The Health of the People of New South Wales

DECEMBER 1997

Report of the Chief Health Officer

The health of the people of New South Wales

Report of the Chief Health Officer

NSW Health Department
December 1997

State Health Publication No: (PHD) 970127
ISBN: 0 7313 0681 3

Suggested citation: Public Health Division, *The Health of the People of New South Wales - Report of the Chief Health Officer.* NSW Health Department, Sydney, 1997.

Recent related Publications: Public Health Division, *The Health of the People of New South Wales - Report of the Chief Health Officer.* NSW Health Department, Sydney, 1996.

Published by Epidemiology and Surveillance Branch, Public Health Division, NSW Health Department

Further copies of this publication are available within Australia at a cost of $20 (plus $5 postage and handling) from:
The Better Health Centre,
162 Blues Point Road
NORTH SYDNEY NSW 2060
AUSTRALIA
(02) 9391 9010; International +61 2 9391 9010
or
from the Public Health Division Web site at:
http://www.health.nsw.gov.au/public-health/chorep/chorep.html

Foreword

I am pleased to present the second edition of the Chief Health Officer's report on the health of the people of New South Wales.

The report provides a detailed account of available measures of health for residents of NSW. In general, the latest 10 years of available data are presented and an Area Health Service breakdown is given for key health indicators. The report includes more than 200 health indicators. While this seems a large number, many other possible indicators were excluded owing to incomplete or poor quality data or because they were inadequate descriptors of the relevant health issues.

The report is intended for health consumers and their representative organisations, staff of the Area Health Services, health professionals, and other interested organisations and individuals. It will contribute to evaluating health policy and programs and planning services that more effectively meet the needs of the NSW community. We will produce a new edition every two years, and the indicators covered will evolve with the increasing sophistication of methods for measuring health and health system performance.

The first section of the report, *Patterns of health and illness*, presents information on demographic factors including age, sex, ethnicity and socioeconomic status, and on the health of NSW mothers and babies, disability, self-assessed health and major causes of illness and death.

Section two, *Determinants of health*, gives information on health risks including inadequate physical activity, overweight and obesity, smoking, alcohol use, use of illicit drugs and air and water quality. Monitoring these indicators will allow us to assess the success of programs at managing these risks and preventing disease.

The third section of the report, *Health inequalities*, focuses on health differentials according to indigenous status, country of birth and socioeconomic status. The health of our Aboriginal and Torres Strait Islander people is of particular concern as it is worse than that of the population as a whole across a wide range of indicators. Also, problems with data quality limit our ability to monitor progress in addressing these inequalities.

Section four, *Health priority areas* presents the latest information on key health issues including cardiovascular disease, cancer, mental health, injury, diabetes, communicable diseases, dental health and asthma. Prevention and treatment programs will use these measures as a criterion of success or failure. Childhood vaccination programs are one such example: the community's use of vaccines is disastrously low and the consequences are seen in unnecessary deaths and hospital admissions. Other programs that rely on early diagnosis and treatment, like mammographic screening for breast cancer, will measure their success by an increase in the number of notifications of new cases and a decrease in the number of deaths. Treatment programs, like those for the management of diabetes, will rely on a decrease in the number of complications (such as lower leg amputations) as a measure of their effectiveness.

The Department's Epidemiology and Surveillance Branch coordinated the production of this report. It involved much hard work by these staff, others from the Department's Public Health Division and collaborating groups and individuals. I commend them on a fine piece of work.

I encourage you to comment on the report by completing the evaluation form at the rear of the report or sending your comments to me.

Andrew Wilson

Deputy Director-General Public Health and Chief Health Officer

6 December 1997

Table of contents

Appendices

Executive Summary

Demography

In 1996, approximately half the NSW population was aged 35 years or over. Because birth rates are expected to remain stable and migration at or below current levels, the population will gradually "age". In 1996, just over 21 per cent of the NSW population spoke a language other than English at home.

Health of mothers and babies

In 1995, almost 88,000 births were registered in NSW. Between 1986 and 1995, the crude birth rate fell from 15.4 to 14.2 per 1,000 population, and the median age of mothers giving birth increased from 28.3 to 29.1 years. Deaths from sudden infant death syndrome (SIDS) in NSW have decreased by around two-thirds over the past 10 years, from 205 in 1986 to 72 in 1995.

Health status and disability

In 1995, fair or poor health was reported with similar frequency by both men (17.5%) and women (17.3%). Self-reported health declined with age. In 1993, more than one million NSW residents had a disability. The prevalence of disability increased with age, to 65 per cent among people aged 75 years and over. Almost 80 per cent of people with a disability had a handicap which limited their ability to perform tasks associated with daily living.

Illness

In 1995, the recent health conditions most commonly reported by NSW residents were headache, arthritis, high blood pressure, asthma and common cold, while the long-term health conditions most commonly reported were vision problems, arthritis, hay fever, asthma, high blood pressure, sinusitis and deafness. In 1995/96, respiratory diseases, diseases of the gastrointestinal system and cardiovascular diseases were the most common causes of hospitalisation in those aged 0-14 years, 14-64 years and 65+ years respectively (excluding pregnancy-related admissions).

Life expectancy

Between 1985 and 1994, life expectancy at birth in NSW increased steadily, from 72.2 to 75.1 years for males and from 78.8 to 80.9 years for females. In 1994, the expected age at death for those having reached the age of 65 years was 84.5 years for women and 81.0 years for men.

Deaths

In 1994, most deaths among children aged 0-14 years were due to perinatal conditions and congenital anomalies. The most important causes of death among people aged 15-64 years were cancer, circulatory diseases and injury and poisoning. Circulatory diseases were the most important causes of death in people aged 65 years and over. Potential years of life lost (PYLL) before age 75 is a measure of premature mortality. In 1994, breast cancer was the single largest cause of PYLL in females, followed by ischaemic heart disease, motor vehicle traffic accidents, lung cancer and suicide. Ischaemic heart disease was the single largest cause of PYLL in males, followed by suicide, motor vehicle traffic accidents, lung cancer and colorectal cancer.

Health-related behaviour

In 1996, only half of NSW adults expended enough energy on leisure-time activity for health benefit. Men (59%) were more likely to report adequate levels of activity than women (42%). In 1994, women were more likely to report using sunscreen and wearing sunglasses, while men were more likely to wear protective clothing or hats. In 1995, almost half of NSW men (47%), and less than one-third of women (28%) reported being overweight or obese. Men reported eating greater quantities of fatty foods. Smoking levels in NSW have declined by around one-third since 1977. In 1995, 27 per cent of men and 20 per cent of women reported current smoking. In the same year, 10 per cent of men and 6 per cent of women reported drinking alcohol at medium- or high-risk levels.

Health and the environment

Concentrations of lead in ambient air in Sydney have been steadily declining in recent years. The number of days on which desired goals for atmospheric fine particles, nitrogen dioxide and ozone have been exceeded have also declined. Drinking water from Sydney and Hunter Water has complied with guidelines for coliforms, aluminum, lead and pesticides in recent years. Rural water supplies as a whole have also generally complied with guideline levels, but in three instances in the period 1994 to 1997, levels of pesticides exceeding guideline values were detected.

Health of Aboriginal and Torres Strait Islander peoples

Aborigines and Torres Strait Islanders comprised 1.3 per cent of the NSW population at the 1991 Census and 2.3 per cent of the population at the 1996 Census. Much of the increase was due to an increasing level of self-identification among indigenous people. In 1996, only 13 per cent of the indigenous population was aged 45 years or over (compared with 34% of the total population). In the period 1990 to1994, the perinatal mortality rate and the prematurity rate for babies of indigenous mothers were much higher than for other NSW babies. Less than half of deaths among indigenous people in NSW are recorded as such, making death data unreliable. Even though indigenous status is also under-reported in NSW hospital data, reported hospitalisation rates for indigenous people for cardiovascular diseases, diabetes mellitus, respiratory diseases, lung cancer and injury and poisoning are consistently around double those for non-indigenous people.

Country of birth differentials

In the period 1989 to1993, NSW residents born in most overseas countries experienced lower death rates than for all NSW. Selection processes at least partly explain the low death rates among immigrants. People born in Malta, Lebanon, India (men), Italy (women) and the former Yugoslavia (women) have a higher death rate from diabetes than for NSW as a whole. Women born in Fiji and Vietnam experienced significantly higher incidence rates for cervical cancer than for all NSW women, while women born in the United Kingdom had significantly higher death rates from breast cancer.

Socioeconomic status and health

In the period 1990 to1994, the NSW local government areas with the lowest socioeconomic status (SES) had the highest rates of premature death and hospitalisation. The association between low SES and premature death was observed for a range of causes, including cardiovascular diseases, injury and poisoning, respiratory diseases, lung cancer and cervical cancer. Premature deaths from breast cancer, prostate cancer and colorectal cancer showed virtually no correlation with SES.

Cardiovascular diseases

Deaths due to coronary heart disease (CHD) and stroke have been declining in NSW since the 1960s. Nevertheless, CHD caused 10,900 deaths (24% of all deaths) in NSW in 1994 and while stroke caused 4,820 deaths (11% of all deaths). The declines have been accompanied by increases in hospitalisations for these conditions: hospitalisations for CHD (mainly for non-infarct diagnoses) have increased by 44 per cent in the past seven years, while hospitalisations for stroke have increased by 12 per cent.

Diabetes mellitus

In 1994, 5 per cent of NSW adults reported being told by a doctor or nurse that they had high blood sugar or diabetes. Prevalence increased with age, to around 10 per cent for people aged 65 years or over. Deaths recorded as due to diabetes have been relatively stable in NSW in recent years, but diabetes is under-reported as a direct cause of death, and may be a contributory risk factor in many deaths ascribed to cardiovascular diseases.

Asthma

In 1994, 14 per cent of NSW adults reported ever having being diagnosed with asthma. Asthma prevalence was highest among adults aged 18-24 years. In the same year, 9 per cent of NSW adults reported current asthma. The death rate from asthma in NSW has been declining gradually since 1989. There were 309 deaths from asthma in 1994.

Cancer

In 1994, cancer caused 11,502 deaths in NSW. Breast cancer was the most common malignant cancer, and the leading cause of cancer death in women. New cases of breast cancer have increased gradually in recent years (partly owing to increased screening and early detection) but death rates have remained stable. Lung cancer was the most common cause of cancer death in males and the second most common in females. Male death rates from lung cancer have declined in recent years, but female death rates continue to rise. Prostate cancer was the most common malignant cancer and the second most common cause of cancer death in men. The reported rate for new cases of prostate cancer has risen rapidly in recent years.

Injury and poisoning

In 1994, injury and poisoning caused 2,930 deaths in NSW. The major causes of injury death were road injury, falls, unintentional poisoning, homicide and unintentional drowning. The main causes of injury hospitalisation in 1995/96 were falls, road injury, sports injury and unintentional cutting and piercing injuries. In the same year, 12,810 NSW children had a confirmed case of abuse or neglect reported to the Department of Community Services.

Mental health

Around 18 per cent of NSW children and adolescents meet criteria for mental health problems at some time during a six-month period. Delinquent problems, thought problems, attention problems and social problems are the most common mental health problems among children. Nearly 30 per cent of NSW adults may have at least one mental health disorder at some time during a 12-month period. The most common mental disorders in adults are major depressive episode, simple phobia, social phobia and alcohol dependence. In 1994, 797 deaths in NSW were caused by suicide or self-inflicted injury. Most of these deaths were in males. Death rates from suicide among young men aged 15-24 years have risen steadily over recent years.

Communicable diseases

Rates of *Haemophilus influenzae* type b (Hib) disease have declined substantially in NSW since the introduction of an effective vaccine in 1993. NSW has been in the grip of an extended outbreak of pertussis (whooping cough) since 1993. In late 1996 and early 1997, six NSW infants died of pertussis. Only 59.3 per cent of NSW children aged three months to six years were fully immunised in 1995. AIDS cases and deaths declined sharply in NSW in 1996; 338 new cases of HIV infection and 259 new cases of AIDS were reported in that year. Hepatitis C is the most commonly reported communicable disease in NSW, with 8,547 cases reported in 1996. The incidence of food poisoning in NSW appears to be increasing, with 1,248 reported cases of salmonella infection in 1996. Arboviral illness reports rose sharply in 1996, with 1,268 cases reported compared with 551 the previous year.

Dental health

In 1996, approximately two-thirds of NSW kindergarten children and 57 per cent of children in grade 6 had experienced no tooth decay. They had on average one decayed, missing or filled tooth. Hospitalisations for removal or restoration of teeth rose in all age groups over the period 1989/90 to 1995/96.

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 on page 267.

List of abbreviations

2,4-D	2,4-Dichlorophenoxyacetic acid
ABS	Australian Bureau of Statistics
AGPS	Australian Government Printing Service
AHS	NSW Area Health Service (see map, page xv)
AHR	Airway hyper-responsiveness
AIDS	Acquired immunodeficiency syndrome
AIHW	Australian Institute of Health and Welfare
ARMCANZ	Agricultural and Resource Management Council of Australia and New Zealand
BMI	Body mass index
CI	Confidence interval
DDE	A metabolite of DDT, Dichloro-diphenyl-dichloroethylene
DDT	Dichloro-diphenyl-trichloroethane
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 deacy)
DTP	Diphtheria-tetanus-pertussis combined vaccine (also called triple antigen vaccine)
EPA	Environment Protection Authority
F	Female
FEV1	Forced expiratory volume
HARP	Health and Air Research Program
HIV	Human immunodeficiency virus
HOIST	Health Outcomes Information Statistical Toolkit (see Methods section, page 257)
HPS	NSW Health Promotion Survey 1994 (see Methods section, page 259)
ICD-9	International Classification of Diseases, 9th revision
IDDM	Insulin-dependent diabetes mellitus
IDSS	NSW Infectious Diseases Surveillance System (see Methods section, page 260)
ISC	NSW Inpatients Statistics Collection (see Methods section, page 258)
LGA	Local Government Area
LL 99% CI	Lower limit of 99% confidence interval for rate
M	Male
MDMA	Methylenedioxyamphetamine (Ecstasy)
MMR	Measles-mumps-rubella combined vaccine
NAC	National Asthma Campaign
NATSIS	National Aboriginal and Torres Strait Islander Survey
NHS	Australian Bureau of Statistics National Health Survey (see Methods section, page 259)

NIDDM	Non-insulin-dependent diabetes mellitus
No.	Number
NOx	Oxides of nitrogen
NO	Nitric oxide
NO_2	Nitrogen dioxide
NSW	New South Wales
PCP	Pentachlorophenol
PM10	Particulate matter <10 microns in diameter
ppm	parts per million
PYLL	Potential years of life lost (see Methods section, page 262)
ROCS	Reactive organic compounds
SEIFA	Australian Bureau of Statistics Socioeconomic Index for Areas (see Methods section, page 263)
SES	Socioeconomic status
SLA	Statistical Local Area
SPCC	State Pollution Control Commission
THM	Trihalomethane
SIDS	Sudden infant death syndrome
UL 99% CI	Upper limit of 99% confidence interval for rate

Patterns of health and illness

Section 1

Chapter 1.1

Demography

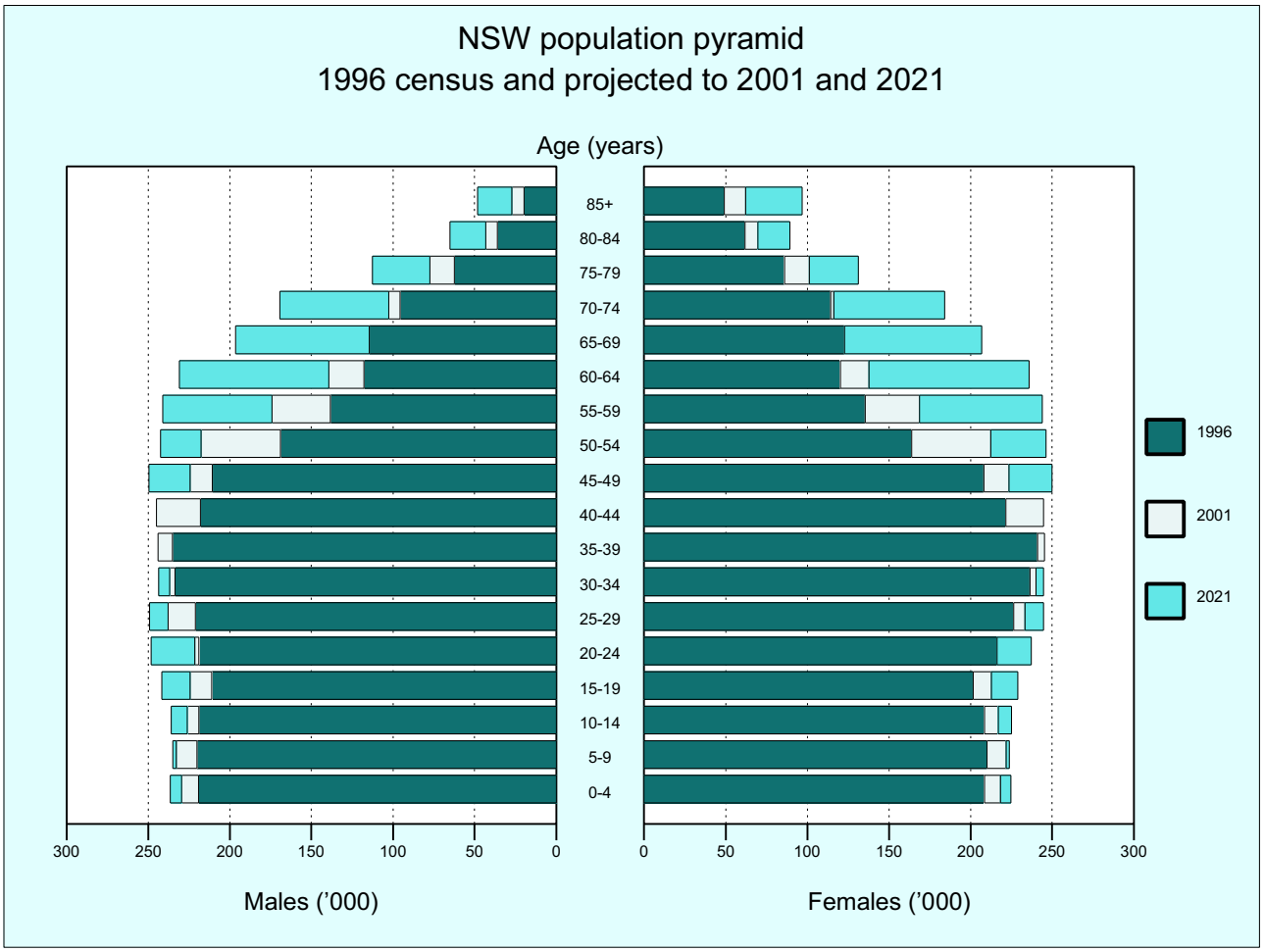
- Approximately half of the NSW population was aged 35 years or older in 1996. Because birth rates are expected to remain stable and migration to remain at or below current levels, the population will gradually "age".
- The female population outnumbers the male population, especially in the older age groups.
- The proportion of the NSW population born overseas rose from 25.2 per cent in 1991 to 26.7 per cent in 1996. The majority of the overseas-born come from the United Kingdom, New Zealand, Italy, China, Vietnam, Lebanon and the Philippines.
- Just over 21 per cent of the NSW population spoke a language other than English at home in 1996. Chinese, Arabic, Italian, Greek, Vietnamese, Spanish and Filipino were the non-English languages most commonly spoken.
- Almost 57 per cent of female NSW residents aged 15 years and over in 1996 had a weekly income of less than $300, compared with only 37 per cent of males.
- The NSW unemployment rate varied widely over the period 1986 to 1996, peaking at 12.5 per cent in February 1993 after a low of 5.2 per cent in November 1989.
- The workforce participation rate among males decreased in the period 1986 to 1996, from 75.5 to 72.4 per cent. The female participation rate increased quite dramatically in this period, from 45.2 per cent to 52.2 per cent.

In this chapter

Introduction

Demographic factors, including age, gender, ethnicity and socioeconomic status, are important determinants of health. This chapter presents NSW data for a range of demographic indicators, using information from the Australian Bureau of Statistics 1996 census where possible.

More information on health differentials by indigenous status, country of birth and socioeconomic status is given in chapters 3.1, 3.2 and 3.3.



Note: It is expected that the number of males and females aged 35-44 will decrease by 2021.

Sources: ABS, *1996 Census Basic Community Profile* (electronic), ABS cat. no. 2020.0, ABS, Canberra, 1997 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department and ABS, *Projections of the population of Australia, states and territories, 1993 to 2041,* ABS cat. no. 3222.0, ABS, Canberra, 1996 (Series B displayed).

- The age and sex distribution of the current and projected NSW population is illustrated in the population pyramid above.
- Currently, approximately half of the NSW population is aged 35 years and over. Because birth rates are expected to remain stable and migration to remain at or below the current levels, the population as a whole will gradually "age".
- Particularly noticeable is the current bulge in the population pyramid in the 30- to 49-year-old age groups. This represents people born during a period of high birth rate in the 1950s and 1960s, often known as "baby boomers".
- By 2021, these "baby boomers" will be approaching old age and, as a result, a dramatic increase in demand for health and other social services more commonly used by older age groups is expected.
- The female population outnumbers the male population, particularly in the older age groups. In 1996, 14.3 per cent of females were aged 65 and over, compared with 11.1 per cent of males.
- By 2021, the proportion of the population aged 65 years and over will increase to 15.9 per cent for males and 18.7 per cent for females.

For more information, see: Australian Bureau of Statistics Web site at http://www.abs.gov.au

MALES – 1996 census population of NSW residents by age and Health Area

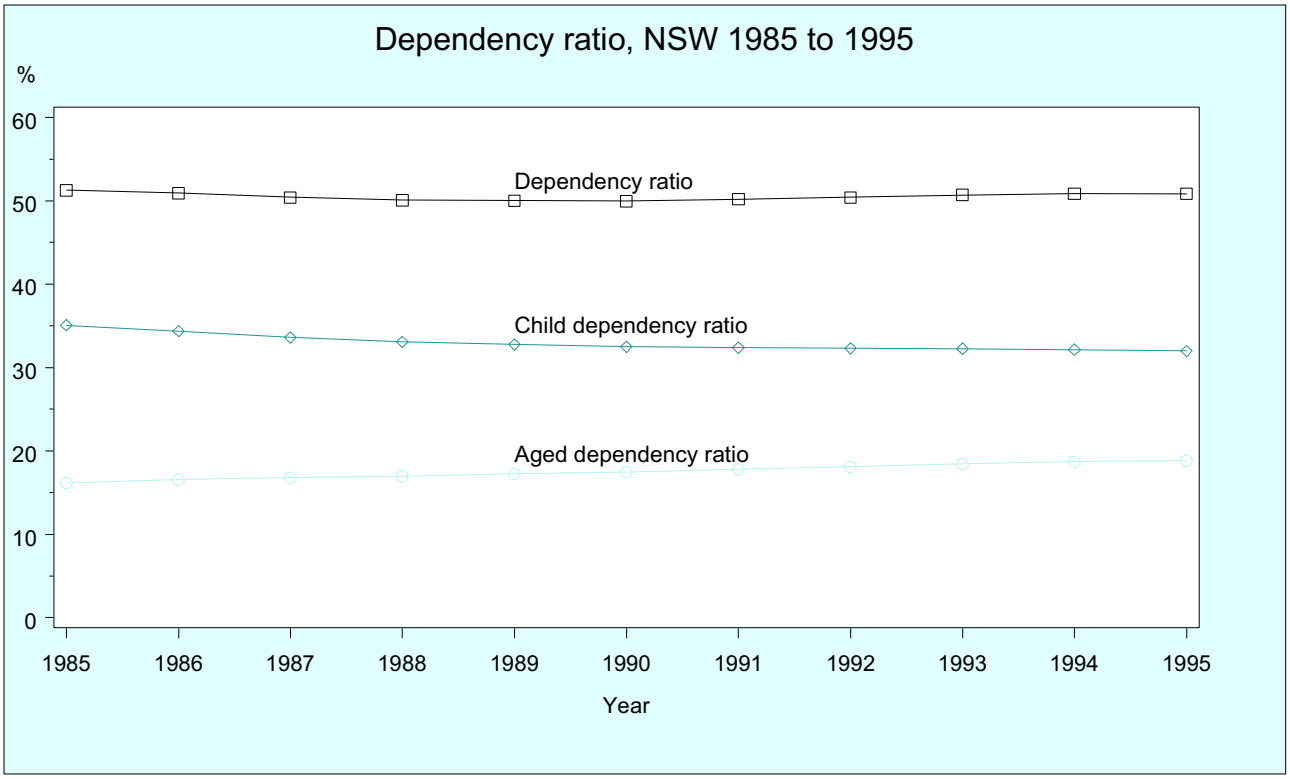
Health Area	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85 +	All ages
Central Sydney	14591	12467	11938	13390	18903	21725	22462	20017	16714	15158	12237	10499	9229	8521	6894	4501	2766	1647	223659
Northern Sydney	21224	21685	22403	24347	26179	26620	27161	26883	25201	26298	22051	17122	13318	12573	11062	7922	5110	3129	340288
South Eastern Sydney	20777	19869	19640	22316	30446	32688	31988	29023	25597	25178	20635	16660	13845	13303	11444	8025	4912	2789	349135
South Western Sydney	30412	29803	29359	27986	27386	26534	28112	28077	25334	23919	18359	14569	11798	10423	8319	4990	2591	1330	349301
Western Sydney	24999	24000	23845	24349	25405	24465	24718	23620	22154	22498	18537	14132	10454	8942	7033	4340	2434	1181	307106
Wentworth	12731	12776	12779	11447	10926	10768	11309	11955	11499	11032	7757	5416	4107	3495	2846	1841	1062	569	144315
Central Coast	10236	10435	9705	8168	7169	7406	9054	9622	9002	8294	6573	5387	5279	6217	5812	4138	2403	1216	126116
Hunter	18671	19200	19021	18075	18590	17585	18371	19487	18507	17464	14255	11237	9870	10278	8981	5760	3259	1710	250321
Illawarra	12258	12346	12230	11477	11502	10625	11984	12282	11209	10793	8453	7758	7130	7400	6047	3731	1969	888	160082
Northern Rivers	8611	9924	10033	8484	6579	6254	7818	9277	9659	8778	6448	5719	5845	6620	5972	3921	2033	1071	123046
Mid North Coast	8563	9808	9872	7814	5447	5777	7180	8850	8831	8462	6891	6409	6485	7383	6436	4135	2222	1105	121670
New England	6692	7112	7319	6378	5642	5439	5992	6511	6347	6147	5277	4558	3900	3490	2622	1738	1042	595	86801
Macquarie	4514	4446	4295	3260	2843	3289	3631	3867	3548	3499	2943	2727	2292	2119	1553	944	554	322	50646
Far West	2008	2050	1874	1534	1561	1830	1930	2066	2025	1922	1644	1445	1276	1243	825	474	269	152	26128
Mid Western	6193	6681	6915	6305	5413	5277	5663	6217	5830	5721	4687	3908	3458	3190	2433	1546	928	578	80943
Greater Murray	10150	10294	10202	9416	8624	8434	9090	9777	9165	8649	6868	6096	5201	5103	3938	2479	1469	875	125830
Southern	6715	7325	7523	6252	6169	6418	6950	7628	7220	6849	5464	4931	4310	4194	3456	2172	1109	556	95241
NSW	219345	220221	218953	210998	218784	221134	233413	235159	217842	210661	169079	138573	117797	114494	95673	62657	36132	19713	2960628

FEMALES – 1996 census population of NSW residents by age and Health Area

Health Area	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85 +	All ages
Central Sydney	13532	11773	11559	13585	20288	22709	22099	19320	16782	14865	11559	9957	8885	8706	8064	6316	4871	4388	229258
Northern Sydney	20273	20958	21403	23145	26493	27889	28460	28591	27651	28088	22780	17240	13952	14633	14667	12274	9840	9247	367584
Sth Eastern Sydney	19502	19170	18845	21676	30428	32455	30337	27907	25448	24953	20197	16106	13860	14708	14690	11396	8778	6933	357389
Sth Western Sydney	28753	28126	27778	26576	27170	27947	28809	29217	26263	23965	17146	14100	12048	11739	10328	6800	4316	3213	354294
Western Sydney	23496	22842	22865	23466	25155	24955	24669	24520	23342	23005	17477	12956	10463	9811	9066	6433	4420	3365	312306
Wentworth	12221	12411	12108	11003	10984	11341	11962	13059	11746	10712	7297	5253	4130	3895	3654	2698	1814	1271	147559
Central Coast	9700	9833	9329	7746	7235	8123	9714	10462	9262	8365	6656	5715	6061	7006	6948	5661	3706	2527	134049
Hunter	17919	18414	18057	17230	17795	17315	18660	19679	18505	17061	13587	11271	10520	11199	10418	7872	5673	4330	255505
Illawarra	11588	11810	11749	10601	10887	10723	12161	12690	11413	10307	8656	7871	7433	7766	6621	4670	3130	2194	162270
Northern Rivers	8245	9291	9372	7848	6218	6661	8410	10261	9756	8144	6434	6026	6394	6889	6299	4479	2950	2163	125840
Mid North Coast	8235	9345	9430	7287	5397	6123	7992	9683	9027	8294	7047	6846	6938	7380	6793	4693	3166	2258	125934
New England	6534	6829	6862	6416	5441	5467	6233	6704	6061	5976	4989	4431	3682	3508	3060	2442	1737	1530	87902
Macquarie	4212	4285	4147	3020	2863	3478	3710	3963	3586	3205	2761	2510	2238	2019	1764	1316	982	754	50813
Far West	1836	1919	1644	1388	1414	1767	1770	1917	1647	1554	1323	1185	1098	1067	810	684	484	342	23849
Mid Western	6049	6266	6492	5954	5238	5079	5713	6002	5541	5361	4374	3771	3240	3153	2960	2271	1692	1391	80547
Greater Murray	9766	9859	9912	8928	7907	8368	8928	9728	8662	7945	6441	5778	5097	5016	4515	3451	2522	2031	124854
Southern	6533	6968	7033	5650	5330	6101	6942	7492	6751	6255	5202	4542	4094	4176	3562	2615	1758	1214	92218
NSW	208394	210099	208585	201519	216243	226501	236569	241195	221443	208055	163926	135558	120133	122671	114219	86071	61839	49151	3032171

Source: ABS, *1996 census basic community profile* (electronic), ABS cat. no. 2020.0, ABS, Canberra, 1997 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

Note: NSW census population for residents at 6 August 1996.



		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
NSW	Child dependency ratio	35.1	34.4	33.6	33.1	32.8	32.5	32.4	32.3	32.3	32.2	32.0
	Aged dependency ratio	16.2	16.6	16.8	17.0	17.3	17.5	17.8	18.1	18.4	18.7	19.0
	Dependency ratio	51.3	50.9	50.4	50.1	50.0	50.0	50.2	50.4	50.7	50.9	51.0
AUSTRALIA	Child dependency ratio	35.7	34.7	34.0	33.4	33.0	32.9	32.8	32.6	32.5	32.3	–
	Aged dependency ratio	15.5	15.7	16.1	16.3	16.5	16.6	16.9	17.2	17.5	17.8	–
	Dependency ratio	51.2	50.4	50.1	49.7	49.5	49.5	49.7	49.8	50.0	50.1	–

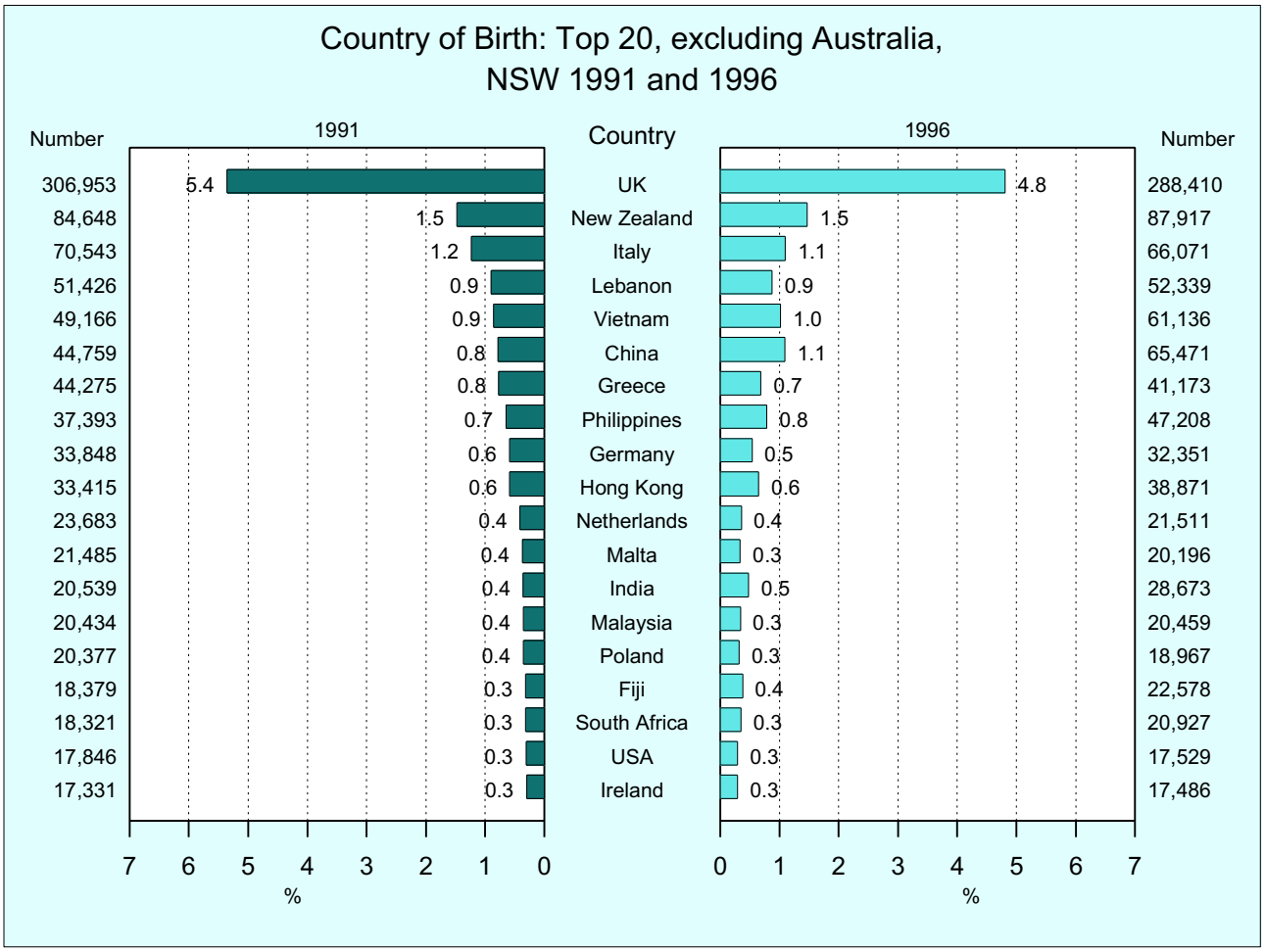
Note: NSW population estimated as at 30 June each year.

Source: ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian Health Trends*, AIHW, Canberra, 1995.

- A dependent is defined as a person under the age of 15 years of age or aged 65 years or over. The dependency ratio is the ratio of the number of people in the population in these age groups to the number of people of working age (aged 15 to 64 years).
- Of course, not all people aged 65 years and over are "dependent", nor are all people of working age actually working. Nevertheless, the dependency ratio gives an approximate indication of the proportion of people in the population who may need to rely on those of working age for support.
- Although the dependency ratio appeared to be stable between 1985 and 1995, this hides the fact that the age distribution of the dependents is shifting.
- In Australia, child dependents decreased from 35.7 to 32.3 per cent of the population, while aged dependents increased from 15.5 to 17.8 per cent of the population. Overall, the dependency ratio in Australia decreased slightly, from 51.2 to 50.1 per cent in this 10-year period. This decline is not expected to continue as the population ages.
- A similar trend was evident in the NSW population. However, there was a greater increase in aged dependents (from 16.2% to 19.0%) and lesser decrease in child dependents (from 35.1% to 32.0%) than in Australia overall in this period. This difference reflects the flatter age distribution in NSW, which has a more equal number of children and older people than Australia as a whole.

For more information, see: Australian Bureau of Statistics Web site at http://www.abs.gov.au

Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au



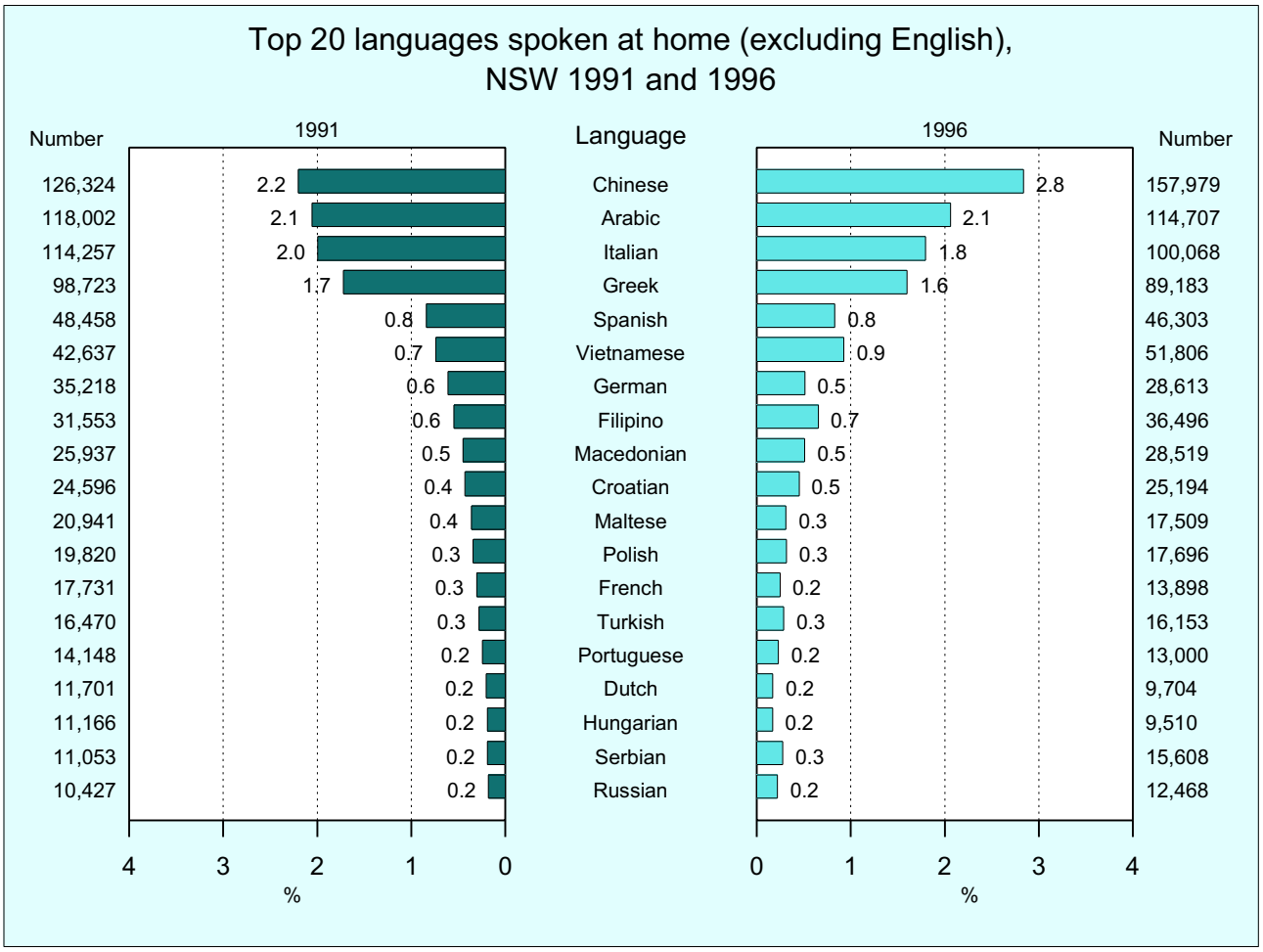
Note: 74.7% and 73.3% of NSW residents were Australian-born in 1991 and 1996 respectively. The 1991 census reported the former Yugoslavia as the country of birth for 61,324 (1.1%) NSW residents.

Source: ABS, *1996 Census Basic Community Profile* (electronic), ABS cat. no. 2020.0, ABS, Canberra, 1997 and special tabulations from the ABS 1991 census (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The percentage of the NSW population born overseas rose from 25.2 per cent in 1991 to 26.7 per cent in 1996.
- Among the overseas-born population in 1996, the majority came from the United Kingdom, followed by New Zealand, Italy, China, Vietnam, Lebanon and the Philippines.
- The proportion of the NSW population born in the United Kingdom and European countries declined between 1991 and 1996, while the proportion born in Asian countries, particularly Vietnam, China and the Philippines, increased.
- The health status of the overseas-born population tends to be slightly better than that of the Australian-born population. This is partly because immigration regulations require most migrants to pass medical examinations. This tends to favour migrants who are younger and healthier than the general Australian population.
- Migrant groups from some countries suffer higher rates of certain diseases, such as re-activated tuberculosis in migrants from South-East and South Asia. However, owing to screening procedures, the total number of such cases is not large. Overall, migrants tend to use health services less than Australian-born people of the same age and sex.
- For more information on the health of overseas-born residents of NSW, see chapter 3.2 (page 111).

For more information, see: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds), *Immigrants in Australia: a health profile*, AIHW Ethnic Health Series no. 1, AGPS, Canberra, 1992.

Australian Bureau of Statistics Web site at http://www.abs.gov.au



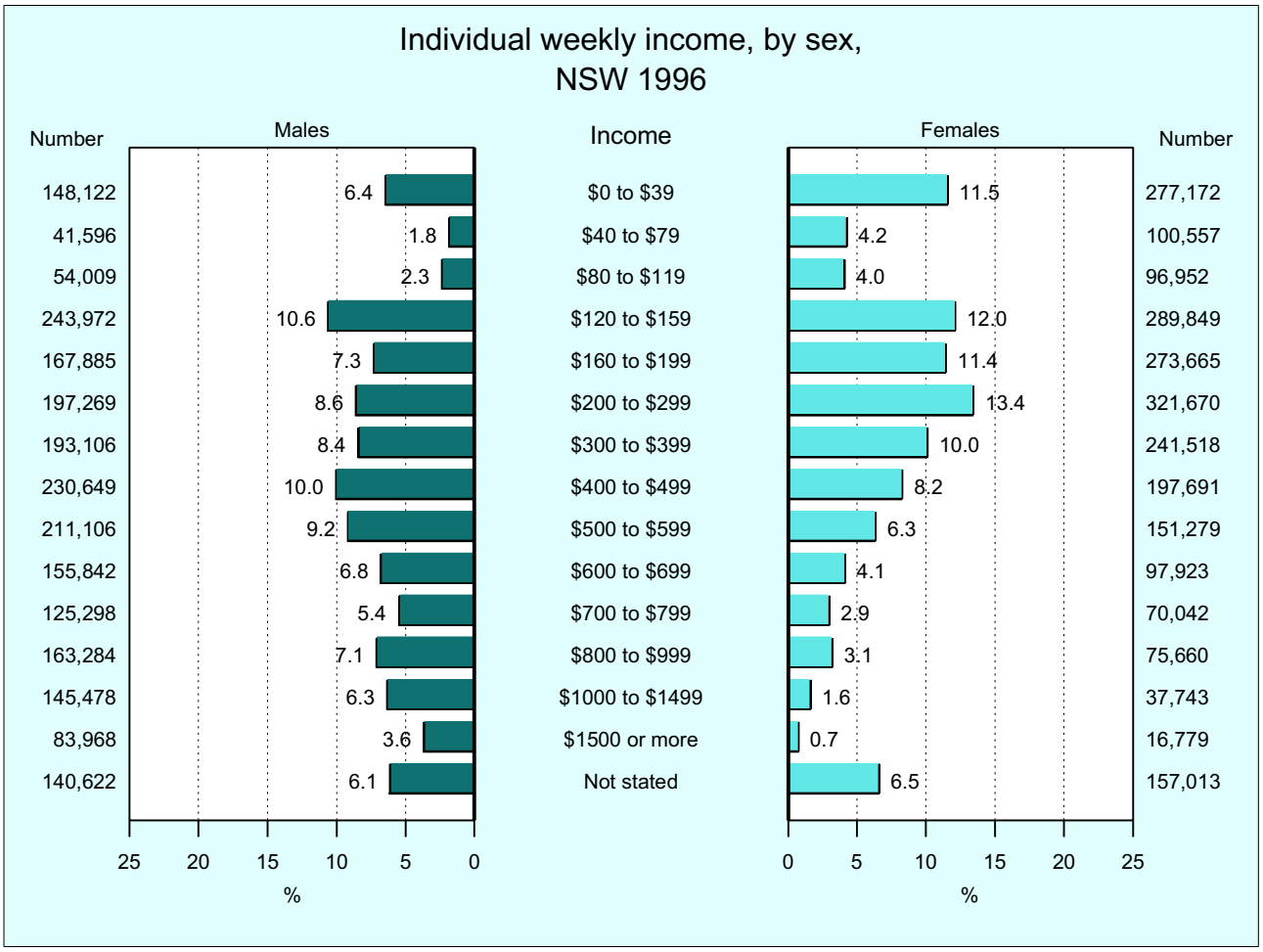
Note: 80.1% and 78.6% of NSW residents spoke only English at home in 1991 and 1996 respectively.

Source: ABS, *1996 Census Basic Community Profile* (electronic), ABS cat. no. 2020.0, ABS, Canberra, 1997, and special tabulations from the ABS 1991 Census (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The total proportion of the 1996 population who spoke a language other than English at home was 21.4 per cent, compared with 19.9 per cent in 1991.
- Changes in the leading languages spoken at home between 1991 and 1996 reflect shifting migration patterns. For example, between 1991 and 1996, people who reported their country of birth as China or Hong Kong increased by one-third. This change is reflected in the large increase (from 2.2% to 2.8%) in the NSW population who reported speaking Chinese languages at home.
- Shifts in the major (non-English) languages spoken have implications for planning of health services, including culturally specific health promotion campaigns, health care interpreter services and programs to promote sensitivity to the diverse needs of the NSW population among health care workers.
- For more information on the health of overseas-born residents of NSW, see chapter 3.2 (page 111).

For more information, see: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds), *Immigrants in Australia: a health profile*, AIHW Ethnic Health Series no. 1, AGPS, Canberra, 1992.

Australian Bureau of Statistics Web site at http://www.abs.gov.au

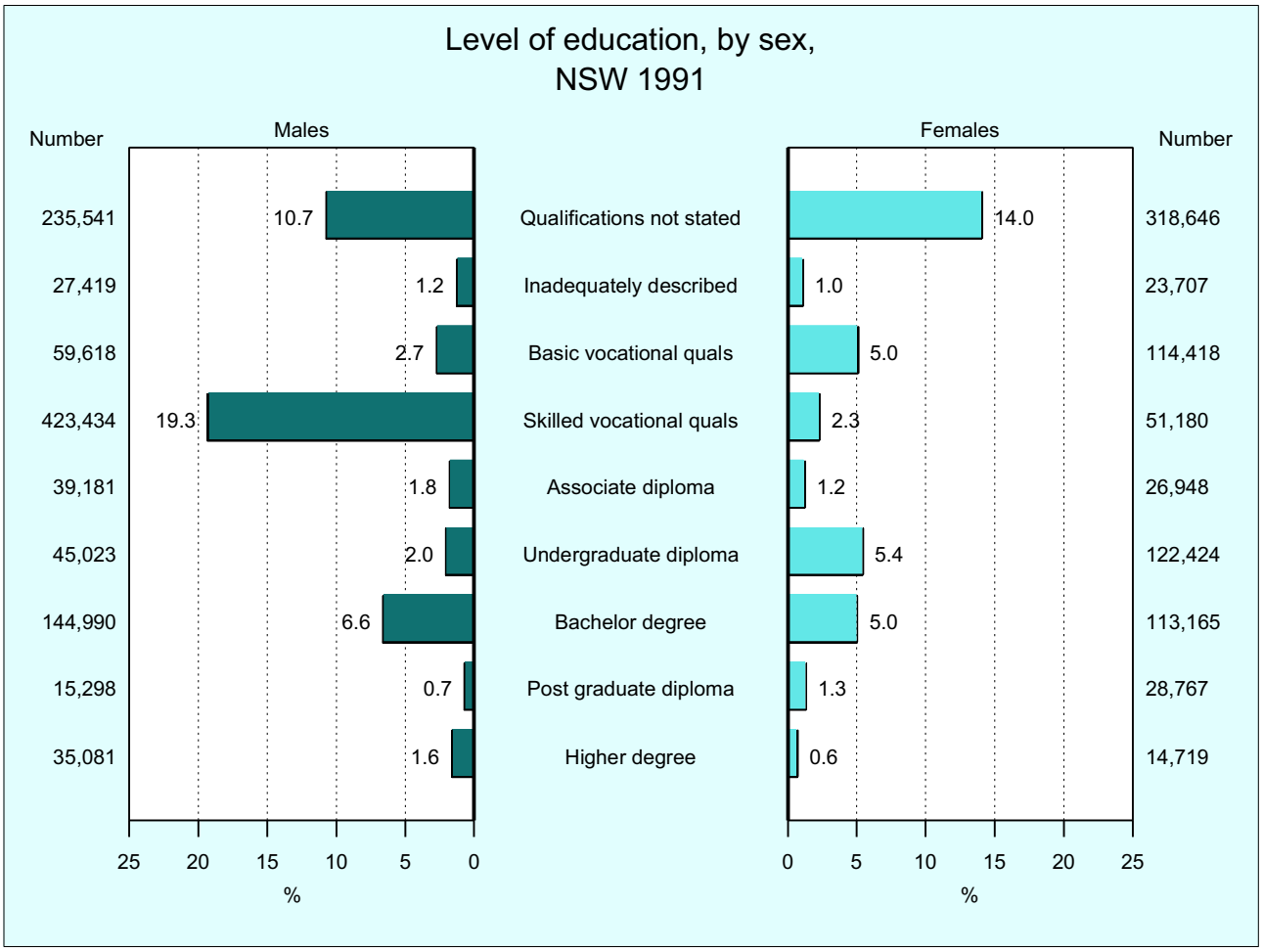


Note: Includes all NSW residents aged 15 years and over, based on individual weekly income reported.

Source: ABS *1996 Census Basic Community Profile* (electronic), ABS cat. no. 2020.0, ABS, Canberra, 1997 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Monetary income is one of the main determinants of socioeconomic status, and socioeconomic status is known to be closely linked to health. This relationship is covered in more detail in chapter 3.3 (page 135).
- In 1996, there were substantial differences in the individual income distribution of male and female residents of NSW. Almost 57 per cent of females aged 15 years and over had a weekly income of less than $300, compared with only 37 per cent of males.
- At the other end of the income scale, males (22.4%) were almost three times more likely than females (8.3%) to earn more than $700 per week.

For more information, see: Australian Bureau of Statistics Web site at http://www.abs.gov.au

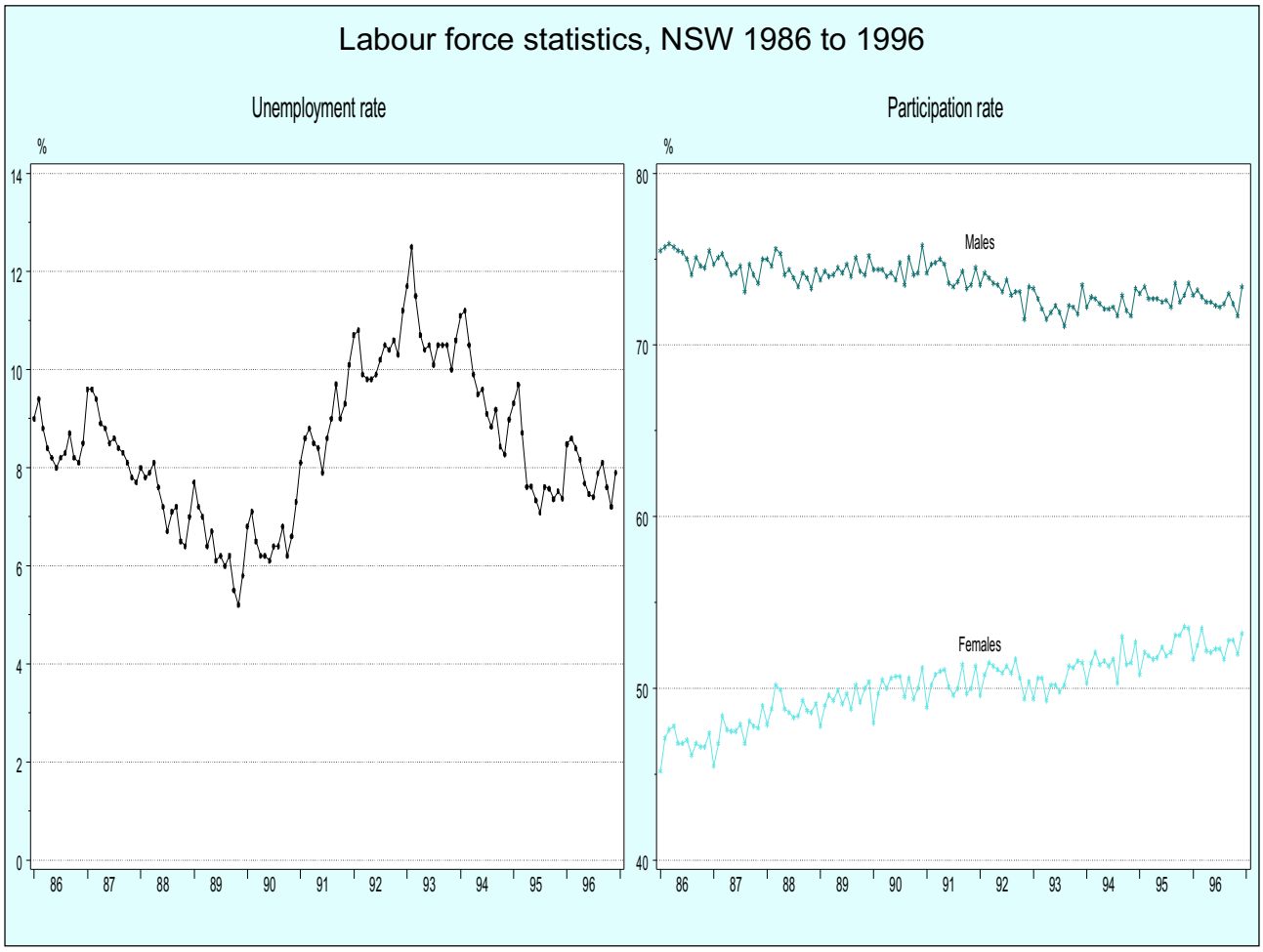


Note: Data on level of education from the ABS 1996 Census were not available at the time this report was prepared. In 1991, 53.3% of males and 64.2% of females had no educational qualifications.

Source: ABS *1991 Census Basic Community Profile* (electronic), ABS cat. no. 2722.1, ABS, Canberra, 1991 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The level of educational or vocational qualification achieved by individuals is an important determinant of their socioeconomic status. The relationship between socioeconomic status and health is covered in more detail in chapter 3.3 (page 135).
- In NSW in 1991, 53.4 per cent of males reported they had no qualifications, compared to 64.2 per cent of females.
- A much greater proportion of the male population (22%) than the female population (7.3%) possessed a skilled vocational qualification.
- Conversely, a slightly greater proportion of females (13.5%) than males (12.7%) held diplomas and higher levels of tertiary qualifications.

For more information, see: Australian Bureau of Statistics Web site at http://www.abs.gov.au



Note: Unemployment rate = ratio of the number of people out of work but seeking work to the total participating in the labour force. Participation rate = ratio of the population participating in the labour force to the total population.

Source: ABS, *Labour Force, NSW and ACT*, ABS Catalogue Number 6201.1, ABS, Canberra, 1997.

- Labour force statistics include both the unemployment rate (defined as a ratio of the number of people out of work but seeking work to the total participating in the labour force) and the participation rate (defined as the ratio of the population participating in the labour force to the total population). People who are out of work but seeking work are included in the population participating in the labour force. Examples of people not participating in the labour force include students and retired persons.
- The NSW unemployment rate varied widely over the 10-year period between 1986 and 1996. With an average hovering around 9 per cent, the unemployment rate peaked at 12.5 per cent in February 1993, having risen from a low of 5.2 per cent in November 1989.
- The male labour force participation rate decreased slightly from 75.5 per cent in 1986 to 72.4 per cent in 1996. The female participation rate increased from 45.2 per cent in 1986 to 52.5 per cent in 1996. Overall, the participation rate increased from 60.1 per cent in 1986 to 62.3 per cent in 1996.

For more information, see: Australian Bureau of Statistics Web site at http://www.abs.gov.au

Chapter 1.2

Health of mothers and babies

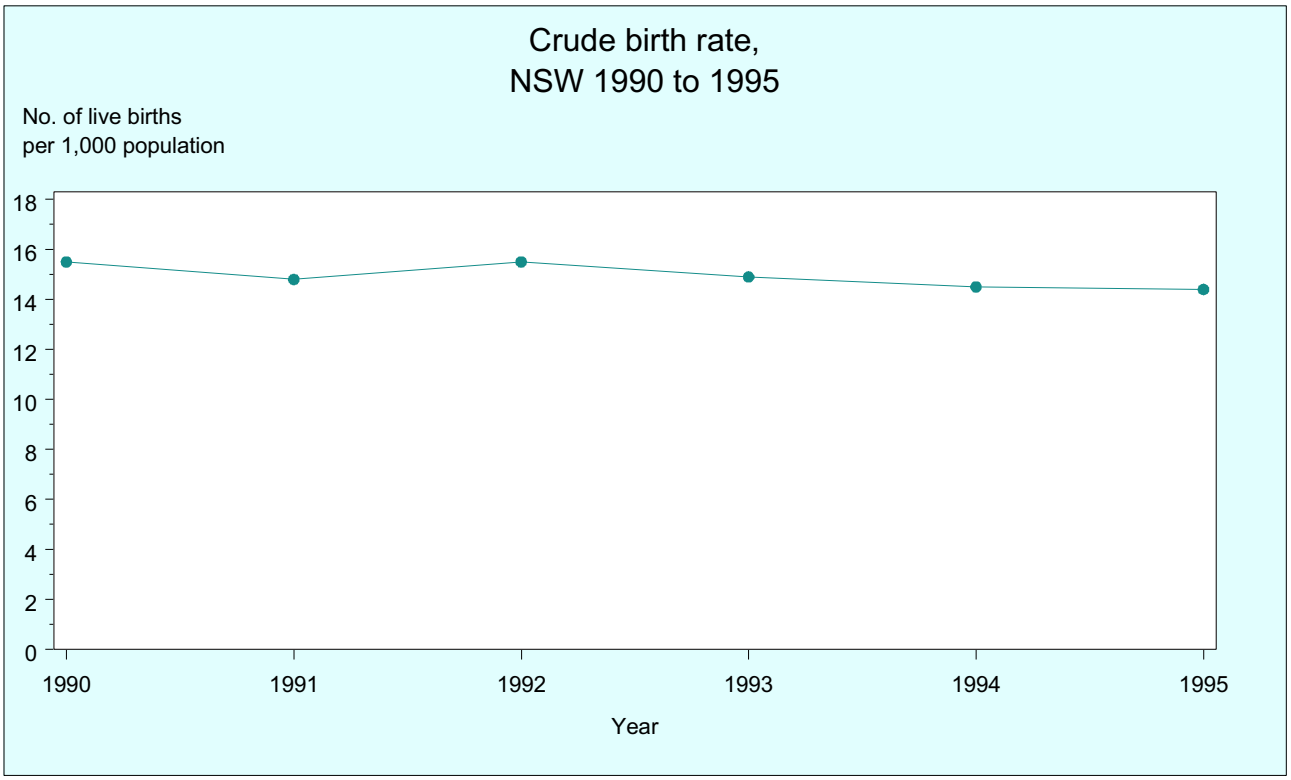
- In 1995, 87,849 births were registered in NSW, representing 34.3 per cent of all births registered in Australia. Between 1986 and 1995, the crude birth rate in NSW fell from 15.4 to 14.2 per 1,000 population.
- The total fertility rate has remained stable at about 1.9 children per woman since 1990.
- The median age of mothers giving birth has increased from 28.3 to 29.1 years over the period 1990 to 1995.
- In 1995, 1,405 babies were born to mothers aged under 18 years, which is a stable rate of 1.6 per cent of all live-born babies.
- There has been a marked decrease in perinatal deaths in recent years, from 1,084 in 1986 to 693 in 1995, and the perinatal mortality rate declined from 12.8 to 7.9 per 1,000 total births.
- Between 1980 and 1995, the number of infant deaths registered annually decreased from 867 to 498, and the infant mortality rate declined from 10.9 to 5.7 per 1,000.
- The rate of low birth-weight has remained stable at just under 6 per cent.
- Between 1990 and 1995, the prematurity rate remained stable at just over 6 per cent, with rates slightly higher among male than female infants.
- The annual rate of congenital malformations among live-born and stillborn infants is slightly more than 2 per cent, with congenital malformations being reported in 1,995 live-born and stillborn infants in 1994.
- There has been a marked decrease in deaths due to sudden infant death syndrome over the past 10 years, from 205 in 1986 to 72 in 1995.

In this chapter

Introduction

This section describes recent trends in the major indicators of maternal and infant health in NSW.

Further information on the health of Aboriginal and Torres Strait Islander babies is presented in chapter 3.1 (page 98), and on babies of mothers who were born overseas in chapter 3.2 (page 111).



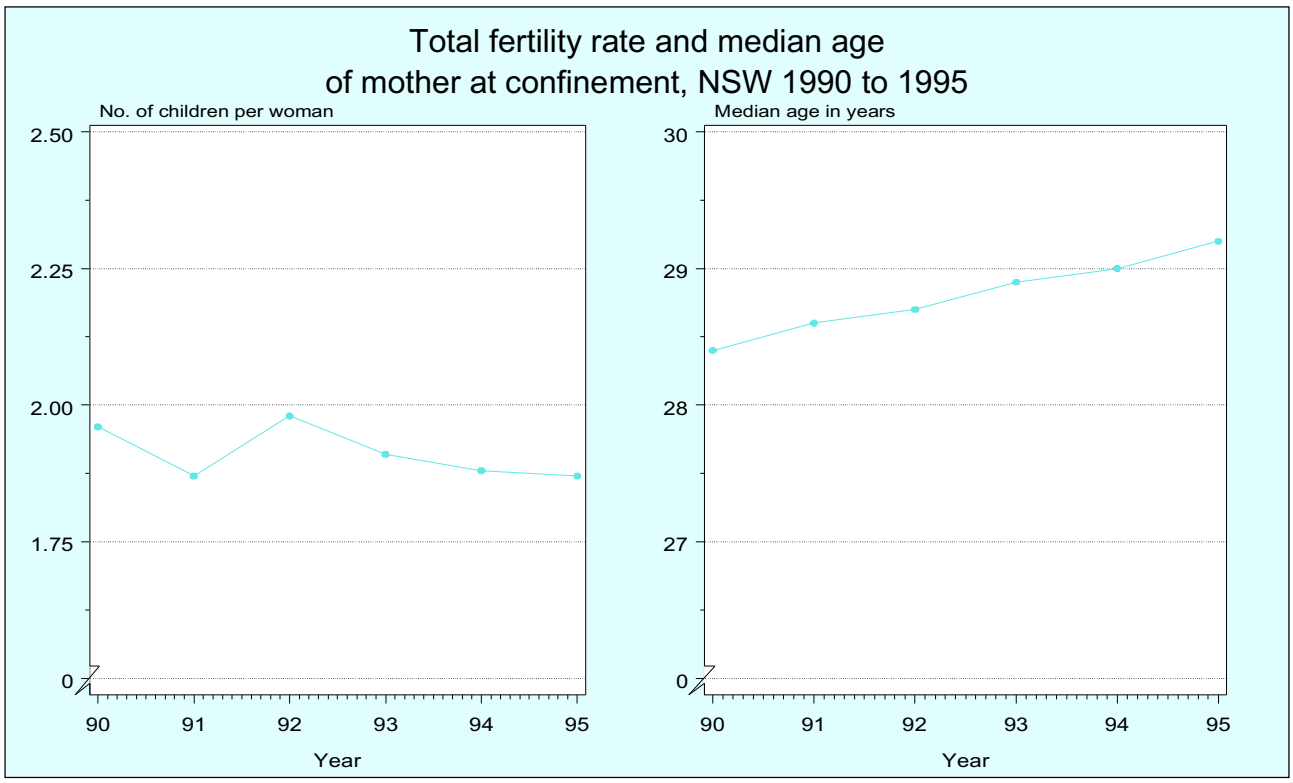
Year		1990	1991	1992	1993	1994	1995
Number of births	NSW	90534	87367	92585	89354	87977	87849
	AUSTRALIA	262648	257247	264151	260229	258051	256190
Crude birth rate (per 1,000)	NSW	15.5	14.8	15.5	14.9	14.5	14.4
	AUSTRALIA	15.4	14.9	15.1	14.7	14.5	14.2

Source: *ABS births, Australia*, cat no. 3301.0, ABS, Canberra.

- In 1995, 87,849 births were registered in NSW. These represent 34.3 per cent of all births registered in Australia.
- Between 1986 and 1995, the crude birth rate in NSW fell from 15.3 to 14.4 per 1,000 population. This slow downward trend was also evident nationally.
- Crude birth rates varied markedly across NSW: from 11.5 and 11.6 per 1,000 population in the Far West and Southern Areas respectively, to 16.8 and 16.2 per 1,000 in the South Western Sydney and Western Sydney Areas respectively. Some births to mothers resident in NSW occur in interstate hospitals, and this may contribute to the relatively lower crude birth rates observed in NSW Health Areas which border other States.
- The crude birth rate for Aboriginal people in NSW is estimated to be 21.0 per 1,000, about one and a half times the rate of 14.1 per 1,000 for non-Aboriginal people.

For more information, see: Day P, Lancaster P, Huang J, *Australia's mothers and babies 1994,* AIHW Perinatal Statistics Series no. 5, National Perinatal Statistics Unit, Sydney, 1997

Taylor L, Pym M 1996, *NSW Midwives Data Collection 1995*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1996. This publication may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au/public-health/mdc95.html



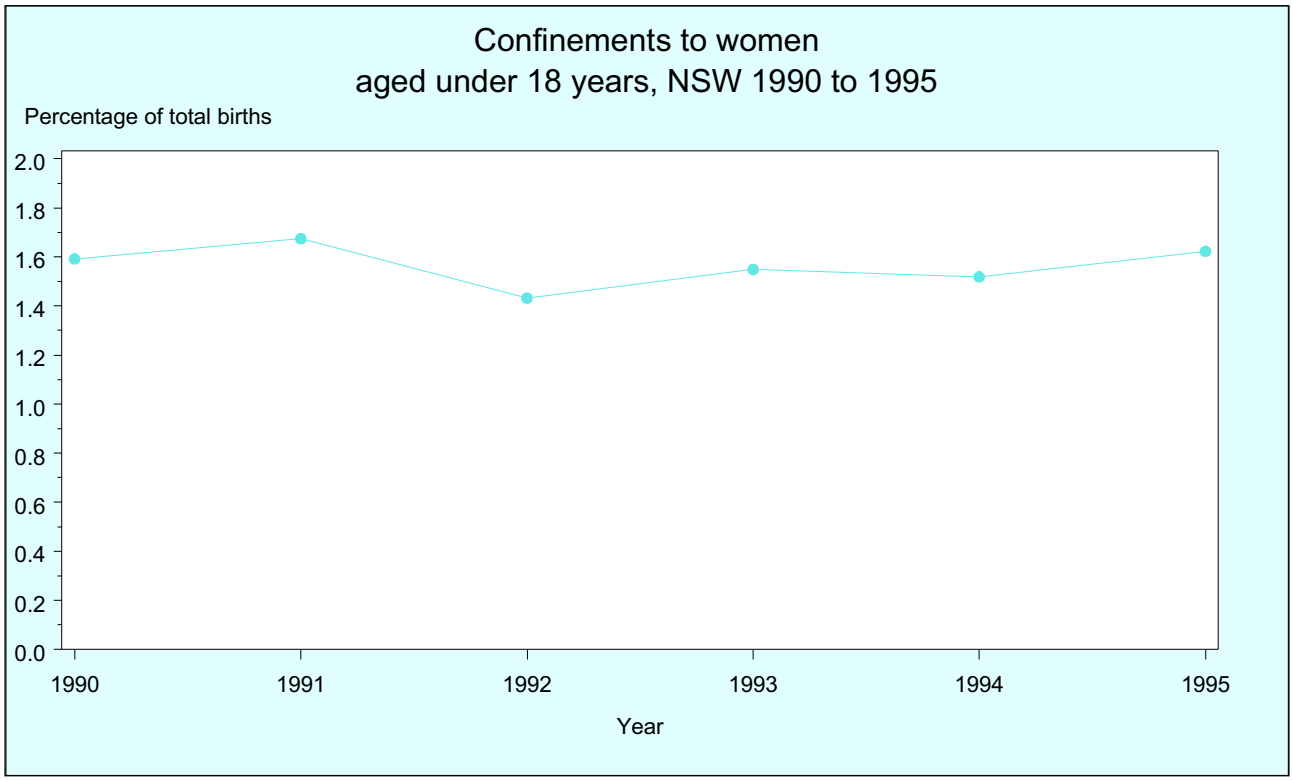
Year		1990	1991	1992	1993	1994	1995
Total fertility rate	NSW	1.96	1.87	1.98	1.91	1.88	1.87
	AUSTRALIA	1.91	1.86	1.89	1.87	1.85	1.82
Median age of mother (years)	NSW	28.4	28.6	28.7	28.9	29.0	29.2
	AUSTRALIA	28.3	28.5	28.7	28.8	29.0	29.1

Sources: *ABS births, Australia*, cat no. 3301.0, ABS, Canberra. *Demography, New South Wales*. cat no. 3311.1, ABS Canberra.

- The total fertility rate is the number of live births a woman would have over her life if she experienced the age-specific fertility rates prevailing in a given year.
- The total fertility rate for NSW has remained stable, at about 1.9 children per woman, since 1990.
- There is, however, a trend towards delaying childbirth. In NSW the median age of mothers giving birth increased from 28.3 to 29.1 years over the period 1990 to 1995, a trend which reflected an Australia-wide trend. The proportion of mothers aged 35 years and over increased from 10.4 per cent in 1990 to 13.8 per cent in 1995.

For more information, see: Day P, Lancaster P, Huang J, *Australia's mothers and babies 1994*, AIHW Perinatal Statistics Series no. 5, National Perinatal Statistics Unit, Sydney, 1997

Taylor L, Pym M, *NSW Midwives Data Collection 1995*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1996. This publication may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au/public-health/mdc95.html



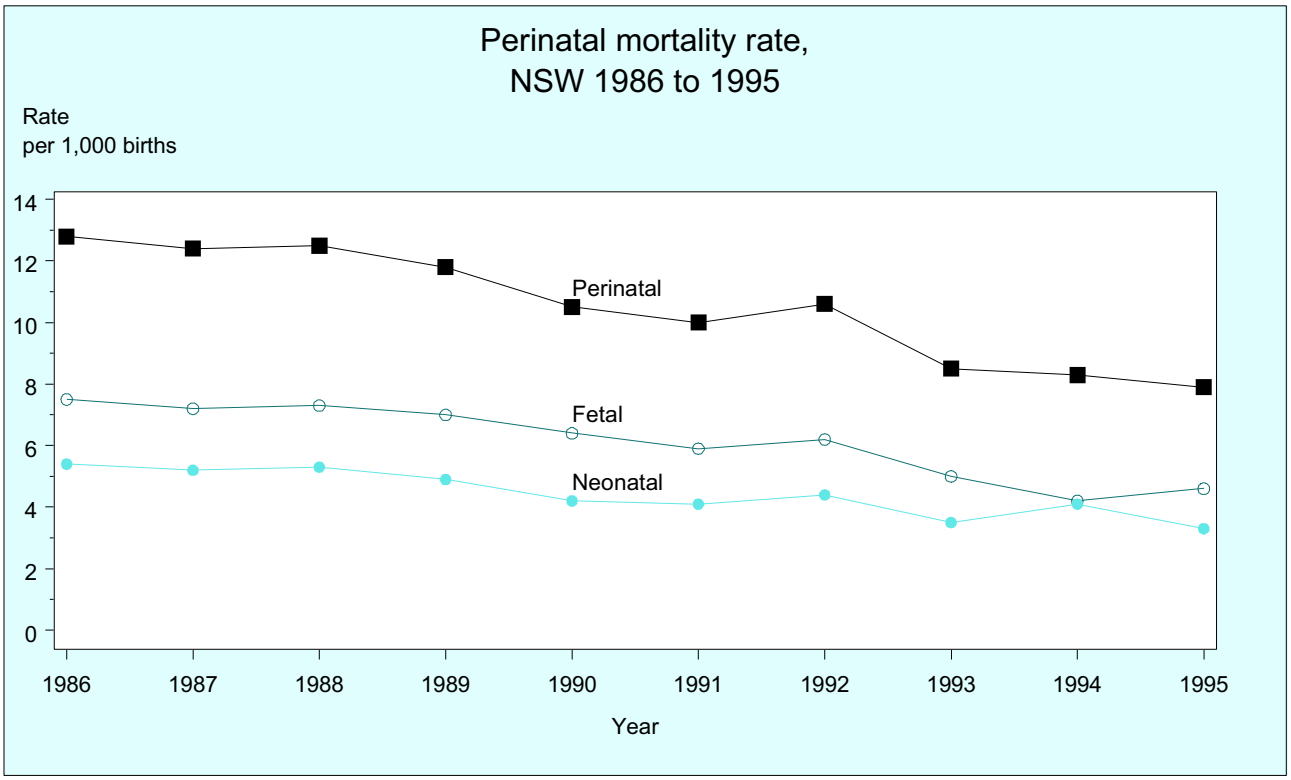
Year		1990	1991	1992	1993	1994	1995
Number of live births	NSW	1331	1414	1242	1330	1305	1388
	AUSTRALIA	4330	4186	3977	3844	3865	3890
Per cent of total confinements	NSW	1.6	1.7	1.4	1.5	1.5	1.6
	AUSTRALIA	1.6	1.7	1.5	1.5	1.5	1.5

Sources: *ABS births, Australia*, cat. no. 3301.0, ABS, Canberra. *NSW Midwives Data Collection* (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995, there were 1,388 mothers aged less than 18 years, who had about 1.6 per cent of all live-born babies in NSW. The proportion of live-born babies to adolescent mothers has remained fairly stable since 1990.
- In 1995, 146 mothers were reported to be adolescent Aboriginal or Torres Strait Islanders, which is 8.4 per cent of all mothers in NSW.
- The proportion of adolescent mothers varied across the NSW Health Areas: from 0.3 per cent in the Northern Sydney Area to 6.2 per cent in the Far West Area.

For more information, see: Day P, Lancaster P, Huang J, *Australia's mothers and babies 1994*, AIHW Perinatal Statistics series no. 5, National Perinatal Statistics Unit, Sydney, 1997

Taylor L, Pym M, *NSW Midwives Data Collection 1995*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney 1996. This publication may be found at the NSW Health Department's World Wide Web site at http://www.health.nsw.gov.au/public-health/mdc95.html



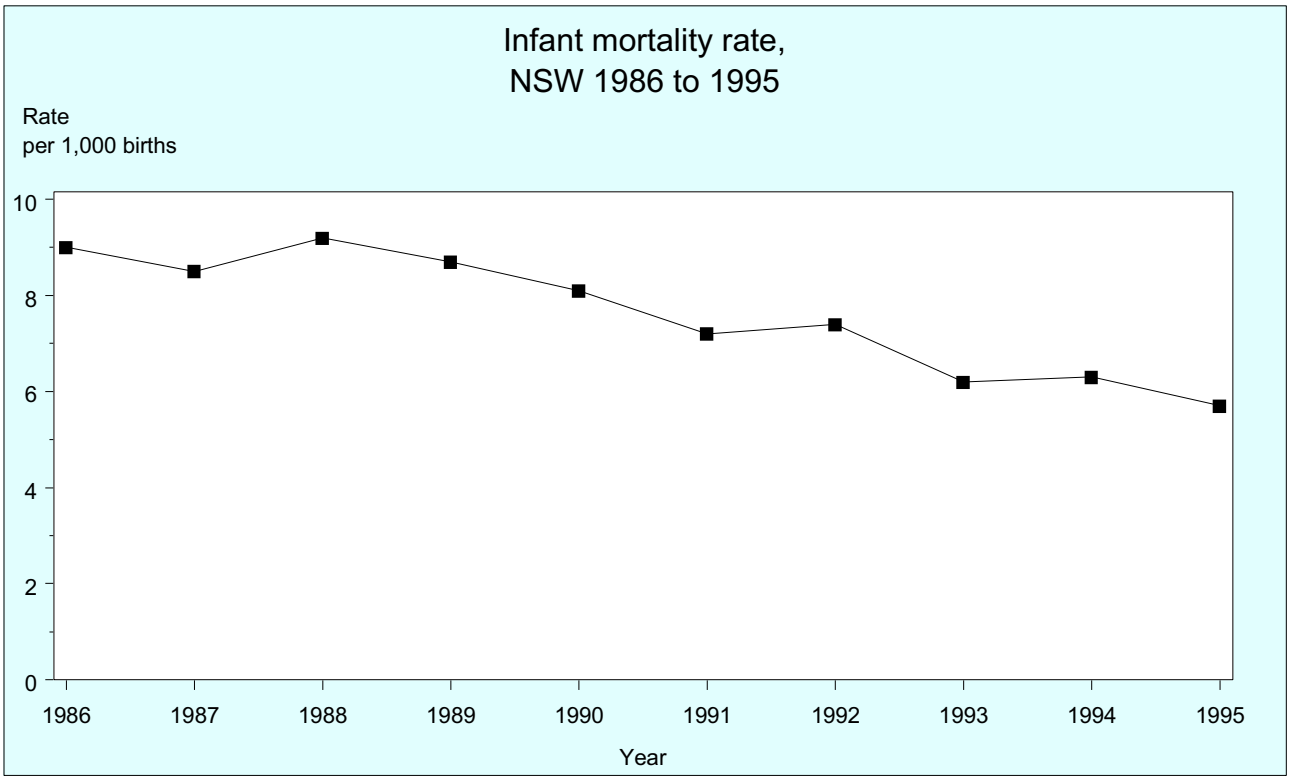
Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
NSW										
Fetal mortality rate (per 1,000)	7.5	7.2	7.3	7.0	6.4	5.9	6.2	5.0	4.2	4.6
Neonatal mortality rate (per 1,000)	5.4	5.2	5.3	4.9	4.2	4.1	4.4	3.5	4.1	3.3
Perinatal mortality rate (per 1,000)	12.8	12.4	12.5	11.8	10.5	10.0	10.6	8.5	8.3	7.9
AUSTRALIA										
Fetal mortality rate (per 1,000)	6.5	5.8	6.0	5.8	6.0	5.7	5.6	4.8	4.7	5.0
Neonatal mortality rate (per 1,000)	5.0	4.8	4.7	4.2	4.3	3.9	3.8	3.4	3.4	3.2
Perinatal mortality rate (per 1,000)	11.5	10.6	10.7	9.9	10.3	9.6	9.4	8.2	8.0	8.1

Sources: *ABS demography, New South Wales*, cat no. 3311.1, ABS, Canberra, *ABS perinatal deaths, NSW*, cat no. 3303.1, ABS, Canberra, *ABS causes of death, Australia*, cat no. 3303.0, ABS, Canberra. *ABS perinatal deaths, Australia*, ABS, Canberra, cat no. 3304.0.

- Perinatal deaths include stillbirths of at least 500 grams birth-weight or, if birth-weight is unknown, 22 weeks gestation.
- There has been a marked decrease in perinatal mortality in recent years. In NSW, the number of perinatal deaths declined from 1,084 in 1986 to 693 in 1995, and the perinatal mortality rate declined from 12.8 to 7.9 per 1,000 total births. Both the number of stillbirths and the number of neonatal deaths decreased substantially over the 10-year period.
- In 1995, the perinatal mortality rate varied among NSW Health Areas: from 5.6 per 1,000 in the South Eastern Sydney Area to 6.0 in the Central Sydney Area to 19.6 in the Far West Area.
- In 1995, the most common group of causes of perinatal mortality were conditions arising in the perinatal period (77.3%) ,which include hypoxia and birth asphyxia (19.9%), other respiratory disorders, such as respiratory distress syndrome (8.4%), and prematurity (6.4%). Congenital malformations, most commonly chromosomal abnormalities and spina bifida, were responsible for 20.2 per cent of perinatal deaths.
- The decline in perinatal mortality in recent years is related to improvements in obstetric and paediatric care, the availability of genetic counselling and genetic education services, and improved availability of prenatal diagnosis to detect problems such as spina bifida.

For more information, see: Day P, Lancaster P, Huang J, *Australia's mothers and babies 1994,* AIHW Perinatal Statistics series no. 5, National Perinatal Statistics Unit, Sydney, 1997

Taylor L, Pym M, *NSW Midwives Data Collection 1995*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1996. This publication may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au/public-health/mdc95.html



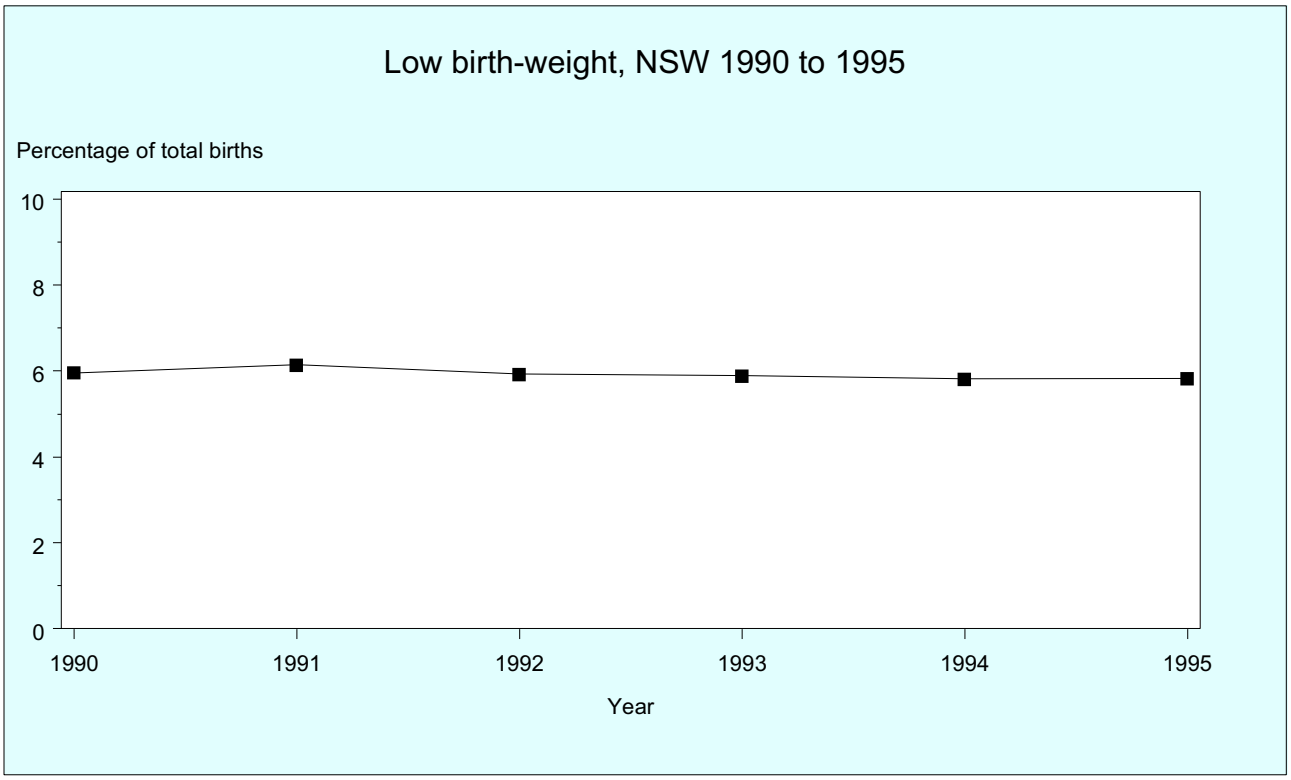
Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
NSW										
Number of deaths	759	731	775	744	733	632	688	552	551	498
Mortality rate (per 1,000)	9.0	8.5	9.2	8.7	8.1	7.2	7.4	6.2	6.3	5.7
AUSTRALIA										
Number of deaths	2154	2116	2132	2004	2145	1836	1843	1591	1512	1449
Mortality rate (per 1,000)	8.8	8.7	8.7	8.0	8.2	7.1	7.0	6.1	5.9	5.7

Source: *ABS deaths, Australia*, cat no. 3302.0, ABS, Canberra.

- The infant mortality rate is the number of deaths among children aged under one year per 1,000 live births.
- Between 1980 and 1995, in NSW, the number of infant deaths registered annually decreased from 867 to 498, and the infant mortality rate declined from 10.9 to 5.7 per 1,000.
- Most infant deaths occur in the first four weeks of life. Of the 498 infant deaths registered in 1995, 326 (65.5%) occurred in the neonatal period (up to 28 days of life) and 172 (34.5%) occurred in the postneonatal period. There were 171 deaths in the first day of life, constituting over one-third of all infant deaths.
- In 1995, conditions arising in the perinatal period, such as respiratory conditions and infections, accounted for 234 (47.0%) infant deaths. Congenital malformations accounted for a further 135 (27.1%) deaths. The single most common cause of infant death was sudden infant death syndrome, which was responsible for 73 (14.7%) infant deaths.
- In 1995, 54.8 per cent of deaths occurred among male infants and 45.2 per cent among female infants. The infant mortality rate among male infants was 6.1 per 1,000, compared with 5.3 per 1,000 for female infants. Deaths due to respiratory conditions and sudden infant death syndrome were more common among male than female infants.
- The infant death rate varied among NSW Health Areas: from 3.9 per 1,000 live births in the Northern Sydney Area to 11.9 in the Southern Area and 15.0 per 1,000 live births in the Far West Area.

For more information, see: Day P, Lancaster P, Huang J, *Australia's mothers and babies 1994,* AIHW Perinatal Statistics series no. 5, National Perinatal Statistics Unit, Sydney, 1997

Taylor L, Pym M, *NSW Midwives Data Collection 1995*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1996. This publication may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au/public-health/mdc95.html



Year		1990	1991	1992	1993	1994	1995
Number of infants with low birth-weight	NSW	5208	5338	5274	5168	5112	5091
	AUSTRALIA	–	16272	16489	16374	16387	–
Per cent of total births	NSW	5.96	6.14	5.93	5.89	5.82	5.83
	AUSTRALIA	–	6.30	6.30	6.30	6.30	–

Notes: Low birth-weight = weight at birth less than 2,500 grams. Births where weight at birth was unknown were excluded.

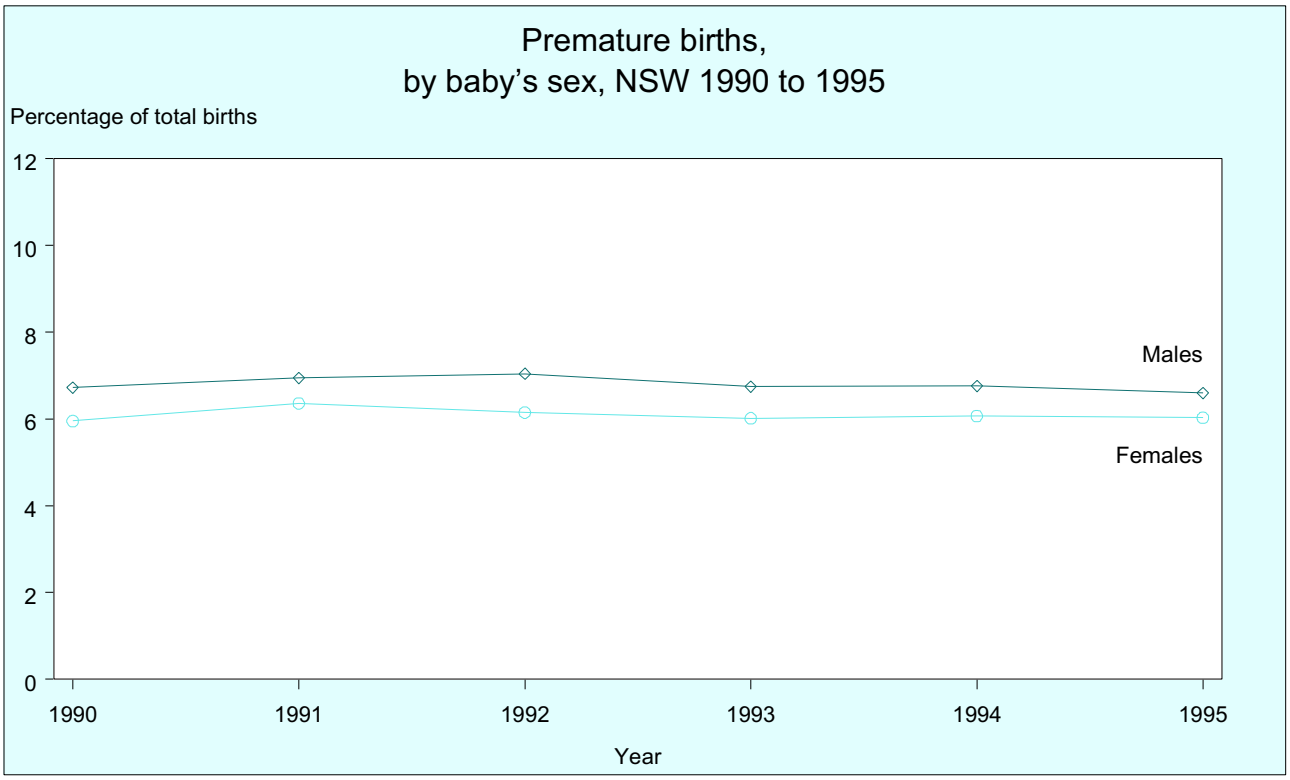
Source: *NSW Midwives Data Collection* (HOIST), Epidemiology and Surveillance Branch, NSW Health Department 1996. AIHW National Perinatal Statistics Unit, *Australia's mothers and babies*, Perinatal Statistics Series No. 1, 3 and 5.

- Low birth-weight is an important outcome of the health of the mother and her care during pregnancy. The risk of illness or death is higher among infants with low birth-weight than infants with normal birth-weight.
- The rate of low birth-weight has remained stable at just under 6 per cent over the last few years.
- In 1995, the proportion of infants with low birth-weight varied from 4.9 per cent in the Greater Murray Area to 6.9 per cent in the Mid North Coast Area.
- Over 6.0 per cent of infants of mothers born in New Zealand or Oceania, Africa and Asia were of low birth-weight.
- The rate of low birth weight among infants born to Aboriginal or Torres Strait Islander mothers was 11.1 per cent, almost twice that of babies born to non-Aboriginal mothers.
- Smoking is one of the most important modifiable risk factors for low birth-weight. Quitting smoking in the first few months of pregnancy protects the baby from the effects of smoking on birth-weight.
- Low birth-weight is also more common among babies born to adolescent mothers, older mothers, and babies born of multiple pregnancies.

For more information, see: Taylor L, Pym M, *NSW Midwives Data Collection 1995*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1996

Neonatal Intensive Care Unit Study Group of the NSW Perinatal Services Network, *New South Wales Neonatal Intensive Care Data Collection 1993*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1997

These publications may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au



Year		1990	1991	1992	1993	1994	1995
Number of premature infants	Male	3026	3123	3221	3043	3056	2952
	Female	2531	2670	2653	2561	2585	2569
	Total	5557	5793	5874	5604	5641	5521
Per cent of total births	Male	6.7	7.0	7.0	6.7	6.8	6.6
	Female	6.0	6.4	6.2	6.0	6.1	6.0
	Total	6.3	6.7	6.6	6.4	6.4	6.3

Notes: Births where gestational age was less than 37 weeks were classified as premature births. Infants with birth-weight over 400 grams or of more than 20 weeks gestation, were included. Infants with indeterminate sex were excluded.

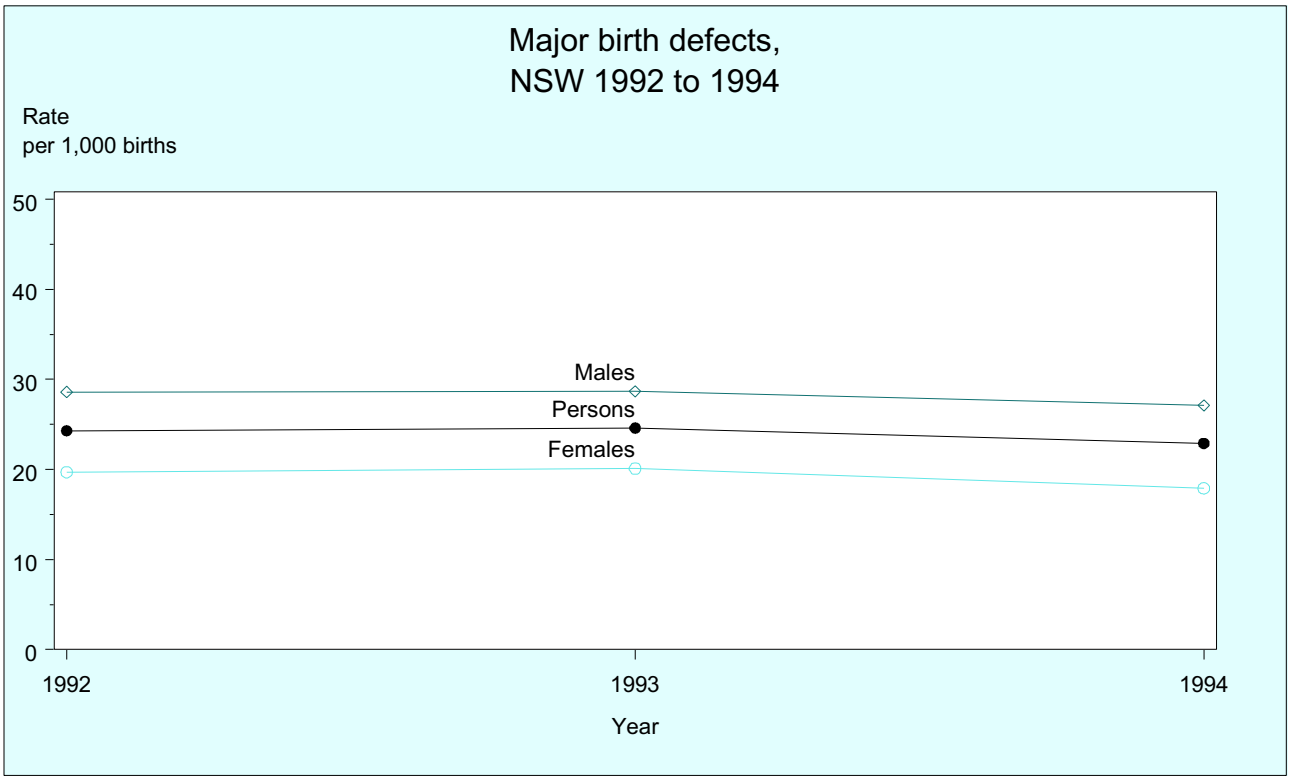
Source: *NSW Midwives Data Collection* (HOIST), Epidemiology and Surveillance Branch, NSW Health Department 1996.

- A birth before 37 weeks' gestation is a premature or preterm birth. Preterm birth is associated with higher rates of perinatal mortality than birth at full term, and causes significant morbidity from respiratory conditions, infection and intra cerebral haemorrhage.
- The prematurity rate remained stable at just over 6 per cent in the period 1990 to 1995, with rates slightly higher among male than female infants.
- Of the 5,521 premature infants reported in NSW in 1995, 8.8 per cent were born at less than 27 weeks gestation, 10.3 per cent were born at 28 to 31 weeks gestation and 80.9 per cent were born at 32 to 36 weeks gestation.
- In 1995, the proportion of premature infants varied from 4.9 per cent in the Southern Area to 7.6 per cent in the Hunter Area.
- For infants of mothers who were born overseas, the highest rate of prematurity was among infants of mothers born in Africa (7.6%).
- The rate of prematurity among infants born to Aboriginal or Torres Strait Islander mothers was 10.7 per cent, about one and a half times that of babies born to non-Aboriginal mothers (see page 99).
- Survival rates of preterm infants improve with increasing birth-weight and gestational age. The survival of extremely premature infants has improved over recent years with advances in neonatal intensive care and a trend for mothers to be transferred to a hospital with neonatal intensive care prior to preterm birth.

