0.2	0.2
Listeriosis	25	13	19	46	40	0.4	0.2	0.3	0.7	0.6
Lymphogranuloma venereum	0	2	1	0	0	0.0	0.0	0.0	0.0	0.0
Malaria	117	119	96	96	108	1.8	1.8	1.4	1.4	1.6
Measles	14	10	10	12	8	0.2	0.2	0.2	0.2	0.1
Meningococcal disease	321	240	277	250	196	4.9	3.6	4.2	3.8	2.9
Mumps	15	18	20	15	14	0.2	0.3	0.3	0.2	0.2
Pertussis (whooping cough)	267	263	114	141	177	4.1	4.0	1.7	2.1	2.6
Pneumococcal infection	1901	1880	1841	1732	1111	28.7	27.8	26.9	25.2	15.9
Psittacosis	21	21	16	23	37	0.3	0.3	0.2	0.3	0.5
Q fever	62	69	109	114	70	1.0	1.0	1.6	1.7	1.0
Rubella-congenital	13	7	13	16	12	0.2	0.1	0.2	0.2	0.2
Rubella-other	24	15	9	7	1	0.4	0.2	0.1	0.1	0.0
Salmonella infection (non-typhoid)	311	355	402	406	414	4.7	5.3	6.0	6.0	6.1
Shigellosis	34	20	19	19	41	0.5	0.3	0.3	0.3	0.6
Syphilis-congenital	9	19	18	9	16	0.1	0.3	0.3	0.1	0.2
Syphilis-infectious	2	13	13	17	12	0.0	0.2	0.2	0.3	0.2
Syphilis-other	168	200	209	197	248	2.5	2.9	3.1	2.8	3.5
Tetanus	16	6	7	7	6	0.2	0.1	0.1	0.1	0.1
Tuberculosis	637	655	529	512	550	9.6	9.7	7.7	7.4	7.8
Typhoid and paratyphoid	23	30	29	35	36	0.4	0.5	0.4	0.5	0.5

Note: Data consists of hospital separations with the condition or organism as a principal or additional diagnosis. Additional diagnoses may reflect coexisting or historical conditions and may therefore not reflect new incident cases and may not be the primary reason for hospitalisation. Multiple hospitalisations of the same person result in multiple counts. Hospitalisations were not reported for conditions that had no notifications during 1998-2005. Notifiable diseases which do not have an ICD code are not included in the table. Chickenpox is not notifiable but was included for completeness. Hospital separations were classified using ICD-10-AM. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

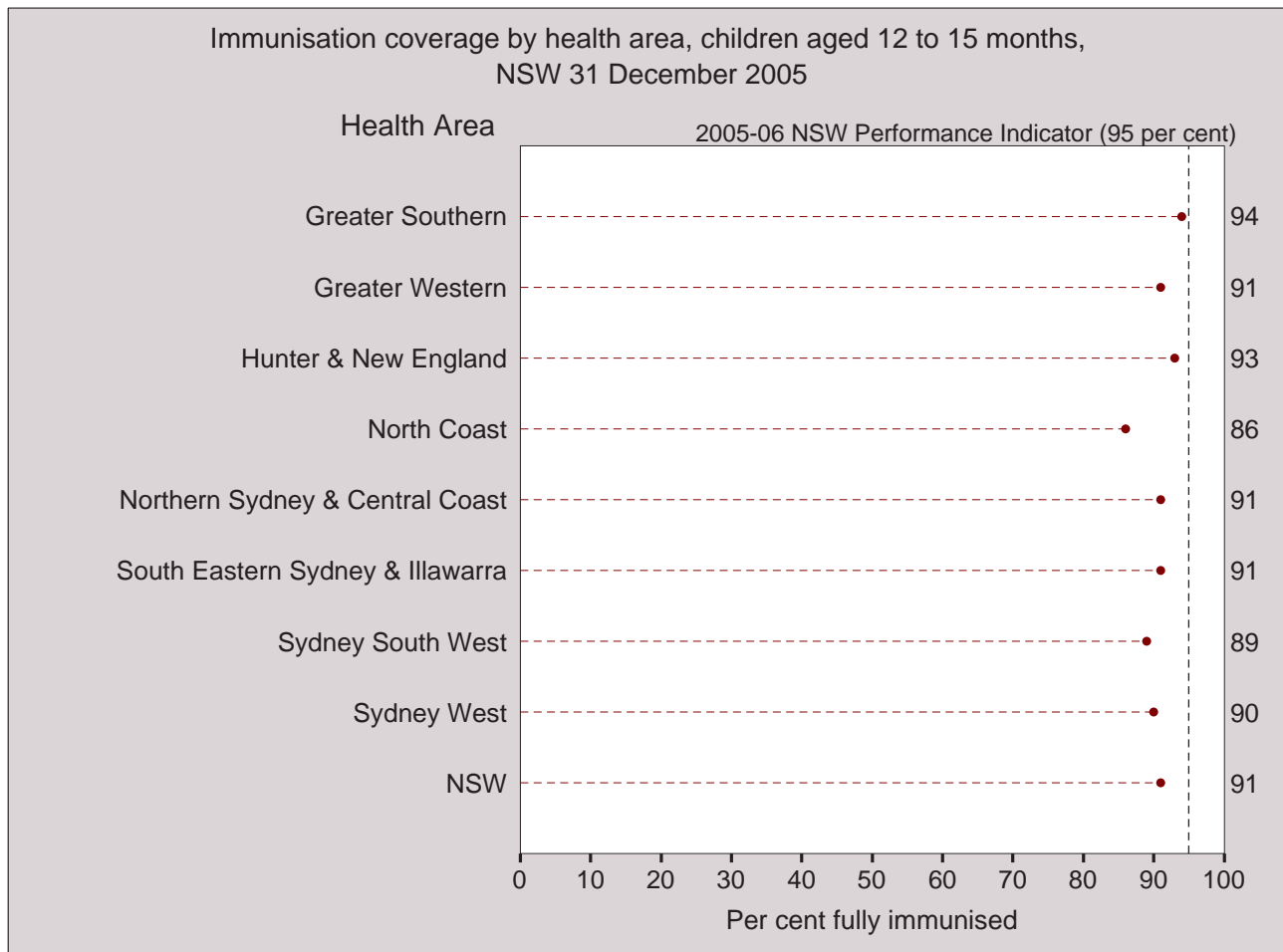
Source: NSW Inpatient Statistics Collection and ABS population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Deaths from communicable diseases, NSW, 2000 to 2004

Disease	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
Adverse event after immunisation	0	0	0	1	0	0.0	0.0	0.0	0.0	0.0
Anthrax	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Arboviral infection-other/not specified	0	1	0	0	0	0.0	0.0	0.0	0.0	0.0
Arboviral infection-Ross River	0	1	0	0	0	0.0	0.0	0.0	0.0	0.0
Botulism	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Brucellosis	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Chancroid	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Chickenpox	1	7	3	3	1	0.0	0.1	0.0	0.0	0.0
Chlamydia trachomatis-congenital pneumonia	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Chlamydia trachomatis-other sexually transmitted	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Cholera	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Cryptosporidiosis	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Diphtheria	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Escherichia coli (E. coli)-enterohaemorrhagic	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Giardiasis	0	0	1	0	0	0.0	0.0	0.0	0.0	0.0
Gonorrhoea	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Granuloma inguinale(Donovanosis)	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Haemolytic uraemic syndrome	0	1	0	0	0	0.0	0.0	0.0	0.0	0.0
Haemophilus influenzae meningitis	0	0	1	0	1	0.0	0.0	0.0	0.0	0.0
Hepatitis A	0	0	0	1	1	0.0	0.0	0.0	0.0	0.0
Hepatitis B	2	4	5	10	3	0.0	0.1	0.1	0.1	0.0
Hepatitis C	3	8	8	29	3	0.0	0.1	0.1	0.4	0.0
Hepatitis D	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Hepatitis E	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Hepatitis-viral, type not specified	60	60	42	27	50	0.9	0.9	0.6	0.4	0.7
HIV-acquired immune deficiency syndrome (AIDS)	68	62	55	56	46	1.0	0.9	0.8	0.8	0.7
Influenza	31	16	24	26	16	0.5	0.2	0.3	0.4	0.2
Legionnaires' disease	2	0	0	2	1	0.0	0.0	0.0	0.0	0.0
Leprosy	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Leptospirosis	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Listeriosis	0	2	1	4	2	0.0	0.0	0.0	0.1	0.0
Lymphogranuloma venereum	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Malaria	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Measles	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Meningococcal disease	11	7	23	12	6	0.2	0.1	0.3	0.2	0.1
Mumps	1	1	0	0	1	0.0	0.0	0.0	0.0	0.0
Pertussis (whooping cough)	0	0	0	0	1	0.0	0.0	0.0	0.0	0.0
Plague	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Pneumococcal infection	26	14	15	25	12	0.4	0.2	0.2	0.4	0.2
Polio (late effects)	6	10	6	3	7	0.1	0.1	0.1	0.0	0.1
Psittacosis	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Q fever	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Rabies(Lyssavirus)	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Rubella-congenital	1	1	0	0	0	0.0	0.0	0.0	0.0	0.0
Rubella-other	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Salmonella infection (non-typhoid)	0	2	1	1	1	0.0	0.0	0.0	0.0	0.0
Shigellosis	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Syphilis-congenital	1	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Syphilis-infectious	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Syphilis-other	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Tetanus	1	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Tuberculosis	24	31	22	23	22	0.4	0.5	0.3	0.3	0.3
Typhoid and paratyphoid	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Typhus	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Viral haemorrhagic fever	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Yellow fever	0	1	0	0	0	0.0	0.0	0.0	0.0	0.0

Note: Notifiable diseases which do not have an ICD code are not included in the table. Chickenpox is not notifiable but was included for completeness. Deaths were classified using ICD-10. Rates were age-adjusted using the Australian population as at 30 June 2001.

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

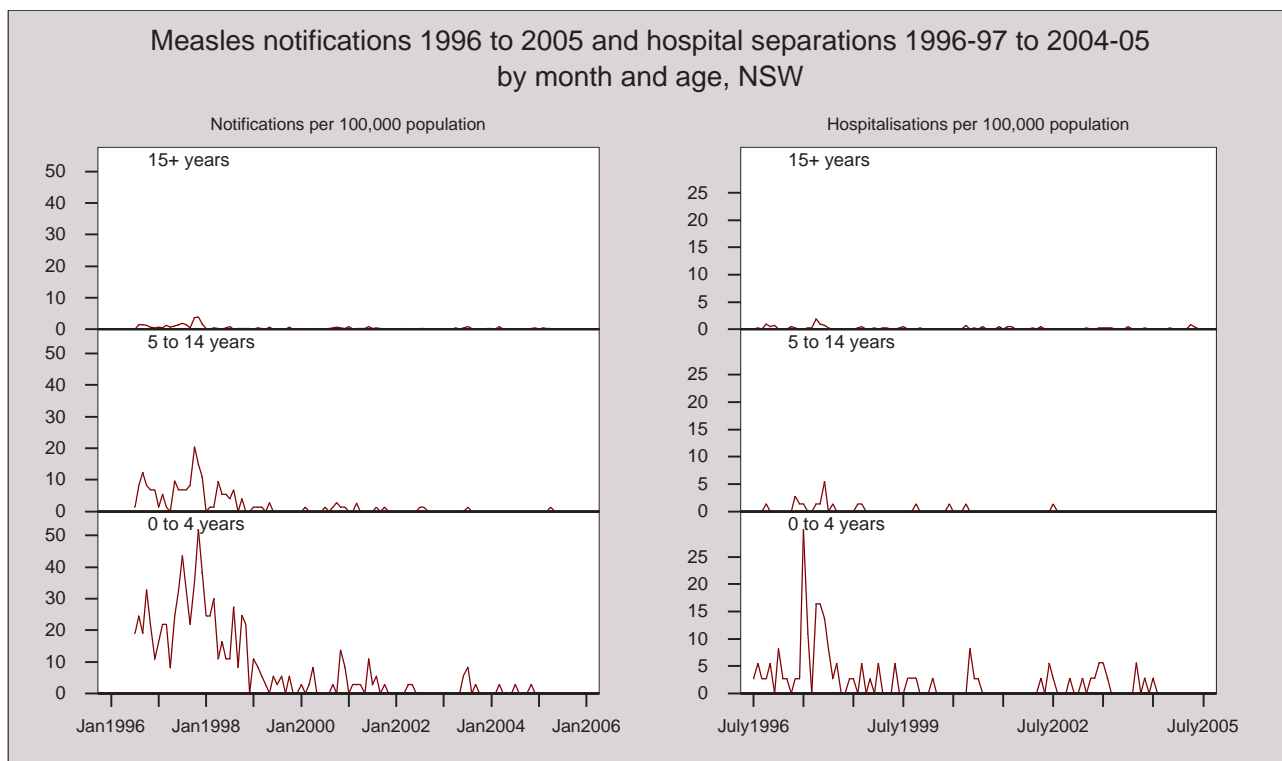


Note: These figures may be less than actual coverage due to under-reporting.

Source: Australian Childhood Immunisation Register. Health Insurance Commission, Perth (unpublished data).

- Despite substantial progress in reducing the incidence of vaccine-preventable diseases in NSW, increases in immunisation levels are needed to further reduce and finally eliminate these causes of illness and death.
- Safe and effective vaccines are now freely available. However, the growing number of vaccines, and the complexity of immunisation schedules, make delivering appropriate immunisations on time increasingly difficult for service providers and parents.
- Data from the Australian Childhood Immunisation Register provide information on the immunisation status of all children under seven years of age.
- ACIR data for NSW indicate that at the end of December 2005, 91% of children aged 12 to less than 15 months were fully immunised. This compares with national figures of 91%.
- Recorded immunisation coverage varied according to health area, ranging from 86% in North Coast to 94% in Great Southern Area Health Service.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

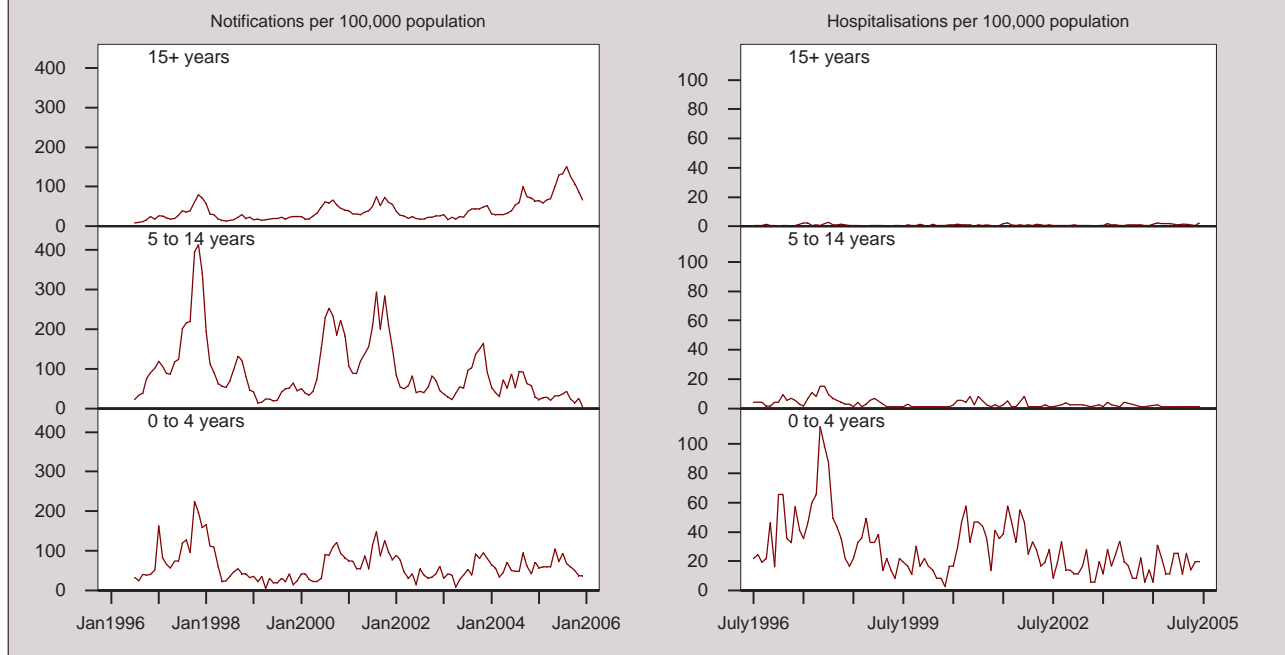


Note: Hospital separations with measles as a principal or additional diagnosis were included. Hospital separations were classified using ICD-9-CM up to 1997-98 and ICD-10-AM from 1998-99 onwards. Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

- Measles is a highly infectious disease characterised by fever, rash, runny nose, sore eyes, and cough. Serious complications, including pneumonia, encephalitis and death, can follow infection. The Australian Standard Vaccination Schedule currently recommends two doses of measles, mumps and rubella (MMR) vaccine, at one and four years of age.
- All doctors, laboratories, hospitals, schools, and child care centres are required by law to notify cases of measles.
- NSW experienced its last major epidemic of measles in 1993-94, with an age-adjusted notification rate in 1993 of 40 per 100,000 population (2,348 notifications). In children aged under 15 years, the rate was around 150 per 100,000. Children aged less than five years were most likely to be hospitalised, with an admission rate in this age group of 49 per 100,000 in the same year.
- In 1998, the National Health and Medical Research Council recommended that the age for the second dose of MMR vaccine be lowered from between ages 10 and 16 years to age four years. The National Measles Control Campaign was conducted in all primary schools in 1998 to offer MMR vaccination to those children who would otherwise have missed out on their second dose. Over 75% of NSW primary school children received a dose of MMR vaccine.
- Since 1998, the incidence of measles in NSW has been at historically low levels. September 1999 was the first month, since laboratory notifications began being collected in 1991, in which no cases of measles were reported. This indicated that measles transmission was interrupted in NSW, probably for the first time. For all of 2005, there were only 5 cases notified (age-adjusted rate of 0.1 cases per 100,000 population).
- The small number of measles cases notified in recent years have often been in travellers returning from overseas, particularly young adults. Encouraging vaccination of young adults, especially those who are travelling, and maintaining high levels of childhood vaccination, are central to eliminating measles in Australia.

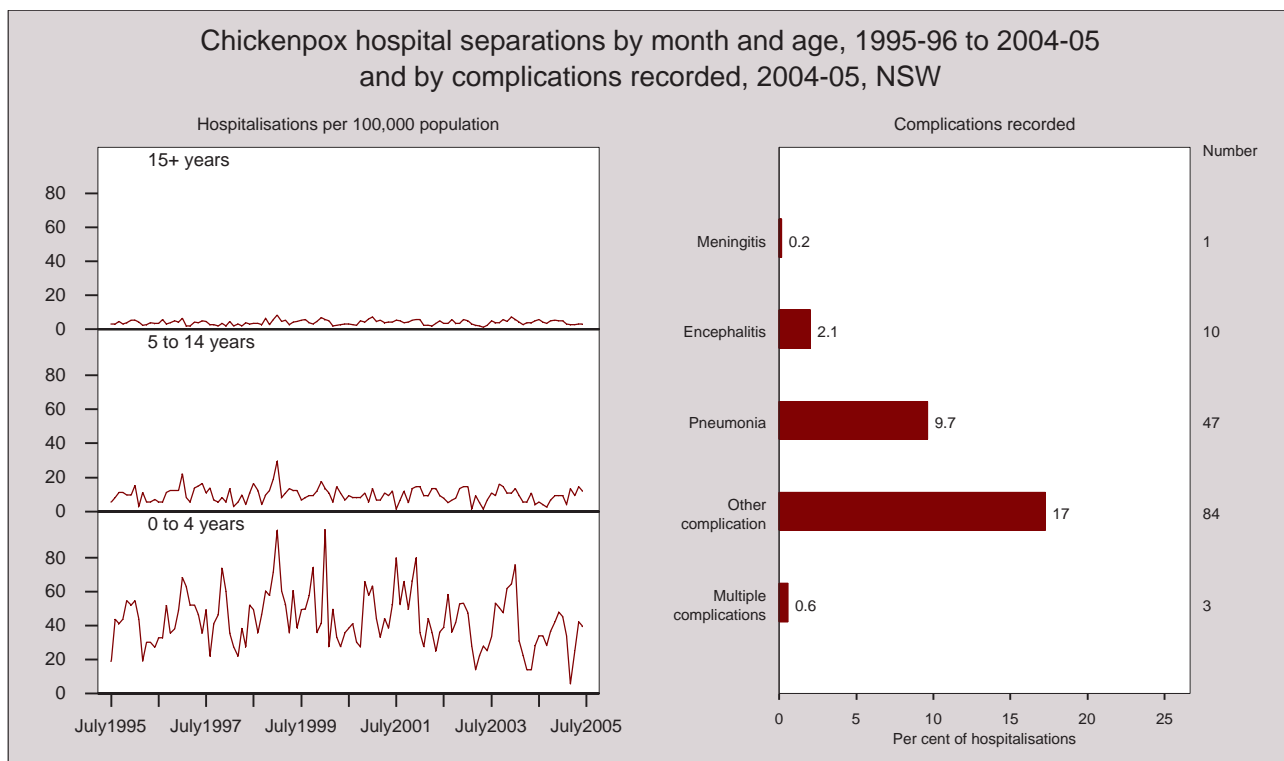
Pertussis notifications 1996 to 2005 and hospital separations 1996-97 to 2004-05 by month and age, NSW



Note: Hospital separations with pertussis as a principal or additional diagnosis were included. 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 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