For more information, see: Taylor L, Pym M, *NSW Midwives Data Collection 1995*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1996

Neonatal Intensive Care Unit Study Group of the NSW Perinatal Services Network 1997, *New South Wales Neonatal Intensive Care Data Collection 1993*, NSW Public Health Bulletin supplement no. 2 NSW Health Department, Sydney, 1997

These publications may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au



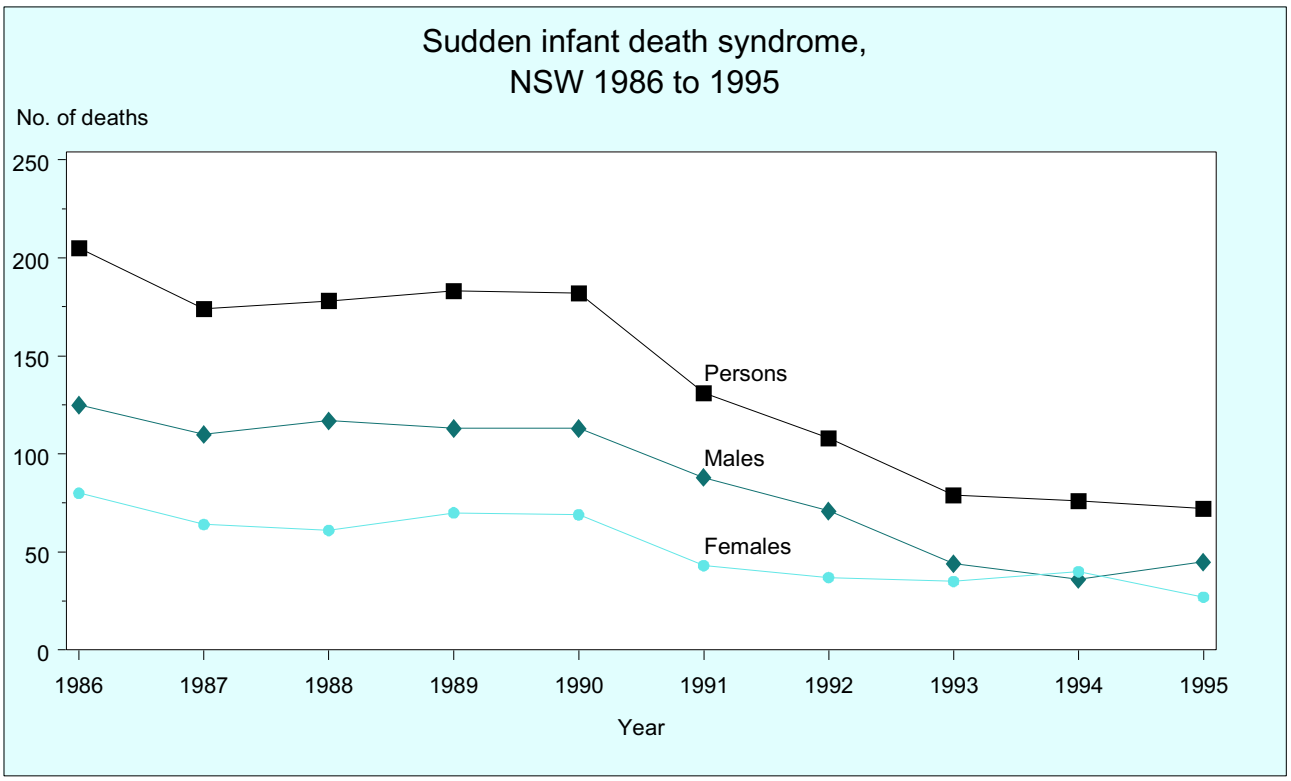
Year		1992	1993	1994
Number of infants	Males	1296	1283	1214
	Females	843	847	754
	Persons	2142	2142	1995
Birth defect rate per 1,000	Males	28.6	28.7	27.1
	Females	19.7	20.1	17.9
	Persons	24.3	24.6	22.9

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

- The NSW Birth Defects Register collects information on birth defects detected during pregnancy, at birth and up to one year of age. The register covers the congenital malformations as described in the International Classification of Diseases, three congenital metabolic disorders (cystic fibrosis, phenylketonuria and hypothyroidism) and thalassemia major.
- The annual rate of congenital malformations among live-born and stillborn infants is slightly more than 2 per cent, with congenital malformations being reported in 1,995 live-born and stillborn infants in NSW in 1994.
- The rate of congenital malformations among live-born and stillborn babies was slightly lower in 1994 than the previous two years. In particular, the number of babies born with chromosomal abnormalities and neural tube defects has decreased since 1992. For example, the number of babies born with Down syndrome decreased from 100 in 1992 to 78 in 1994. The number of babies born with neural tube defects decreased from 80 in 1992 to 33 in 1995. These decreases are likely to be related to improved access to genetic counselling and prenatal diagnosis services.
- The rate of congenital malformations was higher among male than female infants: 2.4 and 1.7 per cent respectively in 1994. Most of the additional malformations in male infants were malformations of the genital organs, such as hypospadias and chordee.
- The most common congenital malformations reported were of the cardiovascular system, such as ventricular and atrial septal defects, followed by malformations of the musculoskeletal system, including congenital dislocation of the hips and craniosynostosis.

For more information, see: Taylor L, Travis S, Banks C , *NSW birth defects register 1995 report*, NSW Public Health Bulletin supplement no. 1 NSW Health Department, Sydney, 1997. This publication may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au

Lancaster P, Hurst T, Day P, Huang J, Shafir E, *Congenital malformations Australia 1993 and 1994*, AIHW Birth Defects series no. 2, Australian Institute of Health and Welfare National Perinatal Statistics Unit, Sydney, 1996 and 1997



Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Number of males	125	110	117	113	113	88	71	44	36	45
Number of females	80	64	61	70	69	43	37	35	40	27
Number of persons	205	174	178	183	182	131	108	79	76	72

Note: Sudden infant death syndrome was classified according to the International Classification of Diseases (ICD-9) code 798.0. 1995 data excludes deaths registered after 1995.

Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Sudden infant death syndrome (SIDS) is the single most common cause of infant death in NSW. In 1995, SIDS was responsible for 72 (14.6 %) infant deaths.
- Following a national prevention campaign, the number of deaths due to SIDS in NSW decreased by about two-thirds over 10 years, from 205 in 1986 to 72 in 1995. The risk of SIDS is reduced by: placing babies to sleep on their backs; ensuring that they have a smoke-free environment, both before and after birth; and ensuring that the baby's head remains uncovered during sleep.
- Until 1994, SIDS was substantially more common among males than females, but in recent years the numbers of deaths each year have been similar for both sexes.
- About two-thirds (67.5 %) of SIDS deaths occur in the first four months of life.
- While the numbers of SIDS deaths decreased in every Health Area in NSW over the 10-year period, this decrease was more marked in the metropolitan Areas (including Central Coast, Hunter and Illawarra Areas) than in the rural Areas. The proportion of all SIDS deaths in NSW occurring in the metropolitan areas decreased from 76 per cent in 1986 to 1990 to 68 per cent in 1991 to 1995. For rural Areas, the proportion increased from 24 to 31 per cent over the same period. This suggests that the national prevention campaign may have been more effective in metropolitan than rural areas.
- Since 1991, all post mortem examinations on babies who die unexpectedly are carried out at the NSW Institute of Forensic Medicine at Glebe or the Department of Forensic Pathology, Institute of Clinical Pathology and Medical Research, Westmead Hospital. These specialist services ensure that unexpected infant deaths are fully investigated.

For more information, see: National SIDS Council of Australia and the Australian College of Paediatrics, *Reducing the risk of sudden infant death syndrome (SIDS),* Scientific literature to support the recommendations of the Forum to review the risk factors for SIDS, convened by the National SIDS Council of Australia, Melbourne, March 1997

Chapter 1.3

Self-reported health and disability

- In NSW in 1995, fair or poor health was reported with similar frequency by men (17.5%) and women (17.3%).
- Fair or poor health was more frequently reported by men than women among the older age groups.
- Among both men and women, self-reported health declined with age.
- In 1993, 1,015,600 NSW residents (17%) had a disability. These comprised almost equal numbers of males and females.
- The proportion of people with a disability increased with age, from 4 per cent among children aged 0-4 years, to 65 per cent among people aged 75 years and over.
- Most people with a disability (89%) were disabled by physical conditions, most frequently arthritis, disorders of the ear and mastoid process, including hearing loss, and other musculoskeletal disorders.
- Around 11 per cent of people with a disability reported mental disorders.
- In 1993, 803,200 NSW residents (13% of the population and 79% of people with a disability) had a handicap resulting from their disability.
- The most frequently reported area of handicap was mobility, where three-quarters of people with a handicap reported limitations. Mobility limitations were more prevalent among females.
- The next most frequently reported area of handicap was employment, followed by self-care and verbal communication.

In this chapter

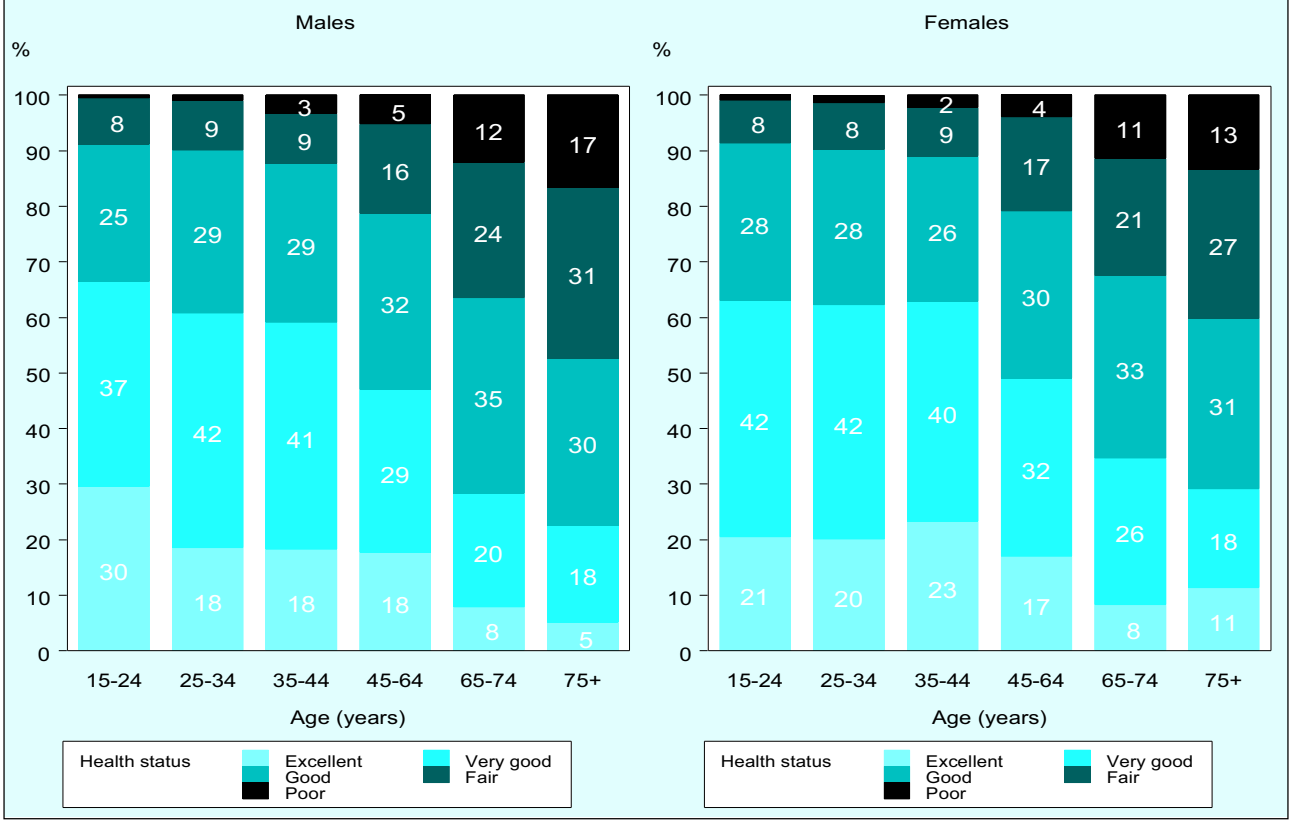
- Self-reported health status
- Disabling conditions and severity of handicap
- Area of handicap

Introduction

This brief chapter presents recent NSW data on self-reported health (from the 1995 ABS National Health Survey) and disability (from the 1993 ABS Survey of Disability, Ageing and Carers).

We lack more recent statewide data on disability and handicap for NSW, and have no information on either self-assessed health or disability at Health Area level. Development of methods for monitoring health status and quality of life is a priority for improving population health surveillance in NSW.

Self-reported health status of persons aged 15 years and over, NSW, 1995

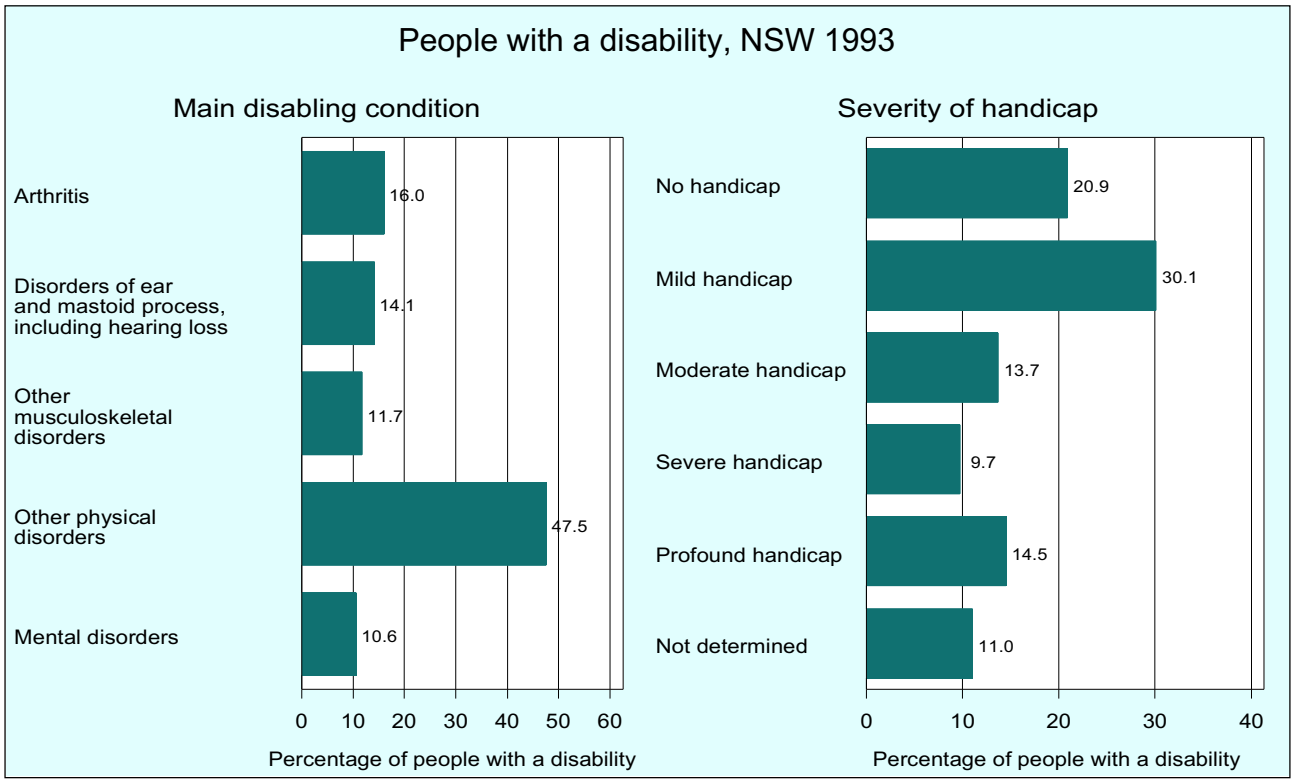


Note: Survey respondents were asked "In general, would you say your health is: excellent, very good, good, fair or poor?" Figures not included in the chart are for Poor Health Status - 15-24 yr old males (0.5%); Poor Health Status - 25-34 yr old males (1%); Poor Health Status - 15-24 yr old females (0.9%); Poor Health Status - 25-34 yr old females (1.3%).

Source: ABS National Health Survey 1995, unpublished data.

- Self-reported health varies with both age and sex. In NSW in 1995, fair or poor health was reported with similar frequency by men (17.5%) and women (17.3%).
- However, fair or poor health was more frequently reported by males than females among the older age groups: almost half of men aged 75 years and over rated their health as fair or poor, compared with around 40 per cent of women.
- Among both men and women, self-reported health declined with age. People aged 75 years and over were more than four times more likely than those aged 15-34 years to rate their health as fair or poor.
- Poor self-reported health is a good predictor of subsequent illness and premature death. A recent Australian study that followed people aged 60 years and over for a seven-year period found that people with self-reported health status of fair or poor (women) and poor (men) were significantly more likely to die during the follow-up period. This association remained after controlling for demographic factors, a range of illnesses, disability, depression and social support (McCallum et al. 1994).

Reference: McCallum J, Shadbolt B and Wang D, 'Self-rated health and survival: a 7-year follow-up study of Australian elderly', *American Journal of Public Health*, Vol. 84, 1994, pp. 1100-5.



Notes: People with a disability were defined as those who had one or more selected group of limitations, restrictions or impairments, which lasted or expected to last, for a period of sith months or more. Handicap was defined as limitation in ability to perform tasks associated with daily living in relation to one or more of the areas of self-care, mobidity, verbal communication, schooling and employment.

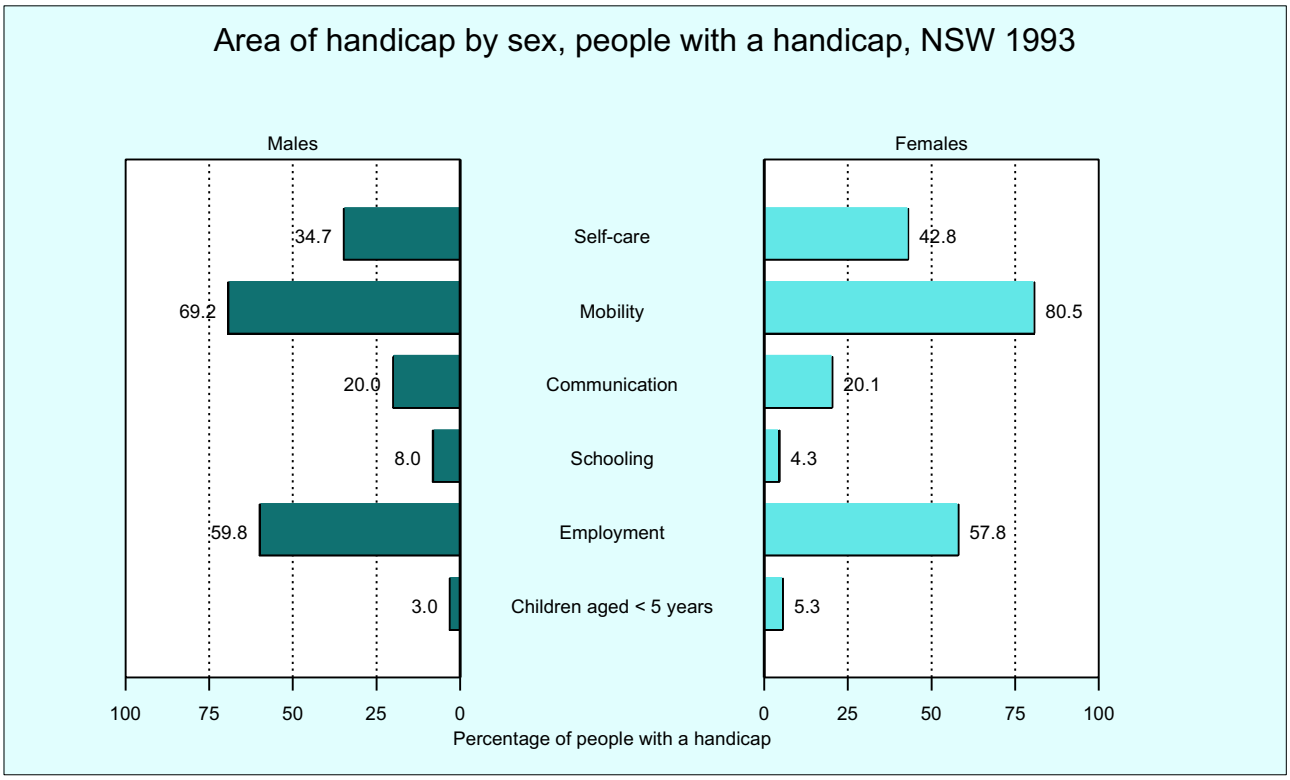
Source: Ageing and Disability Department and Australian Bureau of Statistics, *Disability in NSW*, cat. no. 4198.1, ABS, Canberra,1995.

- In 1993, 1,015,600 NSW residents (17%) had a disability (one or more of a selected group of limitations, restrictions or impairments lasting for six months or more). There were almost equal numbers of males and females.
- The proportion of people with a disability increased with age, from 4 per cent among children aged 0-4 years, to 65 per cent among people aged 75 years and over (Ageing and Disability Department, 1995).
- The reported prevalence of disability has increased from around 13 per cent in 1981, largely as a result of population ageing (Wen et al. 1995).
- In 1993, 803,200 NSW residents (13% of the population and 79% of people with a disability) had a handicap* resulting from their disability which limited their ability to perform certain tasks associated with daily living. Again there were nearly equal numbers of males and females.
- Among people with a handicap, nearly half (48% of males and 41% of females) had a mild handicap and did not require any personal help or supervision. Almost one-quarter of people with a handicap (18% of males and 24% of females) had a profound handicap and required constant personal help or supervision.
- Most people with a disability (89%) were disabled by physical conditions, most frequently arthritis, disorders of the ear and mastoid process, including hearing loss, and other musculoskeletal disorders.
- Around 11 per cent of people with a disability reported mental disorders as their main disabling condition (Ageing and Disability Department, 1995).

* Note that many people prefer the term "participation restriction", but "handicap" is used here to be consistent with the data source.

References: Ageing and Disability Department and Australian Bureau of Statistics, *Disability in NSW*, cat. no. 4198.1, ABS, Canberra,1995.

Wen XW, Madden R and Black K, *Population indicators of needs for disability services: an exploration*. Welfare Division working paper no. 9, AIHW, Canberra, 1995.



Note: Each person could have more than one area of handicap. A handicap was defined as limitation to perform certain tasks associated with daily living. All children aged 0-4 years with a disability were classified as having a handicap, but the area of handicap was not determined.

Source: Australian Bureau of Statistics, *Disability, ageing and carers Australia 1993*, cat. no. 4430.0, ABS, Canberra, 1995.

- Of the 803,200 NSW persons with a handicap* in 1993, the most frequently reported area of handicap was mobility, where three-quarters (75%) reported limitations. Mobility limitations were more prevalent among females than males.
- The next most frequently reported area of handicap was employment, where 59 per cent of persons with a handicap reported limitations in their ability to work, the type of work performed or other work problems such as the amount of time off required and special arrangements which needed to be made. Australia-wide in 1993, the labour force participation rate among people with a handicap aged 15-64 years was 47 per cent, compared with 74 per cent for all persons in this age range.
- More than one-third (39%) of persons with a handicap reported limitations in the area of self-care, including difficulties in showering, bathing, dressing, eating, toiletting, bladder or bowel control.
- A smaller proportion of persons with a handicap (20%) reported limitations in verbal communication, including difficulties understanding or being understood in their native language.
- In 1993, 4.2 per cent of the Australian population cared for a person with a handicap. Two-thirds (66%) of principal carers were women (Australian Bureau of Statistics, 1995).

* Note that many people prefer the term "participation restriction", but "handicap" is used here to be consistent with the data source.

Reference: Australian Bureau of Statistics, *Disability, ageing and carers Australia 1993*, cat. no. 4430.0, ABS, Canberra, 1995

Chapter 1.4

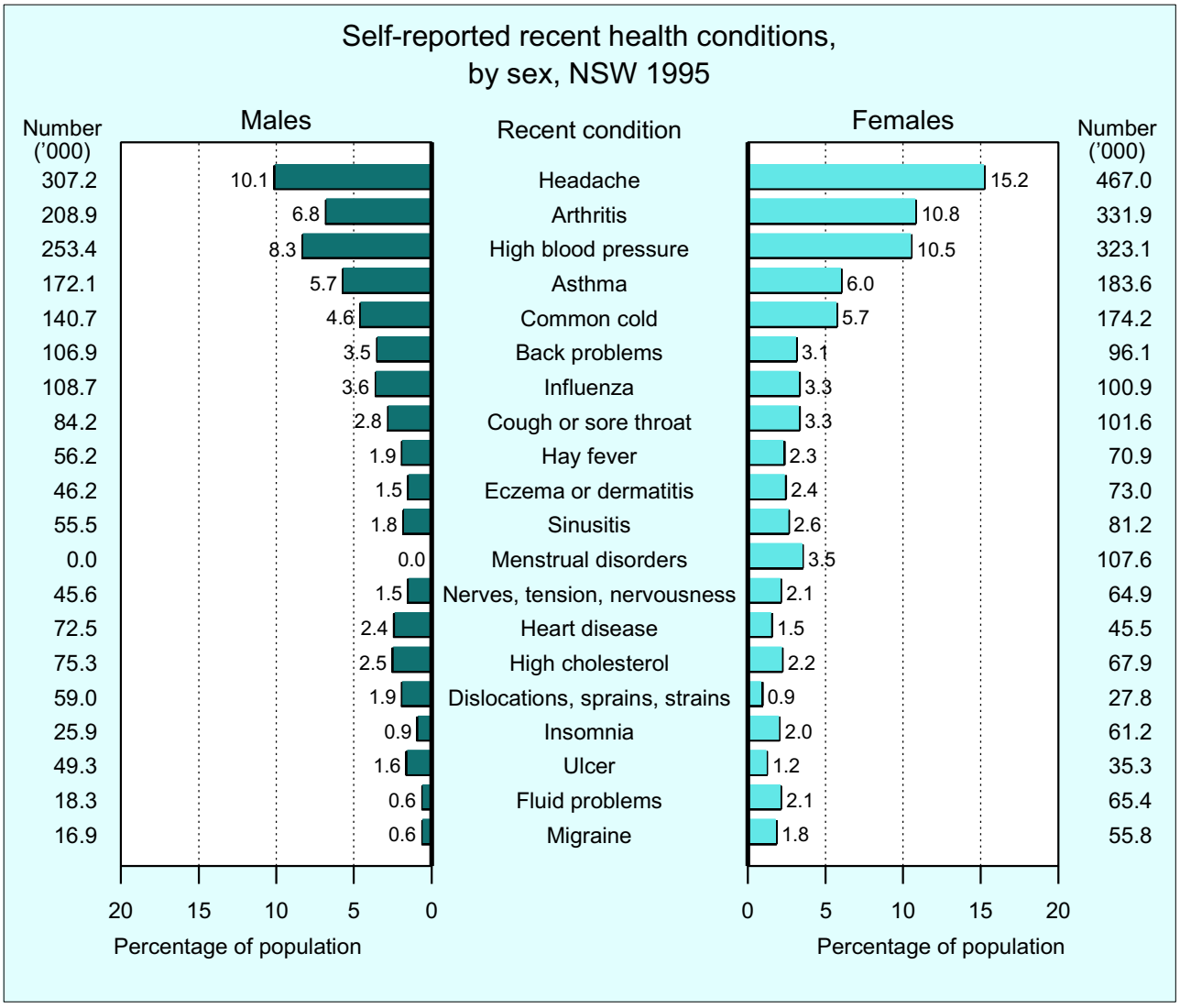
Illness

- In 1995, the recent health conditions (those experienced in the previous two weeks) most commonly reported by NSW residents were headache, arthritis, high blood pressure, asthma and common cold.
- In 1995, the long-term health conditions (those that had lasted six months or were expected to last as long as that) most commonly reported by NSW residents were vision problems, arthritis, hay fever, asthma, high blood pressure, sinusitis and deafness (complete or partial).
- In the financial year 1995/96, “V codes”, including admissions of live-born infants and symptoms and signs without a specific diagnosis, were the most common causes of hospitalisation in the 0- to 14-years age group, followed by respiratory diseases, mainly childhood chest infections and asthma.
- Pregnancy and delivery-related causes were the most common reason for hospitalisation in females aged 14-65 years. “V codes”, including symptoms and signs without a specific diagnosis, were the most common reason for hospitalisation of males in this age group, and the second most common reason for hospitalisation of females. Diseases of the gastrointestinal system were the second most common cause of hospitalisation in males, and the third most common cause of hospitalisation in females in this age group.
- “V codes”, including admissions for rehabilitation and respite care, were the most common reason for hospitalisation of people aged 65 years or more. Diseases of the cardiovascular system, principally ischaemic heart disease, cardiac failure and stroke, were the next the most common cause of hospitalisation for both sexes in this age group.

In this chapter

Introduction

This chapter presents recent NSW data on self-reported health from the 1995 ABS National Health Survey and the principal causes of hospitalisation from the NSW Health Department Inpatient Statistics Collection. These data collections are described in the Methods section (see page 257).

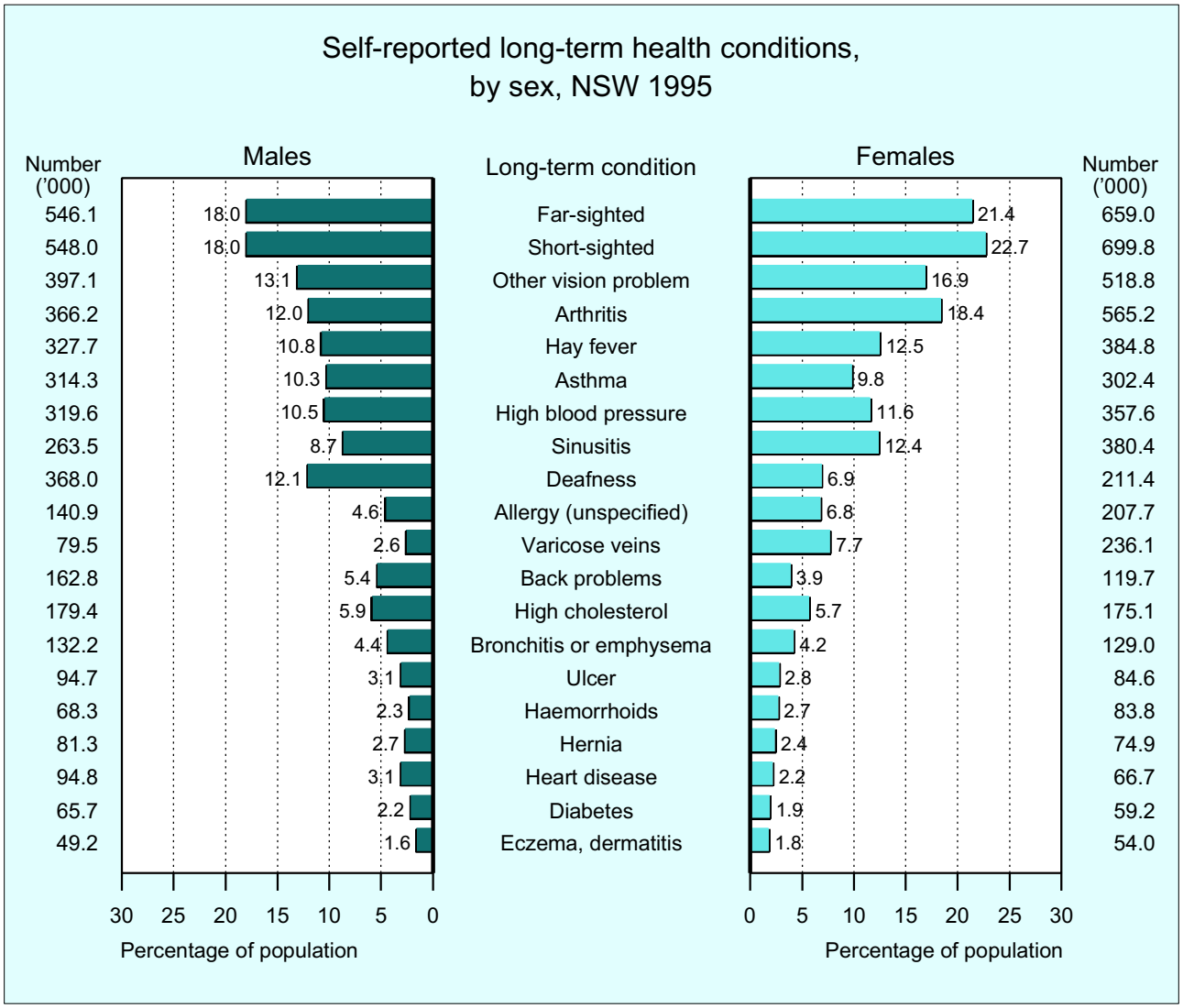


Note: The most commonly reported conditions are shown. Recent conditions=medical conditions (illness, injury or disability) experienced in the two weeks prior to interview.

Source: ABS 1995 National Health Survey, unpublished data.

- In 1995, the recent health conditions (those experienced in the previous two weeks) most commonly reported by NSW residents were headache, arthritis, high blood pressure, asthma and common cold.
- Women were more likely than men to report many conditions, including headache, arthritis, high blood pressure and common cold.
- Men were more likely than women to report back problems, heart disease and high cholesterol.
- These differences are in part attributable to differences in the age structure of the male and female populations, with a greater proportion of females aged 75 years or over (see page 5).
- More than 30 per cent of people aged 75 years and over reported arthritis as a recent condition, and almost 40 per cent of people in this age group reported high blood pressure.
- These findings were very similar to those from the 1989/90 National Health Survey (ABS 1997).

Reference: ABS,1997, unpublished data



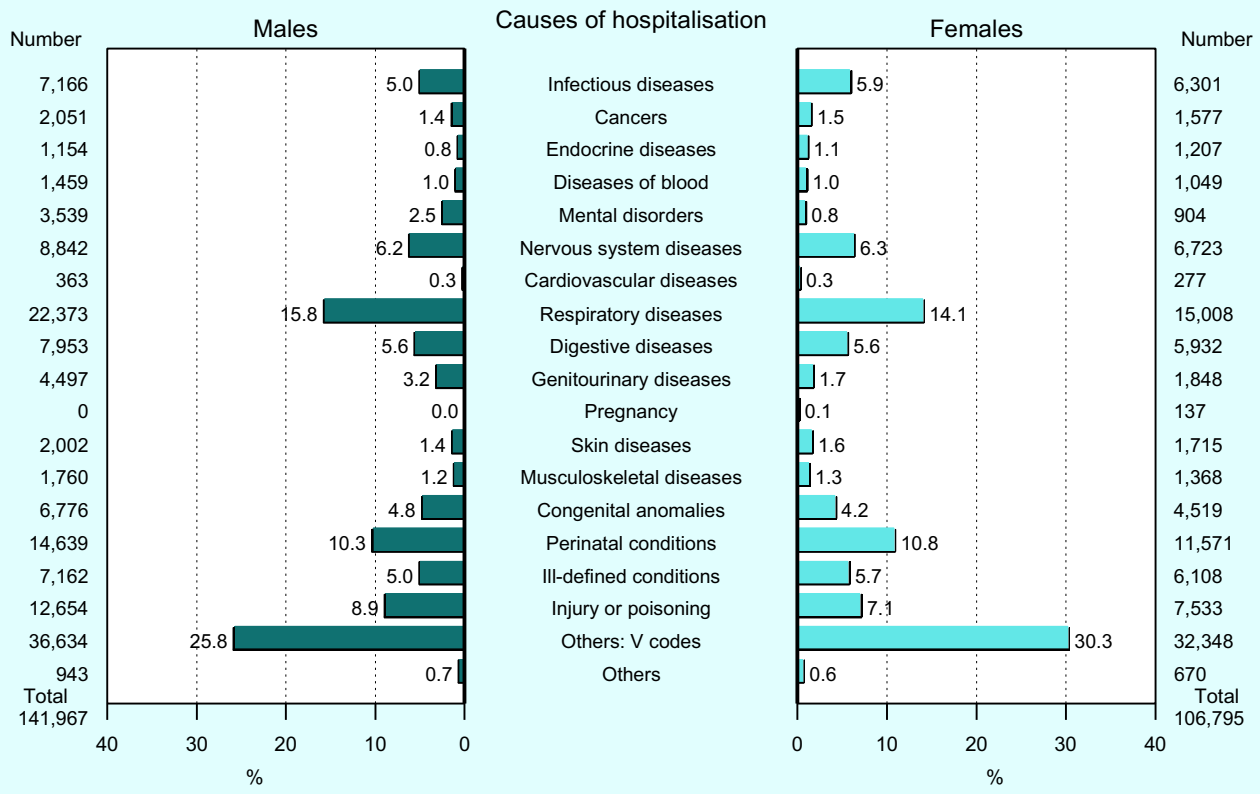
Note: The most commonly reported conditions are shown. Long-term conditions=medical conditions (illness, injury or disability) which have lasted at least 6 months or which are expected to last for 6 months or more. Deafness includes complete and partial.

Source: ABS 1995 National Health Survey, unpublished data.

- In 1995, the long-term health conditions (those that had lasted six months or were expected to last six months) most commonly reported by NSW residents were vision problems, arthritis, hay fever, asthma, high blood pressure, sinusitis and deafness (complete or partial).
- Women were more likely than men to report many long-term conditions, including vision problems, arthritis and high blood pressure. Women were 1.5 times more likely than men to report arthritis.
- Men were more likely than women to report asthma, deafness, back problems and heart disease. This difference was most striking for deafness, which was reported 1.8 times more commonly by men than women.
- These differences are at least partly attributable to differences in the age structure of the male and female populations, with a greater proportion of females aged 75 years or over (see page 5).
- Fifty-six per cent of NSW people aged 75 years and over reported arthritis as a long-term condition, while 38 per cent reported high blood pressure and 36 per cent reported deafness.
- These findings were very similar to those from the 1989/90 National Health Survey (ABS, 1997).

Reference: ABS, 1997, unpublished data

Principal diagnosis for hospitalisation by sex, for persons aged 0-14 years, NSW 1995/96



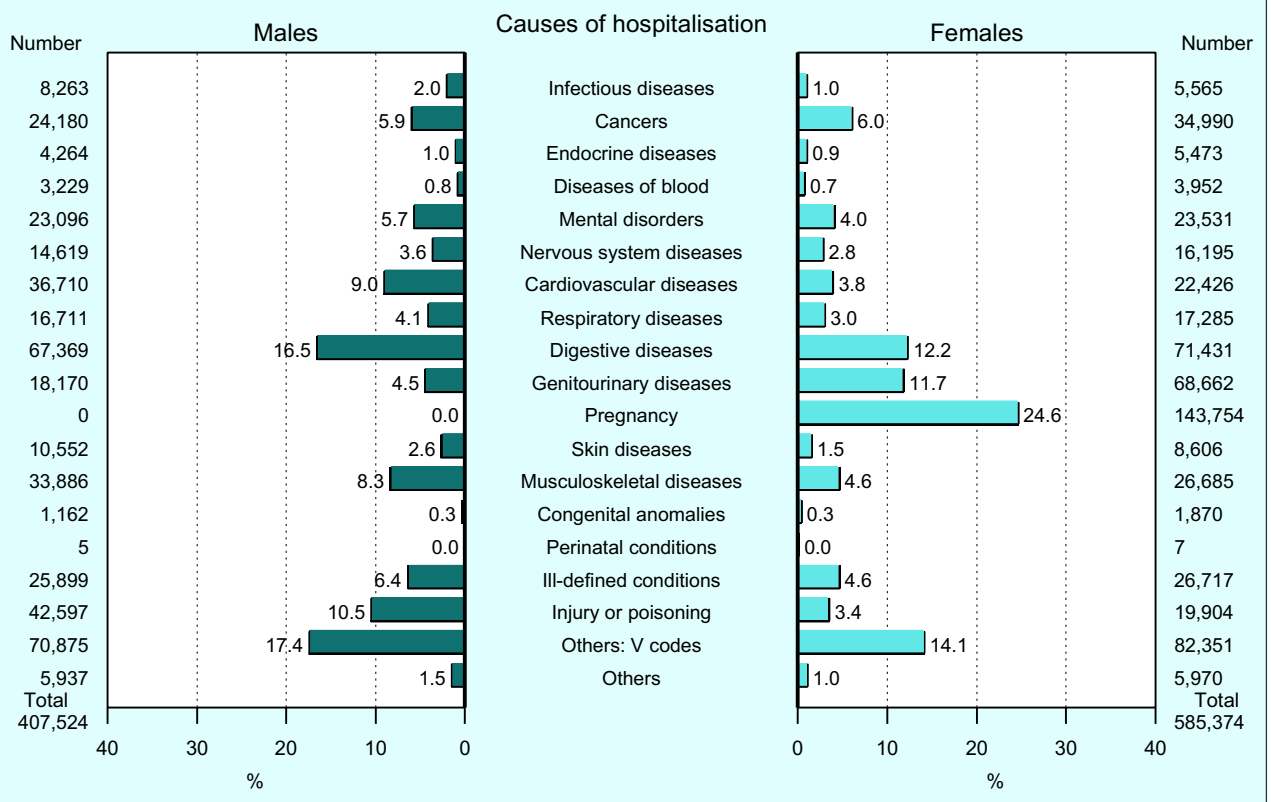
Note: Category of principal diagnosis was classified according to ICD-9 chapter headings, using the codes 000 to 799 when present, or using the injury/poisoning external cause codes E800-869 E880-929 E950-999. The remainder were classified to either V-codes or the 'other' category. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Health Department Inpatient Statistics Collection (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the financial year 1995/96, the most common causes of hospitalisation for NSW residents aged 0 to 14 years were "V codes" which include symptoms and signs without a specific diagnosis or cause, and in this age group, admissions of live born infants.
- After "V codes", respiratory diseases, mainly childhood chest infections and asthma, were the most common cause of hospitalisation in this age group, accounting for 14.7 per cent of all admissions.
- Perinatal conditions (occurring in the first year of life) were the next most common cause of hospitalisation. The majority of these admissions were for babies born prematurely.
- The fourth most common cause of admission was injury and poisoning. Boys in this age group were slightly more likely than girls to be admitted for injury or poisoning and mental illness. Otherwise, there were minimal differences between the sexes.

For more information see: Australian Institute of Health and Welfare, *Australia's health 1996: the fifth biennial report of the Australian Institute of Health and Welfare*, AGPS, Canberra, 1996.

Principal diagnosis for hospitalisation by sex, for persons aged 15-64 years, NSW 1995/96



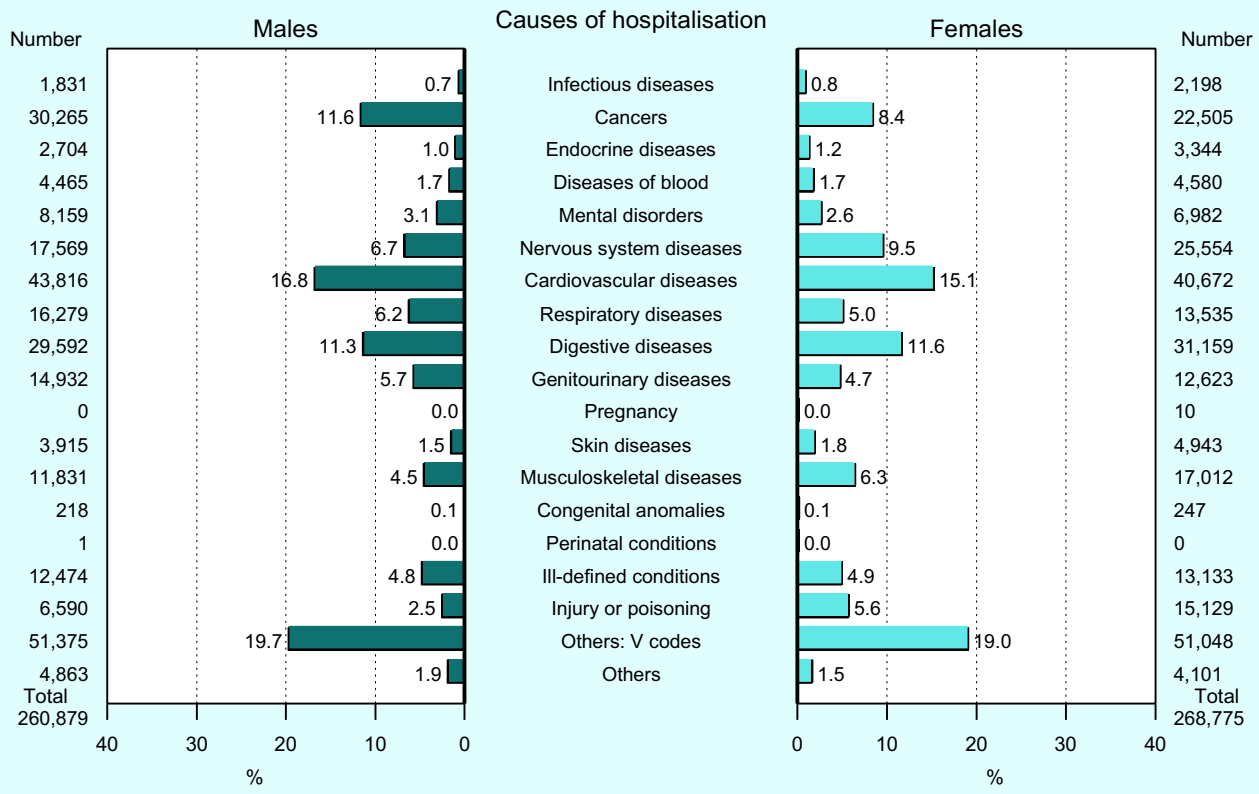
Note: Category of principal diagnosis was classified according to ICD-9 chapter headings using the codes 000 to 799 when present or using the injury/poisoning external cause codes E800-869 E880-929 E950-999. The remainder were classified to either V-codes or the 'other' category. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Health Department Inpatient Statistics Collection (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the financial year 1995/96, pregnancy and delivery were the most common reasons for hospitalisation among NSW females aged 15-64 years.
- The most common causes of hospitalisation among males in this age group, and the second most common among females, were "V codes", which include symptoms and signs without a specific diagnosis or cause.
- Diseases of the gastrointestinal system were the second most common cause of hospitalisation in males in this age group, and the third most common in females. Gastric and duodenal ulcers, oesophagitis and hernias were the leading reasons for admission within this group. The higher number of admissions for males in this group was due to inguinal hernias, which are rare in females.
- The next most common cause of admission in males was injury and poisoning. This includes sporting injuries, workplace injuries, injuries sustained in motor vehicle accidents and self-inflicted injuries (suicide attempts), all of which are more common in males.
- Genitourinary conditions were the next most common cause of hospitalisation in females. These include admission for hysterectomy and for treatment of urinary incontinence.

For more information see: Australian Institute of Health and Welfare, *Australia's health 1996: the fifth biennial report of the Australian Institute of Health and Welfare*, AGPS, Canberra, 1996.

Principal diagnosis for hospitalisation by sex, for persons aged 65+ years, NSW 1995/96



Note: Category of principal diagnosis was classified according to ICD-9 chapter headings, using the codes 000 to 799, when present or using the injury/poisoning external cause codes E800-869 E880-929 E950-999. The remainder were classified to either V-codes or the 'Other' category. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Health Department Inpatient Statistics Collection (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the financial year 1995/96, the most common causes of hospitalisation among NSW residents aged 65 years and older were "V codes" which include symptoms and signs without a specific diagnosis or cause, and in this age group, admissions for rehabilitation, nursing home and respite care.
- Diseases of the cardiovascular system, principally ischaemic heart disease, cardiac failure and stroke, were the next most common causes of admission to hospital for both sexes in this age group.
- Diseases of the gastrointestinal system and cancer were the other two main causes of hospitalisation.
- Admission for nervous system disorders, especially dementia, and respiratory disease figure much more prominently in this older age group than in younger people.

For more information see: Australian Institute of Health and Welfare, *Australia's health 1996: the fifth biennial report of the Australian Institute of Health and Welfare*, AGPS, Canberra, 1996.

Chapter 1.5

Life expectancy and deaths

- In NSW, between 1985 and 1994, life expectancy at birth increased steadily, by 2.9 years for males (from 72.2 to 75.1 years) and by 2.1 years for females (from 78.8 to 80.9 years).
- Though NSW females can still expect to live longer than males, the difference between the sexes has decreased, from 6.6 years in 1985 to 5.8 years in 1994.
- in 1994, the expected age at death at the age of 65 years was 84.5 years for NSW women and 81.0 years for men.
- The age-adjusted death rate in NSW decreased by 43 per cent over the period 1964 to 1994, from 1189 to 680 per 100,000 population.
- In the period 1990 to 1994, the state's lowest age-adjusted death rates were found in the Northern Sydney Health Area, with the highest death rates in the Far West Health Area.
- In 1994, most deaths in NSW of children aged 0-14 years occurred in the first two years of life, and were due to perinatal conditions and congenital anomalies. Injury or poisoning was the next most common cause of death in this age group.
- The most important causes of death in males and females aged 15-64 years were cancer, circulatory diseases and injury and poisoning.
- Circulatory diseases were the most important causes of death in people aged 65 years and over, followed by cancers and respiratory diseases.
- Cancers were the most important *category* of causes of potential years of life lost (PYLL) before the age of 75 in females, followed by injury and poisoning and circulatory diseases. For males, injury and poisoning was the largest category of causes of PYLL, followed by cancers and circulatory diseases.
- Among *individual* causes of death, breast cancer was the single largest cause of PYLL in females, followed by ischaemic heart disease, motor vehicle traffic accidents, lung cancer and suicide. Ischaemic heart disease was the single largest cause of PYLL in males, followed by suicide, motor vehicle traffic accidents, lung cancer and colorectal cancer.

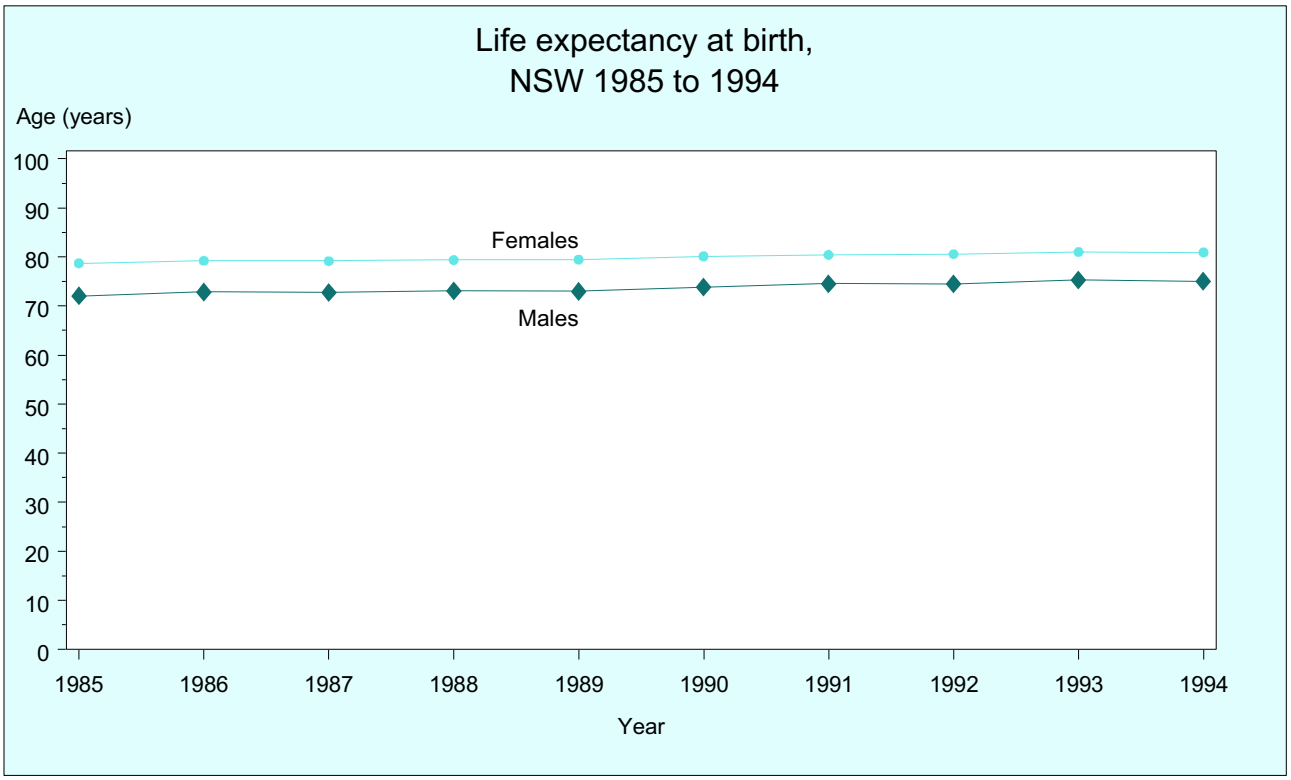
In this chapter

Introduction

This chapter focuses on trends in life expectancy and death rates in NSW, and examines major causes of death and potential years of life lost. It uses data on deaths compiled by the Australian Bureau of Statistics (ABS).

Since Federation in 1900, all deaths for which a coronial inquiry is not required must be certified as to cause and date by a registered medical practitioner and the certificate 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 occurring in 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. This may take months to years. Each year, all State and Territory Registrars of Births, Deaths and Marriages and all coroners forward details of all deaths which they have registered in that calendar year to the ABS. Currently, a single code for a single underlying cause of death is applied. Starting in 1998, multiple cause-of-death codes will be applied to each death record if more than one cause contributes to the death.

Data presented in this chapter are based on year of death, rather than year of registration. Details of the methods used to calculate life expectancy, age-adjust death rates and to calculate and interpret confidence intervals can be found in the Methods section (see page 257).



		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	Males	72.1	72.9	72.8	73.1	73.0	73.9	74.5	74.5	75.4	75.1
	Females	78.7	79.2	79.2	79.4	79.5	80.1	80.4	80.6	81.0	80.9
AUSTRALIA	Males	72.4	72.9	73.0	73.1	73.3	73.9	74.4	74.5	75.0	–
	Females	78.8	79.2	79.5	79.5	79.6	80.1	80.4	80.4	80.9	–

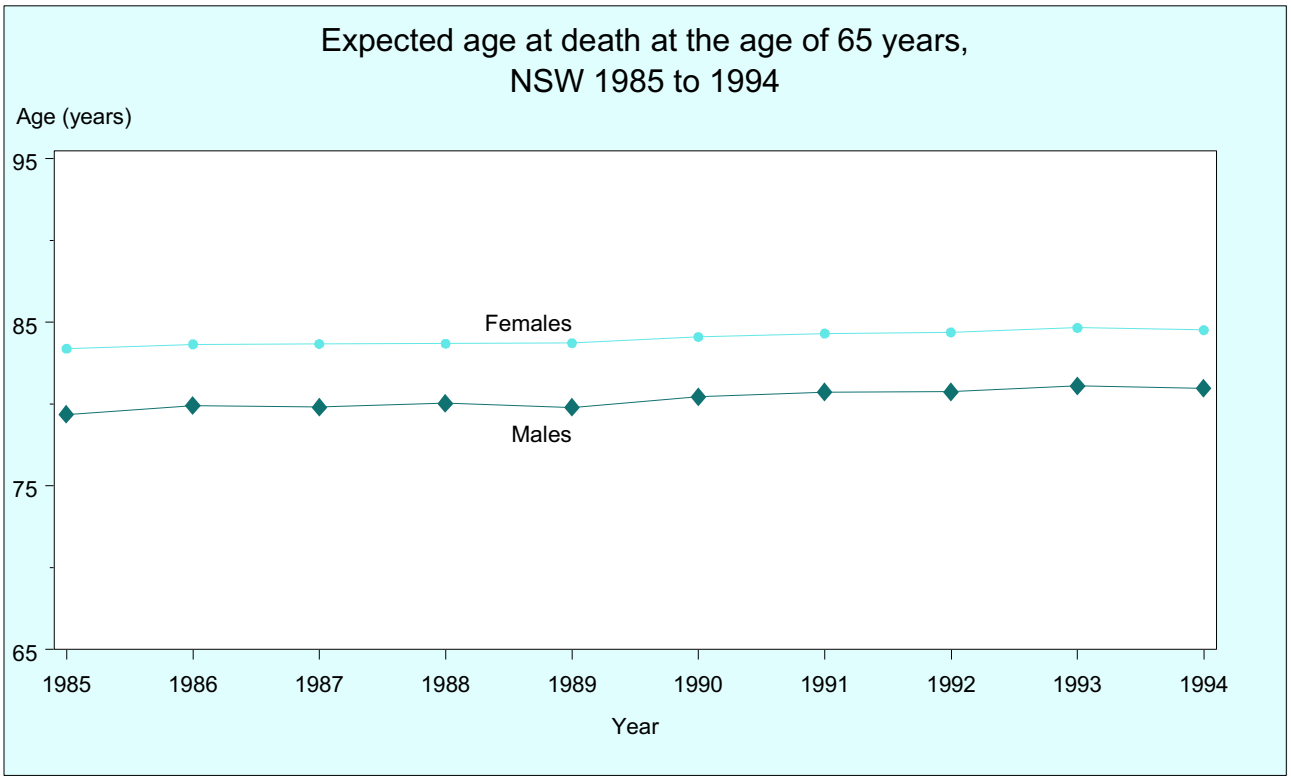
Note: Population as at 30 June each year.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- 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, because of changes in social and economic conditions, lifestyle, nutritional and environmental factors, sanitation, immunisation, the quality of 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.
- A more precise measure is the expected age at death once a person has reached the age of 65 years (see page 42).
- Details of the methods used to calculate life expectancy and related measures can be found in the Methods section (see page 261).
- In NSW, between 1985 and 1994, life expectancy at birth steadily increased, by 2.9 years for males (from 72.2 to 75.1 years) and by 2.1 years for females (from 78.8 to 80.9 years). These increases were similar to those for Australia overall.
- Though females can still expect to live longer than males, the difference between the sexes is decreasing. In NSW the difference in life expectancy between males and females dropped from 6.6 years in 1985 to 5.8 years in 1994.
- Life expectancy at birth for Aboriginal and Torres Strait Islander people is significantly lower than for the non-indigenous population. See Section 3.1 for more information regarding the health status of the Aboriginal and Torres Strait Islander population.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/



		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	Males	79.4	79.9	79.8	80.1	79.8	80.5	80.7	80.7	81.1	81.0
	Females	83.4	83.7	83.7	83.7	83.7	84.1	84.3	84.4	84.7	84.5
AUSTRALIA	Males	79.3	79.7	79.7	79.8	79.7	80.2	80.5	80.4	80.7	–
	Females	83.2	83.5	83.7	83.8	83.7	84.0	84.3	84.2	84.5	–

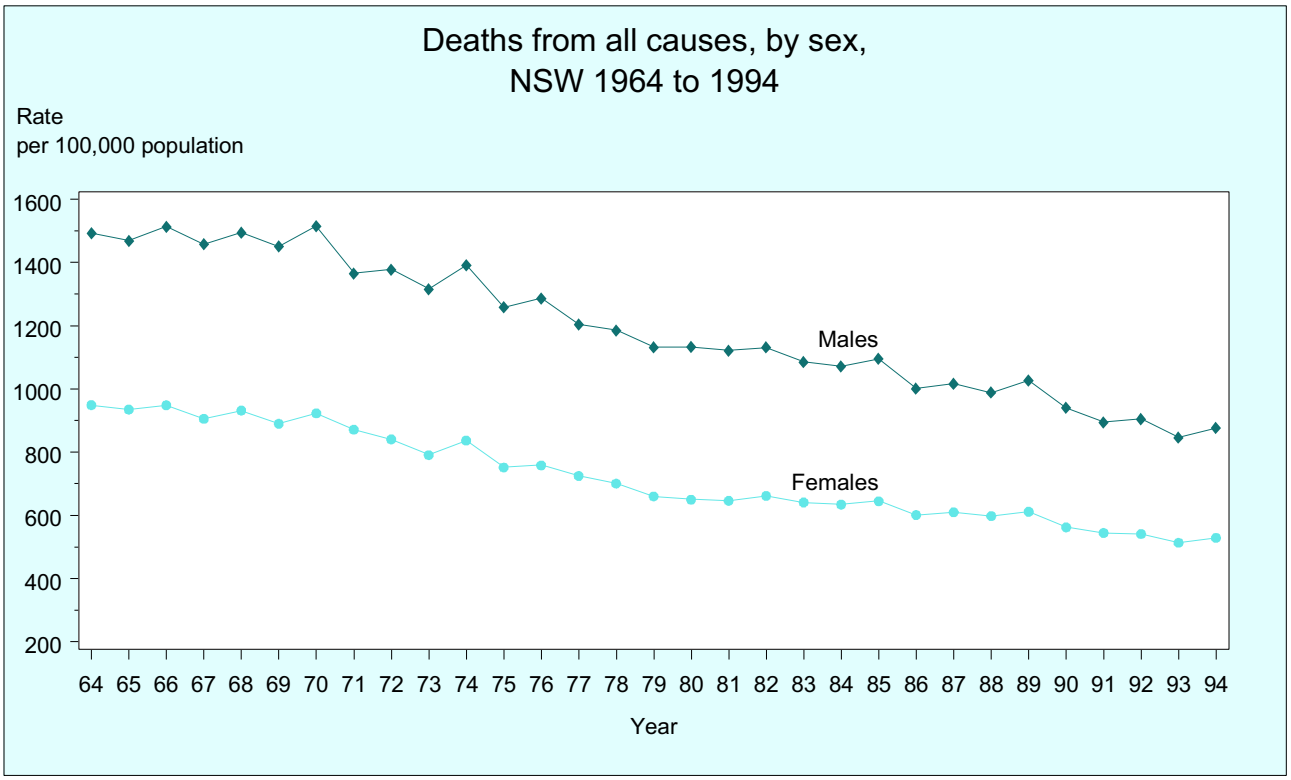
Note: Population as at 30 June each year.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- Expected age at death at the age of 65 years is an estimate of the average age of death for someone who has already reached the age of 65, assuming that current rates of death prevail for the remaining lifetime of that person. 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 (see page 41). See the Methods section (page 261) for details of the method used to calculate expected age at death.
- Expected age at death at the age of 65 years is an overall indicator of the effect of the many different factors that influence the health of the elderly in the population. These factors include lifestyle, nutritional and environmental factors and the quality and availability of health care.
- In NSW, between 1985 and 1994, the expected age at death for persons aged 65 increased slightly, for males from 79.4 to 81.0 years, and for females from 83.4 to 84.5 years.
- Expected age at death for persons aged 65 increased slightly more rapidly in NSW than in Australia overall.
- Although women who have reached the age of 65 can still expect to live longer than men of the same age, the difference is less than the sex difference for expectation of life at birth. This reflects the fact that males are at greater risk of dying before they reach the age of 65, primarily from accidents, suicide and cardiovascular disease.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/



		1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Number	Males	21759	21761	22577	22192	22805	22611	23798	22484	22940	22358
	Females	17401	17573	18249	17811	18646	18199	19267	19006	18753	18090
	Persons	39160	39334	40826	40003	41451	40810	43065	41490	41693	40448
Rate	Males	1493.2	1469.6	1514.2	1458.0	1494.6	1451.0	1515.6	1365.5	1378.3	1315.6
per 100,000	Females	949.1	935.1	948.3	905.7	932.0	889.7	923.2	871.5	840.6	791.1
	Persons	1188.9	1169.9	1194.8	1147.0	1175.9	1132.8	1177.0	1085.9	1071.0	1017.0

		1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Number	Males	23833	22093	22866	21728	21856	21184	21656	21842	22498	22056
	Females	19634	18013	18800	18251	18053	17422	17597	18036	18921	18764
	Persons	43467	40106	41666	39979	39909	38606	39253	39878	41419	40820
Rate	Males	1391.4	1258.5	1287.2	1204.8	1185.5	1132.4	1133.1	1122.3	1131.3	1085.2
per 100,000	Females	837.1	751.9	758.5	725.1	700.4	660.3	650.2	646.3	661.6	640.9
	Persons	1072.2	967.6	983.1	927.5	906.4	860.6	855.8	847.6	860.3	827.2

		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Number	Males	22319	23342	22274	23296	23236	24590	23137	22646	23467	22530	23848
	Females	19082	20081	19297	20147	20227	21324	19925	19890	20390	19869	21151
	Persons	41401	43423	41571	43443	43463	45914	43062	42536	43857	42399	44999
Rate	Males	1071.4	1095.3	1000.8	1016.5	988.7	1027.5	940.4	894.2	905.0	847.2	876.6
per 100,000	Females	634.5	645.0	600.9	610.1	598.1	611.8	562.3	544.5	541.4	513.1	528.8
	Persons	818.6	834.8	772.2	785.3	767.1	790.8	726.5	696.4	699.2	658.1	680.1

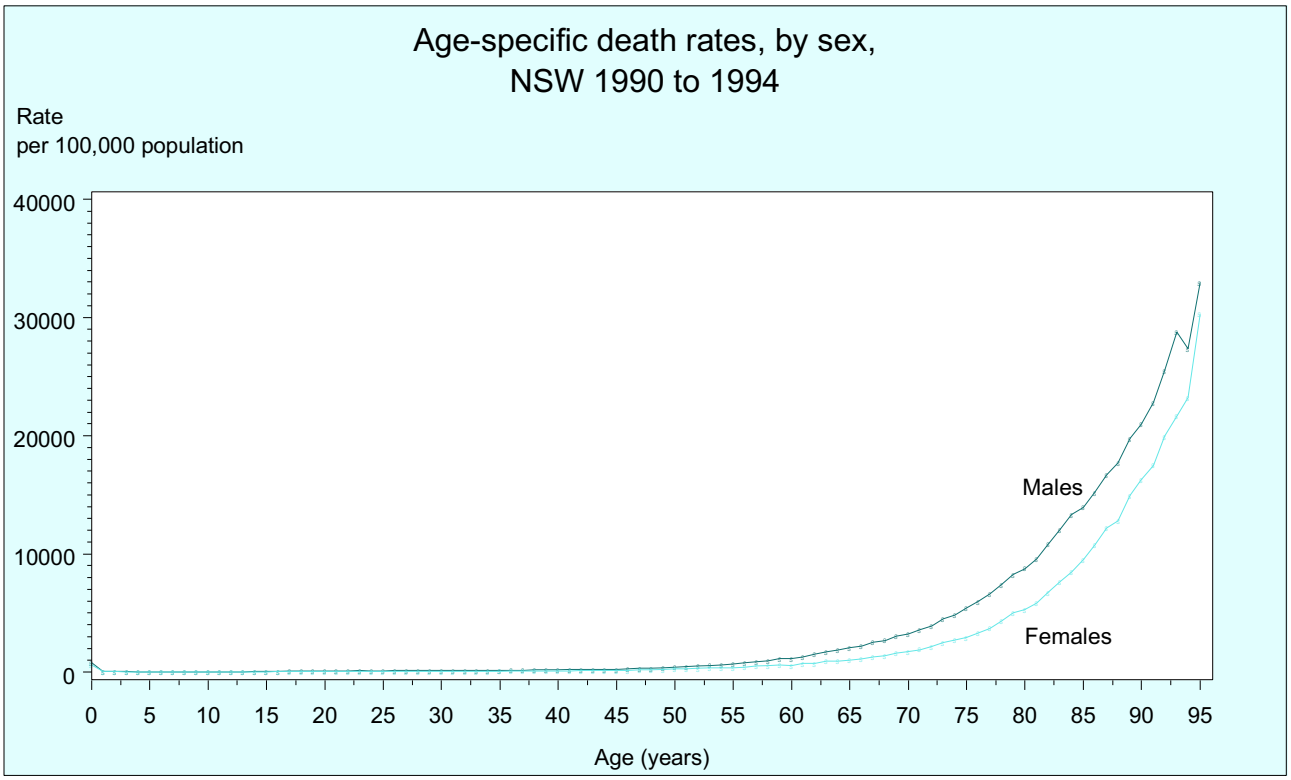
Note: Yearly NSW population estimates as at 30 June. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The age-adjusted death rate in NSW decreased by 43 per cent over the period 1964 to 1994 (42% for males and 44% for females).
- Throughout this period, the age-adjusted male death rate was consistently around 1.6 times greater than the female death rate.
- Owing to this decline in the underlying death rate, the absolute number of deaths in NSW residents per annum rose by only 15 per cent, from 39,160 in 1964 to 44,999 in 1994, despite a 48 per cent increase in the NSW population over the same period.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/



Age	Sex	Deaths	Death rate /100,000	Age	Sex	Deaths	Death rate /100,000	Age	Sex	Deaths	Death rate /100,000
<1 year	Males	1799	800.5	30-34	Males	1785	145.0	65-69	Males	14371	2486.5
	Females	1307	614.9		Females	630	51.6		Females	8132	1278.5
	Persons	3106	710.3		Persons	2415	98.5		Persons	22503	1853.6
1-4	Males	372	41.9	35-39	Males	1877	164.3	70-74	Males	16973	3939.2
	Females	264	31.2		Females	868	76.2		Females	11565	2176.8
	Persons	636	36.7		Persons	2745	120.3		Persons	28538	2966.0
5-9	Males	218	19.9	40-44	Males	2375	216.2	75-79	Males	18909	6610.5
	Females	155	14.9		Females	1191	110.7		Females	15553	3803.2
	Persons	373	17.5		Persons	3566	164.0		Persons	34462	4958.7
10-14	Males	212	19.7	45-49	Males	2956	308.7	80-84	Males	16177	10534.6
	Females	142	13.9		Females	1690	184.2		Females	18016	6621.2
	Persons	354	16.9		Persons	4646	247.8		Persons	34193	8033.0
15-19	Males	907	80.1	50-54	Males	3929	510.7	85 +	Males	14429	18303.7
	Females	331	30.8		Females	2281	310.1		Females	30067	14771.1
	Persons	1238	56.1		Persons	6210	412.6		Persons	44496	15757.3
20-24	Males	1315	111.2	55-59	Males	5797	878.3	All ages	Males	115650	781.3
	Females	440	38.3		Females	3110	478.4		Females	101228	677.2
	Persons	1755	75.3		Persons	8907	679.9		Persons	216878	729.0
25-29	Males	1531	129.8	60-64	Males	9718	1513.7				
	Females	458	39.4		Females	5028	770.9				
	Persons	1989	84.9		Persons	14746	1139.3				

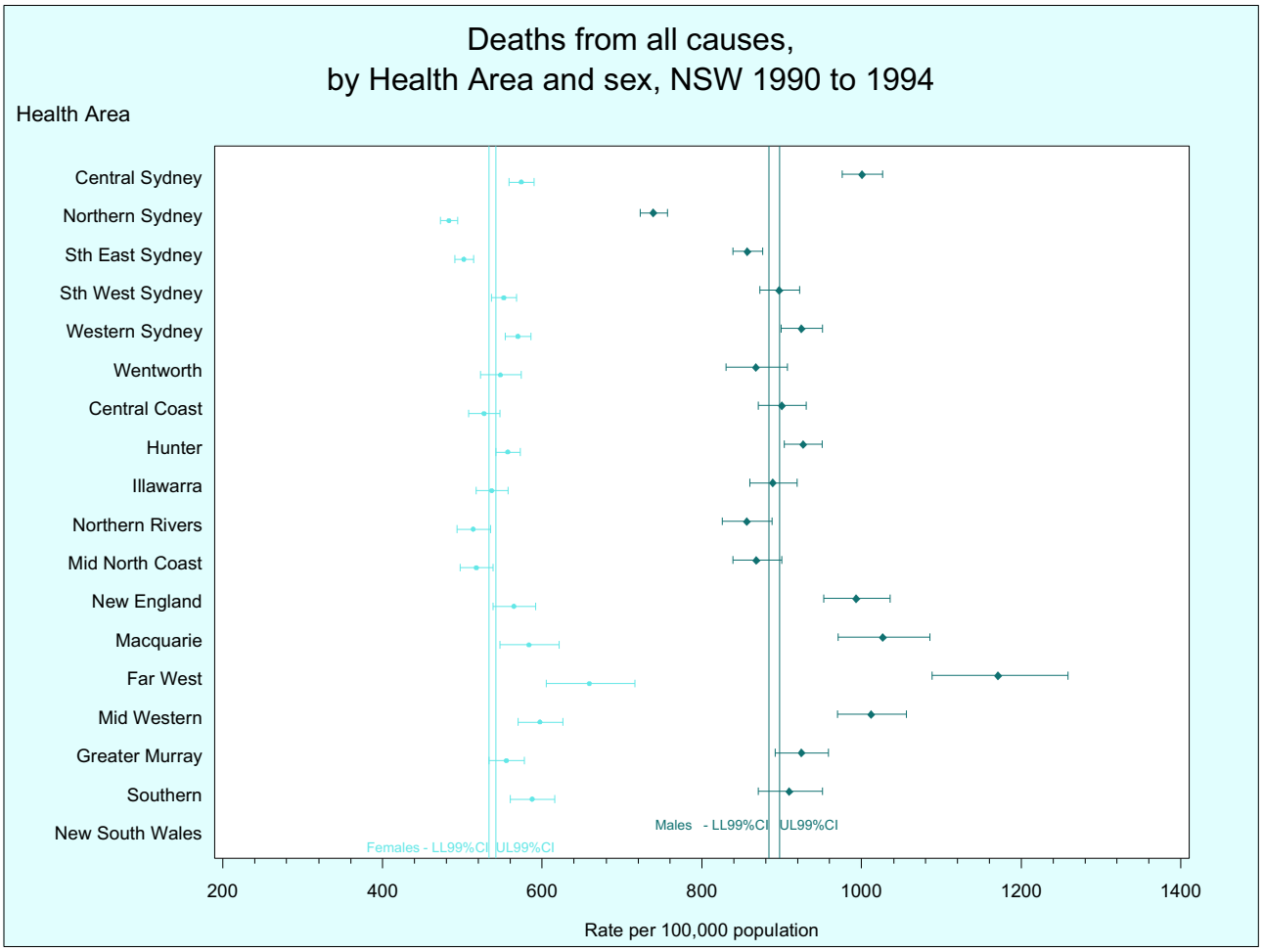
Note: NSW population as at 30 June each year.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In NSW in the period 1990 to 1994, death rates among both sexes were highly age-dependent.
- After a peak among infants aged under one year (mainly due to perinatal deaths and congenital abnormalities: see page 48), age-specific death rates declined gradually to their lowest point (16.9/100,000) among 10- to 14-year-olds. Death rates then rose steadily to age 50-54, which marked the beginning of a rapid rise.
- As would be expected, the highest age-specific death rates were recorded in people aged 85 years or over (15,757.3/100,000).
- Death rates among males were higher than those among females at all ages.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/



Note: Death rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for the age-adjusted rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Older people are more likely to die than younger people (see page 44), so a geographical area with a high proportion of older people would be expected to have a higher overall (crude) death rate than one with a smaller proportion of older people. Age-adjustment controls for the effect of such differences in the age distribution, allowing valid comparison of death rates in different populations. More details about methods used for age-adjustment and how to interpret confidence intervals are included in the Methods section (see page 261).
- In NSW in the period 1990 to 1994, the lowest age-adjusted death rates were found in the Northern Sydney Health Area, with a female death rate 11 per cent lower than the NSW average and a male death rate 5 per cent lower than the NSW average.
- The highest age-adjusted death rates were found in the Far West Health Area, with a female rate 18 per cent higher than the NSW average, and a male rate 33 per cent higher than the NSW average.
- The Central Sydney, New England, Macquarie, Far West and Mid Western Health Areas had age-adjusted male death rates significantly higher than NSW overall. Only Northern Sydney and South Eastern Sydney Health Areas had a male death rate significantly lower than for the state as a whole.
- The Central Sydney, Macquarie, Far West, Mid Western and Southern Health Areas had age-adjusted female death rates significantly higher than NSW overall. Only Northern Sydney and South Eastern Sydney Health Areas had female death rates significantly lower than for the state as a whole.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/

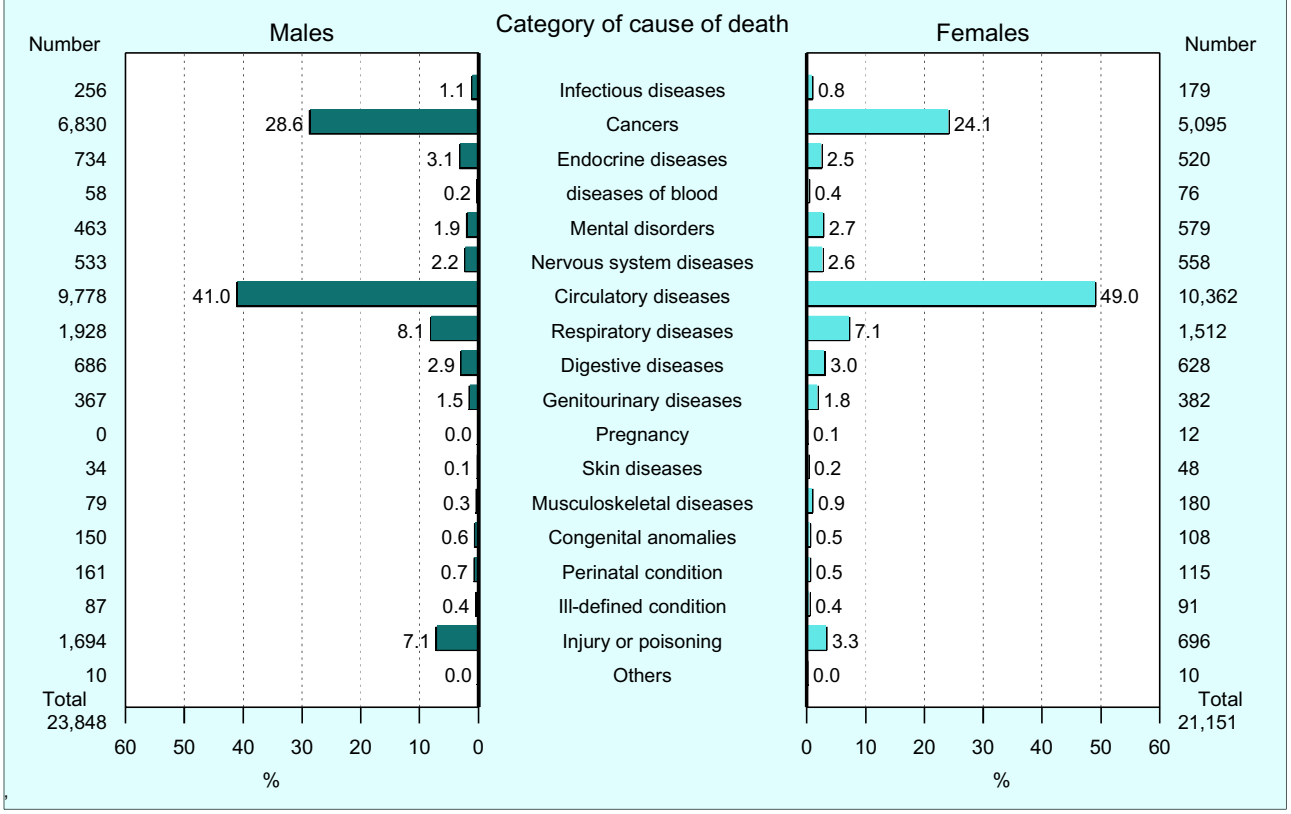
Deaths from all causes by Health Area and sex, NSW 1990 to 1994

Health Area	Sex	Crude rate	Std rate	L99%CI	U99%CI
Central Sydney	Males	916.1	1000.9	975.6	1026.6
Central Sydney	Females	830.1	574.0	558.2	590.0
Central Sydney	Persons	873.0	758.4	744.6	772.5
Northern Sydney	Males	723.0	739.7	722.9	756.8
Northern Sydney	Females	799.1	483.4	472.7	494.2
Northern Sydney	Persons	762.1	587.0	577.8	596.2
South Eastern Sydney	Males	826.6	857.3	838.9	876.0
South Eastern Sydney	Females	735.7	501.9	490.5	513.6
South Eastern Sydney	Persons	780.7	655.9	645.7	666.1
South Western Sydney	Males	578.4	897.3	872.6	922.4
South Western Sydney	Females	473.7	552.1	536.3	568.1
South Western Sydney	Persons	526.3	701.9	688.2	715.7
Western Sydney	Males	614.0	925.0	899.1	951.3
Western Sydney	Females	536.9	569.7	553.6	586.1
Western Sydney	Persons	575.4	721.2	707.2	735.4
Wentworth	Males	520.1	868.0	829.9	907.3
Wentworth	Females	434.7	547.9	522.8	573.9
Wentworth	Persons	477.3	687.5	665.8	709.6
Central Coast	Males	1061.7	900.2	870.5	930.5
Central Coast	Females	813.1	527.3	508.0	547.2
Central Coast	Persons	934.6	692.6	675.8	709.8
Hunter	Males	848.9	926.8	903.4	950.5
Hunter	Females	729.4	556.9	542.0	572.2
Hunter	Persons	789.0	717.1	704.1	730.3
Illawarra	Males	810.6	889.3	859.8	919.4
Illawarra	Females	625.4	536.9	517.5	556.9
Illawarra	Persons	718.2	695.7	678.9	712.7
Northern Rivers	Males	918.6	856.3	825.6	887.9
Northern Rivers	Females	718.2	513.7	493.0	535.0
Northern Rivers	Persons	818.2	670.9	653.0	689.1
Mid North Coast	Males	1007.0	868.8	838.6	899.7
Mid North Coast	Females	744.4	517.5	497.2	538.4
Mid North Coast	Persons	874.5	680.0	662.4	697.9
New England	Males	846.3	993.7	952.8	1035.9
New England	Females	677.1	564.7	538.8	591.5
New England	Persons	761.6	753.5	730.6	776.9
Macquarie	Males	868.6	1026.7	970.3	1085.3
Macquarie	Females	677.4	583.4	547.5	621.0
Macquarie	Persons	773.2	777.4	745.9	809.9
Far West	Males	998.7	1171.4	1088.3	1258.7
Far West	Females	746.7	659.2	605.2	716.5
Far West	Persons	877.0	892.9	845.6	942.1
Mid Western	Males	899.0	1012.3	969.5	1056.3
Mid Western	Females	765.4	597.3	569.7	625.8
Mid Western	Persons	832.4	777.2	753.1	801.8
Greater Murray	Males	820.3	924.9	892.0	958.6
Greater Murray	Females	679.3	555.2	533.4	577.6
Greater Murray	Persons	750.1	721.3	702.4	740.5
Southern	Males	831.9	910.1	870.4	951.0
Southern	Females	696.8	587.4	559.8	616.0
Southern	Persons	765.4	735.9	712.6	759.7
NSW	Males	781.5	890.5	883.6	897.4
NSW	Females	677.4	537.3	532.9	541.7
NSW	Persons	729.1	691.0	687.2	694.9

Note: Crude rates used population estimates as at 30 June each year. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for age-adjusted rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

Deaths by category of cause and sex, for persons of all ages, NSW 1994



Note: Cause of death was classified according to ICD-9 chapter headings using the codes 000 to 799 when present, or using the injury/poisoning external cause codes E800-869, E880-929, E950-999. "Others" refers to external cause codes E870-879, E930-949.

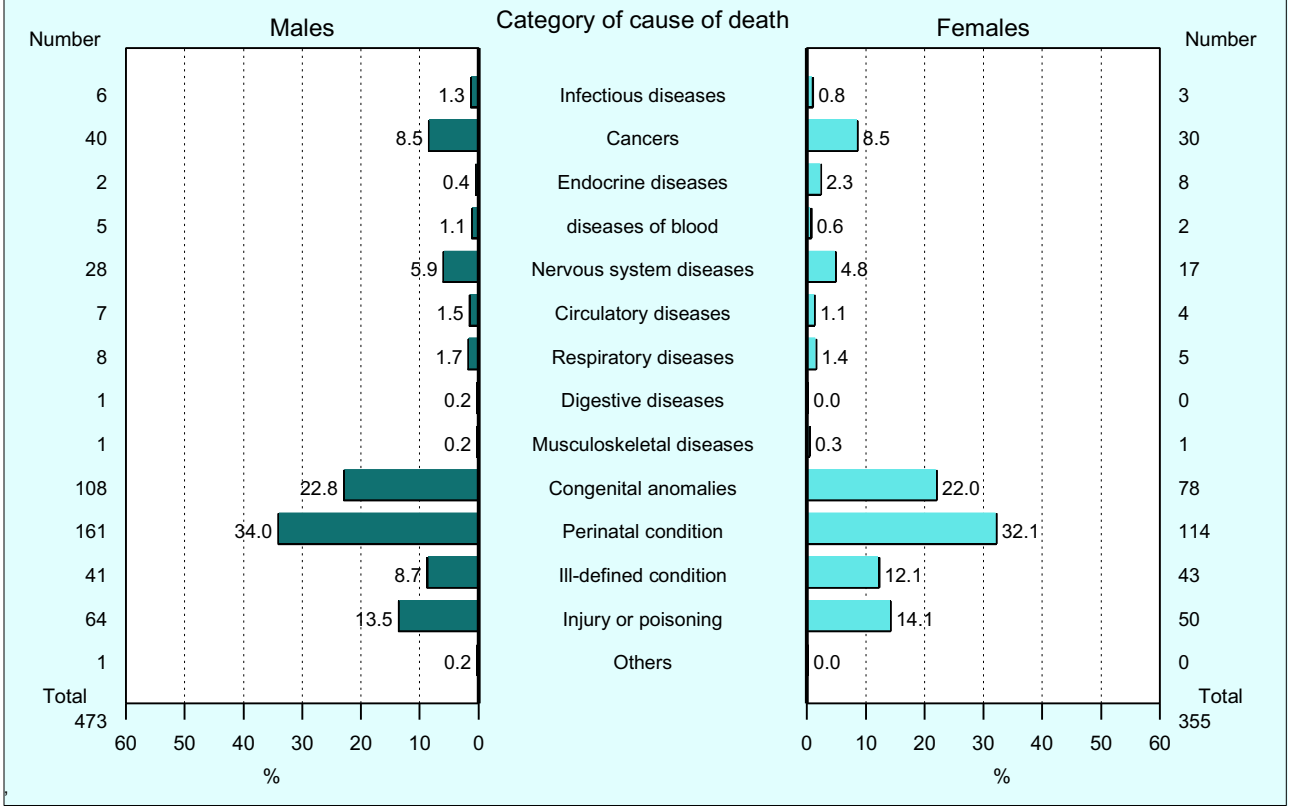
Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- There were 44,999 deaths among NSW residents in 1994, comprising 23,848 (53.0%) male deaths and 21,151 female deaths (47.0%).
- Circulatory diseases were the major cause of death in both males and females, and accounted for 44.8 per cent of all deaths.
- Cancers were the second leading cause of death among both sexes (26.5% of all deaths), followed by respiratory diseases (7.6%), injury and poisoning (5.3%), digestive diseases (2.9%) and endocrine diseases (2.8%).
- Since most deaths occur among older people, causes of death that are most common among older people (such as circulatory and respiratory diseases) tend to dominate when all ages are grouped together. Separate information for children aged 0-14 years, persons aged 15-64 years and persons aged 65 years and over is presented on the following pages.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/

Deaths by category of cause and sex, for persons aged 0-14 years, NSW 1994



Note: Cause of death was classified according to ICD-9 chapter headings using the codes 000 to 799 when present, or using the injury/poisoning external cause codes E800-869, E880-929, E950-999. "Others" refers to external cause codes E870-879, E930-949.

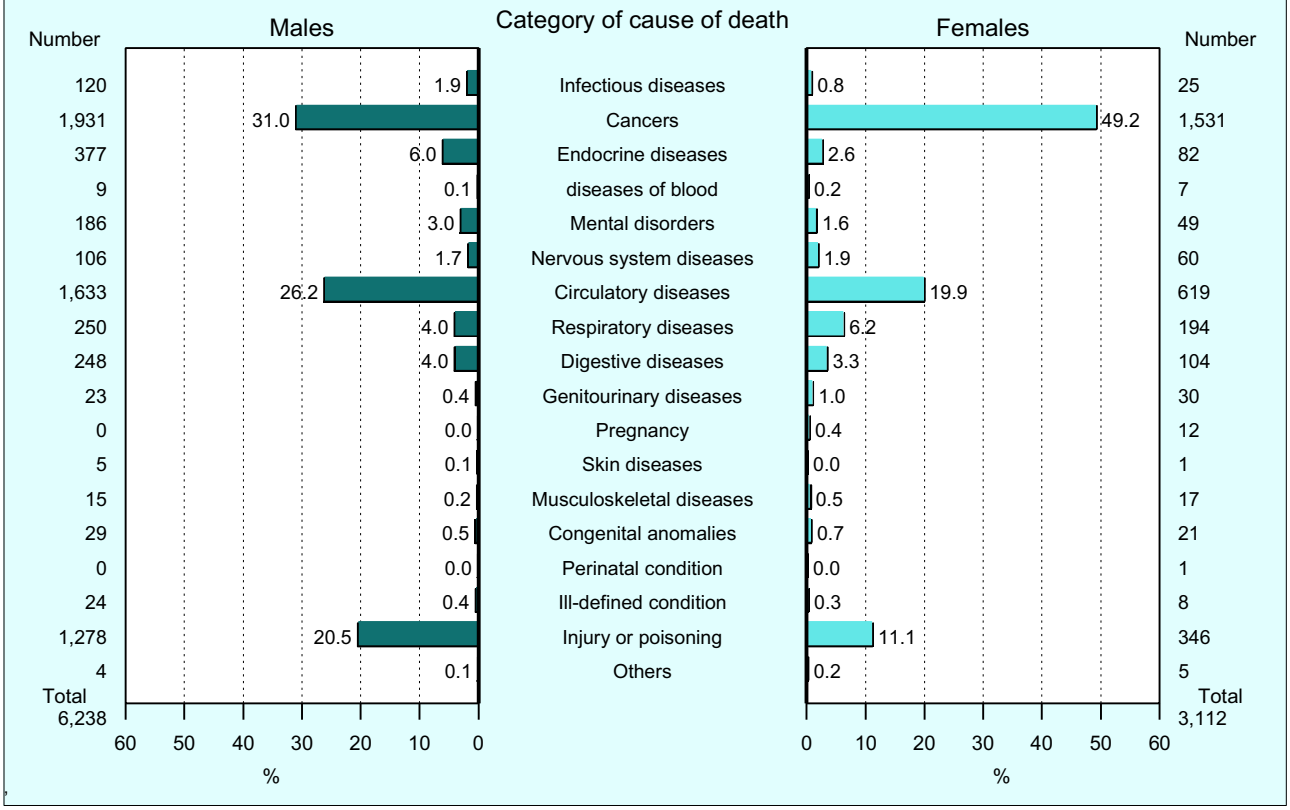
Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- There were 828 deaths among NSW children aged 0 to 14 years in 1994, representing only 1.8 per cent of all deaths in NSW in that year.
- Nearly a third (34% for females, 32.1% for males) of all deaths in this age group were attributable to perinatal conditions (conditions occurring in the first year of life). A further 22 per cent of deaths were due to congenital anomalies, most of which also result in death in the first one or two years of life. Therefore, over half of all deaths in young people occur in the first one or two years of life.
- Injury and poisoning was the next most important category of cause of death in this age group.
- The major causes of death did not differ greatly between boys and girls. This is in contrast to older adult age groups (see the following pages) in which differences in a number of categories become increasingly marked.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/

Deaths by category of cause and sex, for persons aged 15-64 years, NSW 1994



Note: Cause of death was classified according to ICD-9 chapter headings using the codes 000 to 799 when present, or using the injury/poisoning external cause codes E800-869, E880-929, E950-999. "Others" refers to external cause codes E870-879, E930-949.

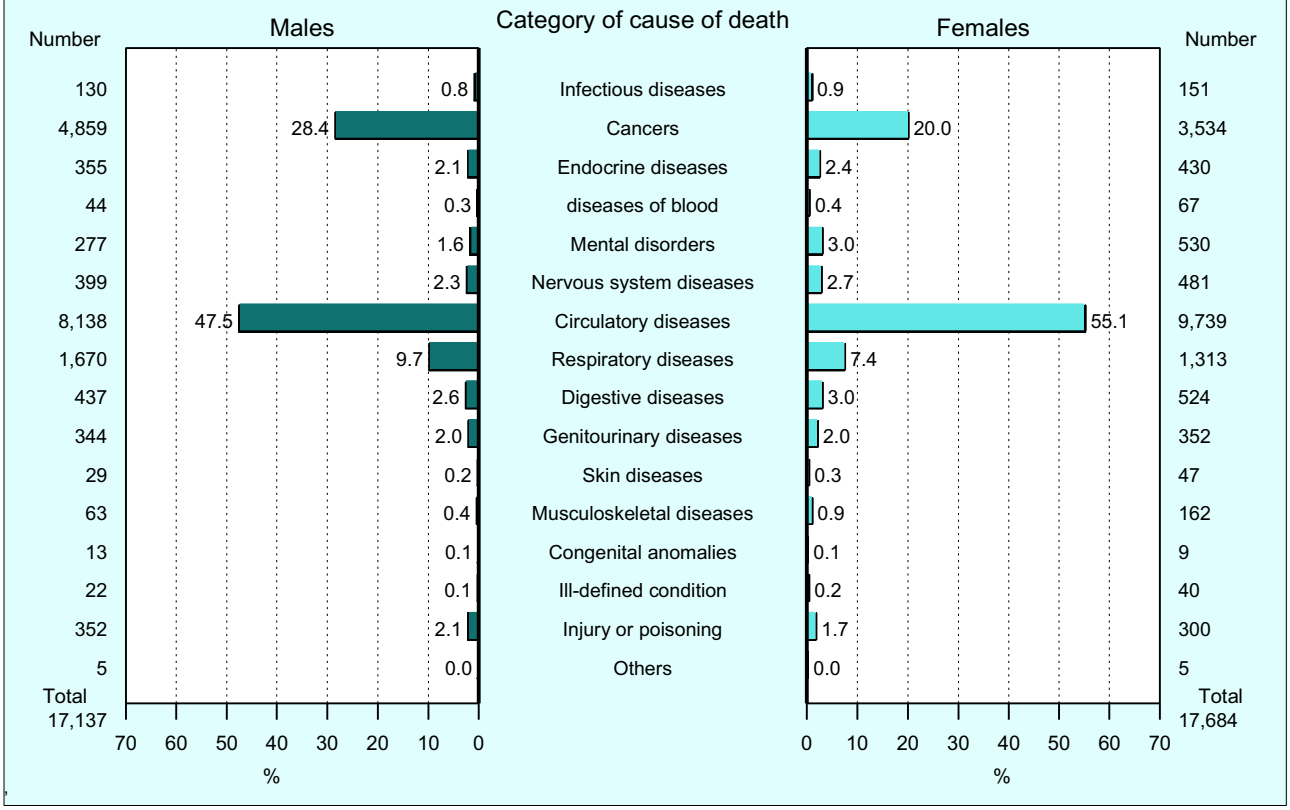
Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In NSW in 1994, there were 9,350 deaths among persons aged 15-64 years, accounting for 20.8 per cent of all deaths. These deaths comprised 6,238 male deaths (66.7%) and 3112 female deaths (33.3%).
- The leading cause of death in this age group was cancer (37% of deaths), followed by cardiovascular diseases (24%) and injury and poisoning (17%).
- Unlike the 0- to 14-year age group (see page 48), there were marked differences in the leading causes of death between the sexes.
- Nearly half (49.2%) of all deaths in females in the 15- to 64-year age group were due to cancer. Of these cancer deaths, 28 per cent were due to breast cancer, 12.4 per cent to lung cancer and 9.1 per cent to colon cancer. The other leading causes of death in females aged 15 to 64 years were circulatory diseases (19.9% of deaths) and injury and poisoning (11.1%).
- Although the three major causes of death in males aged 15 to 64 years were the same as for females, their relative importance varied. Cancer caused almost one-third (31%) of deaths in males in this age group, and of these deaths, 25.1 per cent were due to lung cancer and 10.3 per cent to colon cancer. Circulatory diseases caused just over one-quarter (26.2%) of male deaths and injury and poisoning caused one-fifth (20.5%). Suicide was the most important cause of male injury deaths (43.1% of male injury and poisoning deaths), followed by motor vehicle accidents (24.8%).

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/

Deaths by category of cause and sex, for persons aged 65 years and over, NSW 1994



Note: Cause of death was classified according to ICD-9 chapter headings using the codes 000 to 799 when present, or using the injury/poisoning external cause codes E800-869, E880-929, E950-999. "Others" refers to external cause codes E870-879, E930-949.

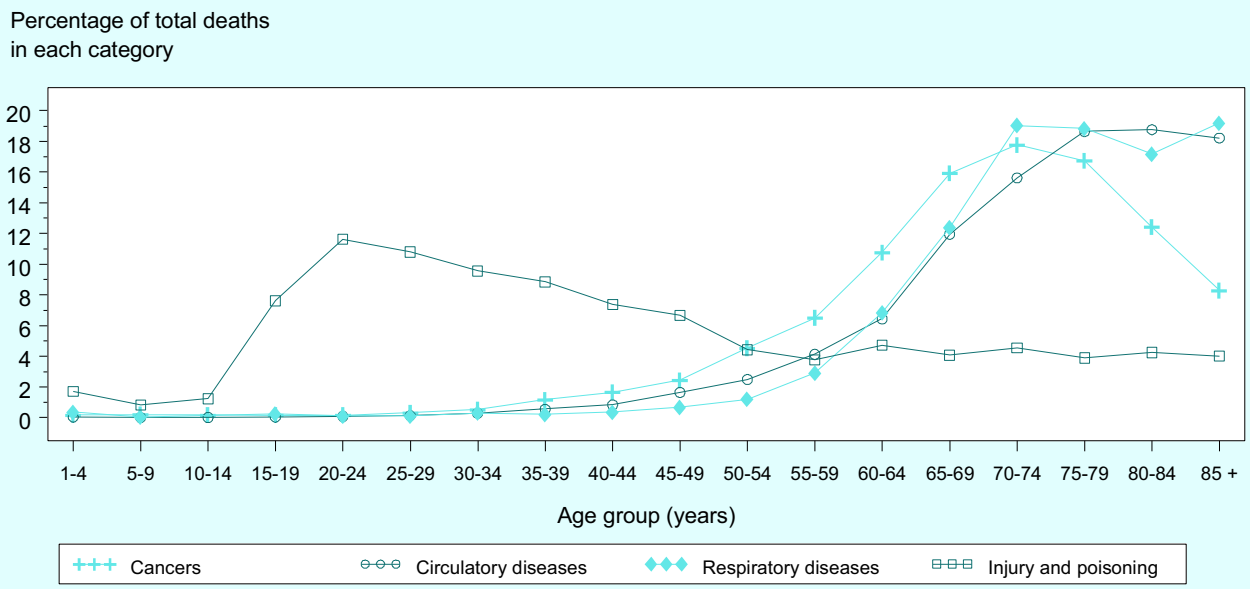
Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In NSW in 1994, there were 34,821 deaths among persons aged 65 or more years, accounting for 77.4 per cent of all deaths. These deaths comprised 17,137 male deaths (49.2%) and 17,684 female deaths (50.8%).
- In distinct contrast to the younger age groups, in this age group circulatory diseases were by far the most common cause of death, killing almost half (47.5%) of males and more than half (55.1%) of females.
- Cancer was the next most common cause of death, accounting for 28.4 per cent of deaths in males and 20.0 per cent of deaths in females, followed by respiratory diseases (9.7% and 7.4% of deaths in males and females respectively). No other cause of death stood out in this age group.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/

Frequency distribution of age at death, by category of cause, males, NSW 1994



Age (years)	Cancers Deaths	%	Circulatory diseases Deaths	%	Respiratory diseases Deaths	%	Injury and poisoning Deaths	%	Other causes Deaths	%	All causes Deaths	%
0-4	13	0.2	4	0.0	7	0.4	29	1.7	331	9.1	384	1.6
5-9	14	0.2	1	0.0	1	0.1	14	0.8	9	0.2	39	0.2
10-14	13	0.2	2	0.0	0	0.0	21	1.2	14	0.4	50	0.2
15-19	11	0.2	4	0.0	5	0.3	129	7.6	25	0.7	174	0.7
20-24	11	0.2	8	0.1	2	0.1	197	11.6	39	1.1	257	1.1
25-29	23	0.3	14	0.1	2	0.1	183	10.8	72	2.0	294	1.2
30-34	36	0.5	28	0.3	6	0.3	162	9.6	139	3.8	371	1.6
35-39	81	1.2	55	0.6	4	0.2	150	8.9	129	3.6	419	1.8
40-44	113	1.7	83	0.8	7	0.4	125	7.4	154	4.3	482	2.0
45-49	167	2.4	162	1.7	13	0.7	113	6.7	149	4.1	604	2.5
50-54	310	4.5	244	2.5	23	1.2	75	4.4	108	3.0	760	3.2
55-59	444	6.5	405	4.1	56	2.9	64	3.8	133	3.7	1102	4.6
60-64	735	10.8	630	6.4	132	6.8	80	4.7	198	5.5	1775	7.4
65-69	1087	15.9	1169	12.0	239	12.4	69	4.1	254	7.0	2818	11.8
70-74	1215	17.8	1528	15.6	367	19.0	77	4.5	337	9.3	3524	14.8
75-79	1143	16.7	1824	18.7	363	18.8	66	3.9	478	13.2	3874	16.2
80-84	848	12.4	1835	18.8	331	17.2	72	4.3	516	14.3	3602	15.1
85 +	566	8.3	1782	18.2	370	19.2	68	4.0	533	14.7	3319	13.9
All	6830	100	9778	100	1928	100	1694	100	3618	100	23848	100

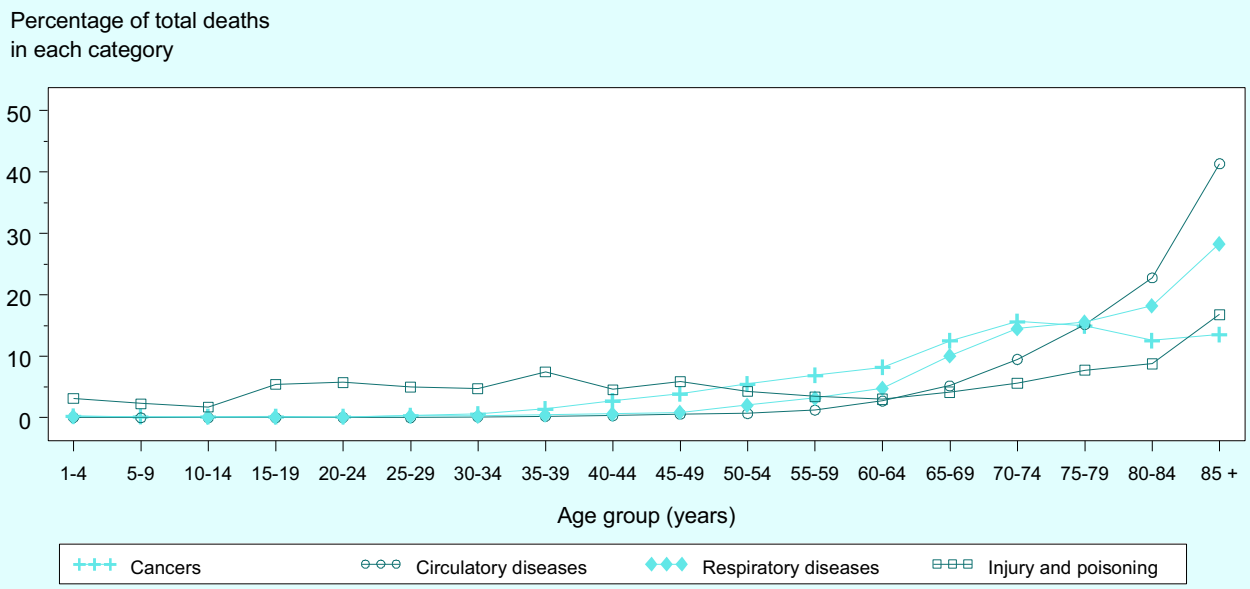
Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- For NSW males in 1994, the distribution of age at death varied among major categories of causes.
- Deaths from injury and poisoning tended to occur at younger ages, peaking in the 20- to 29-year age group. More than one-half (52%) of injury deaths occurred before the age of 40 years, and three-quarters (75%) occurred before the age of 60 years.
- Deaths from cancers also had a relatively "young" age distribution, with 45 per cent of these deaths occurring before the age of 70 years.
- In contrast, deaths from circulatory and respiratory diseases tended to occur at older ages, with most of these deaths (56% and 55%, respectively) occurring after the age of 75 years.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/

Frequency distribution of age at death, by category of cause, females, NSW 1994



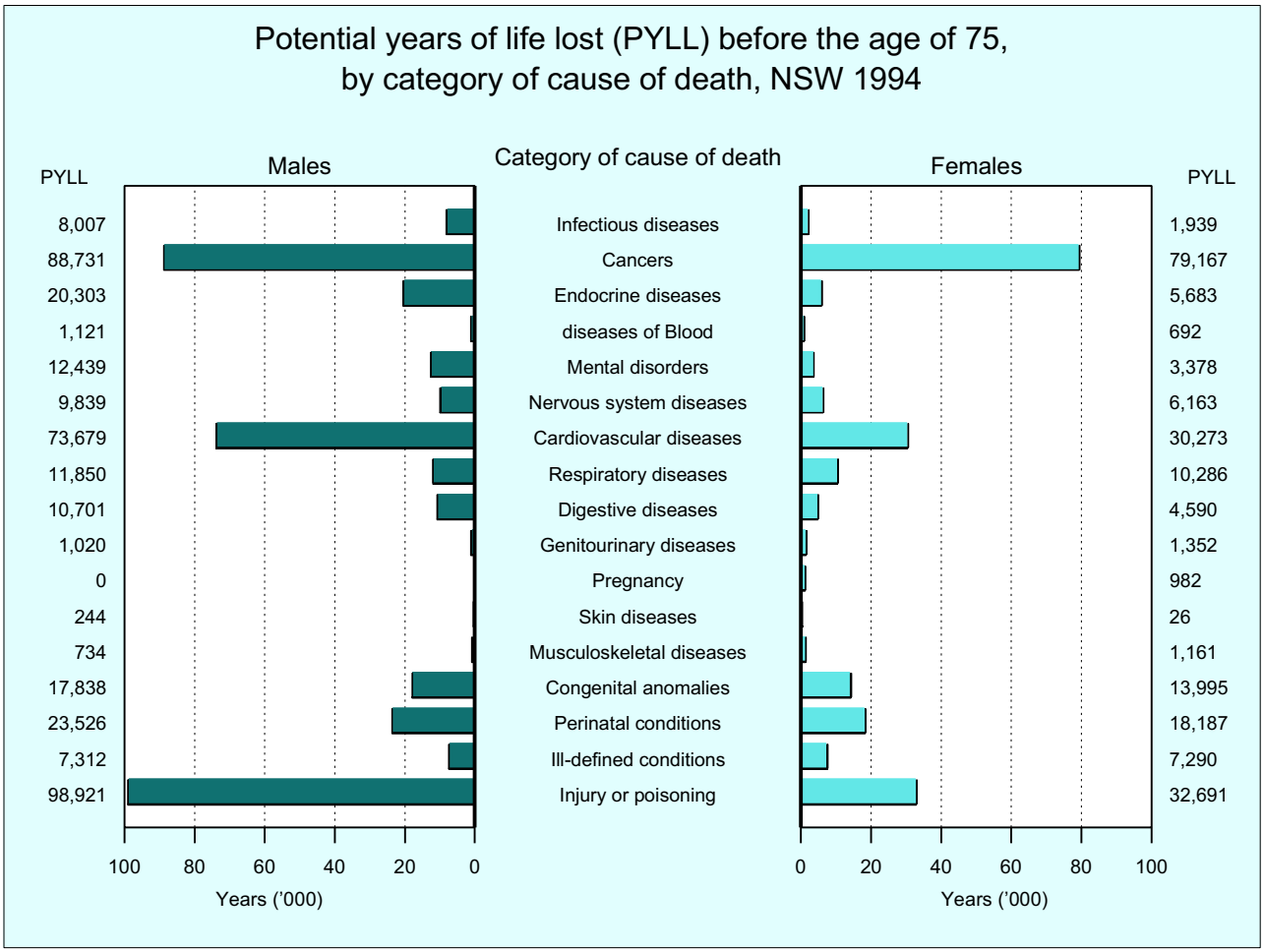
Age (years)	Cancers Deaths	%	Circulatory diseases Deaths	%	Respiratory diseases Deaths	%	Injury and poisoning Deaths	%	Other causes Deaths	%	All causes Deaths	%
0-4	13	0.3	2	0.0	3	0.2	22	3.2	247	7.1	287	1.4
5-9	8	0.2	1	0.0	0	0.0	16	2.3	10	0.3	35	0.2
10-14	9	0.2	1	0.0	2	0.1	12	1.7	9	0.3	33	0.2
15-19	10	0.2	1	0.0	2	0.1	38	5.5	12	0.3	63	0.3
20-24	7	0.1	3	0.0	2	0.1	40	5.7	18	0.5	70	0.3
25-29	18	0.4	1	0.0	4	0.3	35	5.0	21	0.6	79	0.4
30-34	31	0.6	13	0.1	4	0.3	33	4.7	35	1.0	116	0.5
35-39	73	1.4	21	0.2	7	0.5	52	7.5	32	0.9	185	0.9
40-44	141	2.8	36	0.3	10	0.7	32	4.6	30	0.9	249	1.2
45-49	199	3.9	59	0.6	13	0.9	41	5.9	46	1.3	358	1.7
50-54	280	5.5	73	0.7	31	2.1	30	4.3	41	1.2	455	2.2
55-59	354	6.9	129	1.2	48	3.2	24	3.4	62	1.8	617	2.9
60-64	418	8.2	283	2.7	73	4.8	21	3.0	125	3.6	920	4.3
65-69	639	12.5	540	5.2	153	10.1	29	4.2	201	5.8	1562	7.4
70-74	799	15.7	983	9.5	220	14.6	39	5.6	346	9.9	2387	11.3
75-79	762	15.0	1570	15.2	236	15.6	54	7.8	416	11.9	3038	14.4
80-84	642	12.6	2360	22.8	276	18.3	61	8.8	656	18.8	3995	18.9
85 +	692	13.6	4286	41.4	428	28.3	117	16.8	1179	33.8	6702	31.7
All	5095	100	10362	100	1512	100	696	100	3486	100	21151	100

Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- For NSW females in 1994, the distribution of age at death varied among major categories of causes.
- Deaths from injury and poisoning tended to occur at younger ages, with more than one-third (37%) of these deaths occurring before the age of 40 years, and almost half (49%) occurring before the age of 60 years.
- Deaths from cancers also had a relatively "young" age distribution, with 43 per cent of these deaths occurring before the age of 70 years.
- In contrast, deaths from circulatory and respiratory diseases tended to occur at older ages, with most of these deaths (64% and 47%, respectively) occurring after the age of 79 years.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/



Note: Cause-deleted potential years of life lost were calculated from the 1994 NSW current life table. Cause of death was classified according to ICD-9 chapter headings using the codes 000 to 799, or using the Injury/poisoning external cause codes E800-869, E880-929, E950-999.

Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Potential years of life lost (PYLL) before the age of 75 is a measure of premature mortality. It emphasises diseases or conditions which cause death among younger people. The potential years of life lost shown here are calculated by subtracting the total number of years up to the age of 75 which a group of 100,000 males or females would be expected to live from the total number of years the same group would be expected to live if no-one in that group died of the disease or conditions specified. This is known as "cause-deleted" potential years of life lost. More details of the method of calculation appear in the methods section (see page 262).
- Among major *categories* of cause of death, cancers were the largest cause of PYLL in females, followed by injury and poisoning and circulatory diseases. For males, injury and poisoning was the largest category of causes of PYLL, followed by cancers and circulatory diseases.
- Among *individual* causes of death, breast cancer was the single largest cause of PYLL in females (21,063 PYLL), followed by ischaemic heart disease (14,525), motor vehicle traffic accidents (13,340), lung cancer (8,469) and suicide (7,757). Ischaemic heart disease was the single largest cause of PYLL in males (46,882 PYLL), followed by suicide (37,429), motor vehicle traffic accidents (27,183), lung cancer (17,811) and colorectal cancer (10,646).
- More information on PYLL due to individual cancers is given on page 204.

For more information, see: Australian Institute of Health and Welfare Web site at http://www.aihw.gov.au/home.html

Australian Bureau of Statistics Web site at http://www.abs.gov.au/

Determinants of health

- 2.1 Health-related behaviours
- 2.2 Health and the environment

Section 2

Chapter 2.1

Health-related behaviours

- In 1996, only half of NSW adults expended enough energy on leisure-time activity for health benefit. Men (59%) were more likely to report adequate levels than women (42%).
- Although NSW secondary students in 1993 had a high level of knowledge about sun protection, 57 per cent reported deliberately wearing less or briefer clothing to get more sun on the skin.
- Among NSW adults in 1994, women were more likely to report using sunscreen and wearing sunglasses, while men were more likely to wear protective clothing or hats. Men were also more likely to report being sunburned in the previous summer.
- In 1995, almost half (47%) of NSW men and less than a third (28%) of women reported being overweight or obese.
- In 1994, NSW women were more likely to report eating adequate amounts of fruit, while men were more likely to report eating adequate amounts of breads and cereals. Men also reported eating greater quantities of fatty foods.
- In 1994, just over half of NSW infants were breastfed at three months of age, and only just over one-third were breastfed at six months of age.
- Smoking rates in NSW have declined by around one-third since 1977. In 1995, 27 per cent of men and 20 per cent of women reported current smoking.
- Among NSW secondary school students in 1992, 17 per cent of boys and 22 per cent of girls smoked on a daily or occasional basis, representing an increase on 1989 figures.
- In 1995, ten per cent of NSW men and six per cent of women reported drinking alcohol at high- or medium-risk levels.
- Between 1983 and 1992, the rate of regular alcohol use among NSW secondary school students declined from 33 to 20 per cent for boys and 32 to 16 per cent for girls.
- In the last decade there has been a small increase in opiate-related deaths in NSW. In 1994, there were 183 such deaths (152 males, 31 females).

In this chapter

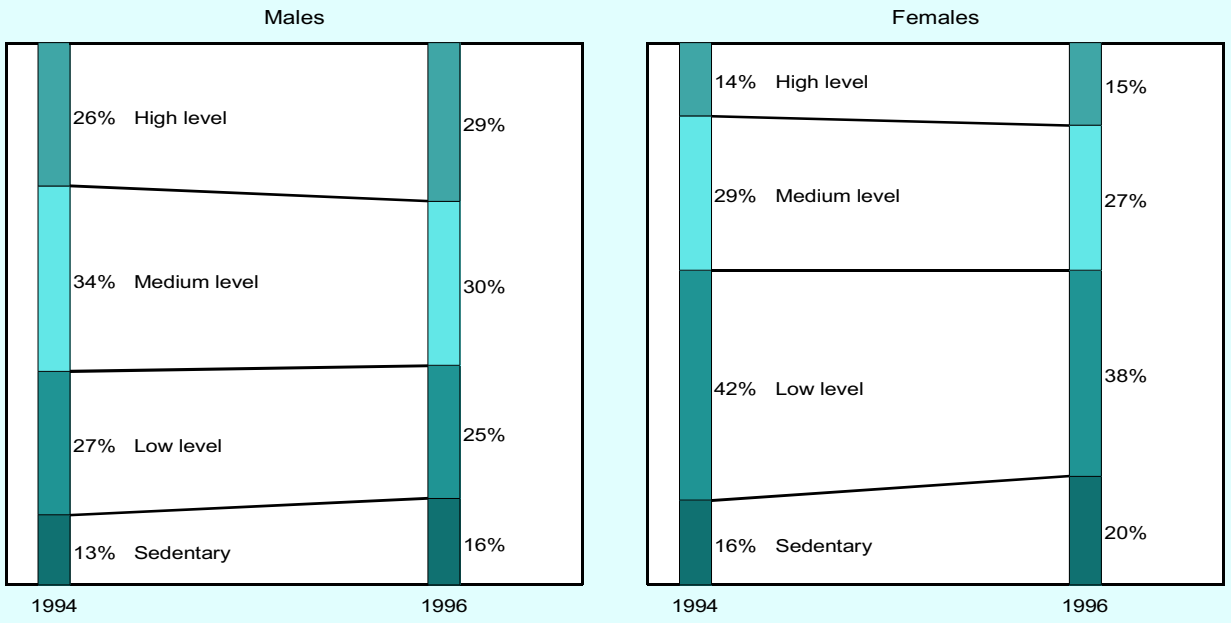
Introduction

This chapter focuses on six main areas of health-related behaviour: physical activity, sun protection, nutrition, smoking, alcohol use and other drug use. It brings together data from a wide range of sources, most notably the Australian Bureau of Statistics 1995 National Health Survey, the 1994 NSW Health Promotion Survey and primary and secondary school surveys conducted by the former Drug and Alcohol Directorate of the NSW Health Department.

Because existing data for adults come from a range of surveys that used different modes (including face-to-face and telephone interview), apparent trends are difficult to interpret. They may reflect real changes in the prevalence of behaviour, or differences due to variations in sampling and data collection methods. To help rectify this problem, and provide a mechanism for monitoring health at Area Health Service level, NSW Health has established the NSW Health Survey Program. Yearly statewide telephone surveys are being conducted, with the first having commenced in July 1997. The first data from the NSW Health Survey Program will be included in the next edition of this report.

For details of the methods used for analysing death data, refer to the Methods section (page 257).

Level of physical activity, persons aged 18 years and over, 1994 and 1996



Note: Classification of energy expenditure: 'sedentary' 0 -<100 Kcal/fortnight; 'low' 100<1600 Kcal/fortnight; 'medium' 1600-<3200 Kcal/fortnight or >1600 Kcal/fortnight but did not engage in at least 2 hours of vigorous activity; 'high'>1600 Kcal/fortnight and participated in at least 2 hours of vigorous activity.

Sources: NSW Health Promotion Survey (HOIST), Epidemiology and Surveillance Branch, NSW Health Department and NSW Physical Activity Survey 1996, Physical Activity and Sun Protection Unit, NSW Health Department.

- Recent evidence points to the need for the adult population to undertake regular moderate physical activity, which can be accumulated during the day. This differs from earlier recommendations that focused upon vigorous activity, at least three times per week, for 20-30 minutes per session.
- The graphs on this page show NSW population survey data from 1994 and 1996. Mean estimated energy expended (from walking and vigorous and moderate activities) was very similar in both years. Comparisons between the two surveys should be made with caution, as they used different sampling methods and had different sample sizes.
- 1996 survey respondents were slightly more likely to be classified in the 'sedentary' or in the 'high-level' energy expenditure categories.
- The combined 'high-level' and 'medium-level' groups (summarised as 'adequate' physical activity) were almost identical in both years.
- In 1996, only half of NSW adults expended enough energy on leisure-time physical activity for health benefit. Men (59%) were more likely to report adequate levels of activity than women (42%).
- If every NSW adult became physically active, more than 3,000 deaths annually might be prevented; however, if the more modest targets of 3-5 per cent increases in prevalence of physical activity participation were achieved, then about 300 deaths per year might be prevented.
- The NSW Chief Health Officer has recommended that every adult in New South Wales should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week.

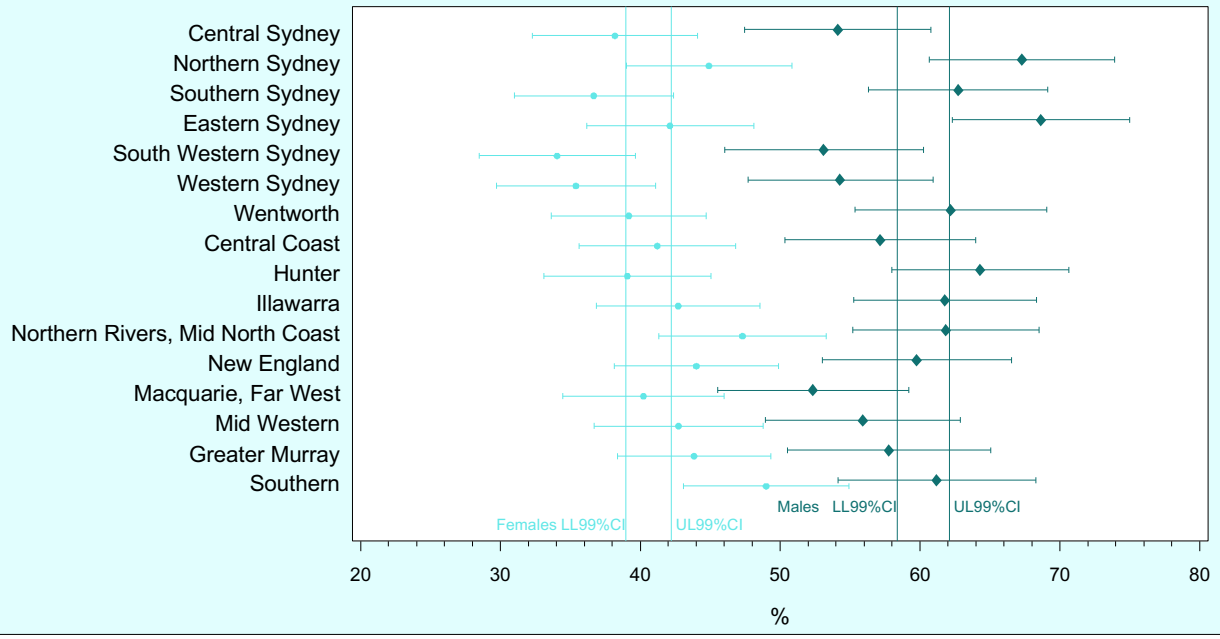
For more information, see: Bauman A et al., *Towards best practice for the promotion of physical activity in the Areas of NSW*, NSW Health Department, Sydney, 1996.

Bauman A et al., *NSW Physical Activity Survey*, NSW Health Department, Sydney, 1996.

The US Surgeon General's Report *Physical activity and health* may be found at Web site http://www.cdc.gov/nccdphp/sgr/sgr.htm

Three issues of the *NSW Public Health Bulletin* focus on physical activity; the Bulletin can be accessed via the Internet from the NSW Health Department Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html

Adequate physical activity, by Health Area and sex, persons aged 18 years and over, NSW 1994



Health Area	Sex	Per cent	LL 99% CI	UL 99% CI	Health Area	Sex	Per cent	LL 99% CI	UL 99% CI
Central Sydney	Males	54.1	47.5	60.8	Illawarra	Males	61.8	55.3	68.3
Central Sydney	Females	38.2	32.3	44.1	Illawarra	Females	42.7	36.9	48.6
Northern Sydney	Males	67.3	60.7	73.9	Northern Rivers,				
Northern Sydney	Females	44.9	39.0	50.8	Mid North Coast	Males	61.9	55.2	68.5
Southern Sydney	Males	62.8	56.3	69.2	Northern Rivers,				
Southern Sydney	Females	36.7	31.0	42.4	Mid North Coast	Females	47.3	41.3	53.3
Eastern Sydney	Males	68.7	62.3	75.0	New England	Males	59.8	53.0	66.5
Eastern Sydney	Females	42.1	36.2	48.1	New England	Females	44.0	38.2	49.9
South Western Sydney	Males	53.1	46.0	60.2	Macquarie, Far West	Males	52.4	45.5	59.2
South Western Sydney	Females	34.0	28.5	39.6	Macquarie, Far West	Females	40.2	34.5	46.0
Western Sydney	Males	54.3	47.7	60.9	Mid Western	Males	55.9	48.9	62.9
Western Sydney	Females	35.4	29.7	41.1	Mid Western	Females	42.7	36.7	48.8
Wentworth	Males	62.2	55.4	69.1	Greater Murray	Males	57.8	50.5	65.1
Wentworth	Females	39.2	33.6	44.7	Greater Murray	Females	43.8	38.4	49.3
Central Coast	Males	57.2	50.3	64.0	Southern	Males	61.2	54.2	68.3
Central Coast	Females	41.2	35.6	46.8	Southern	Females	49.0	43.1	54.9
Hunter	Males	64.3	58.0	70.7	NSW	Males	60.3	58.4	62.1
Hunter	Females	39.1	33.1	45.1	NSW	Females	40.6	39.0	42.2

Note: Classification of energy expenditure: 'sedentary 0' -<100 Kcal/fortnight; 'low' 100<1600 Kcal/fortnight; 'medium' 1600- <3200 Kcal/fortnight or >1600 Kcal/fortnight but did not engage in at least 2 hours of vigorous activity; 'high'>1600 Kcal/fortnight and participated in at least 2 hours of vigorous activity. 'Adequate' physical activity = 'medium' or 'high' energy expenditure. LL/UL99% CI = lower/upper limits of 99% confidence interval of the point estimate.

Source: NSW Health Promotion Survey (HOIST), Epidemiology and Surveillance Branch, NSW Health Department and NSW Physical Activity Survey 1996, Physical Activity and Sun Protection Unit, NSW Health Department.

- In 1994, the prevalence of adequate physical activity varied among NSW Health Areas.
- Men from Eastern Sydney and women from Southern Area were significantly more likely to report adequate levels of physical activity than for all NSW.
- No other differences among Areas attained statistical significance.

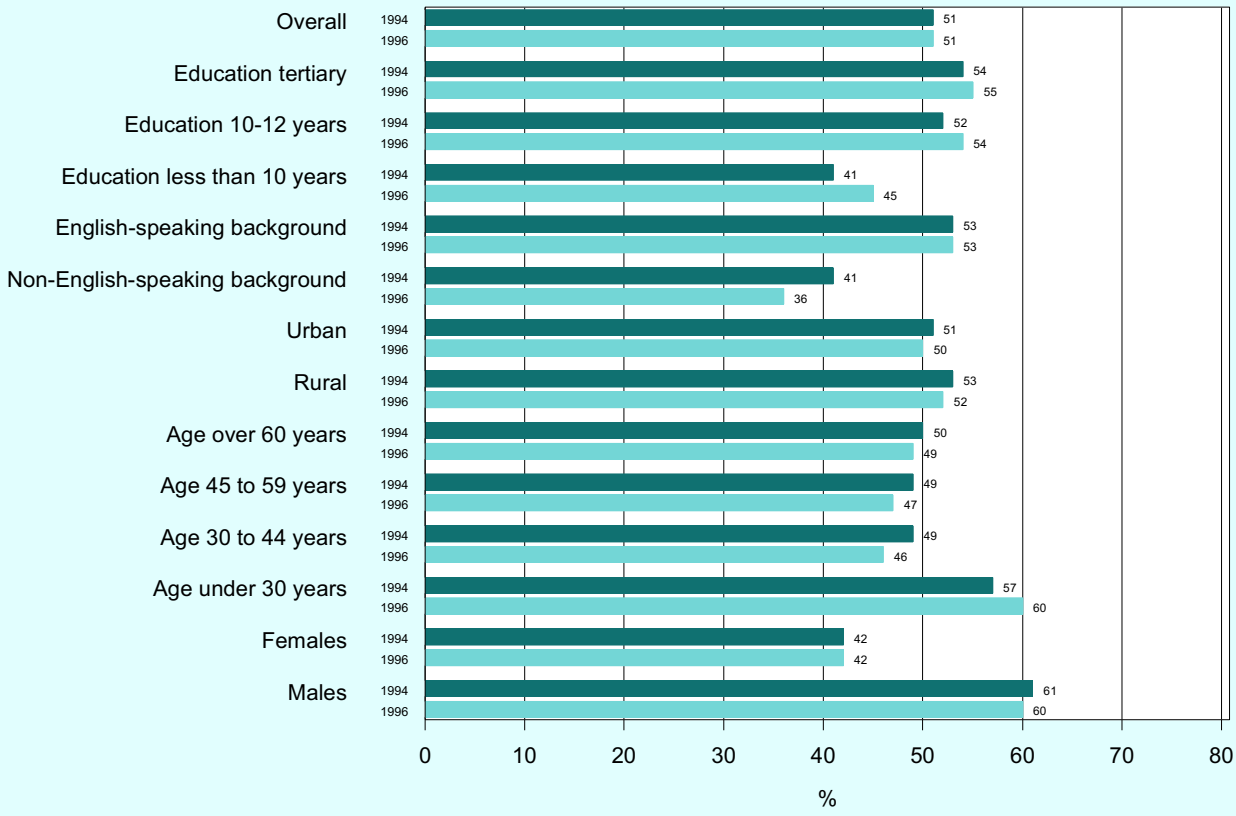
For more information, see: Bauman A et al., *Towards best practice for the promotion of physical activity in the Areas of NSW*, NSW Health Department, Sydney, 1996.

Bauman A et al., *NSW Physical Activity Survey*, NSW Health Department, Sydney, 1996.

The US Surgeon General's Report *Physical activity and health* may be found at Web site http://www.cdc.gov/nccdphp/sgr/sgr.htm

Three issues of the *NSW Public Health Bulletin* focus on physical activity; the Bulletin can be accessed via the Internet from the NSW Health Department Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html

Adequate physical activity, by demographic characteristics, persons aged 18 years and over, NSW 1994 and 1996



Note: Classification of energy expenditure: 'sedentary' 0 -<100 Kcal/fortnight; 'low' 100<1600 Kcal/fortnight; 'medium' 1600- <3200 Kcal/fortnight or >1600 Kcal/fortnight but did not engage in at least 2 hours of vigorous activity; 'high'>1600 Kcal/fortnight and participated in at least 2 hours of vigorous activity. 'Adequate' physical activity = 'medium' or 'high' energy expenditure.

Source: NSW Health Promotion Survey (HOIST), Epidemiology and Surveillance Branch, NSW Health Department and NSW Physical Activity Survey 1996, Physical Activity and Sun Protection Unit, NSW Health Department.

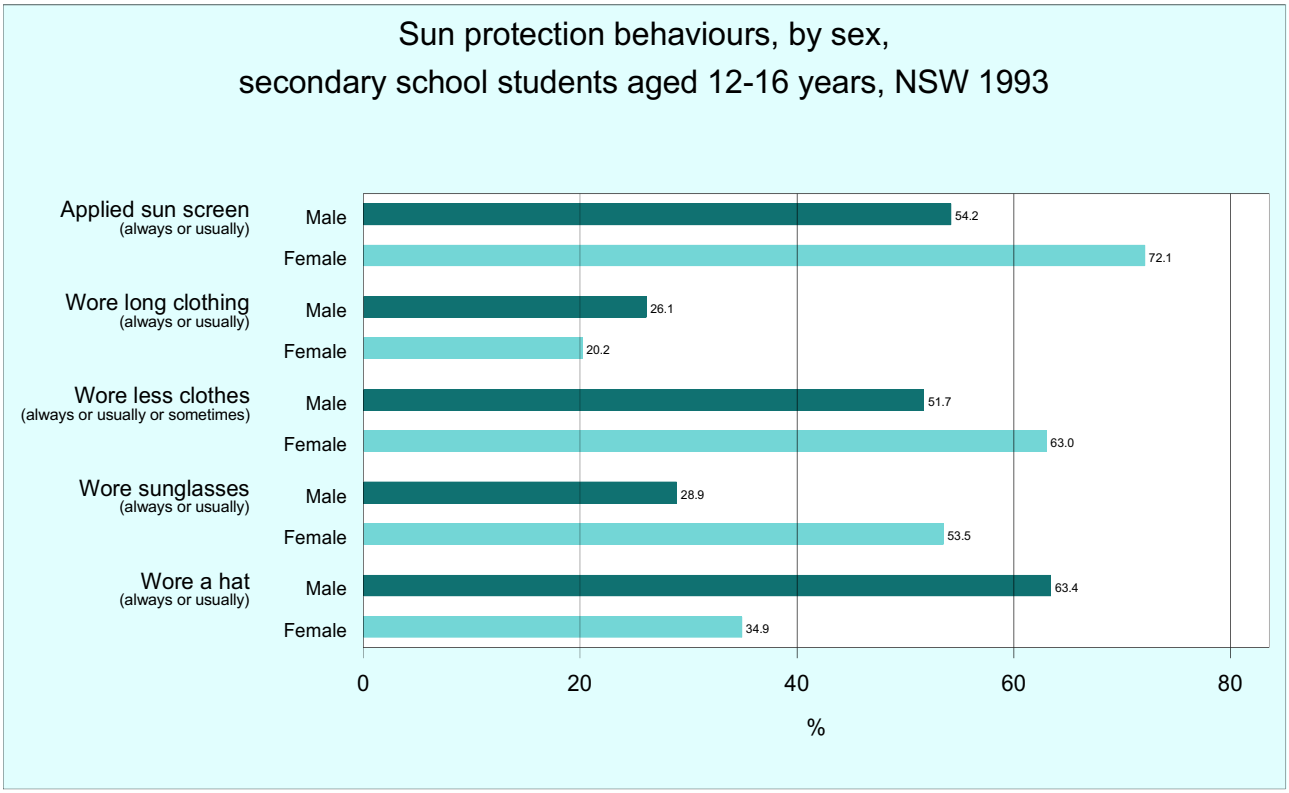
- The relationship between 'adequate' physical activity and a range of socio-demographic characteristics is shown for NSW population survey data from 1994 and 1996. Comparisons between the two surveys should be made with caution, as they used different sampling methods and had different sample sizes.
- Differentials in 'adequate' physical activity by sex, age, ethnicity, rural residence and education were remarkably consistent between 1994 and 1996.
- In both years, people who had been educated for less than 10 years, those of non-English-speaking background and women were less likely to report adequate levels of physical activity than for NSW overall, while people with tertiary education, those aged under 30 years and men were more likely to report adequate levels of physical activity.

For more information, see: Bauman A et al., *Towards best practice for the promotion of physical activity in the Areas of NSW*, NSW Health Department, Sydney, 1996.

Bauman A et al., *NSW Physical Activity Survey*, NSW Health Department, Sydney, 1996.

The US Surgeon General's Report *Physical activity and health* may be found at Web site http://www.cdc.gov/nccdphp/sgr/sgr.htm

Three issues of the *NSW Public Health Bulletin* focus on physical activity; the Bulletin can be accessed via the Internet from the NSW Health Department Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html



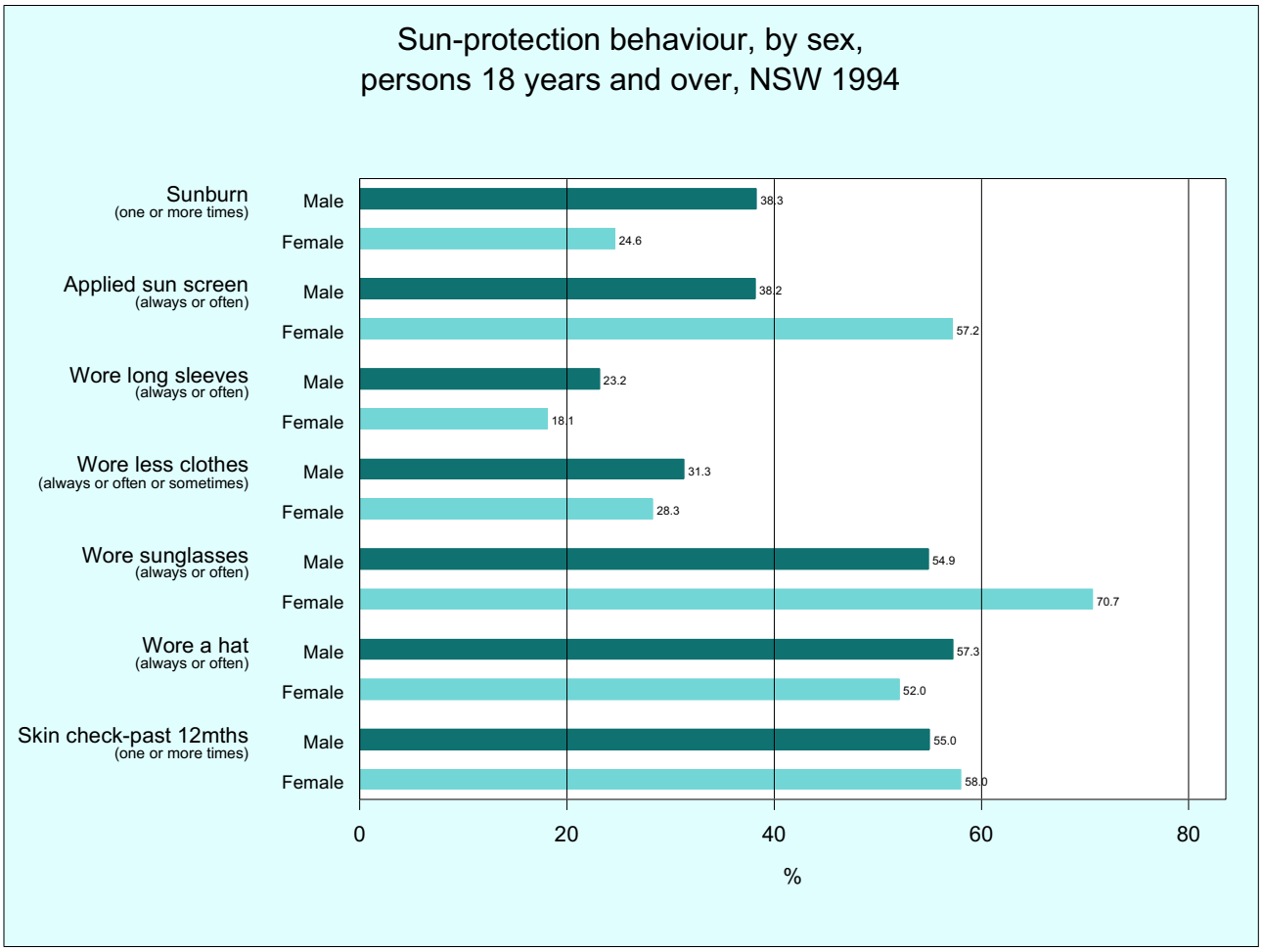
Note: All responses refer to usual behaviour from the pre-survey summer when the respondent was out in the sun for more than 1 hour between the hours of 11 am and 3 pm. The survey defined: 'sun screen' as how often a respondent wore maximum-protection sunscreen (SPF15 or 15+), 'wore long clothing' as wearing clothes covering most of the body (including arms and legs), 'wore less clothing' as deliberately wearing less or briefer clothing to get more sun on the skin, 'wore sunglasses' as the wearing of sunglasses,'wore a hat' as wearing a hat.

Source: Secondary School Age Smoking, Alcohol and Sun Protection Survey (SSASS), NSW Cancer Council, 1993

- Living in Australia during the first 15 years of life contributes about two-thirds to the lifetime risk of melanoma of a lifelong resident of Australia.
- Among secondary school students in 1993, sun protection behaviour varied by sex. Girls were more likely to apply sunscreens and wear sunglasses, while boys were more likely to wear a hat and clothes which cover most of the body.
- Overall, the application of sunscreen was the most popular (63%) form of sun protection, followed by the wearing of sunglasses (49%). However, a high proportion (57%) of students reported deliberately wearing less or briefer clothing to get more sun on the skin.
- Students demonstrated a high level of knowledge about sun protection in the survey, but it was not reflected in their behaviour (NSW Cancer Council 1996).
- Currently, a sun-protection campaign to target parents and carers of 0- to 11-year-olds is being developed by the NSW Cancer Council and NSW Health Department.

References: NSW Cancer Council, *1993 New South Wales Secondary School Age Smoking, Alcohol and Sun Protection Survey,* NSW Cancer Council, Sydney, 1996.

For more information, see: The *1993 New South Wales Secondary School Age Smoking, Alcohol and Sun Protection Survey* report is available from the NSW Cancer Council.



Note: All responses refer to usual behaviour from the pre-survey summer when the respondent was out in the sun for more than 15 minutes between the hours of 11 am and 3 pm. The survey defined: 'sunburn' as when the skin was still sore the next day, 'sun screen' as when a broad-spectrum 15+ sunscreen (no less) was applied to at least half of all exposed skin, 'wore long sleeves' as wearing a long-sleeved shirt, 'wore less clothing' as deliberately wearing less or briefer clothing to get some sun on the skin, 'wore sunglasses' as the wearing of sunglasses, 'wore a hat' as wearing a wide-brimmed hat or cap with a flap, 'skin check-past 12 months' as deliberately checking the skin for changes during the past 12 months.

Source: NSW Health Promotion Survey (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

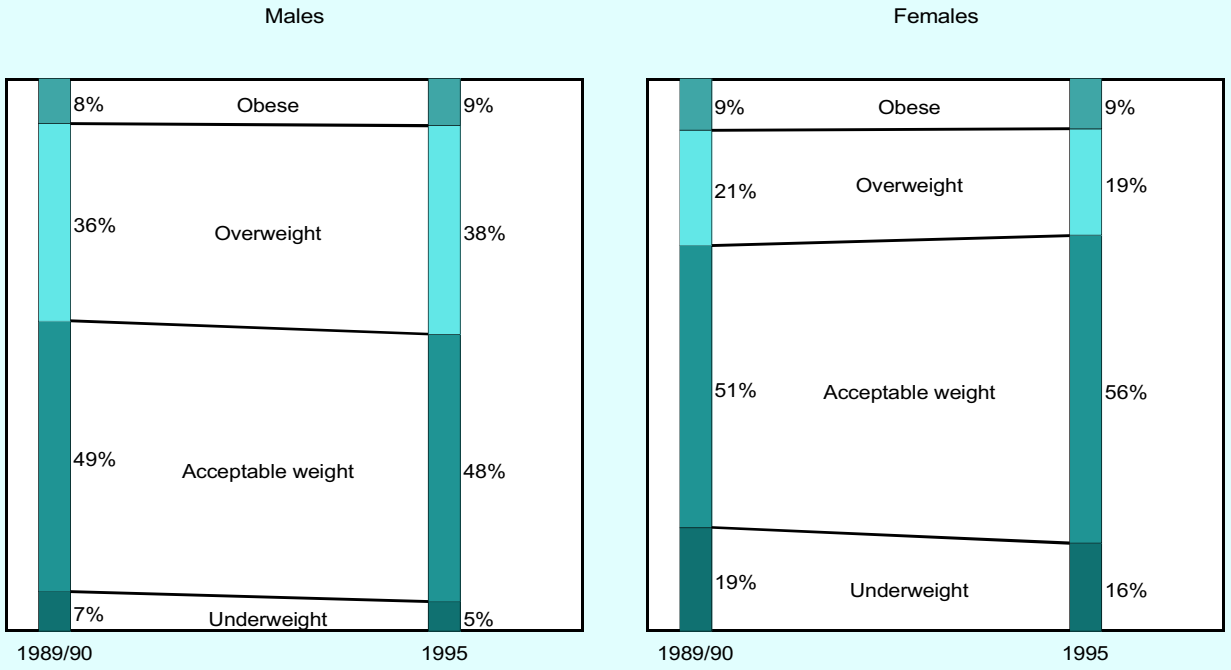
- Most skin cancer is caused by sun exposure and Australia has the highest rate of skin cancer in the world. Around two out of three people who live their whole lives in Australia will require treatment for at least one skin cancer during their lifetime.
- In 1994, sun-protection behaviour among the NSW adult population was assessed using self-report measures relating to the summer before the survey. Prevalence estimates shown here are a combination of behaviours reported "always" or "often".
- Women were much more likely than men to report using a sunscreen and wearing sunglasses when out in the sun between 11 am and 3 pm.
- Women were slightly less likely than men to report wearing less clothing to get more sun on the skin.
- Men were more likely to report wearing a long-sleeved shirt, wearing long clothes and wearing a hat. However, men were also more likely to report being sunburned on one or more occasion in the previous summer.
- Sex differences in sun-protection behaviour revealed in the NSW Health Promotion Survey are similar to those reported by State anti-cancer organisations in Victoria, South Australia and Queensland.

For more information, see: Nguyen HL, Armstrong B, Coates M, *Cutaneous melanoma in NSW in 1983 to 1995,* NSW Cancer Council, 1997.

NSW Cancer Council and NSW Health Department, *Skin cancer control in New South Wales: Health Promotion Strategic Plan 1995 - 2000.* NSW Cancer Council, Sydney, 1995.

NSW Cancer Council Web site at http://www.nswcc.org.au/

Body weight status, persons aged 18 years and over, NSW 1989/90 and 1995



Note: Body mass index (BMI) was based on self reported height and weight. BMI=weight(kg)/height^2(m). BMI categories were as follows: underweight: BMI≤ 20, acceptable weight: 20≤ =BMI≤ =25, overweight: 25≤BMI≤=30, obese: BMI≥30.

Sources: ABS National Health Survey 1989-90 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department; and ABS National Health Survey 1995 (ABS cat. no. 4392.0).

- Overweight or obesity, influenced by diet and physical activity, increases the risk of cardiovascular disease and stroke by raising serum cholesterol and blood pressure and the predisposition to diabetes. It is also a risk factor for some forms of cancer and for a range of common disorders, such as gallstones and gall bladder disease (Lester 1994).
- The proportion of NSW adults considered to be overweight or obese was similar in the National Health Surveys of 1989/90 and 1995. There was, however, a slight increase in the proportion of women who reported an acceptable body weight between 1989/90 and 1995.
- Weight status was unknown for more respondents in the 1995 National Health Survey (6% of men and 11.5% of women) than in 1989/90 (1.7% of men and 4.1% of women). This change was thought to be due to the use of the metric system in 1995 but not 1989/90 (ABS 1996).
- NSW Health Department targets for the year 2000 are to increase the proportion of adults with an acceptable body weight to 60 per cent for both men and women, and to reduce the proportion of adults who are overweight or obese to 40 per cent for men and 25 per cent for women (NSW Health Department 1995).

References: Lester I, *Australia's food and nutrition*, Australian Institute of Health and Welfare, AGPS, Canberra, 1994.

Australian Bureau of Statistics, *National Health Survey users' guide, Australia*, ABS Cat. no. 4363.0, AGPS, Canberra, 1996.

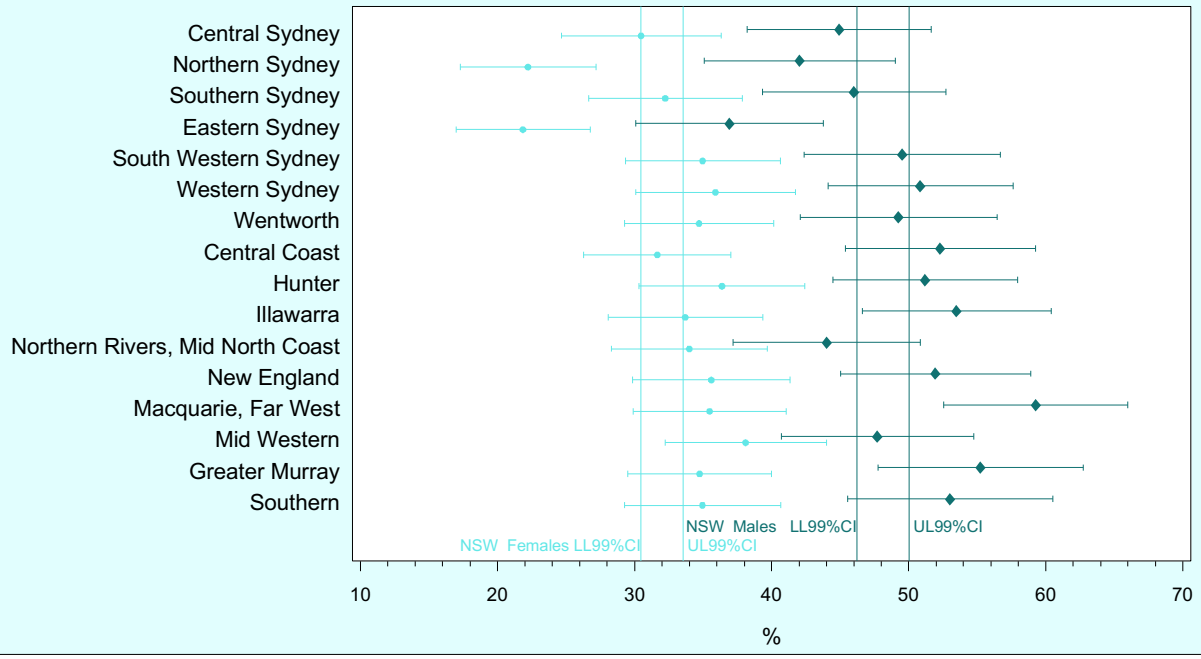
NSW Health Department, *Coronary heart disease: NSW goals and targets and strategies for health gain,* State Health publication no. (PHD) 95-0110 NSW Health Department, Sydney, 1995 .

For more information, see: Martin S and Macoun E, *Food and Nutrition: Directions for NSW 1996-2000*, State Health Publication No. (HP) 96-0116, NSW Health Department, Sydney, 1996.

NSW Food and Nutrition Monitoring Project, *Monitoring overweight and obesity in NSW*, NSW Health Department, Sydney, 1997.

National Health and Medical Research Council, *Acting on Australia's weight — a strategic plan for the prevention of overweight and obesity*, NHMRC, Canberra, 1997.

Overweight and obesity, by Health Area and sex, persons aged 18 years and over, NSW 1994



Health Area	Sex	Per cent	LL 99% CI	UL 99% CI	Health Area	Sex	Per cent	LL 99% CI	UL 99% CI
Central Sydney	Males	44.9	38.2	51.7	Illawarra	Males	53.5	46.6	60.4
Central Sydney	Females	30.5	24.7	36.3	Illawarra	Females	33.7	28.1	39.4
Northern Sydney	Males	42.1	35.1	49.0	Northern Rivers,				
Northern Sydney	Females	22.2	17.3	27.2	Mid North Coast	Males	44.0	37.2	50.9
Southern Sydney	Males	46.0	39.3	52.7	Northern Rivers,				
Southern Sydney	Females	32.3	26.6	37.9	Mid North Coast	Females	34.0	28.3	39.7
Eastern Sydney	Males	36.9	30.1	43.8	New England	Males	52.0	45.0	58.9
Eastern Sydney	Females	21.9	17.0	26.8	New England	Females	35.6	29.9	41.3
South Western Sydney	Males	49.5	42.4	56.7	Macquarie, Far West	Males	59.3	52.6	66.0
South Western Sydney	Females	35.0	29.3	40.6	Macquarie, Far West	Females	35.5	29.9	41.1
Western Sydney	Males	50.9	44.1	57.6	Mid Western	Males	47.7	40.7	54.7
Western Sydney	Females	35.9	30.1	41.7	Mid Western	Females	38.1	32.2	44.0
Wentworth	Males	49.3	42.1	56.4	Greater Murray	Males	55.3	47.8	62.7
Wentworth	Females	34.7	29.3	40.2	Greater Murray	Females	34.8	29.5	40.0
Central Coast	Males	52.3	45.4	59.2	Southern	Males	53.0	45.6	60.5
Central Coast	Females	31.7	26.3	37.0	Southern	Females	35.0	29.2	40.7
Hunter	Males	51.2	44.5	58.0	NSW	Males	48.1	46.2	50.0
Hunter	Females	36.4	30.3	42.4	NSW	Females	32.0	30.5	33.6

Note: Body mass index (BMI) was based on self reported height and weight. BMI=weight(kg)/height^2(m). Overweight or obese was classified as BMI ≥ 25. LL/UL99% CI = lower/upper limits of 99% confidence interval of the point estimate.

Source: NSW Health Promotion Survey 1994 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

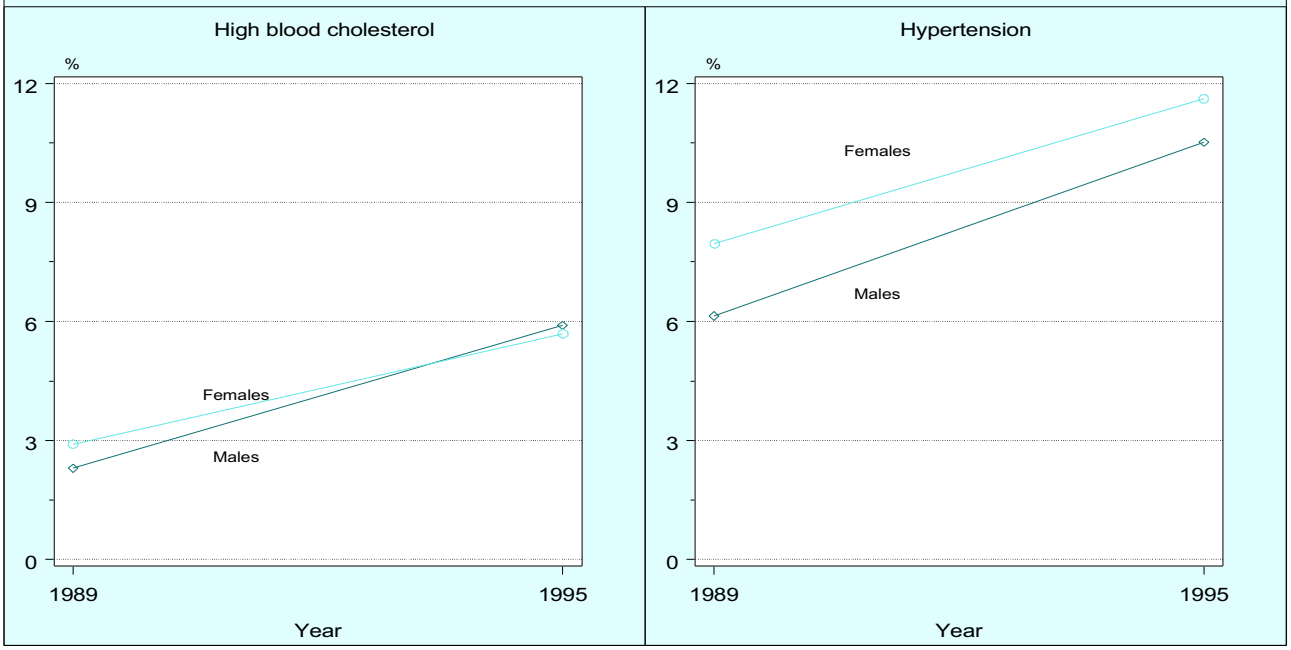
- In NSW in 1994, self-reported overweight and obesity varied among Health Areas.
- In men, the prevalence of overweight and obesity was lowest in Eastern Sydney (37%) and highest in the Greater Murray (55%) and Macquarie and Far West Areas (59%).
- In women, the prevalence of overweight and obesity was lowest in the Northern Sydney and Eastern Sydney Areas (22%) and highest in the Western Sydney, the Hunter (36%) and Mid Western Areas (38%).
- Men from the Macquarie and Far West Areas were significantly more likely to report being overweight or obese than other NSW men.
- Only men and women from Eastern Sydney and women from Northern Sydney were significantly less likely to report overweight or obesity than for all NSW.

For more information, see: NSW Food and Nutrition Monitoring Project, *Monitoring overweight and obesity in NSW,* NSW Health Department, Sydney, 1997.

Martin S and Macoun E, *Food and nutrition: directions for NSW 1996-2000.* State health publication no. (HP) 96-0116, NSW Health Department, Sydney, 1997.

National Health and Medical Research Council, 1997, *Acting on Australia's weight — a strategic plan for the prevention of overweight and obesity*, NHMRC, Canberra, 1997.

Persons reporting long-term high blood cholesterol or hypertension, by sex, NSW 1989/90 and 1995



Year			1989	1995	Year			1989	1995
NSW	High cholesterol (%)	Males	2.3	5.9	NSW	Hypertension (%)	Males	6.1	10.5
		Females	2.9	5.7			Females	8.0	11.6
		Persons	2.6	5.8			Persons	7.1	11.1
AUSTRALIA		Males	–	5.1	AUSTRALIA		Males	–	9.5
		Females	–	4.7			Females	–	10.9
		Persons	–	4.9			Persons	–	10.2

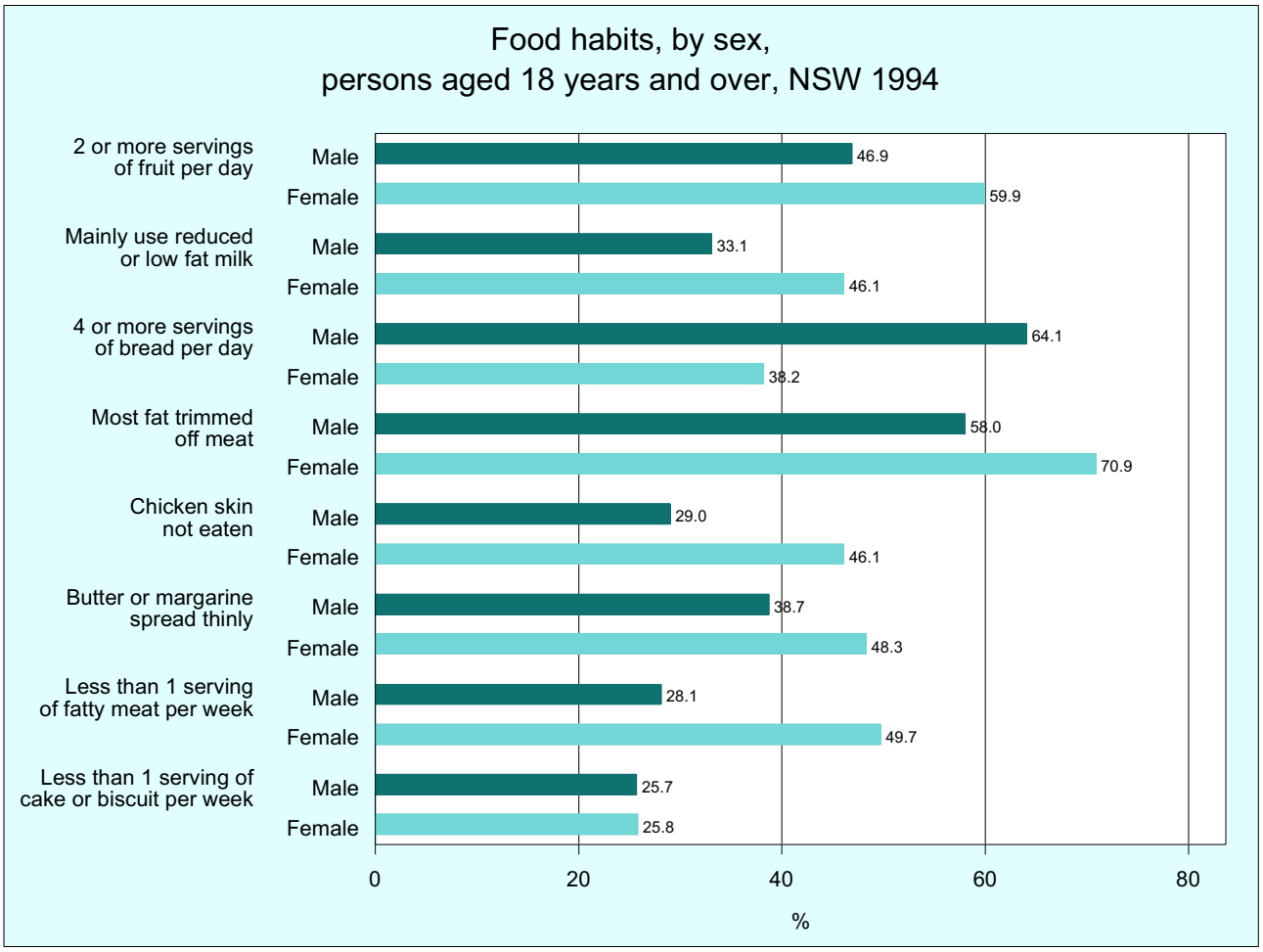
Sources: 1989 National Health Survey and 1995 National Health Survey, ABS, unpublished data.

- There is a strong association between serum cholesterol (especially low-density lipoprotein or LDL cholesterol) level and death from coronary heart disease (CHD). Hypertension (or high blood pressure) is strongly associated with several disorders, including CHD, stroke, congestive heart failure and renal insufficiency (Law et al. 1994).
- Data at state and national level from surveys that *measured* plasma cholesterol and blood pressure indicate that, during the 1980s, mean cholesterol levels changed little and mean blood pressure levels and the prevalence of hypertension declined significantly (Bennett and Magnus 1994).
- Self-report data show a different picture. Between 1989 and 1995, self-reported long-term high cholesterol in NSW males more than doubled, and in females increased by almost 50 per cent.
- In the same period, self-reported long-term hypertension increased by 45 per cent in NSW females and 72 per cent in males.
- These rises may represent real increases in *diagnosed* high cholesterol and hypertension (due, for example, to increased community awareness and/or general practitioner surveillance). Changes in self-reporting may also be influenced by recollection and interpretation of doctors' advice, contact with health services and existence of related conditions, such as diabetes and heart disease.
- A diet low in fat and the partial replacement of saturated fat with unsaturated fat and complex carbohydrates is the main focus of population-level strategies for preventing high blood cholesterol.
- Key issues in preventing hypertension are increasing physical activity and reducing body weight and the intake of alcohol, salt and possibly potassium (NSW Health Department 1995).

References: Law M R, Wald N J, Wu T, et al. 'Systematic underestimation of association between serum cholesterol concentration and ischaemic heart disease in observational studies: data from the BUPA study', *BMJ,* Vol. 308, 1994, pp. 363-366.

Bennett S A and Magnus P, 'Trends in cardiovascular risk factors in Australia. Results from the National Heart Foundation's Risk Factor Prevalence Study, 1980-89', *Medical Journal of Australia* Vol. 161, 1994, pp. 519-527.

For more information, see: NSW Health Department, *Coronary heart disease: NSW goals and targets and strategies for health gain*, State health publication no. (PHD) 950110, 1995.



Note: 'Fatty meats' include sausages, devon, salami, meat pies, hamburgers and bacon. 'Fruit' does not include fruit juice.

Source: NSW Health Promotion Survey 1994 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- An adequate intake of fruit and vegetables offers protection against cardiovascular disease and some cancers. (NHMRC 1992a). The NHMRC recommends that adults should eat at least 300 grams of fruit per day (approximately 2 pieces or servings) as part of a prudent diet (Cashel and Jeffreson 1995).
- In NSW in 1994, more women (60%) than men (47%) consumed the recommended amount of fruit. These proportions were slightly higher than those reported nationally in 1995 (Coles-Rutishauser and Penm 1995).
- Breads and cereals are important sources of complex carbohydrates and dietary fibre. The NHMRC recommends that adults should eat at least seven servings of breads and cereals per day (Cashel & Jeffreson 1995).
- In NSW in 1994, almost two-thirds of men (64%) and only 38 per cent of women reported eating four or more servings of bread per day. Since bread is the major cereal source in many diets, many NSW women are eating inadequate quantities.
- Reduction of saturated fat intake is an important public health strategy to reduce serum cholesterol, a risk factor for heart disease (NHMRC 1992b).
- Milk is a common source of saturated fat. In NSW in 1994, the consumption of reduced or low-fat milk was higher among women (46%) than men (33%). These proportions were slightly lower than those reported nationally in 1995 (Coles-Rutishauser and Penm 1995).
- Fat on meat, skin on chicken, butter or margarine and fatty meats such as sausages and salami are other sources of saturated fat. In NSW in 1994, men consumed larger quantities than women of all of these fatty foods.

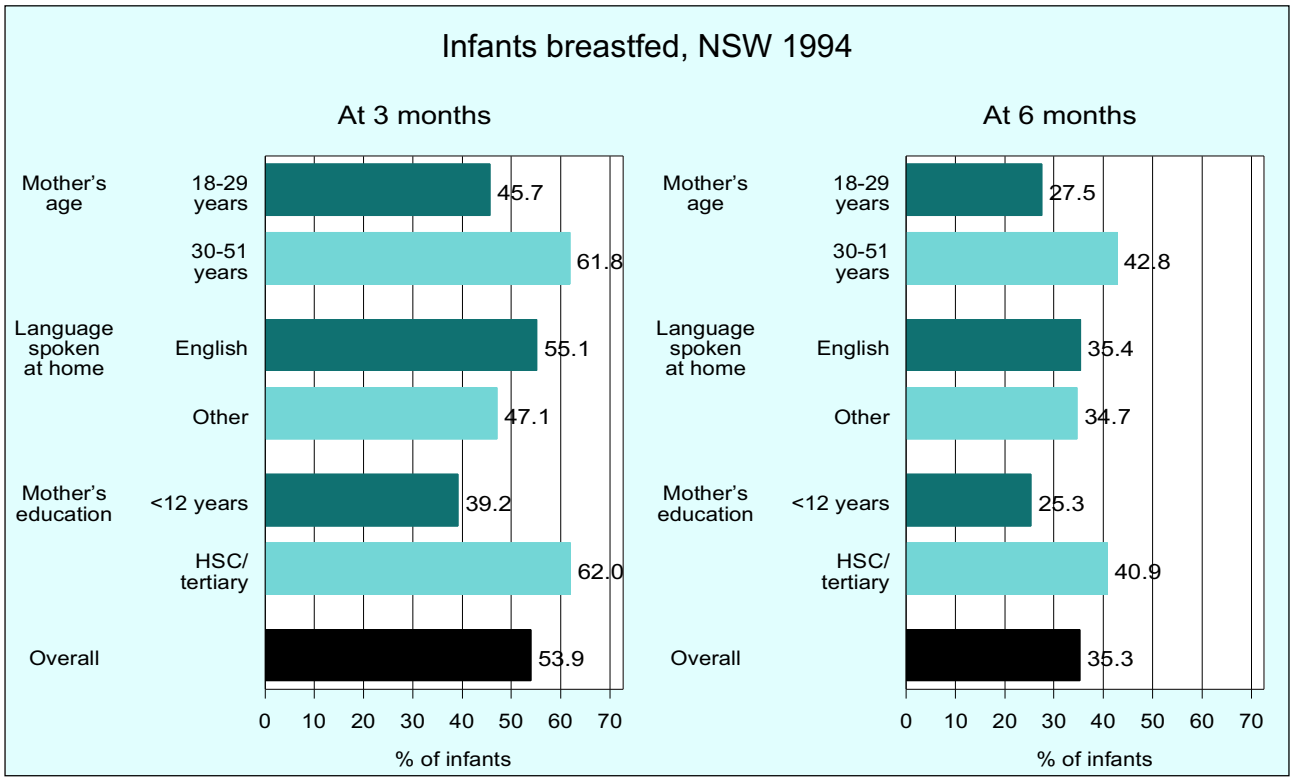
References: Cashel C and Jeffreson S, *The core food groups: scientific basis for developing education tools*, AGPS cat. no. 94 25626 1, NHMRC, Canberra, 1995.

Coles-Rutishauser I and Penm R, *Monitoring food habits and food security: Australia 1995-1996*, AIHW, Canberra, 1995.

NHMRC, *Dietary guidelines for Australians*, AGPS, Canberra, 1992a.

NHMRC, *The role of polyunsaturated fats in the Australian diet*, AGPS, Canberra 1992b.

For more information, see: Martin S and Macoun E, *Food and nutrition: directions for NSW 1996-2000*, State health publication no. (HP) 96-0116, NSW Health Department, Sydney, 1996.



Notes: Women with children aged under 2 years were asked whether they had breastfed their child and for how long. Both complete and partial breastfeeding were included. Where women reported breastfeeding more then one child, data for the youngest child were used. Data were weighted to represent the NSW population. The sample size was small, so estimates should be regarded as indicative only.

Source: NSW Health Promotion Survey 1994 (A Bauman, unpublished data).

- Breastfeeding has important protective health effects for mother and baby. For the mother, these include protection against premenopausal breast cancer and osteoporosis. Breastfed infants have less gastrointestinal and respiratory illness in the first year of life than those bottle-fed from birth. Other health benefits for the infant include lower risk of otitis media, diarrhoeal disease, insulin-dependent diabetes mellitus, asthma, food allergies and immune disorders such as coeliac disease (NHMRC 1995; Stickney and Webb 1995).
- In 1994 most NSW infants (91.4%) were breastfed for at least one day, but breastfeeding tailed off rapidly once mothers left hospital. Just over half (53.9%) of infants were breastfed at three months of age, and just over one-third (35.3%) were breastfed at six months of age. These data include both full and partial breastfeeding.
- Breastfeeding practices varied with mothers' socio-demographic characteristics. Infants of younger mothers, mothers who spoke languages other than English at home and those with less than 12 years of education were less likely to be breastfed at both three and six months.
- Aboriginal and Torres Strait Islander women have also been identified as a priority group for promotion of breastfeeding (Stickney and Webb 1995).
- National targets for the prevalence and duration of breastfeeding are:
  - to increase the percentage of babies who are breastfed after discharge from hospital to 90 per cent by the year 2000, and
  - to increase the percentage of babies who are fully breastfed at three months and at six months of age to 60 per cent and 50 per cent, respectively, and those who are at least partially breastfed at three months and six months to 80 per cent by the year 2000 (Nutbeam et al. 1993).

References: NHMRC, *Dietary guidelines for children and adolescents*, AGPS, Canberra, 1995.

Nutbeam D, Wise M, Bauman A, Harris E and Leeder S, *Goals and targets for Australia's health in the year 2000 and beyond*, Department of Public Health, University of Sydney, Sydney, 1993.

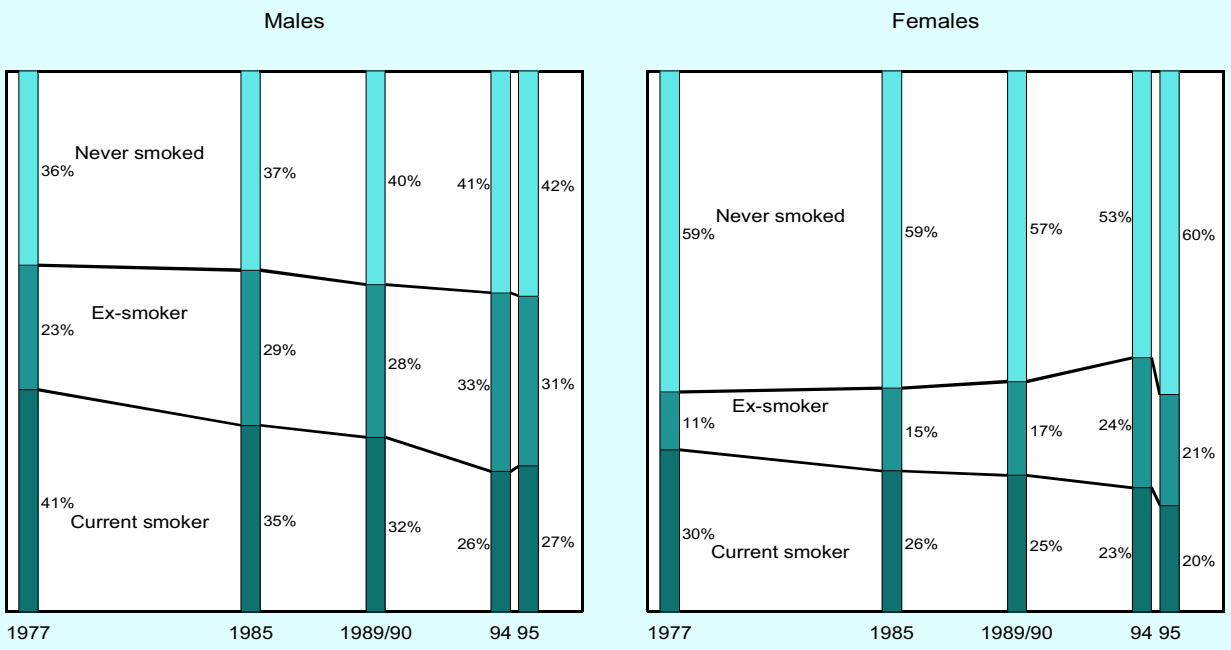
Stickney B and Webb K, *Strategies to promote breastfeeding – an overview*, State health publication no. (HP) 95-0142, NSW Health Department, Sydney, 1995.

For more information, see: *Infant feeding guidelines for health workers,* AGPS cat. no. 964 923 9, AGPS, Canberra.

ABS has an occasional paper on breastfeeding, see Web site at http://www.abs.gov.au/

Public Health Association of Australia policy statement on breastfeeding, see Web site at http://hcn.net.au/pha/policy/breastfe.htm

Smoking status, by sex, persons aged 18 years and over, NSW 1977 to 1995



Note: Current smoking includes daily and occasional smokers.

Sources: 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 National Health Survey, 1989-90 from ABS and NSW Department of Health, *State of health in NSW,* ABS cat. no. 4330.1; NSW Health Promotion Survey 1994 (HOIST) Epidemiology and Surveillance Branch, NSW Health Department; ABS National Health Survey, 1995, ABS unpublished data.

- Cigarette smoking causes around 40 per cent of deaths of men and 20 per cent of deaths of women before the age of 65 years in Australia, and 21 per cent of all heart disease mortality (English et al. 1995).
- Smoking rates in NSW have declined by around one-third among both men and women since 1977.
- The decline is largely attributable to an increase in smoking cessation, rather than a decrease in smoking uptake. Thus there has been an increase in the proportion of men and women who are ex-smokers, and a smaller increase in the proportion of men and women who have never smoked.
- Around 27 per cent of NSW men and 20 per cent of NSW women were current smokers in 1995; this corresponds to around one million current smokers.
- In 1994, 42 per cent of men and 45 per cent of women who were current smokers had attempted to stop smoking at least once in the previous 12 months (Graham-Clarke et al. 1996).
- NSW Health has set smoking prevalence targets for the year 2000 of 24 and 17 per cent for men and women, respectively.
- The NSW Tobacco and Health Strategy 1995-1999 focuses on four key issues for action: marketing tobacco products, passive smoking and smoking cessation.

References: English D R, Holman C D J, Milne M G, et al, *The quantification of drug caused morbidity and mortality in Australia*, Commonwealth Department of Human Services and Health, Canberra, 1995.

Graham-Clarke P, Nathan S, Stoker L, Bauman A and Wise M, *Smoking: best practice for reducing the prevalence of smoking in the Areas of NSW*, State Health publication no. (HP) 96-006, Sydney, NSW Health Department, 1996.

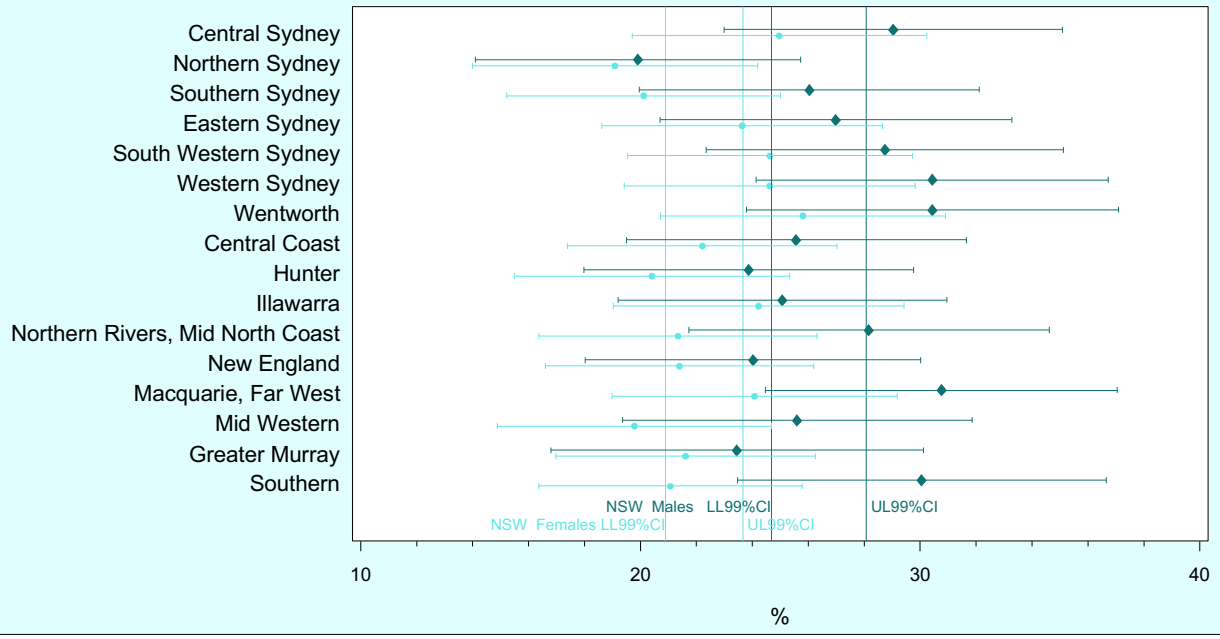
For more information, see: Winstanley M, Woodward S and Walker N, *Tobacco in Australia facts and issues,* The Victorian Smoking and Health Program (QUIT Victoria), Melbourne, 1995, see Web site at http://www.peg.apc.org/~vshp/

Collins D and Lapsley H, *The social costs of drug abuse in Australia in 1988 and 1992*, National Drug Strategy monograph series no. 30, Commonwealth Department of Human Services and Health, Canberra, 1996.

Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au/
Tobacco Control Web site at: http://www.health.usyd.edu.au/tobacco/

Current smoking, by Health Area and sex, persons aged 18 years and over, NSW 1994



Health Area	Sex	Per cent	LL 99% CI	UL 99% CI	Health Area	Sex	Per cent	LL 99% CI	UL 99% CI
Central Sydney	Males	29.0	23.0	35.1	Illawarra	Males	25.1	19.2	31.0
Central Sydney	Females	25.0	19.7	30.2	Illawarra	Females	24.2	19.0	29.4
Northern Sydney	Males	19.9	14.1	25.7	Northern Rivers,				
Northern Sydney	Females	19.1	14.0	24.2	Mid North Coast	Males	28.2	21.7	34.6
Southern Sydney	Males	26.0	20.0	32.1	Northern Rivers,				
Southern Sydney	Females	20.1	15.2	25.0	Mid North Coast	Females	21.3	16.4	26.3
Eastern Sydney	Males	27.0	20.7	33.3	New England	Males	24.0	18.0	30.0
Eastern Sydney	Females	23.6	18.6	28.7	New England	Females	21.4	16.6	26.2
South Western Sydney	Males	28.8	22.4	35.1	Macquarie, Far West	Males	30.8	24.5	37.1
South Western Sydney	Females	24.6	19.5	29.7	Macquarie, Far West	Females	24.1	19.0	29.2
Western Sydney	Males	30.4	24.2	36.7	Mid Western	Males	25.6	19.4	31.9
Western Sydney	Females	24.6	19.4	29.8	Mid Western	Females	19.8	14.9	24.7
Wentworth	Males	30.4	23.8	37.1	Greater Murray	Males	23.5	16.8	30.1
Wentworth	Females	25.8	20.7	30.9	Greater Murray	Females	21.6	17.0	26.3
Central Coast	Males	25.6	19.5	31.7	Southern	Males	30.1	23.5	36.7
Central Coast	Females	22.2	17.4	27.0	Southern	Females	21.1	16.4	25.8
Hunter	Males	23.9	18.0	29.8	NSW	Males	26.4	24.7	28.1
Hunter	Females	20.4	15.5	25.3	NSW	Females	22.3	20.9	23.7

Note: Current smoking includes daily and occasional smokers. LL/UL99% CI = lower/upper limits of 99% confidence interval of the point estimate.

Source: NSW Health Promotion Survey 1994 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

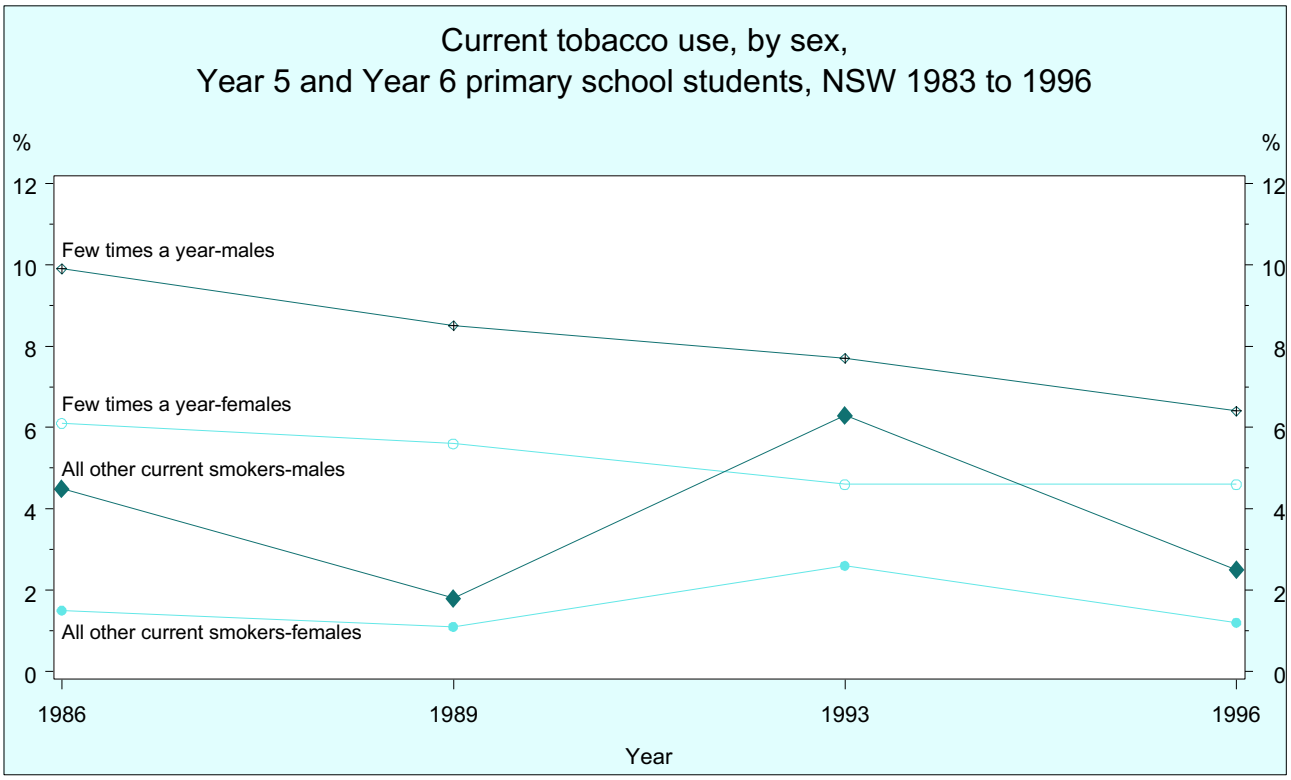
- In NSW in 1994, more men (26%) reported smoking than women (22%).
- In men, current smoking rates varied from 20 per cent in Northern Sydney to 27-30 per cent in Eastern Sydney, Central Sydney, Western Sydney, Wentworth, South Western Sydney, Mid North Coast, Southern, Far West and Macquarie.
- In women, current smoking rates varied from 19 per cent in Northern Sydney to 25-26 per cent in Central Sydney, Western Sydney, Wentworth and South Western Sydney.
- There were no statistically significant differences in smoking rates among Areas.

For more information, see: Winstanley M, Woodward S and Walker N, *Tobacco in Australia facts and issues,* The Victorian Smoking and Health Program (QUIT Victoria), Melbourne, 1995, Web site at http://www.peg.apc.org/~vshp/

Collins D and Lapsley H, *The social costs of drug abuse in Australia in 1988 and 1992*, National Drug Strategy monograph series no. 30, Commonwealth Department of Human Services and Health, Canberra, 1996.

Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au/
Tobacco control Web site at http://www.health.usyd.edu.au/tobacco/



		1986	1989	1993	1996			1986	1989	1993	1996
Males	Don't smoke	85.7	89.7	86.1	90.0	Females	Don't smoke	92.5	93.3	92.7	94.1
	Few times a year	9.9	8.5	7.7	6.4		Few times a year	6.1	5.6	4.6	4.6
	1-3 times a month	2.6	0.8	3.2	1.3		1-3 times a month	0.9	0.9	1.7	0.7
	Once a week	1.4	0.6	1.6	1.5		Once a week	0.5	0.0	0.6	0.4
	Every day	0.5	0.4	1.5	0.7		Every day	0.1	0.2	0.3	0.1

Note: All other current smokers was the sum of the tobacco use categories: 1-3 times a month; once a week; and every day.

Sources: Bauman A, Chen J C, Cooney A, Dobbinson S and Flaherty B, *1993 survey of drug use by NSW primary school children,* New South Wales Health Department, 1994.
Bowman J, Considine R, D'Este K, James E and Sanson-Fisher R, Preliminary results of the 1996 survey of drug use by NSW primary school children. NSW Health Department and the Hunter Centre for Health Advancement, 1997.

- In 1996, 22 per cent of NSW boys and 10 per cent of girls in primary school Year 5 had tried smoking and 26 and 16 per cent of boys and girls respectively in Year 6 had tried smoking.
- The prevalence of having ever tried smoking declined for both sexes between 1986 and 1996.
- The prevalence of both weekly smoking and monthly smoking decreased between 1986 and 1996.
- In every primary school survey since 1986, boys were more likely to report smoking than girls, and the rate of smoking increased with age and school grade.
- Smoking, in their social environment, by parents, brothers, sisters or best friends, was strongly associated with smoking among Year 5 and Year 6 students (Bauman et al. 1994).

References: Bauman A., Chen J.C, Cooney A, Dobbinson S and Flaherty B, *1993 Survey of drug use by NSW primary school children*, NSW Health Department, Sydney, 1994.

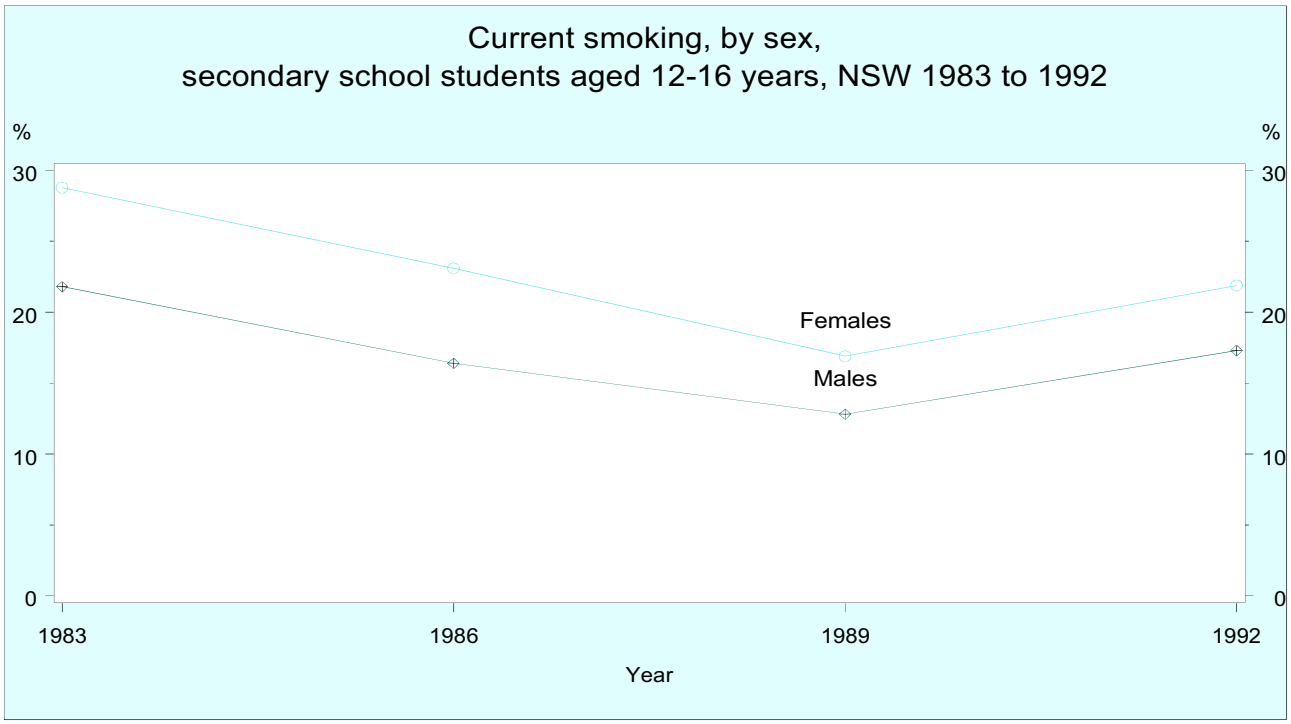
Bowman J, Considine R, D'Este K, James E and Sanson-Fisher R, Preliminary results of the 1996 survey of drug use by NSW primary school children. NSW Health Department and the Hunter Centre for Health Advancement, 1997.

For more information, see: Winstanley M, Woodward S and Walker N, *Tobacco in Australia facts and issues,* The Victorian Smoking and Health Program (QUIT Victoria), Melbourne, 1995, Web site at http://www.peg.apc.org/~vshp/

Collins D and Lapsley H, *The social costs of drug abuse in Australia in 1988 and 1992*, National Drug Strategy monograph series no. 30. Commonwealth Department of Human Services and Health, Canberra, 1996.

Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au/
Tobacco control Web site at http://www.health.usyd.edu.au/tobacco/



	1983	1986	1989	1992
Boys	21.8	16.4	12.8	17.3
Girls	28.8	23.1	16.9	21.9

Note: Current smoking includes daily and occasional smokers. Percentages are age-adjusted.

Source: Cooney A, Dobbinson S and Flaherty B, *1992 Survey of drug use by secondary school students*, NSW Health Department, Sydney, 1994.

- Among NSW secondary school students in 1992, 17 per cent of boys and 22 per cent of girls smoked on a daily or occasional basis.
- There was a decline in current smoking among both sexes between 1983 and 1989. This was followed by an increase between 1989 and 1992 for both sexes.
- There was also an increase in the percentage of students who reported that they had ever smoked (more than once or twice) between 1989 and 1992, from 35 per cent to 39 per cent of girls and 32 per cent to 37 per cent of boys.
- More girls than boys have reported current smoking in every secondary school survey since 1983.
- In 1992, boys aged under 16 years most commonly obtained cigarettes from shops (60%) and friends (45%). This order was reversed for girls, who commonly obtained their cigarettes from friends (59%) followed by shops (55%) (Cooney, Dobbinson and Flaherty 1994).
- The Drug and Alcohol Directorate and the NSW Cancer Council conducted a survey during 1996 among secondary school children in NSW. These data were not available at the time of publishing this report.

Reference: Cooney A, Dobbinson S and Flaherty B, *1992 Survey of drug use by secondary school students*, NSW Health Department, Sydney, 1994.

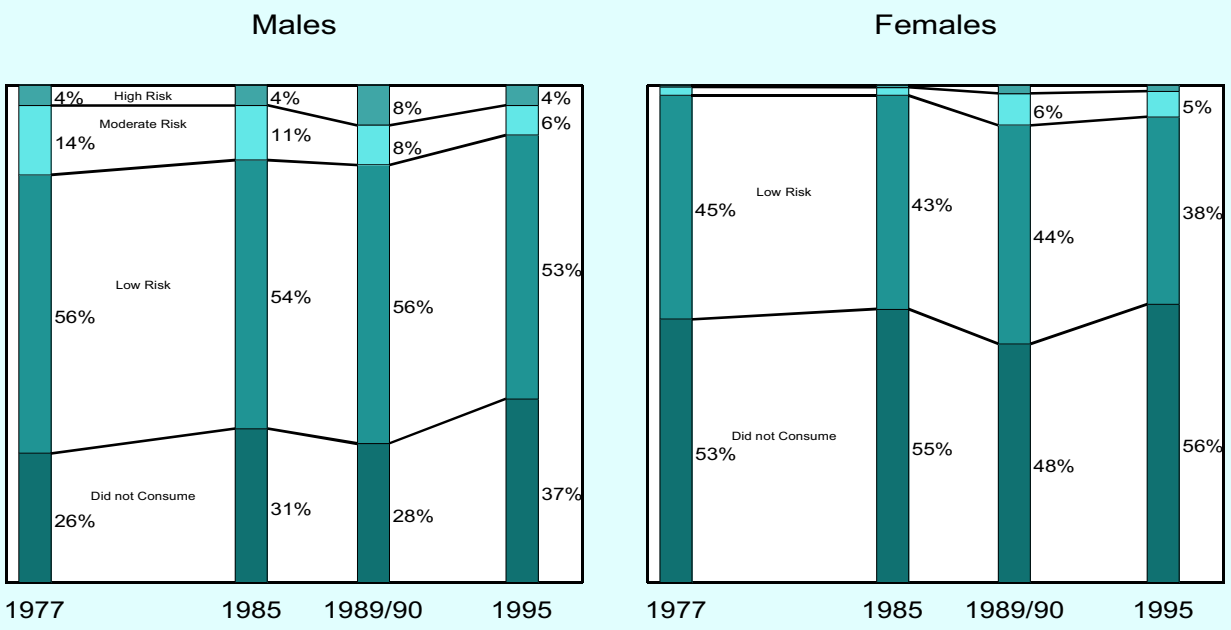
For more information, see: Winstanley M, Woodward S and Walker N, *Tobacco in Australia facts and issues, T*he Victorian Smoking and Health Program (QUIT Victoria), Melbourne, 1995, Web site at http://www.peg.apc.org/~vshp/

Collins D and Lapsley H, *The social costs of drug abuse in Australia in 1988 and 1992*, National Drug Strategy monograph series no. 30. Commonwealth Department of Human Services and Health, Canberra, 1996.

Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au
Tobacco control Web site at http://www.health.usyd.edu.au/tobacco/

Alcohol use, by sex, persons aged 18 years and over, 1977 to 1995



Note: Alcohol risk categories based on millilitres of absolute alcohol per day. Men: low <50, medium 50-75, high>75. Women: low<25, medium 25-50, high>50. Figures not included in the chart are for 'medium-risk' alcohol consumption by females - 1977 (1.7%); 1985 (1.5%); and 'high-risk' alcohol consumption by females - 1977 (0.3%); 1985 (0.4%); 1989/90 (1.6%); 1995 (1.2%).

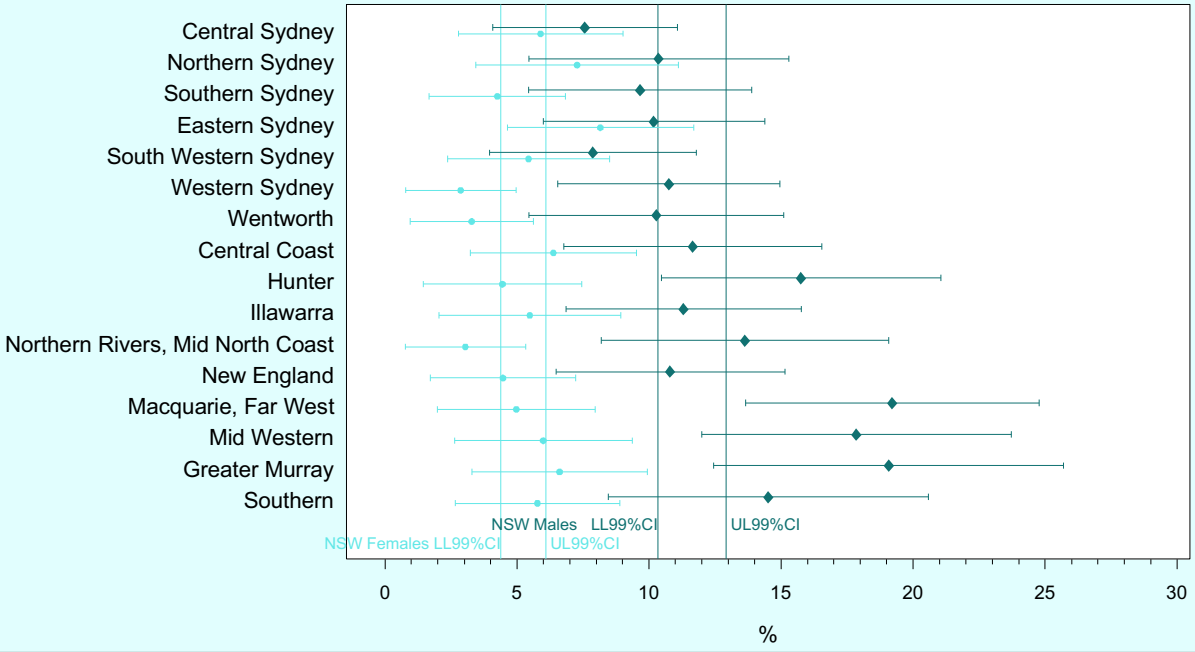
Sources: *ABS survey of alcohol and tobacco Consumption patterns*, ABS cat. no. 4312.0,1997; *ABS life style: health risk factors, NSW*, 1985, ABS cat. no. 4311.1, 1985; ABS National Health Survey, 1989-90 from ABS and NSW Health Department, *State of health in NSW*, ABS cat. no. 4330.1; NSW Health Promotion Survey 1994 (HOIST) Epidemiology and Surveillance Branch, NSW Health Department; ABS National Health Survey, 1995, unpublished data.

- Alcohol is the second leading cause of drug-related death in Australia. It affects health in a number of ways, including acute physical effects, such as intoxication and alcohol overdose; chronic physical effects, such as cirrhosis and heart disease; and the effects of alcohol consumption upon the health of others, such as road trauma caused by drink-driving, and alcohol-related violence (English et al. 1995).
- The economic cost of alcohol to Australia has been calculated at nearly $4.5 billion in 1992 (English et al. 1995).
- In 1995, just over one-third (37%) of NSW men aged 18 years and over did not drink alcohol. Just over half of all men (53%) were classified as low-risk drinkers, with the remainder classified as medium-risk (6%) or high-risk (4%) drinkers.
- Across all years, NSW women drank less alcohol than men. In 1995, well over half (56%) of all women aged 18 years and over did not drink alcohol. Over one-third of women (38%) were classified as low-risk drinkers, with the remainder classified as medium-risk (5%) or high-risk (1%) drinkers.
- The proportion of male drinkers classified as medium-risk more than halved between 1977 and 1995, while the percentage of low-risk and high-risk drinkers remained relatively steady.
- Although the proportion of females who did not drink alcohol increased slightly between 1977 and 1995, the percentage of low-risk drinkers declined and the proportion of medium-risk and high-risk drinkers increased in this period.
- The NSW Health Department adopts a policy approach of harm minimisation with respect to the use of alcohol, involving a range of strategies including demand reduction, supply control, controlled use, safer use, and abstinence.