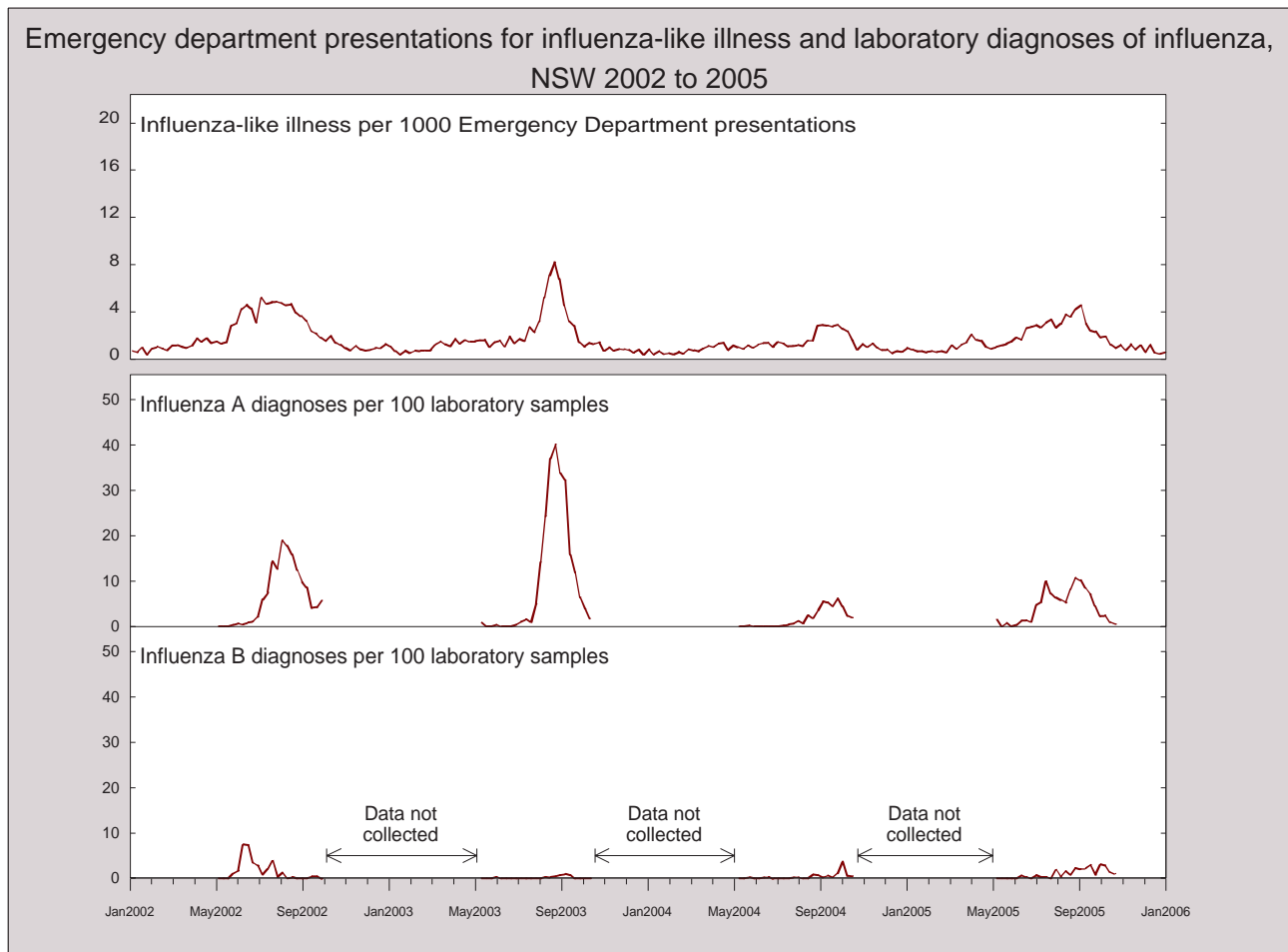
- Pertussis, or whooping cough, is caused by infection with *Bordetella pertussis* bacteria and can cause serious illness in both children and adults. Illness in children is characterised by fits of violent coughing, followed by a whooping sound as the child gasps for breath. The cough may last several months. The illness can be life-threatening, particularly in young babies. Cases of pertussis are notifiable by doctors, hospitals, laboratories, schools and child care centres in NSW.
- Vaccination for pertussis is currently recommended at two, four and six months, and four years of age, but protection wanes over time. There is now a pertussis-containing vaccine suitable for use in teenagers and adults. A booster dose of pertussis vaccine is now recommended for all 15 to 17 year olds, and this vaccine is currently being given to students in all high schools in NSW. Adults who are in contact with small children, including child care workers, health care workers and parents, should also have the pertussis vaccine.
- Epidemics of pertussis tend to occur every three or four years. A large outbreak occurred in NSW in 2005. Compared with earlier outbreaks, the 2005 outbreak was more prominent in people aged 15 years and over. In 2005, the notification rate in 0 to 4 year olds was 63 per 100,000, compared with 25 per 100,000 in 5 to 14 year olds and 97 per 100,000 in people aged 15 years and over. The notification rate in people aged 15 years or more increased from 13 to 97 per 100,000 between 1996 and 2005. Annual hospital separation rates for pertussis vary, and were 2.6 per 100,000 population in 2005.
- In 2005 in NSW, an age-adjusted rate of 84 cases of pertussis per 100,000 population was reported.



Note: Hospital separations with chickenpox as a principal or additional diagnosis were included. 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 2004-05 include an estimate of the small number of interstate hospitalisations, 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.

- Chickenpox is a common infectious disease caused by the varicella-zoster virus. Most children will be immune from infection or immunisation by the time they are 12 years old. In most children the infection is mild, causing a slight fever, and a rash that forms blisters and then scabs. In adults, the infection can be more severe, and is more likely to be complicated by pneumonia and encephalitis. The virus can re-emerge years later as shingles.
- In the 1990s, a chickenpox (varicella) vaccine was introduced into Australia for commercial use. The National Varicella Vaccination Program provides free varicella vaccine for all children at 18 months of age and for children aged 10-13 years who have not received varicella vaccine or who have not had chickenpox. The program started on 1 November 2005.
- Chickenpox is not notifiable in NSW. However, data on hospital separations are available from the NSW Inpatients Statistics Collection. Only a small proportion of all infected people are admitted to hospital, and these generally have complicated infection. In 2004-05, the age-adjusted rate of hospital separation was 6.5 per 100,000 population. The highest rate of separation was among young children aged 0 to 4 years (33.6 per 100,000), reflecting the age group most at risk of infection. Males (38.8 per 100,000) had a higher rate of hospital separation than females (28.0 per 100,000) in this age group.
- In 2004-05, 0.2% of chickenpox-related hospital separations had a single complication of meningitis recorded, 2.1% had encephalitis, and 9.5% had pneumonia, 70.2% had no complications specified.

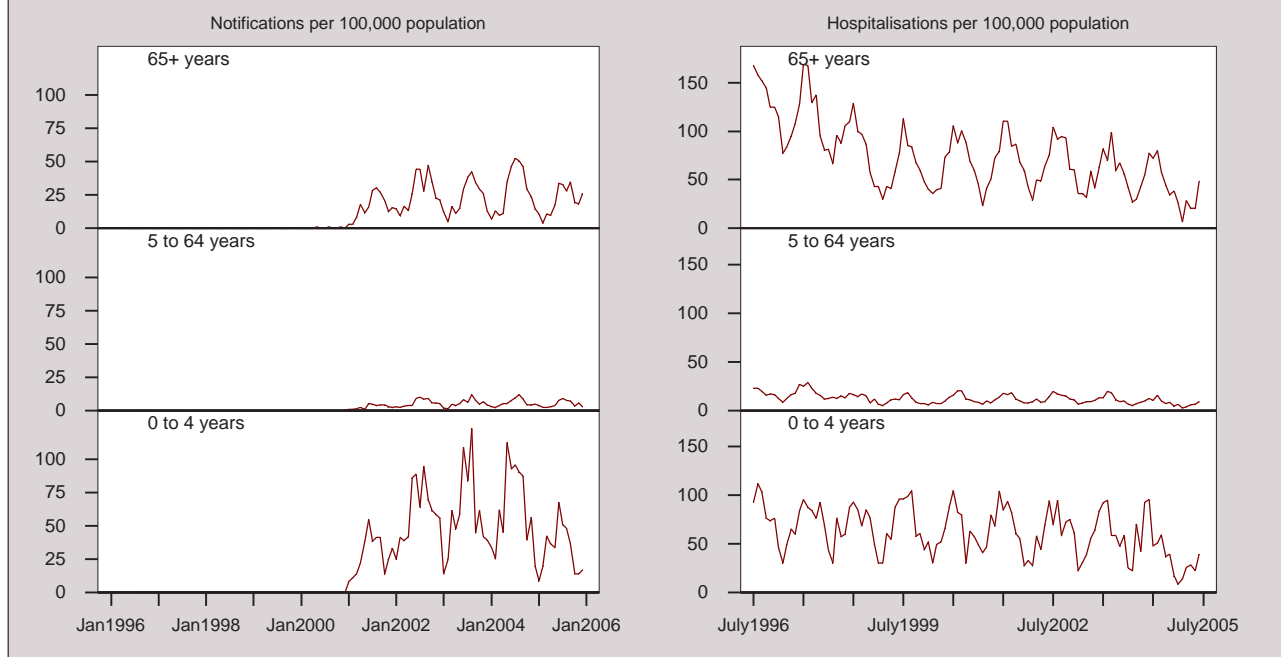


Note: Laboratory data were only collected during the influenza season May–October each year.

Source: NSW Influenza Surveillance Program, Communicable Diseases Branch, NSW Department of Health. NSW Public Health Real-Time Emergency Department Surveillance System (PHREDSS), Centre for Epidemiology and Research, NSW Department of Health.

- The influenza virus causes illness characterised by abrupt onset of fever, aches and pains, headache, sore throat, and acute cough, and can cause extreme malaise lasting several days. Influenza can be complicated by secondary bacterial pneumonia and physiological dysfunction that can lead to organ failure, especially in the elderly and in people with underlying medical conditions. Influenza epidemics occur every year in Australia. Influenza viruses mutate from time to time, potentially resulting in a substantial increase in morbidity and mortality.
- Influenza became notifiable by all laboratories in NSW in 2001. Surveillance is enhanced during the winter months when the NSW Department of Health collects and reports weekly on influenza-like-illness presentations to Emergency Departments, through the Public Health Real-time Emergency Department Surveillance System, and confirmed laboratory diagnoses of influenza virus.
- The laboratory data show that in 2005, the influenza A virus was more commonly diagnosed by laboratories (4.3 per 100 samples averaged over May to October) than the influenza B virus (1.0 per 100 samples).

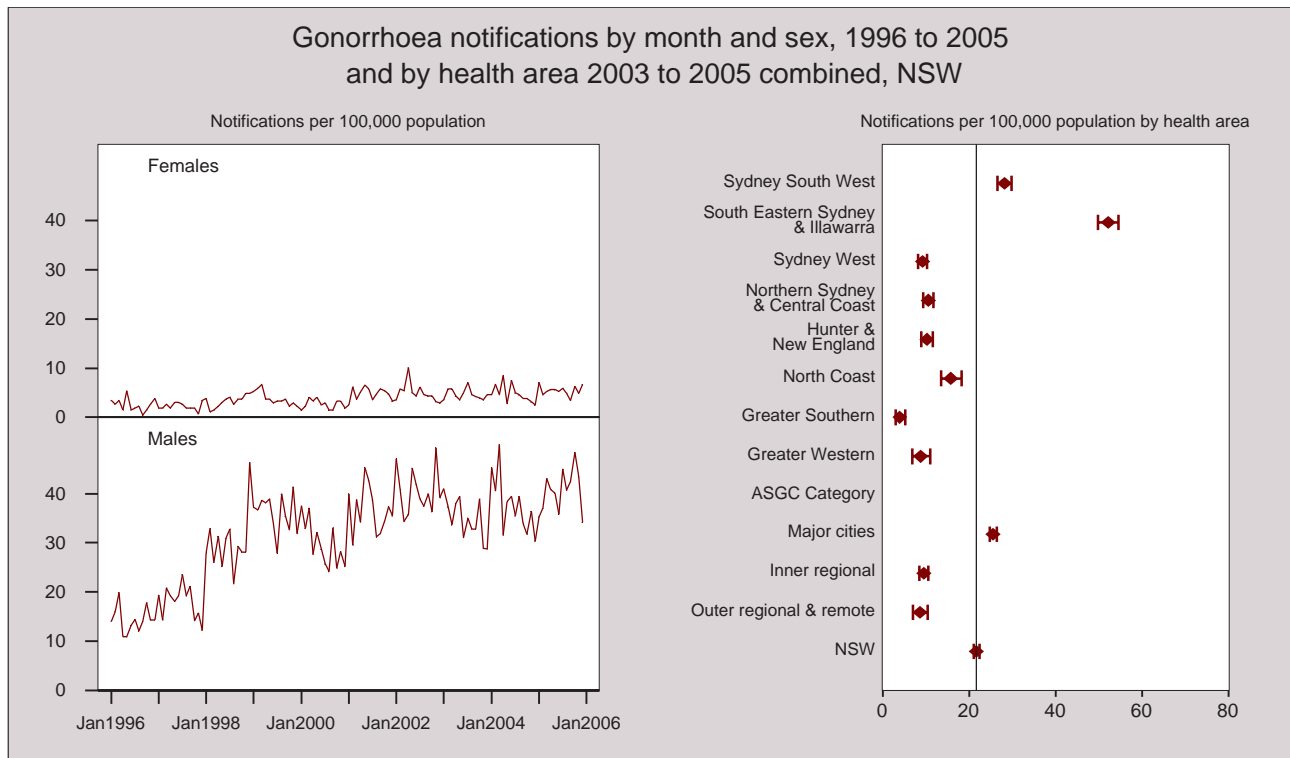
Pneumococcal disease notifications 2001 to 2005 and hospital separations 1996-97 to 2004-05 by month and age, NSW



Note: Invasive pneumococcal disease became notifiable in January 2001. Hospital admissions with a principal or additional diagnosis of pneumococcal septicaemia, pneumococcal meningitis, pneumococcal pneumonia, pneumococcal arthritis, or *streptococcus pneumoniae* organism were included. 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 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

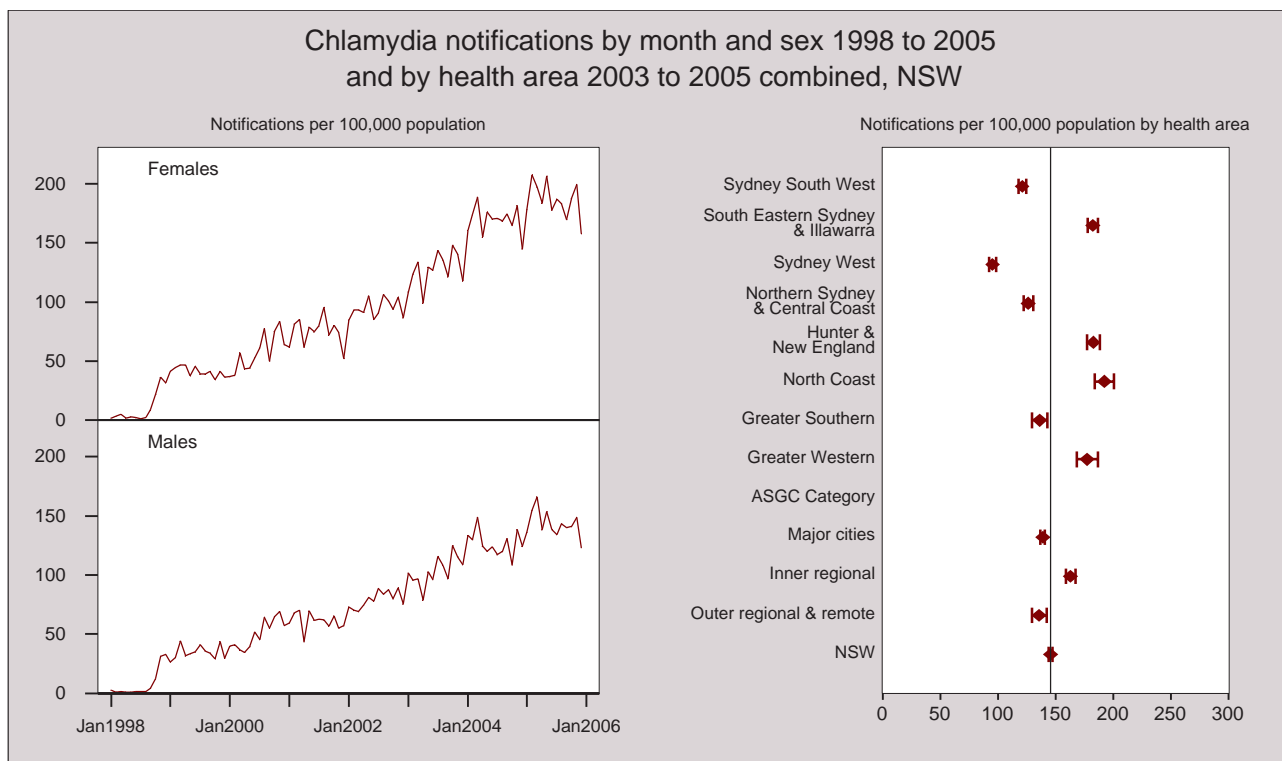
- *Streptococcus pneumoniae* (pneumococcus), a bacterial inhabitant of the upper respiratory tract, is a major cause of pneumonia, meningitis, and middle ear infection, particularly in young children, the elderly, and Aboriginal and Torres Strait Islander people.
- Invasive pneumococcal disease (infection in parts of the body not normally exposed to bacteria) became notifiable in NSW in 2001. From July 2001 the Australian Government funded a National Vaccination Program for all Aboriginal and Torres Strait Islanders children as well as for all children with certain medical conditions. In 2005, the age-adjusted notification rate was 9.2 per 100,000 population. Rates were highest among small children (32.4 per 100,000 in children aged 0 to 4 years) and the elderly (20.5 per 100,000 in people aged 65 years or more).
- The hospitalisation data shown here includes all separations with a diagnosis of pneumococcal infection and are therefore not restricted to invasive infections. Changes in coding procedures may explain the apparent decline in admissions after 1996. These data demonstrate a clear seasonal pattern with winter peaks.
- In 2004-05, the age-adjusted hospital separation rate was 15.9 per 100,000 population. The age pattern of admissions was similar to notifications for invasive infection, with the highest admission rates occurring in young children (37.0 per 100,000 in children aged 0 to 4 years) and the elderly (44.4 per 100,000 in people aged 65 years or more).



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. 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.

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

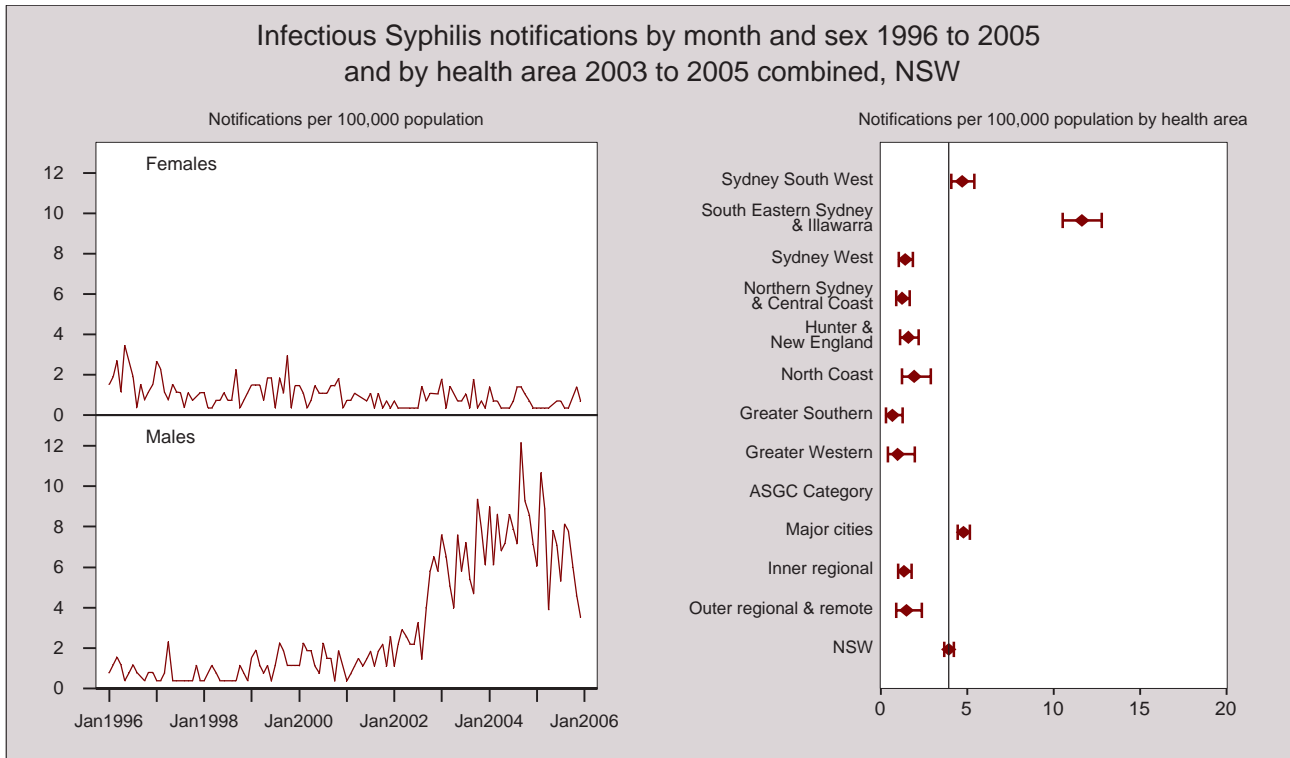
- Gonorrhoea is a sexually-transmissible infection caused by the bacterium *Neisseria gonorrhoea*. In males, infection causes a purulent (pus-containing) discharge, with difficulty in urinating. In females, it causes inflammation of the urethra or cervix, and later pelvic inflammatory disease and infertility. Throat and ano-rectal infections are also reported.
- Case reports of gonorrhoea began to increase in the second half of the 1990s and appear to have stabilised, at a relatively high level. The age-adjusted rate of notifications in 2005 was 41.2 per 100,000 in males, and 5.7 per 100,000 in females. Of the 1,562 cases notified in NSW in 2005, 89% were male.
- For the period 2003 to 2005, notification rates were highest in the South Eastern Sydney & Illawarra (age-adjusted rate 52.2 per 100,000 population) and Sydney South West (28.1 per 100,000) health areas.
- Safe-sex practices, early case identification and treatment, and contact tracing are the most effective methods for controlling gonorrhoea.