Reference: English D R, Holman C D J, Milne M G, et al. *The quantification of drug caused morbidity and mortality in Australia*, Commonwealth Department of Human Services and Health, Canberra,1995.

For more information, see: Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222 DrugLinks: http://www.ceida.net.au/

Harmful alcohol use, by Health Area and sex, persons aged 18 years and over, NSW 1994



Health Area	Sex	Per cent	LL 99% CI	UL 99% CI	Health Area	Sex	Per cent	LL 99% CI	UL 99% CI
Central Sydney	Males	7.6	4.1	11.1	Illawarra	Males	11.3	6.9	15.8
Central Sydney	Females	5.9	2.8	9.0	Illawarra	Females	5.5	2.0	8.9
Northern Sydney	Males	10.4	5.5	15.3	Northern Rivers,				
Northern Sydney	Females	7.3	3.4	11.1	Mid North Coast	Males	13.6	8.2	19.1
Southern Sydney	Males	9.7	5.4	13.9	Northern Rivers,				
Southern Sydney	Females	4.3	1.7	6.8	Mid North Coast	Females	3.0	0.8	5.3
Eastern Sydney	Males	10.2	6.0	14.4	New England	Males	10.8	6.5	15.1
Eastern Sydney	Females	8.2	4.6	11.7	New England	Females	4.5	1.7	7.2
South Western Sydney	Males	7.9	4.0	11.8	Macquarie,Far West	Males	19.2	13.7	24.8
South Western Sydney	Females	5.4	2.4	8.5	Macquarie,Far West	Females	5.0	2.0	8.0
Western Sydney	Males	10.8	6.6	15.0	Mid Western	Males	17.9	12.0	23.7
Western Sydney	Females	2.9	0.8	5.0	Mid Western	Females	6.0	2.6	9.4
Wentworth	Males	10.3	5.5	15.1	Greater Murray	Males	19.1	12.5	25.7
Wentworth	Females	3.3	1.0	5.6	Greater Murray	Females	6.6	3.3	9.9
Central Coast	Males	11.7	6.8	16.6	Southern	Males	14.5	8.5	20.6
Central Coast	Females	6.4	3.2	9.5	Southern	Females	5.8	2.7	8.9
Hunter	Males	15.8	10.5	21.0	NSW	Males	11.6	10.3	12.9
Hunter	Females	4.4	1.4	7.5	NSW	Females	5.2	4.4	6.1

Note: Harmful alcohol use was defined as more than 6 drinks per day on average for men and more than 4 drinks per day on average for women. LL/UL99% CI = lower/upper limits of 99% confidence interval of the point estimate.

Source: NSW Health Promotion Survey 1994 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In NSW in 1994, men (12%) more frequently reported consuming alcohol at harmful levels than women (5%).
- In men, rates of harmful alcohol use varied from 8 per cent in Central Sydney to 19 per cent in the Far West, Macquarie and Greater Murray.
- In women, rates of harmful alcohol use ranged from 3 per cent in Western Sydney to 8 per cent in Eastern Sydney.
- Men from the Macquarie and Far West Areas were significantly more likely to report harmful alcohol use than other NSW men.
- There were no other statistically significant differences among Areas.

For more information, see: Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.
DrugLinks Web site at http://www.ceida.net.au/

Year		1986	1989	1993	1996
Males	Never	55.5	64.4	64.2	71.9
	Few times a year	31.4	24.6	25.3	21.5
	1-3 times a month	8.0	8.8	6.3	4.5
	Once a week	4.4	1.7	2.5	1.8
	Every day	0.8	0.4	1.7	0.3
Females	Never	73.5	79.0	83.0	84.4
	Few times a year	22.2	18.5	13.3	14.0
	1-3 times a month	3.3	1.9	2.3	1.1
	Once a week	1.0	0.7	0.9	0.4
	Every day	0.1	–	0.5	0.1

Note: Percentages are not age-adjusted or weighted.

Sources: Bauman A, Chen J C, Cooney A, Dobbinson S and Flaherty B, *1993 Survey of drug use by NSW primary school children*, NSW Health Department, Sydney, 1994
Bowman J, Considine R, D'Este K, James E and Sanson-Fisher R, *Preliminary results of the 1996 survey of drug use by NSW primary school children*. NSW Health Department and the Hunter Centre for Health Advancement, 1997

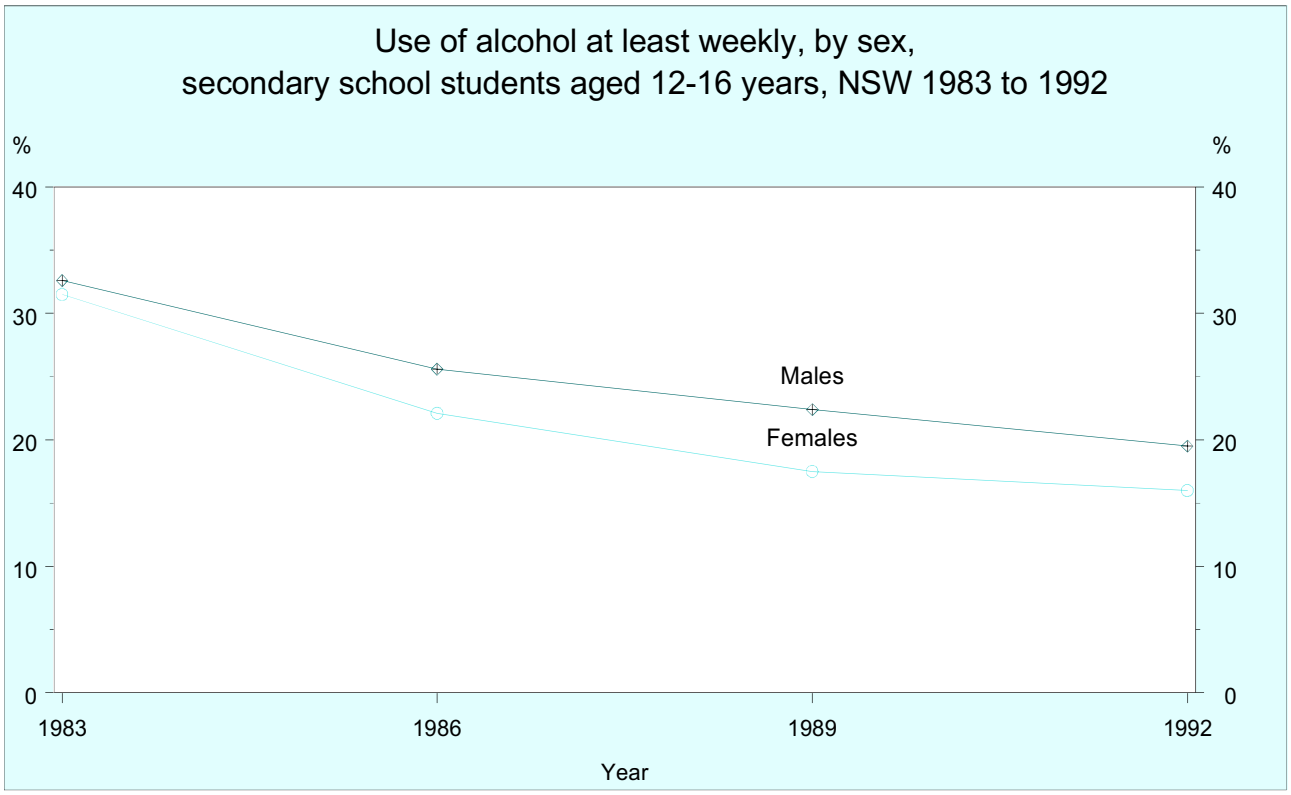
- A small decline in the proportion of Year 5 and Year 6 primary school students who had consumed a glass of alcohol (from 26% to 21%) was seen between between 1993 and 1996.
- There was also a decline in the proportion who had ever tasted alcohol (beer, wine or spirits), from 77 per cent in 1993 to 74 per cent in 1996.
- A decline also occurred in the proportion of children who had consumed alcohol in the previous year.
- Determinants of ever having drunk a whole glass of alcohol were being male, Australian-born, having more than $5 weekly pocket money, in Year 6 versus Year 5, living in a rural area and having several social influences (parents or friends) who drank alcohol.
- Forty per cent of primary school drinkers in 1996 reported that it was easy to obtain alcohol, usually from parents, siblings or friends, rather than by direct purchase from a bottle shop or hotel. Peer offers and peer drinking were strongly associated with alcohol use (Bauman et al. 1994; Bowman et al. 1997).

References: Bauman A, Chen J C, Cooney A, Dobbinson S and Flaherty B, *1993 Survey of drug use by NSW primary school children*, NSW Health Department, Sydney, 1994.

Bowman J, Considine R, D'Este K, James E and Sanson-Fisher R. *Preliminary results of the 1996 survey of drug use by NSW primary school children.* NSW Health Department and the Hunter Centre for Health Advancement, 1997.

For more information, see: Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au/



Year	1983	1986	1989	1992
Boys	32.6	25.6	22.4	19.5
Girls	31.5	22.1	17.5	16.0

Note: Percentages were age-adjusted.

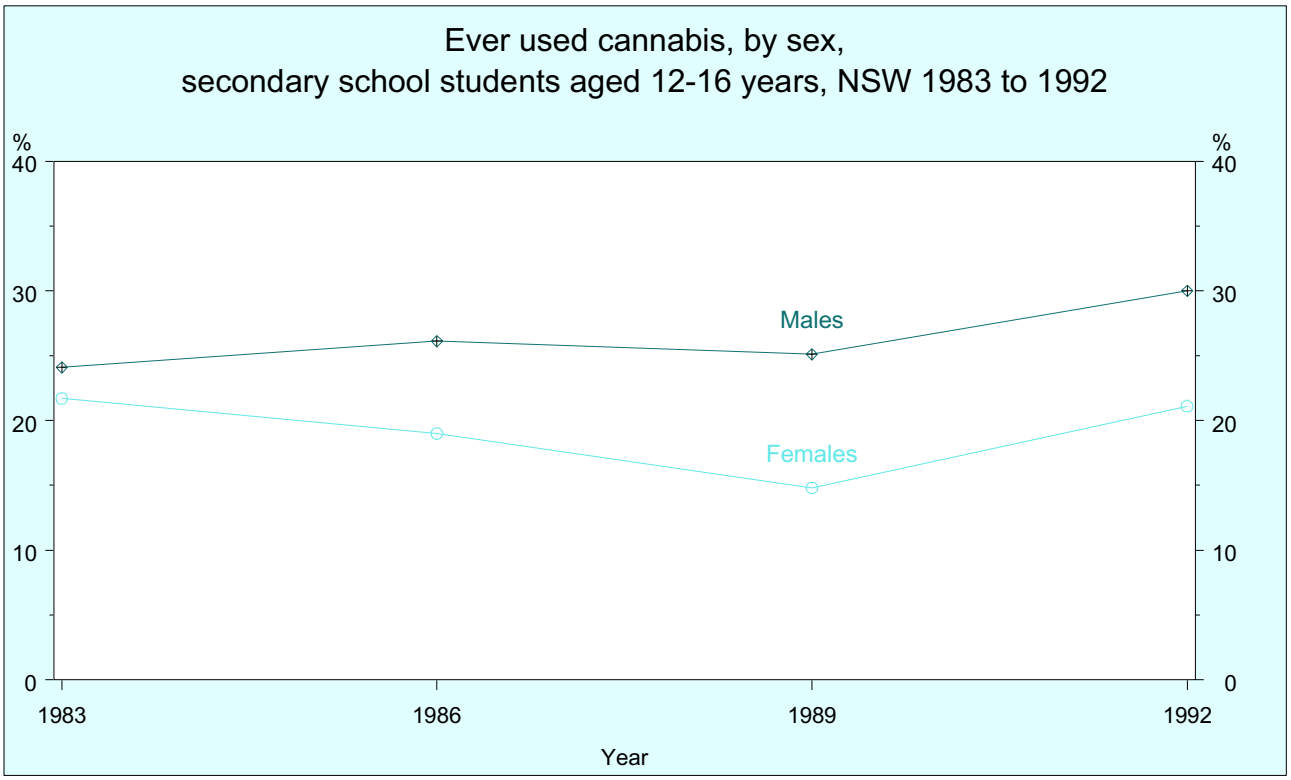
Source: Cooney A, Dobbinson S and Flaherty B, *1992 survey of drug use by secondary school students*, NSW Health Department, Sydney, 1994.

- Since 1983, there has been a steady decline in the proportion of NSW secondary school students of both sexes who report regular use of alcohol (that is, on three or more occasions in the month prior to survey). Between 1983 and 1992, the rate of regular use declined from 32 to 16 per cent for girls and 33 to 20 per cent for boys.
- Heavy drinking (that is, consumption of five or more drinks in a row at least once during the previous fortnight) has increased slightly among girls since 1989 (from 15% to 17%), after a previous decline. Heavy drinking has declined among boys since 1989 (from 26% to 22%).
- From 1983 to 1992 there was a downward trend in the prevalence of ever having consumed one or more drinks ('lifetime' consumption). Since 1989, the rate has declined from 68 to 63 per cent for girls and 75 to 71 per cent for boys.
- Boys have reported significantly more regular, lifetime and heavy consumption of alcohol than girls at each survey since 1983.
- The prevalence of regular alcohol use, as well as heavy drinking, increased steadily with age for both sexes (Cooney, Dobbinson & Flaherty 1994).
- To monitor alcohol use among secondary school children, the Drug and Alcohol Directorate, in partnership with the NSW Cancer Council, conducted a survey among 10,000 children from Year 7 to Year 12 in 143 NSW schools in 1996. These results were not available at the time of publishing this report.

Reference: Cooney A, Dobbinson S and Flaherty B, *1992 Survey of drug use by secondary school students*, NSW Health Department, Sydney, 1994.

For more information, see: Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au/



Year	1983	1986	1989	1992
Males	24.1	26.1	25.1	30.0
Females	21.7	19.0	14.8	21.1

Note: Percentages were age-adjusted.

Source: Cooney A, Dobbinson S, Flaherty B, *1992 survey of drug use by NSW secondary school students*, NSW Health Department, 1994.

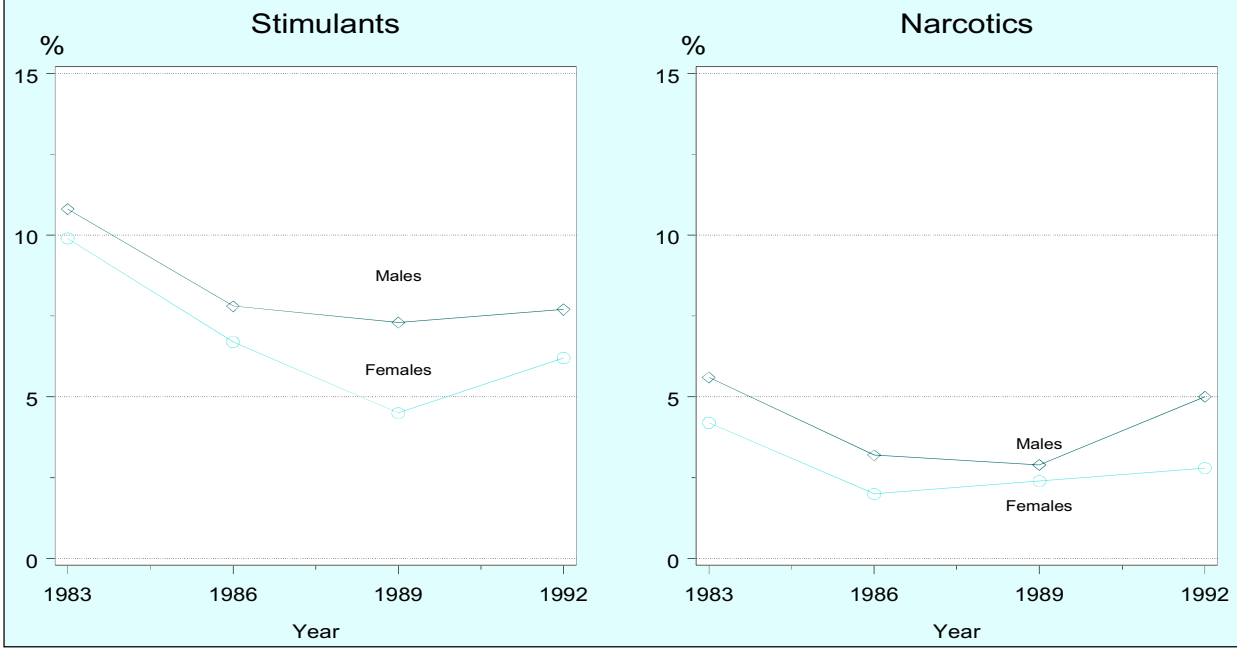
- The proportion of female secondary school students who reported ever using cannabis decreased slightly from 22 per cent in 1983 to 15 per cent in 1989, and then increased to 21 percent in 1992.
- Use by males remained similar between 1983 and 1989, but increased from 25.1 per cent to 30.0 per cent in 1992.
- The most recent survey of drug use among school students in NSW was conducted in late 1996. Over 10,000 students from 143 schools participated. The results were not available at the time of publishing this report.

Reference: Cooney A, Dobbinson S and Flaherty B, *1992 Survey of drug use by secondary school students*, NSW Health Department, Sydney, 1994.

For more information, see: Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au/

Ever used stimulants or narcotics, by sex,
secondary school students aged 12-16 years, NSW 1983 to 1992



Year		1983	1986	1989	1992
Males	Stimulants	10.8	7.8	7.3	7.7
	Narcotics	5.6	3.2	2.9	5.0
Females	Stimulants	9.9	6.7	4.5	6.2
	Narcotics	4.2	2.0	2.4	2.8

Note: Percentages were age-adjusted.

Source: Cooney A, Dobbinson S, Flaherty B, *1992 survey of drug use by NSW secondary school students*, NSW Health Department, 1994.

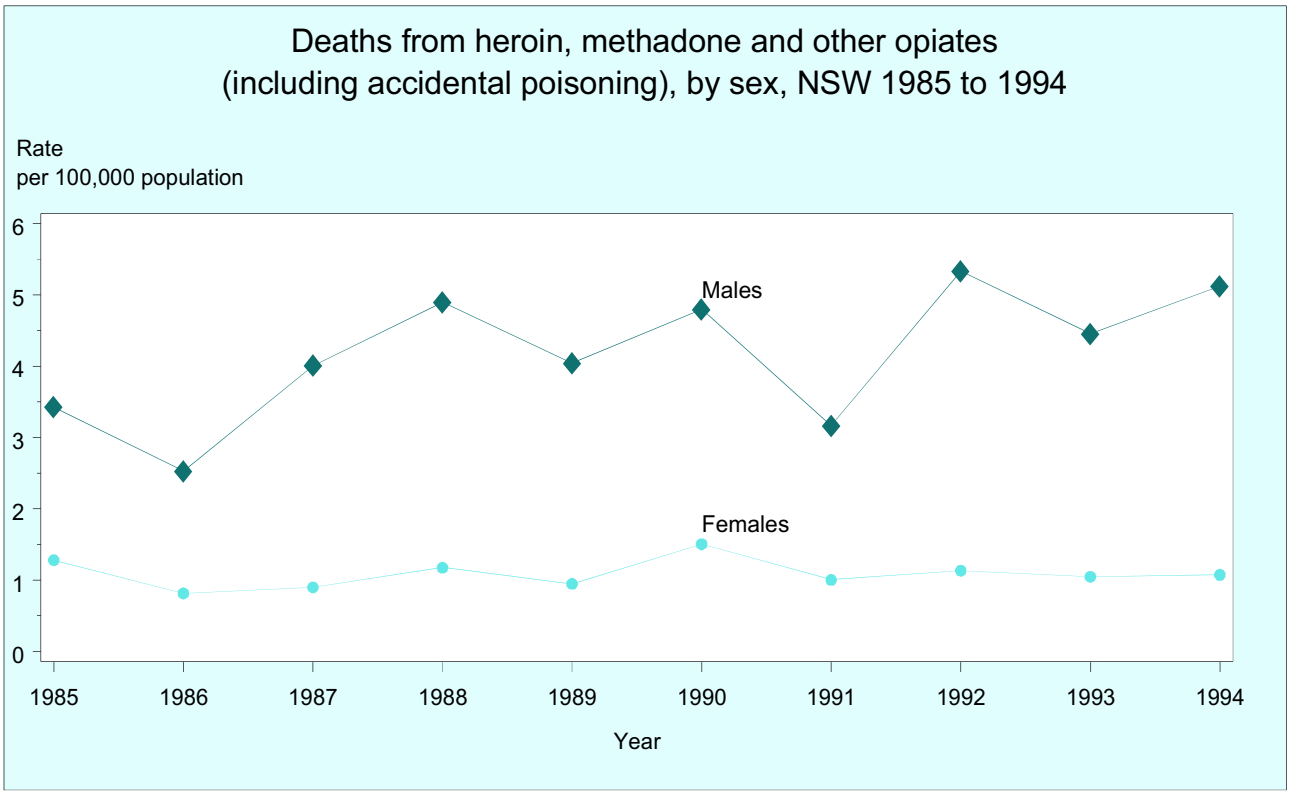
- The proportion of secondary school female students who reported having ever used stimulants (cocaine, speed, amphetamines, 'pep' pills) decreased from 10 per cent in 1983 to 4.5 in 1989 and increased to 6.2 per cent in 1992.
- The proportion of males reporting stimulant use decreased from 11 to 7 per cent between 1983 and 1989 and increased to 8 per cent in 1992, but this increase was not statistically significant.
- A longer-term gradual rise in the use of stimulants in the United States between 1992 and 1996 has been reported (Johnston et al. 1996).
- After years of decline during the 1980s, there is concern about a rise in the prevalence of narcotic use among secondary school children in NSW.
- The reported rate of ever using narcotics (illegally) among 12- to 16-year-old secondary school female students declined between 1983 and 1989, from 4 per cent to 2 per cent, but increased to 3 per cent in 1992 (increase not significant). However, the reported rate among males decreased between 1983 and 1989 from 6 per cent to 3 per cent and significantly increased to 5 per cent in 1992.
- Trends in Canada (Adlaf et al. 1995) and the United States (Johnston et al. 1996) are similar to NSW.
- The most recent survey about drug use among NSW school students was conducted in late 1996. Over 10,000 students from 143 schools participated. Questions about the use of MDMA ('ecstasy') were added for the first time in this survey. The results were not ready for publication in this report.

References: Adlaf E M, Ivis FJ, Smart R G, Walsh G W, *The 1995 Ontario students drug use survey,* The Addiction Research Foundation, 1995.

Johnston L D, O'Malley P M, Bachman J G, *National survey results of drug use from the Monitoring the Future Study, 1975-1995. Volume I: Secondary school students,* NIH publication no. 97-4139, NIDA, Rockville, MD, 1996.

For more information, see: Centre for Education and Information on Alcohol and Other Drugs. Phone (02) 9818 5222.

DrugLinks Web site at http://www.ceida.net.au.



Year		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Number	Males	95	71	113	140	118	140	93	158	133	152
	Females	35	22	25	33	27	43	29	33	31	31
	Persons	130	93	138	173	145	183	122	191	164	183
Rate	Males	3.4	2.5	4.0	4.9	4.0	4.8	3.2	5.3	4.5	5.1
	Females	1.3	0.8	0.9	1.2	0.9	1.5	1.0	1.1	1.0	1.1
	Persons	2.4	1.7	2.5	3.0	2.5	3.2	2.1	3.2	2.8	3.1

Note: Heroin, methadone and other opiates are classified according to the ICD9 codes E850.0/1/2 and 304.0, 305.5, 965.00/01/02. NSW population estimates as at 30 June each year. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Most (80%) of opiate deaths can be attributed to heroin, but these are not distinguished in the coding used for death data. Variation in the interpretation of toxicological data by coroners, particularly where there is evidence of multiple drug use, leads to further difficulties in ascertaining heroin and other opiate deaths (Zador, Sunjic and Darke 1995).
- In the last decade there has been an increase in both the absolute number and age-adjusted rates of opiate-related deaths, particularly among males. This is consistent with trends observed in both national (Hall & Darke 1997) and local (Darke, Zador and Sunjic 1997) studies.
- In NSW, between 1985 and 1994, there were consistently more than twice as many opiate deaths among men as women. This difference is larger than would be expected from clinical treatment populations. The NSW Methadone Program reports that men make up approximately 65 per cent of its clients (NSW Health Department 1997).
- Participation in the NSW Methadone Program has more than doubled since 1987, generating interest in the number of methadone-related deaths (both in and out of treatment). One study found that participation in the program protected heroin-dependent individuals, who were four times more likely to die outside of methadone maintenance treatment than in it (Caplehorn et al. 1996).

References: Caplehorn J R, Dalton S, Haldar F, Petrenas A and Nesbet J, 'Methadone maintenance and addicts' risk of fatal heroin overdose', *Substance Use and Misuse,* Vol. 31, 1996, pp. 177–196.

Darke S, Zador D A and Sunjic S, 'Heroin-related deaths in South Western Sydney'. *Medical Journal of Australia,* Vol.167, 1997, pp.107.

NSW Health Department, *NSW Methadone Program 1995/1996: annual statistical report*, NSW Health Department, Sydney, 1997.

Zador D A, Sunjic S and Darke S, *Toxicological findings and circumstances of heroin related deaths in NSW, 1992,* National Drug and Alcohol Research Centre monograph no. 22, NDARC, Sydney,1995.

Chapter 2.2

Health and the environment

- Concentrations of lead in ambient air in Sydney have been steadily declining in recent years, largely owing to the declining use of leaded petrol and the reduced lead content of leaded petrol.
- Since 1979, the number of days in the Sydney region when atmospheric fine particles exceeded the desired goal have declined. During 1994 there were 20 days and in 1995 there were 5 days when the goal for fine particles (PM10) was exceeded.
- About 75 percent of atmospheric nitrogen dioxide (NO_2) in Sydney can be attributed to motor vehicles. During the last decade, there has been a slight decline in the number of days on which the desired goal for NO_2 has been exceeded in Sydney.
- The number of days on which the desired goal for atmospheric ozone was exceeded in Sydney has apparently declined over the past 10 years. This is attributed to controlling emissions from motor vehicles, and to meteorological conditions which did not promote ozone formation.
- Microbiological analysis of the Sydney and Hunter Water Corporation supplies over the period 1989 to 1996 indicate that drinking water is generally of good quality. Microbiological analysis of rural water supplies as a whole indicate that a consistently high proportion of samples have complied with the target for coliforms over the last five years.
- Since 1993, Sydney and Hunter Water Corporations have complied at most times with the aesthetic guideline for aluminium and at all times with the 1987 guideline for lead in water. Compliance for lead was also good in rural water supplies.
- Neither Sydney nor Hunter Water Corporation has had a positive test for pesticides in source water. Pesticides were detected in 33 rural water samples in the period 1994 to 1997. In three instances the level of pesticides exceeded the guideline value.

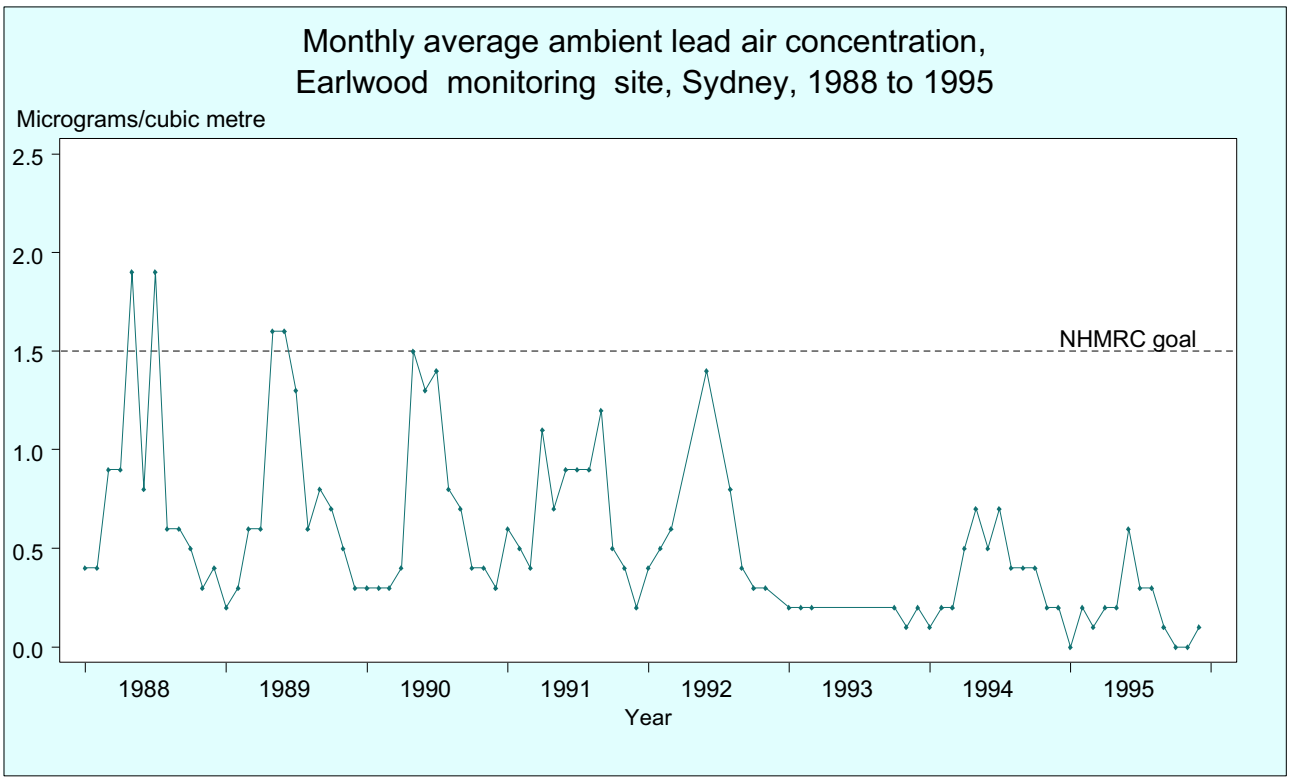
In this chapter

Introduction

Monitoring of air and water quality in NSW has improved in recent years, and environmental impacts on human health are becoming better understood.

This chapter presents recent NSW data on air and water quality that are relevant to health.

More information on arboviral infections, Legionnaires' disease and food poisoning (additional health conditions that are closely linked with environmental factors) is presented in chapter 4.6 (page 221).



Month	1988	1989	1990	1991	1992	1993	1994	1995
January	0.4	0.2	0.3	0.6	0.4	0.2	0.1	0.0
February	0.4	0.3	0.3	0.5	0.5	0.2	0.2	0.2
March	0.9	0.6	0.3	0.4	0.6	0.2	0.2	0.1
April	0.9	0.6	0.4	1.1	–	–	0.5	0.2
May	1.9	1.6	1.5	0.7	–	–	0.7	0.2
June	0.8	1.6	1.3	0.9	1.4	–	0.5	0.6
July	1.9	1.3	1.4	0.9	–	–	0.7	0.3
August	0.6	0.6	0.8	0.9	0.8	–	0.4	0.3
September	0.6	0.8	0.7	1.2	0.4	–	0.4	0.1
October	0.5	0.7	0.4	0.5	0.3	0.2	0.4	0.0
November	0.3	0.5	0.4	0.4	0.3	0.1	0.2	0.0
December	0.4	0.3	0.3	0.2	–	0.2	0.2	0.1

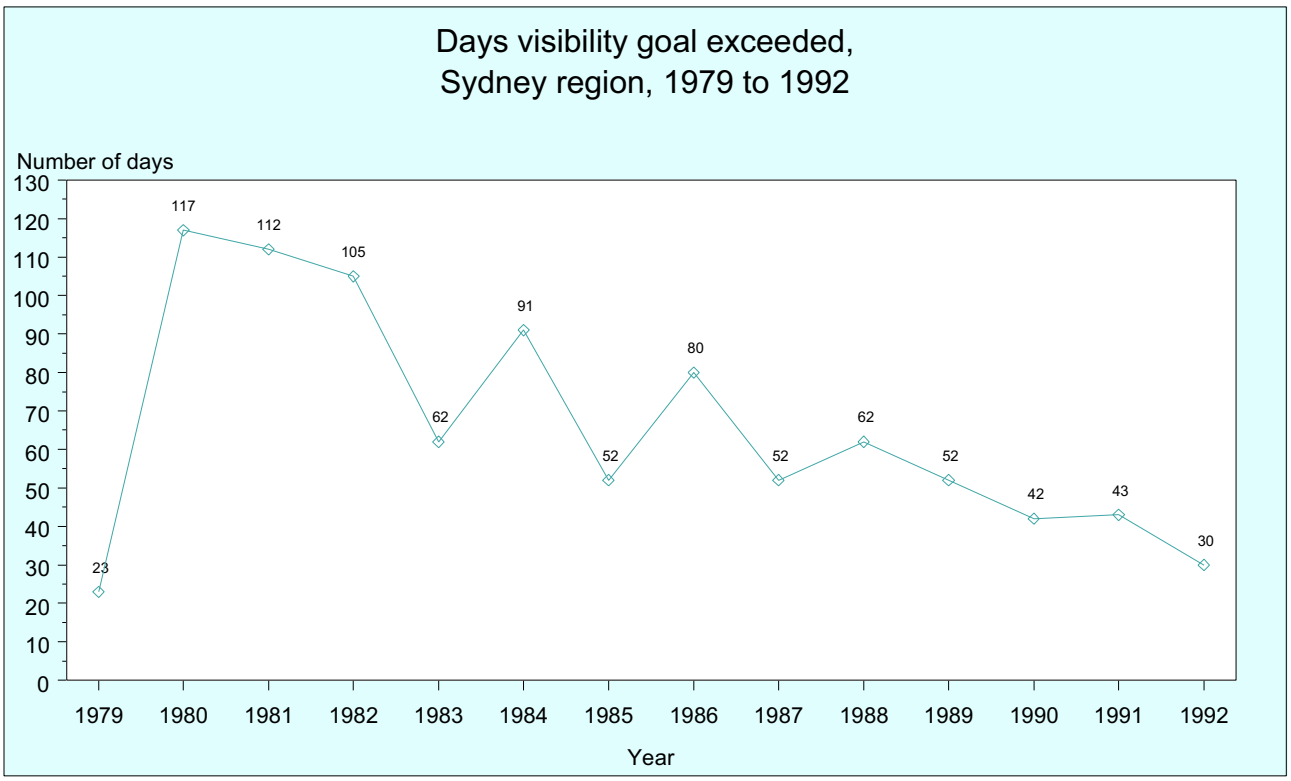
Note: NHMRC goal: 90 day average = 1.5 micrograms per cubic metre.

Source: NSW Environment Protection Authority, *Quarterly air quality monitoring reports,* Air Quality Section, NSW EPA, Lidcombe 1988-1995.

- The main sources of lead in air are emissions from metal works, leaded petrol, leaded paint, and lead from industrial processes.
- Humans absorb lead by ingestion and inhalation through contact with lead particles in soil, dust and air. The health effects of exposure to lead include impaired physical and mental development, lowered IQ level and shortened attention span.
- Ambient lead concentrations in Earlwood in Sydney have been steadily declining in recent years. This pattern is consistent with those from other monitoring stations in Sydney and suburbs. It is largely due to the declining use of leaded petrol and the reduced lead content for leaded petrol. However, lead concentrations near major industry, such as in Port Kembla, are above 1.5 micrograms/cubic metre.
- Lead levels are consistently higher in winter. This is caused by a meteorological condition known as temperature inversion, which occurs in winter. This inhibits vehicular lead emissions from dispersing vertically through the atmosphere, increasing the surface concentration of lead.
- The National Health and Medical Research Council (NHMRC) recommends a maximum air-borne total suspended particulate (TSP) lead concentration of 1.5 micrograms/cubic metre (NHMRC 1979).
- It is expected that lead levels will decrease further as the amount of leaded petrol used in vehicles declines.

References: *NHMRC ambient air quality goals,* NHMRC, Canberra,1979.
Quarterly air quality monitoring reports, Air Quality Section, NSW EPA, Sydney, 1988-1995.

For more information see: Heggie AC and Hawke GS, 'Influence of meteorology on pollution levels', in *Air pollution measurement,* Third Edition, Vol.1, Clean Air Society of Australia and New Zealand, Sydney,1998.



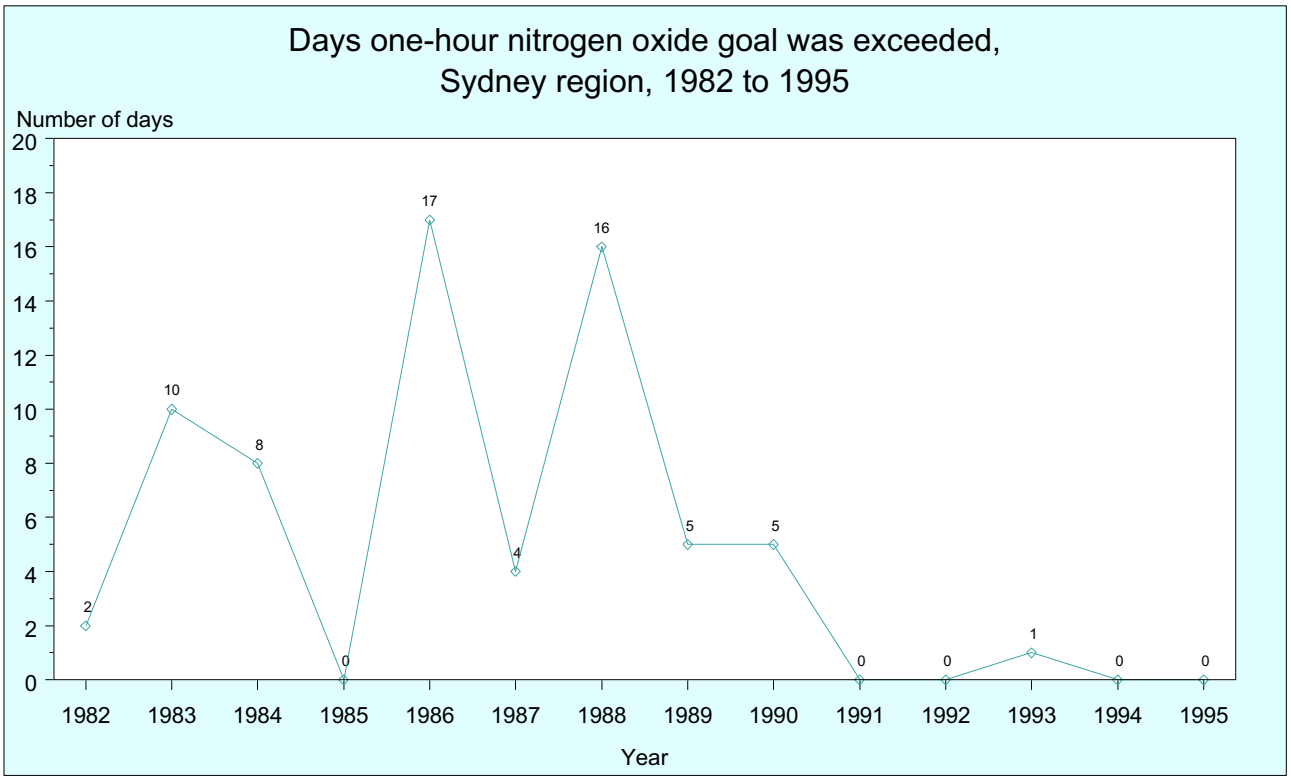
Note: The NSW goal for visibility was <2.1 Bsp averaged over one hour.

Sources: State Pollution Control Commission, *Air quality measurement in NSW, annual review 1979 - 1991,* SPCC, Sydney, 1991. Environment Protection Authority (EPA), *Quarterly air quality monitoring reports 1991-1992*, Air Quality Section, NSW EPA, Sydney, 1995.

- Sources of particles in the atmosphere include dusts from soils, vegetation (pollens and fungi), sea salt, combustion of fossil fuels (both stationary and mobile sources), biomass burning (forest fires, hazard-reduction burns, agricultural burns, incinerators) and industries.
- Health and Air Research Program (HARP) studies funded by NSW Health Department from 1993 to 1996 found associations between levels of atmospheric particles and daily mortality, hospital admissions for chronic obstructive pulmonary disease in the elderly, respiratory symptoms and changes in lung function (NSW Health and NSW EPA, in press).
- Particulate matter in the atmosphere is measured in two ways:
  - in terms of visibility (fine particles of less than 2.5 microns scatter incoming light and reduce visibility)
  - by measuring actual ambient concentrations of particles, which are expressed as PM10 (particulate matter less than 10 microns in diameter) micrograms/m^3.
- For the years 1979 to 1992, the NSW Environmental Protection Authority (EPA) used a goal equivalent to a visibility of nine kilometres as an indicator of fine particle pollution.
- In this period, there was a decline in the number of days per year when the desired visibility goal was exceeded, indicating a decrease in levels of fine particles in the atmosphere.
- Since 1994, atmospheric particles have been monitored using the number of days for which PM10 concentrations exceeded current air quality goals. The current NSW goal for PM10 is 150 micro grams/m^3 for a 24-hour average. During 1994 there were 20 days and in 1995 there were 5 days when PM10 exceeded this goal (NSW EPA 1995).

Reference: NSW Health Department and NSW EPA, *Health and urban air quality in NSW conference proceedings 1996,* NSW Health Department, Sydney, in press.
NSW EPA, *Quarterly air quality monitoring reports 1991-1992*, Air Quality Section, NSW EPA, Sydney, 1995.

For more information, see: National Environment Protection Council, *Towards a national environment protection measure for ambient air quality*. National Environment Protection Council, Adelaide, 1997.
The HARP newsletters can be found at the NSW Health Department Web site http://www.health.nsw.gov.au./public-health/harp/harp.html



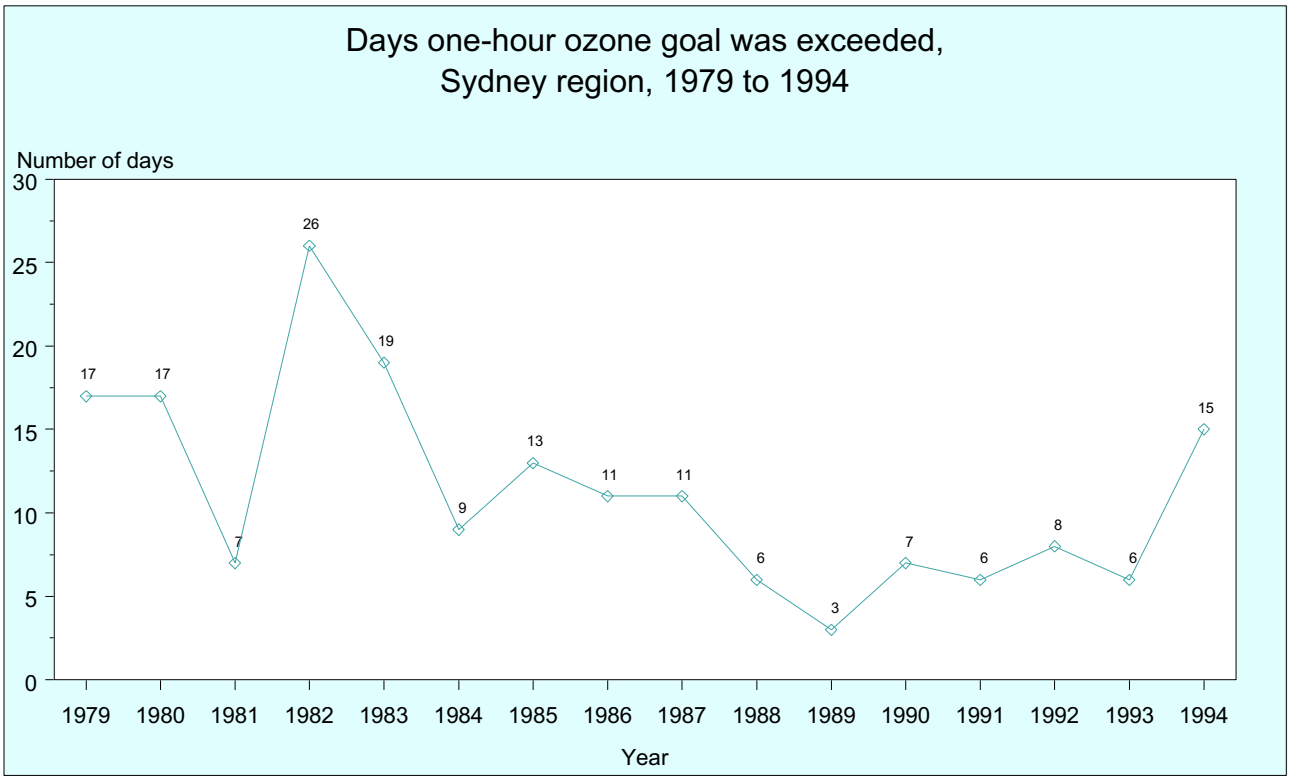
Note: Current NHMRC goal for NO_2 is 0.16 parts per million for a 1-hour average.

Source: NSW EPA *Quarterly air quality monitoring reports 1982-1995*, Air Quality Section, NSW EPA, Sydney, 1995

- Several oxides of nitrogen (NOx) are found in urban air. Nitric oxide (NO) and nitrogen dioxide (NO_2) are the most common of these.
- NOx are produced by any high-temperature combustion process. The major source of NO, the precursor to NO_2, is fuel combustion. About 75 per cent of NO_2 in Sydney can be attributed to motor vehicles.
- Concentrations of NOx (either as NO or NO_2) as low as 0.1 parts per million (ppm) contribute to photochemical smog under certain meteorological conditions. NO_2 absorbs ultraviolet light from the sun and at certain concentrations will cause a brown haze which is frequently seen over Sydney.
- NO_2 is the main precursor of ground-level ozone and, as such, is a major component of oxidant air pollution.
- The potential health effects of NO_2 include exacerbation of asthma and possibly increased susceptibility to infection among children. Recent studies have suggested that NO_2 exposure may increase the effect of common airborne allergens such as house dust mite (Folinsbee 1992, Tunnicliffe et al. 1994).
- Health and Air Research Program (HARP) studies funded by NSW Health Department from 1993 to 1996 found associations between levels of NO_2 and respiratory mortality and hospital admissions for asthma (NSW Health and NSW EPA, in press).
- The current National Health and Medical Research Council (NHMRC) goal for NO_2 is 0.16 parts per million for a one hour average. During the last decade there has been a slight decline in the number of days on which this goal has been exceeded in Sydney.
- It is expected that NO_2 levels will rise in the next 25 years with population growth, resultant urban expansion, and increased motor vehicle use, unless protective action is taken.

Reference: Folinsbee L, 'Human health effects of air pollution', *Environmental Health Perspectives,* Vol.100, 1992, pp. 45-56.
Tunnicliffe W Burge P and Ayres J, 'Effects of domestic concentrations of nitrogen dioxide on airway responses to inhaled allergens in asthmatic patients', *Lancet* Vol. 344, 1994, pp. 1733-1736.
NSW Health Department and NSW EPA, *Health and Urban Air Quality in NSW conference proceedings 1996,* NSW Health Department, Sydney, in press.

For more information, see: NSW Environmental Protection Authority, *NSW state of the environment,* EPA, Sydney, 1995.
The HARP newsletters can be found at the NSW Health department Web site
http://www.health.nsw.gov.au./public-health/harp/harp.html
The air quality management plan, a NSW government green paper, EPA, Sydney, 1996.



Note: Current NHMRC goal for ozone is 0.10 parts per million averaged over one hour.

Source: Borros H, Betts A and McCavitte R, *Quarterly air quality monitoring reports 1982-1994*, Air Quality Section, NSW EPA, Sydney, 1995.

- Ozone occurs naturally in both the upper and lower atmospheres. In the upper atmosphere, it absorbs ultraviolet radiation, protecting humans, plant and animal life.
- In the lower atmosphere, ozone is produced as a product of photochemical reactions between ozone precursors — oxides of nitrogen (NOx) and reactive organic compounds (ROCs). Major sources of NOx and ROCs include motor vehicles, industries such as petroleum refining, chemical, polymer and paper manufacturing, and domestic use of solvents and coatings.
- Variability in ozone levels in the lower atmosphere is strongly linked to meteorological conditions. Hot, still conditions favour ozone pollution.
- Ozone in the lower atmosphere may damage vegetation, materials and human health. Health effects include: irritation of the eyes and nasal passages; respiratory irritation; temporary decreases in lung capacity; exacerbation of asthma; inflammation of lung tissue; and impairment of the body's immune system defences, leading to increased susceptibility to respiratory infections (American Thoracic Society 1996, Woodward et al. 1995).
- Health and Air Research Program (HARP) studies funded by NSW Health Department from 1993 to 1996 found inverse associations between levels of ozone in Sydney and lung function and association between levels of ozone and in daily mortality and hospital admissions for heart disease (NSW Health and NSW EPA, in press).
- The National Health and Medical Research Council (NHMRC) goal for ozone is 0.10 parts per million averaged over one hour. The number of days on which this goal was exceeded in Sydney has apparently declined over the past 10 years. This is attributed to controlling emissions from motor vehicles, and to meteorological conditions which did not promote ozone formation.
- Nevertheless, it is expected that without protective action, ozone levels will rise in the next 25 years due to population growth, resultant urban expansion, and increased motor vehicle use.

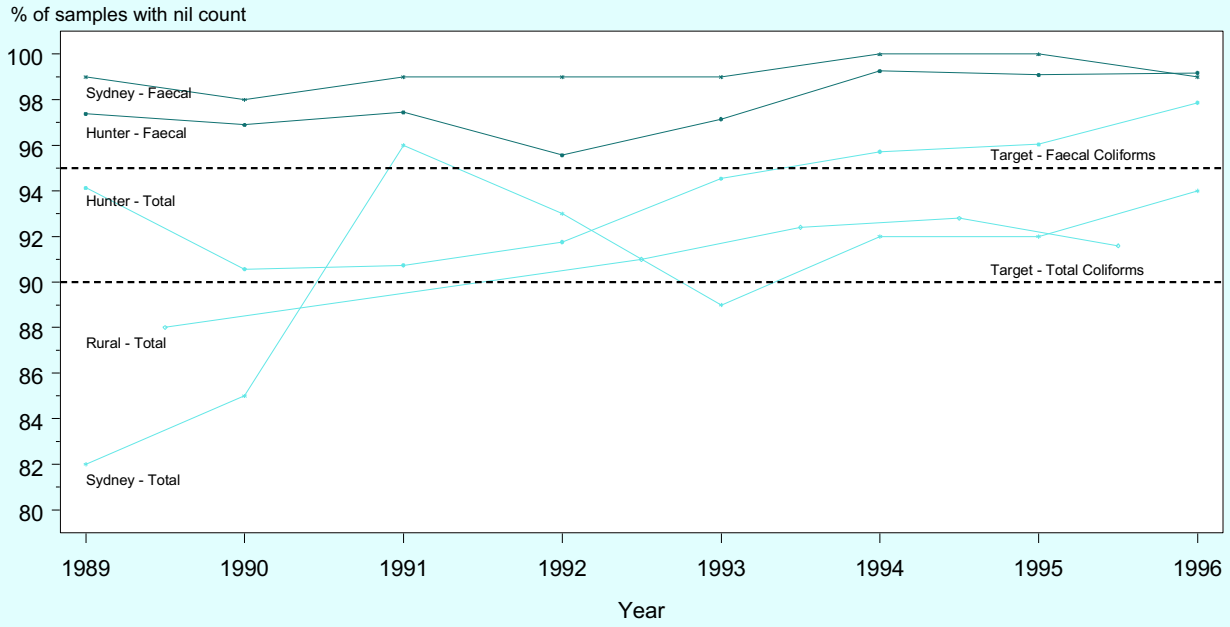
References: Committee of the environmental and occupational health assembly of the American Thoracic Society, 'State of the art: health effects of outdoor air pollution', *American Journal of Respiratory and Critical Care Medicine,* Vol.153, 1996, pp. 3-50.

Woodward A Guest C and Steer K, 'Tropospheric ozone: respiratory effects and Australian air quality goals', *Journal of Epidemiology and Community Health*, Vol. 49, 1995, pp. 410-407.

NSW Health Department and NSW EPA, in press, *Health and urban air quality in NSW conference proceedings 1996,* NSW Health Department, Sydney.

For more information, see: The HARP newsletters can be found at theNSW Health Department Web site http://www.health.nsw.gov.au./public-health/harp/harp.html *The air quality management plan,* a NSW government green paper, EPA, Sydney, 1996.

Faecal and total coliform counts, Hunter and Sydney Water Corporations and NSW rural water supplies, 1989 to 1996



Year		1989	1990	1991	1992	1993	1994	1995	1996
Nil faecal coliforms (% samples)	Hunter	97	97	97	96	97	99	99	99
	Sydney	99	98	99	99	99	100	100	99
Nil total coliforms (% samples)	Hunter	94	91	91	92	95	96	96	98
	Sydney	82	85	96	93	89	92	92	94
Nil faecal/total coliforms (% samples)	Rural NSW	–	88	–	–	91	92	93	92

Notes: Results for Rural Water Corporation are for financial years (1989/90 is shown under 1990 in the table, 1992/93 under 1993 and so on) and present amalgamated bacteriological data (faecal and total coliforms) for rural water supplies as a whole.

Sources: Sydney and Hunter Water Corporations and NSW Department of Analytical Laboratories, unpublished data.

- The coliform group of organisms, in particular the faecal coliforms, are used as indicator organisms for faecal contamination of drinking water. Coliforms are most likely to be present in water supplies when they are not adequately treated or disinfected. Samples for microbiological analyses are collected at points of consumption throughout the water distribution system.
- The data here are reported against targets from the 1987 Guidelines for Drinking Water Quality in Australia (NHMRC 1987).
- Microbiological results from the Sydney and Hunter Water Corporation supplies indicate that drinking water is generally of good quality. Faecal coliform counts, particularly, have been consistently low over recent years. Both total and faecal coliform counts improved in these water supplies from 1993 to 1996.
- Microbiological results from rural water supplies as a whole cannot be applied to individual supplies. As a group, the results indicate that a consistently high proportion of samples have complied with the target over the last five years. Although the overall failure rate is low, data from individual supplies may vary significantly.
- Some pathogenic organisms, such as cryptosporidium and viruses, can occur in the absence of coliform indicator organisms. To minimise contamination of water supplies by pathogenic organisms, water suppliers rely on a multiple barrier approach, which includes catchment protection, long storage detention times, treatment (including filtration), and disinfection.

Reference: NHMRC, *Guidelines for drinking water quality in Australia*, NHMRC, AWRC, Canberra, 1987.

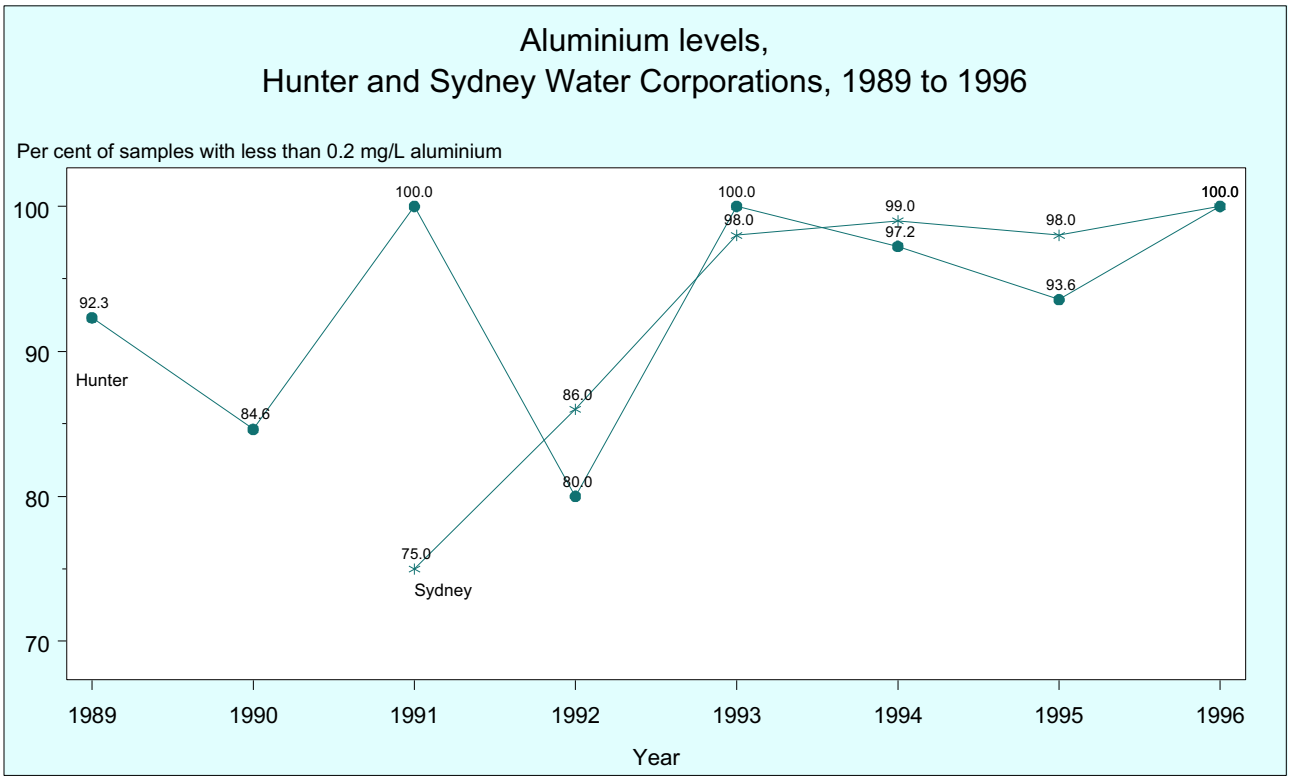
For more information, see:

NHMRC and Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ), *Australian drinking water guidelines*, NHMRC, Canberra, 1996.

Hunter Water Corporation Annual Report 1995/96, see Web site at http://www.hwc.com.au

Sydney Water Corporation Annual Report 1995/96.

Department of Land and Water Conservation, *1994/95 NSW water supply and sewerage performance comparisons*, DLWC, Sydney, 1996.



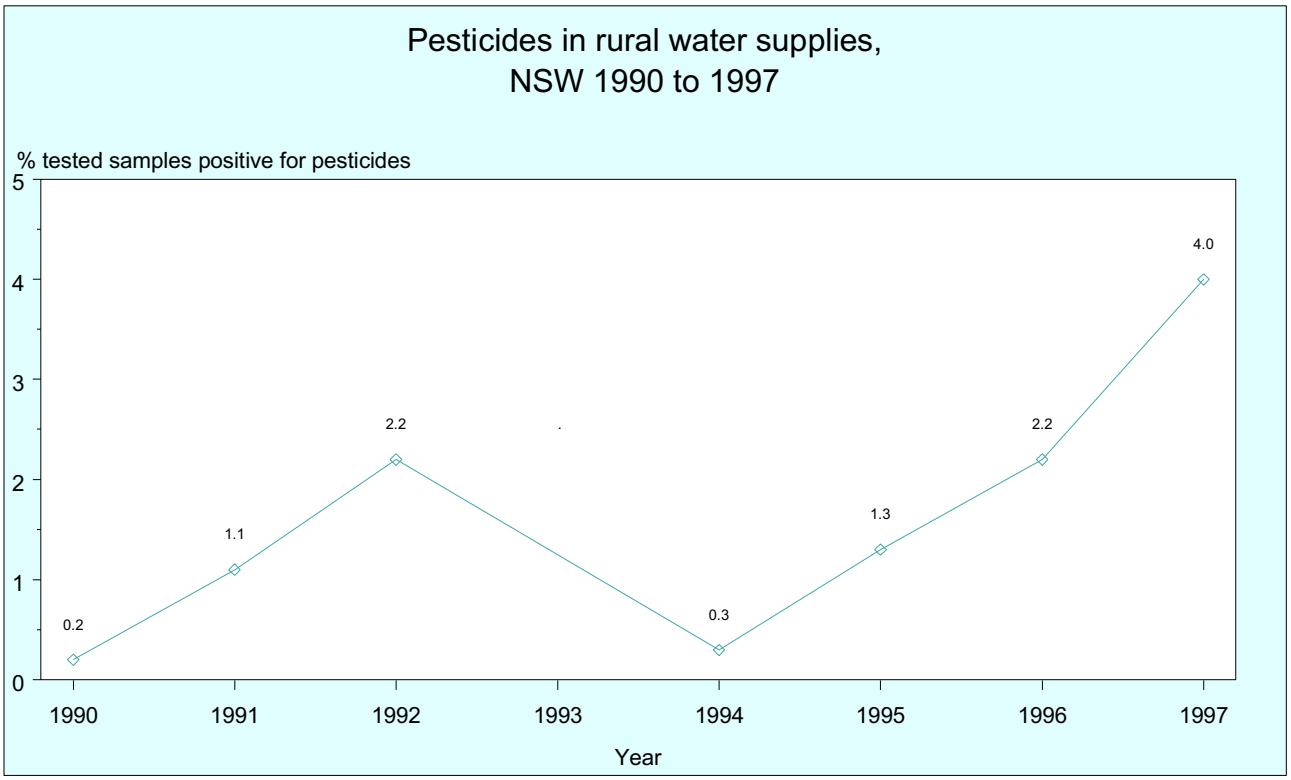
Notes: Data for aluminium were not available for rural water supplies.

Source: Sydney and Hunter Water Corporations, unpublished data.

- Aluminium compounds are widely used as coagulants in the treatment of drinking water, but may also occur naturally in water through natural leaching from soil and rock.
- Drinking water probably contributes less than 5 per cent of the total human intake of aluminium. Although some studies have suggested a tentative link between aluminium and Alzheimer's disease and dementia, the evidence as a whole does not support a causal association. Accordingly, there is no health-based guideline for aluminium in water.
- The drinking water guideline level for aluminium (0.2 mg/L) was set for aesthetic purposes only (NHMRC and ARMCANZ 1996). Elevated levels can result in customer complaints about "milky-coloured" water.
- Compliance with the aesthetic guideline for aluminium by Sydney and Hunter Water Corporations (SWC, HWC) has been good since 1993. In 1994, SWC phased out the use of aluminium-based coagulants in water treatment, replacing these with an iron coagulant.
- Lead can be present in drinking water owing to its presence in natural sources and/or as a result of household plumbing. The greatest potential for lead contamination of drinking water arises from the household reticulation system. Lead can be present in lead piping in older houses. More commonly, lead can be leached from the solder used for pipework, and from certain fittings such as taps.
- Moderately elevated blood lead levels, if sustained over the lifetime of a pre-school-aged child, have been linked to impaired neurological development, growth and hearing acuity.
- Levels of lead in major Australian reticulated supplies range up to 0.01 mg/L, with typical concentrations of around 0.005 mg/L (NHMRC and ARMCANZ 1996).
- Monitoring conducted since 1993 indicates that the SWC and HWC complied at all times with the 1987 guideline level for lead in water of 0.05 mg/L (unpublished data). Compliance was also good in rural water supplies, with between 99.7 and 100 per cent of samples tested meeting the guideline over this period (unpublished data).

References: NHMRC and Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ), *Australian drinking water guidelines*, NHMRC, Canberra, 1996.

For more information, see: Hunter Water Corporation Annual Report 1995/96, see Web site at http://www.hwc.com.au
Sydney Water Corporation Annual Report 1995/96.
Hunter Water Corporation Annual Report 1996.



Notes: Number of samples for 1990,1991,1992,1994,1995,1996 and 1997 (to date): 538, 542, 533, 618, 527, 590 and 277.
Source: Department of Analytical Laboratories, unpublished data.

- Although many pesticides, including insecticides, herbicides and fungicides, degrade rapidly in the environment, water supplies should be protected at all times against pesticide contamination.
- Neither the Sydney Water Corporation or the Hunter Water Corporation has had a positive test of pesticides in its source water (before treatment).
- Three of the 33 rural water samples in which pesticides were detected during the period 1994 to 1997 (to date) contained levels exceeding the guideline value. These were for the pesticides DDT and profenophos. Pesticides detected but not exceeding the guideline values were: fenitrothion; atrazine; 2,4-D; cypermethrin; simazine; dichlobenil; DDE; PCP; methidathion; endosulfan sulphate; endosulfan; ethyl chlorpyrifos; profenophos; and methyl parathion. The identification of pesticides which have been banned (such as DDT) is of concern, and indicates persistence in the environment.
- The results for rural water indicate that detection of pesticides in drinking water samples is increasing slightly. The monitoring program, which tests supplies only once or twice per year, is not specifically tailored to the timing of pesticide use in each area.
- Trihalomethanes (THMs) can be present in drinking water as a result of disinfection with chlorination or chloramination. Some studies have reported associations between the ingestion of chlorinated drinking water (typically containing THMs) and higher cancer rates, but the International Agency for Research on Cancer concluded that the evidence is at present inadequate (NHMRC and ARMCANZ 1996).
- Testing for THMs by larger water authorities has only recently started. Since 1991, the Sydney Water Corporation has complied with the 1987 guideline level of 200 µg/L 94 to 100 per cent of the time, while the Hunter Water Corporation has complied at all times.

Reference: NHMRC and Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ), *Australian drinking water guidelines*, NHMRC, Canberra,1996.

For more information, see: Hunter Water Corporation Annual Report1995/96, see Web site at http://www.hwc.com.au
Sydney Water Corporation Annual Report 1995/96.
Department of Land and Water Conservation 1996, *1994/95 NSW water supply and sewerage performance comparisons*, DLWC, Sydney, 1996.

Health inequalities

Section 3

Chapter 3.1

The health of Aboriginal and Torres Strait Islander peoples

- More than one-quarter of the national indigenous population lives in NSW.
- Aborigines and Torres Strait Islanders constituted 1.3 per cent of the NSW population at the 1991 census and 2.3 per cent of the population at the 1996 census. Much of the increase was due to an increasing level of self-identification of people as indigenous.
- In 1996, 14 per cent of the NSW indigenous population was aged less than 5 years (compared with 7% of the total population), while only 13 per cent of the indigenous population was aged 45 years and over (compared with 34% of the total population).
- Less than half of deaths among indigenous people in NSW are recorded as such. There is also thought to be major under-reporting of hospitalisation of indigenous people. This results in important deficiencies in our ability to monitor and report on indigenous health outcomes in NSW.
- In the period 1990 to 1994, the perinatal mortality rate for babies of indigenous mothers was almost twice that for other NSW babies.
- In the same period, the prematurity rate among babies of indigenous mothers was on average 64 per cent higher than for other NSW mothers.
- NSW statistical local areas with indigenous populations of 5 per cent or more have premature death rates 1.4 times that for NSW as a whole.
- Even though indigenous status is under-reported in NSW hospital data, hospitalisation rates for indigenous people for cardiovascular disease, diabetes mellitus, respiratory disease, lung cancer and injury and poisoning are consistently around double those for non-indigenous people.
- Indigenous men and women are much more likely than the general population to be current smokers and to be overweight or obese.
- Indigenous people are less likely than the general population to report drinking alcohol. However, among current drinkers, indigenous people consume much larger quantities of alcohol.

In this chapter

Introduction

Problems with data quality make reporting on the health of the indigenous population of NSW very difficult. Indigenous status is grossly underreported in death data and hospital morbidity data (see page 97). There are difficulties even in estimating the size of the indigenous population for calculation of event rates. The reported indigenous population of NSW increased from 1.3 per cent at the 1991 census to 2.3 per cent at the 1996 census. Different questions were asked in each year, as follows:

1991

Is the person of Aboriginal or Torres Strait Islander origin?

(For persons of mixed origin, indicate the one to which they consider themselves to belong)

No ..... ☐

Yes, Aboriginal ..... ☐

1996

Is the person of Aboriginal or Torres Strait Islander origin?

(For persons of both Aboriginal and Torres Strait Islander origin, mark both 'yes' boxes)

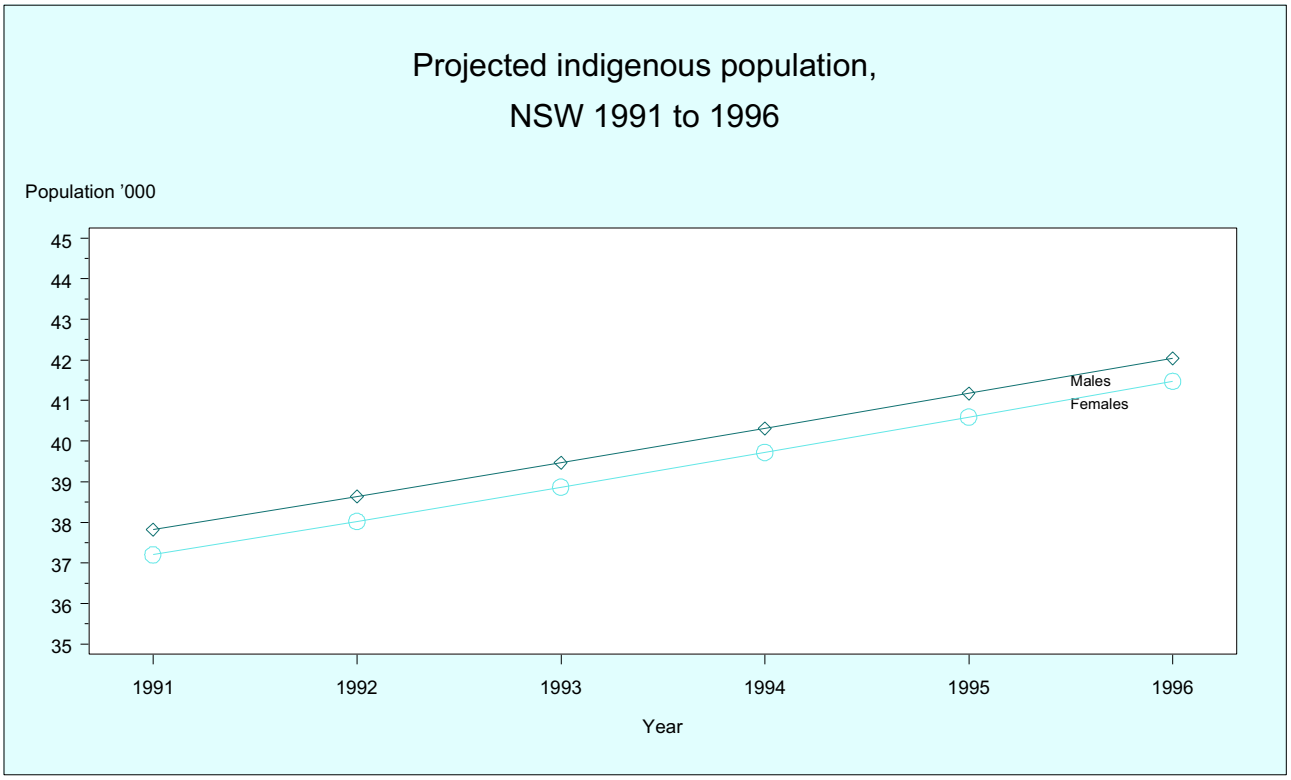
No ..... ☐

Yes, Aboriginal ..... ☐

The dramatic increase in the NSW indigenous population between the two censuses is thought to be mainly because of increased self-identification of indigenous people using the 1996 question.

Rather than using census estimates, which would result in wild fluctuations in apparent event rates, age-adjusted rates presented in this chapter use projected populations developed by the Australian Bureau of Statistics. These projected populations are described as "experimental" because of the uncertain quality of the available data on indigenous populations, births, deaths and internal migration.

For details of the methods used for analysing death and hospital morbidity data, refer to the Methods section (page 257).



Year		1991	1992	1993	1994	1995	1996
NSW	Males	37821	38638	39470	40315	41173	42039
	Females	37199	38024	38867	39725	40595	41473
	Persons	75020	76662	78337	80040	81768	83512

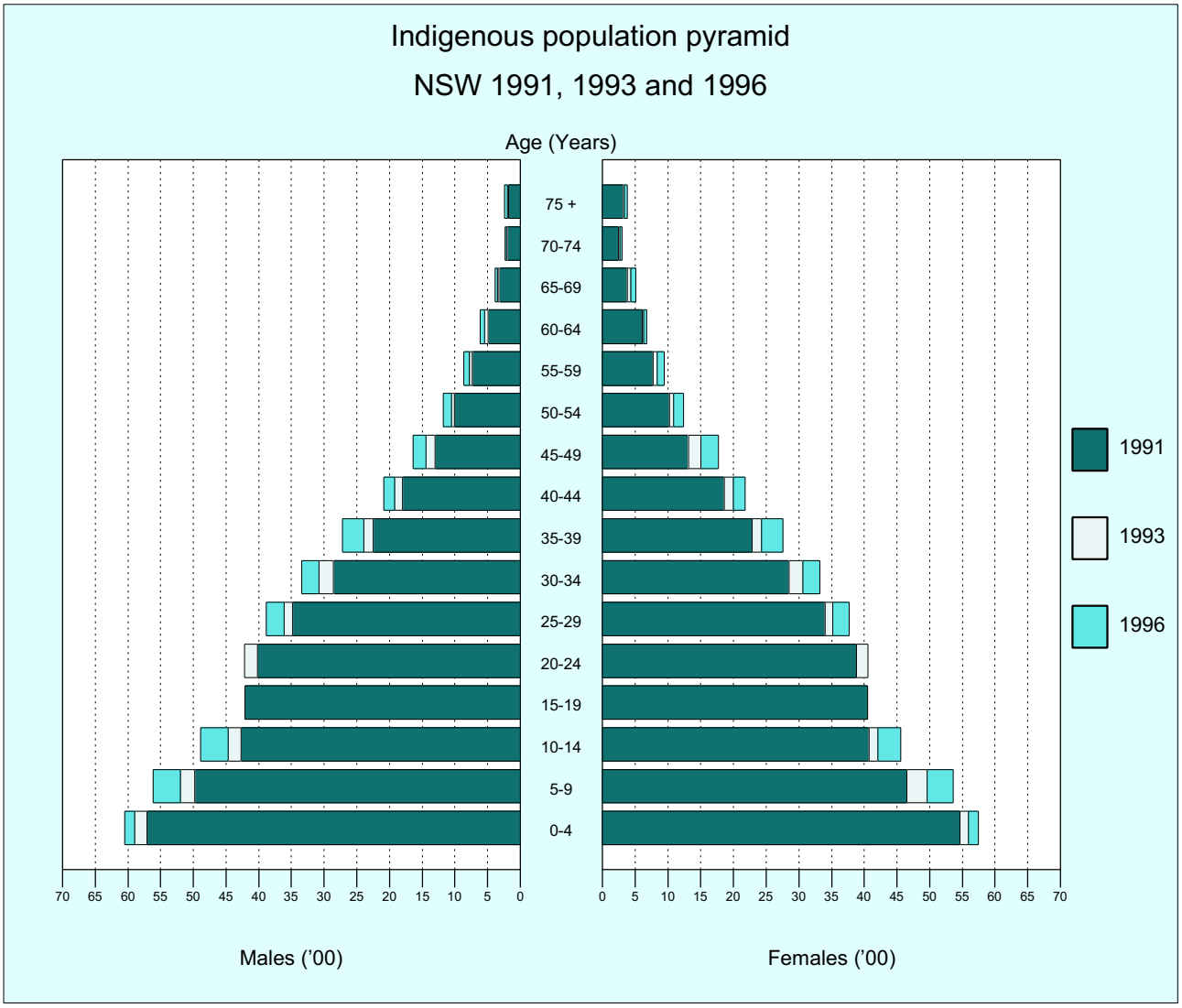
Note: Projected indigenous population as at 30 June each year (medium series).

Source: Australian Bureau of Statistics 1997 (unpublished data).

- More than one-quarter of the national indigenous population lives in NSW. Aborigines and Torres Strait Islanders made up 1.3 per cent of the total NSW population at the 1991 census and 2.3 per cent of the total NSW population at the 1996 census. Much of the increase was caused by an increasing level of self-identification by people as indigenous (Australian Bureau of Statistics 1997).
- The age-adjusted rates presented in this chapter use the projected populations given in the above table. These projected populations are described as "experimental" because of the uncertain quality of the available data on indigenous populations, births, deaths and internal migration. The projections presented here are not adjusted for this. The projections are not adjusted to account for the increasing level of self-identification of indigenous people seen in recent censuses (Australian Bureau of Statistics 1996).
- Indeed, in the recently released first counts from the 1996 census, the Aboriginal and Torres Strait Islander population of NSW constituted 50,065 males and 51,420 females (total 101,485), 22 per cent more than the experimental projected population (Australian Bureau of Statistics 1997)
- Revised estimates of the NSW Aboriginal and Torres Strait Islander population for the period 1991-1996 will be produced following the release of the 1996 census data, but these were not available at the time this report was prepared.

References: Australian Bureau of Statistics, *1996 census basic community profile*, cat no. 2020.0, ABS, Canberra, 1997.

Australian Bureau of Statistics, *June 1991 – June 2001 experimental projections of the Aboriginal and Torres Strait Islander population*, cat no. 3230.1, ABS, Canberra, 1996.



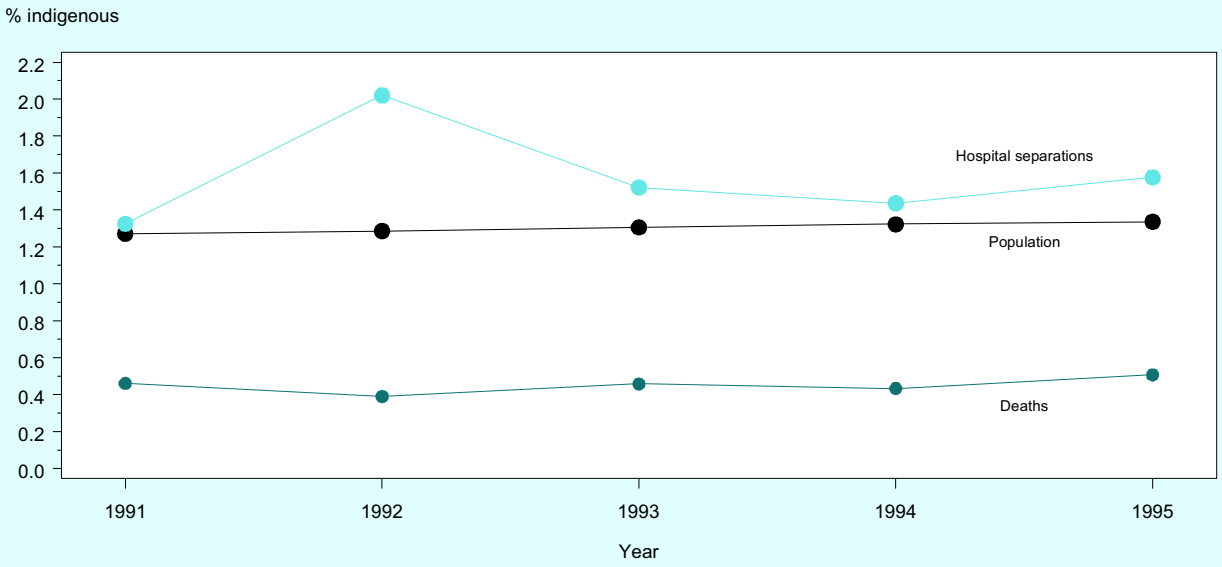
Note: Projected indigenous population as at 30 June each year (medium series).

Source: ABS, 1997 (unpublished data).

- The indigenous and non-indigenous populations of NSW have very different age structures (see population pyramid for all NSW, page 5). Compared with the total population, the indigenous population has proportionally more young people and fewer older people.
- In 1996, 14 per cent of the indigenous population was aged less than five years (compared with 7% of the total population), and only 13 per cent of the indigenous population was aged 45 years and over (compared with 34% of the total population). Remarkably, only 2.5 per cent of indigenous people were aged 65 years and over, compared with 13 per cent of the total population.
- The shape of the indigenous population pyramid reflects high death rates and short life expectancy. indigenous life expectancy at birth is around 15 to 20 years lower than for the rest of the population (Anderson, Bhatia and Cunningham 1996).

Reference: Anderson P, Bhatia K and Cunningham J, *Occasional paper: mortality of indigenous Australians*, ABS and AIHW, cat. no. 3315.0, ABS, Canberra, 1996.

Recording of indigenous status, deaths and hospital separations, NSW 1991 to 1995



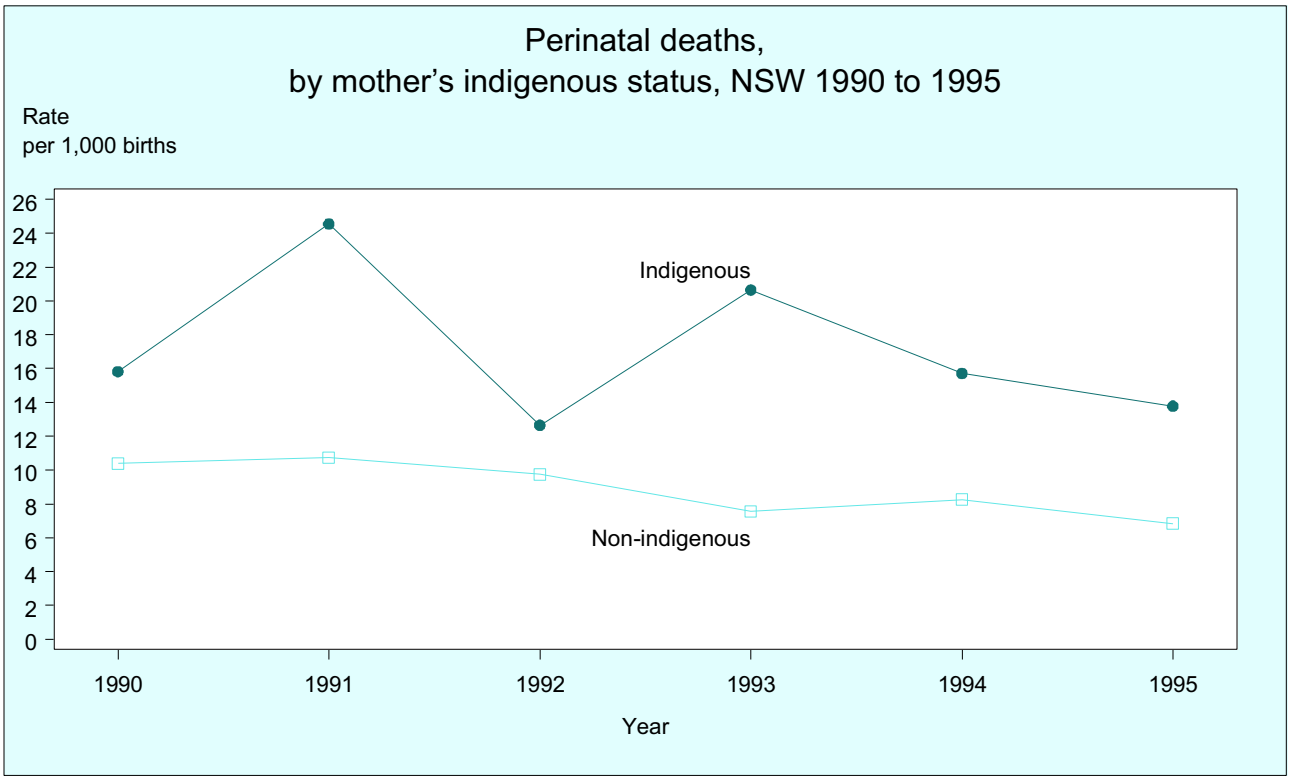
Year		1991	1992	1993	1994	1995
Proportion indigenous (%)	Population	1.3	1.3	1.3	1.3	1.3
	Deaths	0.5	0.4	0.5	0.4	0.5
	Hospital separations	1.3	2.0	1.5	1.4	1.6

Note: Projected indigenous population as at 30 June each year (medium series). Persons whose indigenous status was unknown were classified as non-indigenous.

Sources: Australian Bureau of Statistics 1997 (unpublished data). ABS mortality data and NSW Inpatients Statistics Collection (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This graph gives an indication of the completeness of recording of indigenous status in NSW death and hospital morbidity data in the period 1991-1995.
- Throughout this period, the proportion of deaths identified as indigenous was markedly below that expected based on the size and age structure of the indigenous population. Indeed, the ABS has recently estimated that only 47 per cent of deaths among indigenous people in NSW are recorded as such. They recommend that data for indigenous deaths in NSW (as well as Victoria, Queensland and Tasmania) should not be published (Aboriginal and Torres Strait Islander Health and Welfare Information 1997). This results in a major deficiency in our ability to monitor and report on indigenous health in NSW.
- In contrast, the proportion of NSW hospital separations for people identified as indigenous exceeded the proportion of indigenous people in the population. Nonetheless, there is still thought to be major underreporting of hospitalisations of indigenous people, particularly in metropolitan Sydney. Reluctance of hospital staff to ask patients about indigenous status and unwillingness of indigenous people to identify themselves, owing to fear of discrimination, are thought to contribute to this underreporting.
- Indigenous status is not currently available in data on cancer notifications and deaths from the NSW Central Cancer Registry. It is now being recorded in these data sets, and will be available from 1998 onwards.

Reference: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.



Year		1990	1991	1992	1993	1994	1995
Deaths	Indigenous	19	34	18	30	24	24
	Non-indigenous	881	909	844	647	707	580
	Total	900	943	862	677	731	604
Rate/1,000 births	Indigenous	15.8	24.5	12.7	20.6	15.7	13.8
	Non-indigenous	10.4	10.8	9.7	7.6	8.3	6.8
	Total	10.5	11.0	9.8	7.8	8.4	7.0

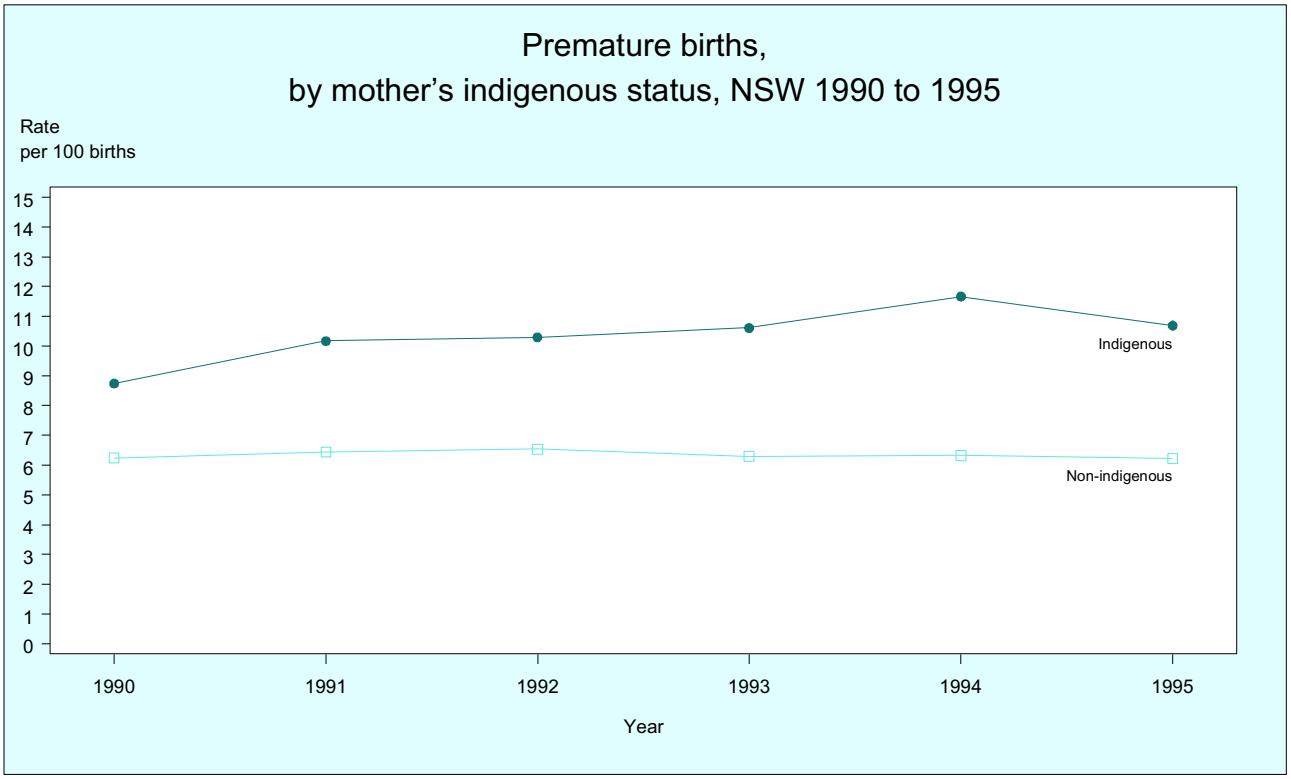
Notes: Deaths within 28 days of birth were classified as perinatal deaths. Infants with birth-weight of 500 grams or more or, if birth-weight was unknown, of at least 22 weeks' gestation, were included. Births for which mother's indigenous status was missing were classified as non-indigenous.

Sources: NSW Midwives Data Collection and ABS perinatal mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The perinatal death rate for babies of indigenous mothers in NSW fluctuated over the period 1990 to 1995. This was primarily because of the relatively small number of births and perinatal deaths among indigenous people, but might also reflect inconsistencies in the recording of indigenous status.
- Despite these variations, the perinatal mortality rate was consistently much higher among babies of indigenous mothers. Overall, the perinatal mortality rate for babies of indigenous mothers was almost twice that for other NSW babies. The decline in perinatal mortality seen among babies of non-indigenous mothers was not evident for babies of indigenous mothers.
- The perinatal mortality rate for babies of indigenous mothers in NSW was lower than that reported in other States, which ranged up to more than 30 per 1,000 births in South Australia and the Northern Territory (Plunkett, Lancaster and Huang 1996).

Reference: Plunkett A, Lancaster P and Huang J, *Indigenous mothers and their babies Australia 1991-1993*, cat. no. PER1, AIHW National Perinatal Statistics Unit, Sydney, 1996.

For more information, see: Taylor L and Pym M, *New South Wales Midwives Data Collection 1995*, NSW Public Health Bulletin Supplement no. 2, NSW Health Department, Sydney, 1996. This publication may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au/public-health/mdc/mdc95.html



Year		1990	1991	1992	1993	1994	1995
Number	Indigenous	106	142	149	156	180	188
	Non-indigenous	4577	5135	5721	5416	5449	5326
	Total	4683	5277	5870	5572	5629	5514
Rate/100 births	Indigenous	8.7	10.2	10.3	10.6	11.7	10.7
	Non-indigenous	6.2	6.4	6.5	6.3	6.3	6.2
	Total	6.3	6.5	6.6	6.4	6.4	6.3

Notes: Births for which gestational age was less than 37 weeks were classified as premature births. Infants with birth-weight over 400 grams or of greater than 20 weeks' gestation were included.

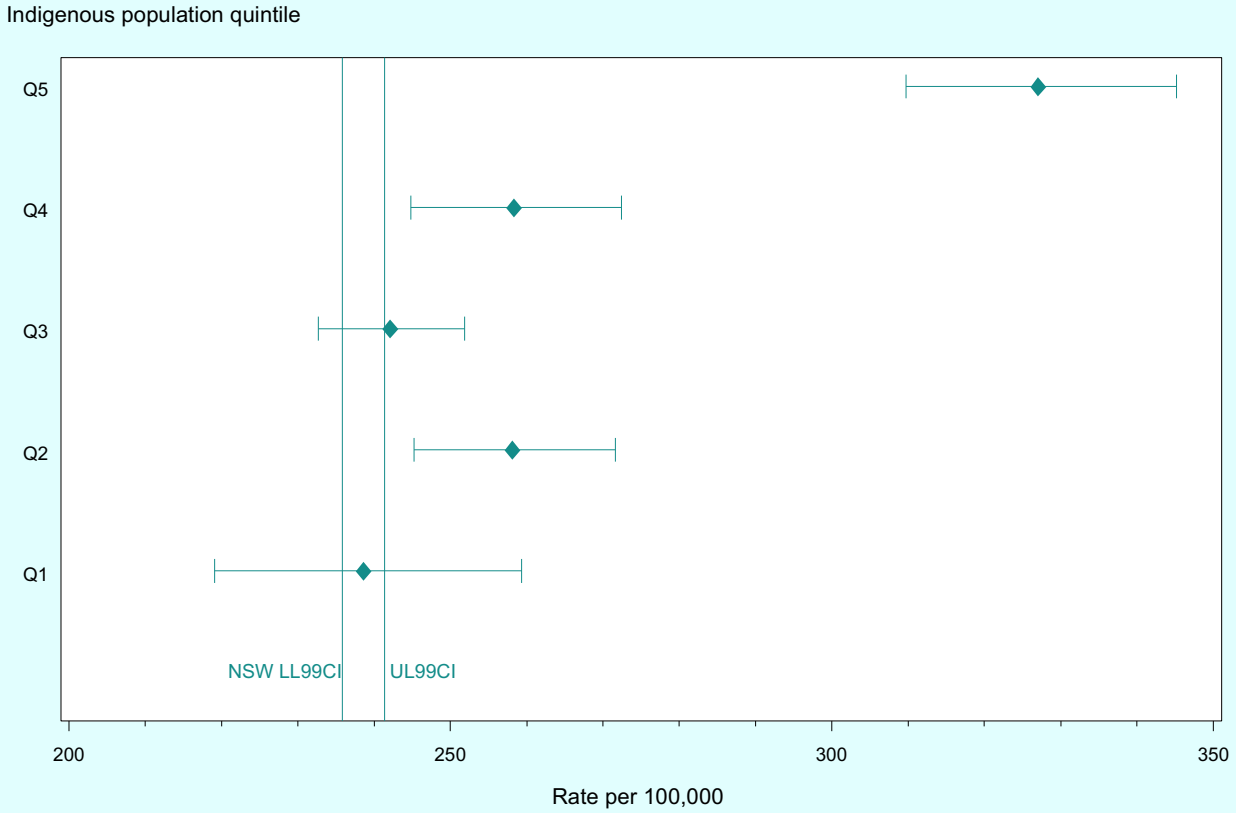
Source: NSW Midwives Data Collection (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995, 1,759 babies were born to Aboriginal and Torres Strait Islander mothers in NSW, making up 2 per cent of all births. This is an underestimate of the total number of indigenous babies born, because the NSW Midwives Data Collection collects information on the indigenous status of mothers but not fathers.
- Premature birth (at less than 37 weeks' gestation) is responsible for many illnesses in newborn infants and sometimes for longer-term disabilities.
- Over the period 1990 to 1995, the prematurity rate among babies of indigenous mothers was consistently higher than for other NSW mothers. On average, 64 per cent more babies of indigenous mothers were born prematurely. The prematurity rate was relatively constant over the six-year period among both indigenous and non-indigenous mothers, with no sign of any decrease in the disparity between them.

Reference: Plunkett A, Lancaster P and Huang J, *Indigenous mothers and their babies Australia 1991-1993*, cat. no. PER1, AIHW National Perinatal Statistics Unit, Sydney, 1996.

For more information, see: Taylor L and Pym M, *New South Wales Midwives Data Collection 1995*, NSW Public Health Bulletin Supplement no. 2, NSW Health Department, Sydney, 1996. This publication may be found at the NSW Health Department's Web site at http://www.health.nsw.gov.au/public-health/mdc/mdc95.html

Premature mortality, by proportion of indigenous people in the population, rural local government areas, NSW, 1990 to 1994



Quintile (% indigenous)	Deaths	Rate/100,000	LL99% CI	UL99% CI
NSW (1.3)	48217	238.6	235.8	241.4
1st Quintile (<0.73)	968	238.6	219.1	259.4
2nd Quintile (0.73-1.46)	2592	258.2	245.2	271.7
3rd Quintile (1.47-2.31)	4301	242.2	232.7	251.9
4th Quintile (2.32-4.73)	2379	258.3	244.8	272.4
5th Quintile (>4.73)	2297	327.1	309.7	345.2

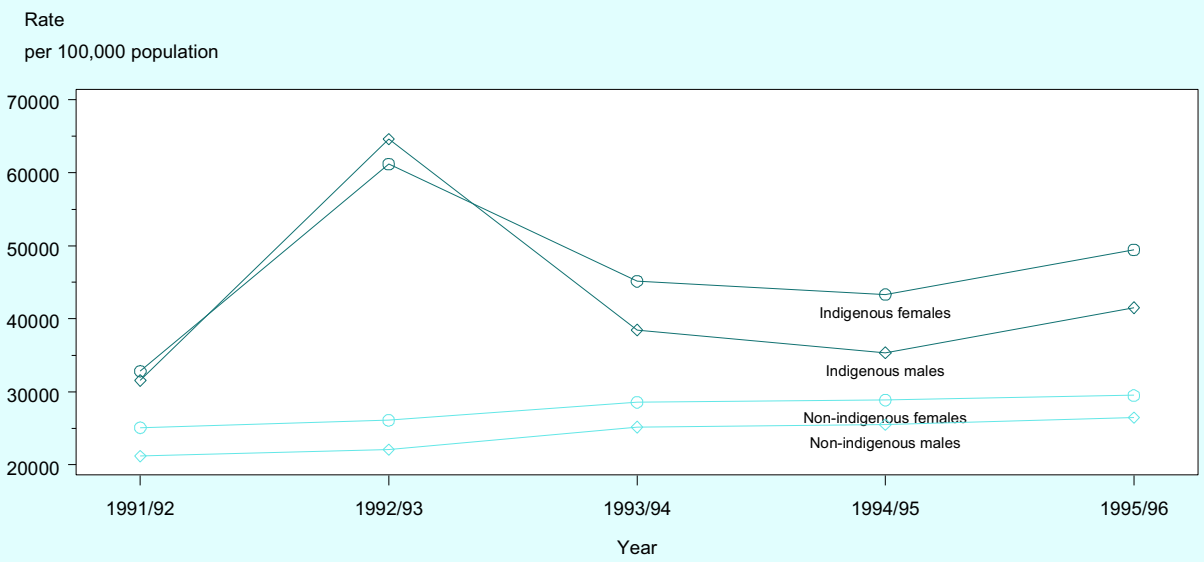
Notes: Rates are for persons aged 15-64 years at death. Rates were age-adjusted using the standard Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the absence of reportable data on deaths among indigenous people in NSW (see page 97), an ecological analysis can be used to illustrate the strong association between indigenous status and premature mortality.
- This graph examines the association between premature mortality in local government areas (LGAs) in rural NSW and the population proportion of indigenous people.
- LGAs in rural NSW were grouped into quintiles according to the population proportion of indigenous people at the 1991 census.
- The age-adjusted premature death rate in the LGAs making up quintile 5 was 1.4 times that for NSW as a whole, and was significantly higher than for NSW and all other quintiles. These LGAs included Coonamble (13.4% indigenous population), Moree Plains (14.1%), Walgett (19%), Bourke (23%), Central Darling (25%) and Brewarrina (43%).