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. 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.

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

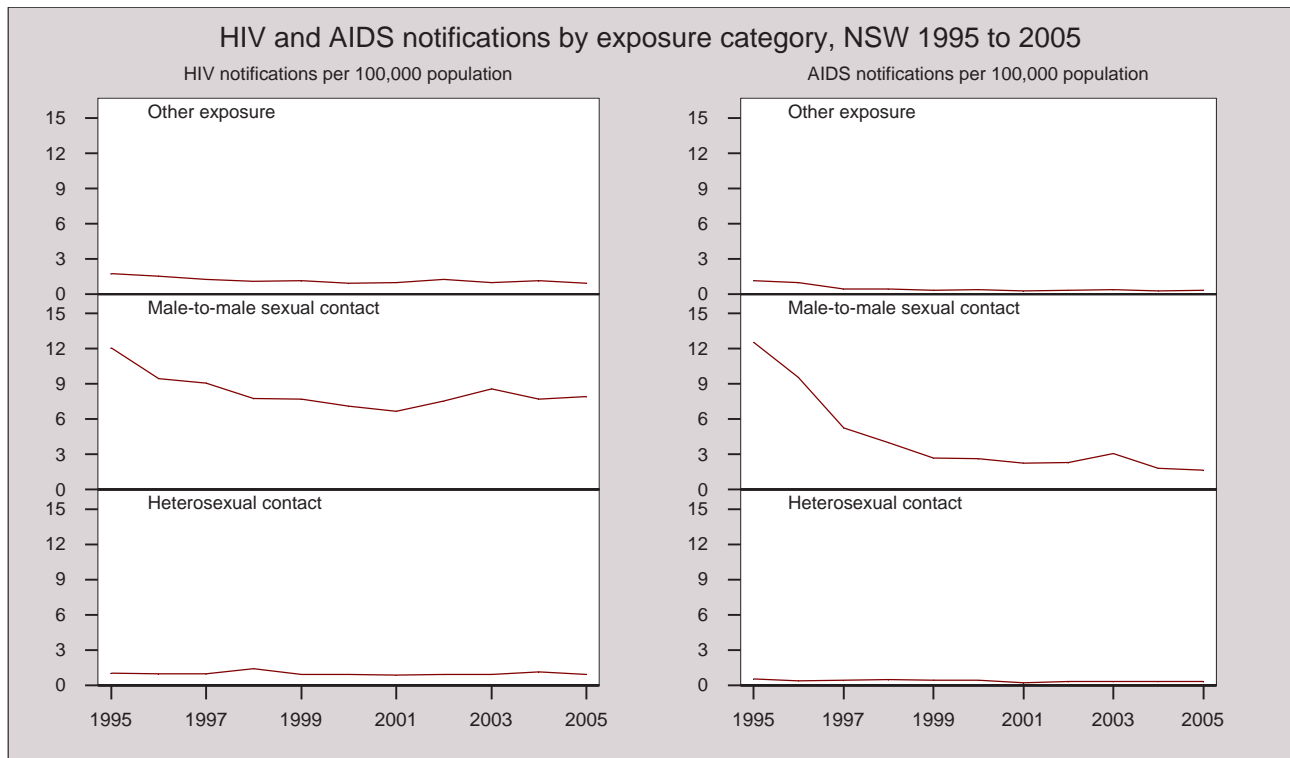
- Chlamydia is a sexually transmissible infection that can affect both men and women. It is caused by the bacterium *Chlamydia trachomatis*. Many people who are infected do not have symptoms of infection but can still transmit the bacterium. Chlamydia can affect the urethra (the urine passage), cervix (the neck of the womb), rectum and anus, throat, and eyes. Infection in women can cause cramps or pain in the lower abdomen; menstrual changes; pain when passing urine; bleeding or pain during or after sex; and a change in vaginal discharge. Infection in men can cause a discharge from the penis; pain when passing urine; and swollen and sore testicles. Infection of the anus can occur but usually goes unnoticed.
- If chlamydia is not properly treated it can cause serious complications such as arthritis, eye inflammation, pelvic inflammatory disease in women and epididymitis (swelling of the tube to the testes) in men.
- Notifications of chlamydia have risen over the last several years and chlamydia is now the most frequently notified communicable disease in NSW. The age-adjusted rate of notifications in 2005 was 144.7 per 100,000 in males, and 195.0 per 100,000 in females. There were 11,232 cases notified in NSW in 2005.
- Safe-sex practices, early case identification and treatment, and contact tracing are the most effective methods for controlling chlamydia.



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. 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.

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

- Syphilis is a serious sexually-transmissible infection caused by the organism *Treponema pallidum*. Infection causes a primary lesion (chancre) that appears about three weeks after exposure. A generalised rash and lymphadenopathy can follow. Cardiovascular or neuro-syphilis may develop many years later. Many cases have no signs or symptoms at diagnosis and are detected by serological testing.
- Syphilis can be treated with antibiotics such as penicillin.
- If untreated, pregnant woman can pass the infection onto their foetuses, resulting in congenital syphilis.
- Syphilis is notifiable by doctors, hospitals, and laboratories in NSW. Many notified cases, particularly those among older people, are likely to represent old, treated infections. For this reason, only 'infectious syphilis' (new infections) is presented in the accompanying graphs and tables.
- Rates of syphilis notifications rose sharply in 2002, predominantly in men. The age-adjusted rate for infectious syphilis in 2005 was 3.6 per 100,000 (6.7 per 100,000 in men and 0.5 per 100,000 in women).
- For the period 2003 to 2005, notification rates for infectious syphilis were highest in the South Eastern Sydney & Illawarra health area (age-adjusted rate 11.6 per 100,000 population).
- Safe sex practices, early case identification, and treatment, and contact tracing are the most effective methods for controlling syphilis.

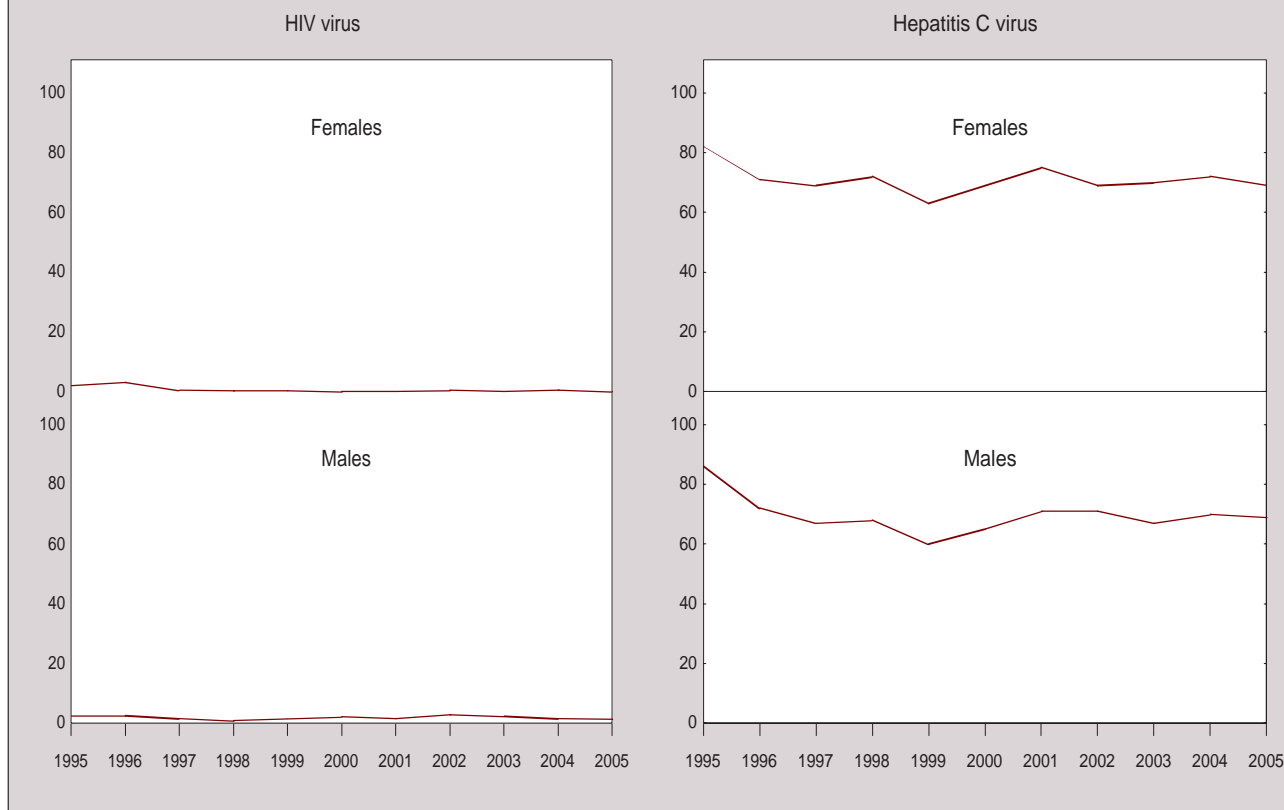


Note: HIV=human immunodeficiency virus. AIDS=acquired immune deficiency syndrome. 'Male-to-male sexual contact' includes males who report bisexual contact. 'Other' includes blood transfusion, haemophilia, injecting drug use with or without other risk factors, mother to baby transmission (vertical), and unknown. Rates were age-adjusted using the Australian population as at 30 June 2001.

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

- Human immunodeficiency virus (HIV) was first identified as the cause of acquired immunodeficiency syndrome (AIDS) in 1984. Persons infected with HIV may develop a brief non-specific illness that resembles glandular fever. Infection then becomes latent for some years. Eventually, a progressive immune system dysfunction develops (AIDS) predisposing infected people to communicable diseases, tumours, and other conditions.
- NSW Laboratories are required by law to notify cases of new confirmed diagnoses of HIV, and all doctors and hospitals are required to report cases of AIDS to the NSW Department of Health.
- HIV diagnoses declined steadily through the 1990s to 2001. However, HIV notifications increased in 2002 and 2003. There were 394 cases notified in 2002, a 16% increase on 2001, and 414 cases were notified in 2003, a 5% increase over 2002. HIV diagnoses declined slightly in 2004 and 2005.
- Among the 390 cases notified in 2005, 91% were males, 68% reported male homosexual sex as a primary risk factor, and 37.2% were aged 30 to 39 years.
- There were 97 notifications of AIDS in NSW in 2005. This was a 3% decrease from the figure for 2004, when 100 residents were diagnosed, and a 34% decrease from 2003 (146 cases).
- A substantial decline in progression to AIDS has been achieved since the mid-1990s, attributable to improvements in antiviral therapy for people with HIV infection.
- Community education, safe sex practices and early case identification and treatment all contribute to the control of HIV in the community.

HIV and hepatitis C prevalence in clients of needle and syringe programs, percent testing positive by sex, NSW 1995 to 2005

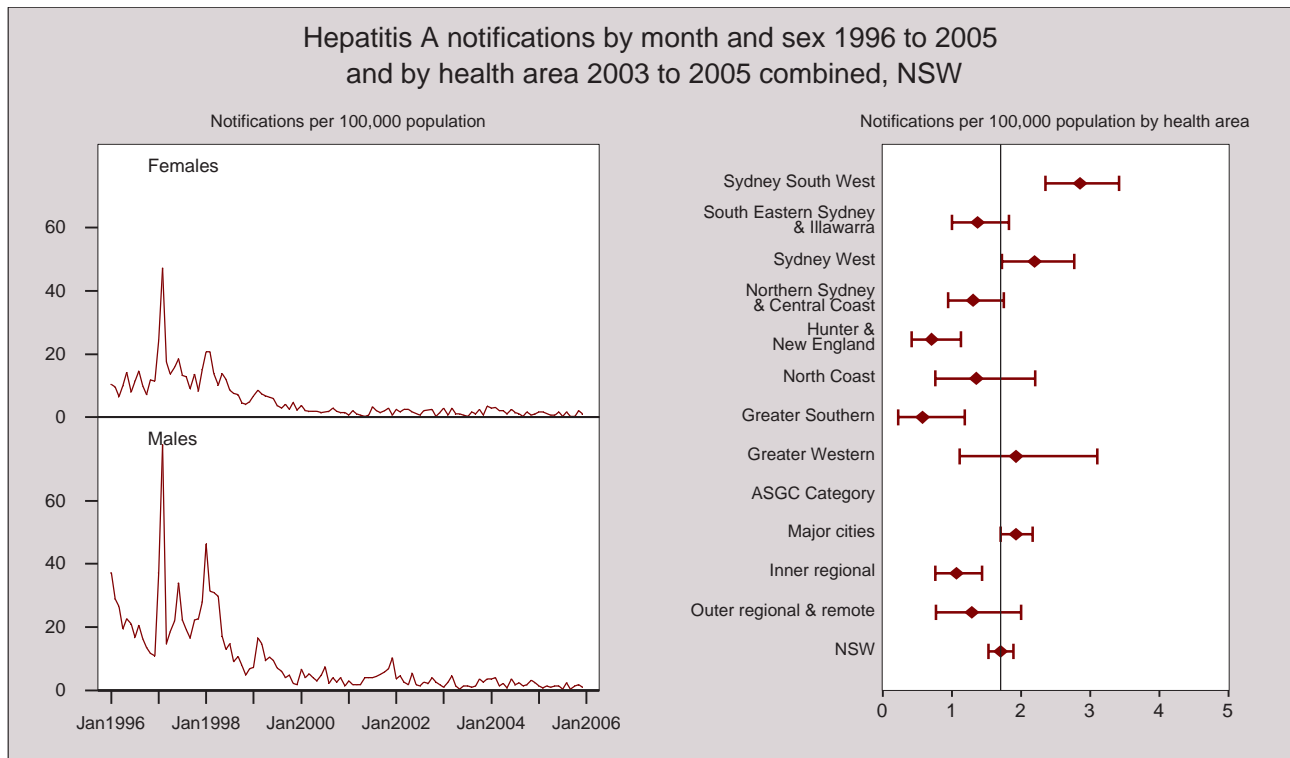


Note: HIV=Human immunodeficiency virus. Prevalence was based on the presence of antibodies to HIV or hepatitis C in a blood sample. *Prevalence of HIV, HCV and injecting and sexual behaviour among IDUs at needle and syringe programs,*

Source: National Centre in HIV Epidemiology and Clinical Research, University of New South Wales, Sydney.

- Injecting drug use is an important risk behaviour for viruses transmitted via body fluids, such as human immunodeficiency virus (HIV), hepatitis B virus and hepatitis C virus.
- From 1995, clients attending selected NSW needle and syringe programs have been asked to complete a questionnaire and provide a finger-prick blood sample for testing for HIV and hepatitis C. Response rates range from 37% to 66% and therefore data from these surveys should be interpreted with caution.
- These surveys have found that HIV prevalence among injecting drug users is low (1.4% prevalence in males and 0% in females in 2005) except in men reporting homosexual contact. The proportion of homosexual male drug users who were HIV positive ranged from 7% in 1998 to 40% in 2002 and 21% in 2005.
- The prevalence of hepatitis C among injecting drug users was 69% in 2005, compared with the highest recorded figure of 85% in 1995.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of "The Health of the People of NSW" at www.health.nsw.gov.au/public-health/chorep/

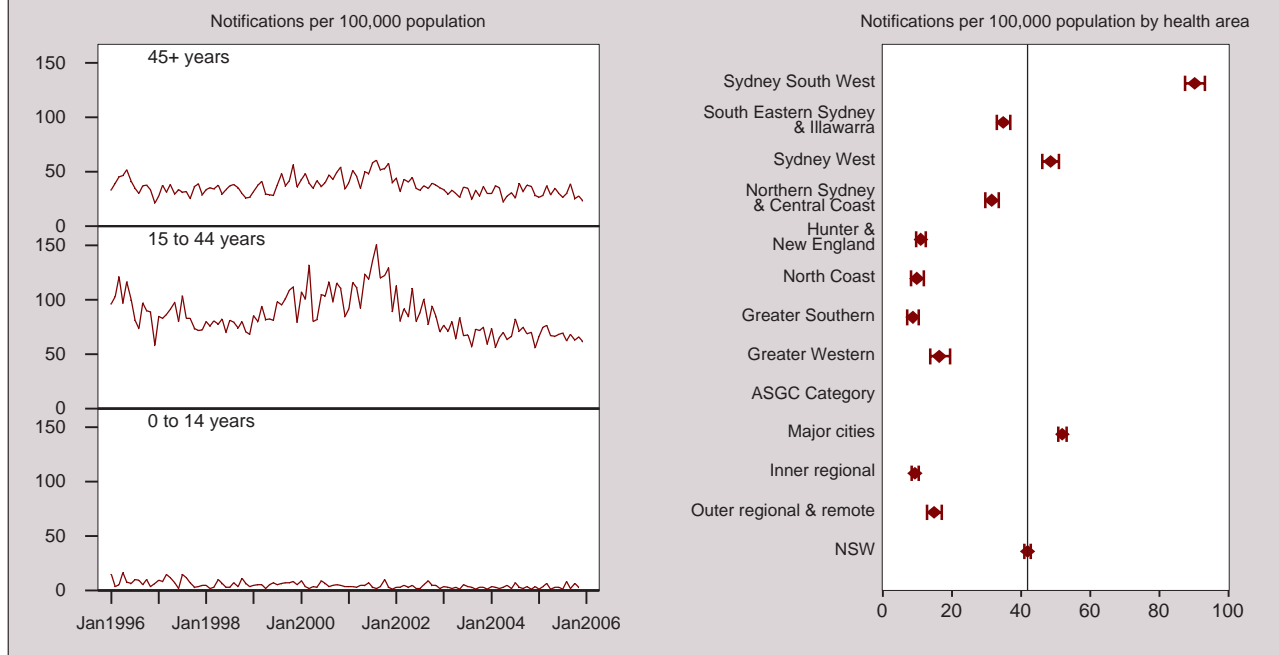


Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Statistical Local Areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

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

- Hepatitis A is caused by infection with the hepatitis A virus, which is transmitted by the faecal-oral route. Infections are usually without symptoms in small children, but commonly cause an unpleasant illness in adults, characterised by general malaise, fever, abdominal discomfort, dark urine, pale stools, and jaundice.
- In 1996 and 1998, epidemics of hepatitis A occurred in South Eastern Sydney, mainly among men who reported male-to-male sexual contact. A large epidemic in 1997 was traced to eating contaminated oysters.
- Low levels of hepatitis A have been reported since 2000 across NSW. Age-adjusted rates for 2005 were 1.2 per 100,000 population. The rate in men was consistently higher than in women.
- For the period 2003 to 2005, age-adjusted rates were highest in Sydney South West (2.9 per 100,000) and Sydney West (2.2 per 100,000) health areas.
- Strategies for preventing hepatitis A in the community include promoting and monitoring safe food production and handling practices and promoting safe sex practices.
- People with hepatitis A should be educated about hand washing and should avoid handling food, and their close contacts should have immunoglobulin administered as prophylaxis.
- A hepatitis A vaccine was licensed in Australia in the early 1990s. It is recommended by the National Health and Medical Research Council for people at increased risk, including travellers to countries where hepatitis A is endemic, certain occupational groups, men who have sex with men, injecting drug users and people with chronic liver disease.