For more information, see: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.

Hospital separations for all causes, by indigenous status and sex, NSW 1991/92 to 1995/96



Year		1991/92	1992/93	1993/94	1994/95	1995/96
Indigenous Rate/100,000	Males	31566.6	64604.1	38481.7	35364.4	41527.3
	Females	32839.3	61183.4	45152.9	43330.8	49459.9
	Persons	31953.5	62016.2	41678.0	39426.6	45517.4
Non-indigenous Rate/100,000	Males	21227.8	22118.9	25181.0	25519.3	26466.2
	Females	25103.0	26110.4	28580.0	28870.0	29508.4
	Persons	23027.1	23974.0	26697.0	27015.0	27806.0

Note: Records with missing indigenous status were classified as non-indigenous. Rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, West Australia or Queensland.

Source: NSW Inpatients Statistics Collection and ABS population data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Indigenous status is believed to be substantially underreported in NSW hospital morbidity data (see page 97). Despite this, age-adjusted hospital separation rates for all causes among indigenous people were consistently more than double those for non-indigenous people over the period 1991/92 to 1995/96.
- Data for hospital separations should be interpreted with caution, because they are influenced by access to and demand for hospital services, as well as need for services (health status). They also represent episodes rather than persons (a person can be hospitalised more than once). Admission policies vary among areas, and people from remote regions may be especially likely to be admitted to hospital so their condition can be monitored.
- Despite this, it is plain that indigenous people in NSW suffer a disproportionate burden of conditions resulting in hospitalisation. Hospitalisations for several specific conditions are examined in more detail on pages 102 and 104-107.

For more information, see: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.

Hospital separations for cardiovascular diseases, by indigenous status and sex, NSW 1991/92 to 1995/96

Year		1991/92	1992/93	1993/94	1994/95	1995/96
Indigenous	Males	3079.4	6600.8	3814.4	3818.0	4073.1
Rate/100,000	Females	2608.7	5271.6	3887.1	3797.4	3848.3
	Persons	2799.2	5936.3	3892.2	3827.1	3977.4
Non-indigenous	Males	2482.6	2567.9	2647.5	2680.2	2682.9
Rate/100,000	Females	1635.3	1691.9	1690.5	1706.5	1736.7
	Persons	2029.3	2102.2	2137.8	2162.6	2177.9

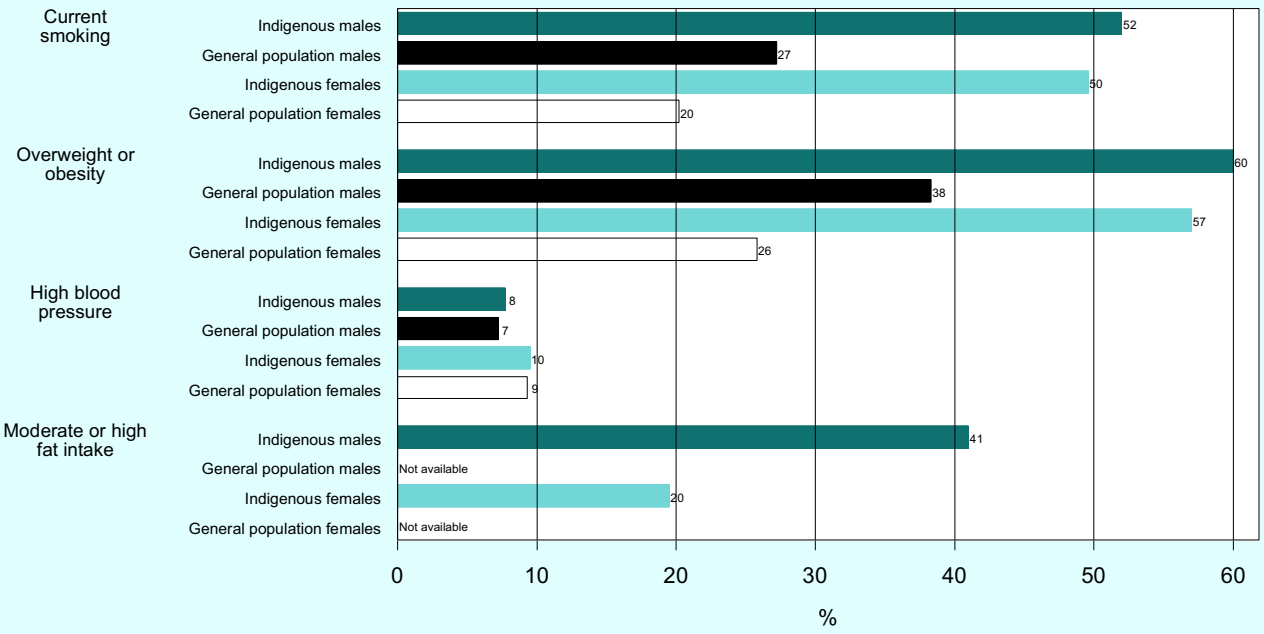
Note: Cardiovascular diseases were classified according to the ICD9 codes 390-459. Records with missing indigenous status were classified as non-indigenous. Rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Inpatients Statistics Collection and ABS population data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Indigenous status is believed to be substantially underreported in NSW hospital morbidity data (see page 97). Despite this, age-adjusted hospital separation rates for cardiovascular diseases (coronary heart disease and stroke) among Aborigines and Torres Strait Islanders were consistently higher than for non-indigenous people over the period 1991/92 to 1995/96.
- Because of poor identification of indigenous status (see page 97), data on cardiovascular disease deaths in NSW cannot be reported here. However, in Western Australia, South Australia and the Northern Territory combined in the period 1992 to 1994, death rates from circulatory diseases among indigenous people were three times the rates among non-indigenous people. Circulatory diseases were responsible for 25 per cent of excess deaths among indigenous males and 29 per cent of excess deaths among indigenous females (Aboriginal and Torres Strait Islander Health and Welfare Information 1997).

Reference: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.

Prevalence of selected cardiovascular risk factors, by indigenous status, NSW and Australia 1994 and 1995



Notes: Current smoking, high blood pressure: Based on self-report. indigenous prevalence for NSW residents aged 13+ years, general population prevalence for NSW residents aged 18+ years. Overweight or obesity: Body mass index greater than 25, based on measurement for indigenous people and self-report for general population. indigenous prevalence for Australian residents aged 13+ years, general population prevalence for NSW residents aged 18+ years. Fat intake: Based on 24-hour food frequency. indigenous prevalence for NSW residents aged 13+ years.

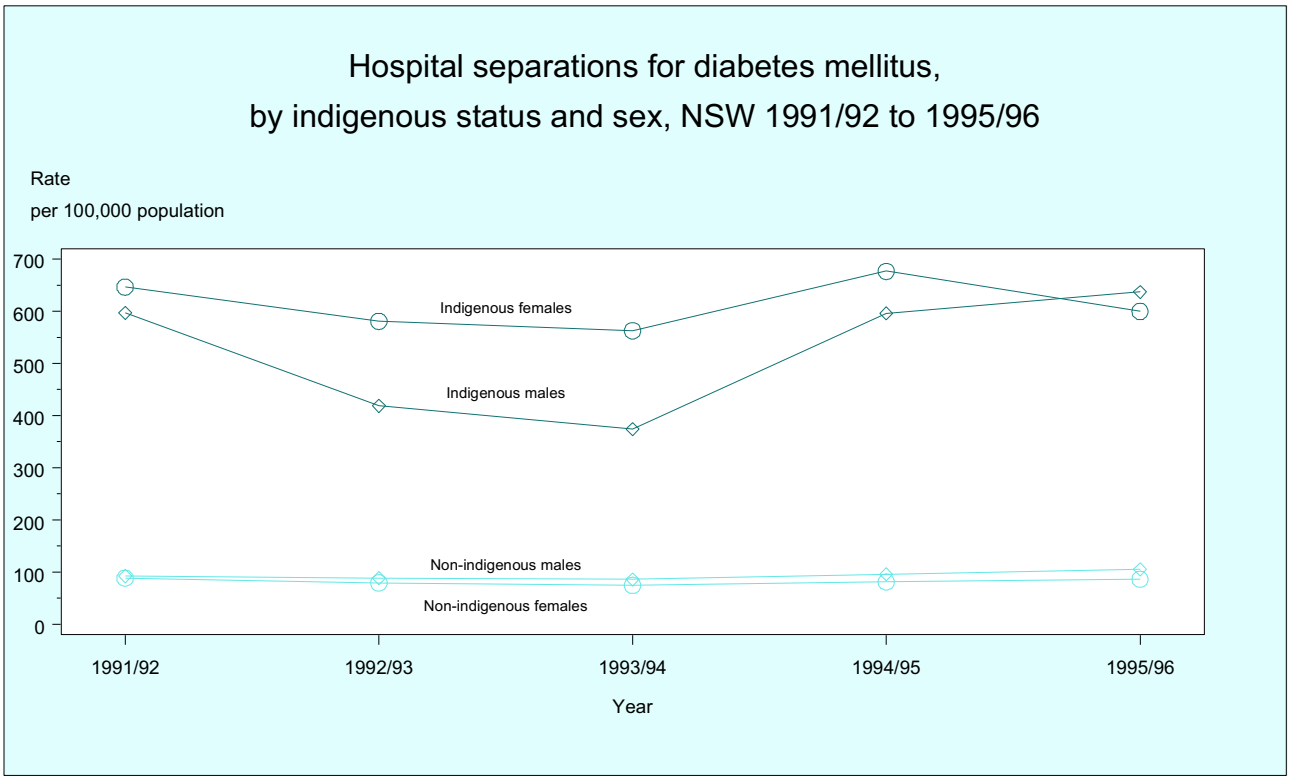
Source: ABS National Aboriginal and Torres Strait Islander Survey 1994 and ABS National Health Survey 1995. Current smoking, high blood pressure, fat intake: ABS Cat. No. 4190.1, ABS Cat. No. 4392.0. Overweight and obesity: ABS Cat. No. 4704.0, ABS Cat. No. 4392.0.

- Comparison of the prevalence of health risk factors in indigenous and non-indigenous people in NSW is hampered by a lack of analogous information. The major sources of recent data on risk factors are the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS, Australian Bureau of Statistics [ABS] 1996) and the 1995 National Health Survey (NHS, ABS 1997), which used different questions and age and geographic groupings. The comparisons shown in the above figure should be regarded as indicative only. Because the NATSIS data refer to people aged 13 years and over while the NHS data refer to people aged 18 years and over, the comparison is likely to downplay differences between indigenous people and the overall population.
- The data shown suggest that indigenous men and women are much more likely than the general population to be current smokers and to be overweight or obese. This is consistent with their high rates of cardiovascular disease (see page 102).
- High blood pressure was reported slightly more frequently by indigenous people than the overall population. The difference in prevalence of high blood pressure may be greater than that shown, because this condition may be less likely to be detected (and managed) among indigenous people.
- A large proportion of indigenous people (especially men) had a moderate to high fat intake. Comparable data for the general population will become available when the 1996 ABS National Nutrition Survey data are released later in 1997.

References: Australian Bureau of Statistics, *1994 National Aboriginal and Torres Strait Islander Survey NSW*, cat. no. 4190.1, ABS, Canberra, 1996.

Australian Bureau of Statistics, *1995 National Health Survey: First results*, cat. no. 4392.0, ABS, Canberra, 1997.

For more information, see: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.



Year		1991/92	1992/93	1993/94	1994/95	1995/96
Indigenous	Males	604.0	421.9	373.9	596.1	636.9
Rate/100,000	Females	656.2	598.2	562.7	676.4	599.7
	Persons	619.4	522.2	472.7	644.2	616.1
Non-indigenous	Males	97.8	94.9	89.1	99.8	106.9
Rate/100,000	Females	92.9	83.9	77.6	83.4	87.5
	Persons	95.1	88.6	82.6	91.0	96.3

Note: Diabetes mellitus was classified according to the ICD9 code 250. Records with missing indigenous status were classified as non-indigenous. Rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

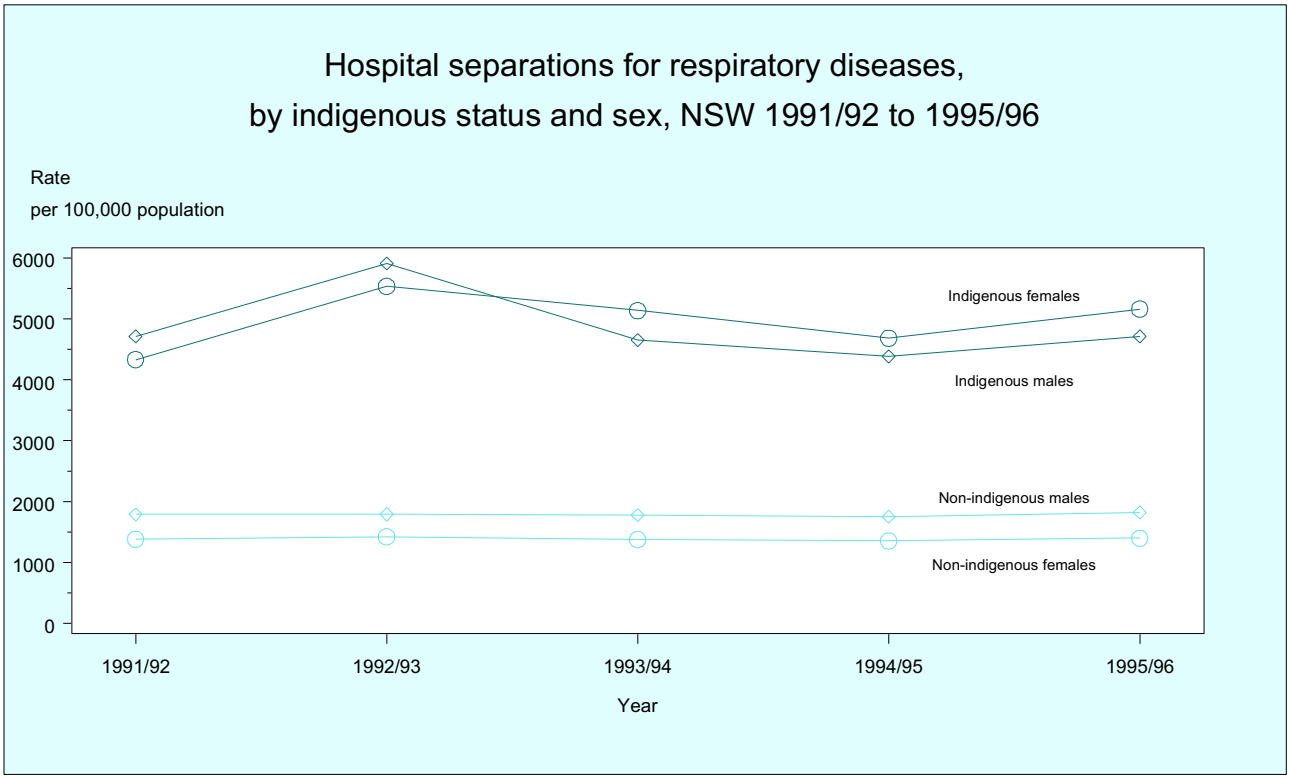
Source: NSW Inpatients Statistics Collection and ABS population data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Indigenous status is believed to be substantially underreported in NSW hospital morbidity data (see page 97). Despite this, age-adjusted hospital separation rates for diabetes mellitus among indigenous people were consistently more than six times higher the rates for non-indigenous people over the period 1991/92 to 1995/96.
- Because of poor identification of indigenous status (see page 97), data on deaths from diabetes mellitus in NSW cannot be reported here. However, in Western Australia, South Australia and the Northern Territory combined in the period 1992 to 1994, death rates from diabetes mellitus among indigenous people were 12 times (males) and 18 times (females) the rates for non-indigenous people (Anderson, Bhatia and Cunningham 1994). Endocrine and metabolic disorders (mainly diabetes) were responsible for 7 per cent of excess deaths among indigenous males and 12 per cent of excess deaths among indigenous females in the same period (Aboriginal and Torres Strait Islander Health and Welfare Information 1997).
- Estimates of the prevalence of diabetes among adult indigenous peoples vary from 5 to 19 per cent, compared with 2 to 7 per cent among adult Caucasian Australians (McCarty et al. 1996).

References: Anderson P, Bhatia K and Cunningham J, *Mortality of indigenous Australians 1994*, cat. no. 3315.0, ABS, Canberra, 1996.

Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.

McCarty DJ, Zimmet P and Dalton A, et al., 'The rise and rise of diabetes in Australia, 1996: a review of statistics, trends and costs', *Diabetes Australia National Action Plan*, Diabetes Australia, Canberra, 1996.



Year		1991/92	1992/93	1993/94	1994/95	1995/96
Indigenous Rate/100,000	Males	4715.3	5910.4	4654.1	4382.1	4715.2
	Females	4333.3	5535.5	5137.6	4684.4	5162.6
	Persons	4494.6	5718.8	4909.5	4514.0	4958.7
Non-indigenous Rate/100,000	Males	1793.4	1794.3	1777.6	1750.9	1822.1
	Females	1383.0	1424.0	1378.0	1356.2	1401.5
	Persons	1569.6	1591.4	1559.7	1534.2	1592.5

Note: Respiratory diseases were classified according to the ICD9 codes 460-466, 470-478, 480-487, 490-496, 500-508, 510-519. Records with missing indigenous status were classified as non-indigenous. Rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Inpatients Statistics Collection and ABS population data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Indigenous status is believed to be substantially underreported in NSW hospital morbidity data (see page 97). Despite this, age-adjusted hospital separation rates for respiratory diseases among indigenous people were consistently more than three times those for non-indigenous people over the period 1991/92 to 1995/96.
- The most common causes of hospitalisation for respiratory diseases among indigenous people were asthma (21%), upper respiratory tract infections (18%) and pneumonia (17%). Hospital separation rates for respiratory diseases among indigenous people were highest among children under five years old, and people aged 65 years and over.
- Because of poor identification of indigenous status (see page 97), data on deaths from respiratory diseases in NSW cannot be reported here. However, in Western Australia, South Australia and the Northern Territory combined in the period 1992 to 1994, death rates from respiratory diseases among indigenous people were more than seven times the rates in non-indigenous people. Respiratory diseases were responsible for 17 per cent of excess deaths among indigenous males and 12 per cent of excess deaths among indigenous females (Aboriginal and Torres Strait Islander Health and Welfare Information 1997).

Reference: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.

Hospital separations for lung cancer, by indigenous status and sex, NSW 1991/92 to 1995/96

Year		1991/92	1992/93	1993/94	1994/95	1995/96
Indigenous Rate/100,000	Males	125.8	170.9	139.5	125.1	182.8
	Females	0.0	66.9	84.5	79.9	83.7
	Persons	56.0	110.8	108.5	96.6	126.9
Non-indigenous Rate/100,000	Males	135.6	132.5	122.3	117.3	108.8
	Females	43.2	44.8	41.7	44.6	39.9
	Persons	84.4	83.4	77.1	76.6	70.3

Note: Lung cancer was classified according to the ICD9 code 162. Records with missing indigenous status were classified as Non-indigenous. Rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

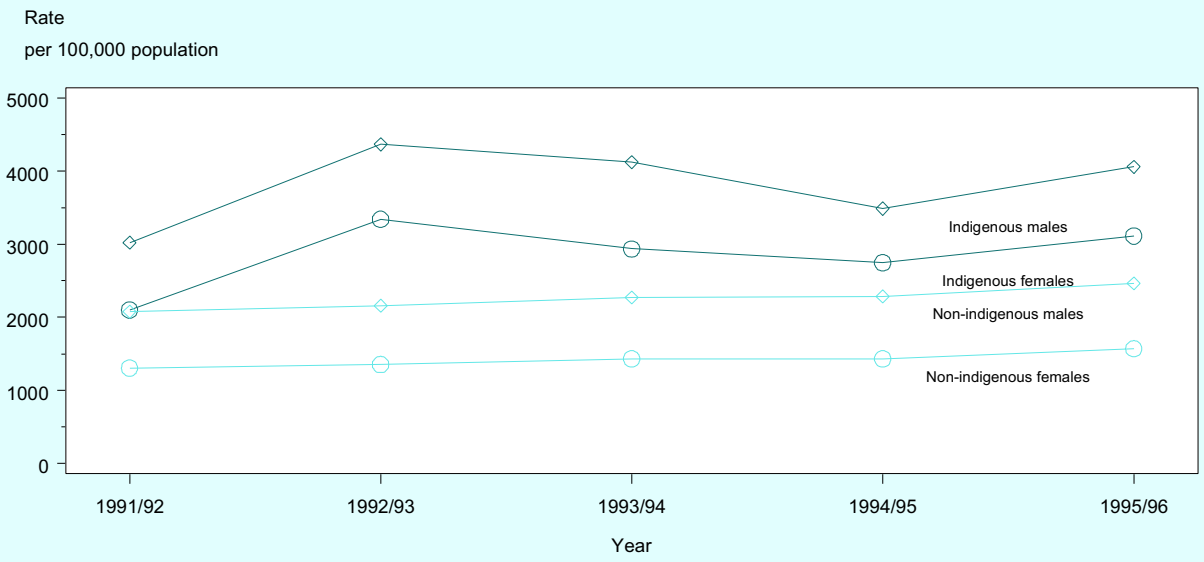
Source: NSW Inpatients Statistics Collection and ABS population data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Indigenous status is not currently available in data on cancer notifications and deaths collected by the NSW Central Cancer Registry. It is now being recorded in these data, and will be available from 1998 onwards.
- Hospital separation rates for cancer give only a crude indication of cancer incidence rates because multiple separations for one person are counted, and because hospital admission practices vary among areas. In addition, indigenous status is believed to be underreported in NSW hospital morbidity data (see page 97). Nonetheless, hospital separations for the primary diagnosis of lung cancer in NSW have been markedly higher among indigenous people than non-indigenous people in recent years. This is consistent with the very high smoking rates reported by indigenous people (see page 103).
- The Northern Territory has the most complete identification of indigenous status in cancer incidence data. In the period 1987 to 1993, indigenous people in the Northern Territory had a greater risk of developing and dying from lung, liver and cervical cancer than the overall Australian population. They had a lower risk of developing and dying from breast, prostate and colorectal cancer (d'Espaignet et al. 1996).

Reference: d'Espaignet E, Measey M, Condon J, Jelfs P and Dempsey K, *Cancer in the Northern Territory 1987-1993*, Epidemiology Branch, Territory Health Services, Darwin, 1996.

For more information, see: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.

Hospital separations for injury and poisoning, by indigenous status and sex, NSW 1991/92 to 1995/96



Year		1991/92	1992/93	1993/94	1994/95	1995/96
Indigenous	Males	3021.1	4365.0	4121.5	3487.5	4059.2
Rate/100,000	Females	2100.4	3340.8	2936.4	2746.4	3113.9
	Persons	2561.7	3873.9	3520.6	3128.2	3598.8
Non-indigenous	Males	2080.5	2158.5	2273.0	2287.6	2466.2
Rate/100,000	Females	1306.6	1354.2	1432.9	1432.3	1571.2
	Persons	1716.5	1778.9	1874.4	1881.6	2041.8

Note: Injury and poisoning was classified according to the ICD9 external cause codes E800-E869, E880-E929, E950-E999. Records with missing indigenous status were classified as Non-indigenous. Rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

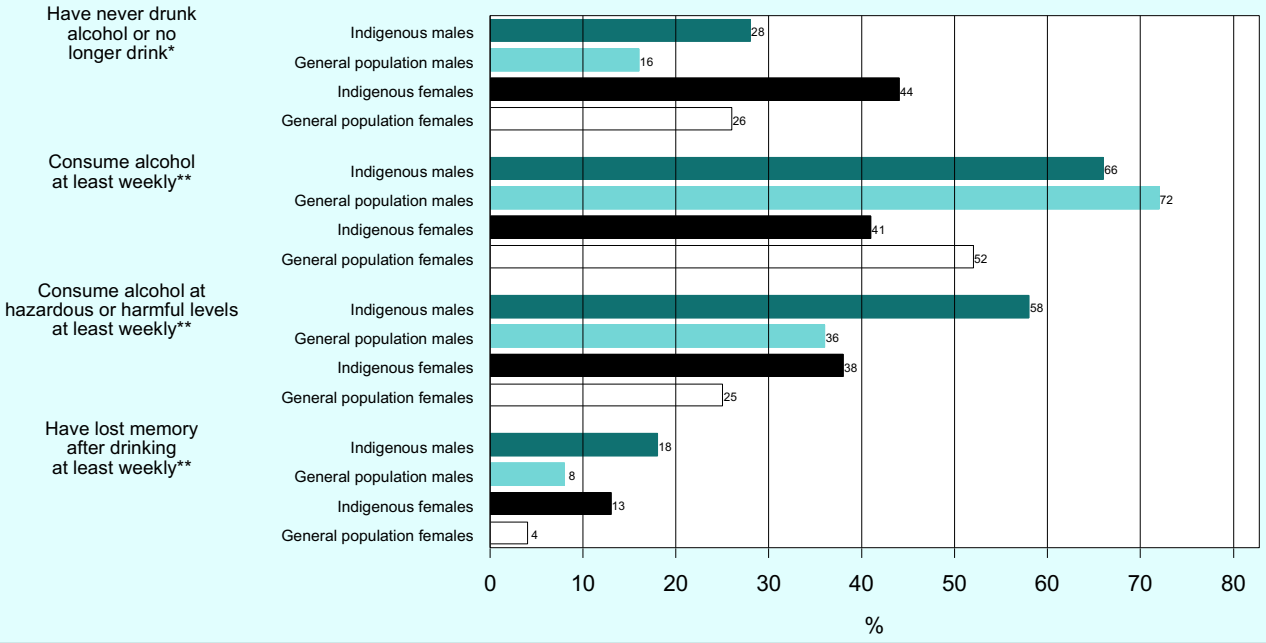
Source: NSW Inpatients Statistics Collection and ABS population data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Indigenous status is believed to be substantially underreported in NSW hospital morbidity data (see page 97). Despite this, age-adjusted hospital separation rates for injury and poisoning among indigenous people were consistently almost twice those for non-indigenous people over the period 1991/92 to 1995/96.
- The most common causes of injury-related hospital separation among indigenous people were interpersonal violence (22%), falls (21%), transport accidents (18%) and poisoning (7%).
- Because of poor identification of indigenous status (see page 97), data on injury-related deaths in NSW cannot be reported here. However, in Western Australia, South Australia and the Northern Territory combined in the period 1992 to 1994, death rates from injury and poisoning among indigenous people were almost four times those in non-indigenous people. Injury and poisoning were responsible for 20 per cent of excess deaths among indigenous males and 12 per cent of excess deaths among indigenous females (Aboriginal and Torres Strait Islander Health and Welfare Information 1997).
- The most important causes of excess injury mortality among indigenous people are transport-related causes in middle-age, drowning in adulthood, poisoning by non-pharmaceutical products (particularly petroleum products and solvents), effects of fire in later adulthood, suicide in early adulthood, and interpersonal violence throughout adulthood (Harrison and Cripps 1994).

References: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.

Harrison JE and Cripps RA (eds), *Injury in Australia – an epidemiological review*, AGPS, Canberra, 1994.

Alcohol consumption by indigenous status, urban residents aged 14 years and over, Australia 1993 and 1994



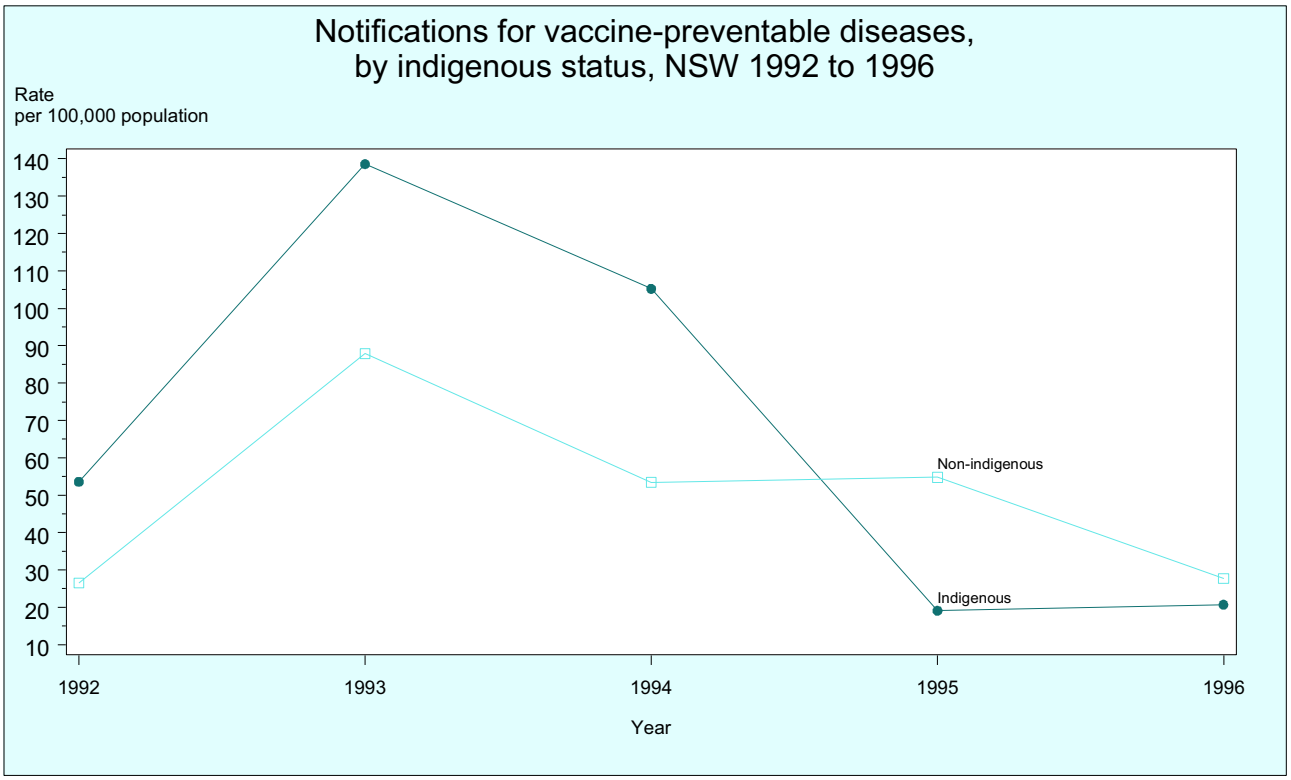
Notes: Based on self-report for previous 12 months. Hazardous/harmful alcohol consumption = More than 2 drinks for females, more than 4 for males.*Percentage of population. **Percentage of current drinkers.

Sources: National Drug Strategy Household Survey urban Aboriginal and Torres Strait Islander peoples supplement 1994. National Drug Strategy Household Survey 1993.

- Excessive consumption of alcohol is an important risk factor for health conditions including transport injuries, interpersonal violence, suicide, liver diseases and stroke.
- There is no detailed information about patterns of alcohol consumption among indigenous people in NSW. The best available data come from the National Drug Strategy Household Survey Aboriginal and Torres Strait Islander Peoples Supplement (Commonwealth Department of Human Services and Health 1996), which was confined to urban areas (those containing a population cluster of 1,000 or more) and did not yield State-level information. Almost one-quarter of the 3,000 respondents in this survey were from NSW.
- A smaller proportion of indigenous people (72% of males and 56% of females) reported drinking alcohol compared to the general population living in urban areas (84% of males and 74% of females).
- Among current drinkers, however, indigenous people consumed much larger quantities of alcohol. Almost 60 per cent of male drinkers and 40 per cent of female drinkers consumed hazardous or harmful amounts at least once a week.
- Indigenous males tended to have more hazardous drinking patterns than females. Hazardous drinking was most prevalent in males aged 25-34 years, rather than in younger males, as seen in the general population. Hazardous drinking patterns among indigenous females peaked at ages 14-24 years, similar to the pattern reported in the general population (Commonwealth Department of Human Services and Health 1996).

Reference: Commonwealth Department of Human Services and Health, *National Drug Strategy Household Survey urban Aboriginal and Torres Strait Islander peoples supplement 1994,* AGPS, Canberra, 1996.

For more information, see: Aboriginal and Torres Strait Islander Health and Welfare Information, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples*, cat. no. 4704.0, ABS, Canberra, 1997.



Year		1992	1993	1994	1995	1996
Indigenous	Males	55.7	126.0	106.3	16.5	15.3
Notification rate/100,000	Females	51.7	151.2	104.0	23.2	23.2
	Persons	53.6	138.6	105.3	19.7	19.4
Non-indigenous	Males	27.3	93.3	51.9	63.9	25.3
Notification rate/100,000	Females	25.6	81.7	54.8	45.2	29.9
	Persons	26.6	87.9	53.5	54.9	27.7

Note: Vaccine-preventable diseases included diphtheria, *Haemophilus influenzae* type b, measles, mumps, pertussis, poliomyelitis, rubella and tetanus. Records with missing indigenous status were classified as non-indigenous. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Infectious Disease Surveillance System (IDSS) and ABS population data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Indigenous status was reported for only 50 per cent of all notifications for vaccine-preventable diseases in NSW in the period 1992 to 1996, with no improvement in completeness over this period. Because of the incomplete information on indigenous status, the data presented here should be interpreted with caution. They will tend to underestimate indigenous rates, because records with missing indigenous status were classified as non-indigenous.
- The notification rate for vaccine-preventable diseases among indigenous people in NSW varied widely over the period from 1992 to 1996. This was partly because of the relatively small number of notifications for these diseases among indigenous people (457 in total over the six-year period), but it probably also reflects inconsistencies in the recording of indigenous status.
- There are no reliable statewide data on vaccination rates among indigenous children in NSW. A study of indigenous children aged 4 months to 11 years in the North Coast region of NSW found that only 9 per cent had fully documented evidence of up-to-date vaccination, while 52 per cent had no documented evidence of any immunisation (Young et al. 1994).

Reference: Young MJ, Taylor LK, Beard JR, Randall A and Coldwell S, 'The vaccination status of aboriginal children in the North Coast Health Region of New South Wales', *Medical Journal of Australia*, Vol, 161, 1994, pp. 301-5.

Chapter 3.2

Country of birth differentials

- In the period 1991 to 1995, babies with mothers born in the Philippines and India were more likely than all NSW babies to be born prematurely, while babies of mothers born in China and South Korea were less likely to be born prematurely.
- In the period 1989 to 1993, NSW residents born in most overseas countries experienced lower death rates than for all NSW. Selection processes at least partially explain low death rates among immigrants.
- The Australian-born and people born in Poland (men) experienced higher death rates from coronary heart disease than for all NSW. Coronary heart disease death rates were low among people born in Greece, Italy, the Netherlands, Malaysia, the Philippines, Vietnam, China and Hong Kong.
- People born in Malta, Lebanon, India (men), Italy (women) and former Yugoslavia (women) had higher death rates from diabetes than for NSW as a whole.
- People born in the United Kingdom, Malta (men) and the Netherlands (men) experienced higher death rates from lung cancer than for all NSW.
- People born in Australia experienced significantly higher death rates for colorectal cancer than for all NSW.
- Men born in Australia experienced significantly higher death rates for prostate cancer than for all NSW.
- Women born in Fiji and Vietnam experienced significantly higher incidence rates for cervical cancer than for all NSW women.
- Women born in the United Kingdom had significantly higher death rates for breast cancer than for all NSW women.
- Only German-born people (men) experienced significantly higher death rates for injury and poisoning than for all NSW.
- NSW residents born in all countries except Australia, Fiji and Lebanon (women) had lower hospital separation rates than for all NSW.

In this chapter

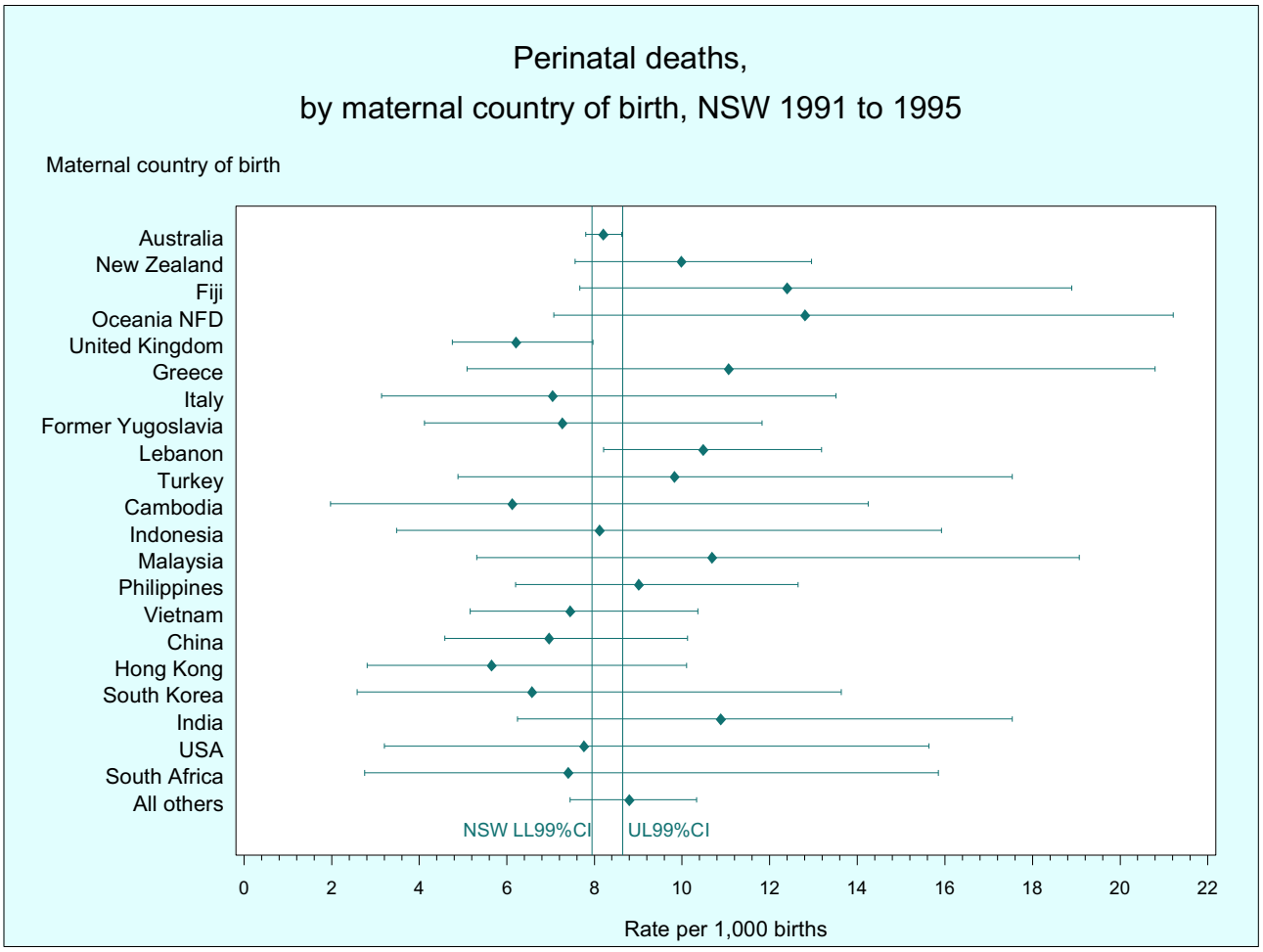
Introduction

This section examines health differentials by country of birth in NSW. Analysis of such differentials assists in planning appropriate preventive and clinical health services.

Most of the information presented is based on deaths in the period 1989 to 1993. This period was chosen because it centres on the 1991 census, which yielded the most recent available population estimates by country-of-birth for NSW. It will be possible to examine more recent death data when country-of-birth populations from the 1996 census become available late in 1997.

The 1997 NSW Health Survey will yield important data on health risk factors and health status of NSW residents from major non-English-speaking communities, and these will be presented in the next edition of this report.

More information on methods used for analysing death, cancer and hospitalisation data is given in the Methods section (page 257).



Mother's country of birth	Perinatal deaths	Births	Rate /1000	LL99%CI	UL99%CI	Mother's country of birth	Perinatal deaths	Births	Rate /1000	LL99%CI	UL99%CI
Australia	2652	323157	8.2	7.8	8.6	Malaysia	18	1683	10.7	5.3	19.1
New Zealand	95	9502	10.0	7.6	13.0	Philippines	55	6099	9.0	6.2	12.6
Fiji	35	2821	12.4	7.7	18.9	Vietnam	58	7783	7.5	5.2	10.4
Oceania NFD*	24	1873	12.8	7.1	21.2	China	45	6453	7.0	4.6	10.1
United Kingdom	103	16569	6.2	4.8	8.0	Hong Kong	18	3176	5.7	2.8	10.1
Greece	15	1354	11.1	5.1	20.8	South Korea	11	1671	6.6	2.6	13.6
Italy	14	1985	7.1	3.1	13.5	India	27	2480	10.9	6.2	17.5
Former Yugoslavia	26	3574	7.3	4.1	11.8	United States	12	1544	7.8	3.2	15.6
Lebanon	123	11720	10.5	8.2	13.2	South Africa	10	1350	7.4	2.8	15.9
Turkey	18	1829	9.8	4.9	17.5	All others	254	28840	8.8	7.4	10.3
Cambodia	8	1303	6.1	2.0	14.3	All	3634	438367	8.3	7.9	8.7
Indonesia	13	1601	8.1	3.5	15.9						

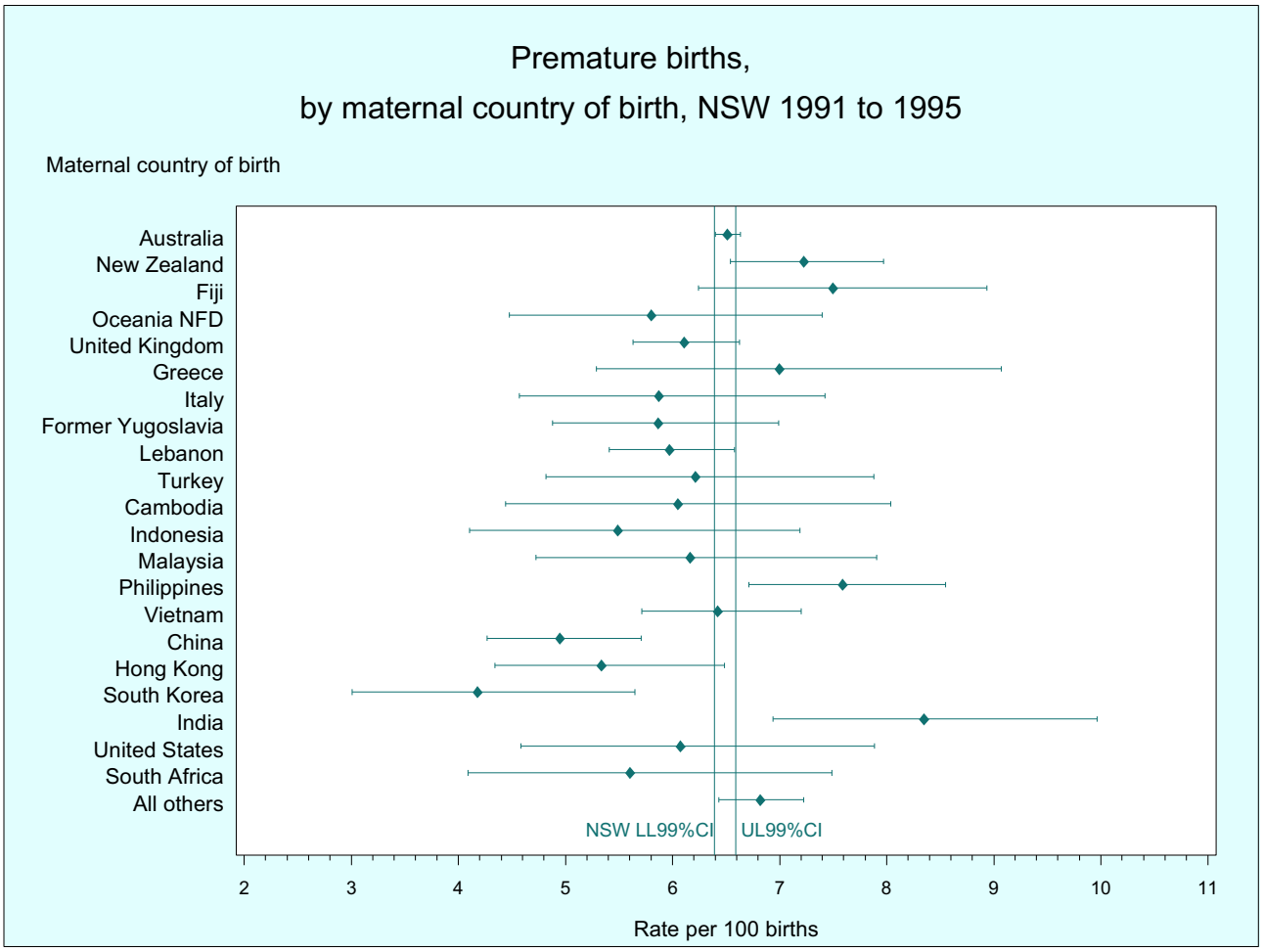
Notes: Deaths within 28 days of birth were classified as perinatal deaths. Infants with birthweight of 500 grams or more or, if birthweight was unknown, of at least 22 weeks' gestation, were included. UL/LL99% CI = upper/lower limits of 99% confidence interval for rate.*NFD = not further defined.

Source: NSW Midwives Data Collection (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- More than one-quarter of women giving birth in NSW in the period 1991 to 1995 were born in other countries, most frequently the United Kingdom, Lebanon, New Zealand, Vietnam and the Philippines.
- Perinatal deaths were rare for all maternal countries of birth, ranging from 5.7 to 12.8 per 1,000 births. The perinatal death rate for any maternal country of birth did not vary significantly from that for NSW as a whole.

For more information, see: Taylor L and Pym M, *New South Wales Midwives Data Collection 1995*, NSW Public Health Bulletin Supplement no. 2, NSW Health Department, Sydney, 1996

This publication may be found at the NSW Health Department's Web site at http://www.nsw.health.nsw.gov.au/public-health/mdc/mdc95.html



Mother's country of birth	Premature births	Total births	Rate /100	LL99%CI	UL99%CI	Mother's country of birth	Premature births	Total births	Rate /100	LL99%CI	UL99%CI
Australia	21096	323730	6.5	6.4	6.6	Malaysia	104	1686	6.2	4.7	7.9
New Zealand	688	9517	7.2	6.5	8.0	Philippines	464	6111	7.6	6.7	8.5
Fiji	212	2825	7.5	6.2	8.9	Vietnam	501	7798	6.4	5.7	7.2
Oceania NFD*	109	1877	5.8	4.5	7.4	China	320	6464	5.0	4.3	5.7
United Kingdom	1015	16599	6.1	5.6	6.6	Hong Kong	170	3184	5.3	4.3	6.5
Greece	95	1357	7.0	5.3	9.1	South Korea	70	1674	4.2	3.0	5.6
Italy	117	1991	5.9	4.6	7.4	India	208	2490	8.4	6.9	10.0
Former Yugoslavia	210	3579	5.9	4.9	7.0	United States	94	1547	6.1	4.6	7.9
Lebanon	702	1748	6.0	5.4	6.6	South Africa	76	1355	5.6	4.1	7.5
Turkey	114	1834	6.2	4.8	7.9	All others	1971	28893	6.8	6.4	7.2
Cambodia	79	1305	6.1	4.4	8.0	All	28503	439166	6.5	6.4	6.6
Indonesia	88	1602	5.5	4.1	7.2						

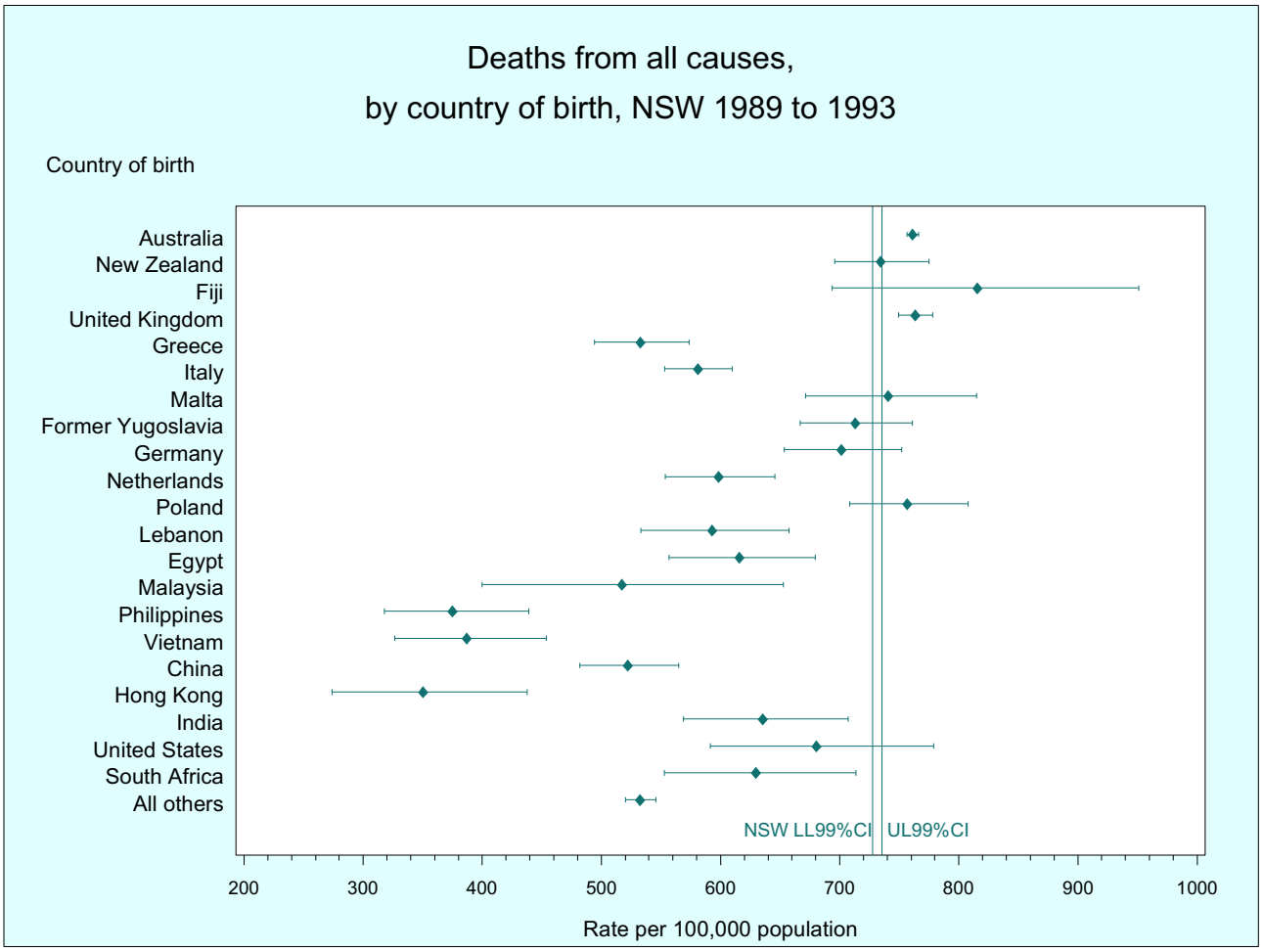
Notes: Births where gestational age was less than 37 weeks were classified as premature births. Infants with birthweight greater than 400g or of greater than 20 weeks' gestation were included. LL/UL99% CI = upper/lower limits of 99% confidence interval for rate.*NFD = not further defined.

Source: NSW Midwives Data Collection (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Premature birth (at less than 37 weeks' gestation) is responsible for many illnesses in newborn infants and sometimes for longer-term disabilities.
- Premature births varied by maternal country of birth, from 4.2 to 8.4 per 100 births. Babies with mothers born in the Philippines and India were significantly more likely than all NSW babies to be born prematurely. Babies with mothers born in China and South Korea were significantly less likely to be born prematurely.

For more information, see: Taylor L and Pym M, *New South Wales Midwives Data Collection 1995*, NSW Public Health Bulletin Supplement no. 2, NSW Health Department, Sydney, 1996

This publication may be found at the NSW Health Department's Web site at http://www.nsw.health.nsw.gov.au/public-health/mdc/mdc95.html



Notes: Death rates were age-adjusted using the Australian population as at 30 June 1991. Country of birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- NSW residents born in most overseas countries experienced lower death rates than for all NSW.
- People born in Greece, Italy, the Netherlands, the Philippines, Vietnam, China and Hong Kong, Lebanon (men), Egypt (men), South Africa (men) and India (women) all had lower death rates than for NSW as a whole.
- Only people born in Australia and the United Kingdom (women) experienced significantly higher death rates than for all NSW.
- Selection processes at least partially explain low mortality rates for many causes among immigrants. The Australian Government applies stringent health criteria to would-be immigrants. In addition, ill-health makes people less likely and less economically able to migrate.
- However, as illustrated by high mortality rates from some conditions (eg. diabetes mellitus, see page 121) among certain country-of-birth groups, mortality differentials may also relate to complex interactions among social, environmental and genetic factors.
- The mortality differences between migrants and the Australian-born tend to diminish, but not disappear, with increasing length of residence in Australia.

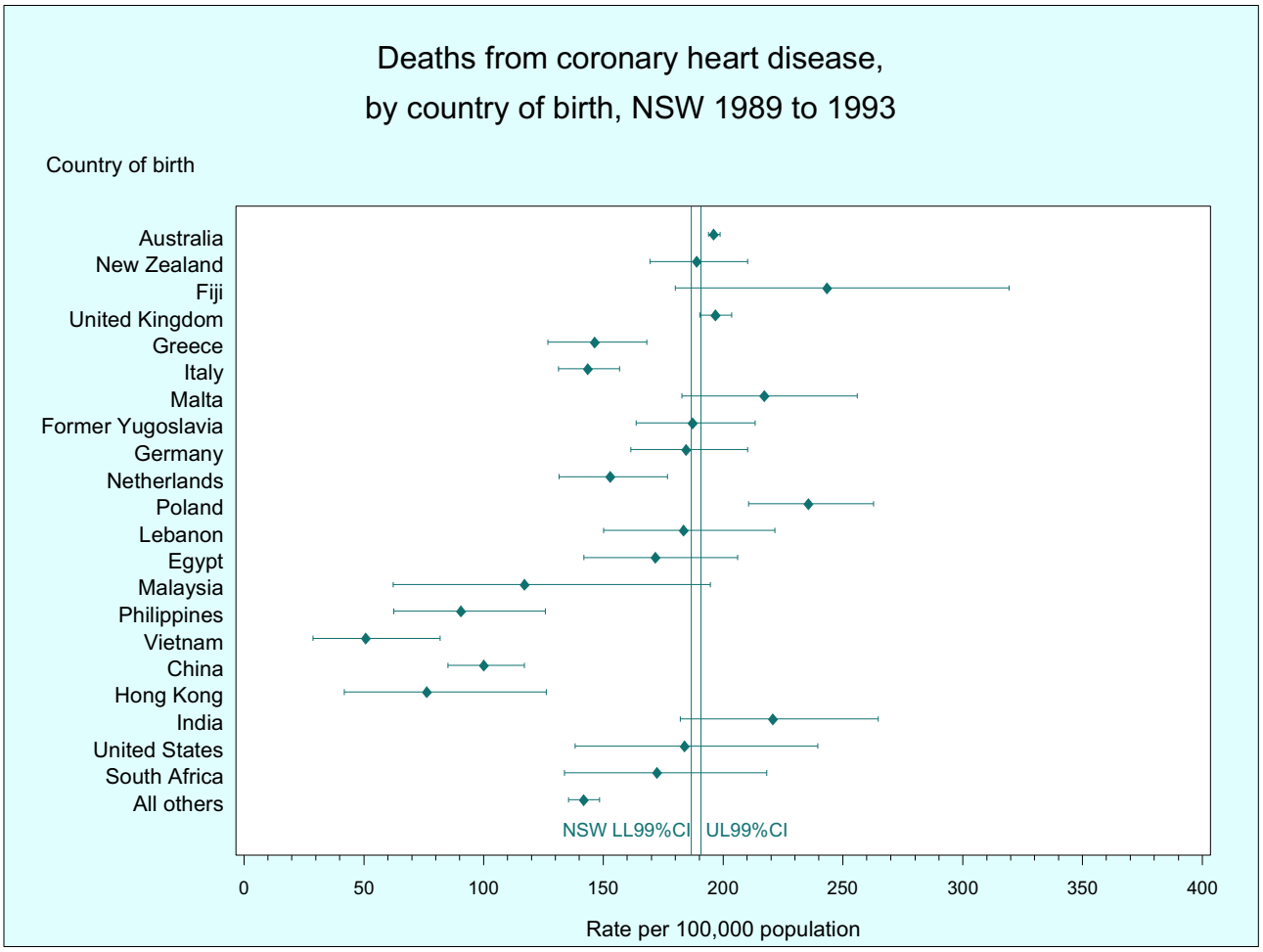
For more information, see: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds) *Immigrants in Australia: a health profile*, Australian Institute of Health and Welfare: Ethnic health series, No. 1, AGPS, Canberra, 1992.

Deaths from all causes, by country of birth, NSW 1989 to 1993

Country of birth	Sex	Deaths	Rate /100,000	LL99%CI	UL99%CI
Australia	Males	85018	963.7	955.2	972.4
Australia	Females	77421	606.8	601.2	612.5
Australia	Persons	162439	761.4	756.6	766.3
New Zealand	Males	1365	911.1	845.6	980.0
New Zealand	Females	1101	588.7	542.5	637.4
New Zealand	Persons	2466	734.6	695.7	774.9
Fiji	Males	194	983.1	775.0	1220.9
Fiji	Females	154	689.1	544.1	857.4
Fiji	Persons	348	816.0	693.7	951.0
United Kingdom	Males	11790	926.9	903.5	950.7
United Kingdom	Females	10769	620.5	603.5	637.8
United Kingdom	Persons	22559	763.6	749.4	777.9
Greece	Males	840	628.7	567.0	694.4
Greece	Females	591	433.9	387.4	484.2
Greece	Persons	1431	533.2	494.5	573.8
Italy	Males	2289	715.4	669.9	762.6
Italy	Females	1315	435.4	403.8	468.6
Italy	Persons	3604	581.2	553.4	609.9
Malta	Males	573	927.7	814.0	1050.5
Malta	Females	342	558.6	480.4	644.9
Malta	Persons	915	740.9	671.3	814.8
Former Yugoslavia	Males	1329	893.0	819.4	970.3
Former Yugoslavia	Females	654	523.2	467.7	582.8
Former Yugoslavia	Persons	1983	713.1	666.9	761.2
Germany	Males	853	884.4	799.1	975.4
Germany	Females	741	569.7	514.0	629.3
Germany	Persons	1594	701.7	653.6	752.2
Netherlands	Males	840	776.6	704.5	853.5
Netherlands	Females	430	414.9	362.8	471.9
Netherlands	Persons	1270	598.4	553.7	645.5
Poland	Males	1287	915.0	838.8	995.3
Poland	Females	609	574.6	513.0	641.0
Poland	Persons	1896	757.0	708.2	807.9
Lebanon	Males	483	655.8	566.2	753.3
Lebanon	Females	337	528.3	448.9	616.1
Lebanon	Persons	820	593.2	532.9	657.6
Egypt	Males	407	707.0	616.2	806.5
Egypt	Females	324	528.2	453.2	611.4
Egypt	Persons	731	616.2	556.9	679.6
Malaysia	Males	95	571.0	395.2	783.8
Malaysia	Females	78	492.4	335.3	686.2
Malaysia	Persons	173	517.4	400.0	652.6
Philippines	Males	175	542.5	432.6	669.1
Philippines	Females	161	277.3	215.1	349.4
Philippines	Persons	336	375.3	317.7	439.0
Vietnam	Males	246	511.9	403.3	634.0
Vietnam	Females	154	291.5	224.5	369.3
Vietnam	Persons	400	387.2	326.6	453.7
China	Males	748	656.2	585.2	732.1
China	Females	630	414.5	373.0	459.3
China	Persons	1378	522.3	481.9	564.8
Hong Kong	Males	125	482.6	347.5	642.1
Hong Kong	Females	71	244.1	161.7	346.9
Hong Kong	Persons	196	350.5	274.2	437.5
India	Males	349	839.6	722.5	969.0
India	Females	248	475.1	400.5	559.0
India	Persons	597	635.4	568.9	707.2
United States	Males	265	828.7	691.5	982.5
United States	Females	139	514.6	405.3	642.6
United States	Persons	404	680.8	591.5	778.8
South Africa	Males	209	752.7	618.8	904.9
South Africa	Females	234	537.7	450.4	636.3
South Africa	Persons	443	629.7	552.9	713.6
All others	Males	7048	686.0	664.8	707.6
All others	Females	4978	396.8	382.4	411.6
All others	Persons	12026	532.7	520.3	545.4
All	Males	116528	916.5	909.5	923.5
All	Females	101481	582.9	578.2	587.7
All	Persons	218009	731.4	727.4	735.5

Notes: Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Notes: Coronary heart disease was classified according to the ICD9 codes 410-414. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- NSW residents born in many overseas countries experienced lower death rates than for all NSW.
- People born in Greece, Italy, the Netherlands, Malaysia, the Philippines, Vietnam, China and Hong Kong all had lower death rates from coronary heart disease than for NSW as a whole.
- Only the Australian-born and men born in Poland experienced higher death rates from coronary heart disease than for all NSW.
- Selection processes at least partially explain low mortality rates from many causes among immigrants.
- However, mortality differentials also relate to complex interactions among genetic and other risk factors. Interestingly, some birthplace groups with the lowest levels of coronary heart disease mortality (for example the Greek, Italian and Vietnamese-born) also have the lowest socioeconomic status, as measured by income and educational levels.
- These groups also have very low levels of physical activity, high rates of smoking among men, and (for the Italian and Greek-born), a high prevalence of obesity. Dietary and genetic factors may explain this apparent paradox.

For more information, see: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds), *Immigrants in Australia: a health profile*, Australian Institute of Health and Welfare Ethnic health series, no. 1, AGPS, Canberra, 1992.

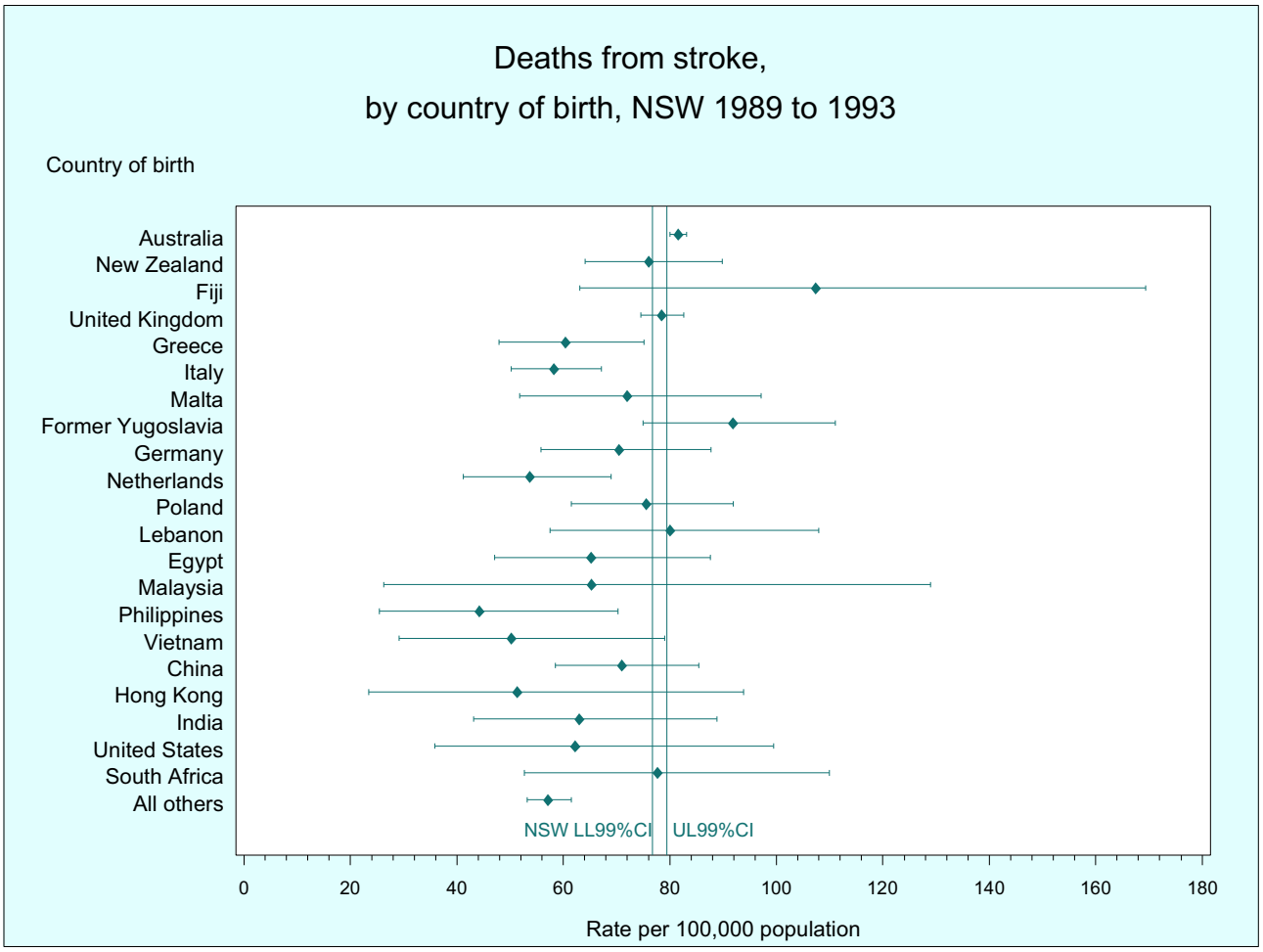
Close G, Lyle D, Churches T and Westley-Wise V, *Cardiovascular disease surveillance report 1994*, NSW Public Health Bulletin Supplement no. 5, NSW Health Department, Sydney, 1994.

Deaths from coronary heart disease, by country of birth, NSW 1989 to 1993

Country of birth	Sex	Deaths	Rate /100,000	LL99%CI	UL99%CI
Australia	Males	22173	257.1	252.7	261.6
Australia	Females	19774	150.1	147.3	152.9
Australia	Persons	41947	196.3	193.8	198.8
New Zealand	Males	346	257.5	222.5	296.1
New Zealand	Females	249	133.3	112.2	157.0
New Zealand	Persons	595	189.0	169.4	210.2
Fiji	Males	69	350.2	233.2	496.7
Fiji	Females	34	162.8	97.6	252.8
Fiji	Persons	103	243.4	180.2	319.2
United Kingdom	Males	3296	251.4	240.3	263.0
United Kingdom	Females	2757	147.7	140.4	155.3
United Kingdom	Persons	6053	196.8	190.3	203.5
Greece	Males	244	178.1	147.1	213.0
Greece	Females	140	111.2	88.0	138.2
Greece	Persons	384	146.6	126.9	168.2
Italy	Males	590	178.3	158.9	199.3
Italy	Females	312	105.1	90.2	121.6
Italy	Persons	902	143.6	131.2	156.9
Malta	Males	169	260.1	206.8	321.5
Malta	Females	100	172.9	130.6	223.9
Malta	Persons	269	217.3	182.8	256.0
Former Yugoslavia	Males	323	230.6	193.7	271.5
Former Yugoslavia	Females	147	138.0	109.3	171.4
Former Yugoslavia	Persons	470	187.4	163.6	213.3
Germany	Males	252	250.3	207.7	298.1
Germany	Females	174	136.2	110.5	165.8
Germany	Persons	426	184.7	161.3	210.2
Netherlands	Males	220	200.4	166.0	239.3
Netherlands	Females	102	100.9	76.9	129.7
Netherlands	Persons	322	153.0	131.6	176.7
Poland	Males	447	294.7	256.8	336.1
Poland	Females	179	163.9	132.4	200.1
Poland	Persons	626	235.7	210.7	262.7
Lebanon	Males	141	207.2	157.6	265.3
Lebanon	Females	85	157.6	114.6	210.2
Lebanon	Persons	226	183.6	150.1	221.6
Egypt	Males	129	219.2	170.6	276.3
Egypt	Females	76	125.7	91.5	168.1
Egypt	Persons	205	171.9	141.9	206.0
Malaysia	Males	17	124.1	47.6	244.6
Malaysia	Females	13	112.6	42.3	231.1
Malaysia	Persons	30	117.3	62.2	194.8
Philippines	Males	41	136.3	84.6	205.6
Philippines	Females	25	64.9	34.8	108.6
Philippines	Persons	66	90.6	62.6	125.7
Vietnam	Males	15	54.4	20.3	109.7
Vietnam	Females	17	48.4	22.1	89.8
Vietnam	Persons	32	50.9	28.8	81.7
China	Males	152	129.5	103.8	159.4
China	Females	119	76.8	59.8	96.9
China	Persons	271	100.2	85.2	117.1
Hong Kong	Males	17	102.3	44.0	194.3
Hong Kong	Females	10	56.2	20.3	121.4
Hong Kong	Persons	27	76.5	41.8	126.3
India	Males	124	310.4	240.5	393.1
India	Females	77	151.7	110.7	202.3
India	Persons	201	220.8	182.1	264.8
United States	Males	65	216.2	148.1	302.0
United States	Females	33	139.9	85.1	215.8
United States	Persons	98	184.0	138.1	239.4
South Africa	Males	47	180.6	119.0	261.6
South Africa	Females	69	158.0	113.0	214.4
South Africa	Persons	116	172.4	133.7	218.3
All others	Males	1889	187.0	176.0	198.5
All others	Females	1286	100.9	93.8	108.4
All others	Persons	3175	141.8	135.4	148.4
All	Males	30766	244.9	241.3	248.5
All	Females	25778	143.5	141.2	145.8
All	Persons	56544	188.7	186.7	190.8

Notes: Coronary heart disease was classified according to the ICD9 codes 410-414. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991. census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Notes: Stroke was classified according to the ICD9 codes 430-438. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- Stroke death rates among the overseas-born tended to be lower than for all NSW, but these differences were rarely statistically significant.
- People born in Italy, Greece (men), the Netherlands (men) and the Philippines (women) had lower death rates from stroke than for NSW as a whole.
- Only people born in Australia experienced higher death rates from stroke than for all NSW.
- As for coronary heart disease (see page 117), these mortality differentials relate both to selection of immigrants and to interactions among social, environmental and genetic factors.

For more information, see: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds), *Immigrants in Australia: a health profile*, Australian Institute of Health and Welfare Ethnic health series, no. 1, AGPS, Canberra, 1992.

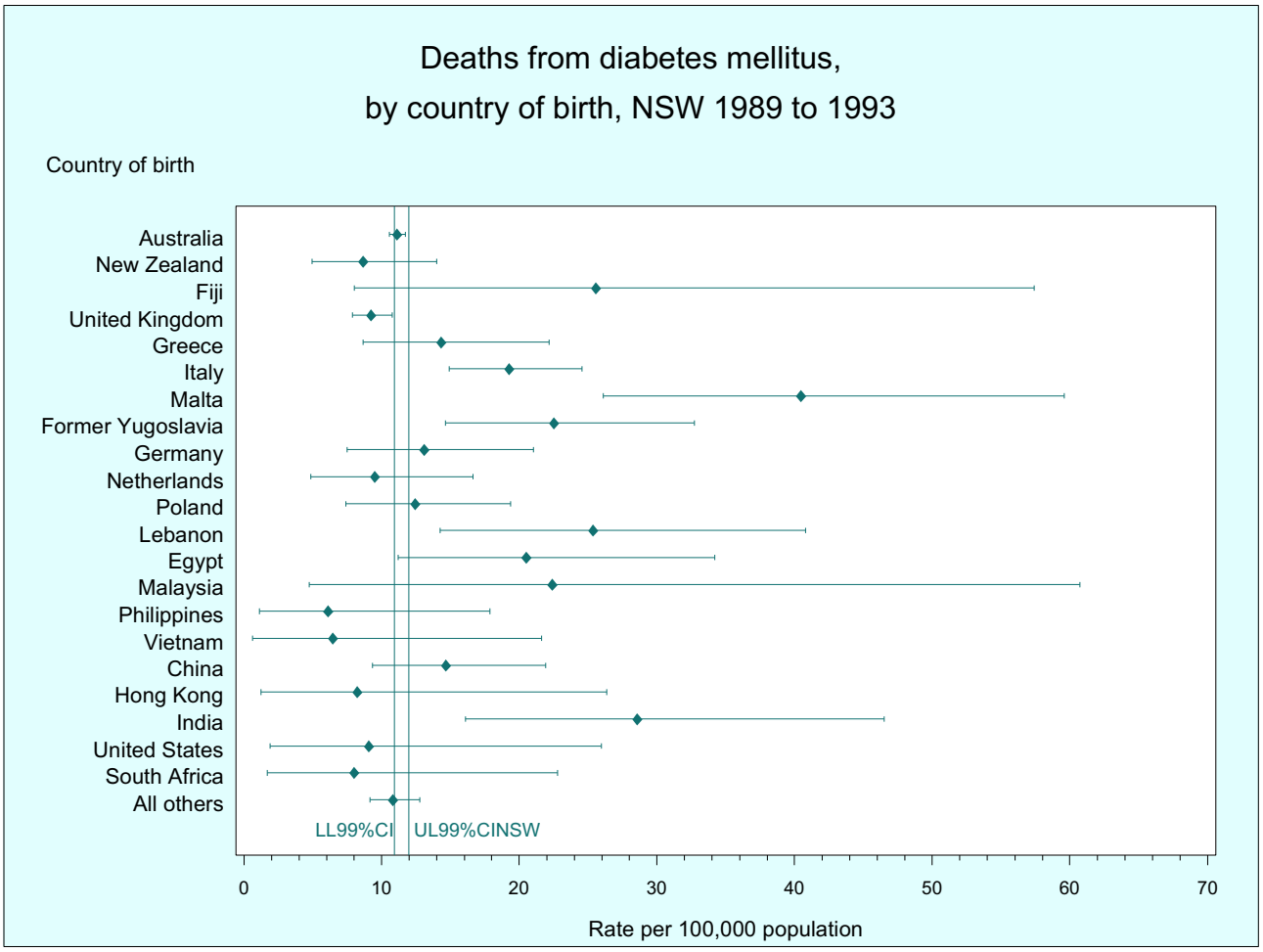
Close G, Lyle D, Churches T and Westley-Wise V, *Cardiovascular disease surveillance report 1994*, NSW Public Health Bulletin Supplement no. 5, NSW Health Department, Sydney, 1994.

Deaths from stroke, by country of birth, NSW 1989 to 1993

Country of birth	Sex	Deaths	Rate /100,000	LL99%CI	UL99%CI
Australia	Males	6718	80.5	77.9	83.0
Australia	Females	10824	80.9	78.9	83.0
Australia	Persons	17542	81.6	80.0	83.2
New Zealand	Males	97	72.5	54.5	94.1
New Zealand	Females	149	77.4	61.8	95.5
New Zealand	Persons	246	76.2	64.1	89.8
Fiji	Males	16	121.5	52.3	232.2
Fiji	Females	16	96.2	44.6	178.5
Fiji	Persons	32	107.5	63.1	169.3
United Kingdom	Males	974	74.5	68.5	80.9
United Kingdom	Females	1545	80.3	75.1	85.9
United Kingdom	Persons	2519	78.5	74.5	82.7
Greece	Males	63	51.8	35.3	72.8
Greece	Females	81	66.8	49.0	88.7
Greece	Persons	144	60.5	47.9	75.2
Italy	Males	169	58.2	47.1	71.1
Italy	Females	166	57.9	46.7	70.8
Italy	Persons	335	58.2	50.2	67.1
Malta	Males	43	88.1	56.3	130.3
Malta	Females	31	57.5	33.9	90.5
Malta	Persons	74	72.0	51.8	97.1
Former Yugoslavia	Males	114	102.1	76.4	132.6
Former Yugoslavia	Females	94	83.0	61.4	109.2
Former Yugoslavia	Persons	208	91.9	74.9	111.1
Germany	Males	60	77.4	52.8	108.6
Germany	Females	83	66.4	48.7	88.0
Germany	Persons	143	70.5	55.8	87.7
Netherlands	Males	52	51.9	34.7	74.2
Netherlands	Females	55	54.4	37.3	76.4
Netherlands	Persons	107	53.8	41.2	68.9
Poland	Males	111	73.3	55.2	94.9
Poland	Females	79	78.7	56.8	105.6
Poland	Persons	190	75.7	61.5	91.9
Lebanon	Males	36	78.2	46.7	121.3
Lebanon	Females	43	82.4	52.1	122.8
Lebanon	Persons	79	80.1	57.5	108.0
Egypt	Males	36	66.6	40.7	102.1
Egypt	Females	39	63.9	40.4	95.5
Egypt	Persons	75	65.2	47.1	87.6
Malaysia	Males	10	91.6	27.8	207.5
Malaysia	Females	5	45.8	7.0	136.3
Malaysia	Persons	15	65.4	26.2	129.0
Philippines	Males	16	56.7	24.8	107.7
Philippines	Females	17	36.1	15.7	68.3
Philippines	Persons	33	44.3	25.5	70.3
Vietnam	Males	19	63.5	26.1	121.0
Vietnam	Females	18	41.8	18.9	77.4
Vietnam	Persons	37	50.3	29.1	79.0
China	Males	83	73.1	53.9	96.5
China	Females	108	70.5	54.2	89.9
China	Persons	191	71.0	58.5	85.4
Hong Kong	Males	13	66.9	20.7	144.8
Hong Kong	Females	7	38.9	10.4	96.9
Hong Kong	Persons	20	51.4	23.5	93.8
India	Males	25	66.6	36.4	110.5
India	Females	30	59.7	35.2	94.1
India	Persons	55	63.1	43.1	88.8
United States	Males	9	44.5	15.0	99.8
United States	Females	20	77.4	39.1	135.5
United States	Persons	29	62.2	35.8	99.5
South Africa	Males	20	77.2	39.2	135.1
South Africa	Females	33	76.7	46.4	118.8
South Africa	Persons	53	77.7	52.7	110.0
All others	Males	579	60.1	53.8	66.9
All others	Females	692	53.8	48.7	59.3
All others	Persons	1271	57.2	53.1	61.5
All	Males	9263	76.8	74.8	78.9
All	Females	14135	77.7	76.1	79.4
All	Persons	23398	78.1	76.8	79.0

Notes: Stroke was classified according to the ICD9 codes 430-438. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Notes: Diabetes mellitus was classified according to ICD9 code 250. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- NSW residents born in some overseas countries experienced significantly higher death rates from diabetes than for all NSW.
- People born in Malta, Lebanon, India (men) Italy (women) and former Yugoslavia (women) all had higher death rates from diabetes than for NSW as a whole.
- Men and women born in Fiji experienced a high death rate from diabetes, but this was based on only a small number of deaths, and was not statistically significant. Other analyses that have grouped all Pacific Island countries together have found significantly elevated death rates from diabetes among people born in these countries (Donovan et al. 1992).
- Only men born in Vietnam experienced significantly lower death rates from diabetes than for all NSW.
- Death data are of limited value for estimating the community burden of diabetes mellitus, because in many instances diabetes is a contributing rather than direct cause of death. Recent changes to the coding of cause of death will allow better evaluation of the contribution of diabetes in the future.

Reference: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds), *Immigrants in Australia: a health profile*, Australian Institute of Health and Welfare Ethnic health series, no. 1, AGPS, Canberra, 1992.

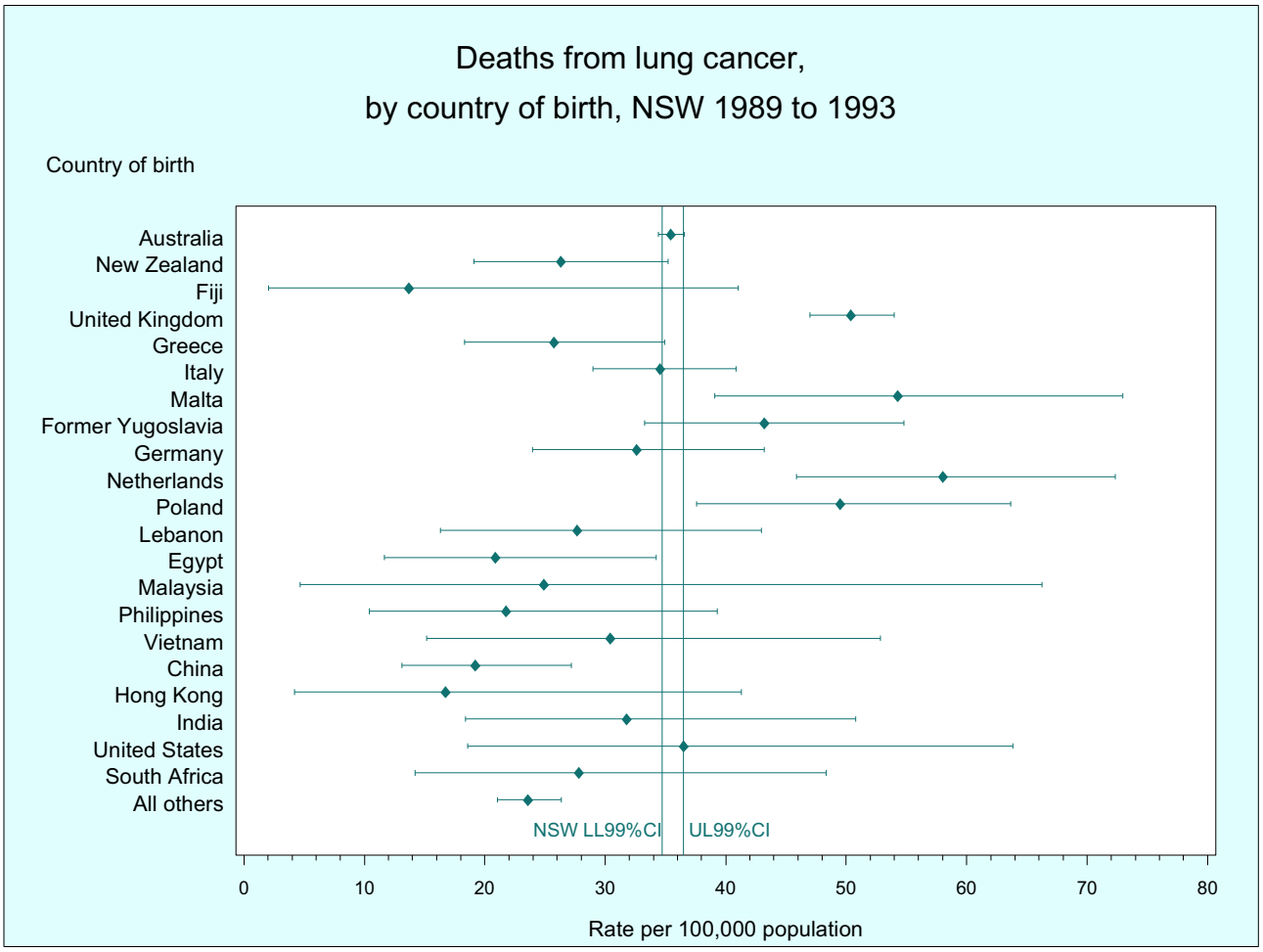
For more information, see: The Federation of Ethnic Communities' Councils of Australia, *Dispelling the myth - a little bit of sugar. A resource directory,* Diabetes Australia, Canberra, 1997.

Deaths from diabetes mellitus, by country of birth, NSW 1989 to 1993

Country of birth	Sex	Deaths	Rate /100,000	LL99%CI	UL99%CI
Australia	Males	1162	13.4	12.4	14.5
Australia	Females	1211	9.4	8.7	10.1
Australia	Persons	2373	11.1	10.6	11.7
New Zealand	Males	19	13.3	6.5	23.7
New Zealand	Females	9	4.9	1.6	11.0
New Zealand	Persons	28	8.7	4.9	14.0
Fiji	Males	3	16.0	0.6	61.9
Fiji	Females	7	31.2	7.4	79.9
Fiji	Persons	10	25.6	8.0	57.4
United Kingdom	Males	141	10.8	8.6	13.4
United Kingdom	Females	146	7.8	6.2	9.7
United Kingdom	Persons	287	9.3	7.9	10.8
Greece	Males	15	12.0	5.0	23.4
Greece	Females	20	15.7	7.9	27.4
Greece	Persons	35	14.3	8.6	22.2
Italy	Males	60	19.7	13.6	27.6
Italy	Females	54	18.5	12.6	26.1
Italy	Persons	114	19.3	14.9	24.5
Malta	Males	20	35.6	17.6	63.1
Malta	Females	24	44.1	24.0	73.5
Malta	Persons	44	40.5	26.1	59.6
Former Yugoslavia	Males	29	22.6	11.9	37.8
Former Yugoslavia	Females	22	22.0	11.6	37.5
Former Yugoslavia	Persons	51	22.5	14.6	32.7
Germany	Males	11	11.1	3.6	24.3
Germany	Females	19	13.9	6.9	24.7
Germany	Persons	30	13.1	7.5	21.0
Netherlands	Males	12	12.0	4.7	24.5
Netherlands	Females	8	7.6	2.4	17.7
Netherlands	Persons	20	9.5	4.9	16.6
Poland	Males	25	15.4	7.9	26.2
Poland	Females	10	9.3	3.1	20.6
Poland	Persons	35	12.5	7.4	19.4
Lebanon	Males	21	30.2	13.5	55.3
Lebanon	Females	12	20.6	7.5	43.2
Lebanon	Persons	33	25.4	14.2	40.8
Egypt	Males	11	16.9	6.3	35.6
Egypt	Females	13	22.4	9.6	43.9
Egypt	Persons	24	20.5	11.2	34.2
Malaysia	Males	3	34.6	3.6	127.6
Malaysia	Females	3	14.6	1.5	54.0
Malaysia	Persons	6	22.4	4.7	60.7
Philippines	Males	1	3.0	0.0	22.0
Philippines	Females	4	8.1	0.9	26.7
Philippines	Persons	5	6.1	1.1	17.9
Vietnam	Males	1	1.1	0.0	8.5
Vietnam	Females	3	9.5	0.9	35.3
Vietnam	Persons	4	6.5	0.6	21.6
China	Males	17	15.8	7.6	28.7
China	Females	22	14.1	7.6	23.9
China	Persons	39	14.7	9.3	21.9
Hong Kong	Males	3	12.3	0.9	46.5
Hong Kong	Females	1	4.2	0.0	31.5
Hong Kong	Persons	4	8.2	1.2	26.4
India	Males	16	38.3	16.8	72.7
India	Females	11	21.1	8.2	43.8
India	Persons	27	28.6	16.1	46.5
United States	Males	3	11.3	0.9	42.5
United States	Females	2	7.7	0.4	35.5
United States	Persons	5	9.1	1.9	26.0
South Africa	Males	2	8.3	0.4	38.3
South Africa	Females	3	8.5	0.9	31.4
South Africa	Persons	5	8.0	1.7	22.8
All others	Males	129	12.8	10.1	16.1
All others	Females	115	9.3	7.2	11.8
All others	Persons	244	10.9	9.1	12.8
All	Males	1704	13.6	12.7	14.4
All	Females	1719	9.7	9.1	10.4
All	Persons	3423	11.4	10.9	12.0

Notes: Diabetes mellitus was classified according to ICD9 code 250. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Notes: Lung cancer was classified according to the ICD9-CM code 162 (includes cancer of trachea and bronchus). Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- NSW residents born in many overseas countries experienced lower death rates from lung cancer than for all NSW.
- People born in Fiji (men), China (men) and Hong Kong (men), Greece (women) and Italy (women) all had lower death rates than for NSW as a whole.
- Only people born in the United Kingdom, Malta (men) and the Netherlands (men) experienced significantly higher death rates than for all NSW.
- Around 80 per cent of all lung cancers are attributable to smoking. The observed distribution of lung cancer deaths reflects smoking patterns among country-of-birth groups in NSW.
- In the 1994 NSW Health Promotion Survey, men born in the UK or Ireland, other European countries and Asia were all more likely than the Australian-born to be current smokers (Howell and Bauman, unpublished).

Reference: Howell S and Bauman A, *Health differentials - the NSW Health Promotion Survey data,* unpublished report, National Centre for Health Promotion, University of Sydney, 1996.

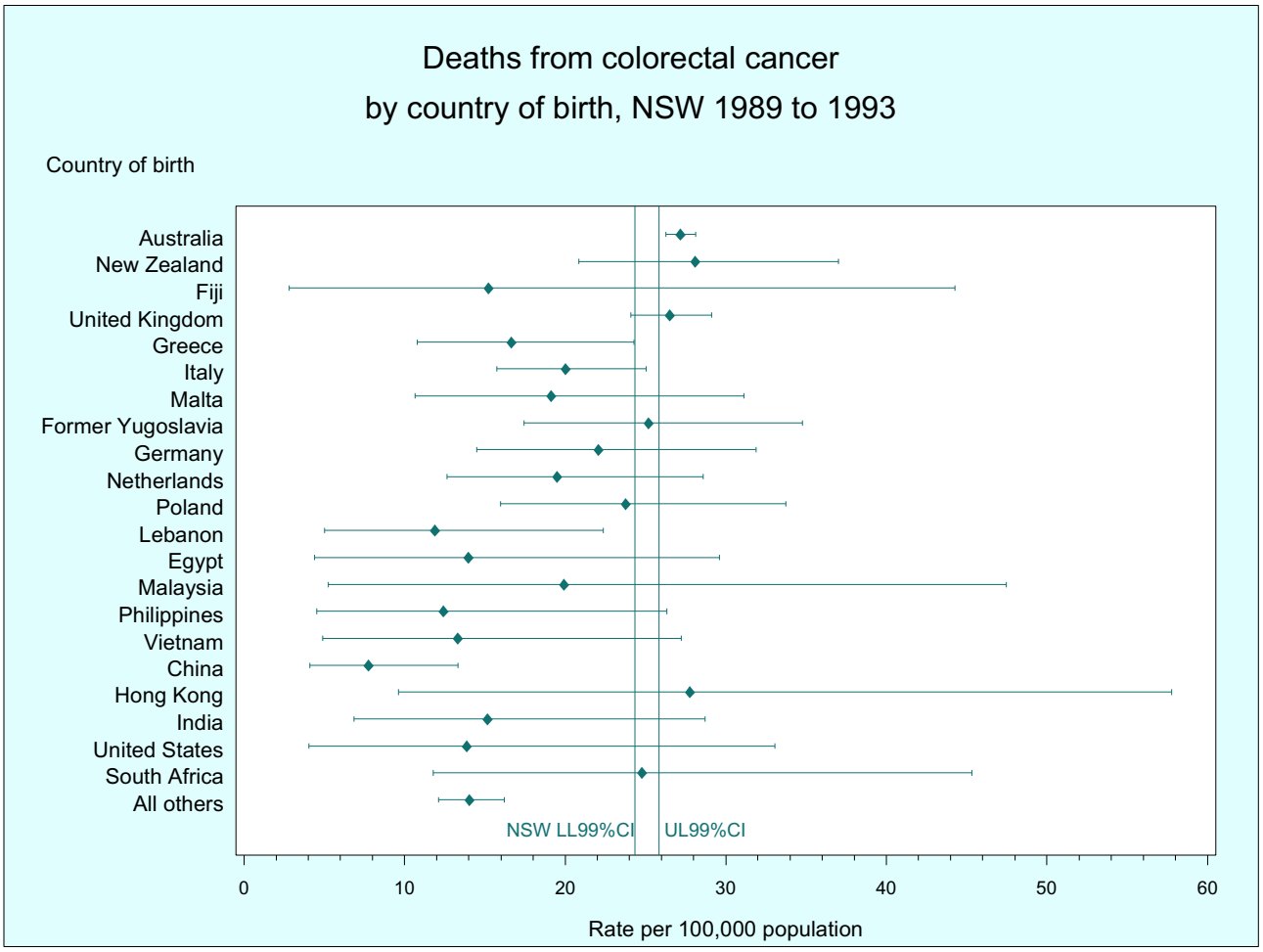
For more information, see: McCredie M, Coates M, Duque-Portugal F, Smith D and Taylor R, *Common cancers in migrants to NSW, 1972-1990*, NSW Cancer Council, Sydney, 1993.

Deaths from lung cancer, by country of birth, NSW 1989 to 1993

Country of birth	Sex	Deaths	Rate /100,000	LL99%CI	UL99%CI
Australia	Males	5424	60.4	58.3	62.5
Australia	Females	2038	17.3	16.3	18.3
Australia	Persons	7462	35.5	34.4	36.5
New Zealand	Males	54	41.3	27.9	58.5
New Zealand	Females	24	15.1	8.1	25.3
New Zealand	Persons	78	26.3	19.1	35.2
Fiji	Males	3	11.0	0.9	41.4
Fiji	Females	2	13.0	0.7	60.2
Fiji	Persons	5	13.7	2.0	41.0
United Kingdom	Males	983	74.7	68.7	81.0
United Kingdom	Females	431	30.1	26.4	34.2
United Kingdom	Persons	1414	50.4	47.0	54.0
Greece	Males	73	46.2	31.9	64.1
Greece	Females	6	4.1	0.8	11.1
Greece	Persons	79	25.8	18.3	34.9
Italy	Males	223	57.5	47.4	68.9
Italy	Females	28	8.9	5.1	14.4
Italy	Persons	251	34.6	29.0	40.9
Malta	Males	70	93.3	65.0	128.6
Malta	Females	10	14.8	5.1	32.3
Malta	Persons	80	54.3	39.1	73.0
Former Yugoslavia	Males	125	69.2	51.2	90.4
Former Yugoslavia	Females	22	15.4	7.6	27.0
Former Yugoslavia	Persons	147	43.2	33.3	54.8
Germany	Males	60	55.6	37.2	79.0
Germany	Females	28	17.4	9.9	28.0
Germany	Persons	88	32.6	24.0	43.2
Netherlands	Males	114	93.3	71.6	119.0
Netherlands	Females	23	21.3	11.5	35.9
Netherlands	Persons	137	58.1	45.9	72.3
Poland	Males	103	73.8	53.6	98.1
Poland	Females	23	22.6	11.1	39.5
Poland	Persons	126	49.5	37.6	63.6
Lebanon	Males	35	49.2	26.9	79.9
Lebanon	Females	6	6.7	1.2	18.6
Lebanon	Persons	41	27.7	16.3	43.0
Egypt	Males	22	36.2	18.6	62.4
Egypt	Females	4	6.7	1.1	21.2
Egypt	Persons	26	20.9	11.6	34.2
Malaysia	Males	5	49.7	8.0	146.8
Malaysia	Females	2	5.9	0.1	28.1
Malaysia	Persons	7	24.9	4.7	66.3
Philippines	Males	14	46.4	19.6	90.8
Philippines	Females	5	7.6	1.5	21.9
Philippines	Persons	19	21.8	10.4	39.3
Vietnam	Males	19	62.6	27.4	116.7
Vietnam	Females	5	8.8	0.7	27.6
Vietnam	Persons	24	30.4	15.2	52.9
China	Males	35	29.3	18.0	44.8
China	Females	18	11.4	5.6	20.4
China	Persons	53	19.2	13.1	27.2
Hong Kong	Males	4	14.4	1.3	48.2
Hong Kong	Females	4	18.1	2.1	59.3
Hong Kong	Persons	8	16.8	4.2	41.3
India	Males	14	32.9	13.7	64.6
India	Females	15	29.8	13.7	56.1
India	Persons	29	31.8	18.4	50.8
United States	Males	17	58.2	26.8	107.7
United States	Females	3	11.7	1.2	43.1
United States	Persons	20	36.5	18.6	63.9
South Africa	Males	13	41.5	16.2	84.1
South Africa	Females	8	18.0	5.6	42.0
South Africa	Persons	21	27.8	14.2	48.3
All others	Males	388	37.2	32.5	42.4
All others	Females	146	12.1	9.6	14.9
All others	Persons	534	23.6	21.0	26.4
All	Males	7798	59.3	57.5	61.0
All	Females	2851	17.3	16.5	18.2
All	Persons	10649	35.6	34.7	36.5

Notes: Lung cancer was classified according to the ICD9-CM code 162 (includes cancer of trachea and bronchus). Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Notes: Colorectal cancer was classified according to the ICD9-CM codes 153-154. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- NSW residents born in many overseas countries experienced lower death rates from colorectal cancer than for all NSW.
- People born China and women born in Lebanon had significantly lower death rates than for NSW as a whole.
- Only people born in Australia experienced significantly higher death rates than for all NSW.
- Diets high in fat meat or protein and low in vegetables and fibre are associated with increased risk of colorectal cancer, and may contribute to the high death rate from this cancer among the Australian-born.