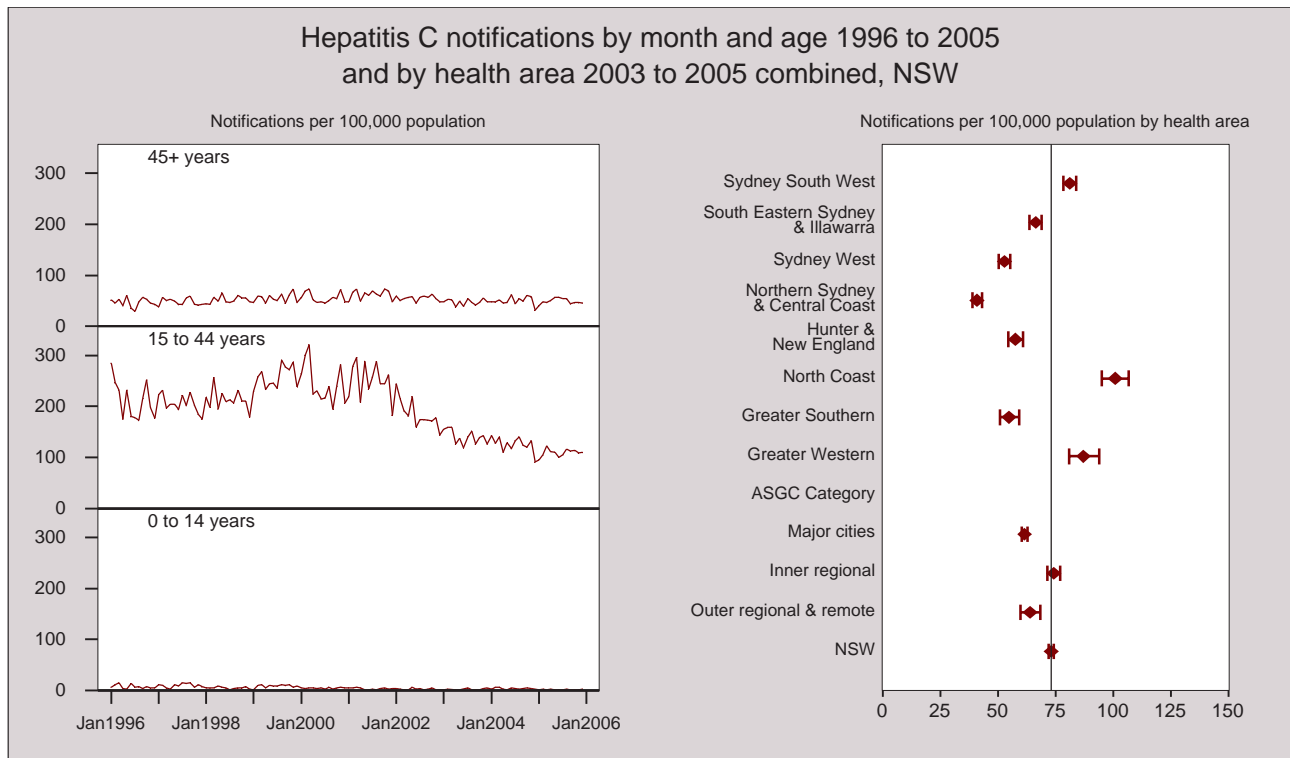
Hepatitis B notifications by month and age 1996 to 2005 and by health area 2003 to 2005 combined, NSW



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. 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.

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

- Hepatitis B is caused by infection with hepatitis B virus, and is transmitted mainly by contact with an infected person's blood or sexual fluids, or from an infected woman to her baby. Many people have no symptoms when first infected, but some experience anorexia, malaise, abdominal discomfort and jaundice. The notification data presented here represent a mix of recent and past hepatitis B infection.
- In 2005, the age-adjusted rate of hepatitis B notifications was 41.0 per 100,000 population, the lowest rate reported in the last ten years. The highest rates were in people aged between 15 and 44 years (67.2 per 100,000).
- For the period 2003 to 2005, the highest rates were in the Sydney South West (90.3 per 100,000 population) and Sydney West (48.6 per 100,000) health areas.
- Prevention of hepatitis B infection depends on immunisation of all children and immunisation of household contacts of infectious cases. Infectious people should avoid exposing others to their blood or sexual fluids. Hepatitis B immunoglobulin given with vaccine to babies born to infectious mothers is also effective.

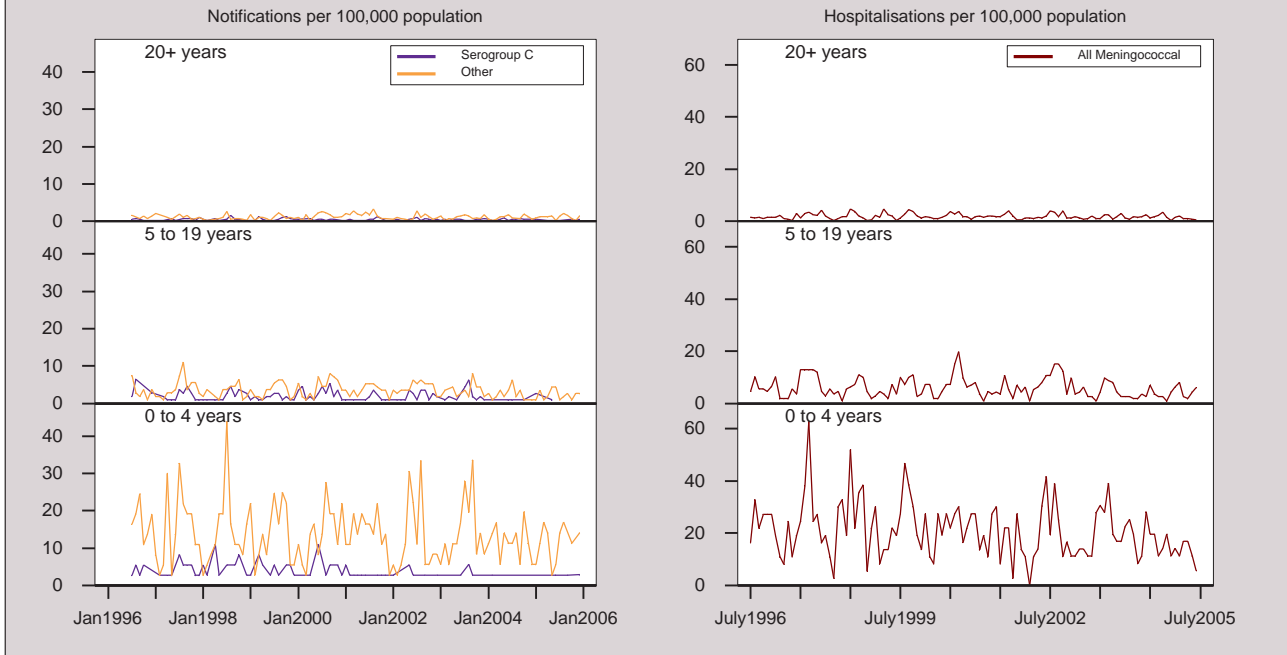


Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Statistical Local Areas were grouped according to Australian Standard Geographical Classification (ASGC) Remoteness categories on the basis of Accessibility/Remoteness Index for Australia (ARIA+ version) score.

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

- Hepatitis C is caused by infection with hepatitis C virus. The virus was first identified in 1989, and is transmitted mainly by contact with an infected person's blood. Until a screening test was introduced in 1990, many people were infected through blood transfusions. Today, most new infections are acquired through sharing contaminated needles and syringes. Most people have no symptoms when first infected, but some experience anorexia, malaise, abdominal discomfort and jaundice.
- Laboratory notifications do not distinguish between people who were newly infected, and those who were infected in the past but who still carry the virus. For these reasons, the notification data presented here represent a mix of recent and past hepatitis C infection.
- Hepatitis C notifications have been in decline since 2001. In 2005, 4,447 cases were notified (age-adjusted rate 66.3 per 100,000 population). The highest rates were among men aged 15–44 years (131.9 per 100,000).
- For the period 2003 to 2005, the highest rates were in the Sydney South West (81.2 per 100,000 population), North Coast (100.9 per 100,000) and Greater Western (87.1 per 100,000 population) health areas.
- There is no vaccine for hepatitis C. Prevention depends on educating injecting drug users to avoid sharing needles and syringes, supported by the provision of sterile needles through needle and syringe exchange programs.

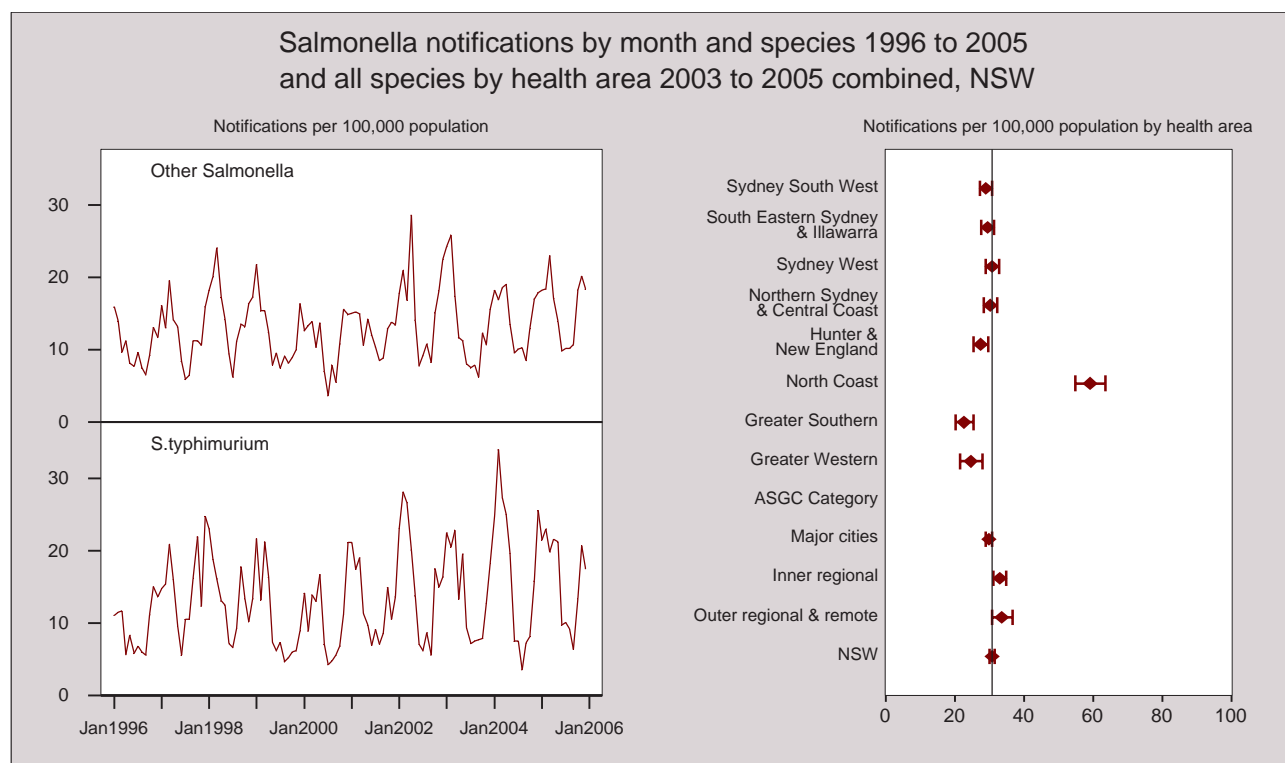
Meningococcal disease notifications 1996 to 2005 and hospital separations 1996-97 to 2004-05 by month and age, NSW



Note: Hospital separations with meningococcal infections as a principal or additional diagnosis were included. 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 2004-05 include an estimate of the small number of interstate hospitalisations, data for which were unavailable at the time of production.

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

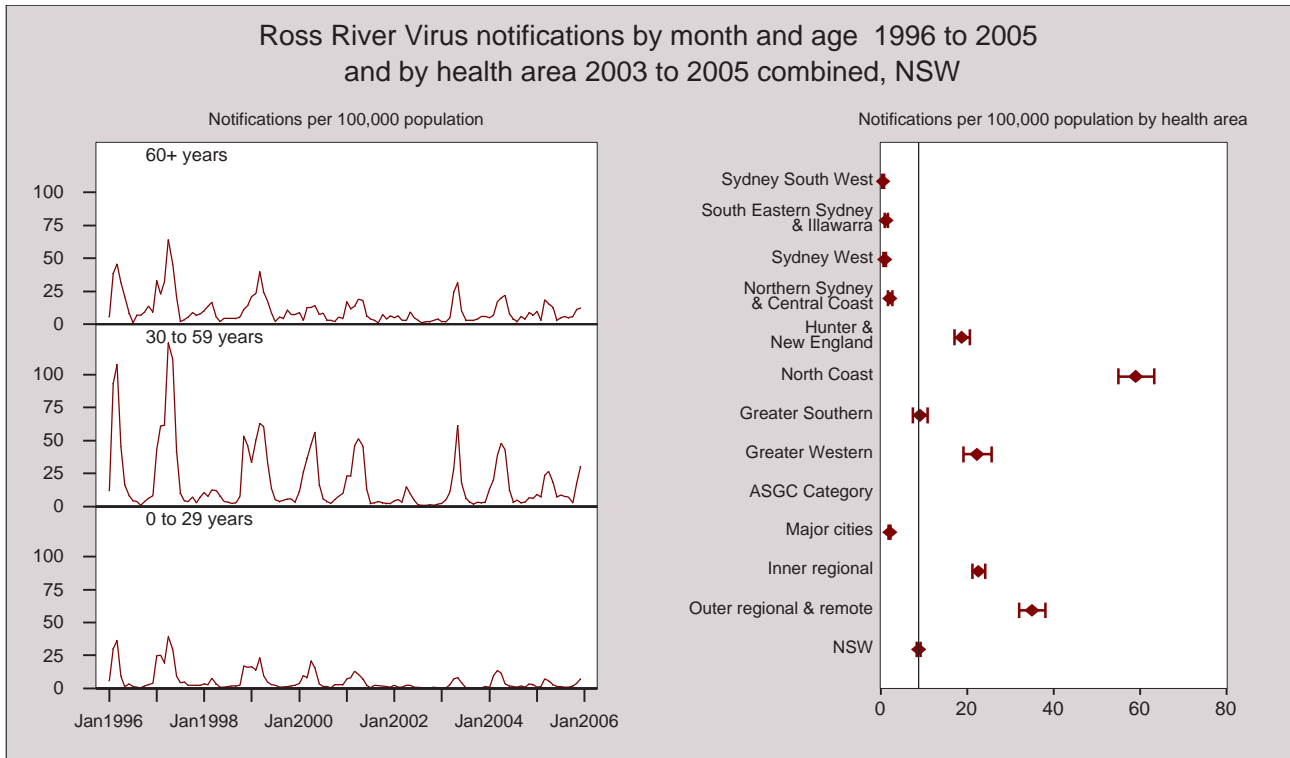
- Meningococcal disease, caused by the bacterium *Neisseria meningitidis*, is uncommon in NSW. Population studies have found that around 10% of people carry the bacteria in their throat, but invasive disease is rare. Symptoms vary according to site of infection, but may include rapid onset of high fever, headache, nausea and vomiting, neck stiffness, drowsiness, coma and a characteristic rash. Treatment involves antibiotics and supportive care.
- Meningococcal disease is notifiable by laboratories and hospitals in NSW.
- Prevention is difficult. Early recognition and treatment are vital. Notification allows close contacts to be identified and given information about signs of illness, and, in some cases, prophylactic antibiotics. A short-acting (2-3 years) vaccine is available that protects against the meningococcal group A, C, W135, and Y strains, but it is not suitable for use in children under 2 years of age. A newer long-lasting meningococcal vaccine is now available for use in all ages, but it is effective against group C only.
- In 2003, NSW Health implemented the school-based meningococcal C vaccine to all high school and primary school children between August 2003 and December 2004. Through the program, a total of 823,197 students were vaccinated, representing a coverage rate of 76%. Following completion of the catch-up program, vaccination against meningococcal C disease continues through the routine vaccination of infants at 12 months of age.
- Since the completion of the program, there has been a notable reduction in the proportion of meningococcal disease cases caused by serogroup C, from 26% of the yearly total in 2000 to 10% in 2005. Most of this decline has occurred in the 1 to 19 year-old age group targeted by the vaccination program.
- In 2005 there were 140 notifications of invasive meningococcal disease in NSW, and 75 hospitalisations. The highest rate of disease was in children aged 0 to 4 years. Thirteen percent of all meningococcal disease notifications were group C.



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. 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.

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

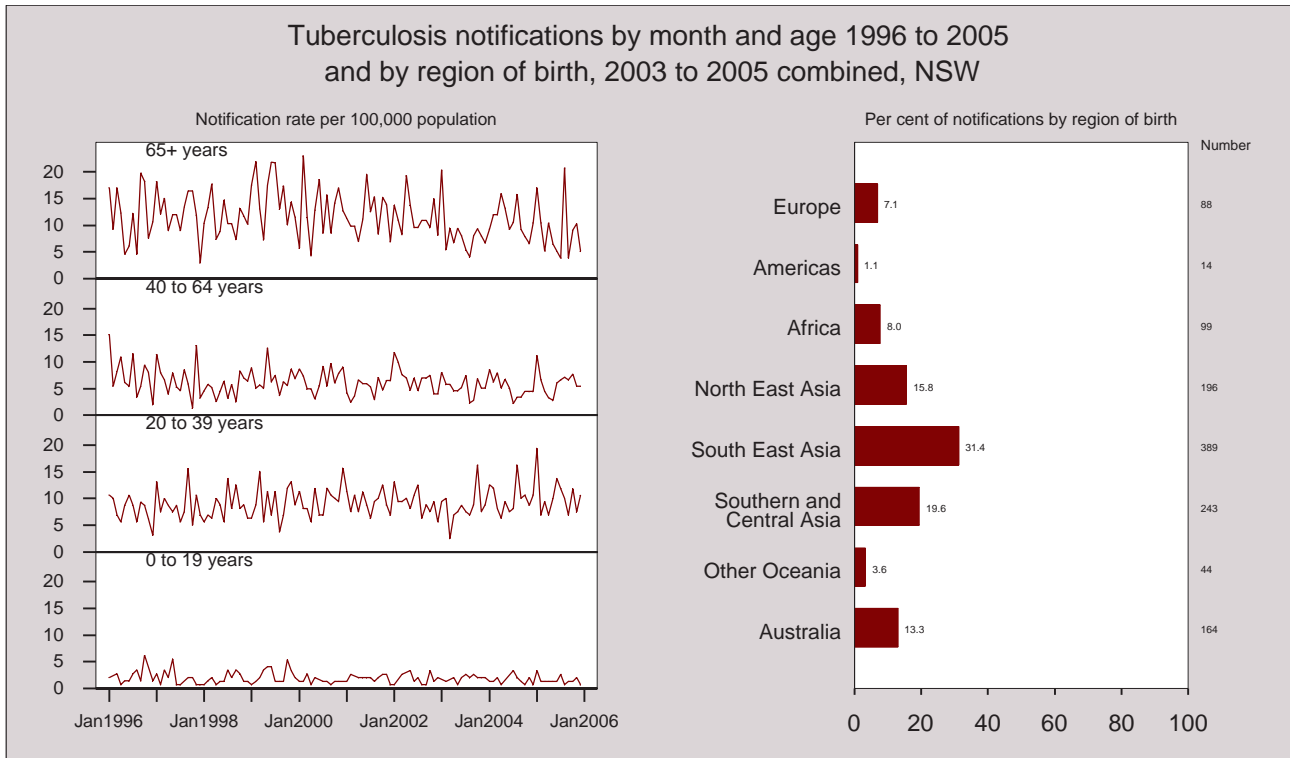
- Numerous species of *Salmonella* bacteria cause disease in both humans and animals. Salmonellosis is mainly a food-borne disease with symptoms of abdominal pain, fever, headache, diarrhoea, nausea and sometimes vomiting. Infants and young children are the most vulnerable to infection. Typhoid, a more serious form of salmonellosis, is uncommon in Australia and is not included in these data. Paratyphoid, however, is included.
- Annual seasonal peaks of salmonellosis are notable in the summer months. Notification rates in the last 10 years were highest in 2005 (age-adjusted rate 32.5 per 100,000 population). For the period 2003 to 2005, the highest rates were seen among residents in the North Coast Health Area (59.1 per 100,000 per year). The most common species notified in NSW was *Salmonella typhimurium*.
- Only a small proportion of people with *Salmonella* infections see a doctor and have a stool test, so the true rate of infection is likely to be much higher than these data suggest.



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. 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.

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

- In NSW, the most common notifiable arboviral infections in humans are caused by the Ross River (RRv) and Barmah Forest viruses (BFv). Both are transmitted by mosquitoes and occur in many areas of the state. Outbreaks of RRv and BFv occur quite regularly along the coastal region of northern NSW.
- Notification patterns for RRv and BFv are seasonal, with peak numbers typically occurring around May each year.
- The age-adjusted rate of RRv notifications for 2005 was 8.5 per 100,000 population and for BFv 6.5 per 100,000.
- Notifications of RRv and BFv are most common in rural NSW.
- No vaccine has been developed for RRv or BFv infections. Prevention depends on the reduction of exposure to mosquitoes through environmental control and personal protection.



Note: Rates were age-adjusted using the Australian population as at 30 June 2001. 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.

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

- Tuberculosis is caused by infection with the bacterium *Mycobacterium tuberculosis*. Tuberculosis rates have remained stable over the past decade, with 444 cases (age-adjusted rate 6.5 per 100,000 population) notified in 2005. Most cases occurring among people born in South East Asia, Southern and Central Asia and North East Asia. Together people born in these countries account for 67% of all NSW tuberculosis cases in the period 2003 to 2005. More information on tuberculosis notifications is included in the country of birth chapter.
- Tuberculosis notifications in NSW typically display a bimodal age distribution, with cases in the 20 to 39 year age group predominantly in overseas born, and cases in the 65 years and over age group a mixture of Australian born and overseas born.

For more information

Australian Divisions of General Practice at www.adgp.com.au, includes information about the Alliance of NSW Divisions.

EpiReview: HIV infection and AIDS in NSW 1981–1999. *N S W Public Health Bull* 2000; 11(12): 217–219.

EpiReview: Hepatitis A in New South Wales 1991–2000. *N S W Public Health Bull* 2001; 12(9): 255–258.

EpiReview: Hepatitis C in NSW 1991–1999. *N S W Public Health Bull* 2001; 12(9): 139–141.

EpiReview: Measles in NSW 1991–2000. *N S W Public Health Bull* 2001; 12(7): 200–204.

EpiReview: Meningococcal disease in NSW 1991–1999. *N S W Public Health Bull* 2000; 11(7): 128–130.

EpiReview: Notifiable sexually transmitted diseases, NSW 1991–1999. *N S W Public Health Bull* 2001; 12(1): 16–18.

Immunisation coverage data are published by the Australian Childhood Immunisation Register (ACIR), available at: www.medicareaustralia.gov.au/providers/health_statistics/statistical_reporting/acir.htm. Accessed 27 October, 2004.

Microbiological Diagnostic Unit. *National Enteric Pathogens Surveillance Scheme (NEPSS) human annual report 1998*. Parkville: University of Melbourne, 1999.

NSW Arbovirus Surveillance and Vector Monitoring Program at www.arbovirus.health.nsw.gov.au.

NSW Department of Health. *Notification of diseases under the Public Health Act 1991*. Sydney: NSW Department of Health, 1998.

NSW Health Infectious Diseases web page. Available at: www.health.nsw.gov.au/infect/diseases.html.

National Centre in HIV Epidemiology and Clinical Research. *Australian NSP Survey, National Data Report 2001–2005: Prevalence of HIV, HCV and injecting and sexual behaviour among IDUs at Needle and Syringe programs*. Sydney: National Centre in HIV Epidemiology and Clinical Research, The University of New South Wales, 2006. Available at: www.med.unsw.edu.au/nchecr/Downloads/NSP_Survey_complete_reduced.pdf.

National Centre in HIV Epidemiology and Clinical Research. *HIV-AIDS, viral hepatitis and sexually transmissible infections in Australia. Annual surveillance report 2001*. Sydney: National Centre in HIV Epidemiology and Clinical Research, 2001. Available at www.med.unsw.edu.au/nchecr/.

National Centre in HIV Epidemiology and Clinical Research. *HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia. Annual Surveillance Report 2006*. Sydney: National Centre in HIV Epidemiology and Clinical Research, The University of New South Wales; Canberra: Australian Institute of Health and Welfare, 2006. Available at www.med.unsw.edu.au/nchecr/Downloads/06_ansurvrp.pdf.

National Health and Medical Research Council. *The Australian Immunisation Handbook. 8th edition*. Canberra: NHMRC, 2003.

National communicable disease data are published in *Communicable Disease Intelligence*. Available at [http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Communicable+Diseases+Intelligence+\(CDI\)-1](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Communicable+Diseases+Intelligence+(CDI)-1).

The *NSW Public Health Bulletin* includes monthly reports of notifiable communicable diseases. Available at www.health.nsw.gov.au/public-health/phb/phb.html.

Appendices

- Methods
- Disease and procedure codes
- Glossary
- List of local government areas by health area
- List of local government areas by ARIA+ score
- Index

Methods

1. Introduction

2. Data sets

2.1 Health Outcomes Information Statistical Toolkit

2.2 Population data

This report brings together data from a wide range of sources. It focuses on trends, and hence uses mainly data from routine collections rather than ad hoc studies. This chapter gives a brief description of the major data sources used and the statistical methods employed in their analysis and interpretation. SAS for Windows Versions 8.02 and 9.1 (SAS, 2005) were used for all data analysis and for production of data tables and charts.

The Health Outcomes Information Statistical Toolkit (HOIST) is a SAS-based 'data warehouse' operated by the Centre for Epidemiology and Research of the NSW Department of Health. It brings together most of the data collections often used in population health surveillance in NSW, and contains all the available historical data for each collection. HOIST data are in one format - SAS datasets - and HOIST code values are, as far as possible, consistent across time and among datasets. HOIST provides a common data analysis environment across the public health network in NSW.

Population estimates as at 30 June were used for calendar years, while estimates as at 30 December were used for financial years. Age- and sex-specific estimated resident populations (ERPs) for NSW Statistical Local Areas (SLAs) at 30 June were obtained from the Australian Bureau of Statistics (ABS) for use with calendar year data. A cubic spline interpolation between mid-year ERPs was used to derive 30 December age- and sex-specific population estimates for use with financial year data. Populations of NSW area health services were derived by aggregating the appropriate SLA-level ERPs, except in the case of Sydney South West and South Eastern & Illawarra Area Health Services, the border between which transects 2 SLAs. ERPs for these SLAs were apportioned according to the proportions derived from the usual resident counts from the 2001 Census at the collection district level.

The 2001 Australian mid-year ERP, shown in Table 1, was used as the standard population for age-adjustment.

Country-of-birth (COB)-specific populations used for country of birth pages were derived from annual age-, sex- and COB-specific ERPs for all of Australia supplied by the Australian Bureau of Statistics. Equivalent populations for NSW were derived from these national populations by estimating the proportion of immigrants in each age, sex, and COB stratum who reside in NSW, based on cubic splines fitted to age-, sex-, COB- and specific State-Territory counts from the 1981, 1986, 1991, 1996 and 2001 ABS Censuses of Population and Housing, and then applying these proportions to the national age-, sex-, and COB-specific ERPs for each year.

Table 1 Australian standard population (30 June 2001)

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

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

2.3 Australian Bureau of Statistics Mortality Collection

This was done to ensure that the COB-specific populations for NSW were based on estimated residential populations; and that the non-linear, and often dramatic, changes in immigrant populations in inter-Censal periods were accurately reflected in the NSW population estimates used.

For this report, ABS mortality data for deaths of NSW residents registered anywhere in Australia were accessed via HOIST. Deaths are presented by calendar year of death.

All deaths for which a coronial inquiry is not required must be certified by a registered medical practitioner as to cause and date; the certificate is registered by the registrar of births, deaths and marriages in each state or territory. Most deaths due to accidental causes, deaths occurring under suspicious circumstances (in which foul play cannot be excluded), deaths occurring shortly after anaesthesia or surgery, and deaths of persons who had not been seen by a medical practitioner in the year preceding their death, automatically become coronial cases and are registered by a coroner at the conclusion of an inquiry into the circumstances of the death.

Most non-coronial deaths are registered with the relevant registrar of births, deaths and marriages within 4 weeks of the date of death. However, coronial inquiries can take months, and in some cases years, to conclude. Mortality data are supplied by the ABS by year of registration. Therefore, deaths occurring in the last few weeks of each calendar year (or the last few months for coronial cases) may not be registered until January in the subsequent year. Delays in registering deaths tend to be greater for some causes of death, and for people resident in rural areas.

At the time of preparation of this report, the most recent mortality data available from ABS included only those deaths registered in 2004. The 2004 numbers were adjusted to include an estimate of the number of deaths due to that cause that occurred in 2004 but were not registered until 2005. A pro rata adjustment was made, based on registrations for the preceding three years (2001 to 2003). The first step was to determine the proportion of total deaths in the preceding three years which were not registered until the following year. That proportion was used to multiply the number of deaths registered in 2004, to obtain the estimate of the number of deaths still to be registered. The estimates were calculated for each age-sex stratum. Where deaths were further categorised, for example by geographical place of residence or country of birth, the imputation procedure was carried out separately for each category.

For deaths registered during or before 1996, a single code for the principal underlying cause of death (based on the information recorded on the death certificate by a medical practitioner or coroner) was selected for each death. For deaths registered since 1997, the ABS has used computer-assisted cause-of-death coding that yields up to 20 contributing causes of death in addition to the principal underlying cause of death.

From 1999 onwards, causes of death have been classified according to the 10th revision of the International Classification of Diseases (ICD-10, World Health Organization, 1992). Deaths registered before 1999 were coded according to the 9th revision of the International Classification of Diseases (ICD-9, World Health Organization, 1977).

The ICD-10 and ICD-9 codes used for each indicator are included in the disease and procedure codes appendix.

2.4 NSW Inpatient Statistics Collection

The NSW Inpatient Statistics Collection (ISC) or Admitted Patient Data Collection is a census of all services for admitted patients provided by public hospitals, public psychiatric hospitals, public multi-purpose services, private hospitals and private day procedure centres in NSW. The ISC is a financial year collection from 1 July through to 30 June of the following year. The information it contains is provided by patients, health service providers, and the hospital's administration. The information reported includes patient demographics, source of referral to the service, service referred to on separation, diagnoses, procedures, and external causes.

The ISC includes data on hospital admissions of NSW residents which occurred in hospitals interstate. The only exception to this is that data from interstate hospitals for the year 2004-2005 are not yet available. This may affect analyses involving uncommon diagnoses or procedures, particularly in Health Area analyses, and has a greater effect on rates for areas closer to an interstate boundary. The number of interstate admissions has been estimated for 2004-05, based on admissions for the preceding three years (2001-02 to 2003-04). The first step was to determine the proportion of total admissions for NSW residents in the preceding three years which were at interstate hospitals. That proportion was used to multiply the number of admissions at hospitals in NSW, to obtain the estimate of the number of admissions expected to have occurred at interstate hospitals. The estimates were calculated for each age-sex stratum. Where hospitalisations were further categorised, for example by geographical place of residence or country of birth, this imputation procedure was carried out separately for each category, thus accounting for the uneven distribution of interstate hospital admissions.

For this report, the ISC was accessed via HOIST. From 1 July 1998, ISC data on HOIST have been for episodes of care in hospital. Episodes of care end with the discharge, transfer, or death of a patient. A new episode of care may also start when the service category for an admitted patient is altered, as a result of a change in the on-going clinical care requirements for that patient during the one episode of accommodation in a single facility. ISC data on HOIST up to 30 June 1998 were for periods of stay in hospital. A period of stay in hospital ends with the discharge, transfer, or death of a patient, and may consist of multiple episodes of care. The change from "period of stay" to "episode of care" causes a small increase in the apparent number of admissions.

From 1 July 1998, the reason for a hospital admission has been coded at the time of separation (discharge, transfer or death), according to the 10th revision of the International Classification of Diseases, Australian Modification ICD-10-AM (National Centre for Classification in Health, 2000). Prior to this, it was coded according to the 9th revision of the International Classification of Diseases, Clinical Modification (ICD-9-CM), using the Australian version (National Coding Centre, 1996) from July 1995 and the US version prior to that.

From 1 July 1998, procedures carried out during a patient's stay have been coded according to the MBS-Extended Procedure Classification, published as Volume 3 and Volume 4 of the 10th revision of the International Classification of Diseases, Australian Modification ICD-10-AM (National Centre for Classification in Health, 2002). Prior to this, procedures were coded according to the 9th revision of the International Classification of Diseases, Clinical Modification (ICD-9-CM), using the Australian version (National Coding Centre, 1996) from July 1995 and the US version prior to that.

The numbers of diagnosis and procedure codes that may be recorded, at the time of separation, have varied over time, and are currently as follows:

- principal diagnosis (the principal reason for admission);
- up to 55 other diagnoses;
- up to 50 procedures and procedure blocks;
- up to eight external cause codes for injury and poisoning.
- up to three codes for place of occurrence injury or poisoning.
- up to three codes for activity at time of injury or poisoning.

Extensive use of mapping tables between ICD-9-CM and ICD-10-AM disease codes, produced by the National Centre for Classification in Health, was made to obtain the most appropriate match for individual codes between the 2 classification systems. The ICD-10-AM and ICD-9-CM codes used for each indicator are included in the disease and procedure codes appendix.

2.5 NSW Midwives Data Collection

The New South Wales Midwives Data Collection (MDC) is a population-based collection covering all births in NSW public and private hospitals, as well as home births. It does not receive notifications of interstate births where the mother is resident in NSW.

The data collection has operated continuously since 1990. It encompasses all livebirths and stillbirths of at least 20 weeks gestation or at least 400 grams birthweight. The MDC relies on the attending midwife to complete a notification form when a birth occurs. The form includes demographic items, and items on maternal health, the pregnancy, labour, delivery, and perinatal outcomes. It has undergone 3 revisions over the years. The Midwives Data Collection database is compiled in the Information Management and Support Branch of the NSW Department of Health.

For this report, the MDC was accessed via HOIST. Data are presented for calendar years. The key indicator of perinatal deaths in the report uses data derived from the Australian Bureau of Statistics. Perinatal deaths among infants of at least 22 weeks gestation or 500 grams birthweight are reviewed by the NSW Maternal and Perinatal Committee. Both stillbirths and neonatal deaths are classified according to an obstetric cause-specific classification, Perinatal Society of Australia and New Zealand Perinatal Death Classification (PSANZ-PDC). Neonatal deaths are also classified by neonatal cause according to the Perinatal Society of Australia and New Zealand Neonatal Death Classification (PSANZ-NDC).

2.6 NSW Birth Defects Register

The NSW Birth Defects Register (BDR) was established in 1990. Legislation to mandate the notification of birth defects recognised at up to 1 year of age, has been in effect since 1 January 1998. Prior to that, the BDR operated on a voluntary reporting basis.

For this report, the BDR was accessed via HOIST. Data are presented for calendar years.

2.7 NSW Health Surveys 1997 and 1998

In 1997 and 1998, the NSW Department of Health, in conjunction with the 17 area health services at that time, conducted 2 population health surveys using computer-assisted telephone interviews (CATI) (Williamson et al., 2001). The main aims of the surveys were to provide local and statewide information to inform health service planning and policy development. The survey questions focused on the 6 NSW health priority areas: cardiovascular disease, cancer, mental health, injury, diabetes, and asthma.

The target sample for each year comprised 1000 NSW residents aged 16

years and over from each of the 17 NSW Health Areas at that time (total sample 17,000 people each year). A stratified two-stage cluster sample design was used, with simple random sampling of all potentially active telephone numbers within each NSW health area, and simple random sampling of one household resident for interview.

Interviews were conducted in 6 languages (English, Arabic, Chinese, Greek, Italian, and Vietnamese) by trained interviewers at the NSW Department of Health's CATI facility.

The total sample size was 35,027 respondents (17,531 in 1997; 17,496 in 1998). The overall response rate for both surveys was 70%.

For this report, data from the NSW Health Surveys 1997 and 1998 were accessed via HOIST.

2.8 NSW Child Health Survey 2001

In 2001, the NSW Department of Health, in conjunction with the 17 area health services at that time, conducted a survey of the health of children in NSW, using CATI.

Development of the survey instrument was overseen by a technical reference group. The final questionnaire covered topics including use of health services, nutrition, food security, asthma, oral health, parent support services, social support, sun protection, sight, hearing, speech, family functioning, social capital, smoking, sports and other organised activities, and physical activity.

The target sample comprised at least 500 NSW children aged 0-12 years from each of the then 17 NSW health areas. Households were sampled using a method similar to the 1998 NSW Health Survey (Williamson et al., 2001). One eligible child was selected from each household, using random numbers generated by the CATI system. A parent or carer of the selected child was interviewed.

Interviews were conducted in 4 languages (English, Arabic, Chinese and Vietnamese) by trained interviewers at the NSW Department of Health's CATI facility. A total of 9933 interviews were completed, while 1770 households or selected respondents refused to participate. This yielded a response rate of 84.9%.

For this report, data from the NSW Child Health Survey 2001 were accessed via HOIST.

2.9 NSW Population Health Survey

From 2002, the NSW Department of Health, in conjunction with the area health services, has conducted the NSW Population Health Survey, an ongoing survey of the health of people in NSW using computer-assisted telephone interviewing (CATI). The main aims of the New South Wales Population Health Survey are to provide detailed information on the health of the people of NSW, and to support the planning, implementation, and evaluation of health services and programs in NSW.

The target population for the NSW Population Health Survey is all NSW residents living in households with private telephones. The target sample comprised approximately 1,200 people in each area health service (total sample of 12,000). When households were contacted, one person was selected, using random numbers generated by the CATI system.

Interviews were carried out continuously between February and December each year. Trained interviewers at the NSW Health Survey facility carried out interviews. When a child under the age of 16 years was selected, the main carer, known as the 'proxy respondent', was interviewed on behalf of the child.

Most respondents were interviewed in English. The remaining interviews were conducted in Arabic, Chinese, Greek, Italian, and Vietnamese.

In 2005, 15,442 interviews were conducted, with 12,622 with people aged 16 years or over. The overall response rate was 67.6 per cent (completed interviews divided by completed interviews and refusals).

For this report, data from the NSW Health Survey were accessed via HOIST.

2.10 ABS National Health Survey

The National Health Surveys (NHS) conducted by the ABS collect information on illness and injury, health care use, and health risk factors. Data from the 1989-90, 1995 and 2001 National Health Surveys are presented in this report. Data were accessed via HOIST, were obtained as special tabulations from the ABS, or were from published reports.

2.11 School surveys

The NSW Department of Health and The Cancer Council NSW have carried out surveys of the health of secondary school students since 1984 as part of the triennial Australian School Students' Alcohol and Drug (ASSAD) survey.

In its earlier years, the ASSAD Survey questions targeted drug and alcohol use. The topics covered by the Survey have gradually extended to include other issues that are important to the health of adolescents. In 2005 the NSW School Student Health Behaviours Survey included questions on physical activity and injuries, sun protection behaviours, eating behaviours, and mental health and wellbeing, in addition to smoking, alcohol and other drug use.

The information presented in this report may differ from information presented in previous Reports of the Chief Health Officer, which used a variety of published reports to collate information on trends. These published reports used data obtained from different surveys, which were then analysed using a variety of methods. For this report all recent and historical ASSAD/NSW School Student Health Behaviours Survey data were available for analysis for the first time. ASSAD/NSW School Student Health Behaviours Survey data has been collected in a consistent way over time and is the most reliable current source of information on trends in secondary school students' health.

2.12 NSW Central Cancer Registry data

The NSW Central Cancer Registry was established by the NSW Department of Health in 1971 under the NSW Public Health Act. It was administered by the NSW Cancer Council, under contract, from 1986 until June 2004. The Registry has been managed by the Cancer Institute NSW since June 2004.

Notification of all newly-diagnosed cases of, and deaths due to, malignant neoplasm by hospitals and the Registrar of Births, Deaths and Marriages has been compulsory since the registry began. In 1991 the Act was amended to make notification by pathology laboratories compulsory as well. Notification has traditionally been via a printed notification form, although in recent years electronic notification by hospitals (but not pathology laboratories) has been introduced.

A case of cancer is the occurrence of a malignant neoplasm in one organ of a particular person. Therefore, a case of malignant melanoma in a particular person counts as one case. If the same person subsequently develops leukaemia, the leukaemia counts as a second case.

Incident cases and deaths registered before July 1999 were classified according to the 9th revision of the International Classification of Diseases (ICD-9, World Health Organization, 1977). Cases registered from July

1999 onwards have been classified according to the 2nd edition of the International Classification of Diseases for Oncology (ICD-O-2, World Health Organization, 1990). ICD-O-2 codes were translated back to ICD-10 codes by the Registry and used in this report.

For this report, cancer incidence data were accessed via HOIST. The cancer mortality data presented come from ABS mortality data.

2.13 NSW Notifiable Diseases Database

The NSW Notifiable diseases database (NDD), formerly called the NSW Infectious Diseases Surveillance system (IDSS), is a networked database used by 17 public health units (PHUs) located across NSW to register communicable disease notifications. Under authority of the NSW Public Health Act 1991, the NSW Health Department receives notifications of communicable disease via PHUs from general practitioners, hospitals, and pathology laboratories. Data are transferred weekly from PHUs to the Department, for compilation of statewide data. The Department, in turn, transfers a limited dataset to the Communicable Diseases Network of Australia and New Zealand (maintained by the Commonwealth Department of Health and Ageing).

For this report, the NDD collection was accessed via HOIST.

2.14 Australian Childhood Immunisation Register

The Australian Childhood Immunisation Register (ACIR), which is managed by the Health Insurance Commission (HIC) and commenced operation on 1 January 1996, is a register of the immunisation status of all children less than 7 years of age. A Commonwealth-State cost-shared payment is made to service providers for data. Broadly, the functions of the ACIR are: to collect immunisation information from immunisation providers, and to administer a payments system to providers for reporting information; to provide immunisation status information to parents and providers and to administer a national recall-reminder service to parents; and to provide immunisation coverage data.

ACIR supplies NSW Health with monthly coverage data that identifies children 'overdue' for immunisation, which are forwarded to Public Health Units for follow up, and quarterly coverage data by local government area. These latter data form the basis for the information presented in this report.

2.15 Prisoner health survey 2001

The overall aims of the Prisoner Health Survey were to describe the health of adult inmates, to identify factors associated with poor health, to develop indicators allowing comparisons to be made with the health of the general population, and to develop health goals and targets for the inmate population based on the findings. Special emphasis was placed on determining the health of Aboriginal and elderly inmates.

The methodology for the 2001 survey was similar to that used in 1996 to ensure consistency across the surveys. The design represented a cross-sectional random sample of inmates stratified by sex, age and Aboriginality. The sample included approximately 10% of male and 34% of female inmates in full-time custody. The survey was conducted between July and November 2001. All 29 correctional facilities in NSW were included in the survey.

According to the 2001 Inmate Census, there were 514 female and 7160 male prisoners in full-time custody on the 30th June 2001. Aboriginal people are over represented in the correctional system, comprising 16% and 25% of male and female prisoners compared with approximately 1% in the general community. Given this overrepresentation, and variations in health status between Indigenous and non-Indigenous Australians, it was decided to stratify

by Aboriginality. The sample was also stratified into three age groups: under 25 years, 25 – 40 years, and over 40 years. The stratification ensured that there were sufficient numbers of both Indigenous and non-Indigenous inmates to enable the health status of each sub-group to be described separately. The overall response rate was 85% (700 males and 154 females). The response rates were 84% for women and 85% for men; and 83% for Aboriginal people compared with 85% for non-Aboriginal people.

2.16 Emergency Department Data Collection

The NSW Emergency Department Data Collection is a database of information collected from approximately one-third of NSW Emergency Departments. It represents approximately two-thirds of all NSW emergency patients. Analyses presented in this report are based on a provisional diagnosis assigned by staff when a patient presented to the Emergency Department.

For this report, data from the Emergency Department Data Collection were accessed via HOIST.

3. Statistical methods

3.1 Crude death rates

The crude death rate is 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). 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. Crude death rates presented in this report used ABS estimated resident populations (ERPs) as at 30 June each year, and are expressed per 100,000 population per year.