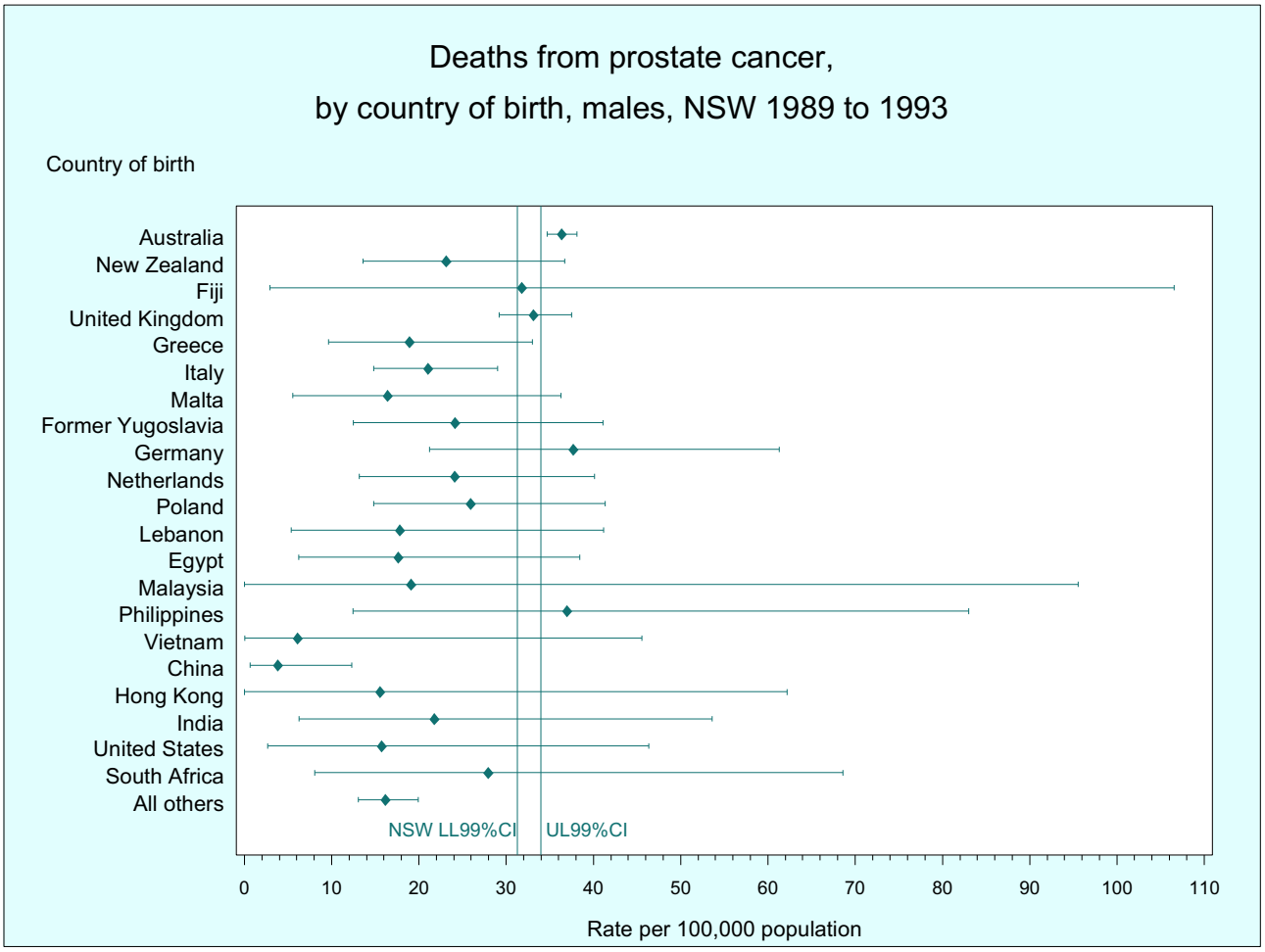
For more information, see: Bell J, Coates M, Day P and Armstrong B, *Colorectal cancer in NSW in 1972 to 1993,* NSW Cancer Council, Sydney, 1996.

Deaths from colorectal cancer, by country of birth, NSW 1989 to 1993

Country of birth	Sex	Deaths	Rate /100,000	LL99%CI	UL99%CI
Australia	Males	3063	34.5	32.9	36.1
Australia	Females	2649	21.7	20.6	22.8
Australia	Persons	5712	27.2	26.3	28.1
New Zealand	Males	42	30.9	19.8	45.8
New Zealand	Females	45	26.6	17.2	38.9
New Zealand	Persons	87	28.1	20.8	37.0
Fiji	Males	4	33.6	4.1	109.8
Fiji	Females	1	4.4	0.0	32.7
Fiji	Persons	5	15.2	2.8	44.3
United Kingdom	Males	451	34.5	30.4	38.9
United Kingdom	Females	323	20.2	17.3	23.4
United Kingdom	Persons	774	26.5	24.1	29.1
Greece	Males	32	20.0	11.1	32.5
Greece	Females	20	12.8	6.1	23.1
Greece	Persons	52	16.7	10.8	24.3
Italy	Males	94	25.8	19.0	33.9
Italy	Females	44	13.8	9.0	20.2
Italy	Persons	138	20.0	15.7	25.0
Malta	Males	16	20.5	8.5	39.8
Malta	Females	14	18.1	7.3	35.8
Malta	Persons	30	19.2	10.6	31.1
Former Yugoslavia	Males	49	27.3	16.6	41.3
Former Yugoslavia	Females	29	21.8	11.8	36.0
Former Yugoslavia	Persons	78	25.2	17.4	34.8
Germany	Males	30	29.3	16.2	47.9
Germany	Females	22	17.5	8.7	30.6
Germany	Persons	52	22.1	14.5	31.9
Netherlands	Males	30	26.0	15.0	41.5
Netherlands	Females	14	12.5	5.5	24.1
Netherlands	Persons	44	19.5	12.7	28.6
Poland	Males	40	29.1	17.3	45.1
Poland	Females	18	16.0	7.5	29.2
Poland	Persons	58	23.8	16.0	33.7
Lebanon	Males	13	20.0	6.6	42.6
Lebanon	Females	7	5.3	1.5	13.2
Lebanon	Persons	20	11.9	5.0	22.4
Egypt	Males	8	13.9	4.1	32.9
Egypt	Females	7	14.4	0.8	42.0
Egypt	Persons	15	14.0	4.4	29.6
Malaysia	Males	4	22.1	0.4	78.0
Malaysia	Females	5	17.9	2.4	54.1
Malaysia	Persons	9	19.9	5.3	47.5
Philippines	Males	6	23.1	5.7	60.7
Philippines	Females	5	8.6	1.1	26.1
Philippines	Persons	11	12.4	4.5	26.3
Vietnam	Males	7	17.1	2.0	48.0
Vietnam	Females	7	11.3	3.0	28.4
Vietnam	Persons	14	13.3	4.9	27.2
China	Males	12	10.2	4.1	20.5
China	Females	9	6.4	2.2	14.4
China	Persons	21	7.8	4.1	13.3
Hong Kong	Males	11	48.8	12.8	112.1
Hong Kong	Females	3	11.0	-0.5	45.6
Hong Kong	Persons	14	27.8	9.6	57.8
India	Males	7	13.9	3.8	34.4
India	Females	8	15.1	4.8	35.2
India	Persons	15	15.2	6.8	28.7
United States	Males	6	19.7	3.7	54.4
United States	Females	2	8.6	0.4	39.9
United States	Persons	8	13.9	4.0	33.0
South Africa	Males	11	40.9	15.4	85.9
South Africa	Females	6	14.9	3.6	39.3
South Africa	Persons	17	24.8	11.8	45.3
All others	Males	184	17.9	14.7	21.6
All others	Females	133	10.8	8.5	13.4
All others	Persons	317	14.0	12.1	16.2
All	Males	4120	31.7	30.4	33.0
All	Females	3371	20.0	19.1	20.9
All	Persons	7491	25.1	24.3	25.8

Notes: Colorectal cancer was classified according to the ICD9-CM codes 153-154. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Country of birth	Deaths	Rate /100,000	LL 99% CI	UL 99% CI	Country of birth	Deaths	Rate /100,000	LL 99% CI	UL 99% CI
Australia	3057	36.4	34.7	38.1	Egypt	10	17.7	6.2	38.4
New Zealand	29	23.2	13.6	36.7	Malaysia	2	19.2	-0.8	95.6
Fiji	4	31.8	2.9	106.6	Philippines	9	37.0	12.4	83.0
United Kingdom	437	33.2	29.2	37.5	Vietnam	1	6.1	0.0	45.6
Greece	21	19.0	9.6	33.0	China	4	3.9	0.7	12.3
Italy	66	21.1	14.8	29.1	Hong Kong	3	15.6	0.0	62.2
Malta	10	16.5	5.6	36.3	India	7	21.8	6.3	53.6
Former Yugoslavia	25	24.2	12.5	41.1	United States	5	15.8	2.7	46.4
Germany	28	37.7	21.2	61.3	South Africa	7	28.0	8.1	68.6
Netherlands	25	24.2	13.2	40.1	All others	155	16.2	13.0	19.9
Poland	34	26.0	14.8	41.3	All	3948	32.6	31.3	34.0
Lebanon	9	17.8	5.4	41.2					

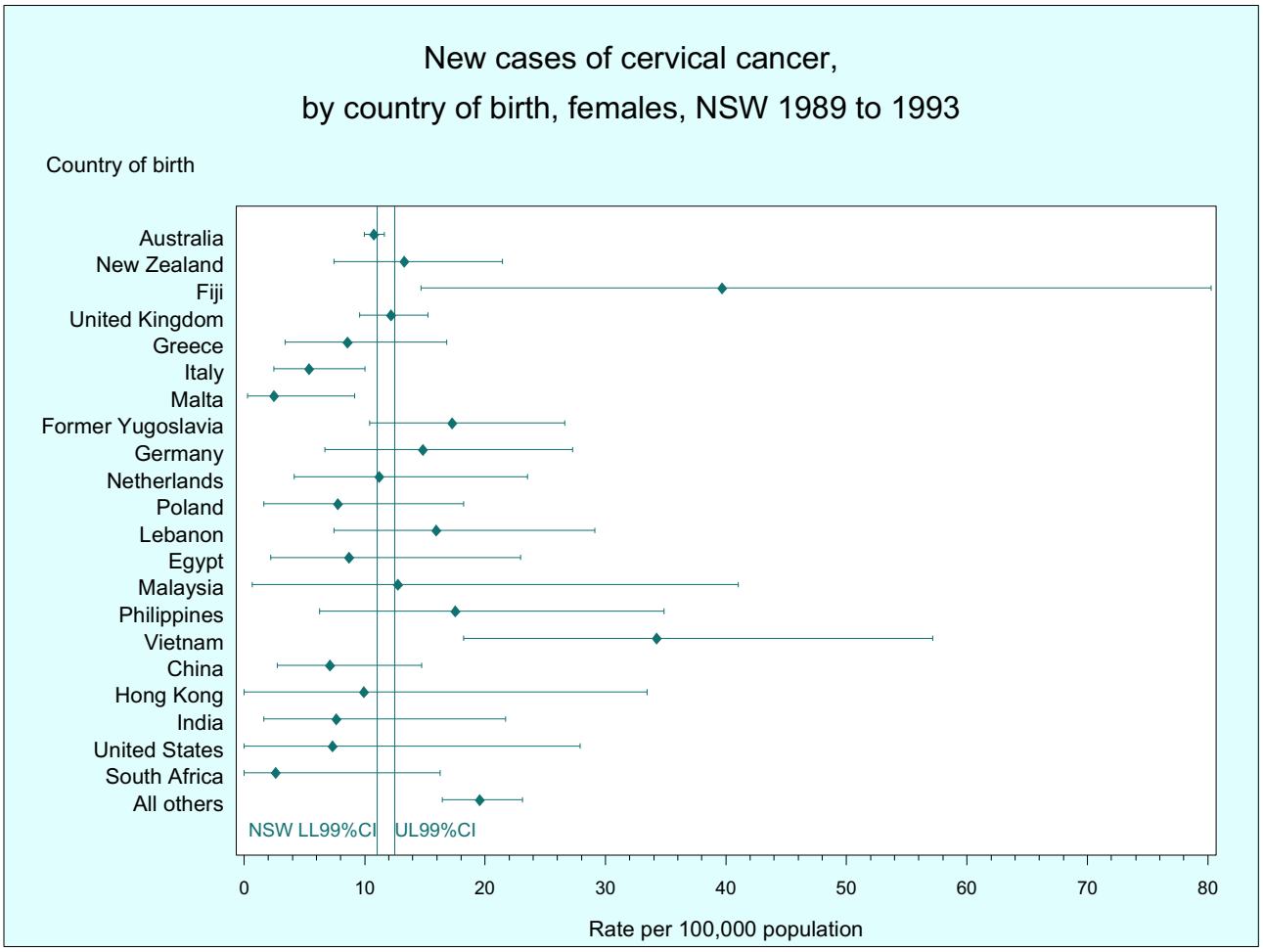
Notes: Prostate cancer was classified according to the ICD9-CM code 185. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- NSW residents born in most overseas countries experienced lower death rates from prostate cancer than for all NSW.
- Men born Italy and China had significantly lower death rates than for NSW as a whole.
- Only men born in Australia experienced significantly higher death rates than for all NSW.
- Genetic and other factors might play a role in explaining the variation in prostate cancer mortality among country-of-birth groups. Possible risk factors for prostate cancer include dietary factors (consumption of animal fats), body mass, low levels of physical activity, family history of prostate cancer and vasectomy.

For more information, see: Health Technology Advisory Committee, *Prostate cancer screening 1996,* Commonwealth Department of Health and Family Services, AGPS, Canberra, 1996.

McCredie M, Coates M, Duque-Portugal F, Smith D and Taylor R, *Common cancers in migrants to NSW, 1972-1990*, NSW Cancer Council, Sydney, 1993.



Country of birth	New cases	Rate /100,000	LL 99% CI	UL 99% CI	Country of birth	New cases	Rate /100,000	LL 99% CI	UL 99% CI
Australia	1178	10.8	10.0	11.7	Egypt	6	8.7	2.2	22.9
New Zealand	31	13.3	7.5	21.5	Malaysia	5	12.8	0.7	41.0
Fiji	15	39.7	14.7	80.3	Philippines	19	17.5	6.3	34.9
United Kingdom	147	12.2	9.6	15.3	Vietnam	28	34.3	18.2	57.2
Greece	17	8.6	3.4	16.8	China	12	7.1	2.7	14.7
Italy	18	5.4	2.5	10.0	Hong Kong	5	9.9	-0.1	33.4
Malta	3	2.5	0.3	9.2	India	5	7.7	1.6	21.7
Former Yugoslavia	38	17.3	10.4	26.6	United States	4	7.3	-0.6	27.9
Germany	20	14.9	6.7	27.3	South Africa	2	2.6	-0.9	16.3
Netherlands	12	11.3	4.1	23.5	All others	241	19.6	16.4	23.1
Poland	13	7.8	1.6	18.2	All	1838	11.7	11.0	12.5
Lebanon	19	16.0	7.4	29.1					

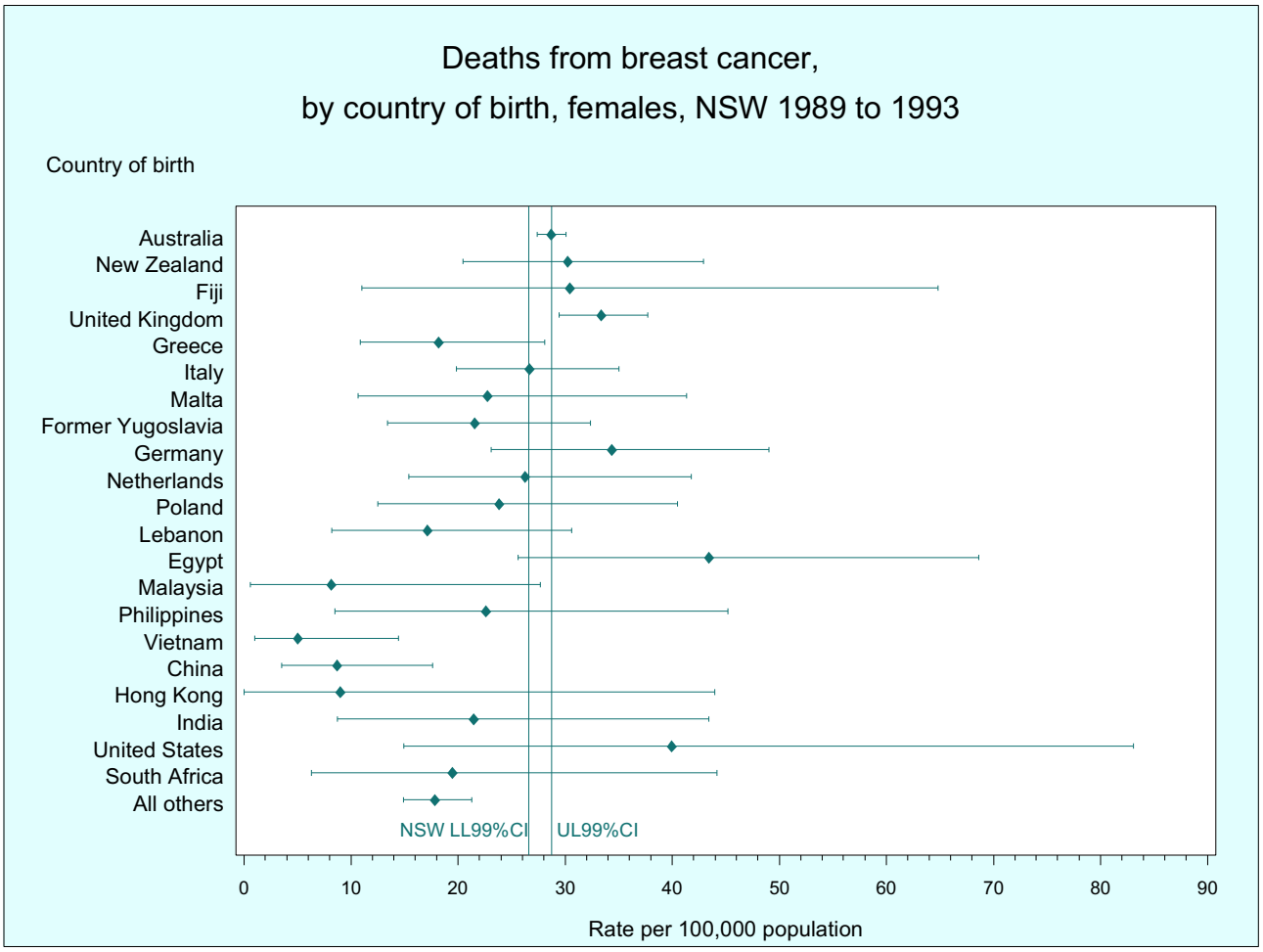
Notes: Cervical cancer was classified according to the ICD9 code 180. Incidence rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Women born in Italy and Malta had significantly lower cervical cancer incidence rates than for NSW as a whole, while women born in Fiji and Vietnam experienced significantly higher incidence rates than for all NSW.
- Misclassification of women visiting Australia for medical treatment might in part explain high rates among the Fijian-born.
- These differences by country of birth may relate to differences in screening rates and risk factors such as early age at first intercourse and multiple sexual partners.
- In the 1989/90 National Health Survey, women born in Asia and European countries other than the UK and Ireland were significantly less likely than the Australian-born to report having had a Pap smear in the past three years (Mathers 1994).

Reference: Mathers C, *Health differentials among adult Australians aged 25-64 years.* Australian Institute of Health & Welfare, Health monitoring series, no. 1, AGPS, Canberra, 1994.

For more information, see: Kricker A, Bell J, Coates M, Taylor R and Armstrong B, *Cancer of the cervix in NSW in 1972-1992,* NSW Cancer Council, Sydney, 1996.



Country of birth	Deaths	Rate /100,000	LL99%CI	UL99%CI	Country of birth	Deaths	Rate /100,000	LL99%CI	UL99% CI
Australia	3245	28.7	27.4	30.0	Egypt	30	43.5	25.6	68.6
New Zealand	55	30.3	20.4	42.9	Malaysia	4	8.2	0.6	27.7
Fiji	11	30.5	11.0	64.8	Philippines	16	22.6	8.5	45.2
United Kingdom	472	33.4	29.4	37.7	Vietnam	5	5.0	1.0	14.5
Greece	38	18.2	10.9	28.1	China	12	8.7	3.5	17.6
Italy	90	26.7	19.8	35.0	Hong Kong	2	9.0	-0.1	43.9
Malta	19	22.8	10.6	41.4	India	12	21.5	8.7	43.4
Former Yugoslavia	45	21.6	13.4	32.3	United States	12	40.0	14.9	83.1
Germany	53	34.4	23.1	49.0	South Africa	9	19.5	6.3	44.1
Netherlands	29	26.3	15.4	41.8	All others	213	17.9	14.9	21.3
Poland	24	23.8	12.5	40.5	All	4417	27.6	26.6	28.7
Lebanon	21	17.1	8.2	30.6					

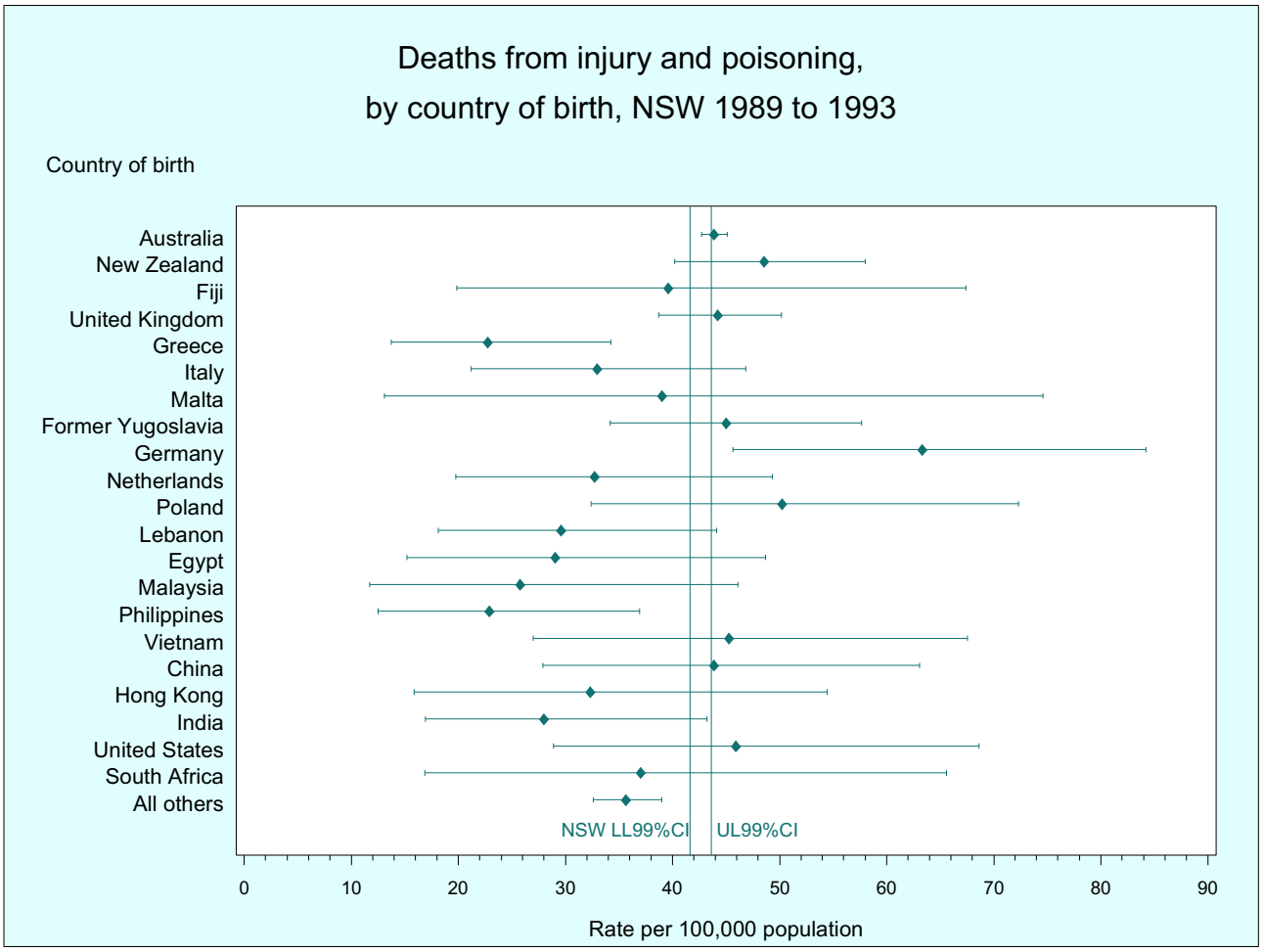
Notes: Breast cancer was classified according to ICD9 codes 174-175. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = upper/lower limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- NSW residents born in most overseas countries experienced lower death rates from breast cancer than for all NSW.
- Women born in China and Vietnam had significantly lower death rates than for NSW as a whole. Only women born in the United Kingdom experienced significantly higher death rates than for all NSW.
- Known risk factors for breast cancer that might contribute to differences by country-of-birth include family history, late age at first birth, nulliparity, late age at menopause, height and postmenopausal weight.
- In the 1989/90 National Health Survey, women born in Asia and European countries other than the UK and Ireland were significantly less likely than the Australian-born to report having had a mammogram in the past three years (Mathers 1994).

References: Mathers C, *Health differentials among adult Australians aged 25-64 years*, Australian Institute of Health and Welfare, Health monitoring series, no. 1, AGPS, Canberra, 1994.

For more information, see: Taylor R, Smith D, Hoyer A, Coates M and McCredie M, *Breast cancer in NSW 1972-1991,* NSW Cancer Council, Sydney, 1994.



Notes: Injury and poisoning was classified according to the ICD9 external cause codes E800-E869,E880-E929,E950-E999. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = upper/lower limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- NSW residents born in many overseas countries experienced lower injury death rates than for all NSW.
- People born in Greece, Italy (women) and Lebanon (men) had lower death rates than for NSW as a whole.
- Only German-born men experienced significantly higher injury death rates than for all NSW.
- Examination by injury intent (data not shown) revealed that much of the variation in injury death rates was due to low rates of suicide and self-inflicted injury in several birthplace groups, including people born in Greece (men), Italy (women), Egypt (women), the Philippines (men) and Hong Kong (men). People born in Greece (women) had significantly low death rates from accidental injury and poisoning, while those born in New Zealand (men) had high rates of death due to homicide or injury inflicted by others.

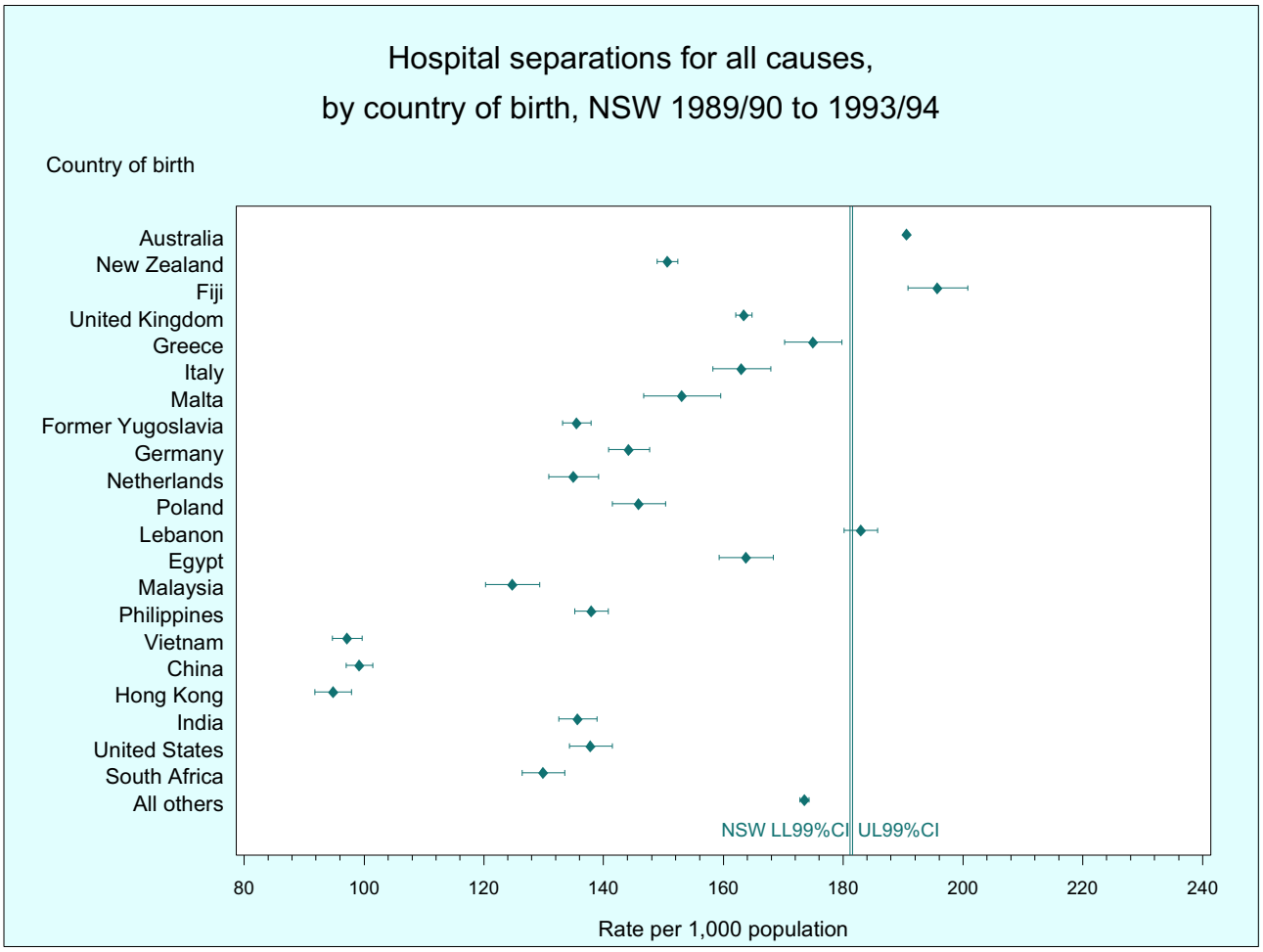
For more information, see: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds), *Immigrants in Australia: a health profile*, Australian Institute of Health and Welfare Ethnic health series, no. 1, AGPS, Canberra, 1992.

Deaths from injury and poisoning, by country of birth, NSW 1989 to 1993

Country of birth	Sex	Deaths	Rate /100,000	LL99%CI	UL99%CI
Australia	Males	6445	65.4	63.3	67.6
Australia	Females	2689	23.5	22.3	24.7
Australia	Persons	9134	43.9	42.7	45.1
New Zealand	Males	172	71.7	57.4	88.3
New Zealand	Females	58	25.5	17.3	36.0
New Zealand	Persons	230	48.6	40.2	58.0
Fiji	Males	22	60.5	24.2	114.6
Fiji	Females	8	21.8	4.4	55.8
Fiji	Persons	30	39.6	19.9	67.4
United Kingdom	Males	530	61.1	51.2	71.9
United Kingdom	Females	327	26.6	21.9	31.8
United Kingdom	Persons	857	44.3	38.7	50.2
Greece	Males	45	35.3	18.7	57.3
Greece	Females	18	11.4	4.9	21.5
Greece	Persons	63	22.8	13.7	34.2
Italy	Males	109	53.4	30.4	80.9
Italy	Females	33	10.3	6.2	15.9
Italy	Persons	142	33.0	21.2	46.8
Malta	Males	26	57.8	12.2	123.6
Malta	Females	9	18.6	5.2	43.9
Malta	Persons	35	39.0	13.1	74.6
Former Yugoslavia	Males	118	62.8	44.6	84.3
Former Yugoslavia	Females	40	25.6	15.2	39.6
Former Yugoslavia	Persons	158	45.0	34.2	57.6
Germany	Males	92	95.0	64.3	132.3
Germany	Females	37	35.6	17.3	60.3
Germany	Persons	129	63.3	45.6	84.2
Netherlands	Males	46	52.4	28.4	84.0
Netherlands	Females	12	11.2	4.6	22.7
Netherlands	Persons	58	32.7	19.7	49.3
Poland	Males	60	79.1	44.9	122.7
Poland	Females	18	21.0	9.5	39.1
Poland	Persons	78	50.3	32.4	72.3
Lebanon	Males	48	36.4	21.0	56.7
Lebanon	Females	17	22.1	6.7	46.5
Lebanon	Persons	65	29.6	18.1	44.1
Egypt	Males	22	40.7	20.2	71.1
Egypt	Females	7	16.7	2.3	46.2
Egypt	Persons	29	29.1	15.2	48.7
Malaysia	Males	19	37.5	14.2	73.3
Malaysia	Females	7	14.8	1.8	41.2
Malaysia	Persons	26	25.8	11.7	46.1
Philippines	Males	19	37.0	14.9	71.0
Philippines	Females	20	15.1	6.8	27.6
Philippines	Persons	39	22.9	12.5	36.9
Vietnam	Males	71	66.8	34.9	106.6
Vietnam	Females	21	23.0	7.7	46.1
Vietnam	Persons	92	45.3	27.0	67.6
China	Males	67	58.1	28.8	94.9
China	Females	41	28.1	17.9	41.7
China	Persons	108	43.9	27.9	63.1
Hong Kong	Males	26	41.2	14.6	79.6
Hong Kong	Females	15	24.6	6.2	54.4
Hong Kong	Persons	41	32.4	15.9	54.4
India	Males	25	38.7	20.4	65.2
India	Females	10	16.7	6.0	36.0
India	Persons	35	28.0	16.9	43.2
United States	Males	33	70.7	41.7	111.0
United States	Females	10	20.9	6.3	47.4
United States	Persons	43	45.9	28.9	68.6
South Africa	Males	20	55.0	20.3	107.8
South Africa	Females	9	19.0	6.4	42.7
South Africa	Persons	29	37.0	16.9	65.6
All others	Males	622	53.2	47.8	59.0
All others	Females	220	18.1	15.1	21.5
All others	Persons	842	35.7	32.6	39.0
All	Males	8637	62.5	60.8	64.3
All	Females	3626	23.3	22.3	24.3
All	Persons	12263	42.6	41.6	43.6

Notes: Injury and poisoning was classified according to the ICD9 external cause codes E800-E869,E880-E929,E950-E999. Death rates were age-adjusted using the Australian population as at 30 June 1991. Country-of-birth populations from the 1991 census were used. LL/UL99% CI = upper/lower limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Notes: Separations for normal delivery (ICD9 codes 630-676) were excluded. Country-of-birth populations from the 1991 census were used. UL/LL99% CI = upper/lower limits of 99% confidence interval for standardised rate.

Source: NSW Inpatients Statistics Collection and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted hospital separation rates for males and females combined. Separate rates for males and females are given in the accompanying table. Hospital separations relating to normal deliveries were excluded.
- NSW residents born in all countries except for Australia, Fiji and Lebanon (women) had lower hospital separation rates than for all NSW.
- Misclassification of people visiting Australia for medical treatment might in part explain high rates among the Fijian-born, as might underenumeration of the Fijian-born population in the 1991 census.
- Better health as a result of selection processes and possibly differential use of or access to services may contribute to low hospitalisation rates among the overseas-born.
- However, the overseas-born are frequent users of some types of health service: in the 1989/90 National Health Survey, they reported more doctor and dentist visits in the past two weeks than the Australian-born. This was particularly marked for men born in the United Kingdom and Ireland, other European countries and Asia (Mathers 1994).

References: Mathers C, *Health differentials among adult Australians aged 25-64 years,* Australian Institute of Health and Welfare, Health monitoring series, no. 1, AGPS, Canberra, 1994.

For more information, see: Donovan J, d'Espaignet ET, Merton C and van Ommeren M (eds), *Immigrants in Australia: a health profile*, Australian Institute of Health and Welfare Ethnic health series, no. 1, AGPS, Canberra, 1992.

Hospital separations for all causes, by country of birth, NSW 1989/90 to 1993/94

Country of birth	Sex	Separations	Rate /100,000	LL 99% CI	UL 99% CI
Australia	Males	1827114	182.7	182.3	183.0
Australia	Females	2201783	201.6	201.2	201.9
Australia	Persons	4028897	190.6	190.4	190.8
New Zealand	Males	26693	145.8	143.2	148.4
New Zealand	Females	36131	157.0	154.7	159.4
New Zealand	Persons	62824	150.7	148.9	152.4
Fiji	Males	5711	187.9	179.9	196.1
Fiji	Females	9406	206.2	199.6	212.8
Fiji	Persons	15117	195.8	190.8	200.9
United Kingdom	Males	136668	154.6	152.5	156.6
United Kingdom	Females	157693	174.4	172.6	176.3
United Kingdom	Persons	294361	163.4	162.1	164.8
Greece	Males	24229	180.7	173.0	188.4
Greece	Females	20157	170.6	164.8	176.5
Greece	Persons	44386	175.0	170.2	179.8
Italy	Males	39300	149.5	142.6	156.4
Italy	Females	34331	179.6	172.6	186.7
Italy	Persons	73631	163.1	158.2	167.9
Malta	Males	9694	149.9	137.7	162.2
Malta	Females	8961	158.2	150.3	166.3
Malta	Persons	18655	153.1	146.7	159.6
Former Yugoslavia	Males	24616	126.9	123.5	130.3
Former Yugoslavia	Females	23299	143.3	140.0	146.6
Former Yugoslavia	Persons	47915	135.5	133.2	137.9
Germany	Males	13204	136.4	131.6	141.4
Germany	Females	16899	155.2	150.2	160.3
Germany	Persons	30103	144.2	140.8	147.6
Netherlands	Males	11504	119.2	114.2	124.4
Netherlands	Females	10845	152.5	145.8	159.3
Netherlands	Persons	22349	135.0	130.8	139.1
Poland	Males	12102	133.2	125.2	141.3
Poland	Females	11382	159.2	153.6	164.8
Poland	Persons	23484	145.9	141.5	150.3
Lebanon	Males	19394	167.1	163.1	171.2
Lebanon	Females	26619	198.3	194.5	202.2
Lebanon	Persons	46013	183.0	180.2	185.8
Egypt	Males	8626	152.7	146.4	159.2
Egypt	Females	8508	173.8	167.5	180.3
Egypt	Persons	17134	163.8	159.3	168.4
Malaysia	Males	2975	101.9	95.3	108.7
Malaysia	Females	6457	143.4	137.2	149.7
Malaysia	Persons	9432	124.7	120.2	129.4
Philippines	Males	5837	131.9	126.9	137.2
Philippines	Females	16810	143.2	139.7	146.7
Philippines	Persons	22647	138.0	135.1	140.8
Vietnam	Males	8009	85.5	81.8	89.3
Vietnam	Females	14051	111.9	108.6	115.3
Vietnam	Persons	22060	97.2	94.7	99.6
China	Males	10669	91.9	88.6	95.3
China	Females	15530	113.6	110.6	116.7
China	Persons	26199	99.2	97.0	101.4
Hong Kong	Males	3922	92.9	87.9	98.1
Hong Kong	Females	7381	99.6	95.7	103.6
Hong Kong	Persons	11303	94.8	91.8	97.9
India	Males	5518	109.0	104.9	113.3
India	Females	8823	161.5	156.7	166.3
India	Persons	14341	135.6	132.5	138.9
United States	Males	5336	134.3	129.2	139.5
United States	Females	6158	137.6	132.7	142.6
United States	Persons	11494	137.9	134.3	141.5
South Africa	Males	4640	123.6	118.4	129.0
South Africa	Females	6696	139.3	134.4	144.4
South Africa	Persons	11336	129.9	126.4	133.5
All others	Males	190178	169.6	168.6	170.6
All others	Females	213623	179.8	178.8	180.9
All others	Persons	403801	173.5	172.8	174.3
All	Males	2395939	172.7	172.5	173.0
All	Females	2861543	192.3	192.0	192.6
All	Persons	5257482	181.3	181.1	181.6

Notes: Separations for normal delivery (ICD9 codes 630-676) were excluded. Country-of-birth populations from the 1991 census were used. UL/LL99% CI = upper/lower limits of 99% confidence interval for standardised rate.

Source: NSW Inpatients Statistics Collection and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

Chapter 3.3

Socioeconomic status and health

- In the period 1990 to 1994, the NSW local government areas (LGAs) with the lowest socioeconomic status (SES) had the highest rates of premature death and hospitalisation.
- Four of the five LGAs with the lowest SES and highest death rates have the highest percentages of indigenous people in the state.
- The association between low SES and premature death was observed for a range of causes, including cardiovascular diseases, injury and poisoning, respiratory diseases, lung cancer and cervical cancer. The association was strongest for cardiovascular diseases and respiratory diseases.
- Premature deaths from breast cancer, melanoma, prostate cancer and colorectal cancer showed virtually no correlation with SES.
- In the 1994 NSW Health Promotion Survey, smoking rates in men and women increased with increasing levels of socioeconomic disadvantage.
- For men, rates of hazardous or harmful alcohol consumption tended to be higher in the more disadvantaged groups, while for women the reverse was true, with rates of risk drinking being lower with lower SES.
- In men, rates of insufficient physical activity were highest in the most disadvantaged, while in women rates of insufficient activity did not vary significantly with SES.
- Socioeconomic disadvantage was not associated with higher or lower rates of overweight or obesity in men. In women, however, rates of overweight and obesity increased steadily with socioeconomic disadvantage.

In this chapter

Introduction

This section looks at the association between socioeconomic status (SES) and health status, which is well documented worldwide (Phillimore et al. 1994; Taylor et al. 1992; Mathers et al. 1994). The main indicators of health status examined are age-adjusted death and hospitalisation rates and self-reported health and health risk factors from the 1994 NSW Health Promotion Survey (Howell and Bauman, unpublished).

The analyses used a composite measure of SES, the index of relative socioeconomic disadvantage (ABS 1993) based on data from the 1991 ABS population census. It is a single score derived from multiple weighted variables relating to education, occupation, non-English speaking background, indigenous origin and the economic resources of households. Lower scores indicate lower SES. With the exception of the self-reported data (see pages 145-149), the analyses are ecological, using the local government area (LGA) as the unit of analysis. Routinely collected data on deaths, hospital separations and cancer incidence and mortality do not capture SES information at the individual level, so directly age-standardised rates were calculated for all adults in each LGA and plotted against the corresponding index of socioeconomic disadvantage. The analysis included 177 NSW LGAs. The LGAs of Sydney and South Sydney were treated as a single unit because of multiple boundary changes over recent years. The degree of association was measured by the Pearson correlation coefficient and depicted by plotting the corresponding regression line. More information on methods used in this chapter is given in the Methods section (page 263).

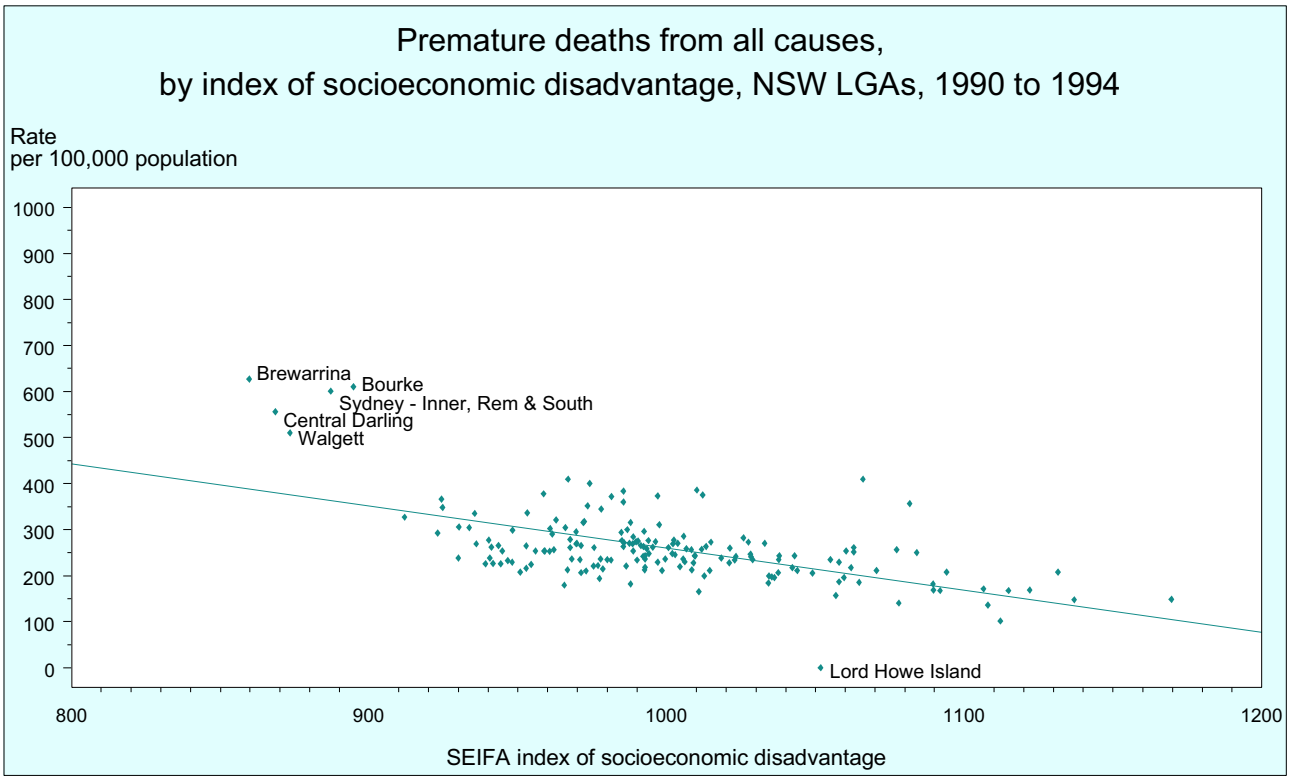
References: Australian Bureau of Statistics, *Information paper: 1991 census socioeconomic indices for areas,* cat. no. 29120, Canberra, 1993.

Howell S and Bauman A, *Health Differentials: the NSW Health Promotion Survey data,* National Centre for Health Promotion, unpublished.

Phillimore P, Beattie A and Townsend P, 'The widening gap. Inequality of health in northern England, 1981-91', *BMJ*, Vol. 308, 1996, pp. 1125-8.

Taylor R, Quine S, Lyle D and Bilton A, 'Socioeconomic correlates of mortality and hospital morbidity differentials by Local government area in Sydney 1985-1988', *Australian Journal of Public Health,* Vol. 16, 1992, pp. 305-14.

Mathers C, *Health differentials among adult Australians aged 25-64 years,* Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.



Notes: Rates are for persons, aged 15-64 years at death. Death rates were directly age-adjusted using the standard Australian population as at 30 June 1991. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status.

Abbreviations: SEIFA: Socioeconomic index for area, LGA: Local government area.

Source: ABS census data, mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

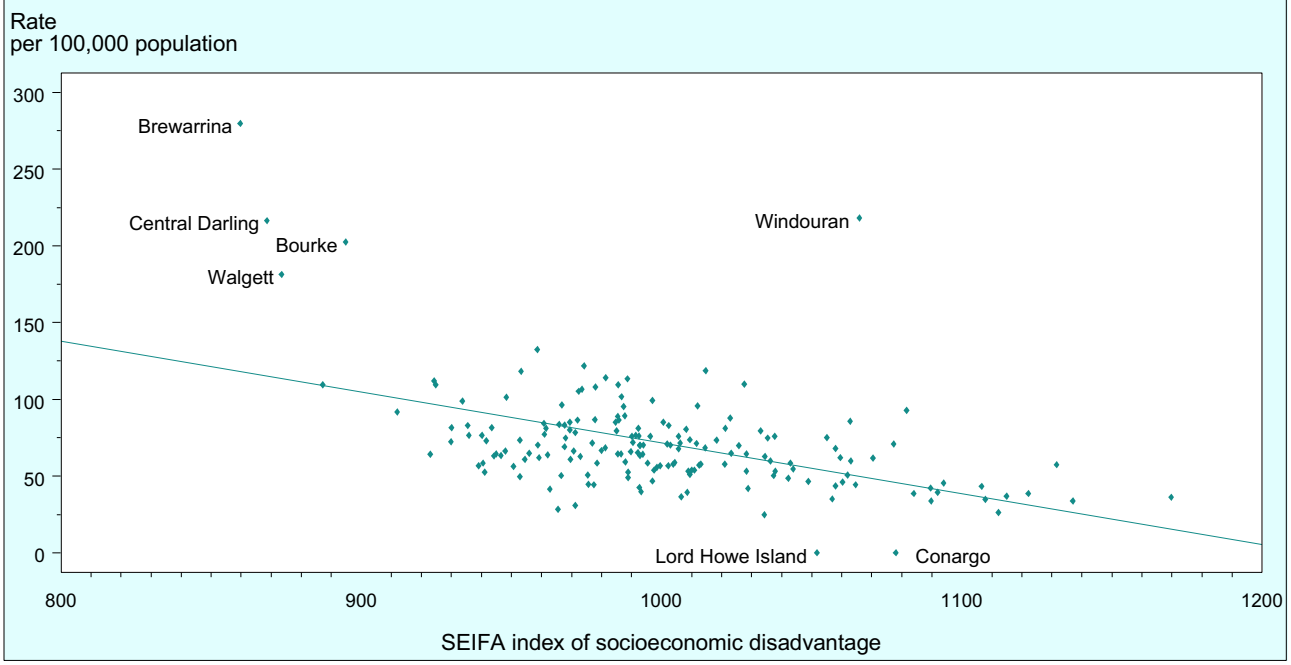
- The above graph shows a strong negative correlation (Pearson correlation coefficient r=-0.59; p<0.0001; n=177 LGAs) between premature death from all causes and the index of socioeconomic disadvantage. The method used to examine this association is described on page 263.
- It is interesting to note that four of the five outliers with low socioeconomic status (SES) and high mortality have the highest percentages of indigenous people in the state. The fact that homeless people, statewide, were classified until recently as residents of Sydney LGA could partly explain the high mortality rate in this LGA.
- The higher overall mortality in adults residing in socioeconomically disadvantaged areas has also been reported in other states (National Health Strategy 1992) and nationwide (Mathers et al. 1994) as well as overseas (Davey Smith et al. 1990).
- The causal link between SES and mortality or health status more generally is not clear. Several explanations have been suggested (National Health Strategy 1992):
  - artefact: the consistency of the findings from numerous studies worldwide suggests that the association between SES and health status is genuine.
  - social selection: although some of the differentials can be explained by a deterioration in circumstances resulting from poor health, this does not account for most of the association.

The main explanation, rather, is that disadvantage causes poor health through:

- lifestyle, behavioural influences
- structural factors, such as income, education, living conditions, working conditions and social support
- differential access to health care.

References: Davey Smith G, Bartley M and Blane D, 'The Black report on socioeconomic inequalities in health 10 years on', *BMJ*, Vol. 301, 1996, pp. 373-7.
Mathers C, *Health differentials among adult Australians aged 25-64 years,* Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.
National Health Strategy, *Enough to make you sick: how income and environment affect health,* Research paper no. 1, Canberra, 1992.

Premature deaths from cardiovascular diseases, by index of socioeconomic disadvantage, NSW LGAs, 1990 to 1994



Notes: Rates are for persons aged 15-64 years at death. Death rates were directly age-adjusted using the standard Australian population as at 30 June 1991. Cardiovascular diseases were classified according to the ICD9-CM codes 390-459. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status.

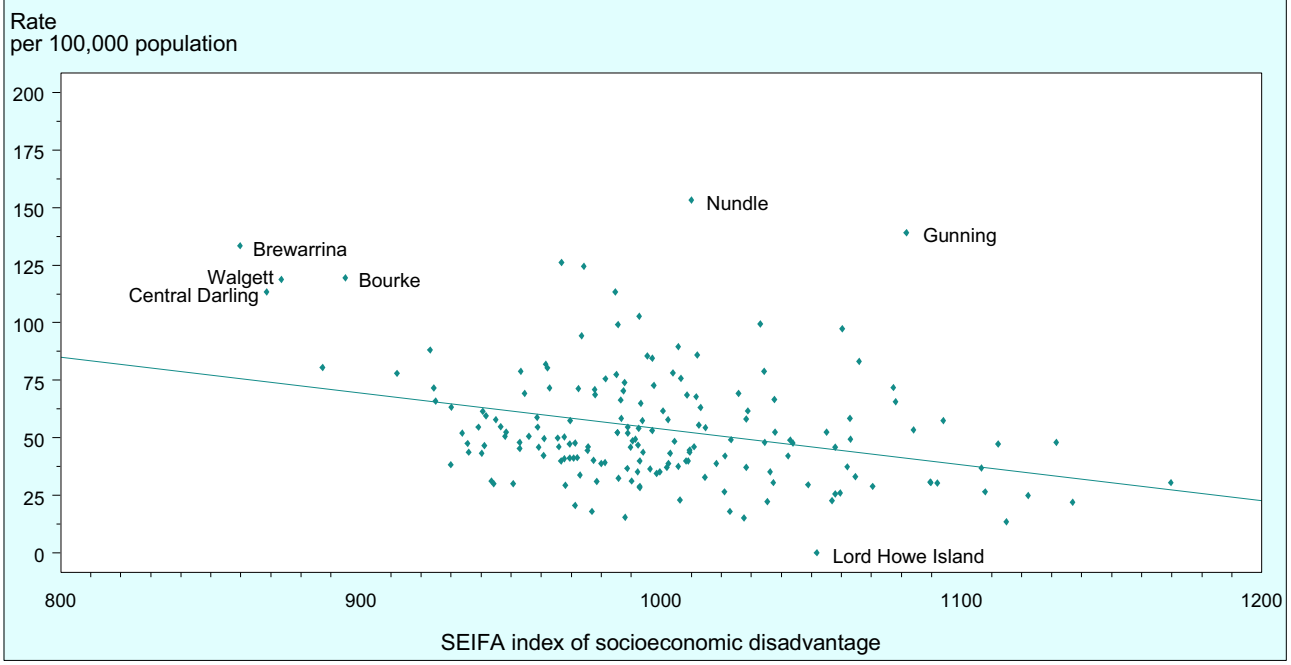
Abbreviations: SEIFA: socioeconomic index for area, LGA: local government area.

Source: ABS census data, mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The above graph summarises the association between premature death from cardiovascular diseases (mainly coronary heart disease and stroke) and index of socioeconomic disadvantage. As for mortality from all causes, there was a strong negative correlation (Pearson correlation coefficient r=-0.50; p<0.0001; n=177 LGAs). The method used is described in more detail on page 263.
- As in the previous graph, the five outliers with high mortality and low socioeconomic status (SES) have the highest percentages of indigenous people in the state.
- The higher premature mortality for cardiovascular diseases in adults residing in socioeconomically disadvantaged areas has also been reported elsewhere for NSW (Close et al. 1994) as well as Australia (Mathers 1994) and overseas (Davey Smith et al. 1990).
- Recognised risk factors for cardiovascular diseases, such as smoking and lack of physical activity, are strongly negatively correlated to SES (Mathers 1994) and are likely to be the important factors influencing this association between cardiovascular disease mortality and SES.

References: Close G, Lyle D, Churches T and Westley-Wise V, *Cardiovascular disease surveillance report 1994,* NSW Public Health Bulletin supplement no. 5, NSW Health Department, 1994.
Davey Smith G, Bartley M and Blane D, 'The Black report on socioeconomic inequalities in health 10 years on', *BMJ*, Vol. 301, 1990, pp. 373-7.
Mathers C, *Health differentials among adult Australians aged 25-64 years,* Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.

Premature deaths from injury and poisoning, by index of socioeconomic disadvantage, NSW LGAs, 1990 to 1994



Notes: Rates are for persons aged 15-64 years at death. Death rates were directly age-adjusted using the standard Australian population as at 30 June 1991. Injury and poisoning were classified according to the ICD9-CM codes: E800-869, E880-929, E950-999. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status.

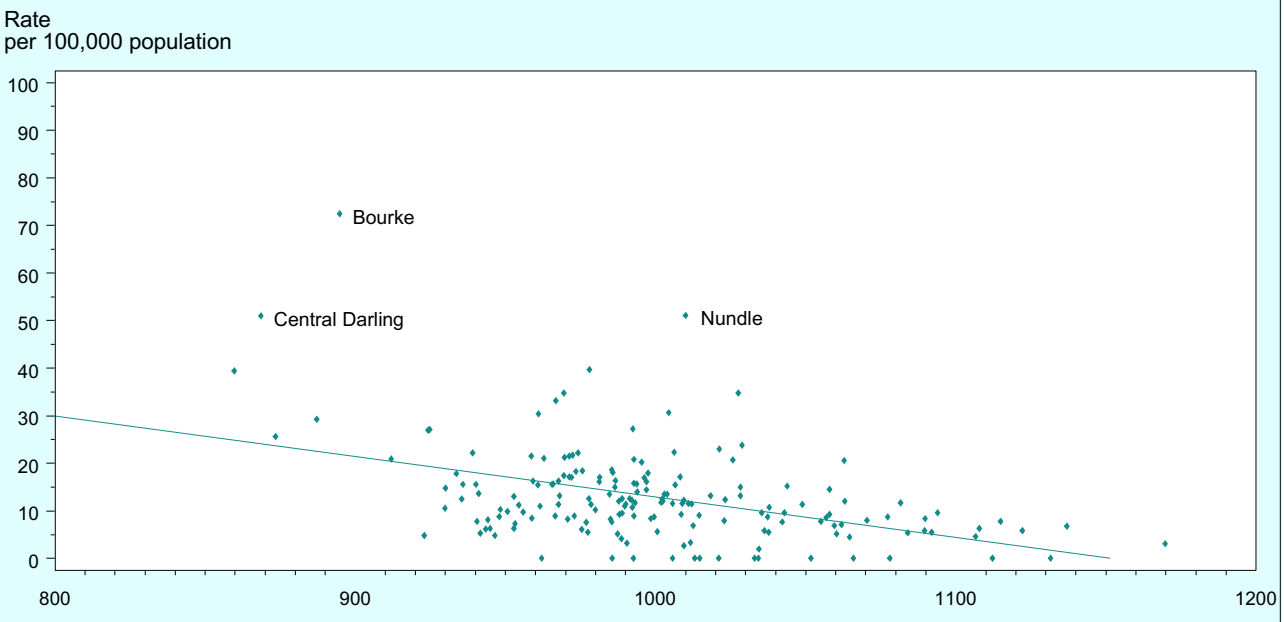
Abbreviations: SEIFA: socioeconomic index for area, LGA: local Government Area.

Source: ABS census data, mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This graph summarises the association between premature death from all injuries and poisoning and index of socioeconomic disadvantage. The method used is described on page 263. Injury is defined as 'bodily harm resulting from some external force or energy acting on a person'; this includes intentional (self-inflicted or inflicted by others) and unintentional (accidental) injuries. The most common causes of premature death due to injury are suicides and road vehicle accidents (see chapter 4.1).
- There was a negative correlation (Pearson correlation coefficient r=-0.32; p<0.0001; n=177 LGAs) between injury death rates and SEIFA score, although somewhat weaker than that for cardiovascular diseases (see page 138). This association has also been reported nationally, for overall injuries and more specifically road traffic accidents and suicides (Harrison et al. 1994; Mathers 1994).
- The mechanism whereby people from areas with low socioeconomic status (SES) experience higher injury death rates is likely to be complex and multifactorial. To understand this association, variation in risk exposures with SES levels needs to be studied, using individual data and record linkage if possible, rather than aggregate data.

References: Harrison JE and Cripps RA (eds), *Injury in Australia. An epidemiological review,* AIHW, AGPS, Canberra, 1994.
Mathers C, *Health differentials among adult Australians aged 25-64 years,* Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.

Premature deaths from respiratory diseases, by index of socioeconomic disadvantage, NSW LGAs, 1990 to 1994



Notes: Rates are for persons aged 15-64 years at death. Death rates were directly age-adjusted using the standard Australian population as at 30 June 1991. Respiratory diseases were classified according to the ICD9-CM codes: 460-519. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status.

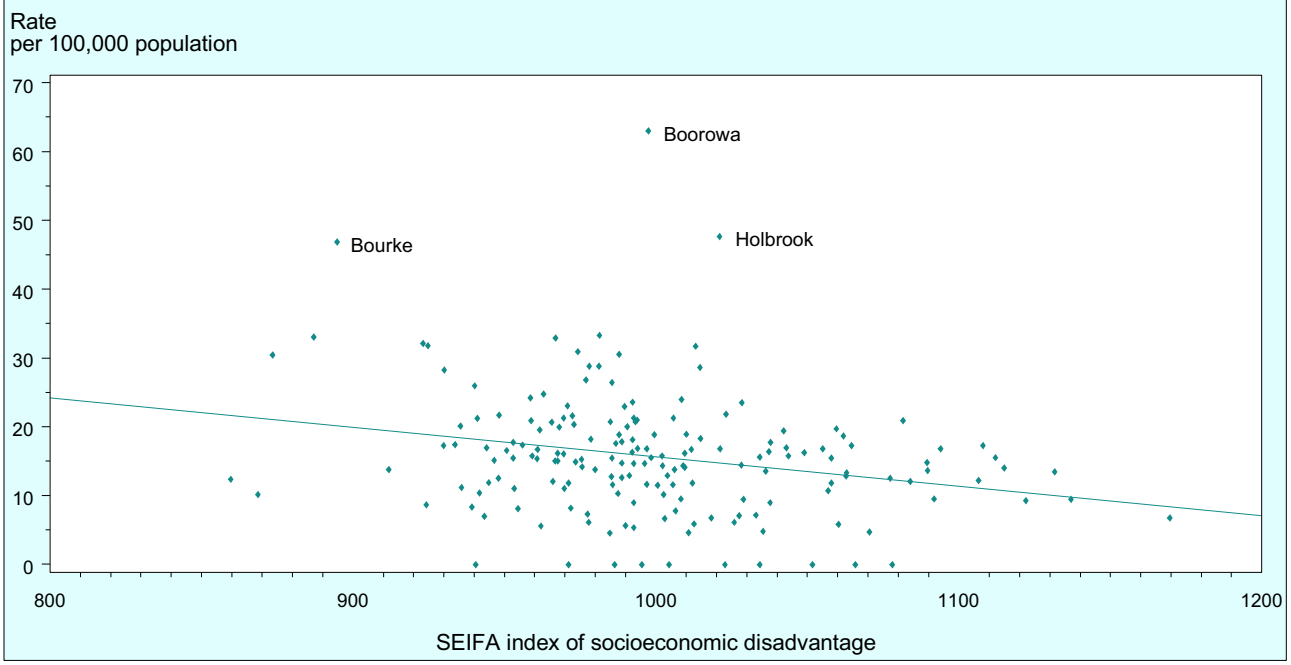
Abbreviations: SEIFA: socioeconomic index for area, LGA: local government area.

Source: ABS census data, mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This graph summarises the association between premature death from respiratory diseases and index of socioeconomic disadvantage. The method used is described on page 263. Major causes of respiratory mortality include acute and chronic conditions such as chronic airways limitation, pneumonias, influenza and asthma.
- There was a marked negative correlation between death rates for respiratory diseases and SEIFA score (Pearson correlation coefficient r=-0.45; p<0.0001; n=177 LGAs).
- The higher premature death rates for respiratory diseases in adults residing in socioeconomically disadvantaged areas has also been reported elsewhere for Australia (Mathers 1994) and overseas (Davey Smith 1990).
- Multiple factors are likely to influence this association. Smoking is probably important; it is a well known risk factor for chronic airways limitation and populations with lower socioeconomic status have higher smoking prevalences.

References: Davey Smith G, Bartley M and Blane D, 'The Black report on socioeconomic inequalities in health 10 years on', *BMJ*, Vol. 301, 1990, pp. 373-7.
Mathers C, *Health differentials among adult Australians aged 25-64 years,* Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.

Premature deaths from lung cancer,
by index of socioeconomic disadvantage, NSW LGAs, 1990 to 1994



Notes: Rates are for persons aged 15-64 years at death. Death rates were directly age-adjusted using the standard Australian population as at 30 June 1991. Lung cancer was classified according to the ICD9-CM code: 162. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status.

Abbreviations: SEIFA: socioeconomic index for area, LGA: local government area.

Source: ABS census data and population estimates, NSW Central Cancer Registry (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In NSW in 1994, lung cancer accounted for 24 per cent and 13 per cent of all cancer deaths for males and females respectively (Coates et al. 1997).
- This graph depicts the association between premature death from lung cancer and index of socioeconomic disadvantage. The method used is described on page 263.
- There was a modest negative correlation (Pearson correlation coefficient r=-0.25; p=0.0008; n=177 LGAs) between lung cancer death rates and SEIFA score. Studies in Australia (Mathers 1994) and overseas (Davey Smith et al. 1990) report similar findings. Higher smoking prevalences in areas with low socioeconomic status are likely to account for a large part of this correlation, since smoking is the strongest risk factor for lung cancer. Indeed, 84 per cent of lung cancer cases in males and 77 per cent of cases in females are attributable to smoking (English et al. 1995).
- There was a similar modest negative correlation between rates of new (incident) cases of lung cancer and index of socioeconomic disadvantage (r=-0.38; p<0.0001; n=177 LGAs).

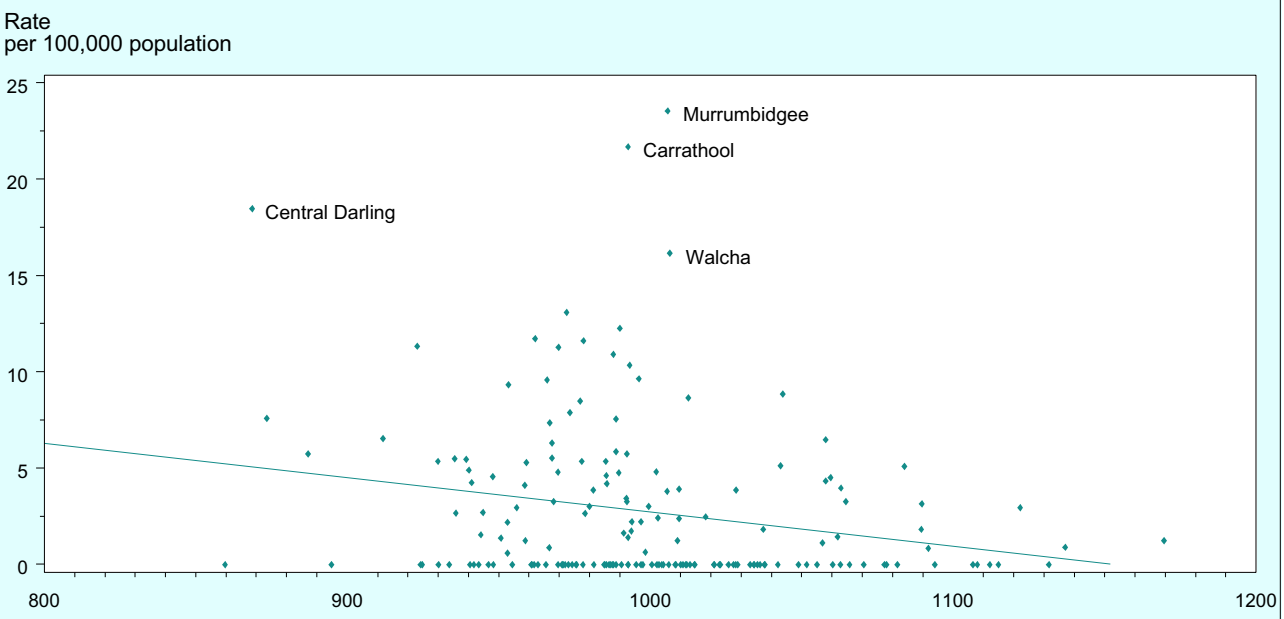
References: Coates MS and Armstrong BK, *Cancer in NSW. Incidence and mortality 1994,* NSW Cancer Council, Sydney, 1997.

Davey Smith G, Bartley M and Blane D, 'The Black report on socioeconomic inequalities in health 10 years on', *BMJ*, Vol. 301, 1990, pp. 373-7.

English DR, Holman CDJ et al., *The quantification of drug-caused morbidity and mortality in Australia – 1995,* Commonwealth Department of Human Services and Health, Canberra, 1995.

Mathers C, *Health differentials among adult Australians aged 25-64 years,* Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.

Premature deaths from cervical cancer,
by index of socioeconomic disadvantage, NSW LGAs, 1990 to 1994



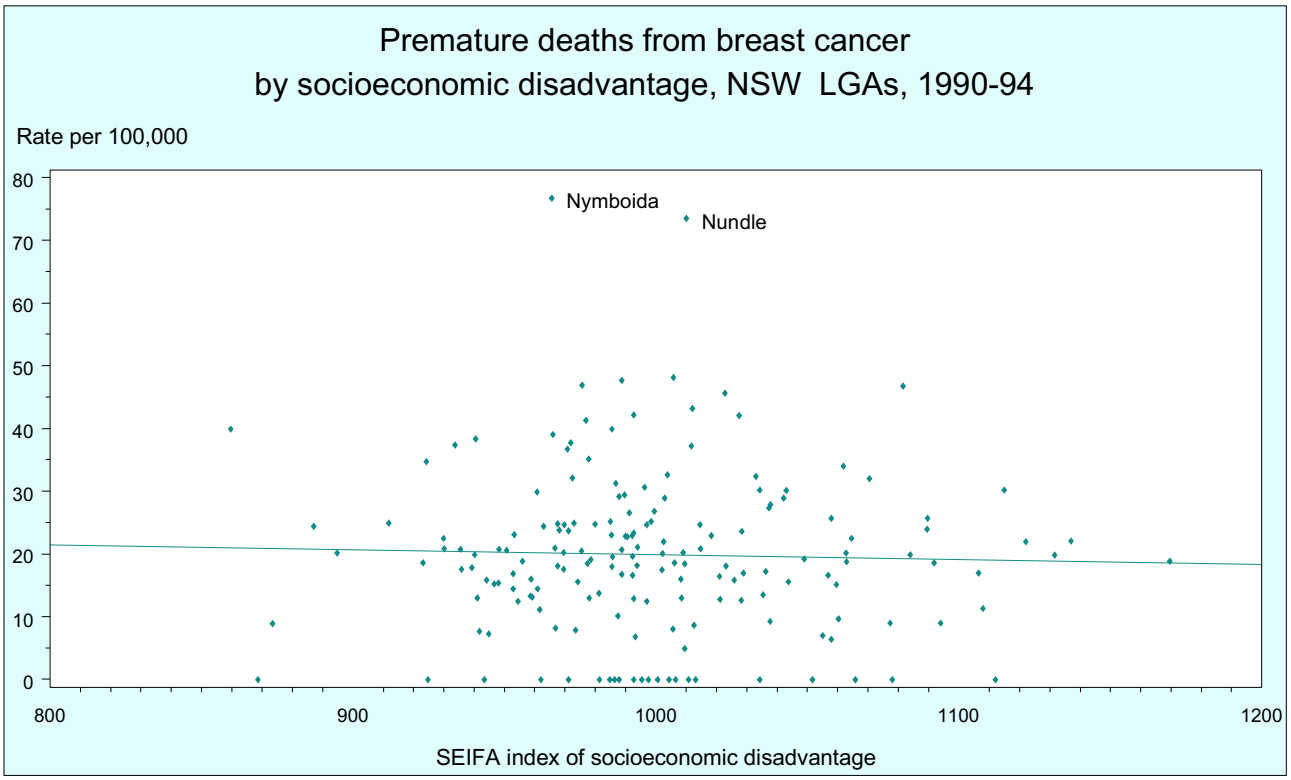
Notes: Rates are for persons aged 15-64 years at death. Death rates were directly age-adjusted using the standard Australian population as at 30 June 1991. Cervical cancer was classified according to the ICD9-CM code: 180. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status.

Abbreviations: SEIFA: socioeconomic index for area, LGA: local government area.

Source: ABS census data and population estimates, NSW Central Cancer Registry (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This graph depicts the association between premature death from cervical cancer and index of socioeconomic disadvantage. The method used is described on page 263.
- As for lung cancer, there was a modest negative correlation (Pearson correlation coefficient r=-0.22; p=0.003; n=177 LGAs) between death rates and SEIFA score. This association has also been reported in Victoria (Jelfs 1995) and overseas (Jelfs 1995). The relationship between rates of new cases of cervical cancer and socioeconomic disadvantage showed a similar negative correlation (r=-0.30; p<0.0001; n=177 LGAs).
- The relationship between low socioeconomic status (SES) and cervical cancer is probably indirect and multifactorial: women of lower SES are at increased risk of not receiving Pap smear screening (Jelfs 1995). Also, high-risk behaviours, such as multiple sexual partners and smoking, are more prevalent in low-SES groups (Jelfs 1995).

References: Jelfs P, *Cervical cancer in Australia,* Cancer series no .3, AIHW, Canberra, 1995.
Kricker A, Bell J, Coates M, Taylor R and Armstrong B, *Cancer of the cervix in NSW, 1972-1992,* NSW Cancer Council, Sydney,1996.



Notes: Rates are for persons aged 15-64 years at death. Death rates were directly age-adjusted using the standard Australian population as at 30 June 1991 Breast cancer was classified according to the ICD9-CM code: 174. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status.

Abbreviations: SEIFA: socioeconomic index for area, LGA: local government area.

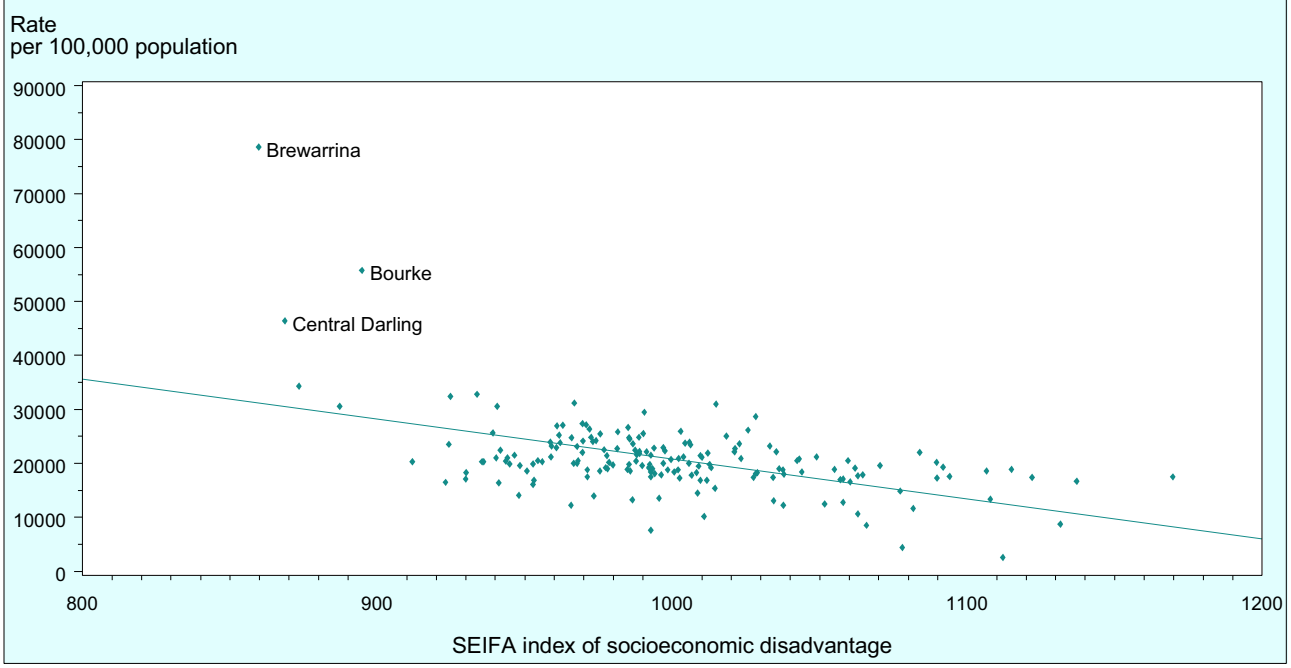
Source: ABS census data and population estimates, NSW Central Cancer Registry (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This graph depicts the association between premature death from breast cancer and index of socioeconomic disadvantage for each LGA in NSW. The method used is described on page 263.
- There was virtually no correlation (Pearson correlation coefficient r=-0.03; p=0.68; n=177 LGAs) between breast cancer death rates and SEIFA score. A national report (National Health Strategy 1992) found a weak positive correlation: women living in areas with lowest socioeconomic status (SES) were 11 per cent less likely to die from breast cancer than their counterparts living in the highest SES areas.
- Our analysis of the relationship between rates of new cases of breast cancer and socioeconomic disadvantage again showed very little correlation (r=-0.06; p=0.42; n=177 LGAs). Interestingly, a positive association between rates of new cases of breast cancer and 'having completed higher education' has recently been reported in NSW (Taylor et al. 1994).
- Premature death rates for other common cancer sites did not show any correlation with SES:
  - Melanoma (r=-0.060; p=0.43; n=177 LGAs) for persons,
  - Prostate cancer (r=0.032;p=0.67; n=177 LGAs) for males,
  - Colorectal cancer (r=-0.073; p=0.33; n=177 LGAs) for persons.

  The last two findings are consistent with those of a national report (National Health Strategy 1992).

References: Bell J, Coates M, Day P and Armstrong B, *Colorectal cancer in NSW in 1972 to 1993,* NSW Cancer Council, Sydney 1996.
National Health Strategy, *Enough to make you sick. How income and environment affect health,* Research paper no.1, National Health Strategy, Canberra, 1992.
Nguyen H, Armstrong B and Coates M, *Cutaneous melanoma in NSW in 1983 to 1995,* NSW Cancer Council, Sydney 1997.
Taylor R, Smith D, Hoyer A, Coates M and McCredie M, *Breast cancer in NSW, 1972-1991,* NSW Cancer Council, Sydney 1994.

Hospital separations for all causes,
by index of socioeconomic disadvantage, NSW LGAs, 1991 to 1995



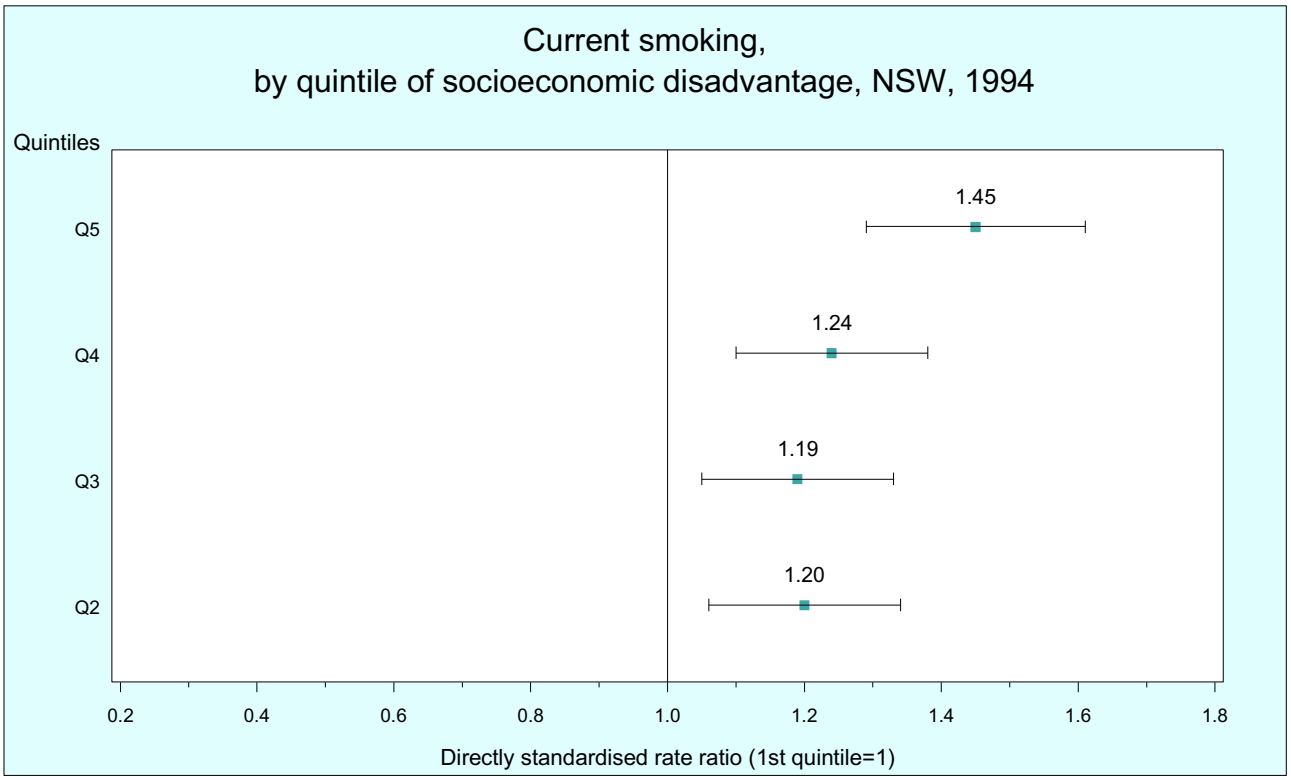
Notes: Separations for normal deliveries (ICD9-CM: 630-676) were excluded. Rates are for persons aged 15-64 years at admission. Separation rates were directly age-adjusted using the standard Australian population as at 30 June 1991. SEIFA index of socioeconomic disadvantage used 1991 census data. Higher scores indicate higher economic status. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Abbreviations: SEIFA: socioeconomic index for area, LGA: local government area.

Source: ABS census data and population estimates, NSW Inpatient Statistics Collection (ISC) (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Data for hospital separations should be interpreted with caution, because they are influenced by access to and demand for hospital services, as well as need for services (health status). They also represent episodes rather than persons (one person can be hospitalised multiple times). Admission policies vary among areas, and people from remote regions may be especially likely to be admitted to hospital so their condition can be monitored. Despite this, it is common practice to use hospital separations for all causes as an index of morbidity in the population as well as one of health services use.
- The above graph depicts the association between hospital separations rates for all causes and the index of socioeconomic disadvantage for each LGA in NSW. The method used is described on page 263.
- As for death rates from all causes, there was a strong negative correlation (Pearson correlation coefficient r=-0.52; p<0.0001; n=177 LGAs). Again here, the three LGA outliers with low socioeconomic status (SES) and high separation rates (Bourke, Brewarrina and Central Darling) have among the highest percentages of indigenous people in the state.
- This negative association of morbidity with SES has been reported at the national level (Mathers 1994) and overseas (Davey Smith et al. 1990) although these findings were often based on self-report of acute or chronic illness and disability (see also page 149).
- Because of space limitations and to avoid repetition, only hospital separations for all causes are displayed here. However, similarly strong negative correlations were observed when examining the association between SES and cardiovascular (r=-0.57), respiratory (r=-0.48) and injury-related (r=-0.56) separations. These analyses were restricted to the main diagnosis at separation and used the same ICD9 codes as for the corresponding death data analyses (see pages 138-140).

References: Davey Smith G, Bartley M and Blane D, 'The Black report on socioeconomic inequalities in health 10 years on', *BMJ*, Vol. 301, 1990, pp. 373-377.
Mathers C, *Health differentials among adult Australians aged 25-64 years,* Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.



Notes: Current smoking includes daily or occasional smoking. Rate ratios are for persons aged 18 years and over. Rates were directly age-adjusted using the standard 1991 NSW population. Respondents were classified into quintiles of index of socioeconomic disadvantage; this index used 1991 census data. Higher scores indicate higher economic status.

Source: Howell and Bauman, unpublished.

- This page and the next four present differences across socioeconomic groups for self-reported risk factors and perceived health status, using data from the 1994 NSW Health Promotion Survey (Graham-Clarke et al. 1996; Howell and Bauman, unpublished).
- Survey respondents were classified into quintiles of socioeconomic disadvantage (ABS 1993) based on their postcode of residence. Age-adjusted rates for a range of health indicators were then calculated by quintile and compared with the rate for quintile 1 (the most socioeconomically advantaged). The methods used are described in more detail in the Methods section (page 263).
- This graph shows that all other quintiles had significantly higher smoking rates than quintile 1. Furthermore, it suggests that smoking rates increase with increasing levels of disadvantage. This pattern was particularly evident for males (Howell and Bauman, unpublished). These findings are consistent with similar work at the national level and overseas (Mathers 1994; National Health Strategy 1992). This association at least partly explains why cardiovascular and lung cancer premature mortality are strongly negatively correlated with socioeconomic status (see pages 138, 141).

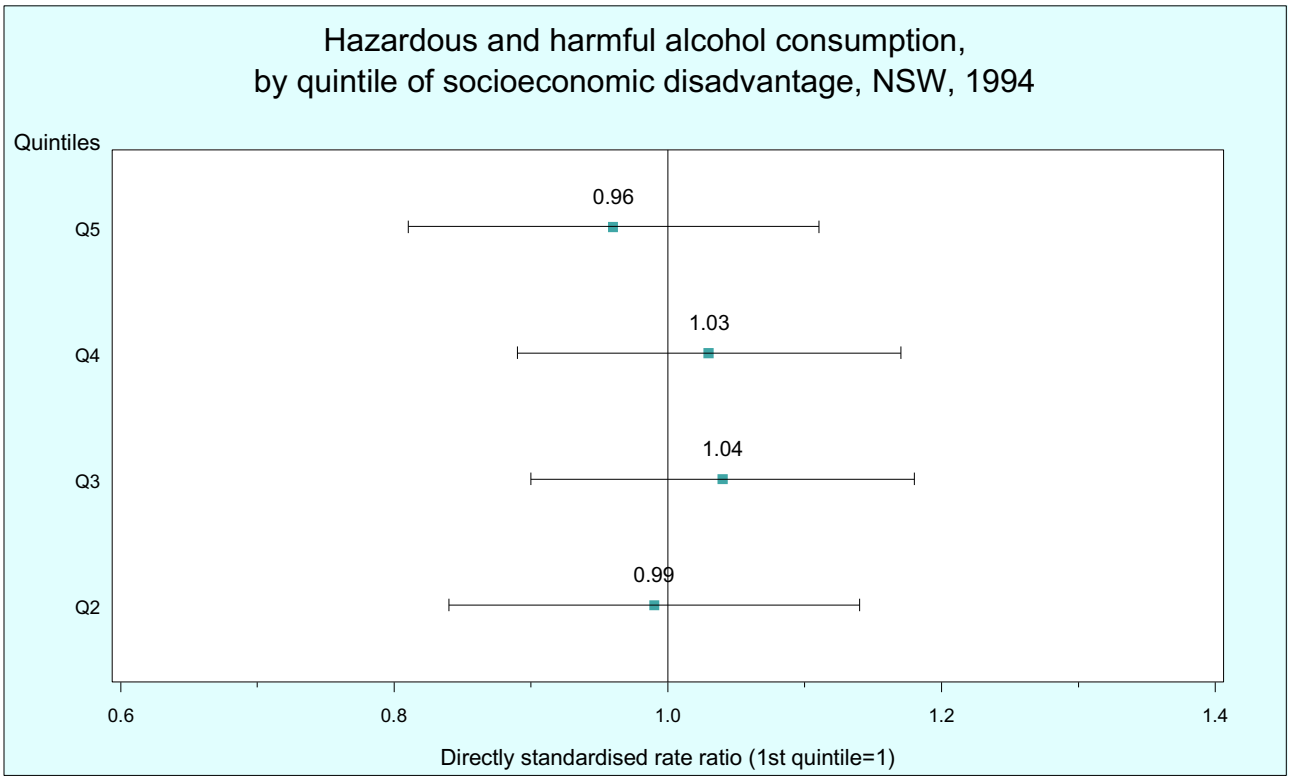
References: Australian Bureau of Statistics, *Information paper. 1991 Census socioeconomic indices for areas,* cat. no.29120, ABS, Canberra., 1993

Graham-Clarke P, Nathan S, Stoker L, Bauman A and Wise M, *Smoking – NSW Health Promotion Survey 1994,* NSW Health Department, Sydney, 1996.

Howell S and Bauman A, *Health differentials – the NSW Health Promotion Survey data,* unpublished report, National Centre for Health Promotion, Sydney, 1996.

Mathers C, *Health differentials among adult Australians aged 25-64 years*, Health monitoring series no.1, AIHW, AGPS, Canberra, 1994.

National Health Strategy, *Enough to make you sick: how income and environment affect health,* Research paper no. 1, National Health Strategy, Canberra, 1992.

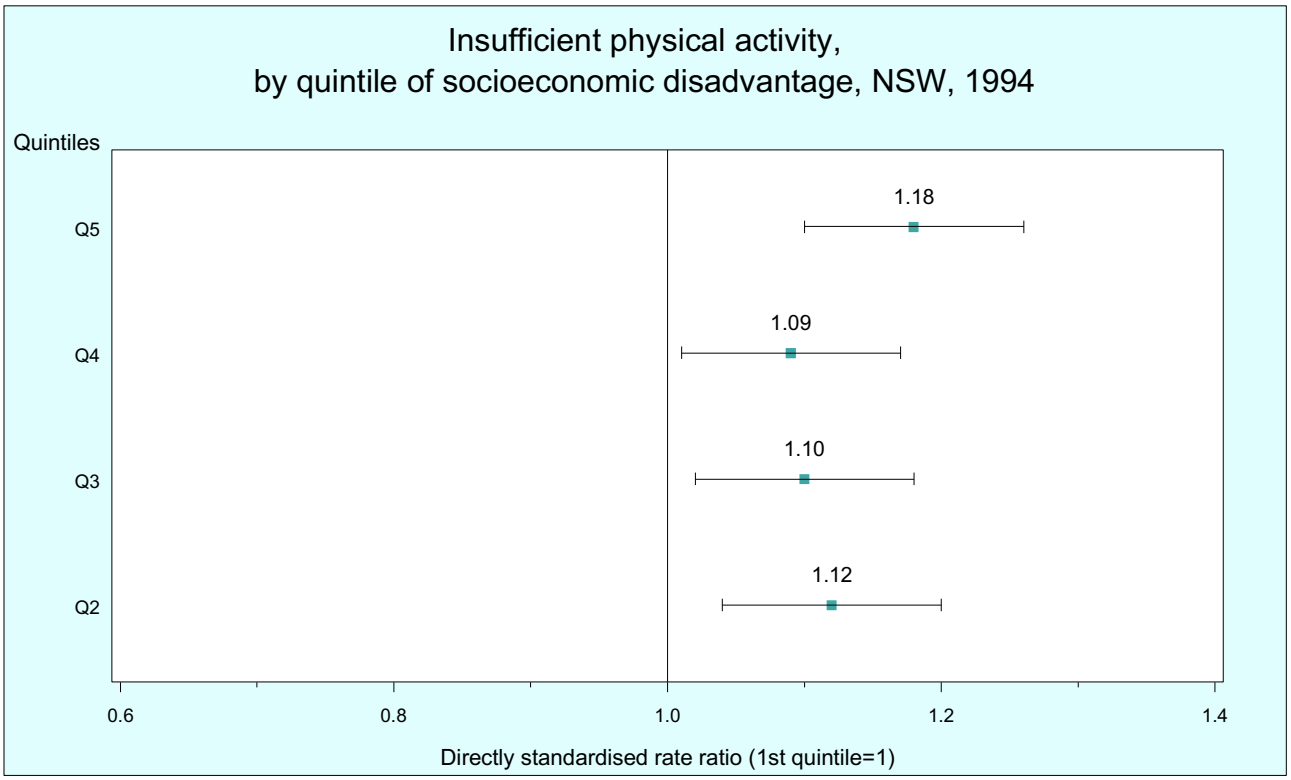


Notes: Average daily alcohol consumption was estimated from self-reported consumption of standard drinks per day for the seven day pre-survey period. Hazardous or harmful alcohol consumption (risk drinking) is defined as the percentage of people whose average daily alcohol consumption exceeds safe limits, that is, more than 4 standard drinks for men and more than 2 standard drinks for women. Drinking risk was coded according to NHMRC guidelines for safe drinking. Rate ratios are for persons aged 18 years and over. Rates were directly age-adjusted using the standard 1991 NSW population. Respondents were classified into quintiles of index of socioeconomic disadvantage; this index used 1991 census data. Higher scores indicate higher economic status.

Source: Howell and Bauman, unpublished.

- This graph examines the association between alcohol consumption and socioeconomic disadvantage, using data from the 1994 NSW Health Promotion Survey (Howell and Bauman, unpublished). The method used is described on page 145 and in more detail on page 263.
- Socioeconomic disadvantage did not appear to be associated with higher rates of risk drinking among NSW adults. However, different patterns were seen in males and females (Howell and Bauman, unpublished). For men, rates of risk drinking tended to be higher among those from more disadvantaged groups. Indeed, men in the fourth quintile were significantly more (26%) likely to drink at risk levels than those in the most advantaged group (1st quintile). In women, rates of risk drinking tended to decrease as socioeconomic disadvantage increased. In particular, women from the fourth quintile were significantly less (20%) likely to drink at risk levels than those from the most advantaged group.
- This is consistent with the findings of a similar univariate analysis of national data (Mathers 1994): there was a 48 per cent greater likelihood of alcohol risk in men, but a slightly reduced (3% less likely) likelihood of alcohol risk in women, when the most socioeconomically disadvantaged quintile (5th quintile) was compared with the least disadvantaged one (1st quintile).

References: Howell S and Bauman A, *Health differentials – the NSW Health Promotion Survey data,* unpublished report, National Centre for Health Promotion, Sydney, 1996.
Mathers C, *Health differentials among adult Australians aged 25-64 years*, Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.



Notes: Insufficient physical activity is defined as the percentage of people with a total fortnightly energy expenditure not exceeding 1600 kilocalories. Rate ratios are for persons aged 18 years and over. Rates were directly age-adjusted using the standard 1991 NSW population. Respondents were classified into quintiles of index of socioeconomic disadvantage; this index used 1991 census data. Higher scores indicate higher economic status.

Source: Howell and Bauman, unpublished.

- This graph examines the association between physical activity and socioeconomic disadvantage, using data from the 1994 NSW Health Promotion Survey (Howell and Bauman, unpublished). The method used is described on page 145 and in more detail on page 263.
- NSW adults residing in the most socioeconomically advantaged postcodes (1st quintile) had significantly lower rates of insufficient physical activity than their counterparts in the other four quintiles.
- Interestingly, when analysing the data by sex and examining inactivity as well as insufficient activity, Howell and Bauman found that the association was stronger for males. In men, rates of inactivity (fortnightly energy expenditure less than 100 kilocalories) and insufficient activity (fortnightly energy expenditure less than 1600 kilocalories) increased with increasing levels of socioeconomic disadvantage. In women, being in the second and fifth quintile was associated with significantly higher rates of inactivity (32% and 45% higher respectively) than being in the most advantaged quintile. However, rates of insufficient activity did not vary significantly with the level of socioeconomic disadvantage.
- Findings consistent with this have been reported by Mathers (1994) in a similar univariate analysis of national data which examined physical inactivity.

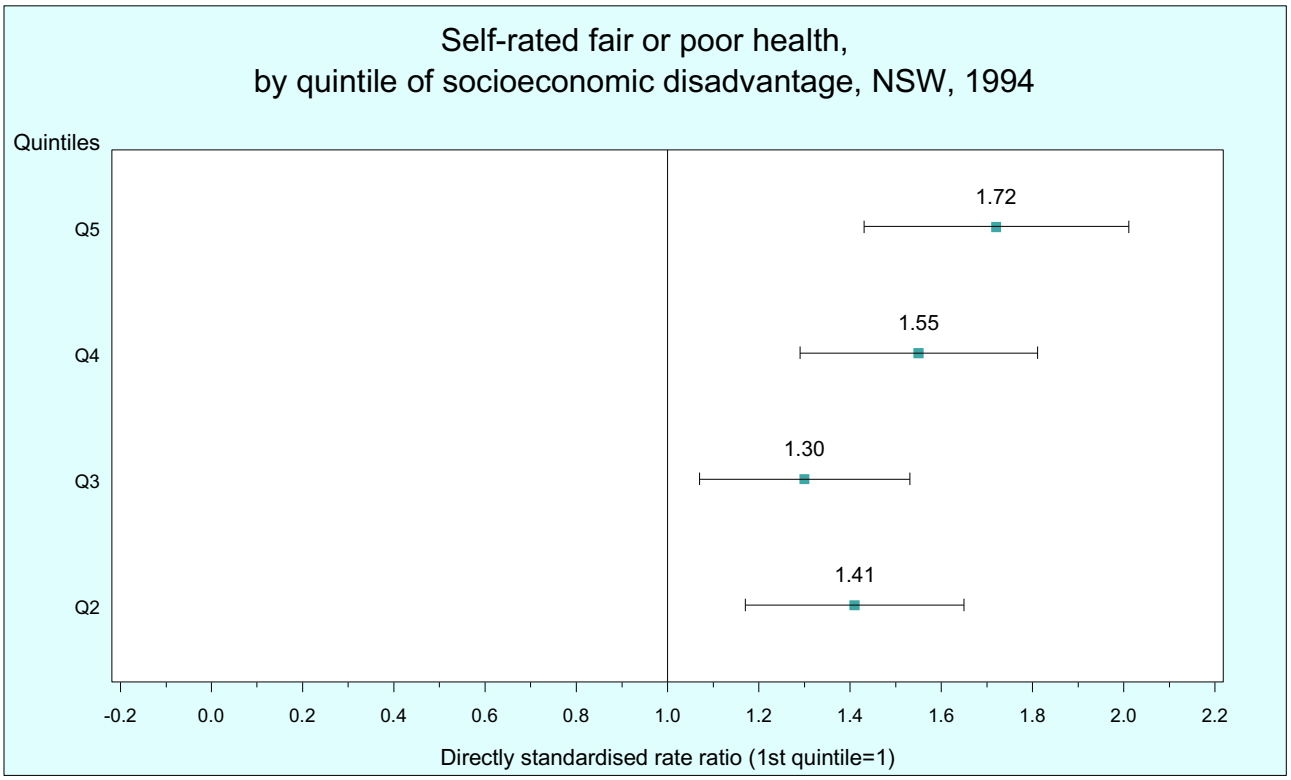
References: Howell S and Bauman A, *Health differentials – the NSW Health Promotion Survey data,* unpublished report, National Centre for Health Promotion, Sydney, 1996.
Mathers C, *Health differentials among adult Australians aged 25-64 years*, Health monitoring series no.1, AIHW, AGPS, Canberra, 1994.

Notes: Overweight and obesity is defined as body mass index (BMI) exceeding 25.0 kg/m^2. BMI was calculated using self-reported height and weight. Rate ratios are for persons aged 18 years and over. Rates were directly age-adjusted using the standard 1991 NSW population. Respondents were classified into quintiles of index of socioeconomic disadvantage; this index used 1991 census data. Higher scores indicate higher economic status.