3.2 Age-adjusted rates

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

3.3 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

3.4 Life expectancy at age 65

years and 1-4 years. The methods used are described in detail by Chiang (1984).

3.5 Analysis of NSW Health Surveys 1997 and 1998, NSW Child Health Survey 2001 and NSW Population Health Survey data

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 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 5-year age groups.

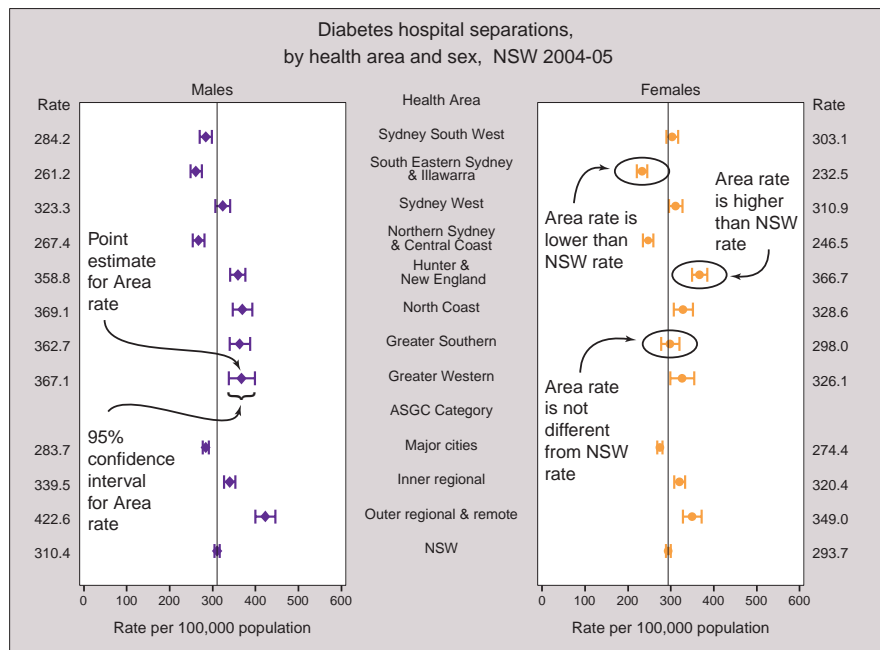
3.6 Graphical presentation

The survey samples were weighted to adjust for differences in the probabilities of selection among respondents, according to the number of eligible respondents in the household, and the number of residential telephone connections for the household (except in 1997, where telephone connection information was not collected). Post-stratification weights were used to adjust for differences between the age and sex structure of the survey samples and the relevant ABS mid-year population estimates (adjusted to exclude people resident in institutions) (Williamson et al., 2001).

The 'Surveymeans' procedure in SAS for Windows Version 8.02 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, 2005).

Figure 1 below demonstrates the method used for graphical presentation of point estimates with their 95% confidence intervals. It shows age-adjusted hospital separations for diabetes for the year 2004-05 for each of the NSW health areas and for ASGC remoteness categories. The standardised rate for NSW as a whole is indicated by the vertical reference line. The standardised rate, with its 95% confidence limits, for each health area, is shown as a horizontal line, with a central box indicating the point estimate.

Figure 1 Sample graph demonstrating point estimates and 95% confidence intervals.



3.7 Analysis of indicators by local government area

Small area estimates of selected indicators are based on analysis at the local government area (LGA) level, and are analysed using ASGC 2004 LGA boundaries. They use Bayesian smoothing methods to stabilise the estimates, which are then displayed in the form of choropleth maps. The associated tables include both raw and smoothed estimates for each LGA, grouped according to health area of residence.

In NSW there are 175 LGAs using the 2004 ASGC boundaries. Unincorporated Far West and Lord Howe Island make up a final area, known as Unincorporated NSW. Due to the spatial isolation of Lord Howe Island, both cases and population on Lord Howe Island were omitted from analysis but Unincorporated Far West was included. The resulting 166 areas ranged in population from 840 to greater than 270,000 (based on population estimates as at June 2005). The distribution of these populations across the local government areas is shown in the Demography chapter.

There are 17 LGAs with total populations less than 3000, and of these five have populations less than 2000 (based on population estimates as at June 2005). As the standard errors of estimates of rates or ratios are inversely related to population size this means that the standard errors vary greatly in their size between different LGAs. It also means that these estimates will vary greatly in the effect that chance events will have on the rate or ratio. Those with the smallest populations are particularly vulnerable to this. An extra one or two cases in a population of 2000 gives a far greater effect than the same increase in cases in a population of 200,000.

There also may be periods of time when there are no events within particular small areas, which would result in a rate for that area of zero. Two alternatives are possible here: to increase the number of years included in the analysis, preferably to 5 or more to obtain a reasonable estimate, or to use reasonably short periods of time (2 or 3 years) but borrow strength from adjacent areas and the variability across the entire state by using Bayesian methods. It is this latter method of “statistical smoothing” that we have applied in this report. Statistical smoothing allows calculation of an estimate for all areas, even when there are no cases/events in a particular area during the observed period of time; takes into account variability among areas (variously called global, uncorrelated or non-spatial variability), and more local effects (so-called spatial or local variability) in creating the estimate for individual areas; and ‘borrows strength’ from other areas, to improve the estimate in any particular area. This is more obvious in those areas with small populations.

There are two distinct methods of Bayesian smoothing used in this report, depending upon whether the indicator involves a population-based denominator (such as most indicators involving hospital separations or deaths) or whether it is of a binary nature (for instance smoking/not smoking in pregnancy). Estimation of population-based indicators are based on the indirectly standardised ratio obtained from indirect age and sex standardisation. In comparison, this report presents directly standardised rates for these indicators when considered on a statewide or health-area basis. Indirect standardisation is used firstly, because age-specific rates required by direct standardisation can be unreliable in small areas where there are small numbers of cases; and secondly, the standardised mortality, or standardised incidence ratio (SMR or SIR) is conventionally modelled using Bayesian methods. The indirectly standardised ratio compares the number of cases in the local area with the number expected given the age-specific rates across the state and the age-specific population of the small area of interest. It is

3.7.1 Smoothing of estimates for population-based indicators

effectively an estimate of the relative risk of being in the disease group within that area compared to the state average risk, which by definition is unity (1). Indirect standardisation assumes that the pattern of age-specific rates across the entire population is appropriate for all small areas, which, although not tested, is usually a safe assumption.

The smoothing used for the population-based indicators is obtained by applying the convolution or Besag, York and Mollie (BYM) model (Lawson et al, 2003). This model incorporates both spatially correlated and uncorrelated variation. It accounts for variability across the entire state (uncorrelated variation) as well as variability amongst the local government areas immediately adjacent to the area in question (spatially correlated variation). It is a fully Bayesian model which has been used substantially for disease mapping since it was introduced by Besag, York and Mollie. Under the BYM model, the smoothed SIR/SMR (or relative risk) is implemented using Gibbs sampling within WinBUGS (www.mrc-bsu.cam.ac.uk/bugs/winbugs/contents.shtml). The sample values for the parameter of interest (q_i) obtained by running this model in WinBUGS range in value within each area. The values form a distribution, which is known as the posterior distribution of q_i , and shows the expected distribution of the SIR/SMR for each area when adjusted (smoothed) for the two types of variability mentioned above. For each area the mean of this posterior distribution was used as the best estimate of the smoothed SIR/SMR, and the proportion of the probability distribution above unity was used as an estimate of the significance of the small area estimate relative to the state average. It is to be noted that the posterior distribution is dependent upon the expected number of cases: the higher the expected number of cases the smaller will be the standard error of the distribution, and hence the distribution will be 'tighter' around its mean.

A Bayesian 95% credible interval is analogous to the more common 95% confidence interval used in frequentist-based analyses. The 95% credible interval is obtained by determining the 2.5th and 97.5th percentiles of the posterior distribution. It can be interpreted as the range in which 95% of the estimates are located. The Bayesian method of obtaining an estimate of significance was also used by determining the proportion of the sampled values in the posterior distribution that lie above (or below) unity. A two-sided alternate hypothesis was used, so that if the proportion of the posterior distribution below unity was less than 0.025, then that area was considered to have significantly increased risk at the 5% level of significance.

The tabular output has been grouped by health area. Sydney LGA has been allocated to both Sydney South West and South East Sydney and Illawarra AHS, as this LGA is split between the two health areas. The columns in the output present the smoothed number of hospitalisations or deaths per year; the stabilized estimate of the Standardised Separation or Mortality Ratio, obtained by using Bayesian smoothing; the upper and lower 95% credible interval endpoints for the smoothed estimates of SSR/SMR; and the level of significance in relation to the state average indicated as follows:

- ++ means more than 99% of the distribution is above one, which would be equivalent to being significantly higher than the state average at 1% level of significance.
- + means more than 95%, but less than 99% of the distribution is above one, which would be equivalent to being significant at 5%.

- 0 means that between 5 and 95% of the distribution is above one, indicating that the SMR/SIR for this area is not significantly different to the state average of unity.
- means less than 5% of the distribution is above one, which is equivalent to saying that the distribution is significantly lower than the state average at 5% level of significance.
- means less than 1% of the distribution is above 1, which is equivalent to saying that the distribution is significantly lower than the state average at the 1% level of significance.

3.7.2 Smoothing of estimates for binary-type indicators

These indicators do not use a population-based denominator. Usually the cases or events of interest are a subset of all cases, so the denominator is obtained from the same source as the cases of interest. Most of these indicators are binary in nature, for example smoking in pregnancy, where the mother either answers yes or no to the question 'did you smoke at all during pregnancy?', or else are made into a binary variable, for instance whether antenatal care was commenced before 20 weeks or not. Because of the binary nature of these indicators, the most appropriate model is the logistic model.

The smoothing used for these indicators is obtained by modelling the data using a binomial distribution with a logit link function (Lawson et al, 2003). The model still incorporates both spatially correlated and uncorrelated variation, however we have not included age-standardisation. Implementation occurred using Gibbs sampling within WinBUGS. The sample values for the parameter of interest (smoothed proportion) range in value within each area. The values form a distribution, which is known as the posterior distribution of the smoothed proportion. For each area the mean of this posterior distribution is used as the best estimate of the smoothed proportion.

In order to compare areas and make mapping consistent with the other indicators, a posterior distribution for the prevalence ratio was calculated for each area by dividing each sampled value of the smoothed proportion by the overall proportion for the state. The proportion of the posterior distribution of this prevalence ratio above unity was used as an estimate of the significance of the small area estimate relative to the state average. The posterior distributions are dependent upon the total number of cases: the higher the total number of cases the smaller will be the standard error of the distribution, and hence the distribution will be 'tighter' around its mean.

Ninety-five percent credible intervals for the smoothed estimates of the proportion and the prevalence ratio as well as the estimate of significance were obtained using similar methods to the population-based indicators in 3.7.1 above. The tabular output included the raw number of cases (the event of interest) (if this was less than five, it was suppressed); the smoothed percent; the smoothed estimate of the prevalence ratio (based on distribution of the ratio of smoothed proportion to the state proportion, as given after Bayesian smoothing, but is not adjusted for the different age structures in the areas); the lower and upper 95% credible interval for ratio; and the level of significance (using the same symbols as for 3.7.2).

3.7.3 Interpretation of data in maps

The smoothed standardised incidence/mortality ratio is mapped for all indicators. The intensity of the colour of an area increases as the SIR/SMR increases, and the same scale is used for all maps. The maps show which areas are significantly different from the state average (at the 5% level of significance) by using '-' or '+' to denote this. If an area does not differ

4. Methods used for specific chapters and topics

4.1 Health-related behaviours- Deaths and hospitalisations attributable to use of drugs and alcohol

4.2 Rural and remote populations

significantly from the state, no symbol is shown. Maps were produced using SAS for Windows Version 9.1.3 (SAS, 2005).

Estimates of the numbers and rates of deaths and hospitalisations attributable to the use of tobacco, alcohol, and illicit drugs used aetiologic fractions developed by Ridolfo and Stevenson (2001). These fractions represent a revision of those originally published by Holman (1990) and later revised by English et al. (1995). They were derived from meta-analysis of published scientific literature on the adverse health effects (and in a small number of instances, protective effects) of these substances to estimate the proportions of cases of specific diseases and injuries that could be attributed to each substance.

For this report, an electronic file of the aetiologic fractions developed by Ridolfo and Stevenson was obtained from the Australian Institute of Health and Welfare. The disease and injury groupings used in this file were defined using ICD-9 and ICD-9-CM. The appropriate groupings of ICD-10 and ICD-10-AM codes were developed for this report. The codes used can be found in the disease and procedure codes section of the electronic version of this report.

The chapter on rural and remote populations, and some indicators in other chapters, present a range of health indicators for NSW according to ARIA+, the new enhanced Accessibility-Remoteness Index of Australia classification. This classification differs from the ARIA classification used in the previous report in several ways. In the ARIA classification an ARIA category was allocated on the basis of an average index score from 0-12 within each statistical local area (SLA). This index score was based on the road distance from the closest service centre in each of 4 classes. Under ARIA the smallest service centre had a population of 5,000 people. Remoteness for each locality was then classified based on a score from 0 (high accessibility) to 12 (high remoteness) and grouped into five categories: 'highly accessible', 'accessible', 'moderately accessible', 'remote' and 'very remote' services (AIHW, 2004).

In ARIA+ the remoteness index value was based on distance to 5 categories of 'service centre'. Centres with populations from 1,000-4,999 were included, to reflect the impact of small centres, as localities with populations of greater than 1000 persons were considered to contain at least some basic level of services (for example health, education, or retail) (GISCA, 1999). Those 'service centres' with larger populations were assumed to contain a greater level of service provision. ASGC remoteness categories were then given to Census Collection Districts (CDs) based on the average ARIA+ score within the CD. As CDs are generally smaller than SLAs, this provides a greater level of precision of the measure of remoteness than was obtained from ARIA. SLAs under ARIA+ are then classified by the proportion of the population living in CDs by the ASGC Remoteness Area classes (AIHW, 2004). The names of the 3 classes of remoteness -metropolitan, inner regional and outer regional have changed also from those used by ARIA. The names for remote and very remote classes remain the same although they are assigned slightly differently under ARIA+. This has resulted in some change in the proportions of the population classified under the new ARIA+ categories compared to the previous ARIA categories. However, the effect on rural and remote areas appears small. It has also meant that some SLAs have been reclassified. The proportion of the population of each SLA in each ARIA+ category is shown in a separate appendix to this report.

4.3 Country of birth

Where possible, indicators for the five countries that comprise the Former Yugoslavia are presented separately. However, in many datasets these countries are not identified separately, in which case indicators are presented for the Former Yugoslavia. The five countries that comprise the Former Yugoslavia are: Croatia, Slovenia, Bosnia-Herzegovina, the Former Yugoslav Republic of Macedonia, and the Former Yugoslav Republic of Serbia and Montenegro.

4.4 Socioeconomic status

The following relates to methods used in the chapter on socioeconomic status.

4.4.1 Socioeconomic status measures

Socioeconomic (SES) groups used in this chapter 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, 2003). 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 four censuses. The methods used for calculation of the IRSD index were similar in 1986, 1991 and 1996, but changed for 2001. 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 collector 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. Calculations of the IRSD scores for a local government area involves the weighting of the indexes based on the population for the particular year.

The NSW population was divided into 3 groups for the analyses in this chapter. Statistical local areas were sorted by IRSD score and assigned to quintiles, each containing as close as possible to one-fifth of the total population. The data are presented for the lowest SES population quintile, the highest SES population quintile, and a group comprising the remaining three SES quintiles, which is referred to as the 'rest' or 'balance of NSW population'.

4.4.2 Poisson regression models

Poisson regression models (Armitage et al., 2002) were used to study the effect of time and SES on death rates. For each indicator (except life expectancy and ACS hospitalisations) and each sex, the trend for SES group by time was modelled to obtain fitted values for the relative health gaps and to ascertain the significance of any observed changes in the health gaps over time. Raw ratios were used to assess changes in the relative position of the SES groups for life expectancy or the rate of hospitalisations for ACS conditions due to difficulties in fitting the Poisson model in these cases.

The models included age, SES group, and year and the interaction of year and SES group. The interaction term assessed change in death rates by SES group over time, after adjusting for age differences. The relative rate of change was determined by exponentiating the coefficient for the appropriate SES*time

4.5 Avoidable mortality

variable in the model. The significance of the change was assessed by testing the difference between the slopes of these trends using the CONTRAST option in the GENMOD procedure in SAS (SAS, 2005).

The method used to calculate avoidable mortality was based on a revision of the original set of conditions published in 2001 (Tobias and Jackson, 2001). This review, by the Public Health Information Development Unit (PHIDU) in Australia and the Ministry of Health in New Zealand, aims to develop an Australasian standard list of potentially avoidable conditions.

Avoidable deaths are those attributed to conditions that are considered preventable or otherwise avoidable through earlier intervention or action. These were further sub-categorised into 3 levels of intervention. Primary level interventions are those that can prevent the condition developing, such as promotions of lifestyle modification. Secondary level interventions are those that detect or respond to the condition early in its progression, such as cancer screening and chronic disease management. Tertiary level interventions are those that treat the condition and prevent premature death. For each condition, the number of deaths that could have been avoided at each level was calculated by applying weights to the total deaths from the condition. These data were summed to determine the rates of primary, secondary and tertiary avoidable mortality. The weights were based on the work of Tobias and Jackson (2001).

The codes used to define avoidable mortality groups, along with the weights for defining the proportion avoidable by primary, secondary and tertiary interventions can be found in the disease and procedure codes section of this report.

4.6 Ambulatory care sensitive conditions

The method used to calculate avoidable hospitalisations uses 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 (DHS, 2001), which have been reviewed by the Public Health Information Development Unit (PHIDU). The DHS list was defined according to ICD-9-CM; appropriate groupings of ICD-10-AM codes were developed for the previous report, and have undergone review by PHIDU.

The information presented in this report differs from information presented in previous editions of *The health of the people of New South Wales*. In 2006 in NSW the coding of diabetes was changed to include diabetes in primary diagnosis only and the coding of cellulitis has been brought in line with the original PHIDU's definition.

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

4.7 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 were: myocardial infarction, ischaemic heart disease, stroke or sequelae of stroke, heart failure, sudden death (cardiac arrest), peripheral vascular disease, kidney disease, hyperglycaemia, hypoglycaemia (Dixon et al, 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 and kidney disease, and stroke. These complications are likely to appear as the underlying cause of death, the basis for official mortality statistics. If only cases where diabetes as the underlying cause were counted, it would lead to considerable underestimates of diabetes' contribution to death in Australia (Dixon et al, 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 AIHW, to include additional conditions (ischaemic heart disease, stroke and heart failure) (Dixon et al, 2005).

For the full list of codes of included conditions see the disease and procedure codes appendix of this report.

4.8 Psychological distress

The K10 (Kessler and Mroczek, 1992, 1994) was included in the 1997, 1998, 2002 and 2005 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) (Andrews and Slade, 2001). The K10 (and a briefer K6 measure) were specifically designed for use in the 'core' of the annual US National Health Interview Survey (NHIS, N=50,000 aged 15+) when it was redesigned for use from 1997 onwards. The K6 has also been used in the biennial Canadian National Population Health Survey (panel survey, N>17,000 aged 12+; 1994-95; 1996-97; 1998-99; 2000-01) and has been replaced by the K10 in the Canadian Community Health Survey from September 2000 (Statistics Canada, 2002).

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 10-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 4-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 5-level response scale based on the amount of time (from none through to all) during a 4-week period when the person experienced the particular problem. In NSW use, there are also 4 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'). 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.

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. 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
30–50	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.

5. Area Health Service boundaries

In July 2004, the Minister for Health announced a new area health structure. The restructure is largely a merger of the 17 Area Health Services into 8 new Area Health Services. The new administrative structure was in place by January 1, 2005. A list of the mergers is given in Table 3. Some localities within the Statistical Local Areas of Greater Taree, Greater Lakes, Gloucester and Lithgow moved to the new Area Health Services independently of the main mergers.

In this report, the 2005 Area Health Services boundaries have been used. A list of local government areas by 2005 Health Area is given elsewhere in this appendix.

Table 3 1996 and 2005 Area Health Services

1996 Area Health Service names	2005 Area Health Service names
Central Sydney	Sydney South West
South Western Sydney	
South Eastern Sydney	South Eastern Sydney & Illawarra
Illawarra	
Wentworth	Sydney West
Western Sydney	
Northern Sydney	Northern Sydney & Central Coast
Central Coast	
Hunter	Hunter & New England
New England	
Mid North Coast	North Coast
Northern Rivers	
Greater Murray	Greater Southern
Southern	
Far West	Greater Western
Macquarie	
Mid Western	

Note: Some localities within the Statistical Local Areas of Greater Taree, Greater Lakes, Gloucester and Lithgow moved to the new Area Health Services independently of the main mergers.

6. Quality assurance process

The preparation of this report involved a great deal of complex data processing and manipulation. The following steps were taken to minimise errors:

- most analyses used a single, shared suite of datasets, contained on the HOIST system. The datasets on HOIST are carefully checked against the original source data to ensure their fidelity. Sources for all data used are described in the footnotes;
- all graphs and tables were produced using SAS programs that can be audited, rather than using interactive data manipulation facilities such as spreadsheets that are much more difficult to check;
- the SAS programs directly created the Web pages for the online version of the report as well as tables and graphs, which were directly imported into Adobe InDesign for typesetting the printed version. This minimised the possibility of transcription and typographical errors;
- every SAS program used in the production of this report was checked by someone other than the person who originally wrote it. Items such as the correct specification of ICD codes and correct selection of numerator and denominator data were systematically checked as part of this audit process;
- complex parts of the SAS programs were abstracted as a common, shared set of SAS 'macros' (callable subroutines). These macros – which were employed for operations such as imputation, direct standardisation and production of custom graph formats – were subject to rigorous testing before they were used;
- all results were checked against other, comparable sources wherever possible.

Disease and procedure codes

This appendix details the codes from the International Statistical Classification of Diseases (ICD) used to prepare some of the data included in this report.

The 10th Revision of the ICD (ICD-10) was generally implemented in Australia from 1998 onwards. It was a major update of the 9th Revision (ICD-9). For some diseases or disease groups, it is not possible to construct a one-to-one mapping between the 2 revisions, and as a result there may be a small distortion of trend lines. Where there was a major change in the cases that would be selected, no trends have been shown.

For some disease groupings, codes differ between the modifications of ICD-9 used for the various data sources. These differences are shown in the table.

Disease codes

ICD codes used for diseases or disease groups in this report are shown in Table 1.

ABS Deaths Register

Causes of deaths registered before 1999 were coded according to the 9th Revision of the International Classification of Diseases (ICD-9). From 1 January 1999 onwards, causes of death have been classified according to the 10th Revision of the International Classification of Diseases (ICD-10).

Inpatient Statistics Collection

The reasons for admission to hospital were coded according to the 9th Revision of the International Classification of Diseases, Clinical Modification (ICD-9-CM) for years up to and including 1997–98. From 1 July 1998, the reasons for admission have been coded according to the 10th Revision of the International Classification of Diseases, Australian Modification (ICD-10-AM).

Central Cancer Registry

Cases of cancer registered before July 1999 were classified according to ICD-9. Cases registered from 1 July 1999 onwards have been classified according to the 2nd edition of the International Classification of Diseases for Oncology (ICD-O-2). ICD-O-2 codes were translated by the Registry to ICD-10 codes, which were used to prepare this report.

Procedure codes

ICD codes used for procedures or procedure groups in this report are shown in Table 2.

Inpatient Statistics Collection

Procedures carried out while patients were admitted to hospital were coded according to the 9th Revision of the International Classification of Diseases, Clinical Modification (ICD-9-CM) for years up to and including 1997–98. From 1 July 1998, the procedures have been coded according the MBS–Extended procedure classifications in ICD-10-AM. These codes are based on the Commonwealth Medicare Benefits scheme (MBS) and are relevant to Australian data only.

Potentially avoidable mortality

ICD codes for diseases and disease groups used to calculate potentially avoidable mortality are shown in Table 3. Tobias and Jackson (2001) defined conditions using ICD-9 codes only. The appropriate groupings of ICD-10 codes were developed for this report.

Ambulatory care sensitive conditions

ICD codes for diseases and disease groups used to calculate ambulatory care sensitive (ACS) conditions, i.e. potentially avoidable hospitalisation, are shown in Table 4. The categories used for ACS are based on those used by the Victorian Department of Human Services (VDHS, 2001), which were defined according to ICD-9-CM codes. The appropriate groupings of ICD-10-AM codes were developed for this report.

Table 1 Disease and disease group codes

Group	ICD-9 and ICD-9-CM	ICD-10 and ICD-10-AM
Acute respiratory infection	460-466, 480-487	J00-J22
Adverse event after immunisation	E948,E949.0-E949.7	Y58,Y59.0-Y59.2
Air transport injury	E840-E845	V95-V97
Ambulatory care sensitive conditions	see disease codes for ambulatory care sensitive conditions table	see disease codes for ambulatory care sensitive conditions table
Anthrax	022,484.50	A22
Aortic aneurysm	441	I71
Aortic aneurysm: Abdominal	441.3,441.4	I71.3,I71.4
Arboviral infection-Ross River	no separate code	B33.1
Arboviral infection-other/not specified	061-064,066	A83,A84,A85.2,A90,A92-A94
Asbestosis	501	J61
Asthma	493	J45,J46
Back pain	Not used in this report	M54
Benzodiazepine deaths	Not used in this report	underlying cause any of F13, F19, X41, X44 in combination with associated cause T42.4.
Blood and immune diseases	Not used in this report	D50-D89
Botulism	005.1	A05.1
Brucellosis	023	A23
Burns and scalds	E890-E899, E924.0, E924.2, E924.8, E924.9	X00-X19
Cancer (all)	140-208	C00-C97
Cancer: breast	174	C50
Cancer: cervical cancer	180	C53
Cancer: colorectal	153-154	C18-C21
Cancer: kidney	Not used in this report	C64-C66, C68
Cancer: liver	Not used in this report	C22
Cancer: lung	162	C33-C34
Cancer: melanoma	172	C43
Cancer: Non-Hodgkin Lymphoma	Not used in this report	C82-C85
Cancer: oral	141-145	C01-C08
Cancer: pancreas	Not used in this report	C25
Cancer: prostate	185	C61
Cancer: unknown primary	Not used in this report	C26,C39,C48,C76,C80
Cardiovascular diseases	Not used in this report	I00-I99
Cardiovascular disease (all)	390-459	I00-I99, G45, G46
Chancroid	099.0	A57
Chickenpox	052	B01
Chickenpox complications	Not used in this report	Meningitis: B01.0; Encephalitis: B01.1; Pneumonia: B01.2; Other: B01.8; None: B01.9
Chlamydia trachomatis-congenital pneumonia	no separate code	P23.1
Chlamydia trachomatis-lymphogranuloma venereum	099.1	A55
Chlamydia trachomatis-other sexually transmitted	ICD9: no separate code ICD9CM 099.41, 099.5	A56, A74.8, K67.0, N74.4
Cholera	001	A00
Chronic obstructive pulmonary disease	491-492, 496	J41-J44
Chronic respiratory disease	491, 492, 493, 496	J41-J46
Coronary heart disease	410-414	I20-I25
Cryptosporidiosis	ICD9: no separate code ICD9CM: 007.4	A07.2
Cutting or piercing injury (unintentional)	E920	W25-W29,W45
Dementia	Not used in this report	F00-F03 in diagnosis fields 1-10
Diabetes	250, 648.0, 648.8	E10-E14, O24

Table 1 Disease and disease group codes (continued)

Group	ICD-9 and ICD-9-CM	ICD-10 and ICD-10-AM
Diabetes: Type 1	Not used in this report	E10, O24.0
Diabetes: Type 2	Not used in this report	E11, O24.1
Diabetes: Gestational	Not used in this report	O24.4
Diabetes: Other	Not used in this report	E12, E13, E14, E12, O24.2, O24.3, O24.9
Diabetes complications	250, 648.0, 648.8 in diagnosis fields 2-5	E10-E14, O24 in diagnosis fields 2-5
Diabetes complication types	Not used in this report	Hyperosmolarity (Type 2 only): E11.0, E13.0, E14.0, E12.0; Acidosis: E10.1, E11.1, E13.1, E14.1, E12.1; Renal: E10.2, E11.2, E13.2, E14.2, E12.2; Ophthalmic: E10.3, E11.3, E13.3, E14.3, E12.3; Neurological: E10.4, E11.4, E13.4, E14.4, E12.4; Circulatory: E10.5, E11.5, E13.5, E14.5, E12.5; Other specified: E10.6, E11.6, E13.6, E14.6, E12.6; Multiple: E10.7, E11.7, E13.7, E14.7, E12.7; Not specified: E10.8, E11.8, E13.8, E14.8, E12.8; No complications: E10.9, E11.9, E13.9, E14.9, E12.9; Other: any other codes
Diabetes: Acute complications	Not used in this report	E10.1, E11.0, E11.1, E13.0, E13.1, E14.0, E14.1, E12.0, E12.1
Diabetes: Chronic complications	Not used in this report	E10.2, E11.2, E13.2, E14.2, E12.2, E10.3, E11.3, E13.3, E14.3, E12.3, E10.4, E11.4, E13.4, E14.4, E12.4, E10.5, E11.5, E13.5, E14.5, E12.5, E10.6, E11.6, E13.6, E14.6, E12.6, E10.7, E11.7, E13.7, E14.7, E12.7
Diabetes: Complications, not specified	Not used in this report	E10.8, E11.8, E13.8, E14.8, E12.8
Diabetes: ophthalmic complications	Not used in this report	E10.3, E11.3, E12.3, E13.3, E14.3 in diagnosis fields 1-10
Diabetes deaths	Not used in this report	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
Digestive system diseases	Not used in this report	K00-K93
Diphtheria	032	A36
Drowning	E910, E830, E832	W65-W74, V90, V92
Endocrine diseases	Not used in this report	E00-E89
Escherichia coli (E. coli)-enterohaemorrhagic	ICD9: no separate code ICD9CM: 008.04	A04.3
Exposure to unspecified factors injury	Not used in this report	X59
Factors influencing health	Not used in this report	Z00-Z99
Falls	E880-E886, E888, E929.3	W00-W19
Firearm injury (unintentional)	E922	W32-W34
Firearm injury	E922, E955.0-E955.4, E955.9, E965.0-E965.4, E970, E985.0-E985.4	W32-W34, X72-X74, X93-X95, Y35.0, Y22-Y24
Gastrointestinal infections	001-009	A00-A09
Genitourinary diseases	Not used in this report	N00-N99
Giardiasis	007.1	A07.1
Gonorrhoea	098, 647.1	A54, K67.1, M73.0, N74.3, O98.2
Granuloma inguinale (Donovanosis)	099.2	A58
Haemolytic uraemic syndrome	ICD9: no separate code ICD9CM: 283.11	D59.3
Haemophilus influenzae meningitis	320	G00.0
Heart failure	428	I50
Hepatitis A	070.0, 070.1	B15
Hepatitis B	Not used in this report	B16.2, B16.9, B18.1
Hepatitis B (including Hepatitis D)	070.2, 070.3	B16, B17.0, B18.0, B18.1
Hepatitis C	ICD9: no separate code ICD9CM: 070.41, 070.44, 070.51, 070.54	B17.1, B18.2

Table 1 Disease and disease group codes (continued)

Group	ICD-9 and ICD-9-CM	ICD-10 and ICD-10-AM
Hepatitis D	ICD9: no separate code ICD9CM: 070.2, 070.23, 070.31, 070.33, 070.42, 070.52	B16.0,B16.1,B17.0,B18.0
Hepatitis E	ICD9: no separate code ICD9CM: 070.43, 070.53	B17.2
Hepatitis-viral, type not specified	ICD9: 070.4, 070.5, 070.6, 070.9 ICD9CM: 070.49, 070.59, 070.6, 070.9	B17.8, B18.8, B18.9, B19.0, B19.9, B94.2, O98.4, P35.3
Hip fractures	Not used in this report	S72.0-S72.2
HIV-Acquired immune deficiency syndrome (AIDS)	042	B20-B24
Infectious diseases	Not used in this report	A00-B99
Influenza	487	J10, J11
Influenza and pneumonia	480-487	J10-J18
Influenza and pneumonia (presentations at Emergency Departments)	480-487	not used in this report
Injury and poisoning	E800-E869, E880-E929, E950-E999	V00-X99, Y00-Y39, Y85-Y87, Y89
Injury and poisoning: principal diagnosis codes	800-908,909 with no additional characters,909.0-909.2,909.4-909.9,910-994,995.5,995.81	S00-T77,T79,T89-T97,T98 with no additional characters,T98.0,T98.1,T98.2
Injury and poisoning (all external cause codes)	Not used in this report	V00-Y89
Interpersonal violence	E960-E969	X85-Y09, Y87.1
Interpersonal violence (children)	E960-E969, E980-E989, V61.21	X85-Y09, Y10-Y34, Y87.1, Z61.6
Legionnaires disease	no separate code	A48.1, A48.2
Leprosy	030	A30, B92
Leptospirosis	100	A27
Listeriosis	027	A32, P37.2
Machinery injury	E919	W24, W30. W31
Malaria	084, 647.4	B50-B54, P37.3, P37.4
Maternal, neonatal and congenital causes	Not used in this report	O00-Q99
Measles	ICD9: 055, 484.0 ICD9CM: 055	B05
Mental disorders	Not used in this report	F00-F99
Meningococcal disease	036, 320.5	A39, M01.0, M03.0
Mesothelioma	no separate diagnosis code	C45
Motor vehicle crash injury	E810-E825, E929.0	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
Motor vehicle crash injury: road user type subgroups	Not used in this report	Motor vehicle occupant: V30-V79, V83-V86 Motor cyclist V20-V29 Pedal cyclist: V12-V14, V19.0-V19.2, V19.4-V19.6 Pedestrian: V02-V04, V09.0, V09.2
Musculoskeletal	Not used in this report	M00-M99
Mumps	ICD9: 072, 321.5 ICD9CM: 072	B26
Natural/environmental factors injury	E900-E909, E928.0-E928.2	W42-43, W53-64, W92-99, X20-X39, X51-57
Neoplasms - malignant	Not used in this report	C00-C99
Neoplasms - other than malignant	Not used in this report	D00-D48
Nervous and sense disorders	Not used in this report	G00-H95
Opiate deaths	304.0, 304.7, 305.5, E850.0	Underlying or associated cause F11, underlying cause any of F19, X42, X44 combined with associated cause any of T40.0-T40.4,T40.6
Osteoarthritis	Not used in this report	M15-M19
Osteoporosis	Not used in this report	M80-M82
Otitis media	Not used in this report	H65, H66, H67.0, H67.8

Table 1 Disease and disease group codes (continued)

Group	ICD-9 and ICD-9-CM	ICD-10 and ICD-10-AM
Overexertion or repetitive movement injury	E927	X50
Pedestrian injury	E810-E825 with fifth digit = 7	V02-V04, V09 with fourth digit not 9
Peripheral vascular disease	440-444	I70-I74
Pertussis (whooping cough)	033	A37
Pneumococcal infection	ICD9: 038.2, 041.2, 320.1, 481, 567.1 ICD9CM: 038.2, 041.06(from July 1995), 041.2(to June 1995), 320.1, 481, 567.1	A40.3,B95.3,G00.1,J13,M00.1
Poliomyelitis	045, 138, 323.2, 730.7	A80, B91, M89.6
Poisoning (unintentional)	E850-E869	X40-X49
Potentially avoidable deaths	see disease codes for potentially avoidable deaths table	see disease codes for potentially avoidable deaths table
Psittacosis	073	A70
Psychostimulant deaths	Not used in this report	F14, underlying cause any of F15, F19, X41, X42, X44 in combination with associated cause any of T40.5,T43.6
Q fever	083	A78
Rabies, lyssavirus	071	A82
Rail transport injury	E800-E807	V05, V15, V80.6, V81.2-V81.9
Respiratory diseases	460-519	J00-J99
Rheumatoid arthritis	Not used in this report	M05-M06
Rubella-congenital	771	P35.0
Rubella-other	056, 647.5	B06, M01.4
Salmonella infection (non-typhoid)	003	A02
Shigellosis	004	A03
Skin diseases	Not used in this report	L00-L99
Skin infections	680-686	L00-L08
Sports injury	no equivalent	1999-00: (in any external cause code) V00- V99 with fifth character = 0 2000 on: (in any activity code or diagnosis code) Y93.0, U50-U72
Stroke	430-438	I60-I69, G45,G46
Struck by/against injury	E916-E917	W20-W22, W50-W52
Syphilis-congenital	090	A50
Syphilis-infectious	Not used in this report	A51
Syphilis-other	Not used in this report	A52-A53, I98.0, K67.2, M03.1, M73.1, N74.2, O98.1
Suicide	E950-E959	X60-X84, Y87.0
Symptoms and other ill defined conditions	Not used in this report	R00-R99
Tetanus	037, 771.3	A33-A35
Threats to breathing injury (unintentional)	E911-E913.9	W75-W84
Tuberculosis	ICD9: 010-018, 137, 320.4, 647.3, 730.4, 730.5, 730.6 ICD9CM: 010-018, 137, 647.3	A15-A19, B90, J65, K23.0, K67.3, K93.0, M01.1, M49.0, M90.0, N33.0, N74.0, N74.1, 098.0, P37.0
Typhoid and paratyphoid	002	A01
Typhus(epidemic)	080	A75.0
Unintentional injury	Not used in this report	V00-X59,Y10-Y39, Y85-Y86, Y89
Viral haemorrhagic fevers	065, 078.6, 078.7	A91, A96, A98, A99
Water transport injury	E831, E833-E838	V91, V93, V94
Workplace injury	no equivalent	financial status=Workers compensation, or 1998-99: V00-Y99 and fifth character =2 (in principal external cause code) 2000 on: Z04.2 (in any diagnosis code) or Z57(in any diagnosis code) or Y93.2 (in any external cause activity code) or Y96 (in any external cause code) or 2002 on: as for 2000, plus U73.0 (in any external cause activity code)
Yellow fever	060	A95

Table 2 Procedure and procedure group codes

Procedure	icd-9 and ICD-9-CM	ICD-10 and ICD-10-AM
Carotid endarterectomy	38.12 in procedure codes 1-5	33500-00 in procedure codes 1-5
Coronary artery bypass graft	36.1	38497, 38500, 38503, 90201
Coronary artery bypass angioplasty/stent	36.01, 36.02, 36.05, 36.06, 36.07	35310, 35304-00, 30305-00
CT scan of the brain	87.03 in procedure codes 1-5 with 430-438 in diagnosis codes 1-11	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)	23	97311-97327, 97411-97679, 97386-00, 97387-00, 97388-00 or procedure block 457-458, 462-473
Hip replacement	Not used in this report	Procedure block 1489 or 1492 in any procedure code
Knee replacment	Not used in this report	Procedure block 1518 or 1519 in any procedure code
Lower limb amputation with diabetes as co-morbidity	84.1 with 250 in diagnosis codes 1-5	44370-00, 44367-00, 44367-02, 44361-00, 44361-01, 44358-00, 44364-00, 44364-01, 44338-00 with E10-E14 in diagnosis codes 1-5
Revascularisation procedures	36.01, 36.02, 36.05, 36.06, 36.07, 36.1	38497, 38500, 38503, 90201, 35310, 35304-00, 30305-00

Table 3 Codes for disease groups used to calculate potentially avoidable mortality

Group	Conditions included	ICD-9	ICD-10	Primary avoidable mortality	Secondary avoidable mortality	Tertiary avoidable mortality
Enteritis and other diarrhoeal diseases	Diarrhoeal diseases	001-009	A00-A09	0.7	0.1	0.2
Infection	Tuberculosis	010-018, 137	A15-A19, B90	0.6	0.35	0.05
Childhood vaccine-preventable disease	Diphtheria, whooping cough, tetanus, polio, Hib, measles, rubella	032-033, 036.0, 037, 041.2, 041.5, 045, 052, 055-056	A35-A37, A49.1, A49.2, A80, B01, B05-B06, J11	0.9	0.05	0.05
Infection	Selected Invasive Bacterial and Protozoal infection	034-035, 038, 084, 320, 481-482, 485, 681-682	A38-A41, A46, A48.1, B50-B54, G00, G03, J13-J15, J18, L03	0.3	0.4	0.3
Sexually transmitted diseases except HIV/AIDS		090-099, 614.0-614.5, 614.7-616.9, 633	A50-A64, M02.3, N34.1, N70-N73, N75.0, N75.1, N76.4, N76.6, O00	0.8	0.1	0.1
Infection	HIV/AIDS	042, 279.10	B20-B24	0.9	0.05	0.05
Infection	Hepatitis	070	B15-B19	0.7	0.1	0.2
Infection	Viral Pneumonia and Influenza	480, 487	J10, J12, J17.1, J21	0.4	0.5	0.1
Neoplasms	Lip, Oral Cavity and Pharynx	140-149	C00-C14	0.8	0.1	0.1
Neoplasms	Oesophagus	150	C15	0.95	0	0.05
Neoplasms	Stomach	151	C16	0.4	0.2	0.4
Neoplasms	Colorectal	153, 154	C18-C21	0.4	0.5	0.1
Neoplasms	Liver	155	C22	0.7	0.1	0.2
Neoplasms	Lung	162	C33-C34	0.95	0	0.05
Neoplasms	Melanoma of skin	172	C43	0.6	0.1	0.3
Neoplasms	Nonmelanotic skin	173	C44	0.6	0.1	0.3
Neoplasms	Breast (Females only)	174	C50	0.15	0.35	0.5
Neoplasms	Uterus	179, 182	C54-C55	0.1	0.4	0.5
Neoplasms	Cervix	180	C53	0.3	0.5	0.2
Neoplasms	Bladder	188	C67	0.5	0.25	0.25
Cancer of testis	Cancer of testis	186	C62	0	0.3	0.7
Eye cancer	Eye cancer	190	C69	0	0	1
Neoplasms	Thyroid	193	C73	0.1	0.2	0.7
Neoplasms	Hodgkins disease	201	C81	0	0.1	0.9
Neoplasms	Leukemia (Age < 44 only)	204-208	C91.0, C91.1	0.05	0.05	0.9
Neoplasms	Benign	210-229	D10-D36	0	0	1
Nutritional deficiency anaemia		280-281	D50-D53	1	0	0
Nutritional, endocrine and metabolic	Thyroid disorders	240-246	E00-E07	0.1	0.7	0.2
Nutritional, endocrine and metabolic	Diabetes	250	E10-E14	0.3	0.6	0.1
Adrenal disorders		255.0, 255.4	E24, E27			
Newborn screening conditions	Congenital hypothyroidism, CAH, PKU, galatosaemia	255.2, 270.1, 271.1	E25, E70.0, E74.2	0	0.8	0.2

Table 3 Codes for disease groups used to calculate potentially avoidable mortality (continued)