Source: Howell and Bauman, unpublished.

- This graph examines the association between overweight or obesity and socioeconomic disadvantage, using data from the 1994 NSW Health Promotion Survey (Howell and Bauman, unpublished). The method used is described on page 145 and in more detail on page 263.
- Socioeconomic disadvantage was associated with significantly higher rates of overweight or obesity among NSW adults except for people in the fourth quintile. When compared with the most advantaged (1st) quintile, adults in the second quintile were significantly more likely to be overweight or obese (10% more likely), as were those in the third and fifth quintiles (respectively, 14% and 16% more likely).
- In the analysis by sex, Howell and Bauman found that socioeconomic disadvantage was not associated with higher or lower rates of overweight or obesity among NSW men. However, for women, such rates increased steadily as socioeconomic disadavantage increased.
- This is consistent with the findings of a similar univariate analysis of national data (Mathers 1994); women in the most socioeconomically disadvantaged quintile had a 23 per cent greater likelihood of being overweight or obese compared with women in the first quintile, but no difference was observed for men.

References: Howell S and Bauman A, *Health differentials – the NSW Health Promotion Survey data,* unpublished report, National Centre for Health Promotion, Sydney, 1996.
Mathers C, *Health differentials among adult Australians aged 25-64 years*, Health monitoring series no. 1, AIHW, AGPS, Canberra, 1994.



Notes: Survey respondents were asked to rate their health status according to a five point scale as 'excellent', 'very good', 'good', 'fair', 'poor'. Rate ratios are for persons aged 18 years and over. Rates were directly age-adjusted using the standard 1991 NSW population. Respondents were classified into quintiles of index of socioeconomic disadvantage; this index used 1991 census data. Higher scores indicate higher economic status.

Source: Howell and Bauman, unpublished.

- This graph examines the association between self-reported health status and socioeconomic disadvantage, using data from the 1994 NSW Health Promotion Survey (Howell and Bauman, unpublished). The method used is described on page 145 and in more detail on page 263.
- Socioeconomic disadvantage was associated with higher rates of self-rated fair or poor health among NSW adults. Rates were significantly higher in all socioeconomic groups than the most advantaged group (1st quintile). Further, there seemed to be a trend for the rates to increase with increasing levels of disadvantage.
- In the analysis by sex, Howell and Bauman found that the trend was most evident in women. For men, higher rates of fair or poor health were associated with being in the fourth and fifth quintiles (respectively, 39% and 58% higher than for men in the most advantaged quintile). Men in the second and third quintiles did not significantly differ from the reference group.
- A similar univariate analysis of national data (Mathers 1994) also reported a gradient of increasing prevalence of self-rated fair or poor health with increasing socioeconomic disadvantage. The gradient was clear for both men and women. The results are also in keeping with the negative correlation observed between socioeconomic status and hospital separations rates for all causes, another index of general morbidity (see page 144).

References: Howell S and Bauman A, *Health differentials – the NSW Health Promotion Survey data,* unpublished report, National Centre for Health Promotion, Sydney, 1996.
Mathers C, *Health differentials among adult Australians aged 25-64 years*, Health monitoring series no.1, AIHW, AGPS, Canberra, 1994.

Health priority areas

Section 4

Chapter 4.1

Injury and poisoning

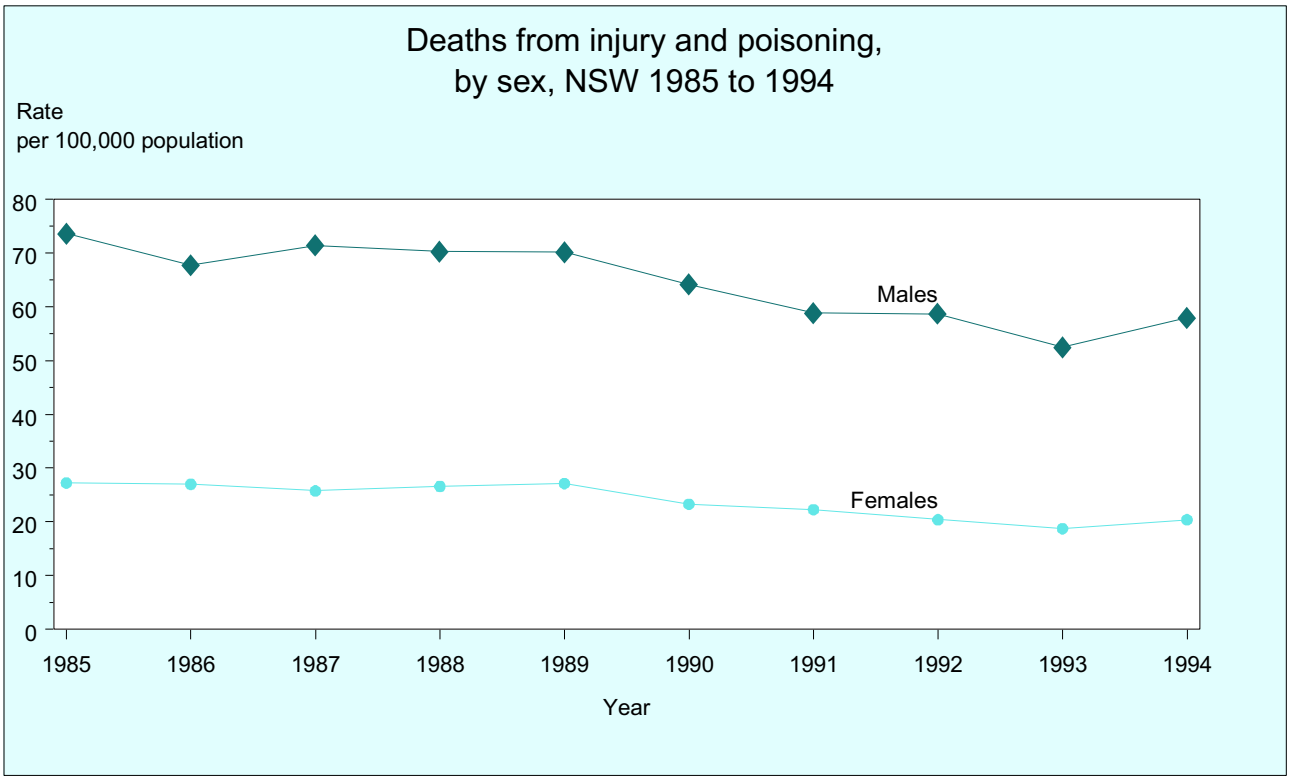
- In 1994, injury and poisoning caused 2,390 deaths in NSW, making it the fourth leading cause of death in both sexes.
- The major causes of injury death were suicide, road injury, falls, unintentional poisoning, homicide and unintentional drowning.
- The main causes of injury hospitalisation in 1995/96 were falls, road injury, sports injury and unintentional cutting and piercing injuries.
- In 1994, there were 613 road injury deaths. The highest rate was in the 15- to 24-year age group.
- In the same year, there were 95 unintentional drownings. The highest rate of drowning was in children aged 0-to 4-years.
- Hospitalisations for falls have been increasing in recent years. In 1995/96, falls were the leading cause of injury hospitalisations in every age group except 15-29 years.
- In 1995/96, unintentional poisoning was the second leading cause of injury hospitalisation in 0- to 4-year-olds, with drugs and medicines (most commonly paracetamol) mainly responsible.
- In the same year, unintentional injuries resulting from fire, burns and scalds were the third leading cause of injury hospitalisation among 0- to 4-year-olds.
- In 1994, there were 66 homicides in males and 42 in females, with almost half of these (45%) in people aged 20-39 years.
- Hospitalisations following interpersonal violence have increased gradually in recent years, with 5,046 such hospitalisations of males and 1,357 of females in 1995/96.
- In 1995/96, 12,810 NSW children had a confirmed case of abuse or neglect reported to the Department of Community Services.
- Deaths and hospitalisations due to firearm injury have decreased in recent years. There were 132 such deaths in males and 16 in females in 1994.

In this chapter

Introduction

This chapter describes trends in deaths and hospitalisations due to injury and poisoning in NSW. The specific injury types chosen reflect priorities for injury prevention in NSW.

For details of the methods used for analysing death and hospitalisation data, refer to the Methods section (page 257).



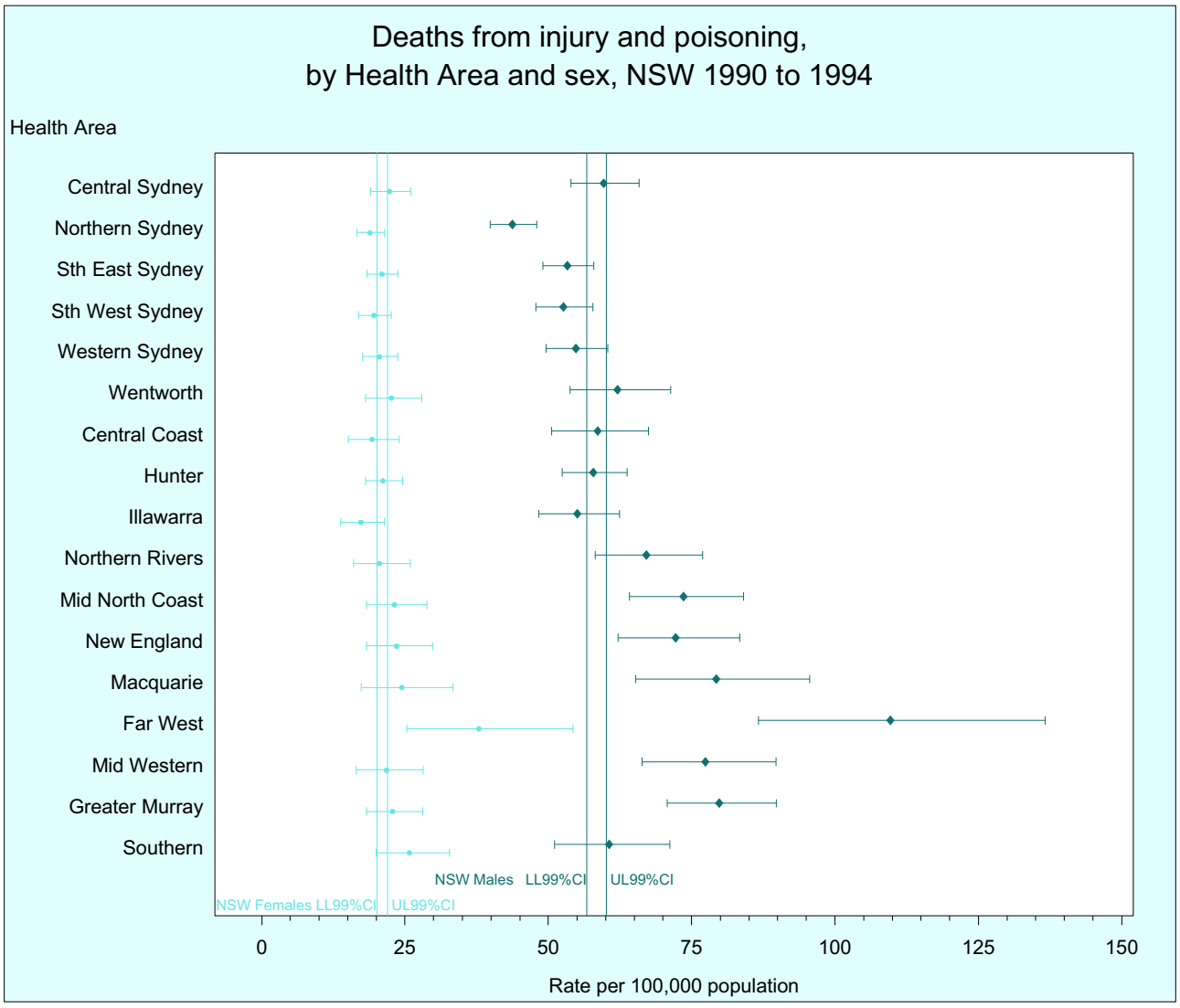
Year		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	Males	73.6	67.7	71.4	70.3	70.2	64.2	58.9	58.7	52.5	58.0
	Females	27.2	27.0	25.7	26.6	27.1	23.3	22.3	20.4	18.7	20.4
	Persons	49.9	47.1	48.2	48.2	48.4	43.2	40.2	39.1	35.3	38.7
AUSTRALIA	Males	72.6	71.2	73.2	75.0	70.4	67.7	64.1	61.3	58.6	-
	Females	27.9	27.6	26.6	28.0	26.9	25.2	24.4	23.3	20.2	-
	Persons	50.0	49.2	49.6	51.1	48.3	46.1	43.9	42.0	39.0	39.4

Note: Injury and poisoning were classified according to the ICD9 external cause codes E800-869 E880-929 E950-999. NSW population estimates as at 30 June each year. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: ABS mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet E T and Stevenson C, *Australian health trend*, AIHW, Canberra, 1995.

- In 1994, 2,390 NSW people (1,694 males, 696 females) died following injury and poisoning, making it the fourth leading cause in both sexes. Injury and poisoning accounted for 7 per cent of all male deaths, 3 per cent of all female deaths and 5 per cent of all deaths.
- The main causes of injury death were suicide (797 deaths or 33%), road injury (613, 26%), falls (339, 14%), unintentional poisoning (120, 5%), homicide (108, 5%) and unintentional drowning (95, 4%).
- The rise in the injury death rate in 1994 was largely explained by increases in road injury deaths, and suicide in males.
- The age-adjusted rate of death due to injury in 1994 for males was about three times that for females. The difference was most pronounced in the 20- to 29-year age group, where the male rate was five times the female rate.
- Injury and poisoning is the primary cause of death in younger people. In the age range 1-39 years, there were 1,123 such deaths in 1994, making up approximately half of all deaths in that age group. Injury and poisoning made the greatest contribution to the overall death rate in the 20- to 24-year age group, causing 237 (72%) of the 327 deaths in this age group.
- NSW Health has set a target for the year 2000 of reducing the death rate for injury and poisoning by 15 per cent compared with the 1992 rate.

For more information, see: Bordeaux S and Harrison J, 'Injury Mortality Australia 1994', *Australian Injury Prevention Bulletin,* Issue 13, AIHW National Injury Surveillance Unit, Adelaide, 1996.
NSW Injury Expert Working Panel, *Injury prevention and Management NSW goals and targets*, NSW Health Department, Sydney, 1995.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



Note: Injury and poisoning were classified according to the ICD9 external cause codes E800-869, E880-929, E950-999. Death rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990 to 1994, male residents of the Mid North Coast, New England, Macquarie, Far West, Mid Western, and Greater Murray Health Areas had age-adjusted injury death rates significantly higher than for NSW overall. Only residents of the Northern Sydney Health Area had a death rate significantly lower than for NSW overall.
- Among females, only residents of the Far West Health Area had an age-adjusted injury death rate significantly higher than for NSW overall. No Health Area had an injury death rate significantly lower than for NSW overall.
- Degree of remoteness influences the risk of death from injury. Rural and remote areas have significantly elevated unintentional injury death rates compared with capital city and major urban areas. In males, there is a clear gradient of increasing risk of unintentional injury death with increasing remoteness, with a weaker gradient for females. Suicide death rates for females are higher in urban than rural areas, while in males, higher risk is seen only in the most remote areas. The risk of death due to interpersonal violence is higher in remote rural areas for both sexes (Moller 1994).
- Deaths from transportation and production injuries and burns and scalds are more frequent in rural areas. Non-pharmaceutical poisoning deaths are more common in the most remote areas. There is no obvious spatial relationship for unintentional drowning, falls, or pharmaceutical poisonings (Moller 1994).

References: Moller J, The spatial distribution of injury deaths in Australia: urban, rural and Remote Areas', *Australian Injury Prevention Bulletin,* Issue 8, AIHW National Injury Surveillance Unit, Adelaide, 1994.

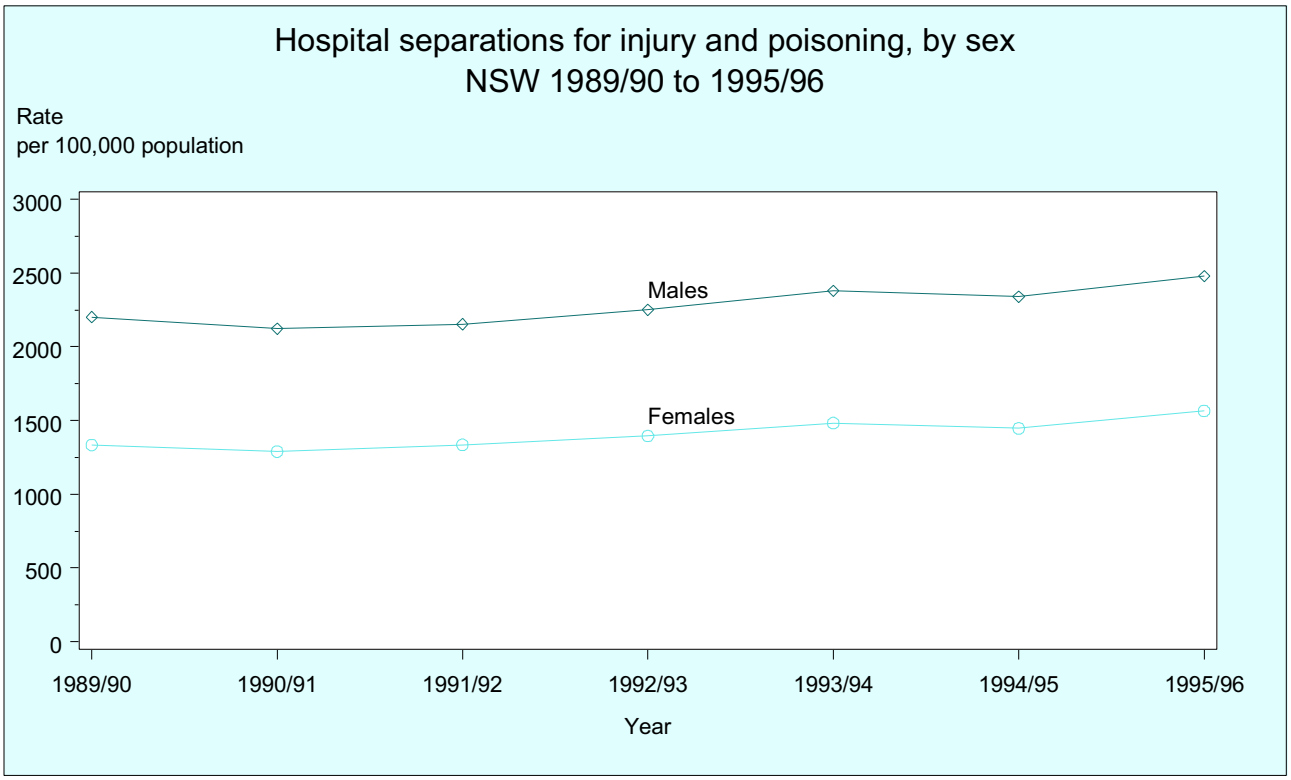
For more information, see: The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au

Deaths from injury and poisoning, by Health Area and sex, NSW, 1990 to 1994

Health Area	Sex	Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	Males	697	59.7	53.9	65.9
Central Sydney	Females	299	22.3	19.0	26.0
Central Sydney	Persons	996	40.0	36.8	43.5
Northern Sydney	Males	785	43.7	39.8	47.9
Northern Sydney	Females	461	18.9	16.6	21.4
Northern Sydney	Persons	1246	30.6	28.4	33.0
South Eastern Sydney	Males	971	53.4	49.0	58.0
South Eastern Sydney	Females	446	21.0	18.4	23.8
South Eastern Sydney	Persons	1417	36.6	34.1	39.2
South Western Sydney	Males	824	52.6	47.8	57.8
South Western Sydney	Females	317	19.6	16.9	22.6
South Western Sydney	Persons	1141	35.9	33.2	38.8
Western Sydney	Males	772	54.8	49.6	60.4
Western Sydney	Females	308	20.5	17.6	23.7
Western Sydney	Persons	1080	37.2	34.3	40.2
Wentworth	Males	385	62.1	53.8	71.3
Wentworth	Females	151	22.6	18.1	27.9
Wentworth	Persons	536	41.4	36.8	46.4
Central Coast	Males	338	58.6	50.6	67.5
Central Coast	Females	142	19.2	15.1	24.0
Central Coast	Persons	480	38.3	33.9	43.2
Hunter	Males	713	57.9	52.4	63.7
Hunter	Females	300	21.2	18.1	24.6
Hunter	Persons	1013	39.5	36.3	42.8
Illawarra	Males	422	55.1	48.3	62.5
Illawarra	Females	145	17.3	13.8	21.4
Illawarra	Persons	567	36.0	32.2	40.1
Northern Rivers	Males	362	67.1	58.2	76.9
Northern Rivers	Females	131	20.6	16.1	25.9
Northern Rivers	Persons	493	43.5	38.5	48.9
Mid North Coast	Males	395	73.6	64.1	84.1
Mid North Coast	Females	149	23.2	18.3	28.8
Mid North Coast	Persons	544	48.2	42.8	54.0
New England	Males	321	72.2	62.2	83.4
New England	Females	118	23.5	18.3	29.8
New England	Persons	439	47.8	42.1	54.0
Macquarie	Males	191	79.3	65.2	95.6
Macquarie	Females	67	24.5	17.4	33.4
Macquarie	Persons	258	51.9	43.9	60.9
Far West	Males	139	109.7	86.7	136.7
Far West	Females	49	37.9	25.3	54.3
Far West	Persons	188	73.7	60.6	88.8
Mid Western	Males	303	77.4	66.4	89.7
Mid Western	Females	101	21.8	16.5	28.2
Mid Western	Persons	404	49.8	43.6	56.6
Greater Murray	Males	484	79.9	70.8	89.8
Greater Murray	Females	155	22.9	18.3	28.1
Greater Murray	Persons	639	51.0	46.0	56.5
Southern	Males	254	60.6	51.1	71.2
Southern	Females	114	25.8	19.9	32.8
Southern	Persons	368	43.7	38.0	50.0
NSW	Males	8356	58.4	56.7	60.1
NSW	Females	3453	21.0	20.1	21.9
NSW	Persons	11809	39.3	38.3	40.2

Note: Injury and poisoning were classified according to the ICD9 external cause codes E800-869 E880-929 E950-999. Death rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



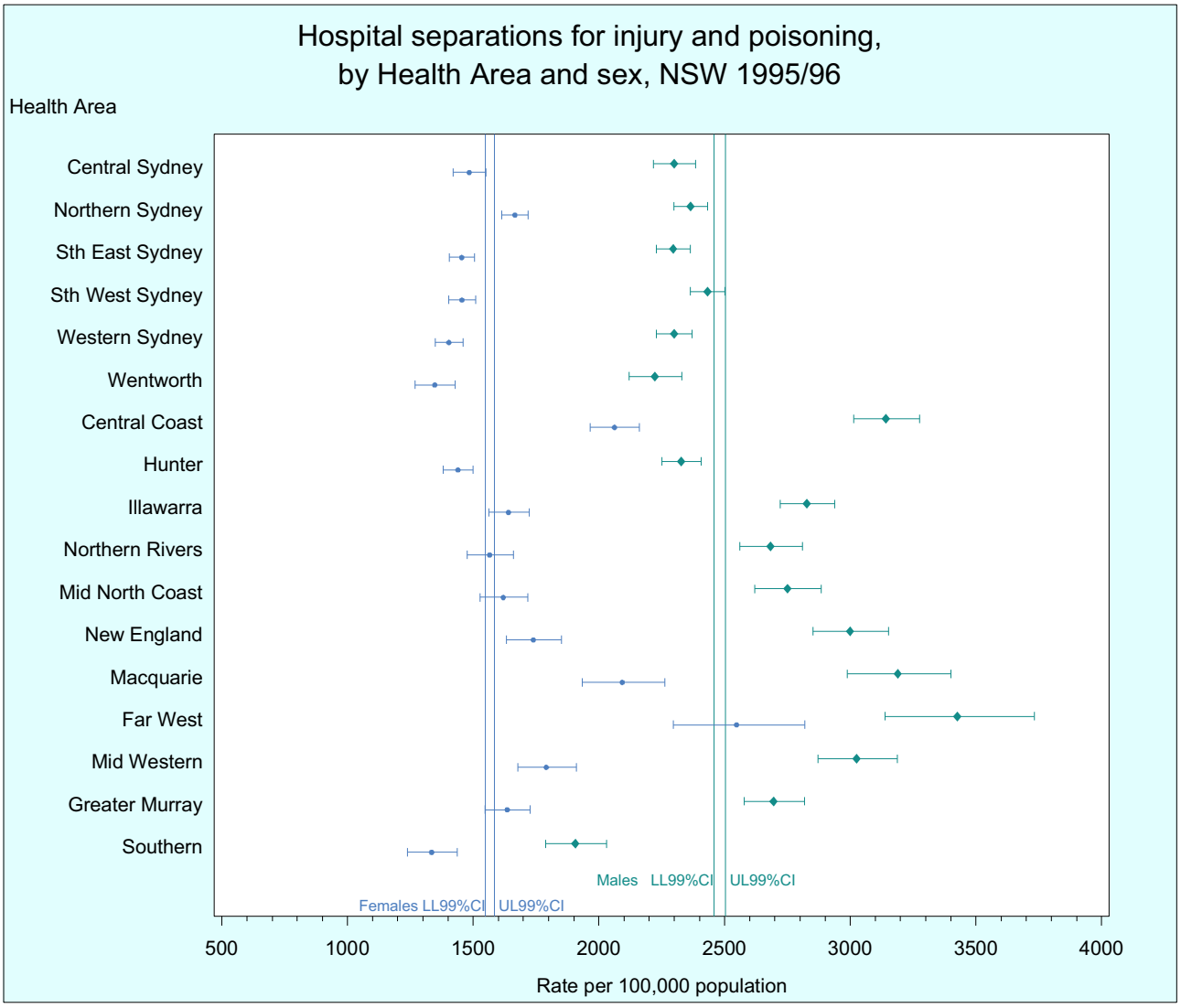
Year	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Males	2201.7	2121.8	2153.4	2251.8	2381.5	2339.7	2480.7
Females	1334.4	1290.1	1336.2	1396.2	1483.6	1447.3	1565.8
Persons	1788.9	1725.6	1766.7	1845.4	1952.4	1913.5	2044.5

Note: Injury and poisoning were classified according to the ICD9 external cause codes E800-869 E880-929 E950-999. NSW population estimates as at 31 December each year. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 127,155 hospitalisations of NSW residents (74,516 male, 52,639 female) following injury and poisoning. Injury and poisoning accounted for 9 per cent of all male hospitalisations, 6 per cent of all female hospitalisations and 7 per cent of all hospitalisations. These data do not include injury resulting from medical treatment.
- The main causes of injury hospitalisation in NSW in 1995/96 were falls, with 43,199 hospitalisations (34%), road injury (14,406, 11%), sports injury (10,948, 9%), unintentional cutting and piercing injuries (7,065, 6%), late effects of injury (6,959, 5%), attempted suicide and self-inflicted injury (6,944, 5%), and interpersonal violence (6,403, 5%).
- The increase in hospital separations owing to injury and poisoning over the seven years to 1995/96 was largely explained by increases in the rate of reported hospitalisations attributed to falls in females, sports injury, late effects of injury, and attempted suicide and self-inflicted injury.
- In 1995/96, the injury hospitalisation rate for all ages in males was about 1.5 times the rate for females. The greatest difference occurred in the 20- to 29-year age group, where the rate for males was more than 2.5 times the rate for females.
- Injury is a major source of morbidity in young people and children. In persons aged 5-24 years, there were 36,651 injury hospitalisations in 1995/96, accounting for 29 per cent of all injury hospitalisations and 16 per cent of all hospitalisations in that age group.
- NSW Health has set a target for the year 2000 of reducing the hospital separation rate for injury and poisoning by 10 per cent, compared to the 1992/93 rate.

For more information, see: NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.
The National Injury Surveillance Unit at Web site http://www.nisu.flinders.edu.au



Note: Injury and poisoning were classified according to the ICD9 external cause codes E800-869 E880-929 E950-999. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, male residents of the Central, Northern, South Eastern and Western Sydney Health Areas, the Wentworth Health Area, the Hunter Health Area and the Southern Health Area all had age-adjusted injury hospitalisation rates significantly lower than for NSW overall. Male residents of the Central Coast, Illawarra, Northern Rivers, Mid North Coast, New England, Macquarie, Far West, Mid Western and Greater Murray Health Areas had hospitalisation rates significantly higher than for NSW overall. Only the South Western Health Area had an injury hospitalisation rate which did not differ significantly from that of NSW overall.
- In the same year, female residents of the South Eastern, South Western and Western Sydney Health Areas, the Wentworth Health Area, the Hunter Health Area and the Southern Health Area all had age-adjusted injury hospitalisation rates significantly lower than for NSW overall. Female residents of the Northern Sydney, Central Coast, New England, Macquarie, Far West and Mid Western Health Areas had injury hospitalisation rates significantly higher than for NSW overall. Females from the Central Sydney, Illawarra, Northern Rivers, Mid North Coast and Greater Murray Health Areas had injury hospitalisation rates which did not differ significantly from NSW overall.

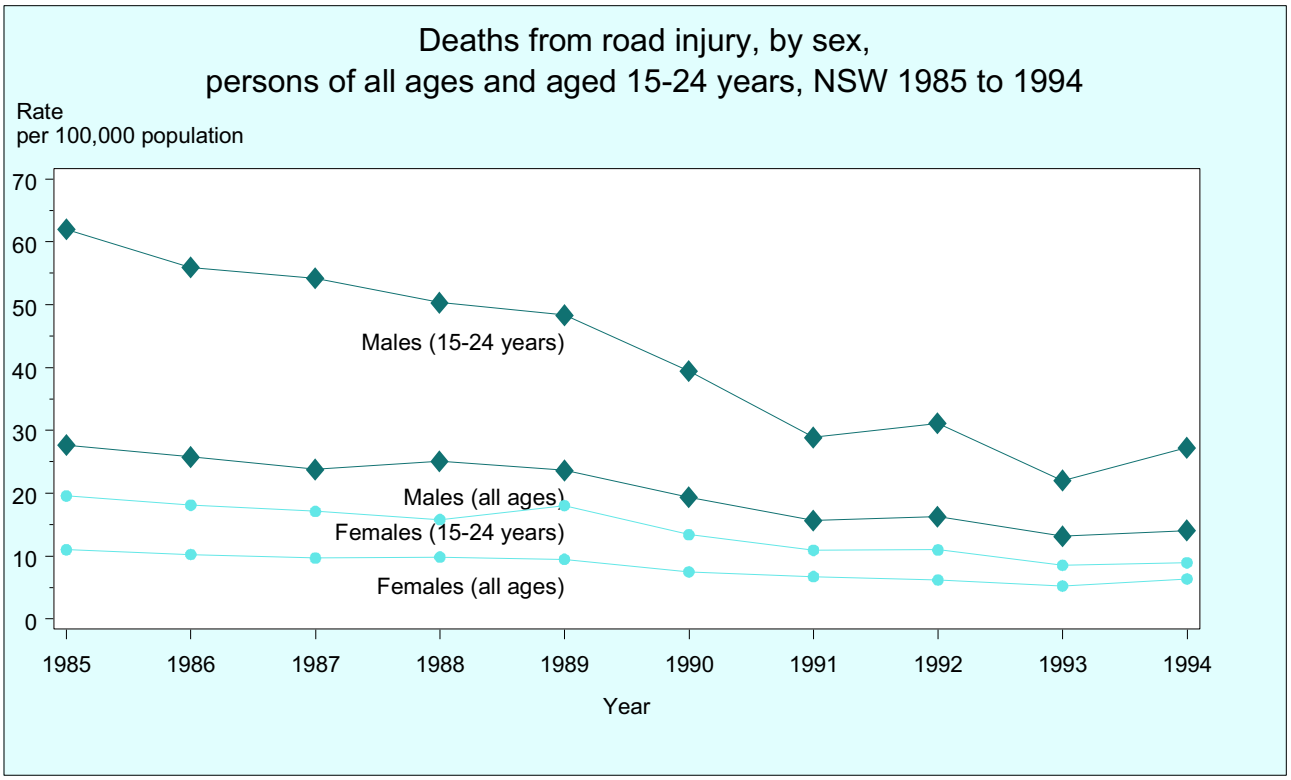
For more information, see: Moller J, 'The spatial distribution of injury deaths in Australia: urban, rural and remote areas', *Australian Injury Prevention Bulletin,* Issue 8, AIHW National Injury Surveillance Unit, Adelaide, 1994.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au

Hospital separations for injury and poisoning, by Health Area and sex, NSW, 1995/96

Health Area	Sex	Number	Rate/ 100,000	L99%CI	U99%CI
Central Sydney	Males	5162	2299.4	2216.1	2384.9
Central Sydney	Females	3878	1484.7	1421.0	1550.3
Central Sydney	Persons	9040	1905.9	1853.3	1959.4
Northern Sydney	Males	8400	2365.0	2298.4	2432.9
Northern Sydney	Females	7677	1666.3	1614.3	1719.4
Northern Sydney	Persons	16077	2041.0	1998.6	2084.0
South Eastern Sydney	Males	8108	2295.3	2229.1	2362.8
South Eastern Sydney	Females	6083	1454.5	1404.3	1505.8
South Eastern Sydney	Persons	14191	1896.4	1854.6	1938.8
South Western Sydney	Males	8559	2431.5	2362.8	2501.6
South Western Sydney	Females	5113	1455.4	1403.3	1508.9
South Western Sydney	Persons	13672	1961.9	1918.5	2005.9
Western Sydney	Males	7206	2299.3	2228.6	2371.5
Western Sydney	Females	4473	1403.8	1350.1	1459.1
Western Sydney	Persons	11679	1875.6	1830.9	1921.1
Wentworth	Males	3257	2222.6	2119.8	2328.8
Wentworth	Females	1957	1347.4	1269.0	1429.1
Wentworth	Persons	5214	1797.0	1732.1	1863.6
Central Coast	Males	3977	3142.8	3013.7	3275.6
Central Coast	Females	3320	2062.4	1966.2	2161.7
Central Coast	Persons	7297	2627.4	2546.4	2710.2
Hunter	Males	6050	2327.6	2251.0	2406.1
Hunter	Females	4130	1439.7	1381.4	1499.6
Hunter	Persons	10180	1906.3	1857.7	1955.8
Illawarra	Males	4607	2828.2	2721.2	2938.1
Illawarra	Females	2911	1640.8	1562.3	1722.0
Illawarra	Persons	7518	2257.6	2190.6	2326.1
Northern Rivers	Males	3210	2683.8	2561.1	2810.7
Northern Rivers	Females	2138	1565.4	1475.7	1658.7
Northern Rivers	Persons	5348	2144.1	2067.3	2222.9
Mid North Coast	Males	3140	2750.4	2620.8	2884.3
Mid North Coast	Females	2207	1620.0	1526.7	1717.0
Mid North Coast	Persons	5347	2196.5	2116.2	2278.9
New England	Males	2729	2999.0	2852.0	3151.3
New England	Females	1755	1739.6	1632.6	1851.5
New England	Persons	4484	2382.2	2290.9	2476.0
Macquarie	Males	1626	3189.4	2986.9	3401.4
Macquarie	Females	1135	2093.3	1934.1	2261.5
Macquarie	Persons	2761	2664.4	2534.4	2799.0
Far West	Males	908	3426.4	3138.4	3732.6
Far West	Females	653	2548.0	2295.1	2820.0
Far West	Persons	1561	3024.7	2829.9	3228.8
Mid Western	Males	2488	3025.8	2871.0	3186.5
Mid Western	Females	1668	1791.1	1677.2	1910.2
Mid Western	Persons	4156	2438.8	2341.6	2538.8
Greater Murray	Males	3417	2695.8	2577.7	2817.7
Greater Murray	Females	2268	1635.5	1546.7	1727.7
Greater Murray	Persons	5685	2191.5	2116.7	2268.1
Southern	Males	1672	1907.0	1787.5	2032.0
Southern	Females	1273	1335.0	1238.7	1436.4
Southern	Persons	2945	1637.4	1559.8	1717.7
NSW	Males	74516	2480.7	2457.3	2504.3
NSW	Females	52639	1565.8	1548.0	1583.8
NSW	Persons	127155	2044.5	2029.7	2059.4

Note: Injury and poisoning were classified according to the ICD9 external cause codes E800-869 E880-929 E950-999. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Year			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	All ages	Males	27.6	25.8	23.8	25.1	23.6	19.3	15.7	16.3	13.2	14.1
		Females	11.0	10.3	9.7	9.8	9.5	7.5	6.7	6.2	5.3	6.4
		Persons	19.3	17.9	16.7	17.4	16.5	13.4	11.1	11.2	9.1	10.1
	15-24 years	Males	62.0	55.9	54.2	50.4	48.4	39.4	28.9	31.1	22.0	27.2
		Females	19.6	18.1	17.1	15.8	18.0	13.4	10.9	11.0	8.5	8.9
		Persons	41.3	37.4	36.0	33.4	33.5	26.7	20.1	21.2	15.4	18.3
AUSTRALIA	All ages	Males	27.0	27.3	25.1	26.9	24.4	21.2	18.7	16.7	16.2	–
		Females	10.8	10.6	9.7	10.9	9.8	8.6	7.5	7.4	6.4	–
		Persons	18.8	18.9	17.3	18.8	17.0	14.8	13.0	12.0	11.2	–

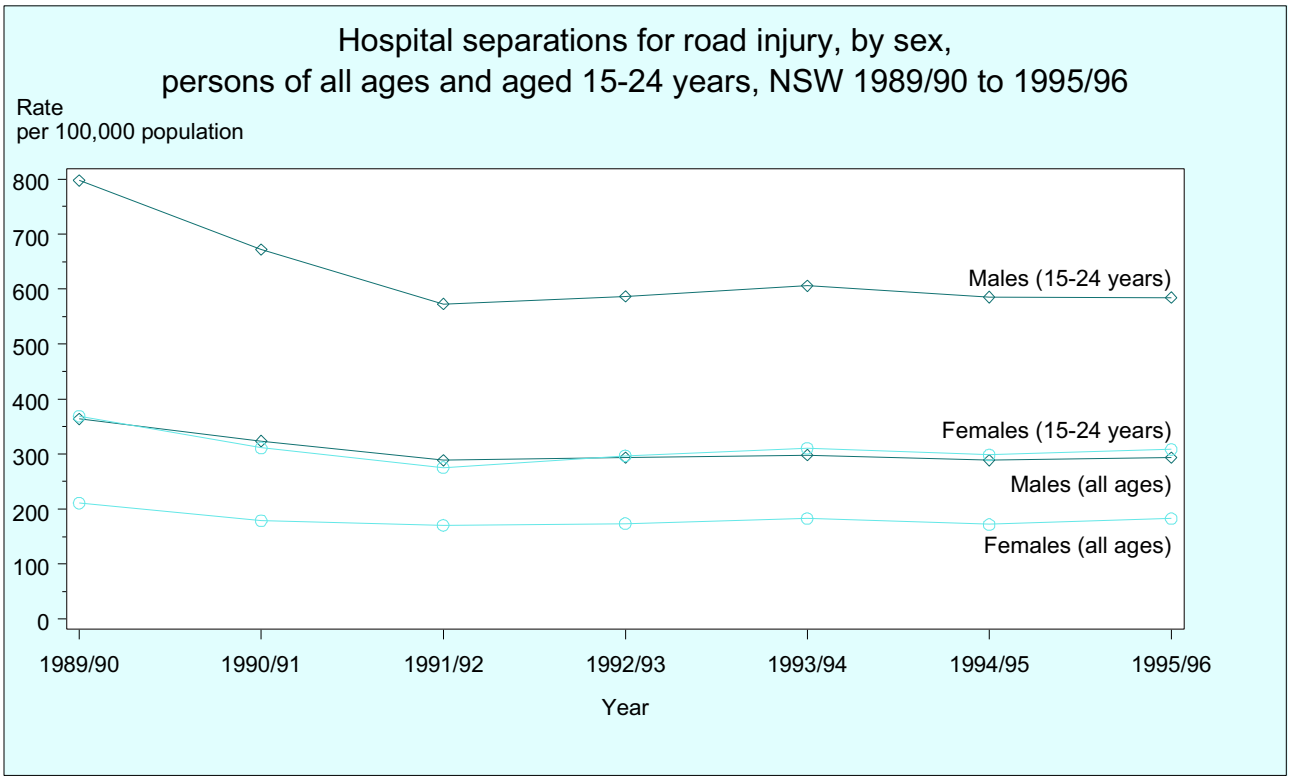
Note: Road injury was classified according to the ICD9 external cause codes E810-819 E826-829. NSW population estimates as at 30 June each year. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: ABS mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia from Abraham B, d'Espaignet E T and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- In 1994, there were 412 deaths due to road injury in males (24% of injury deaths) and 201 in females (29%), making it the second leading cause of injury death in males and the leading cause in females. These data include accidents involving any vehicle travelling on a public road, but exclude accidents occurring off-road.
- The 15-24 year age group accounted for 31 per cent of all male and 19 per cent of all female road injury deaths.
- Road injury death rates for males in 1994 were more than double those for females. The greatest disparities occurred in the 15- to 24-year and 80- to 84-year age groups.
- Alcohol was involved in 25 per cent of all fatal accidents in 1995 in which blood alcohol level was known. Speeding was a factor in at least 34 per cent of fatal accidents (RTA 1996).
- In NSW in 1995, 57 per cent of fatal road accidents occurred on country roads, even though only 32 per cent of all accidents occurred there (RTA 1996). Driver age, alcohol use, speed, fatigue and non-use of seat belts are risk factors in rural road fatalities (Henderson 1995).
- NSW Health has set a target for the year 2000 of reducing mortality and serious casualties as a result of transport related injury by 14 per cent compared with the 1994 rate.

References: Roads and Traffic Authority NSW (RTA), *Road traffic accidents in NSW – 1995*, Roads and Traffic Authority NSW, Sydney, 1996.
Henderson M, *Towards an action plan for rural road safety. A report of the Wodonga Seminar, Rural Road Safety: Focus for the Future,* Federal Office of Road Safety, Canberra, 1995.

For more information, see: Federal Office of Road Safety, *Road fatalities Australia, 1996 statistical summary,* Federal Office of Road Safety, Canberra, 1997.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



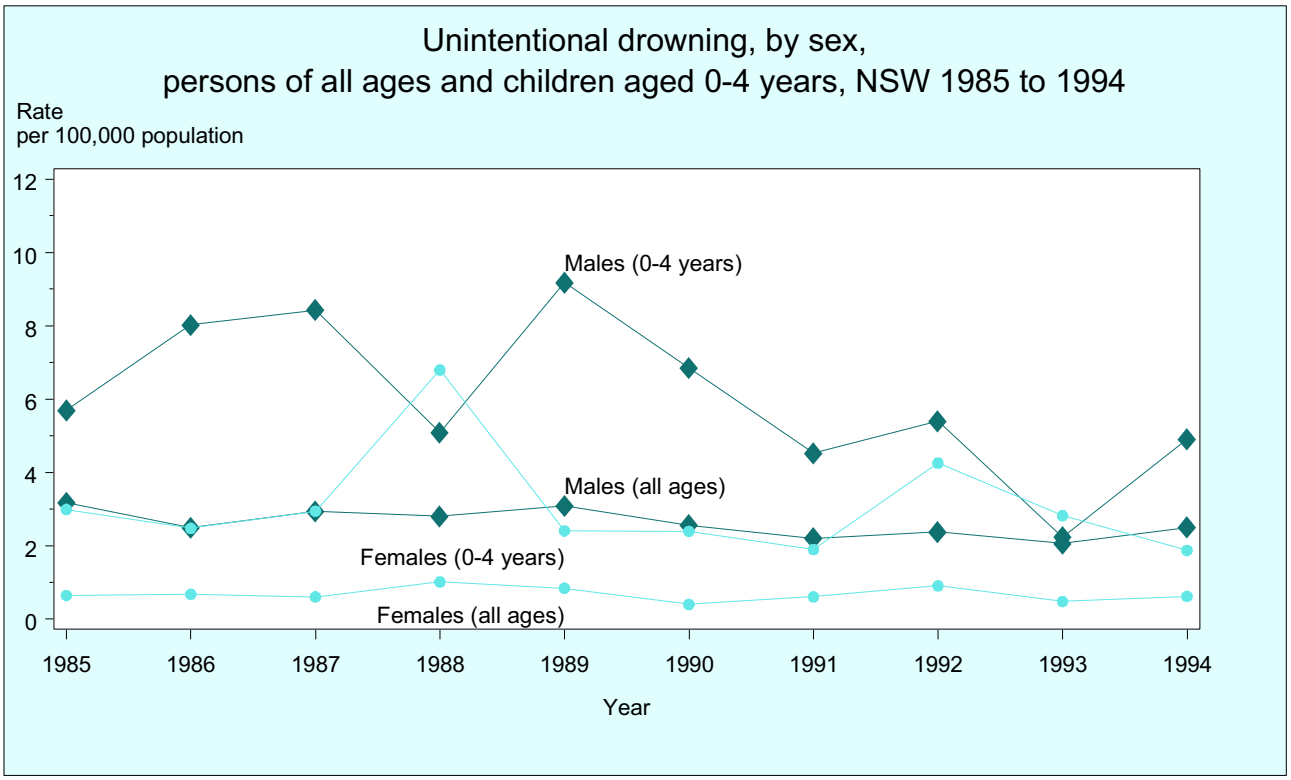
Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	363.4	323.8	288.5	293.9	298.7	288.7	293.9
	Females	210.7	178.9	170.6	173.7	183.3	172.4	183.4
	Persons	287.8	251.8	229.9	234.0	241.0	231.1	238.8
15-24 years	Males	797.1	672.5	571.6	582.5	600.6	578.2	576.8
	Females	369.0	311.3	275.2	296.0	309.0	297.5	308.1
	Persons	587.5	495.6	426.5	442.3	458.0	441.0	445.5

Note: Road injury was classified according to the ICD9 external cause codes E810-819 E826-829. NSW population estimates as at 31 December each year. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, road vehicle injury was the second leading cause of injury hospitalisation in males, accounting for 8,816 hospitalisations (12% of male injury hospitalisations). It was the leading cause in females, with 5,590 hospitalisations (24% of female injury hospitalisations). These data include accidents involving any vehicle travelling on a public road, but excludes accidents occurring off-road.
- Among 15- to 24-year-olds in 1995/96, road injury resulted in 2,644 hospitalisations in males and 1,340 in females. In this age group, road injury contributed 16 per cent of male and 22 per cent of female injury hospitalisations, and was the second leading cause of injury hospitalisation in males, and the leading cause in females.
- The rate of hospitalisation for pedestrians being struck by a motor vehicle declined from 31 to 22 per 100,000 over the period 1989/90 to 1995/96. In 1995/96, there were 1,356 hospitalisations as a result of pedestrians being struck by motor vehicles.
- In 1995/96, there were 198 hospitalisations as a result of collisions between motor vehicles and bicycles, of which 79 were in 10- to 19-year-olds. The hospitalisation rate for such collisions has declined in recent years. Among 10- to 19-year-olds, in whom the highest rate occurs, the age-adjusted rate fell from 18 to 9.3 per 100,000 over the period 1989/90 to 1995/96.
- NSW Health has set a target for the year 2000 of reducing hospital separations owing to transport-related injury by 14 per cent compared with the 1992/93 rate.

For more information, see: Federal Office of Road Safety, *Road injury Australia, crashes resulting in Hospitalisation, 1995 statistical summary,* Federal Office of Road Safety, Canberra, 1997.
Roads and Traffic Authority NSW, *Road traffic accidents in NSW – 1995*, Roads and Traffic Authority NSW, Sydney, 1996
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



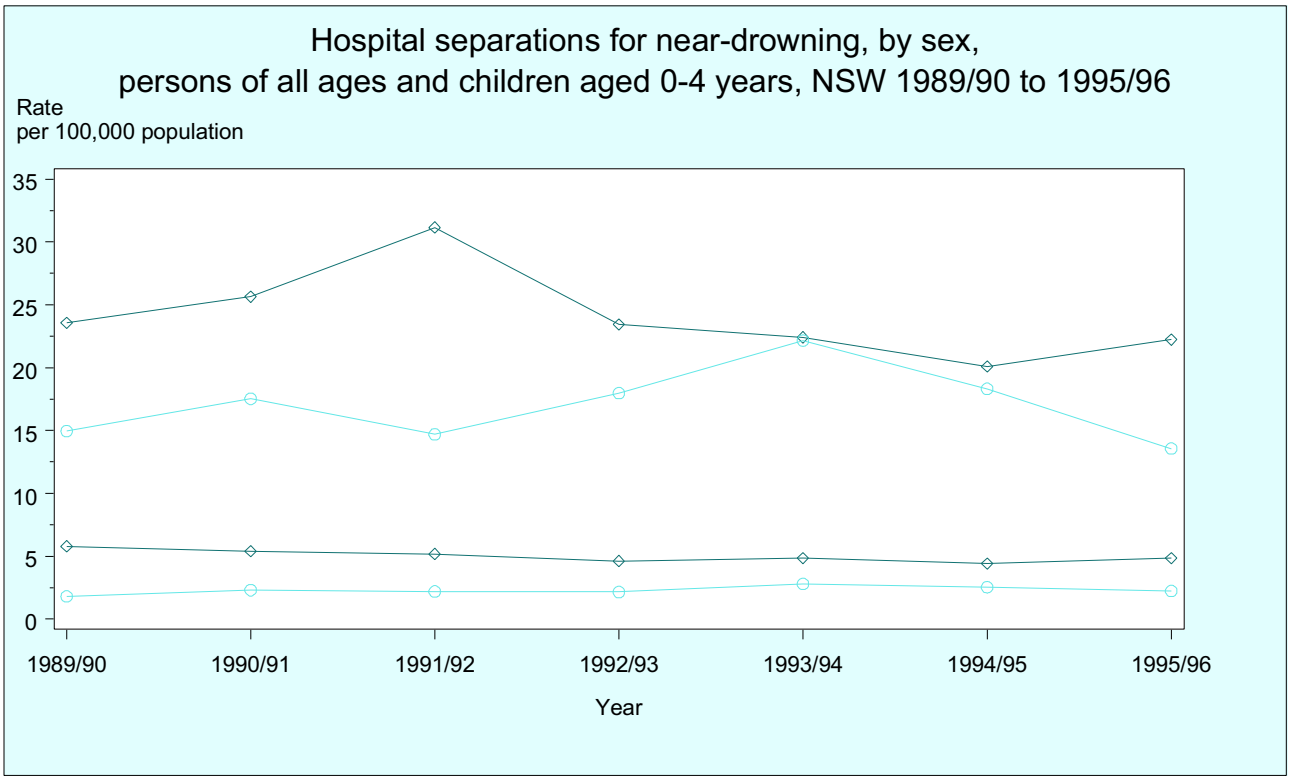
Year			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Rate/100,000	All ages	Males	3.2	2.5	2.9	2.8	3.1	2.6	2.2	2.4	2.1	2.5
		Females	0.6	0.7	0.6	1.0	0.8	0.4	0.6	0.9	0.5	0.6
		Persons	1.9	1.6	1.8	1.9	2.0	1.5	1.4	1.7	1.3	1.6
	0-4 years	Males	5.7	8.0	8.4	5.1	9.2	6.8	4.5	5.4	2.2	4.9
		Females	3.0	2.5	2.9	6.8	2.4	2.4	1.9	4.3	2.8	1.9
		Persons	4.4	5.3	5.8	5.9	5.9	4.7	3.2	4.8	2.5	3.4
Number	All ages	Males	87	69	82	79	87	74	65	71	62	75
		Females	18	19	18	29	26	12	18	27	15	20
		Persons	105	88	100	108	113	86	83	98	77	95
	0-4 years	Males	12	17	18	11	20	15	10	12	5	11
		Females	6	5	6	14	5	5	4	9	6	4
		Persons	18	22	24	25	25	20	14	21	11	15

Note: Unintentional drowning was classified according to the ICD9 external cause code E910. NSW population estimates as at 30 June each year. Death rates for persons of all ages were age-adjusted using the Australian population as at 30 June 1991.

Source: ABS mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1994, there were 75 unintentional drownings in males and 20 in females. The highest rate of drowning was in 0- to 4-year-olds. In children aged 1-4 years, unintentional drowning was the leading cause of injury death, and the second leading cause of death, after congenital anomalies.
- For persons of all ages in the period 1990 to 1994, 119 males (34% of male drownings) and 38 females (41%) drowned as a result of unintentionally falling or wandering into a swimming pool, river, beach, or any other body of water. The next most frequent circumstance was drowning while swimming, paddling or wading in any body of water (107 males, 31%, 23 females, 25%).
- In children aged 0-4 years, in this period, there were 81 unintentional drownings. Of these, 41 (51%) were caused by falling or wandering into a private swimming pool, 10 (12%) were bathtub drownings, and 8 (10%) were caused by falling or wandering into a lake, lagoon, dam or waterhole. The rate of drowning in private swimming pools in this age group fell from 2.7 per 100,000 in 1985 to 1989 to 1.9 per 100,000 in 1990 to 1994, a reduction of 30 per cent.
- NSW has a target for the year 2000 of reducing the rate of due to drowning in children aged 0-4 years by 50 per cent (compared to the 1992 rate), and reducing the death rate due to all water-related injury by 20 per cent over the same period.

For more information, see: Royal Life Saving Society, *New South Wales drowning statistics 1995/1996*, Royal Life Saving Society Australia, New South Wales Branch, Sydney, 1997.
NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



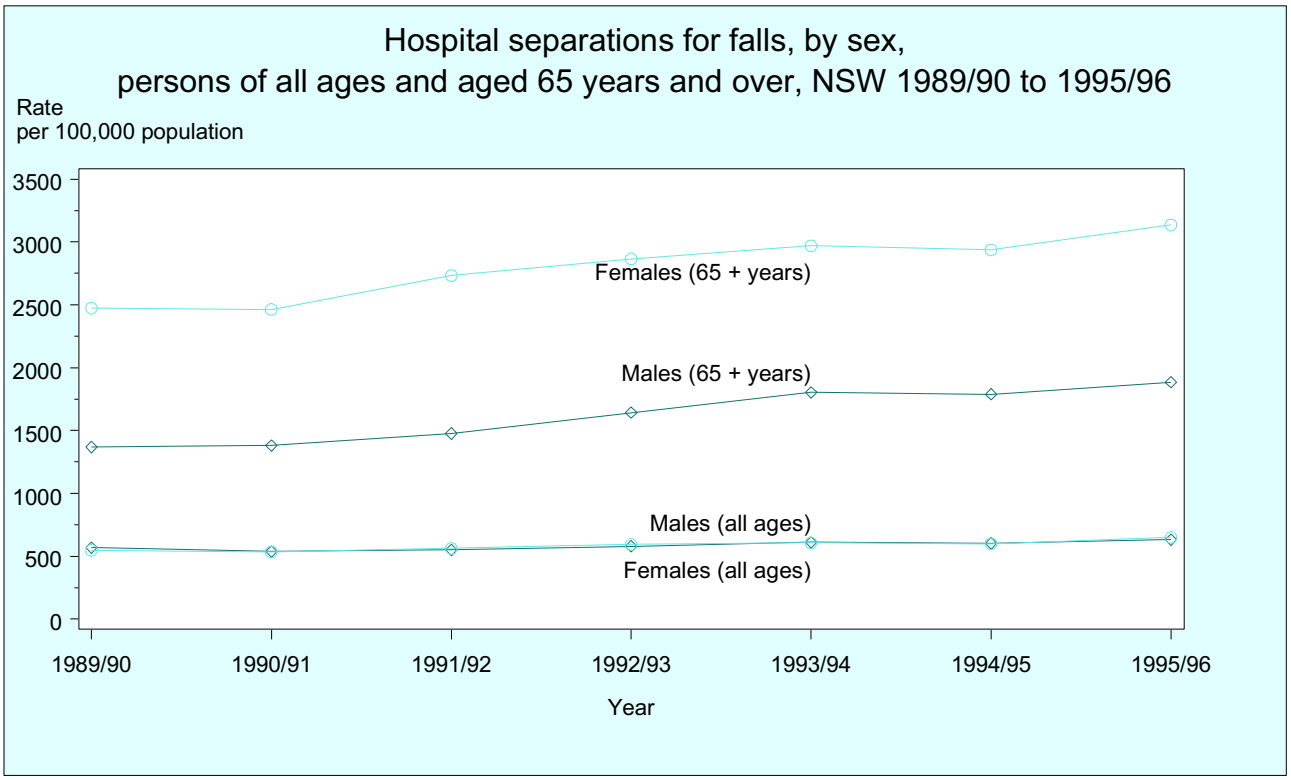
Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	5.8	5.4	5.2	4.6	4.9	4.4	4.8
	Females	1.8	2.3	2.2	2.2	2.8	2.5	2.2
	Persons	3.8	3.9	3.7	3.4	3.9	3.5	3.6
0-4 years	Males	23.6	25.6	31.1	23.4	22.3	20.1	22.3
	Females	14.9	17.5	14.7	17.9	22.1	18.3	13.6
	Persons	19.4	21.7	23.1	20.7	22.2	19.2	18.0

Note: Unintentional drowning and near-drowning was classified according to the ICD9 external cause code E910. NSW population estimates as at 31 December each year. Hospital separation rates for persons of all ages were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 148 hospitalisations due to near-drowning in males and 67 in females. Of these, 50 were in males and 29 in females aged 0-4 years. An estimated 5-10 per cent of childhood near-drownings result in serious and permanent brain damage (Pitt and Belanda 1991).
- Of all near-drowning hospitalisations in 1995/96, 83 (39%) were attributed to swimming pool incidents and 70 (33%) to recreational fishing, swimming, surfing or wading. In 0- to 4-year-olds in the same year, 46 (58%) were attributed to swimming pool and 26 (33%) to bathtub incidents.
- In children under 5 years, the rate of swimming-pool related hospitalisations declined from 14 to 11 per 100,000 over the period 1989/90 to 1995/96. In females aged under 5 years, the rate of reported bathtub-related hospitalisations increased from 1.0 to 6.5 per 100,000 over the same period. This trend was not apparent in males.
- The main risk factors for child domestic pool drowning in NSW in 1990 to 1995 were lack of fencing, non-functioning fencing or gates, and inadequate supervision. The main risk factor for bathtub drowning was inadequate supervision, particularly leaving infants unattended or in the care of siblings during bathing (Cass, Ross and Lam 1996).
- NSW has a target for the year 2000 of reducing the hospital separation rate resulting from near-drowning in 0- to 4-year-olds by 50 per cent, compared with 1992/93.

References: Pitt W R and Belanda K P, 'Childhood drowning and near-drowning in Brisbane: the contribution of domestic pools', *Medical Journal of Australia*, Vol. 154, pp. 661-665.
Cass D, Ross R and Lam L, 'Childhood drowning in New South Wales 1990-95: a population-based study', *Medical Journal of Australia*, Vol. 165, pp. 610-612.
For more information, see: NSW Injury Expert Working Panel 1995, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.
Royal Life Saving Society. *New South Wales drowning statistics 1995/1996*, Royal Life Saving Society Australia, New South Wales Branch, Sydney, 1997.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	566.7	537.7	549.0	577.8	609.5	605.3	635.5
	Females	547.5	533.7	562.1	592.6	605.7	600.1	651.6
	Persons	573.1	550.7	573.2	602.2	623.7	618.3	660.1
65 years and over	Males	1366.5	1375.7	1469.9	1627.6	1793.6	1784.0	1888.2
	Females	2471.0	2459.9	2727.5	2851.2	2956.7	2931.8	3145.7
	Persons	2048.0	2039.1	2244.0	2379.6	2507.0	2486.4	2654.1

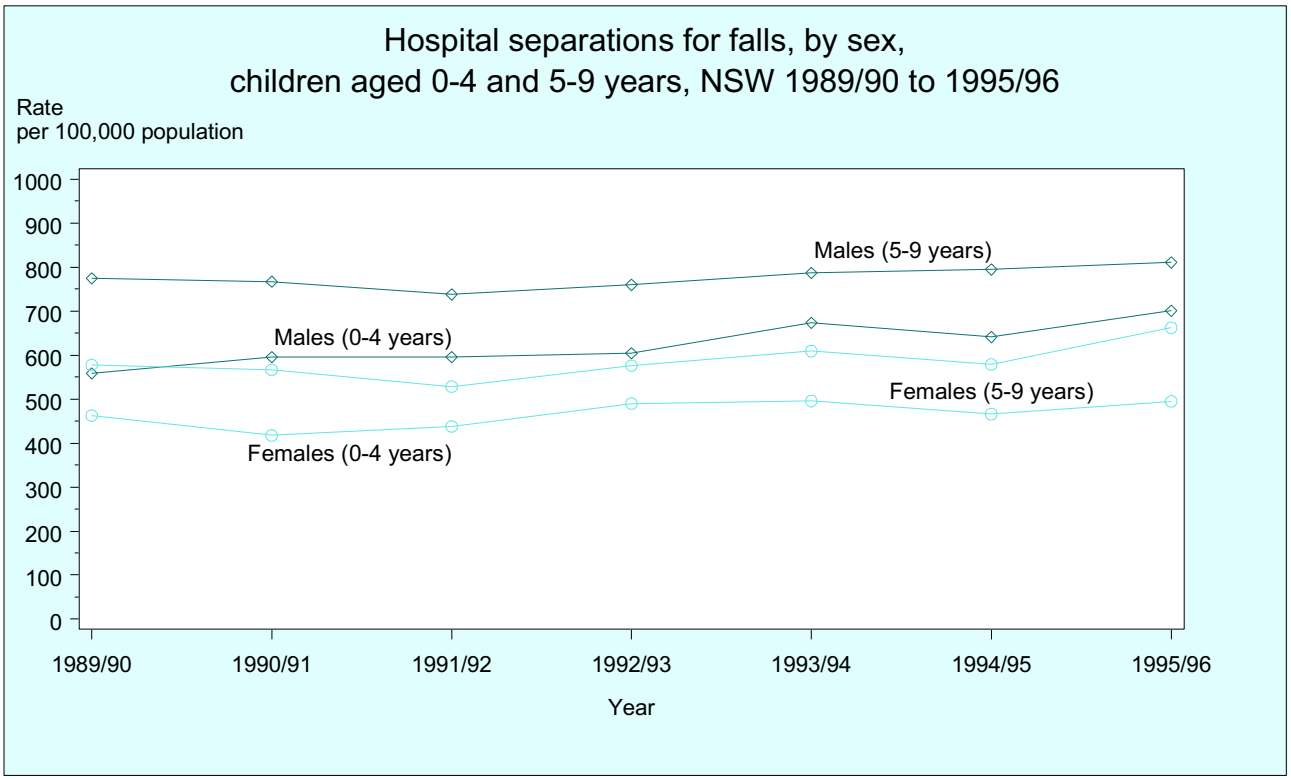
Note: Falls were classified according to the ICD9 external cause codes E880-888. NSW population estimates as at 31 December each year. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 18,744 hospitalisations following falls in males (25% of male injury hospitalisations) and 24,455 (47%) in females. Falls were the leading cause of injury hospitalisation in every age group except 15-29 years.
- In persons aged 65 years and over, there were 5,800 hospitalisations following falls in males, (63% of male injury hospitalisations) and 15,517 (80%) in females. The hospitalisation rate following falls rose steeply with age from 971 per 100,000 for those aged 65-69 years to 9331 per 100,000 for those aged 85 years and over.
- Of the hospital separations for falls in persons aged 65 years and over, 10,099 (47%) had no specific cause reported, 7,625 (36%) were attributed to a slip, trip, or stumble on the same level, 1,575 (7%) to a fall from a chair, bed or other furniture, and 1,142 (5%) to a fall on stairs or steps.
- Almost half of all falls in older people in NSW occur at home, and about a quarter occur in the street. Hip fractures are the main injury in older people hospitalised as a result of a fall. Risk factors for falls in older people include disability, medication, chronic disease, and environmental hazards (Graham-Clarke et al. 1997).
- NSW has a target for the year 2000 of reducing the rate of hospital separation resulting from falls in men and women aged 65 years and over by 5 per cent and 10 per cent respectively, compared with 1992/93. Another target is to reduce the rate of hospitalisation for a fractured lower limb among men and women aged 75 years and over by 5 and 10 per cent respectively over the same period.

References: Graham-Clarke P, Fisher J and Elkington J, *Preventing injuries from falls in older people,* National Centre for Health Promotion, Sydney University and Centre for Disease Prevention and Health Promotion, NSW Health Department, Sydney, in press.

For more information, see: NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



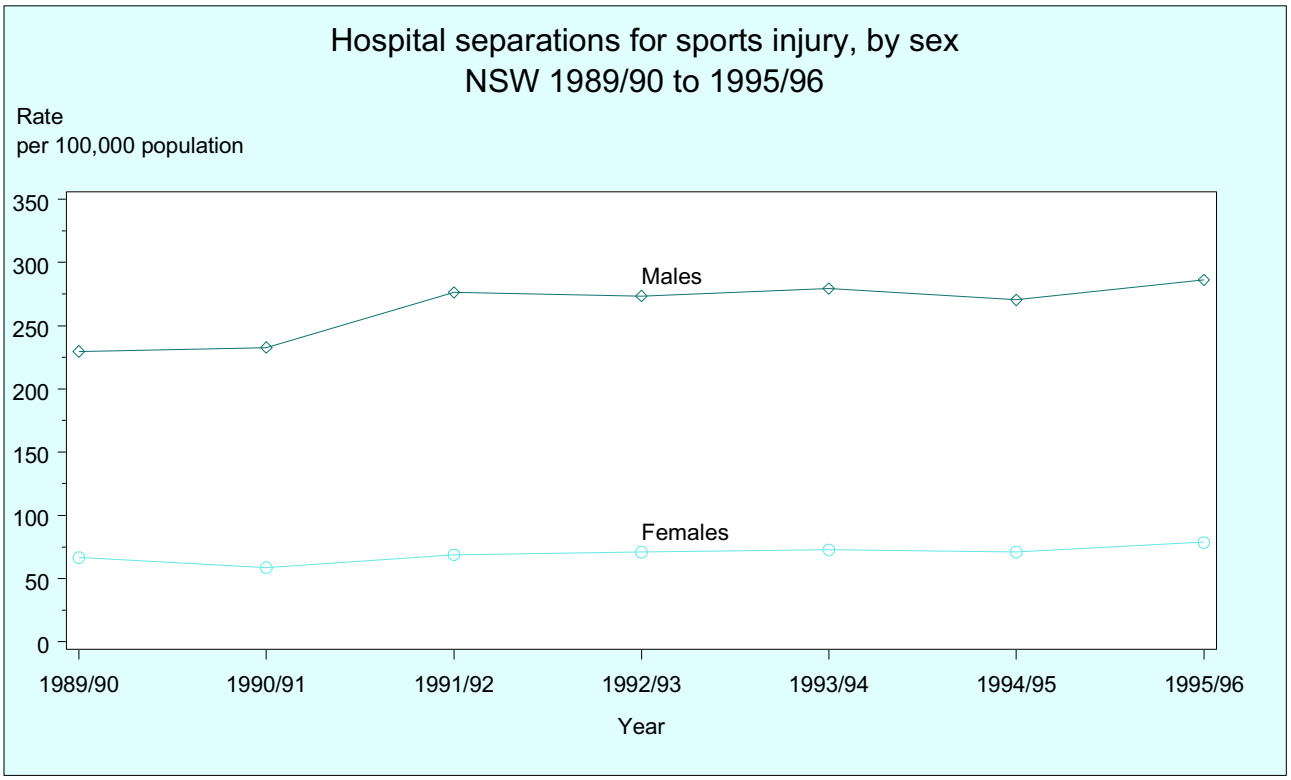
Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
0-4 years	Males	558.5	595.8	595.7	604.4	673.2	641.7	700.4
	Females	462.8	417.5	438.1	490.1	496.0	466.0	495.2
	Persons	511.8	508.8	518.8	548.7	586.8	556.0	600.2
5-9 years	Males	775.1	766.8	737.9	760.1	786.7	794.8	810.7
	Females	577.5	566.5	528.5	576.3	609.3	578.8	662.2
	Persons	678.9	669.1	635.7	670.3	699.9	689.1	737.9

Note: Falls were classified according to the ICD9 external cause codes E880-888. NSW population estimates as at 31 December each year. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 2,630 falls-related hospitalisations in children aged 0-4 years (35% of injury hospitalisations) and 3,196 in children aged 5-9 years (49%), making falls the leading cause of injury hospitalisation in children aged 0-9 years.
- In 0- to 4-year-olds, the main type of fall resulting in hospitalisation was falling from a chair, bed or other furniture (565 hospitalisations, 22% of falls hospitalisations in this age group). Other leading types of falls in 0- to 4-year-olds were slipping, tripping or stumbling on the same level (349, 13%), falling from play equipment (310, 12%), falls on stairs or steps (170, 6.5%) and falling from a building or other structure (163, 6.2%).
- In 5- to 9-year-olds, the main type of fall resulting in hospitalisation was falling from play equipment. This type resulted in 894 hospitalisations, and accounted for 28 per cent of falls hospitalisations in this age group. Other leading types of falls in 5- to 9-year-olds were slipping, tripping or stumbling on the same level (438, 14%), falling from a chair, bed or other furniture (227, 7%), falling from a tree (152, 4.8%), falling from a building or other structure (151, 4.7%) and falls from a trampoline (145, 4.5%).
- In 0 to 4-year-olds, the rate of reported hospitalisation due to falling from a chair, bed, or other furniture increased from 93 to 129 per 100,000 over the period 1989/90 to 1995/96. In 5- to 9-year-olds, the rate of reported hospitalisation due to falling from play equipment increased from 149 to 206 per 100,000 over the same period.
- NSW has a target for the year 2000 of reducing the rate of hospital separation resulting from falls in children aged 0 to 4 and 5 to 9 by 10 per cent, compared with 1992/93.

For more information, see: NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



Year	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Males	229.7	232.8	276.3	273.7	279.3	270.3	286.4
Females	66.6	58.7	68.8	70.9	72.8	71.1	78.6
Persons	149.5	147.3	174.2	173.9	177.7	172.2	184.1

Note: Sports injury was classified according to the ICD9 external cause codes E886.0 E917.0 E927. NSW population estimates as at 31 December each year. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

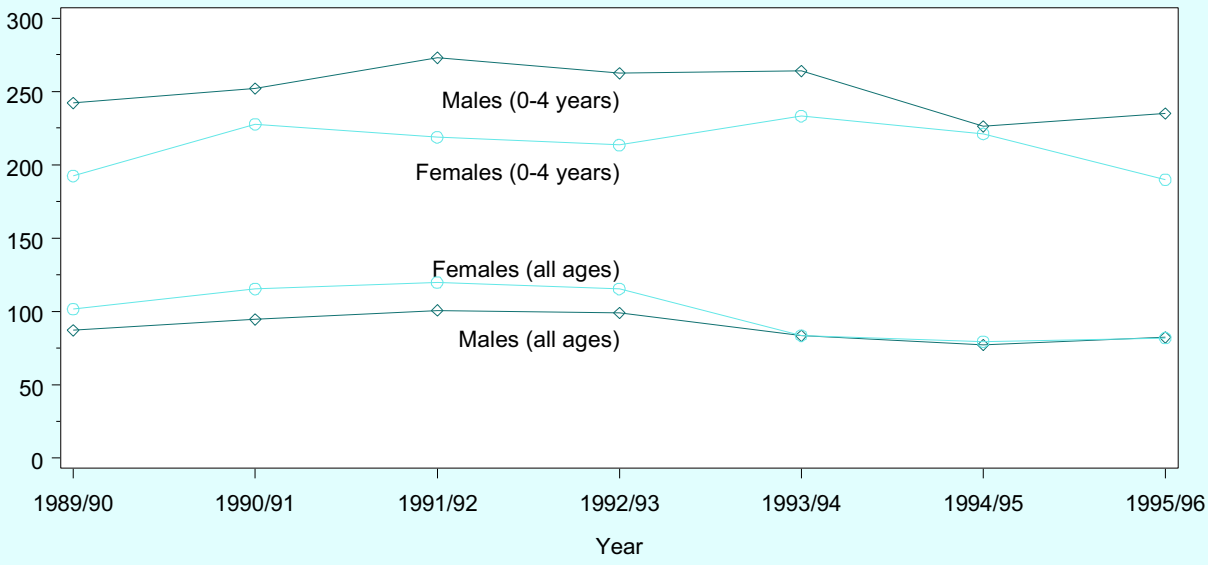
- In 1995/96, there were 8,546 hospital separations following sports injury in males (12% of male injury hospitalisations) and 2,402 (5%) in females. Sports injury was the third leading cause of injury hospitalisation in males and the sixth in females.
- The rate of sports injury hospitalisation peaked in the 10-34 year age range. There were 7,412 sports injury hospitalisations in this age group (68% of all sports injury hospitalisations). The age-adjusted hospital separation rate for sports injury in this age group was 537 per 100,000.
- In males, the most frequent causes of sports injury hospitalisation were rugby football, with 2,946 hospitalisations (35%), overexertion or strenuous movement (2,008, 24%), non-rugby football (1,560, 18%), basketball and similar sports (496, 6%) and cricket and similar sports (470, 5%).
- In females, the most frequent causes of sports injury hospitalisations were overexertion or strenuous movement, with 1,034 hospitalisations (43%), basketball and similar sports (431, 18%), non-rugby football (229, 10%) and cricket and similar sports (104, 4%).
- Around 92 per cent of NSW high school students aged 11-19 years in 1994/95 reported participation in at least one sport and 54 per cent reported being injured during a sporting activity at least once in the previous six months. The sports causing the most injuries were rugby union, rugby league, gymnastics, netball, hockey, and Australian Rules Football. The main sports injuries experienced were bruising, muscle strain, joint or ligament strain, joint swelling or inflammation, bleeding, broken bones and dislocation (NSAHS 1997).
- NSW has a target for the year 2000 of reducing the hospital admission rate for sports injury by 20 per cent, compared with 1992/93.

Reference: Northern Sydney Area Health Service (NSAHS), *NSW sports injury Report*, Northern Sydney Area Health Service, Sydney, 1997.

For more information, see: NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995

The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au

Hospital separations for unintentional poisoning, by sex, persons of all ages and children aged 0-4 years, NSW 1989/90 to 1995/96



Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	87.1	94.6	100.8	99.0	83.4	77.2	82.5
	Females	101.6	115.4	119.8	115.4	83.6	79.5	81.8
	Persons	94.2	104.7	110.1	106.8	83.2	78.0	82.1
0-4 years	Males	242.0	252.1	272.9	262.4	263.8	226.1	235.0
	Females	192.4	227.7	218.8	213.5	233.2	221.1	189.8
	Persons	217.8	240.2	246.5	238.5	248.9	223.6	212.9

Note: Unintentional poisoning was classified according to the ICD9 external cause codes E850-869. NSW population estimates as at 31 December each year. Hospital separation rates for persons of all ages were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

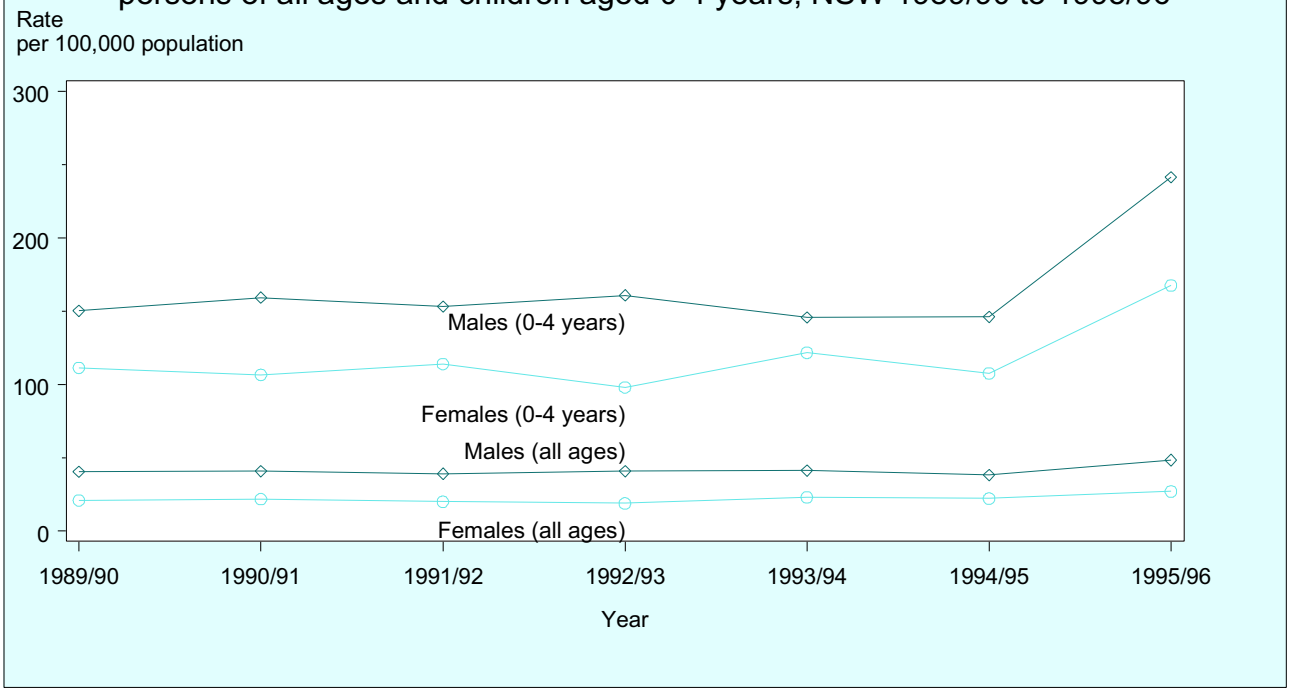
Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 2,487 hospitalisations following unintentional poisoning in males, and 2,498 in females. The highest rate occurred in 0- to 4-year-olds (527 poisonings in males and 406 in females), making it the second leading cause of injury hospitalisation in this age group.
- Eighty per cent of unintentional poisonings in persons of all ages and children aged 0-4 years were caused by drugs and medicines.
- In persons of all ages, the main drugs and medicines involved were tranquillisers, causing 870 hospitalisations (18% of all poisoning hospitalisations), paracetamol (506, 10%), antidepressants (340, 7%) and heroin (232, 5%).
- In 0- to 4-year-olds, the main drug involved was paracetamol, reported as the cause of 151 hospitalisations (16% of poisoning seperations). Other important drugs were agents acting on the cardiovascular system (76, 8%), tranquillisers (66, 7%) and agents acting on smooth and skeletal muscles and the respiratory system (48, 5%).
- The rate of hospitalisation in 0- to 4-year-olds following poisoning by paracetamol increased from 22 per 100,000 in the four years to June 1992 to 32 per 100,000 in the four years to June 1996.
- In 0- to 4-year-olds, the main non-medicinal substances were foods and plants (41 hospitalisations, 4% of poisoning hospitalisations), pesticides (37, 4%), petroleum and other solvents (26, 3%) and corrosives and caustics (23, 2%).
- NSW has a target for the year 2000 of reducing the hospital admission rate due to unintentional poisoning in children aged 0 to 4 years by 20 per cent, compared with 1992/93.

For more information, see: NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.

The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au

Hospital separations for accidents due to fire, burns and scalds, by sex, persons of all ages and children aged 0-4 years, NSW 1989/90 to 1995/96



Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	40.5	41.0	39.1	40.9	41.3	38.4	48.5
	Females	20.9	21.8	20.0	18.9	23.0	22.3	27.1
	Persons	30.8	31.5	29.7	30.0	32.2	30.4	37.9
0-4 years	Males	150.0	159.2	153.1	160.1	145.1	145.8	242.1
	Females	111.3	106.6	113.9	97.6	121.1	107.3	167.4
	Persons	131.1	133.6	133.9	129.6	133.4	127.0	205.6

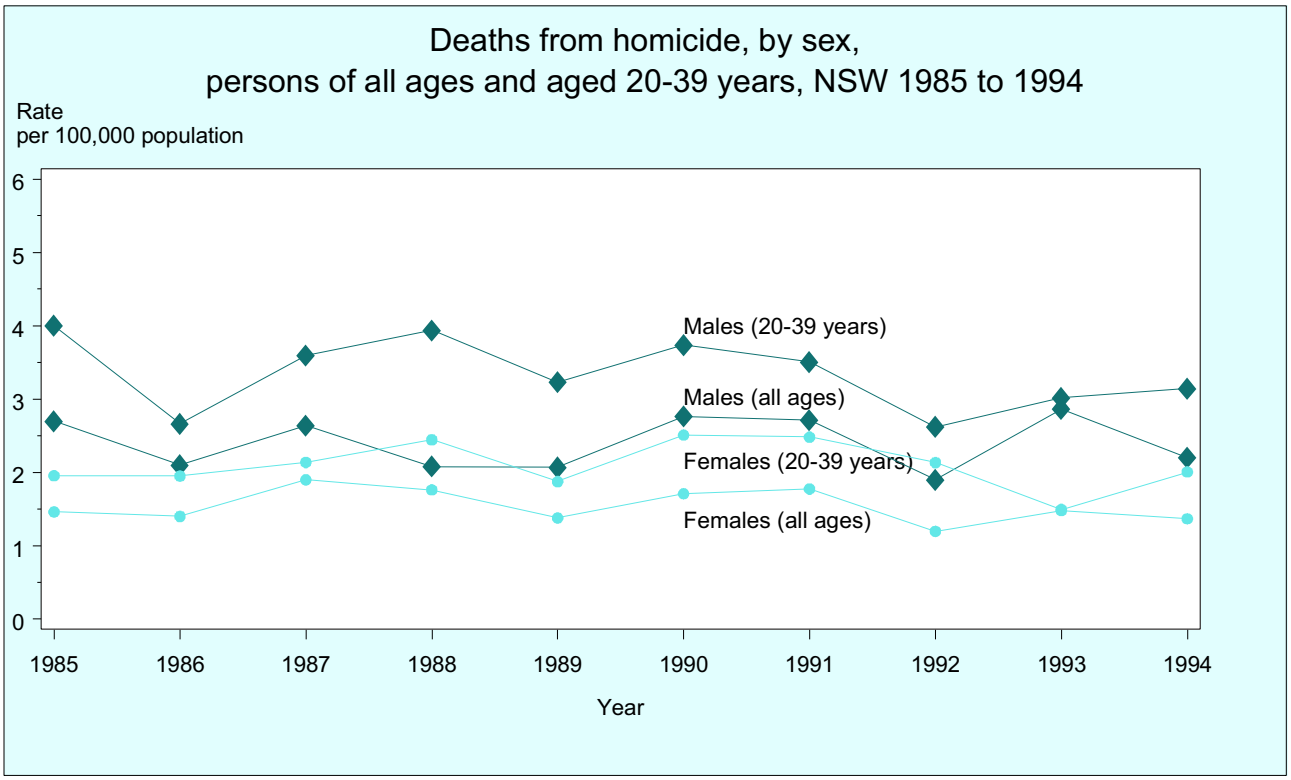
Note: Accidents due to fire, burns and scalds were classified according to the ICD9 external cause codes E890-899, 924.0/8/9. NSW population estimates as at 31 December each year. Hospital separation rates for persons of all ages were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 1,466 hospitalisations following unintentional injury resulting from fire, burns and scalds in males, and 829 in females. Of these, 543 were in males and 358 in females aged 0-4 years, making it the third leading cause of injury hospitalisation in this age group.
- In persons of all ages, scalds were the leading cause of hospitalisation for burns, resulting in 1,138 hospitalisations (50% of burns hospitalisations). Other important causes were burning by a hot object (297, 13%), ignition of highly inflammable material (248, 11%) and major home fires (184, 8%).
- In children under 5 years, there were 621 hospitalisations for scalds (69% of burns hospitalisations), 168 (19%) hospitalisations for burns by a hot object and 34 (4%) following major fires in private dwellings. The rate of scalds hospitalisation in this age group was 142 per 100,000, over seven times the all-ages rate.
- The striking increase in the rate of hospitalisations for injury due to fire, burns, and scalds in 0- to 4-year-olds in 1995/96 was largely because of an increase in the number of reported day-only admissions for burns treatment.
- The NSW Health Department Scalds Prevention Campaign is aimed at raising awareness of the dangers of hot water, and encouraging the delivery of hot water no hotter than 50°C to bathroom areas in residential buildings.
- NSW has targets for the year 2000 of reducing the hospital admission rate for burns and scalds in children aged 0- to 4 years by 20 per cent, compared with 1992/93, and reducing mortality from burns in persons aged over 55 years by 50 per cent, compared with 1991.

For more information, see: NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.

The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



Year			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Rate/100,000	All ages	Males	2.7	2.1	2.6	2.1	2.1	2.8	2.7	1.9	2.9	2.2
		Females	1.5	1.4	1.9	1.8	1.4	1.7	1.8	1.2	1.5	1.4
		Persons	2.1	1.8	2.3	1.9	1.7	2.2	2.2	1.5	2.1	1.8
	20-39 years	Males	4.0	2.7	3.6	3.9	3.2	3.7	3.5	2.6	3.0	3.1
		Females	2.0	2.0	2.1	2.4	1.9	2.5	2.5	2.1	1.5	2.0
		Persons	3.0	2.3	2.9	3.2	2.6	3.1	3.0	2.4	2.3	2.6
Number	All ages	Males	72	57	74	59	59	81	80	57	85	66
		Females	39	38	53	50	41	50	52	35	45	42
		Persons	111	95	127	109	100	131	132	92	130	108
	20-39 years	Males	36	24	33	36	30	35	33	25	29	30
		Females	17	17	19	22	17	23	23	20	14	19
		Persons	53	41	52	58	47	58	56	45	43	4

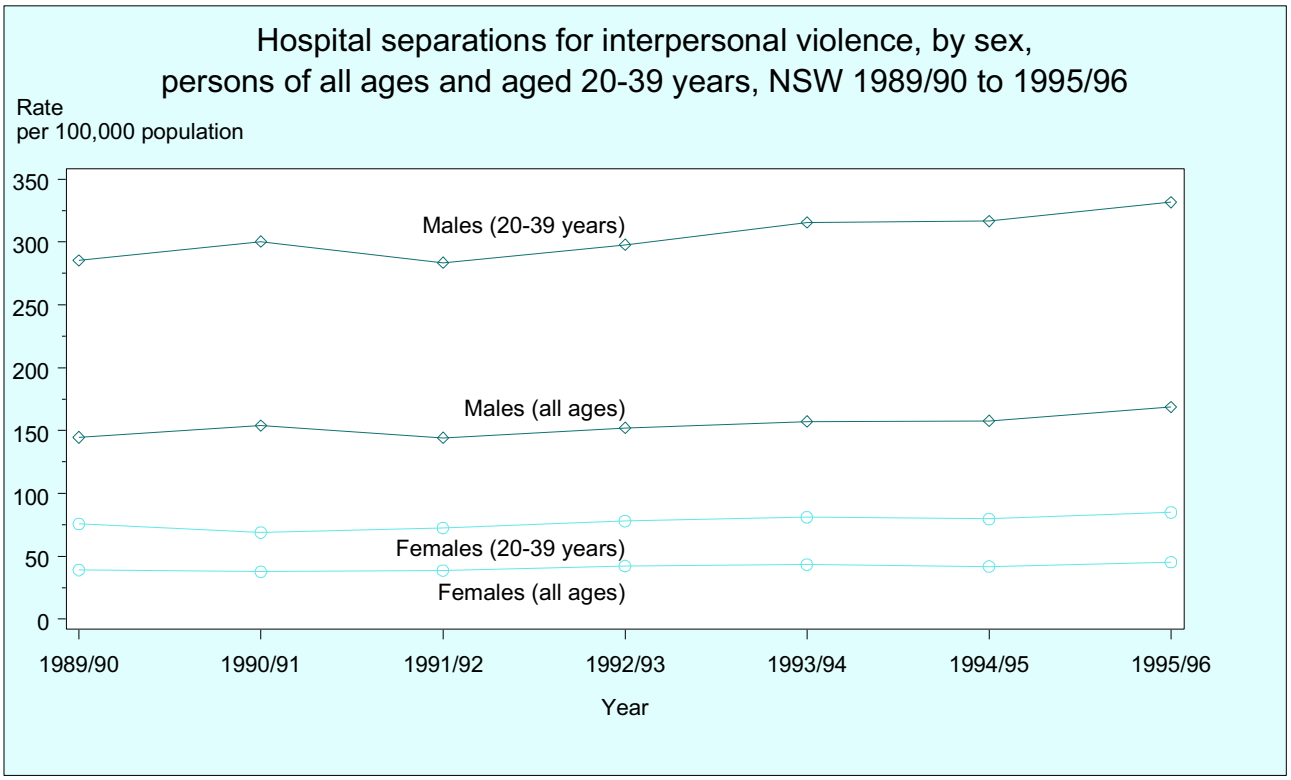
Note: Homicide death was classified according to the ICD9 external cause codes E960-969. NSW population estimates as at 30 June each year. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Source: ABS mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1994, there were 66 homicides in males and 42 in females. Of these, 30 males (45% of males) and 19 females (45%) were aged 20-39 years.
- Assault by a cutting and piercing instrument was the leading cause of homicide, with 24 deaths in males (36% of male homicides) and 19 in females (45 %). Of these, 11 males and 8 females were aged 20-39 years. Firearm assault was the second leading cause, accounting for 12 deaths in males (18% of male homicides) and 8 in females (19%).
- In males aged 20-39 years, the second and third leading causes of homicide were shared equally between fighting or brawling and being struck by a blunt or thrown object, each with 6 deaths. Firearm assault was the next most common cause, accounting for 4 deaths.
- An analysis of homicide data for the years 1968 to 1992 found no general trend in incidence. Forty-one per cent of incidents were between members of the same family, in 38 per cent the suspect and victim were acquaintances and in 17 per cent the suspect was not known to the victim (Gallagher et al. 1994).
- NSW has a target for the year 2000 of reducing the homicide rate in people aged 20-39 compared with the 1992 rate.

References: Gallagher S, Nguyen da Huong M T and Bonney R, 'Trends in homicide 1968-92', *Crime and Justice Bulletin,* no. 21, NSW Bureau of Crime Statistics and Research, Sydney, 1994.

For more information, see: NSW Injury Expert Working Panel, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



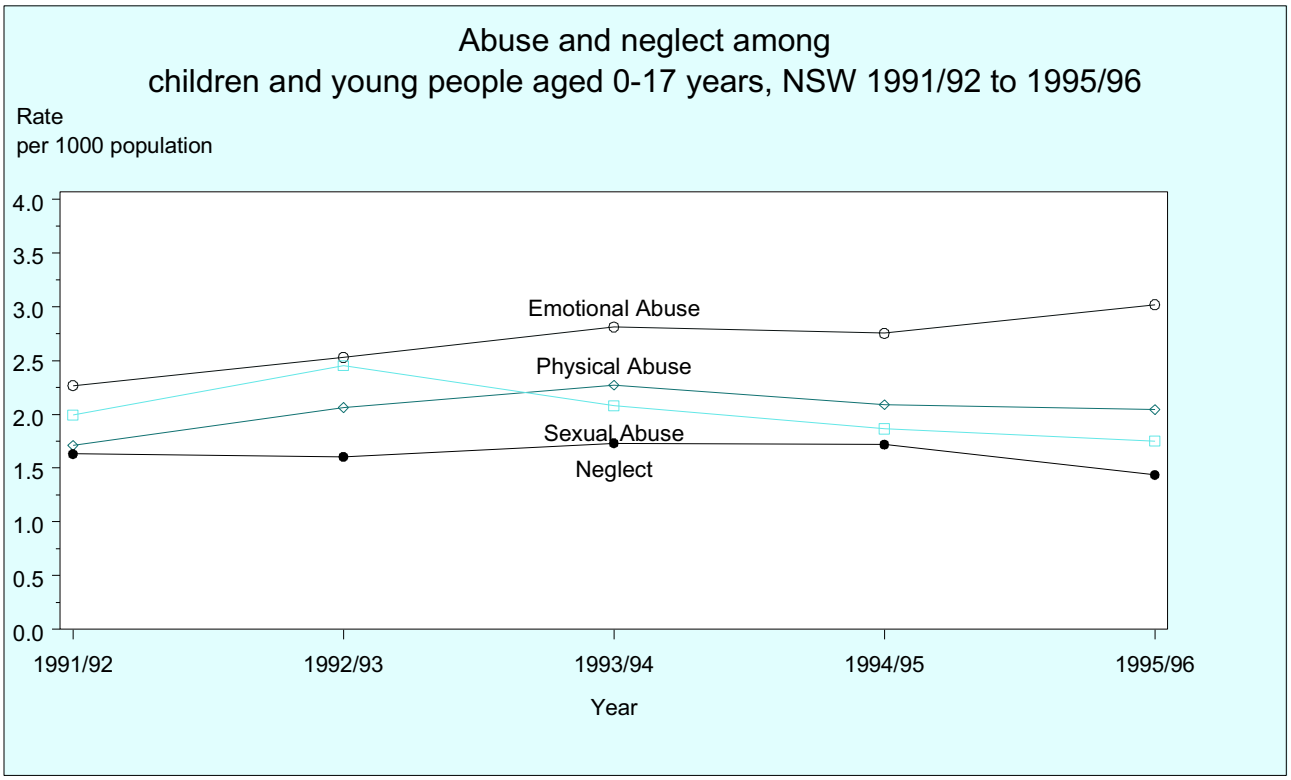
Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	144.7	154.2	144.1	151.8	157.1	157.4	168.2
	Females	39.1	37.7	38.6	42.3	43.4	41.9	45.4
	Persons	92.5	96.6	91.8	97.6	100.8	100.2	107.5
Ages 20-39	Males	285.2	300.4	282.5	295.2	313.0	313.5	328.0
	Females	75.6	69.0	72.3	77.6	80.6	79.1	84.5
	Persons	181.5	185.9	178.3	187.4	197.8	197.3	207.3

Note: Interpersonal violence was classified according to the ICD9 external cause codes E960-969. NSW population estimates as at 31 December each year. Hospital separation rates for persons of all ages were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 5,046 hospital separations following interpersonal violence in males (7% of male injury hospitalisations) and 1,357 (3%) in females. Of these, 3,152 were in males and 802 in females aged 20-39 years.
- In males, the main causes of interpersonal violence leading to hospitalisation were unarmed fighting and brawling (2,937 hospitalisations, 58% of interpersonal violence hospitalisations), assault by a cutting and piercing instrument (480, 10%) and being struck by a blunt or thrown object (471, 9%). Assault by firearm accounted for 44 hospitalisations (1%).
- In females, the leading causes of interpersonal violence hospitalisation were unarmed fighting and brawling, (781 hospitalisations, 58% of interpersonal violence hospitalisations), being struck by a blunt or thrown object (89, 7%) and assault by a cutting and piercing instrument (69, 5%). Assault by firearm accounted for 44 hospitalisations (1%). There were 42 hospitalisations (3%) attributed to rape, although under-reporting is likely.
- In children aged under 15 years, there were 307 hospitalisations attributed to interpersonal violence, of which 123 were in children aged 0- to 4 years, and 29 in children aged 5-9 years. In 0- to 4-year-olds, 79 per cent of the hospitalisations were attributed to child abuse. The rate of reported hospitalisation for child abuse in 0- to 4-year-olds increased from 12 to 22 per 100,000 over the period 1989/90 to 1995/96 (see page 172).
- NSW has a target for the year 2000 of reducing the hospital admission rate for intentional injury in persons aged 20-39 years by 10 per cent, compared with 1992/93.

For more information, see: NSW Injury Expert Working Panel 1995, *Injury prevention and management NSW goals and targets*, NSW Health Department, Sydney, 1995.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



		1991/92	1992/93	1993/94	1994/95	1995/96
Number	Physical Abuse	2623	3170	3489	3224	3172
	Emotional Abuse	3479	3889	4321	4249	4690
	Sexual Abuse	3060	3772	3195	2877	2719
	Neglect	2503	2466	2661	2651	2229
	Total	11665	13297	13666	13001	12810
Rate/1,000	Physical Abuse	1.7	2.1	2.3	2.1	2.0
	Emotional Abuse	2.3	2.5	2.8	2.8	3.0
	Sexual Abuse	2.0	2.5	2.1	1.9	1.8
	Neglect	1.6	1.6	1.7	1.7	1.4
	Total	7.6	8.7	8.9	8.4	8.2

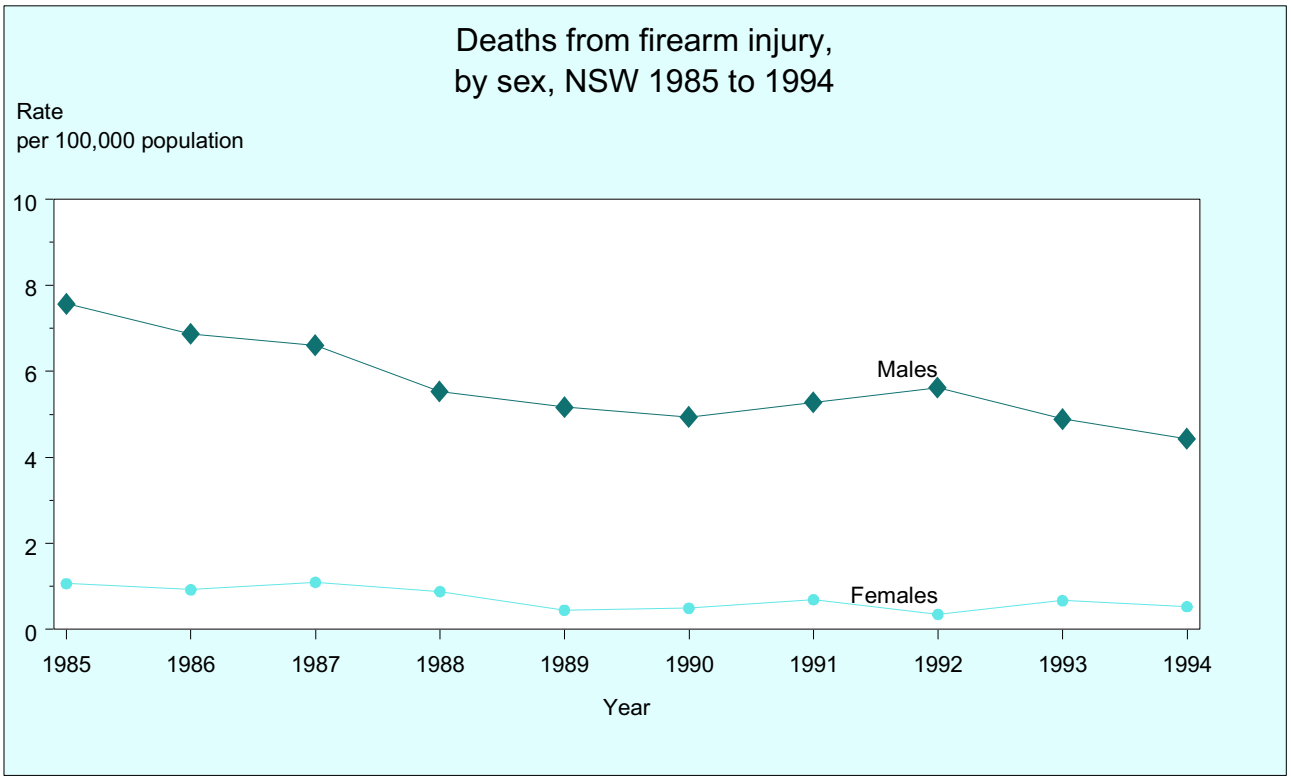
Note: A child or young person can be substantiated for more than one type of abuse any year. Population as at 30 June each year.