Group	Conditions included	ICD-9	ICD-10	Primary avoidable mortality	Secondary avoidable mortality	Tertiary avoidable mortality
Drug use disorders	Alcohol related disease	291, 303, 305.0, 425.5, 535.3, 571.0-571.3	F10, I42.6, K29.2, K70	0.9	0	0.1
Drug use disorders	Illicit drug use disorders	292, 304, 305.2-305.9	F11-F16, F18-F19	0.9	0	0.1
Neurological disorders	Epilepsy	345	G40-G41	0	0.9	0.1
Cardiovascular diseases	Rheumatic and other valvular heart disease	390-398	I01-I09	0.3	0.6	0.1
Cardiovascular diseases	Hypertensive heart disease	402	I11	0.3	0.65	0.05
Cardiovascular diseases	Ischaemic heart disease	410-414	I20-I25	0.5	0.25	0.25
Cardiovascular diseases	Cerebrovascular diseases	430-438	I60-I69	0.3	0.5	0.2
Cardiovascular diseases	Aortic aneurysm	441	I71	0.3	0.3	0.3
Genitourinary Disorders	Nephritis and Nephrosis	403, 580-589, 591	I12-I13, N00-N09, N17-N19	0.1	0.2	0.7
Genitourinary Disorders	Obstructive uropathy & Prostatic Hyperplasia	592, 593.7, 594, 598, 599.6, 600	N13, N20-N21, N35, N40, N99.1	0.3	0.3	0.3
Respiratory diseases	DVT with pulmonary embolism	415.1, 451.1	I26, I80.2	0.3	0.3	0.3
Respiratory diseases	COPD	490-492, 496	J40-J44	0.8	0.1	0.1
Respiratory diseases	Asthma	493	J45-J46	0.1	0.7	0.2
Upper respiratory tract infection		382-383, 460-465	J00-J06, H66, H70	0.4	0.5	0.1
Digestive disorders	Peptic ulcer disease	531-534	K25-K28	0.05	0.75	0.2
Digestive disorders	Acute abdomen, appendicitis, intestinal obstruction, cholecystitis / lithiasis, pancreatitis, hernia	540-543, 550-553, 574-577	K35-K38, K40-K46, K80-K83, K85-K86, K91.5	0	0	1
Digestive disorders	Chronic liver disease (excluding alcohol related disease)	571.4-571.9	K73, K74	0.7	0.1	0.2
Osteomyelitis and other osteopathies of bone	Skin, bone and joint infections	730	M86, M89-M90	0.2	0.5	0.3
Maternal & infant	Birth defect	237.70, 740-760	H31.1, P00, P04, Q00-Q99	0.1	0.2	0.7
Complication of pregnancy, labor or the puerperium,	Complications of pregnancy	630-632, 634-676	O01-O99	0.2	0.5	0.3
Maternal & infant	Complications of perinatal period	764-779	P03, P05-P95	0.3	0.2	0.5
Sudden infant death syndrome	SIDS	798	R95	1	0	0
Unintentional injuries	Road traffic injuries, other transport injuries	E810-E819	V01-V04, V06, V09-V80, V87, V89, V99	0.6	0	0.4

Table 3 Codes for disease groups used to calculate potentially avoidable mortality (continued)

Group	Conditions included	ICD-9	ICD-10	Primary avoidable mortality	Secondary avoidable mortality	Tertiary avoidable mortality
Unintentional injuries	Accidental Poisonings	E850-E869	X40-X49	0.6	0	0.4
Unintentional injuries	Falls	E880-E886, E888	W00-W19	0.6	0	0.4
Unintentional injuries	Fires, burns	E890-E899	X00-X09	0.8	0	0.2
Unintentional injuries	Drownings (Swimming)	E910	W65-W74	0.8	0	0.2
Intentional injuries	Suicide and self inflicted injuries	E950-E959, E980-E989	X60-X84, Y87.0, Y10-Y34	0.6	0.3	0.1
Intentional injuries	Violence	E960-E969	X85-Y09, Y87.1	1	0	0
War		E990-E999	Y36	1	0	0
Iatrogenic conditions	Complications of treatment	E870 - E879	Y60-Y84	0	0.2	0.8

Table 4 Codes for disease groups used to calculate ambulatory care sensitive (ACS) hospitalisations

Group	ICD-9-CM codes (NSW Health)	ICD-10-AM codes (NSW Health)	Further selection information
Vaccine-preventable			
Influenza and pneumonia	481, 482.2, 482.3, 482.9, 483, 487.0, 487.1, 487.8	J10, J11, J13, J14, J15.3, J15.4, J15.7, J15.9, J16.8, J18.1, J18.8	In any diagnosis field; exclude people under 2 months; ICD-9-CM: exclude cases with second diagnosis of 282.6; ICD-10-AM: exclude cases with second diagnosis of D57
Other vaccine preventable	032, 033.0, 033.1, 033.8, 033.9, 037, 045, 055, 056, 070.3, 072, 320.0	A35, A36, A37, A80, B05, B06, B16.1, B16.9, B18.0, B18.1, B26, G00.0, M01.4	In any diagnosis field
Chronic			
Diabetes complications	250.1-250.9	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	260, 261, 262, 268.0, 268.1	E40-E43, E55.0, E64.3	Principal diagnosis only
Iron deficiency anaemia	280.1, 280.8, 280.9	D50.1-D50.9	Principal diagnosis only
Hypertension	401.0, 401.9, 402.00, 402.10, 402.90	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	402.01, 402.11, 402.91, 428, 518.4	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	411.1, 411.8, 413	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	491, 492, 494, 496, (466.0)J41-J44, J47, (J20)		Principal diagnosis only; ICD-9-CM: 466.0 only with second diagnosis of 491, 492, 494, 496; ICD-10-AM: J20 only with secondary diagnosis of J41, J42, J43, J44, J47
Asthma	493	J45, J46	Principal diagnosis only
Acute			
Dehydration and gastroenteritis	276.5, 558.9	E86, K52.2, K52.8, K52.9	Principal diagnosis only
Convulsions and epilepsy	345, 642.6, 780.3	G40, G41, O15, R56	Principal diagnosis only
Ear, nose and throat infections	382, 462, 463, 465, 472.1	H66, H67, J02, J03, J06, J31.2	Principal diagnosis only
Dental conditions	521, 522, 523, 525, 528	A69.0, K02-K06, K08, K09.8, K09.9, K12, K13	Principal diagnosis only
Perforated/bleeding ulcer	531.0-531.2, 531.4-531.6, 532.0-532.2, 532.4-532.6, 533.0-533.2, 533.4-533.6, 534.0-534.2, 534.4-534.6	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	540	K35.0	In any diagnosis field
Pyelonephritis	590.0, 590.1, 590.8	N10, N11, N12, N13.6	Principal diagnosis only
Pelvic inflammatory disease	614	N70.0, N70.1, N70.9, N73, N74.0-N74.1, N74.2-N74.8	Principal diagnosis only
Cellulitis	681, 682, 683, 686	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	785.4	R02	In any diagnosis field

For more information

- Andrews G, Slade T. Interpreting scores on the Kessler psychological distress scale (K10). *Aust N Z J Public Health* 2001; 25: 494–497.
- Armitage P, Berry G, Matthews J. *Statistical Methods in Medical Research*, 4th edition. Oxford: Blackwell Science, 2002.
- Australian Bureau of Statistics. Information paper: 2001 Socio-Economic Indexes for Areas. Catalogue no. 2039.0. Canberra: ABS, 2003.
- Australian Institute of Health and Welfare, Rural, Regional and Remote Health: A guide to remoteness classifications. AIHW Catalogue no. PHE 53. Canberra: AIHW, 2004. Available at www.aihw.gov.au.
- Chiang CL. *The life table and its applications*. Malabar: Krieger, 1984.
- Commonwealth Department of Health and Aged Care and the National Key Centre for Social Applications of Geographical Information Systems. *Accessibility–Remoteness Index of Australia*. Occasional Papers Series no 5. Canberra: CDHAC, 1999.
- Dixon T, Webbie K. *Diabetes-related deaths 2001–2003*. Nulletin No. 32. AIHW Cat. No. AUS 69. Canberra: AIHW 2005. Available at www.aihw.gov.au/publications/index.cfm/title/10221
- Dobson A, Kuulasmaa K, Eberle E, Schere J. Confidence intervals for weighted sums of Poisson parameters. *Stat Med* 1991; 10: 457–62.
- English DR, Holman CDJ, Milne MG et al. *The quantification of drug-caused morbidity and mortality in Australia*. Canberra: Commonwealth Department of Human Services and Health, 1995.
- Holman CDJ, Armstrong BK, Arias LN et al. *The quantification of drug-caused morbidity and mortality in Australia, 1988*. Canberra: Commonwealth Department of Human Services and Health, 1990.
- Kessler RC, Costello EJ, Merikangas KR, Ustun TB. *Psychiatric Epidemiology: Recent Advances and Future Directions*. Mental Health, United States, 2000. Manderscheid RW, Henderson MJ (editors). Rockville, Maryland: US Department of Health and Human Services, 2000.
- Kessler R, Mroczek D. An update of the development of mental health screening scales for the US National Health Interview Survey. Ann Arbor, Michigan: Survey Research Centre of the Institute for Social Research, University of Michigan, Memo dated December 22, 1992.
- Last JM. *A Dictionary of Epidemiology*, 4th edition. New York: Oxford University Press, 2001.
- Lawson AB, Browne WJ, Vidal Rodeiro CL. *Disease mapping with WinBUGS and MLwiN*. Chichester, Wiley, 2003
- National Centre for Classification in Health. *ICD-10-AM, 2nd edition*. Sydney: National Centre for Classification in Health, 2000.
- National Centre for Classification in Health. *ICD-10-AM, 5th edition*. Sydney: National Centre for Classification in Health, 2006.
- National Coding Centre. *The Australian version of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*. Sydney: University of Sydney, 1996.
- NSW Health Survey Program website at www.health.nsw.gov.au/public-health/survey/hsurvey.html.
- Ridolfo B, Stevenson C. *The quantification of drug-caused morbidity and mortality in Australia, 1998*. AIHW Catalogue no. PHE 29. Canberra: AIHW, 2001.
- SAS Institute. *The SAS System for Windows*. Cary, North Carolina: SAS Institute, 2005.
- Tobias M, Jackson G. Avoidable mortality in New Zealand, 1981–97. *Aust N Z J Public Health* 2001; 25: 12–20.
- Victorian Department of Human Services. *The Victorian ambulatory care-sensitive conditions study: Preliminary analyses*. Melbourne: VDHS, 2001.
- Williamson M, Baker D, Jorm L. The NSW Health Survey Program: Overview and methods 1996–2000. *N S W Public Health Bull* 2001; 12(S-2).
- World Health Organization. *International Classification of Diseases, 9th Revision*. Geneva: WHO, 1977.
- World Health Organization. *International Statistical Classification of Diseases and Related Health Problems, 10th Revision*. Geneva: WHO, 1992.

Glossary

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).

NSW local government areas by health area

Sydney South West Area Health Service

Ashfield	Campbelltown	Leichhardt	Sydney (part)
Bankstown	Canterbury	Liverpool	Wingecarribee
Burwood	Canada Bay	Marrickville	Wollondilly
Camden	Fairfield	Strathfield	

South Eastern Sydney & Illawarra Area Health Service

Botany Bay	Randwick	Sutherland	Woolahra
Hurstville	Rockdale	Sydney (part)	
Kiama	Shellharbour	Waverley	
Kogarah	Shoalhaven	Wollongong	

Sydney West Area Health Service

Auburn	Blue Mountains	Lithgow	
Baulkham Hills	Hawkesbury	Parramatta	
Blacktown	Holroyd	Penrith	

Northern Sydney & Central Coast Area Health Service

Gosford	Lane Cove	Pittwater	Wyong
Hornsby	Manly	Ryde	
Hunters Hill	Mosman	Warringah	
Ku-Ring-Gai	North Sydney	Willoughby	

Hunter & New England Area Health Service

Armidale Dumaresq	Guyra	Muswellbrook	Tamworth Regional
Cessnock	Gwydir	Narrabri	Greater Taree
Dungog	Inverell	Newcastle	Tenterfield
Glen Innes	Lake Macquarie	Port Stephens	Upper Hunter
Gloucester	Liverpool Plains	Scone	Uralla
Great Lakes	Maitland	Severn	Walcha
Gunnedah	Moree Plains	Singleton	

North Coast Area Health Service

Ballina	Clarence Valley	Kempsey	Nambucca
Bellingen	Coffs Harbour	Kyogle	Richmond Valley
Byron	Hastings	Lismore	Tweed

Greater Southern Area Health Service

Albury	Cootamundra	Harden	Temora
Bega Valley	Corowa	Hay	Tumbarumba
Berrigan	Deniliquin	Jerilderie	Tumut
Bland	Eastern Capital City	Junee	Upper Lachlan
Bombala	Eurobodalla	Leeton	Urana
Boorowa	Greater Argyle	Lockhart	Wagga Wagga
Carrathool	Greater Hume	Mulwaree	Wakool
Conargo	Greater Queanbeyan	Murrumbidgee	
Coolamon	Griffith	Narrandera	
Cooma-Monaro	Gundagai	Snowy River	

Greater Western Area Health Service

Balranald	Central Darling	Lachlan	Warren
Bathurst Regional	Cobar	Mid-Western Regional	Warrumbungle
Blayney	Coolah	Narromine	Weddin
Bogan	Coonamble	Oberon	Wellington
Bourke	Cowra	Orange	Wentworth
Brewarrina	Dubbo	Parkes	
Broken Hill	Forbes	Unincorporated Far West	
Cabonne	Gilgandra	Walgett	

NSW local government areas by ARIA+ score

LGA	% of population in ARIA+ category					LGA	% of population in ARIA+ category				
	Metropolitan	Inner regional	Outer regional	Remote	Very remote		Metropolitan	Inner regional	Outer regional	Remote	Very remote
Ashfield	100	.	.	.	.	Junee	.	88.16	11.84	.	.
Auburn	100	.	.	.	.	Harden	.	87.74	12.26	.	.
Bankstown	100	.	.	.	.	Culcairn	.	87.45	12.55	.	.
Blacktown	100	.	.	.	.	Blayney	.	87.31	12.69	.	.
Botany Bay	100	.	.	.	.	Evans	.	83.72	16.28	.	.
Burwood	100	.	.	.	.	Cooma-Monaro	.	82.77	17.23	.	.
Canterbury	100	.	.	.	.	Cowra	.	80.37	19.63	.	.
Concord	100	.	.	.	.	Parry	.	78.9	21.1	.	.
Drummoyne	100	.	.	.	.	Young	.	76.38	23.62	.	.
Fairfield	100	.	.	.	.	Scone	.	72.9	27.1	.	.
Holroyd	100	.	.	.	.	Kyogle	.	71.26	28.74	.	.
Hunters Hill	100	.	.	.	.	Crookwell	.	68.43	31.57	.	.
Hurstville	100	.	.	.	.	Murray	.	68.04	31.96	.	.
Kogarah	100	.	.	.	.	Eurobodalla	.	65.67	34.33	.	.
Ku-ring-gai	100	.	.	.	.	Holbrook	.	64.7	35.3	.	.
Lane Cove	100	.	.	.	.	Gundagai	.	63.02	36.98	.	.
Leichhardt	100	.	.	.	.	Boorowa	.	58.47	41.53	.	.
Manly	100	.	.	.	.	Cabonne	.	57.21	42.79	.	.
Marrickville	100	.	.	.	.	Gloucester	.	52.66	47.34	.	.
Mosman	100	.	.	.	.	Mudgee	.	51.16	48.84	.	.
Newcastle	100	.	.	.	.	Coolamon	.	50.04	49.96	.	.
North Sydney	100	.	.	.	.	Kempsey	.	43.82	56.18	.	.
Parramatta	100	.	.	.	.	Berrigan	.	42.02	57.98	.	.
Queanbeyan	100	.	.	.	.	Copmanhurst	.	41.69	58.31	.	.
Randwick	100	.	.	.	.	Uralla	.	40.18	59.82	.	.
Rockdale	100	.	.	.	.	Rylstone	.	39.85	60.15	.	.
Ryde	100	.	.	.	.	Lockhart	.	25.67	74.33	.	.
South Sydney	100	.	.	.	.	Macleay	.	20.13	79.87	.	.
Strathfield	100	.	.	.	.	Pristine Waters	.	17.13	82.87	.	.
Sydney	100	.	.	.	.	Snowy River	.	8.38	91.62	.	.
Warringah	100	.	.	.	.	Tallaganda	.	5.92	94.08	.	.
Waverley	100	.	.	.	.	Barraba	.	.	100	.	.
Willoughby	100	.	.	.	.	Bellingen	.	.	100	.	.
Woollahra	100	.	.	.	.	Bingara	.	.	100	.	.
Campbelltown	99.8	0.2	.	.	.	Bombala	.	.	100	.	.
Pittwater	99.35	0.65	.	.	.	Broken Hill	.	.	100	.	.
Shellharbour	98.58	1.42	.	.	.	Conargo	.	.	100	.	.
Sutherland Shire	98.48	1.52	.	.	.	Coolah	.	.	100	.	.
Liverpool	96.63	3.37	.	.	.	Forbes	.	.	100	.	.
Wollongong	95.94	4.06	.	.	.	Glen Innes	.	.	100	.	.
Hornsby	95.86	4.14	.	.	.	Griffith	.	.	100	.	.
Camden	95.65	4.35	.	.	.	Gunnedah	.	.	100	.	.
Penrith	95.61	4.39	.	.	.	Guyra	.	.	100	.	.
Gosford	94.82	5.18	.	.	.	Jerilderie	.	.	100	.	.
Maitland	94.67	5.33	.	.	.	Leeton	.	.	100	.	.
Baulkham Hills	92.42	7.58	.	.	.	Manilla	.	.	100	.	.
Lake Macquarie	90.28	9.72	.	.	.	Merrima	.	.	100	.	.
Wyong	88.88	11.12	.	.	.	Murrurundi	.	.	100	.	.
Blue Mountains	67.17	32.83	.	.	.	Nambucca	.	.	100	.	.
Tweed	65.45	34.55	.	.	.	Narrandera	.	.	100	.	.
Hawkesbury	56.21	42.71	1.08	.	.	Narromine	.	.	100	.	.
Cessnock	30.33	69.22	0.45	.	.	Nundle	.	.	100	.	.

NSW local government areas by ARIA+ score

LGA	% of population in ARIA+ category					LGA	% of population in ARIA+ category				
	Metropolitan	Inner regional	Outer regional	Remote	Very remote		Metropolitan	Inner regional	Outer regional	Remote	Very remote
Port Stephens	24.36	75.64	.	.	.	Quirindi	.	.	100	.	.
Yarrowlumla	10.12	89.88	.	.	.	Severn	.	.	100	.	.
Wollondilly	0.84	99.16	.	.	.	Temora	.	.	100	.	.
Albury	.	100	.	.	.	Tenterfield	.	.	100	.	.
Ballina	.	100	.	.	.	Tumbarumba	.	.	100	.	.
Bathurst	.	100	.	.	.	Urana	.	.	100	.	.
Byron	.	100	.	.	.	Wakool	.	.	100	.	.
Deniliquin	.	100	.	.	.	Walcha	.	.	100	.	.
Goulburn	.	100	.	.	.	Weddin	.	.	100	.	.
Grafton	.	100	.	.	.	Wellington	.	.	100	.	.
Hume	.	100	.	.	.	Windouran	.	.	100	.	.
Kiama	.	100	.	.	.	Bega Valley	.	.	98.38	1.62	.
Lismore	.	100	.	.	.	Parkes	.	.	98.38	1.62	.
Orange	.	100	.	.	.	Gilgandra	.	.	96.88	3.12	.
Tamworth	.	100	.	.	.	Inverell	.	.	96.66	3.34	.
Wingecarribee	.	100	.	.	.	Murrumbidgee	.	.	96.39	3.61	.
Greater Lithgow	.	99.22	0.78	.	.	Yallaroi	.	.	95.33	4.67	.
Singleton	.	98.9	1.1	.	.	Bland	.	.	94.3	5.7	.
Shoalhaven	.	98.83	1.17	.	.	Wentworth	.	.	91.14	8.86	.
Richmond Valley	.	98.33	1.67	.	.	Narrabri	.	.	90.9	9.1	.
Wagga Wagga	.	97.86	2.14	.	.	Balranald	.	.	83.86	16.14	.
Gunning	.	96.36	3.64	.	.	Coonabarabran	.	.	81.97	18.03	.
Muswellbrook	.	95.85	4.15	.	.	Moree Plains	.	.	81.82	18.18	.
Coffs Harbour	.	95.85	4.15	.	.	Hay	.	.	78.88	21.12	.
Corowa	.	95.52	4.48	.	.	Warren	.	.	70.24	29.76	.
Dungog	.	95.52	4.48	.	.	Lachlan	.	.	51.95	48.05	.
Cootamundra	.	94.53	5.47	.	.	Carrathool	.	.	33.16	66.84	.
Hastings	.	94.09	5.91	.	.	Unincorporated NSW	.	.	15.85	18.92	65.23
Mulwaree	.	92.98	7.02	.	.	Bogan	.	.	.	100	.
Armidale Dumaresq	.	91.98	8.02	.	.	Coonamble	.	.	.	100	.
Yass	.	91.91	8.09	.	.	Walgett	.	.	.	95.26	4.74
Tumut	.	90.8	9.2	.	.	Cobar	.	.	.	91.01	8.99
Greater Taree	.	90.22	9.78	.	.	Brewarrina	.	.	.	58.3	41.7
Oberon	.	89.46	10.54	.	.	Central Darling	.	.	.	32.01	67.99
Dubbo	.	88.72	11.28	.	.	Bourke	100
Great Lakes	.	88.36	11.64	.	.						

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