Sources: Client Information System, Information and Research Unit, NSW Department of Community Services. ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Many occurrences of child abuse and neglect go unreported. Those that are reported come to the attention of the Department of Community Services.
- In 1995/96, the Department of Community Services received and investigated 28,366 reports. These reports ranged from requests from parents concerned about their parenting to instances of actual harm or injury, for example, bruising.
- In that year, 12,810 children in NSW had a confirmed report of abuse or neglect. Of these children, 37 per cent had confirmed emotional abuse, 25 per cent had confirmed physical abuse, 21 per cent had confirmed sexual abuse and 17 per cent were confirmed as suffering neglect.
- The number of children and youth with confirmed neglect decreased by 16 per cent between 1993/94 and 1995/96.
- Confirmed emotional abuse and neglect was most commonly found in younger children. The rates of confirmed physical abuse in both sexes and sexual abuse among females increased with age to 10-14 years and then decreased.
- Fifty-four per cent of confirmed reports of abuse or neglect were in females and 46 per cent were in males.

For more information, see: NSW Department of Community Services, *Trends in the NSW Department of Community Services Child Protection Program: Aggregation of Data by NSW Department of Health Areas*, NSW Department of Community Services, Sydney, 1997.

NSW Health Department, *Victims of Sexual Assault: Initial Contact at NSW Sexual Assault Services, 1992/93-1993/94*, NSW Health Department, Sydney, 1995.



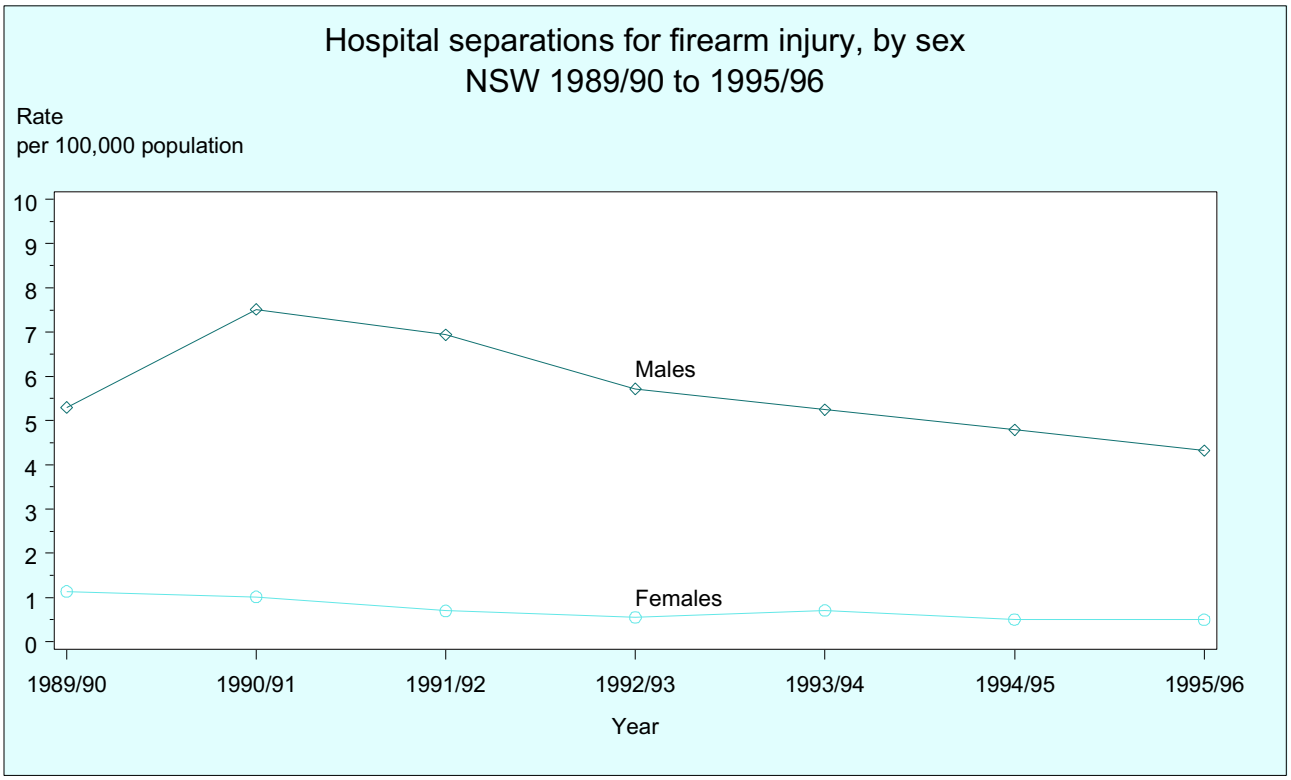
Year		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	Males	7.6	6.9	6.6	5.5	5.2	4.9	5.3	5.6	4.9	4.4
	Females	1.1	0.9	1.1	0.9	0.4	0.5	0.7	0.3	0.7	0.5
	Persons	4.2	3.8	3.8	3.2	2.8	2.7	3.0	2.9	2.7	2.4

Note: Firearm injury was classified according to the ICD9 external cause codes E922, E955.0-955.4/9, E965.0-965.4, E970, E985.0-985.4. NSW population estimates as at 30 June each year. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Source: ABS mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1994, there were 132 deaths in males and 16 in females as a result of firearm injury, accounting for 8 per cent of male and 2 per cent of female injury deaths.
- In males, there were 115 suicides by firearm, accounting for 87 per cent of male firearm deaths. Firearm assault accounted for another 12 deaths (9%). There was 1 death (1%) from unintentional firearm injury, 1 death (1%) due to legal intervention with firearms and 3 cases (2%) of undetermined intent.
- In females, there were 8 deaths by firearm assault, accounting for 50 per cent of female firearm deaths. Suicide accounted for 7 deaths (44%) and unintentional firearm injury for 1 death (6%).
- The death rate for firearm injury in all persons for the period 1990 to 1994 (2.7 per 100,000) was 23 per cent lower than for the period 1985 to 1989 (3.5 per 100,000). The suicide component of the rate declined from 2.6 to 2.1 per 100,000, and the firearm assault component from 0.6 to 0.5 per 100,000.

For more information see: Harrison J, Moller J and Bordeaux S, 'Injury by firearms Australia 1994', *Australian Injury Prevention Bulletin,* Issue 13 Supplement, AIHW National Injury Surveillance Unit, Adelaide, 1994.
Mukherjee S, 'Firearm-related violence in Australia', *Trends & issues in crime and criminal justice,* No. 70, Australian Institute of Criminology, Canberra, 1997.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au



Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Number	Males	155	221	205	169	155	144	130
	Females	32	30	20	16	21	15	15
	Persons	187	250	225	185	176	159	145
Rate	Males	5.3	7.5	6.9	5.7	5.2	4.8	4.3
	Females	1.1	1.0	0.7	0.6	0.7	0.5	0.5
	Persons	3.3	4.3	3.9	3.1	3.0	2.7	2.4

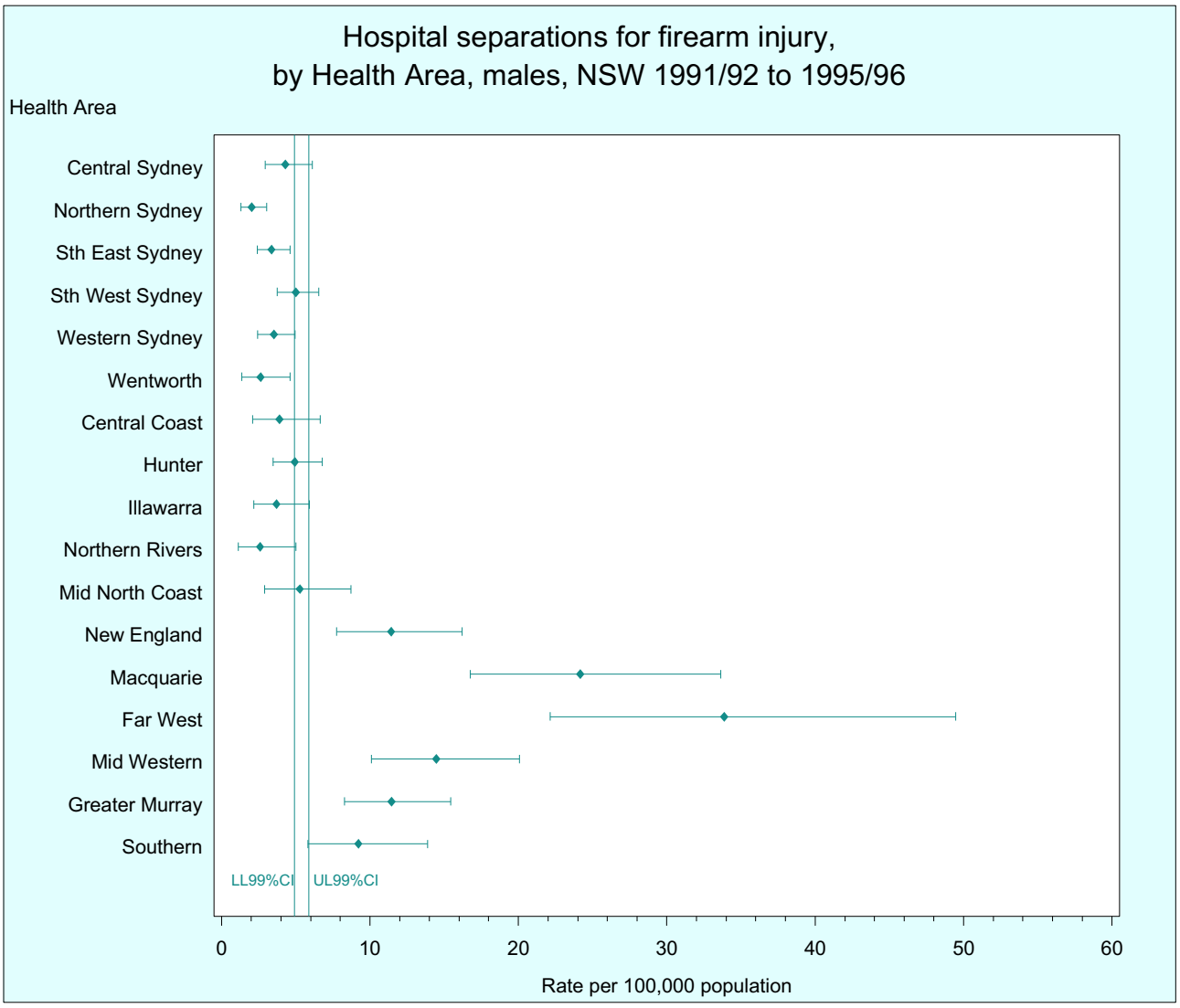
Note: Firearm injury was classified according to the ICD9 external cause codes E922, E955.0-955.4, E955.9, E965.0-965.4, E970, E985.0-985.4. NSW population estimates as at 31 December each year. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1995/96, there were 130 hospitalisations following firearm injury in males and 15 in females. Of these 145 hospitalisations, 13 (9%) were reported as hospital deaths.
- Among males, 61 firearm injury hospitalisations (47%) were due to unintentional injury, 44 (34%) to assault and 19 (15%) to self-inflicted injury. There were 6 hospitalisations (5%) of undetermined intent.
- Among females, 8 firearm injury hospitalisations (53%) were due to assault, 6 (40%) to unintentional injury, and 1 (7%) to self-inflicted injury.
- In the five years to 1995/96, there were, on average, 160 hospitalisations per year following firearm injury in males and 17 in females. The yearly average number of unintentional firearm injury hospitalisations was 90 for males and 9 for females, (56% of male and 51% of female firearm hospitalisations). For firearm assault, the yearly average was 25 for males (16%) and 5 for females (30%). For self-inflicted firearm injury, the yearly average was 24 for males (15%) and 2 for females (14%).
- A review of injury outcomes of family and intimate assaults conducted in the United States found that firearm assault was 12 times more likely to result in death than assault by other means (Saltzman et al. 1992).

References: Saltzman L E, Mercy J A, O'Carroll P W, Rosenberg M L and Rhodes P H, 'Weapon involvement and injury outcomes in family and intimate assaults', *Journal of the American Medical Association*, vol. 267, 1992, pp. 3043-3047.

For more information, see: Harrison J, Moller J and Bordeaux S, 'Injury by firearms Australia 1994', *Australian Injury Prevention Bulletin,* Issue 13 Supplement, AIHW National Injury Surveillance Unit, Adelaide, 1996.
Mukherjee S, 'Firearm-related violence in Australia', *Trends & issues in crime and criminal justice,* No. 70, Australian Institute of Criminology, Canberra, 1997.
The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au
The Australian Institute of Criminology Web site at at http://www.aic.gov.au



Note: Firearm injury was classified according to the ICD9 external cause codes E922, E955.0-955.4, E955.9, E965.0-965.4, E970, E985.0-E985.4. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Among males in the period 1991/92 to 95/96, residents of the New England, Macquarie, Far West, Mid Western, and Greater Murray Health Areas had an age-adjusted firearm hospitalisation rate significantly higher than for NSW overall. The same areas also had significantly elevated age-adjusted firearm injury death rates among males.
- The Northern and South Eastern Sydney Health Areas and the Wentworth Health Area had an age-adjusted male firearm injury hospitalisation rate significantly lower than for NSW overall among males. The same areas, with the exception of Wentworth Health Area and the addition of South Western Sydney Health Area, also had significantly low age-adjusted firearm injury death rates among males.
- The numbers of hospitalisations and deaths from firearm injuries in females were too small for valid comparisons to be made among Health Areas.
- An analysis of firearm injury in Australia in 1994 found that death rates for firearm injury are elevated in rural areas, and the highest rate occurs in areas with the lowest population density (Harrison, Moller and Bordeaux 1996).

Reference: Harrison J, Moller J and Bordeaux S, 'Injury by firearms Australia 1994', *Australian Injury Prevention Bulletin,* Issue 13 Supplement, AIHW National Injury Surveillance Unit, Adelaide, 1996.

For more information, see: Mukherjee S, 'Firearm-related violence in Australia', *Trends & issues in crime and criminal justice,* No. 70, Australian Institute of Criminology, Canberra, 1997.

The National Injury Surveillance Unit Web site at http://www.nisu.flinders.edu.au

The Australian Institute of Criminology Web site at http://www.aic.gov.au

Hospital Separations for Firearm Injury, by Health Area and sex, NSW 1991/92 to 1995/96

Health Area	Sex	Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	Males	53	4.3	2.9	6.1
Central Sydney	Females	7	0.6	0.2	1.4
Central Sydney	Persons	60	2.4	1.7	3.4
Northern Sydney	Males	38	2.0	1.3	3.0
Northern Sydney	Females	8	0.5	0.1	1.1
Northern Sydney	Persons	46	1.2	0.8	1.8
South Eastern Sydney	Males	65	3.4	2.4	4.6
South Eastern Sydney	Females	6	0.3	0.1	0.8
South Eastern Sydney	Persons	71	1.9	1.3	2.5
South Western Sydney	Males	90	5.0	3.8	6.6
South Western Sydney	Females	10	0.6	0.2	1.3
South Western Sydney	Persons	100	2.9	2.2	3.7
Western Sydney	Males	57	3.5	2.4	4.9
Western Sydney	Females	11	0.7	0.3	1.5
Western Sydney	Persons	68	2.2	1.5	2.9
Wentworth	Males	20	2.6	1.4	4.6
Wentworth	Females	3	0.4	0.0	1.5
Wentworth	Persons	23	1.5	0.8	2.5
Central Coast	Males	22	3.9	2.1	6.7
Central Coast	Females	6	1.1	0.3	2.8
Central Coast	Persons	28	2.5	1.4	4.0
Hunter	Males	63	4.9	3.5	6.8
Hunter	Females	3	0.3	0.0	0.9
Hunter	Persons	66	2.6	1.9	3.6
Illawarra	Males	29	3.7	2.2	5.9
Illawarra	Females	4	0.5	0.1	1.7
Illawarra	Persons	33	2.1	1.3	3.2
Northern Rivers	Males	14	2.6	1.1	5.0
Northern Rivers	Females	1	0.2	0.0	1.2
Northern Rivers	Persons	15	1.4	0.6	2.6
Mid North Coast	Males	25	5.3	2.9	8.7
Mid North Coast	Females	1	0.3	0.0	1.9
Mid North Coast	Persons	26	2.8	1.5	4.5
New England	Males	52	11.4	7.7	16.2
New England	Females	2	0.4	0.0	2.0
New England	Persons	54	5.9	4.1	8.4
Macquarie	Males	58	24.2	16.7	33.7
Macquarie	Females	3	1.3	0.1	4.7
Macquarie	Persons	61	12.9	9.0	17.8
Far West	Males	44	33.9	22.1	49.5
Far West	Females	5	4.3	0.9	12.2
Far West	Persons	49	19.7	13.2	28.2
Mid Western	Males	60	14.5	10.1	20.1
Mid Western	Females	9	2.3	0.8	5.0
Mid Western	Persons	69	8.5	6.1	11.5
Greater Murray	Males	72	11.5	8.3	15.5
Greater Murray	Females	6	1.0	0.3	2.6
Greater Murray	Persons	78	6.3	4.6	8.4
Southern	Males	38	9.2	5.8	13.9
Southern	Females	2	0.5	0.0	2.2
Southern	Persons	40	5.0	3.2	7.4
NSW	Males	800	5.4	4.9	5.9
NSW	Females	87	0.6	0.4	0.8
NSW	Persons	887	3.0	2.7	3.3

Note: Firearm injury was classified according to the ICD9 external cause codes E922, E955.0-955.4, E955.9, E965.0-965.4, E970, E985.0-E985.4. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

Chapter 4.2

Asthma

- In the period 1991 to 1993, the prevalence of current asthma among children aged 8-11 years varied across NSW regions. Prevalence was highest in Broken Hill (13%) and lowest in Western Sydney (7%).
- In 1994, 14 per cent of NSW adults (an estimated 587,437 people) reported ever having being diagnosed with asthma. Asthma prevalence was highest among adults aged 18-24 years.
- In the same year, 9 per cent of NSW adults reported current asthma (defined as having been diagnosed with asthma and experiencing symptoms in the past 12 months).
- The prevalence of self-reported doctor-diagnosed asthma among NSW men varied from 3.5 per cent in the Southern Health Area to 13.6 per cent in the Greater Murray Health Area.
- The prevalence of self-reported doctor-diagnosed asthma among NSW women varied from 9.1 per cent in the Southern Health Area to 14.5 per cent in the Greater Murray Health Area.
- The death rate from asthma in NSW has been declining gradually since 1989. There were 309 deaths from asthma in 1994.
- The hospitalisation rate for asthma in NSW has been relatively stable in recent years.

In this chapter

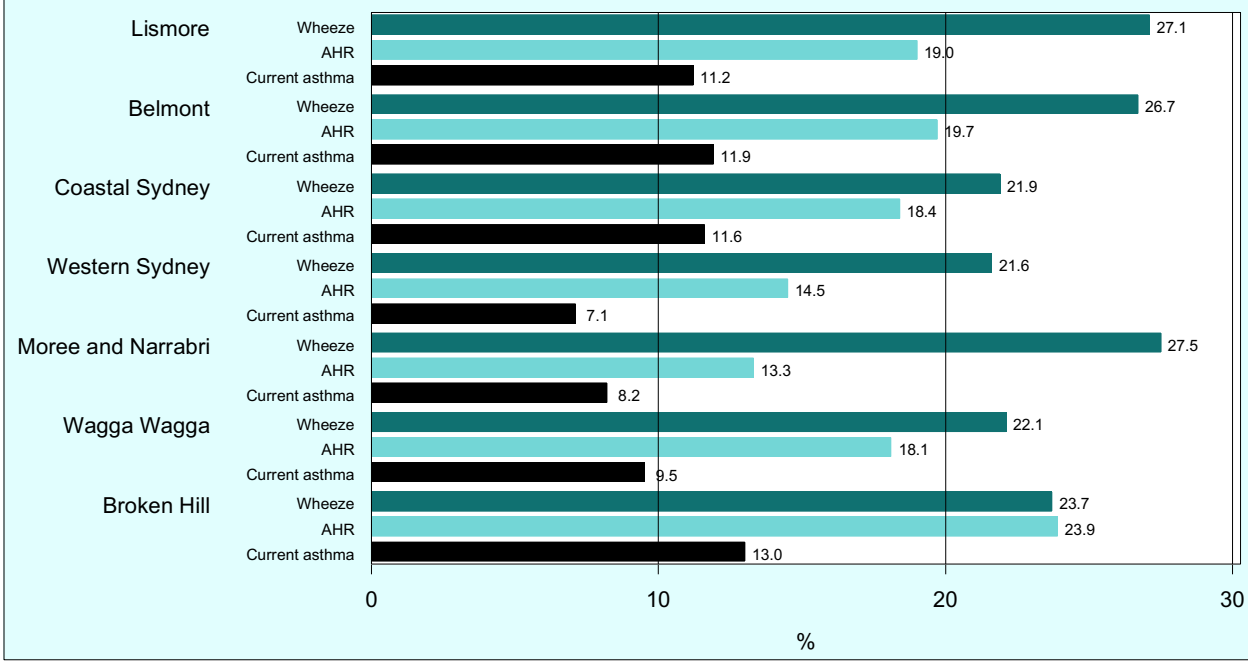
Introduction

This chapter presents information on the prevalence of asthma in NSW, and deaths and hospitalisations attributed to it.

Prevalence data for children come from surveys which measured asthma markers, including airway hyper-responsiveness, in seven regions of NSW, while prevalence data for adults are based on self-report from the 1994 NSW Health Promotion Survey.

The methods used for analysing and presenting death and hospitalisation data are described in more detail in the Methods section (see page 257).

Prevalence of recent wheeze, AHR and current asthma in children aged 8-11 years, for selected NSW regions, NSW 1991 to 1993



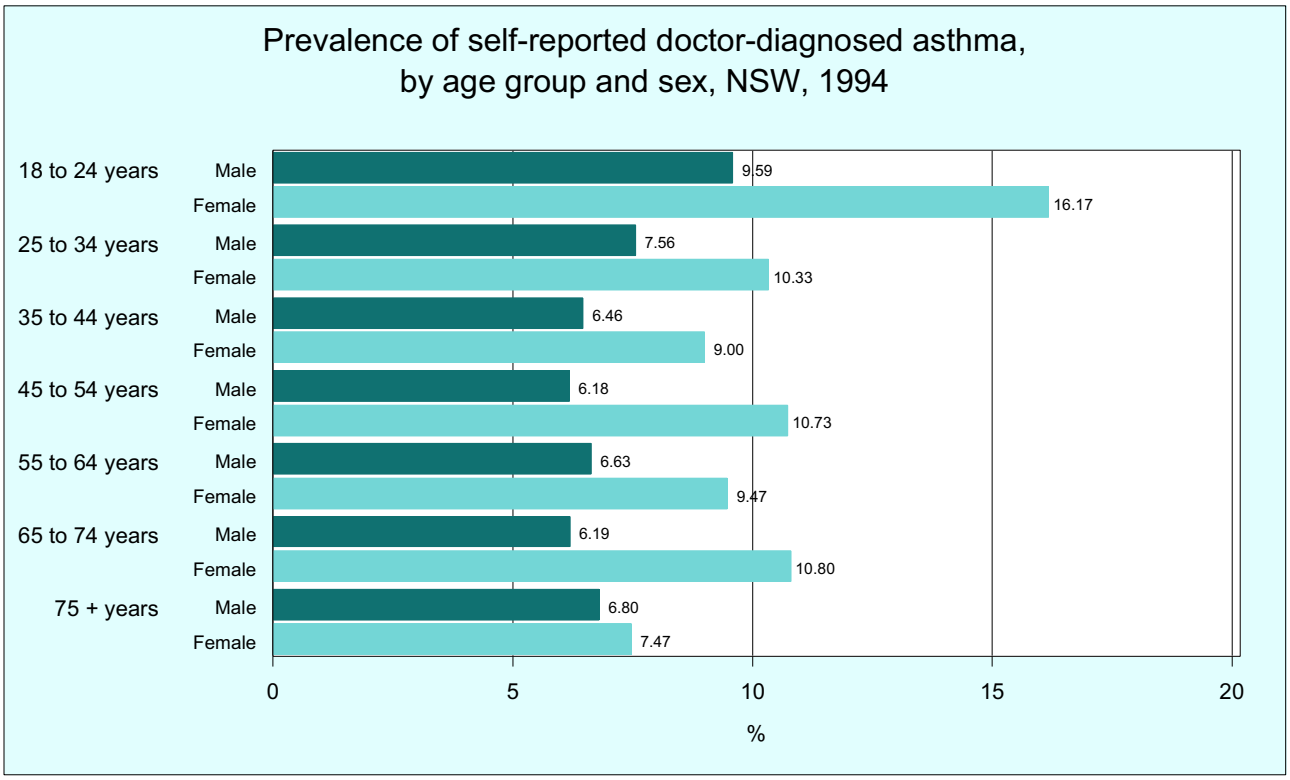
Note: Wheeze = recent wheeze, defined as children with wheeze on exercise in the previous 12 months. AHR = airway hyperresponsiveness, defined as a reduction of 20 per cent or more in FEV1 following histamine challenge. Current asthma = recent wheeze and airway hyperresponsiveness in the previous 12 months.

Source: Peat J K, et al., 'Prevalence and severity of childhood asthma and allergic sensitisation in seven climatic regions of New South Wales', *Medical Journal of Australia,* Vol. 163, 1995 pp 22-26.

- Asthma is a chronic respiratory condition, usually beginning in childhood. Its effects may vary from mild, with occasional acute exacerbations, to severe. It is an important public health problem in Australia, with prevalence rates amongst the highest in the world.
- In NSW children aged 8-11 years in the period 1991 to 1993, the prevalence of indicators of current asthma, including recent wheeze and airway hyperresponsiveness, varied markedly across regions.
- The prevalence of recent wheeze ranged from 22 per cent in coastal Sydney, Western Sydney and Wagga Wagga to 28 per cent in Moree and Narrabri. Airway hyperresponsiveness was highest in children from Broken Hill (24%) and lowest in those from Moree and Narrabri (13%).
- Current asthma is defined as the presence of airway hyperresponsiveness plus recent symptoms of wheeze. Broken Hill had the highest rate of current asthma in children (13%), while western Sydney had the lowest (7%).
- The prevalence of diagnosed asthma was also high, ranging from 24 per cent in coastal Sydney to 38 per cent in Belmont (Peat et al. 1995).
- Recent evidence suggest that an elevated level of immunoglobulin E (IgE) is the principal risk factor for the development of asthma in children, followed by a secondary exposure and sensitisation to possible allergens (Bates 1995).
- A number of environmental hazards are associated with the development of asthma. These include house dust mite, *Alternaria* mould spores, ryegrass pollens, pet allergens, cockroach allergens, maternal smoking, childhood infections and occupational exposures. Sensitisation to these allergens appears to be related to climatic conditions. For example, sensitivity to house dust mites is found more frequently in humid coastal areas, while sensitivity to Alternaria is more common in dry inland regions. This may explain some of the variations in asthma prevalence within and between countries (Bates 1995).

References: Peat J K, Toelle B G, Haby M H, et al., 'Prevalence and severity of childhood asthma and allergic sensitisation in seven climatic regions of New South Wales', *Medical Journal of Australia,* Vol. 163, 1995, pp 22-26.
Bates D V, 'Observations on asthma' *Environmental Health Perspectives*, Vol. 103, 1995, pp 243-247.

For more information, see: NSW Health Department, *Asthma and the environment: perspectives on the prevention of asthma*, NSW Health Department, Sydney, 1997.
Also at Web site at http://www.health.nsw.gov.au/public-health/index.html
National Asthma Campaign Web site at http://hna.ffh.vic.gov/asthma/
Asthma Foundation of Victoria Web site at http://www.asthma.org.au/
Asthma Society of Canada Web site at http://westview.org/asthma/



Note: Survey respondents were asked: "Have you ever been diagnosed as having asthma by a doctor or at a hospital?"

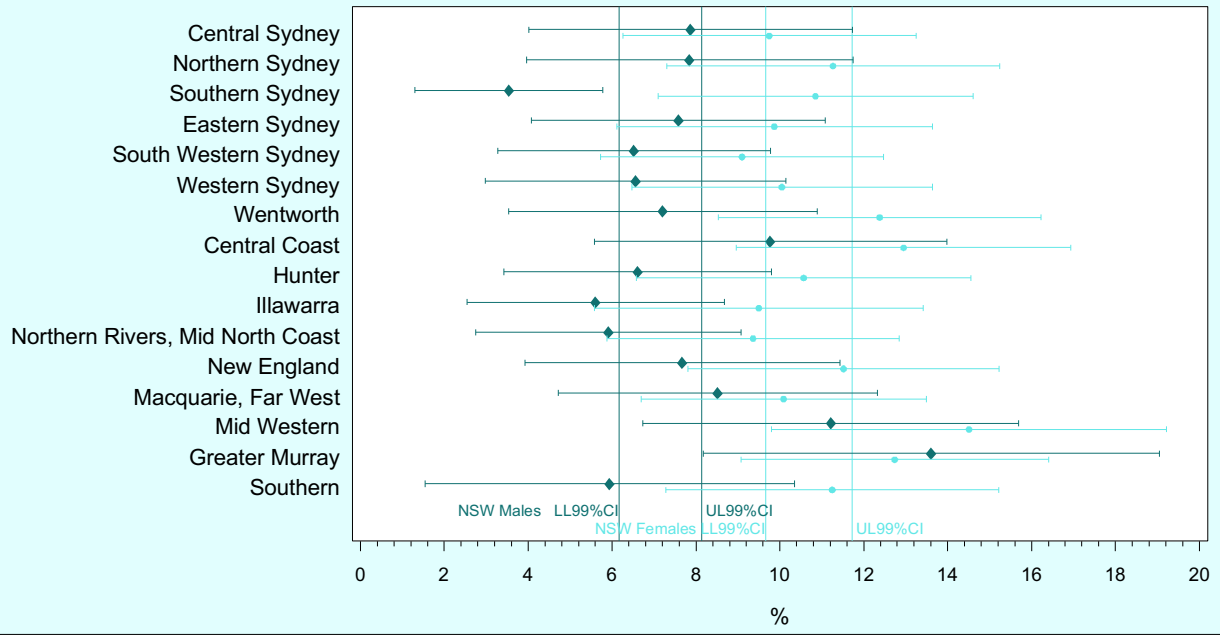
Source: NSW Health Promotion Survey 1994 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1994, 14 per cent of NSW adults (an estimated 587,437 people) reported ever having been diagnosed with asthma.
- Between 1981 and 1990, serial cross-sectional studies in a rural community in Western Australia showed increases in the reporting of recent wheeze (17.5% to 28.8%) and diagnosed asthma (9.0% to 16.3%). However, the prevalence of reported current asthma and objective measures of asthma, including bronchial hyperresponsiveness, did not change.
- In 1994, 9 percent of the NSW adult population (377,236) reported having current asthma (as defined by having been diagnosed with asthma and experiencing symptoms in the last 12 months). Men reported a significantly lower rate of current asthma than females. The highest rates of current asthma for both sexes were reported by those aged 18- to 24 years.
- The prevalence of current asthma in females ranged from 7.5 per cent in women 75 years and over to 16.2 per cent in those 18-24 years old. While the prevalence in males aged 25 years and over ranged from 6.2 to 7.6 per cent, almost 10 per cent of younger males reported current asthma.
- The NSW Health Department's Asthma Health Improvement Project has identified three main goals: reducing the prevalence of asthma, improving the health of people with asthma and optimising the clinical management of asthma.

Reference: Peat JK, Haby M, Spijker J, et al. *Prevalence of asthma in adults in Busselton, Western Australia.* BMJ, Vol. 305, 1992, pp. 1326-1329.

For more information, see: NSW Health Department, *Asthma and the environment: perspectives on the prevention of asthma*, NSW Health Department, Sydney,1997. Also at Web site http://doh.health.nsw.gov.au/public-health/index.html
National Asthma Campaign at Web site http://hna.ffh.vic.gov/asthma/
Asthma Foundation of Victoria at Web site http://www.asthma.org.au/
Asthma Society of Canada at Web site http://westview.org/asthma/

Prevalence of self-reported doctor-diagnosed asthma by Health Area and sex, persons aged 18 years and over, NSW 1994



Health Area	Sex	%	LL 99% CI	UL 99% CI	Health Area	Sex	%	LL 99% CI	UL 99% CI
Central Sydney	Males	7.9	4.0	11.7	Illawarra	Males	5.6	2.5	8.7
Central Sydney	Females	9.8	6.3	13.3	Illawarra	Females	9.5	5.6	13.4
Northern Sydney	Males	7.8	4.0	11.7	Northern Rivers and				
Northern Sydney	Females	11.3	7.3	15.2	Mid North Coast	Males	5.9	2.7	9.1
Southern Sydney	Males	3.5	1.3	5.8	Northern Rivers and				
Southern Sydney	Females	10.8	7.1	14.6	Mid North Coast	Females	9.4	5.9	12.8
Eastern Sydney	Males	7.6	4.1	11.1	New England	Males	7.7	3.9	11.4
Eastern Sydney	Females	9.9	6.1	13.6	New England	Females	11.5	7.8	15.2
South West Sydney	Males	6.5	3.3	9.8	Macquarie, Far West	Males	8.5	4.7	12.3
South West Sydney	Females	9.1	5.7	12.5	Macquarie, Far West	Females	10.1	6.7	13.5
Western Sydney	Males	6.6	3.0	10.1	Mid Western	Males	11.2	6.7	15.7
Western Sydney	Females	10.0	6.5	13.6	Mid Western	Females	14.5	9.8	19.2
Wentworth	Males	7.2	3.5	10.9	Greater Murray	Males	13.6	8.2	19.1
Wentworth	Females	12.4	8.5	16.2	Greater Murray	Females	12.7	9.1	16.4
Central Coast	Males	9.8	5.6	14.0	Southern	Males	5.9	1.5	10.3
Central Coast	Females	12.9	9.0	16.9	Southern	Females	11.3	7.3	15.2
Hunter	Males	6.6	3.4	9.8	NSW	Males	7.1	6.2	8.1
Hunter	Females	10.6	6.6	14.6	NSW	Females	10.7	9.7	11.7

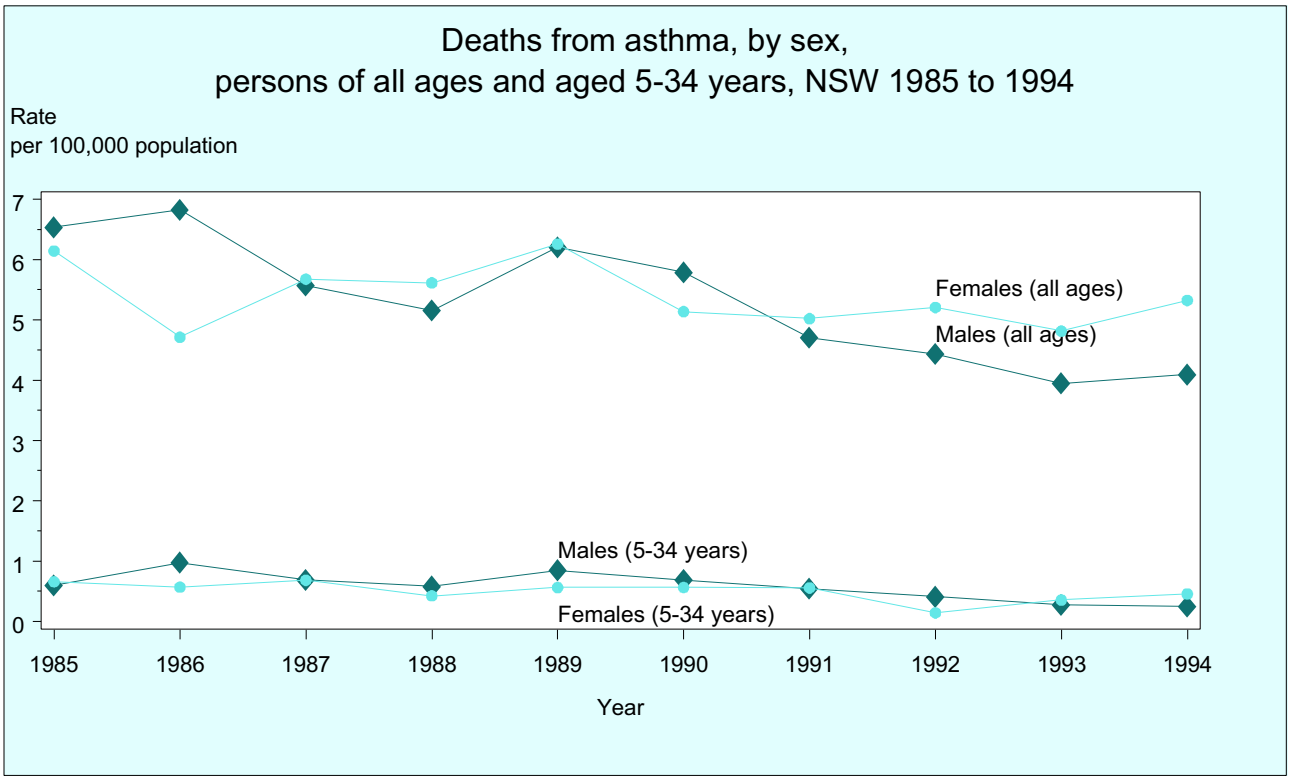
Note: Survey respondents were asked: "Have you ever been diagnosed as having asthma by a doctor or at a hospital?". LL/L99% CI = lower/upper limits of 99% confidence interval of the point estimate.

Source: NSW Health Promotion Survey 1994 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In 1994, the prevalence of self-reported doctor-diagnosed current asthma among NSW men varied from 3.5 per cent in the Southern Area (significantly lower than for NSW overall) to 13.6 per cent in the Greater Murray Area (significantly higher than for NSW overall).
- In the same year, the prevalence of self-reported doctor-diagnosed current asthma among NSW women varied from 9.1 per cent in South Western Sydney to 14.5 per cent in the Mid Western Area. No area differed significantly from NSW overall.
- Little is known about the socio-demographic factors associated with adult asthma in Australia. Risk factors identified in the United States include smoking, low socioeconomic status and living in rural areas (Turkeltaub and Gergen, 1991).

Reference: Turkeltaub P C and Gergen P J, 'Prevalence of upper and lower respiratory conditions in the US population by social and environmental factors: data from the second National Health and Nutrition Examination Survey, 1976 to 1980 (NHANES II)', *Annals of Allergy,* Vol. 67, 1991, pp. 147-154.

For more information, see: NSW Health Department, *Asthma and the environment: perspectives on the prevention of asthma*, NSW Health Department, Sydney, 1997. Also at Web site http://www.health.nsw.gov.au/public-health/index.html National Asthma Campaign at Web site http://hna.ffh.vic.gov/asthma/



Year			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	Number	Males	150	168	139	134	165	151	123	120	111	111
All ages		Females	182	141	174	180	201	171	169	188	172	198
		Persons	332	309	313	314	366	322	292	308	283	309
	Rate/100,000	Males	6.5	6.8	5.6	5.2	6.2	5.8	4.7	4.4	3.9	4.1
		Females	6.1	4.7	5.7	5.6	6.3	5.1	5.0	5.2	4.8	5.3
		Persons	6.2	5.6	5.6	5.5	6.2	5.4	4.8	4.9	4.4	4.7
NSW	Number	Males	17	28	20	17	25	20	16	12	8	7
5-34 years		Females	18	16	19	12	16	16	16	4	10	13
		Persons	35	44	39	29	41	36	32	16	18	20
	Rate/100,000	Males	0.6	1.0	0.7	0.6	0.8	0.7	0.5	0.4	0.3	0.2
		Females	0.7	0.6	0.7	0.4	0.6	0.6	0.6	0.1	0.4	0.5
		Persons	0.6	0.8	0.7	0.5	0.7	0.6	0.6	0.3	0.3	0.4
AUSTRALIA												
All ages	Rate/100,000	Males	5.9	5.7	5.3	5.3	5.9	5.1	4.4	4.2	4.1	–
		Females	5.3	4.6	5.5	5.0	5.8	4.7	4.4	4.2	4.4	–
		Persons	5.4	5.1	5.3	5.1	5.8	4.9	4.3	4.3	4.3	–

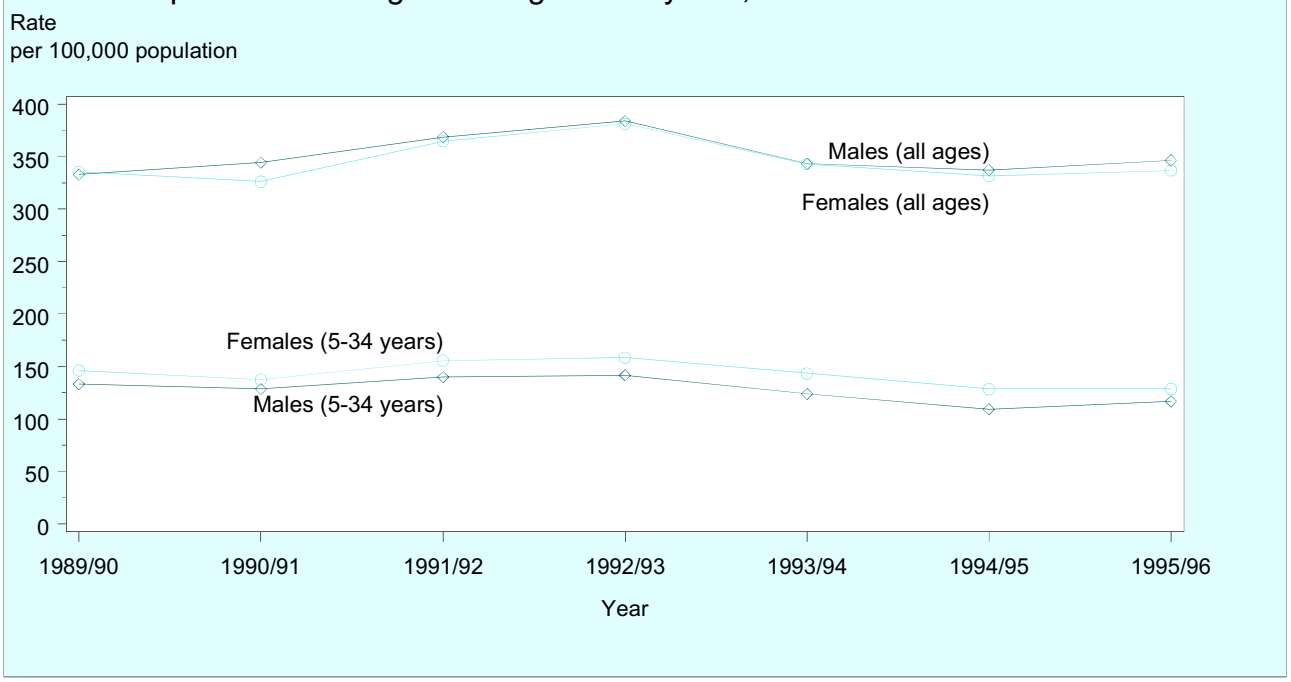
Note: Asthma was classified according to the ICD9 code 493. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The asthma death rate in NSW remained relatively stable between 1983 and 1989, when it gradually began to decrease. A similar trend was seen in Australia overall.
- Asthma death rates for people aged 5-34 years in NSW peaked in 1986, and for males, in 1989. Since then, there has been a gradual decline among both males and females in this age group.
- Most asthma deaths occur in the older age groups, where diagnosis of asthma may not be reliable. The apparent recent decline in deaths may be partly owing to improvements in classification of the cause of death.
- In 1989, the National Asthma Campaign (NAC) was established and strategies were established to improve the diagnosis and management of asthma.
- The death rate for asthma in people aged 5-34 has been chosen by the NAC as an indicator to measure the outcome of asthma management and efforts to reduce preventable asthma deaths.

For more information, see: National Asthma Campaign at Web site http://hna.ffh.vic.gov/asthma/
Asthma Foundation of Victoria Web site at http://www.asthma.org.au/
American Academy of Allergy, Asthma and Immunology Web site at http://www.aaaai.org/patpub/allrash/asthma/
Doctor's Guide to Asthma Information and Resources Web site at htt://www.ps/groupcm/asthma.htm
Asthma Society of Canada Web site at http://westview.org/asthma/
Asthma practice parameters Web site at http://www.cmh.edy/allergy/param/tocasthm.htm

Hospital separations for asthma, by sex, persons of all ages and aged 5-34 years, NSW 1989/90 to 1995/96



			1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Number	Males	9719	10094	10908	11447	10284	10172	10533
		Females	9743	9550	10856	11434	10387	10179	10473
		Persons	19462	19644	21764	22881	20671	20351	21006
	Rate/100,000	Males	333.0	344.2	369.1	384.7	343.8	338.2	347.9
		Persons	334.9	335.3	367.8	384.2	344.3	335.7	343.9
5-34 years	Number	Males	3928	3795	4139	4199	3658	3247	3487
		Females	4138	3892	4418	4493	4050	3639	3651
		Persons	8066	7687	8557	8692	7708	6886	7138
	Rate/100,000	Males	133.4	128.5	139.8	141.9	123.8	109.5	117.0
		Females	146.3	137.5	155.7	158.6	143.3	128.4	128.6
		Persons	139.9	133.1	147.8	150.2	133.5	118.8	122.8

Note: Asthma was classified according to the ICD9 code 493. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Since 1988/89, NSW hospital separation rates for asthma for all ages and ages 5-34 years have remained relatively stable. This is in contrast to the United States, where hospital rates for asthma have increased significantly during the same period.
- Care should be taken when using asthma hospitalisation rates alone as an indicator for the outcome of asthma management. Admission to hospital is not only indicated for severe attacks of asthma but also where asthma is unstable, and there may be social concerns which make hospitalisation a necessity, such as the distance between the hospital and the home of a patient with unstable asthma.
- A study in the United States found that perceived poor access to medical care and higher prevalence of asthma were independent predictors of higher rates of asthma hospital admissions (Bindman et al. 1995).

Reference: Bindman A B, Grunmbach K, Osmond D, et al. 'Preventable hospitalisations and access to health care', *Journal of the American Medical Association*, Vol. 274, 1995, pp 305-311.

For more information, see: National Asthma Campaign Web site at http://hna.ffh.vic.gov/asthma/
Asthma Foundation of Victoria Web sit eat http://www.asthma.org.au/
American Academy of Allergy, Asthma and Immunology Web site at http://www.aaaai.org/patpub/allrash/asthma/
Doctor's Guide to Asthma Information and Resources Web site at http:/www.ps/groupcm/asthma.htm
Asthma Society of Canada Web site at http://westview.org/asthma/
Asthma practice parameters Web site at http://www.cmh.edy/allergy/param/tocasthm.htm

Chapter 4.3

Cardiovascular diseases

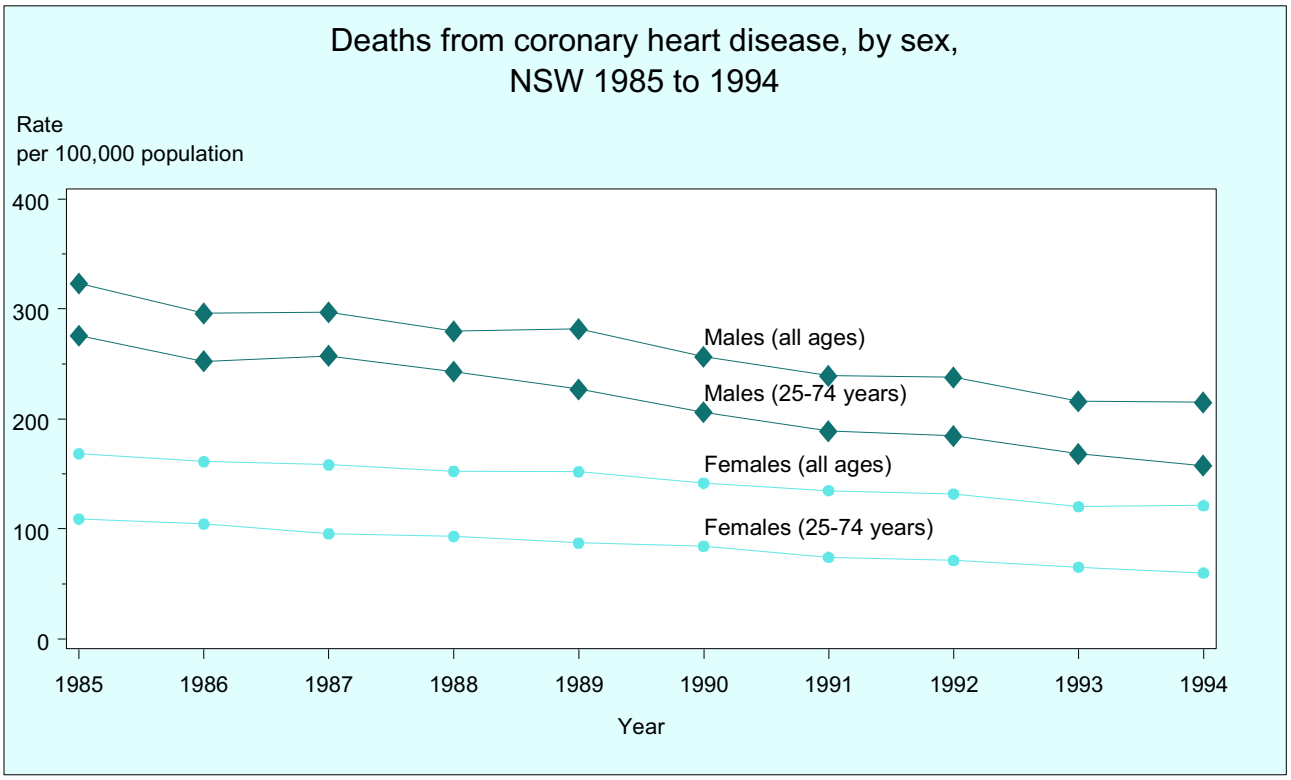
- Deaths due to coronary heart disease (CHD) have been declining in NSW since the 1960s. The age-adjusted CHD death rate dropped by an average of 3.8 per cent per year for males and 3.0 per cent per year for females during the decade to 1994.
- Nevertheless, CHD is still a major cause of death in NSW, causing 10,900 deaths (24% of all deaths) in NSW in 1994.
- In the period 1990 to 1994, the Northern Sydney and South-Eastern Sydney Health Areas had the lowest age-adjusted death rates from CHD, while areas in central and far western NSW had death rates significantly above the state average.
- The decline in deaths from CHD has been accompanied by a 44 per cent increase in hospitalisations for this condition in the past seven years. Most of the increase has been for non-infarct diagnoses, with hospitalisations for acute myocardial infarction ("heart attack") actually declining.
- Deaths from stroke declined by an average of 4.4 per cent per year for males and 4.1 per cent per year for females in the decade to 1994.
- Stroke caused 4,820 deaths in NSW in 1994 (11% of all deaths that year).
- Although deaths from stroke are declining, the incidence of non-fatal stroke may be increasing, mainly because of improved survival after stroke. Hospitalisations for stroke have increased by 12 per cent in the past seven years.

In this chapter

Introduction

Coronary heart disease, causing angina and acute myocardial infarction (or "heart attack") and stroke (or cerebrovascular disease), are the major forms of cardiovascular disease causing death and illness in NSW. This chapter presents recent data on deaths and hospitalisations for these conditions.

The methods used for analysing and presenting death and hospitalisation data are described in more detail in the Methods section (see page 257).



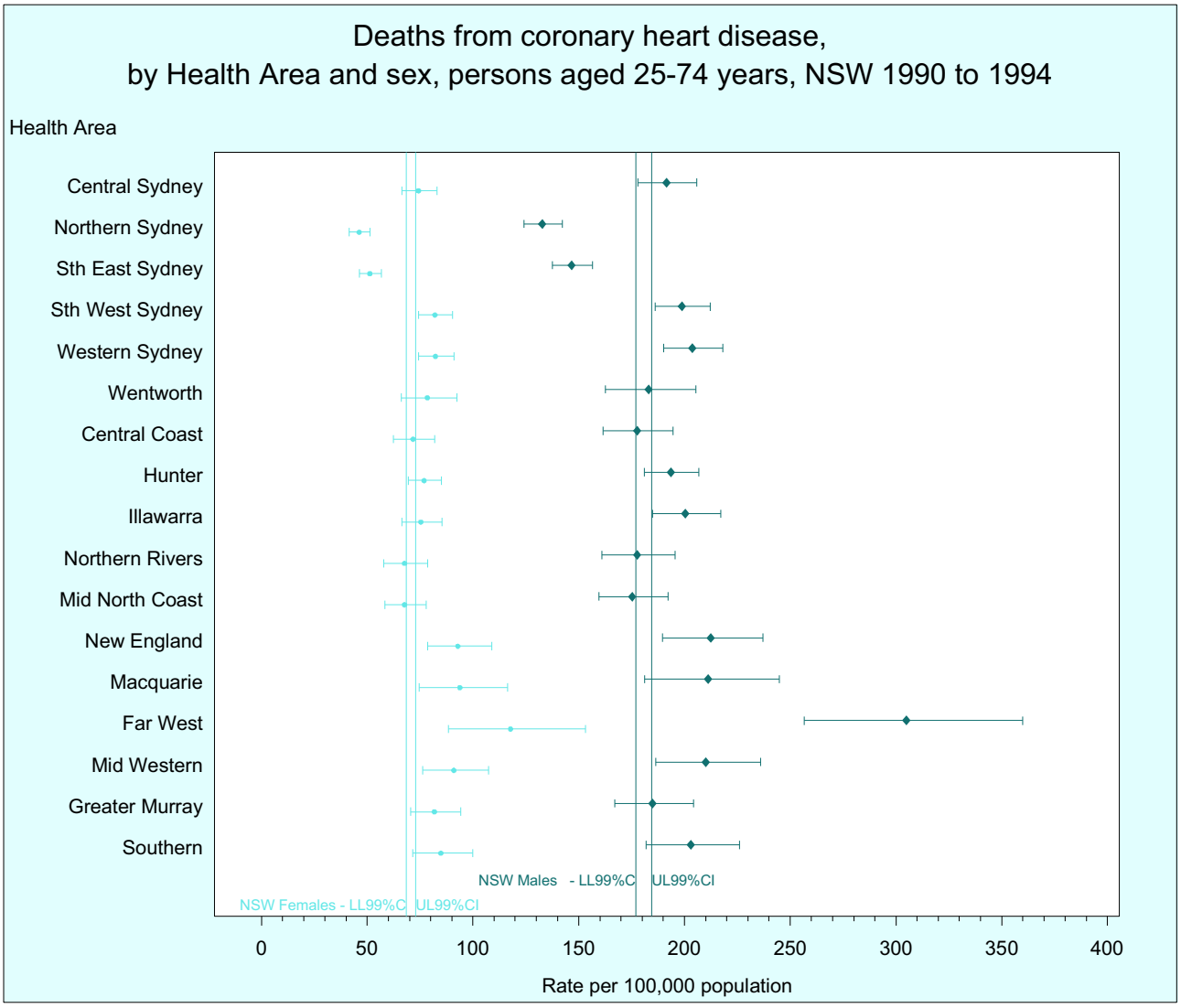
Year		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW											
All ages	Males	323.5	296.1	297.0	279.9	282.0	256.6	239.3	237.9	216.2	215.3
	Females	168.3	161.3	158.3	152.5	151.9	141.7	134.9	131.8	120.3	121.2
	Persons	234.5	219.3	218.8	208.6	208.3	191.6	181.1	178.4	162.6	162.6
25-74 years	Males	276.0	252.5	257.5	243.1	227.2	206.1	188.9	184.6	168.2	157.7
	Females	109.0	104.5	95.6	93.2	87.1	84.3	74.2	71.3	65.2	59.9
	Persons	188.1	174.9	172.5	165.0	154.0	142.7	129.4	125.8	114.8	107.0
AUSTRALIA											
All ages	Males	310.2	289.5	280.3	268.3	268.6	248.7	235.4	233.5	217.1	–
	Females	159.4	153.5	150.0	142.6	144.1	136.7	127.9	131.0	115.1	–
	Persons	224.8	213.1	207.2	198.1	198.7	186.2	175.4	176.5	160.2	–

Notes: Coronary heart disease was classified according to the ICD-9 codes 410-414. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet E T and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995

- Deaths due to coronary heart disease (CHD) in NSW continue the gradual decline that has been observed since the late 1960s.
- The age-adjusted death rate for CHD in NSW decreased by an average of 3.8 per cent per year in males and 3.0 per cent per year in females during the decade to 1994. This rate of decline is comparable to that observed Australia-wide in that time (3.7% and 2.9%, respectively), and is slightly higher than that observed for deaths from all causes (2.0% and 1.8% respectively, Gajanayake & Bennett, 1997).
- Nevertheless, CHD remains a major cause of death. In 1994 there were 10,900 deaths due to CHD (5,806 males and 5,094 females), representing 24 per cent of all deaths in NSW.
- Reduction of cardiovascular risk factors, including cigarette smoking and high blood pressure, as well as improved medical care, have contributed to the decrease in deaths from coronary heart disease.

Reference: Gajanayake I and Bennett S, *Surveillance of cardiovascular mortality in Australia 1983-94*, AIHW cat. no. CVD 2 (Cardiovascular disease series no. 5), AIHW, Canberra, 1997.



Note: Coronary heart disease was classified according to the ICD-9 codes 410-414. Death rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990 to 1994, there was substantial geographic variation in coronary heart disease (CHD) death rates in NSW.
- The Northern Sydney and South-Eastern Sydney Health Areas had the lowest (age-adjusted) death rates from CHD, while Areas in western Sydney and in central and far western NSW had death rates significantly above the state average. A broadly similar pattern was observed for the period 1983 to 1992 (Close et al. 1994).
- For planning health services, it is important to note that although age-adjusted death rates were low in Northern and South Eastern Sydney, the actual number of deaths in these areas was large. During the period 1990 to 1994, these two areas, because of the size and age structure of their populations, experienced more CHD deaths than most other Health Areas.

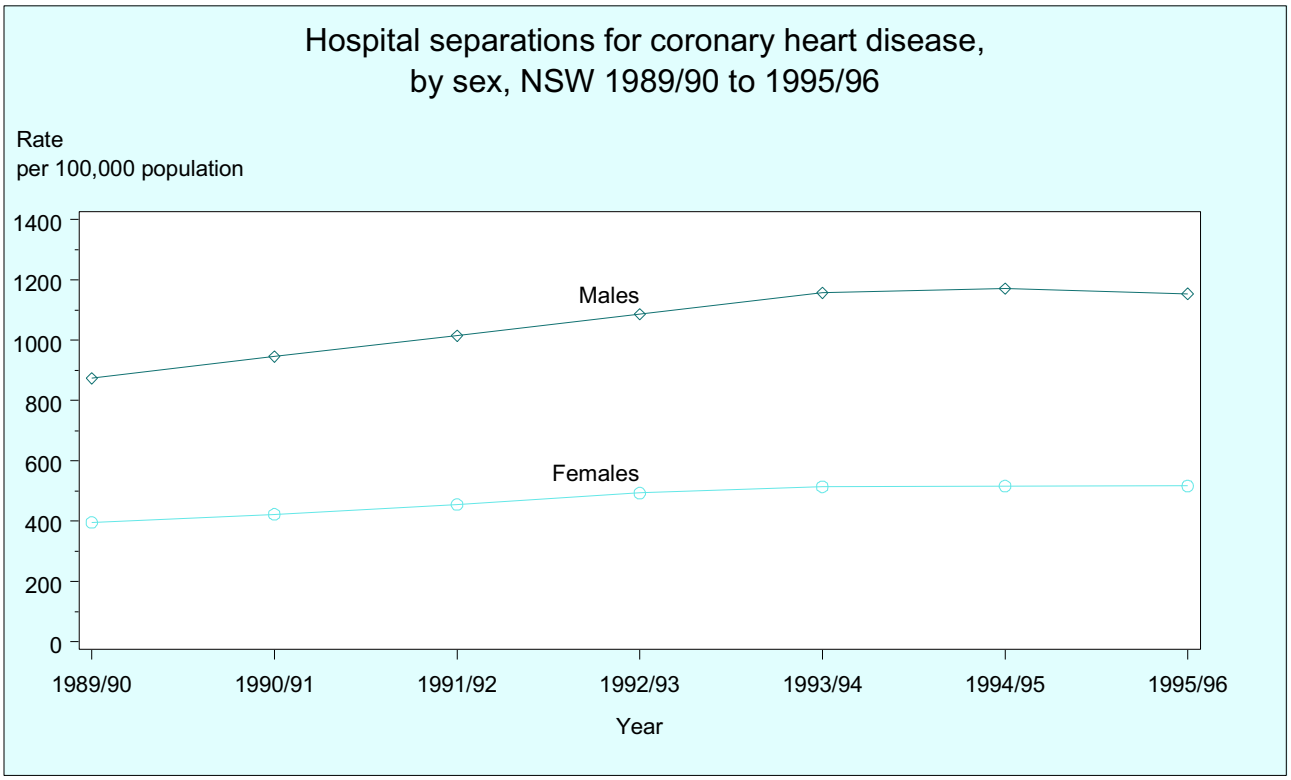
Reference: Close G, Lyle D, Churches T and Westley-Wise V, 'Cardiovascular disease surveillance report 1994', Supplement to *NSW Public Health Bulletin* Number 5, Sydney, NSW Health Department, 1994.

Deaths from coronary heart disease, by health area and sex, persons aged 25 -74 years, NSW, 1990 to 1994

Health Area	Sex	Deaths	Rate/100,000	LL 99% CI	UL 99% CI
Central Sydney	Males	1271	191.6	178.0	205.9
Central Sydney	Females	535	74.3	66.2	83.0
Central Sydney	Persons	1806	131.8	123.9	140.0
Northern Sydney	Males	1440	132.9	124.0	142.2
Northern Sydney	Females	610	46.3	41.5	51.3
Northern Sydney	Persons	2050	86.2	81.4	91.2
South Eastern Sydney	Males	1591	146.8	137.4	156.5
South Eastern Sydney	Females	655	51.3	46.3	56.8
South Eastern Sydney	Persons	2246	96.4	91.2	101.8
South Western Sydney	Males	1594	198.9	186.2	212.2
South Western Sydney	Females	719	82.0	74.4	90.3
South Western Sydney	Persons	2313	137.9	130.6	145.4
Western Sydney	Males	1470	203.8	190.2	218.0
Western Sydney	Females	655	82.3	74.3	91.0
Western Sydney	Persons	2125	140.1	132.4	148.2
Wentworth	Males	508	183.2	162.6	205.5
Wentworth	Females	245	78.4	66.1	92.3
Wentworth	Persons	753	128.6	116.7	141.2
Central Coast	Males	800	177.6	161.6	194.7
Central Coast	Females	384	71.7	62.4	81.9
Central Coast	Persons	1184	121.5	112.4	131.1
Hunter	Males	1509	193.6	181.0	206.8
Hunter	Females	665	77.0	69.5	85.0
Hunter	Persons	2174	133.3	126.0	140.9
Illawarra	Males	1056	200.6	185.0	217.1
Illawarra	Females	421	75.4	66.2	85.4
Illawarra	Persons	1477	136.8	127.8	146.3
Northern Rivers	Males	724	177.7	161.0	195.6
Northern Rivers	Females	301	67.7	58.0	78.5
Northern Rivers	Persons	1025	121.7	112.1	132.0
Mid North Coast	Males	797	175.4	159.6	192.3
Mid North Coast	Females	332	67.7	58.4	77.9
Mid North Coast	Persons	1129	120.7	111.5	130.4
New England	Males	546	212.4	189.6	237.1
New England	Females	256	92.9	78.6	108.9
New England	Persons	802	151.0	137.6	165.3
Macquarie	Males	301	211.3	181.2	244.9
Macquarie	Females	139	93.9	74.6	116.4
Macquarie	Persons	440	152.2	134.2	172.0
Far West	Males	241	305.1	256.5	359.9
Far West	Females	92	117.8	88.5	153.3
Far West	Persons	333	213.8	184.8	246.0
Mid Western	Males	489	210.2	186.5	236.0
Mid Western	Females	233	91.0	76.3	107.5
Mid Western	Persons	722	148.6	134.8	163.5
Greater Murray	Males	676	185.0	167.2	204.2
Greater Murray	Females	327	81.8	70.6	94.2
Greater Murray	Persons	1003	132.4	121.9	143.6
Southern	Males	572	203.1	181.9	226.0
Southern	Females	243	84.9	71.5	100.0
Southern	Persons	815	144.3	131.6	157.8
NSW	Males	15585	180.6	176.9	184.4
NSW	Females	6812	70.7	68.5	73.0
NSW	Persons	22397	123.6	121.5	125.8

Note: Coronary heart disease was classified according to the ICD-9 codes 410-414. Death rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



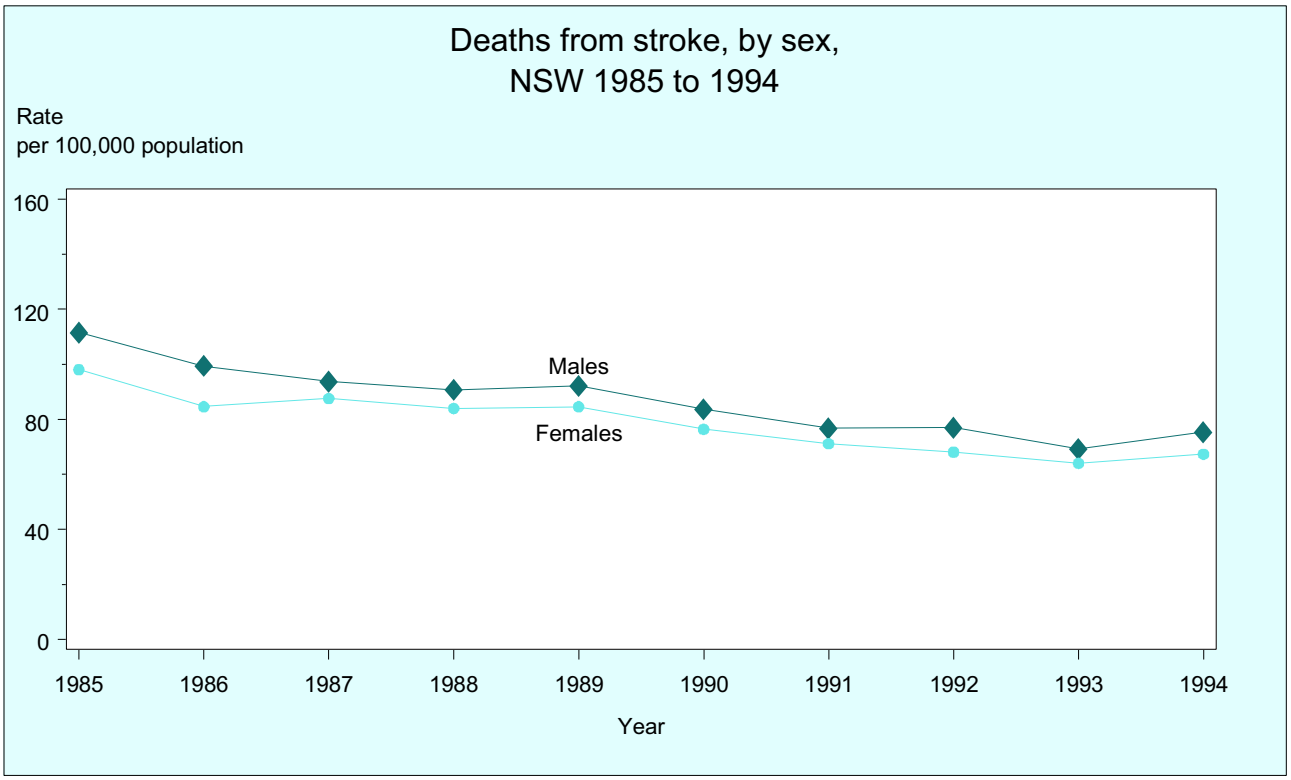
Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
NSW	Males	872.8	945.4	1013.0	1085.3	1158.0	1174.2	1159.1
	Females	395.5	422.6	454.7	492.5	514.2	517.5	518.9
	Persons	624.5	674.3	722.2	776.7	822.6	832.8	825.5

Note: Coronary heart disease was classified according to the ICD-9 codes 410-414. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- The recent decline in deaths from coronary heart disease has been accompanied by a 44 per cent increase in hospitalisations over the past seven years. There were 54,984 such separations in 1995/96 (35,850 males and 19,134 females).
- Hospital separation data do not give an accurate picture of the incidence of coronary heart disease, because they exclude people who died prior to admission, count episodes rather than persons (one person can be hospitalised multiple times) and because admission and diagnostic practices vary among hospitals.
- Most of the recent increase has been for non-infarct diagnoses (mainly unstable angina and investigation). Hospitalisations for acute myocardial infarction have actually declined (Close et al. 1994).
- The rise in hospitalisations for non-infarct diagnoses reflects increasing rates of coronary revascularisation procedures (such as coronary artery bypass grafts and coronary angioplasty), as well as changes in diagnostic and admission practices.
- The increase in revascularisation procedures has been most marked among people aged 70 years and over (Close et al. 1994).

Reference: Close G, Lyle D, Churches T and Westley-Wise V, 'Cardiovascular disease surveillance report 1994', Supplement to *NSW Public Health Bulletin* Number 5, Sydney, NSW Health Department, 1994.



Year		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	Males	111.6	99.4	93.8	90.7	92.2	83.6	76.7	76.9	69.2	75.3
	Females	98.1	84.6	87.6	84.0	84.6	76.4	71.1	68.1	64.0	67.3
	Persons	104.2	91.7	91.4	87.6	89.0	80.6	74.3	72.5	66.9	71.5
AUSTRALIA											
	Males	96.5	87.6	86.4	83.1	80.4	74.1	72.3	70.2	67.5	–
	Females	91.3	80.7	77.7	74.5	72.9	69.5	64.9	63.1	62.4	–
	Persons	94.6	84.5	82.3	78.8	76.9	72.5	68.8	66.9	65.3	–

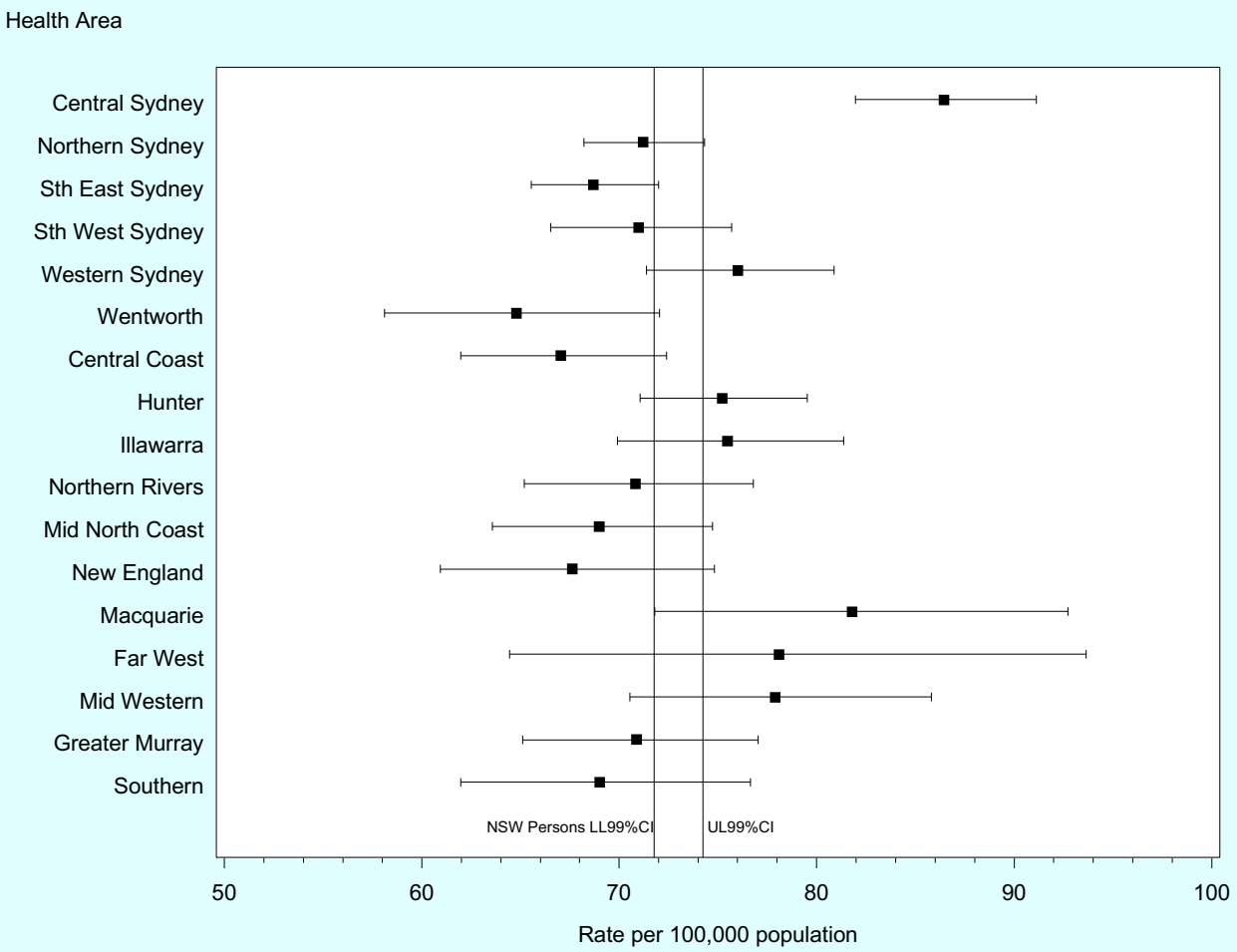
Notes: Stroke was classified according to the ICD-9 codes 430-438. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet, E T and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- Stroke deaths have declined even more rapidly than coronary heart disease (CHD) deaths in recent years. In the decade to 1994, the age-adjusted death rate from stroke in NSW decreased by an average of 4.4 per cent per year in males and 4.1 per cent per year in females. This compares to corresponding rates for Australia overall of 3.7 per cent and 3.9 per cent per year (Gajanayake and Bennett 1997).
- This was the continuation of a longer-term trend. Stroke deaths in NSW decreased by 66 per cent in males and 67 per cent in females in between 1970 to 1974 and 1990 to 1994, a decline comparable to that observed in other States and most developed countries.
- This still represents a substantial burden of mortality. In 1994, there were 4,820 deaths recorded as due to stroke in NSW (1,910 males and 2,910 females), representing 11 per cent of all deaths in that year (8% of male and 14% of female deaths).
- The decline in stroke deaths is due to reductions in cardiovascular risk factors, particularly cigarette smoking and high blood pressure, and advances in medical care, which have improved survival after stroke.

Reference: Gajanayake I and Bennett S, S*urveillance of cardiovascular mortality in Australia 1983-94*, AIHW cat. no. CVD 2 (Cardiovascular disease series no. 5), AIHW, Canberra, 1997.

Deaths from stroke, by Health Area, NSW 1990 to 1994



Notes: Stroke was classified according to the ICD-9 codes 430-438. Death rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- This chart gives age-adjusted death rates for males and females combined. Separate rates for males and females are given in the accompanying table.
- In NSW, in the period 1990 to 1994, there was substantial geographic variation in stroke death rates, although differences in age-adjusted rates rarely reached statistical significance.
- The stroke death rate for both males and females in Central Sydney was significantly higher than for NSW overall.
- Relative inaccuracy in coding, the existence of large nursing home populations in some Areas and variation in attribution of death to stroke (perhaps owing to varying propensities to admit people with suspected stroke) may partly explain observed differences.
- Concern has, nevertheless, been expressed that management of stroke may be haphazard, with subsequent variation in the type and quality of care (Consensus Conference 1988).

Reference: Consensus Conference, 'Treatment of stroke', *British Medical Journal*, Vol. 297, 1988, pp126-128.

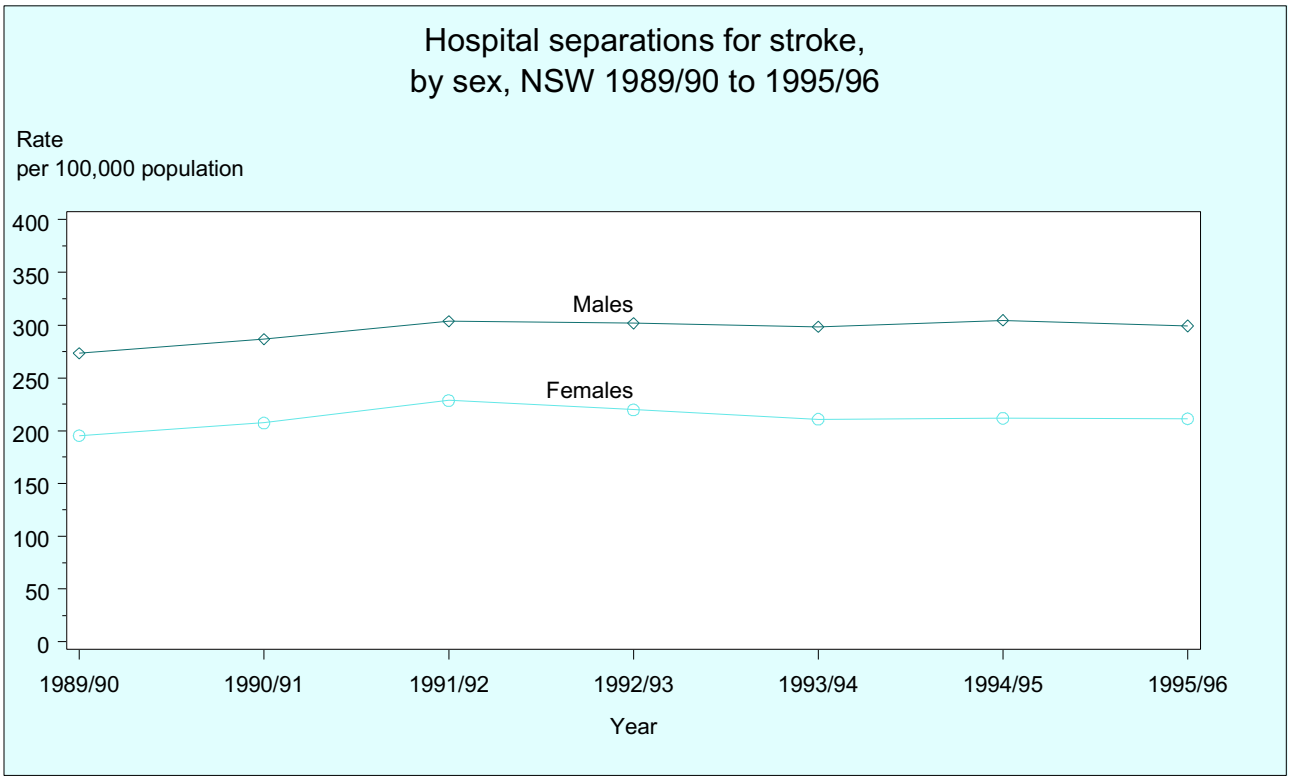
For more information, see: Close G, Lyle D, Churches T and Westley-Wise V, 'Cardiovascular disease surveillance report 1994', Supplement to *NSW Public Health Bulletin* Number 5, Sydney, NSW Health Department, 1994.

Deaths from stroke, by health area, by sex, NSW 1990 to 1994

Health Area	Sex	Deaths	Rate/100,000	LL 99% CI	UL 99% CI
Central Sydney	Males	924	93.9	86.1	102.3
Central Sydney	Females	1495	79.3	73.9	84.9
Central Sydney	Persons	2419	86.5	82.0	91.1
Northern Sydney	Males	1198	71.2	66.0	76.7
Northern Sydney	Females	2479	69.5	65.9	73.3
Northern Sydney	Persons	3677	71.2	68.2	74.3
South Eastern Sydney	Males	1160	71.9	66.5	77.5
South Eastern Sydney	Females	1884	64.5	60.7	68.5
South Eastern Sydney	Persons	3044	68.7	65.5	72.0
South Western Sydney	Males	692	74.7	67.1	82.7
South Western Sydney	Females	957	67.5	62.0	73.3
South Western Sydney	Persons	1649	71.0	66.5	75.7
Western Sydney	Males	710	83.1	74.9	91.9
Western Sydney	Females	1031	71.1	65.5	77.0
Western Sydney	Persons	1741	76.0	71.4	80.9
Wentworth	Males	257	68.8	57.9	81.0
Wentworth	Females	332	60.1	51.9	69.1
Wentworth	Persons	589	64.8	58.1	72.0
Central Coast	Males	487	71.1	62.8	80.1
Central Coast	Females	652	63.1	56.9	69.9
Central Coast	Persons	1139	67.0	62.0	72.4
Hunter	Males	842	77.7	70.8	85.0
Hunter	Females	1278	72.2	67.0	77.6
Hunter	Persons	2120	75.2	71.1	79.5
Illawarra	Males	533	80.9	71.7	90.9
Illawarra	Females	657	70.3	63.5	77.7
Illawarra	Persons	1190	75.5	69.9	81.4
Northern Rivers	Males	414	70.3	61.5	79.9
Northern Rivers	Females	596	70.6	63.3	78.5
Northern Rivers	Persons	1010	70.8	65.2	76.8
Mid North Coast	Males	442	67.6	59.3	76.6
Mid North Coast	Females	600	68.4	61.4	75.9
Mid North Coast	Persons	1042	69.0	63.6	74.7
New England	Males	276	73.7	62.6	86.0
New England	Females	366	62.2	54.0	71.2
New England	Persons	642	67.6	60.9	74.8
Macquarie	Males	187	92.1	75.4	111.3
Macquarie	Females	228	74.4	62.2	88.2
Macquarie	Persons	415	81.8	71.8	92.7
Mid Western	Males	298	85.8	73.5	99.6
Mid Western	Females	406	71.7	62.8	81.6
Mid Western	Persons	704	77.9	70.5	85.8
Far West	Males	95	87.7	65.5	114.6
Far West	Females	102	67.9	51.8	87.3
Far West	Persons	197	78.1	64.4	93.7
Greater Murray	Males	411	77.2	67.6	87.6
Greater Murray	Females	539	65.3	58.2	73.0
Greater Murray	Persons	950	70.9	65.1	77.0
Southern	Males	253	67.7	56.9	79.8
Southern	Females	349	68.0	58.9	77.9
Southern	Persons	602	69.0	62.0	76.6
NSW	Males	9179	76.2	74.2	78.3
NSW	Females	13951	69.3	67.8	70.8
NSW	Persons	23130	73.0	71.8	74.3

Notes: Stroke was classified according to the ICD-9 codes 430-438. Death rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



Year		1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
NSW	Males	270.4	273.2	286.5	302.9	300.8	298.1	305.0	300.6
	Females	187.8	195.2	207.1	228.2	219.1	210.6	211.8	212.2
	Persons	224.4	229.5	241.9	261.9	256.4	249.8	253.4	251.8

Note: Stroke was classified according to the ICD-9 Codes: 430-438. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST). Epidemiology and Surveillance Branch, NSW Health Department.

- Though death rates from stroke are falling (see page 191), the incidence of non-fatal stroke may be increasing, mainly because of improved survival after stroke (Bonita 1993).
- There are few data on the incidence of stroke in NSW. However, hospitalisations for stroke have increased by 12 per cent in the past seven years. There were 17,192 such separations in 1995/96 (8,765 males and 8,427 females).
- Hospital separation data do not give an accurate picture of overall stroke incidence, because they exclude people who died prior to admission, count episodes rather than persons (one person can be hospitalised multiple times) and because admission practices vary among hospitals.
- The Perth Community Stroke Study reported a crude annual incidence of first-ever stroke of 175 per 100,000. Stroke risk varied substantially with age: the annual risk for people aged 35-44 years was 1 in 5000, but for people aged 75-84 years it was to 1 in 45 (Anderson et al. 1993).
- With improvements in survival and rising numbers of elderly people in the population, stroke will make an increasing contribution to the community burden of disability in NSW.
- Up to 75 per cent of stroke survivors at one to three weeks after stroke have persisting significant disability. About 50 per cent remain dependent on others for at least some activities of daily living (showering, toileting etc.) one year after the stroke, and close to 75 per cent have difficulty with more demanding activities such as housework and shopping (Mykyta 1992).

References: Anderson CS, Jamrozik KD, et al., 'Ascertaining the true incidence of stroke: experience from the Perth Community Stroke Study, 1989-90', *Medical Journal of Australia*, Vol. 188, 1993, pp.80-84.
Bonita R, 'Epidemiology of stroke', *Lancet*, Vol. 339, 1992, pp. 342-344.
Bonita R, 'Stroke trends in Australia and New Zealand: mortality, morbidity and risk factors'. *Annals of Epidemiology*, Vol. 3, 1993, pp. 529-533.
Mykyta LJ, 'Stroke in the elderly', *Medical Journal of Australia*, Vol. 156, 1992, pp. 149-151.

Chapter 4.4

Diabetes mellitus

- In 1994, 5 per cent of adult NSW residents reported being told by a doctor or nurse that they had high blood sugar or diabetes. Prevalence of self-reported diabetes increased with age, to around 10 per cent for people aged 65 years or more.
- Deaths recorded as due to diabetes have been relatively stable in NSW in recent years. However, interpretation is difficult because diabetes is under-reported as a direct cause of death, and is also a contributory risk factor in many deaths ascribed to cardiovascular diseases.
- Hospitalisations recorded as due to diabetes have fluctuated in NSW in recent years, but again, inaccuracies and inconsistencies in coding diabetes as a principal or other diagnosis in hospital separation data make interpretation problematic.
- Hospitalisation for lower limb amputation for people with diabetes (especially men) in NSW has increased steadily in recent years, but this may reflect improved recording of diabetes in hospital data, rather than increasing amputation rates.

In this chapter

Introduction

This chapter presents information on the prevalence of diabetes mellitus in NSW, and deaths and hospitalisations attributed to diabetes.

Routine death and hospital data do not distinguish between the three forms of diabetes mellitus: insulin-dependent diabetes mellitus (IDDM), non-insulin-dependent diabetes mellitus (NIDDM), and gestational diabetes. These routine data also tend to underestimate the true burden of diabetes, which is an important contributory risk factor for cardiovascular disease, eye disease and kidney disease.

The methods used for analysing and presenting death and hospitalisation data are described in more detail in the Methods section (see page 257).

Self-reported doctor-diagnosed diabetes or high blood sugar, by age group and sex, NSW 1994

Note: M = males F = females. Survey respondents were asked "Have you ever been told by a doctor or nurse that you had high blood sugar or diabetes?".

Source: NSW Health Promotion Survey 1994 (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

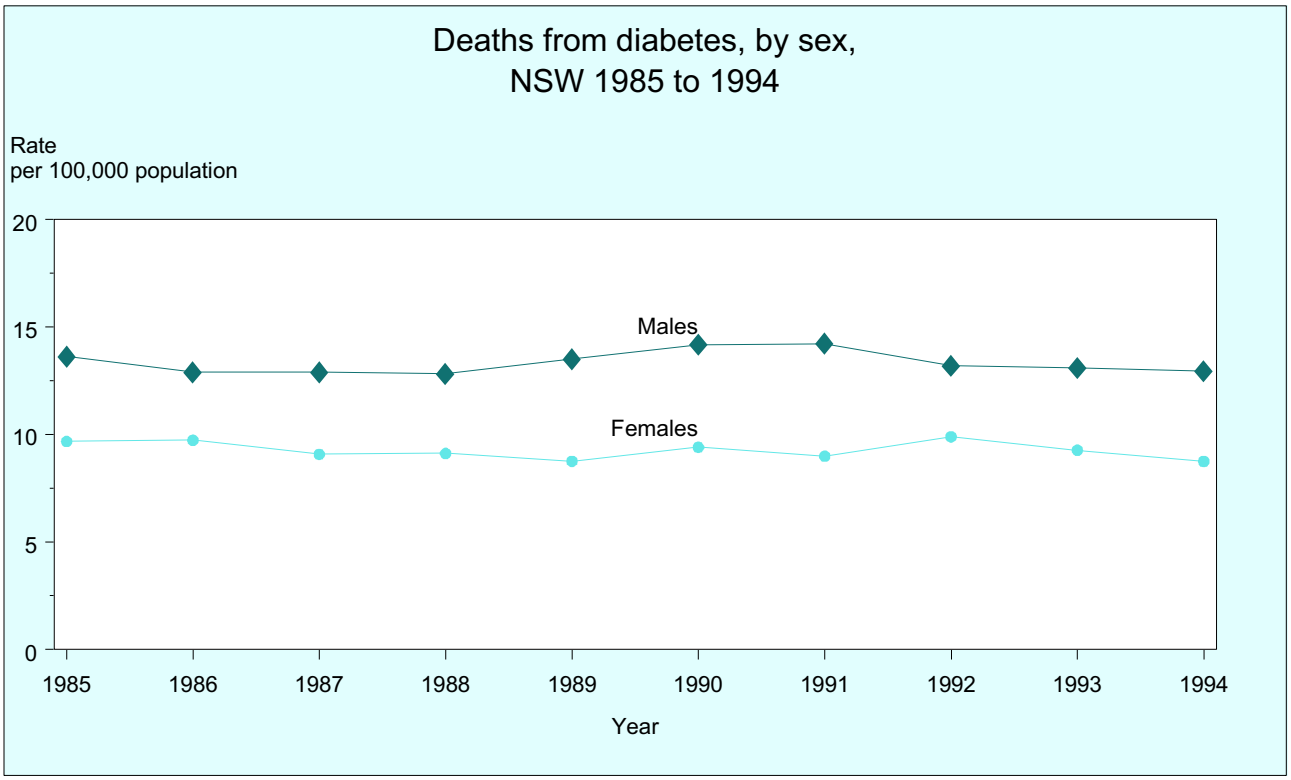
- Non-insulin-dependent diabetes mellitus (NIDDM) is the commonest form of diabetes, affecting 85-90 per cent of all people with diabetes.
- NIDDM is characterised by insulin resistance and relative insulin deficiency. Lifestyle factors such as being overweight and inactive predispose the person to its development.
- While its prevalence varies among different populations, NIDDM is one of the commonest chronic diseases in the world, and its prevalence is increasing, especially in developing countries.
- Estimates of the prevalence of diabetes in adult Caucasian Australians vary from 2 to 7 per cent, and among Aboriginal and Torres Strait Islander peoples from 5 to 19 per cent (McCarty et al. 1996; McGrath et al. 1991). There is also a high prevalence of diabetes in people from the Pacific Islands, the Middle East, Southern Europe and some Asian countries (see page 121).
- Although the specific questions differed, the 1989/90 National Health Survey (Australian Bureau of Statistics 1991) and the 1994 NSW Health Promotion Survey found similar rates of self-reported diabetes or 'high blood sugar' among adult respondents in NSW (4.8% and 5.0% respectively).
- As the NSW Health Promotion Survey data illustrate, diabetes prevalence increases with age and it may be found in up to 10 per cent of people over the age of 65 years.
- The prevalence of self-reported diabetes or high blood sugar in the NSW Health Promotion Survey did not vary significantly among Health Areas.
- There are many cases of undiagnosed NIDDM in the community, although there are few firm estimates. The 1976 to 1980 National Health and Nutrition Examination Survey in the United States found that the prevalence of diagnosed NIDDM in those aged 20-74 years was almost equal to the prevalence of undiagnosed NIDDM (3.4% and 3.2% respectively, Harris et al. 1987).

References: Australian Bureau of Statistics, *National Health Survey user's guide*. ABS cat. no. 4363.0, ABS, Canberra, 1991.

Harris MI, Hadden WC, Knowler WC and Bennett P H, 'Prevalence of diabetes and impaired glucose tolerance and plasma glucose levels in US population aged 20-74 years', *Diabetes,* Vol. 36, 1987, pp. 523-534.

McCarty DJ, Zimmet P and Dalton A, et al., 'The rise and rise of diabetes in Australia, 1996: a review of statistics, trends and costs', *Diabetes Australia National Action Plan*, Diabetes Australia, Canberra, 1996.

McGrath M, Collins V, Zimmet P and Dowse G, *Lifestyle disorders in Australian Aborigines: diabetes and cardiovascular disease risk factors: a review*, International Diabetes Institute, for ATSI Better Health Program, Canberra, 1991.



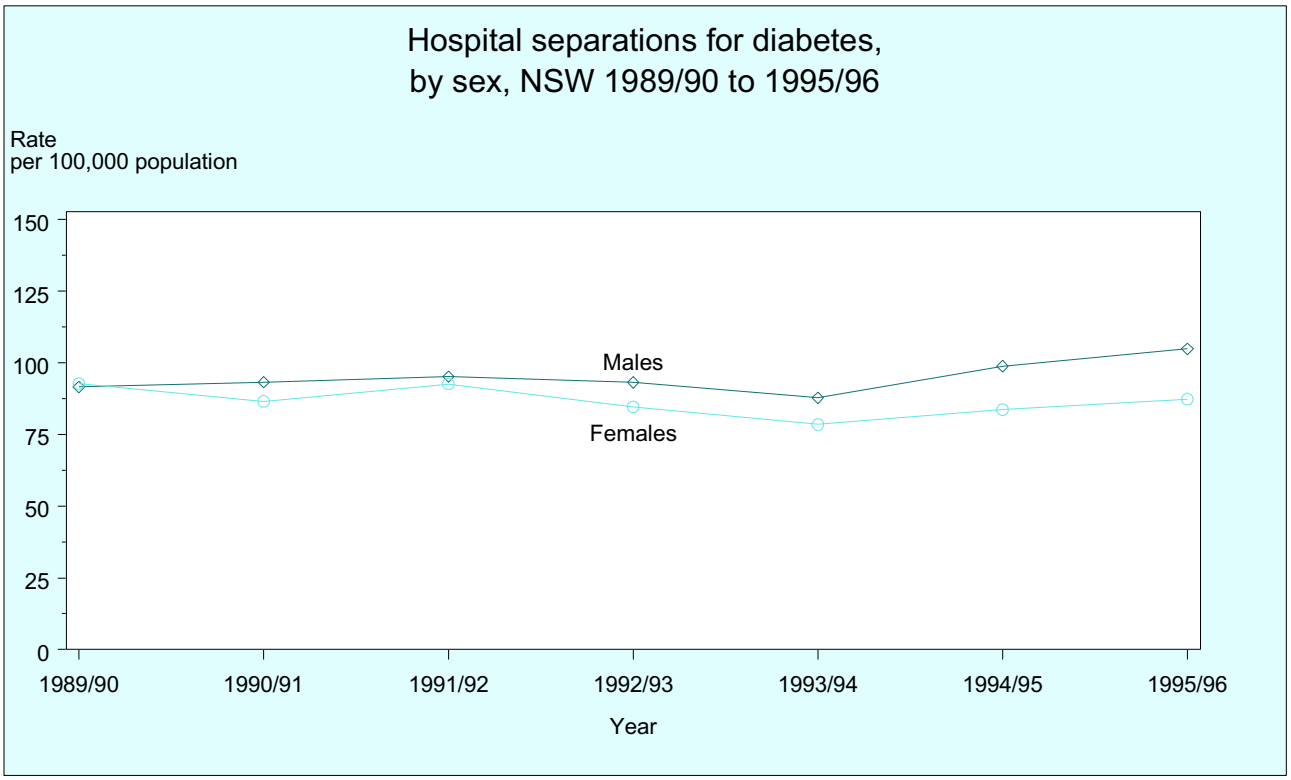
Year		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	Males	13.6	12.9	12.9	12.8	13.5	14.2	14.2	13.2	13.1	12.9
	Females	9.7	9.7	9.1	9.1	8.8	9.4	9.0	9.9	9.3	8.8
	Persons	11.3	11.1	10.7	10.6	10.8	11.6	11.1	11.3	10.9	10.5
AUSTRALIA											
	Males	14.6	14.8	15.9	14.1	14.9	15.5	15.8	15.5	16.8	–
	Females	12.2	11.8	11.6	11.4	11.3	11.1	11.5	12.0	11.9	–
	Persons	13.2	13.0	13.4	12.6	12.9	13.0	13.2	13.5	14.0	–

Note: Diabetes was classified according to the ICD9 code 250. Death rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: ABS mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet E T and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- The age-adjusted rate of deaths recorded as due to diabetes has been relatively stable in NSW in recent years. Interpretation is difficult because only the direct (main) cause of death is presently available in NSW death data. Diabetes is known to be under-reported as a direct cause of death, and is also a contributory risk factor in many deaths recorded as due to cardiovascular diseases.
- Reports from a series of community surveys in Western Australia from 1978 to 1986 show that 37 per cent of death certificates for people with diabetes did not show diabetes as a direct or indirect cause of death. Almost two-thirds (63%) of these deaths were due to cardiovascular disease (Whittal et al. 1990). Similar findings were reported from the only other large-scale mortality study in an Australian population, which followed a Tasmanian cohort between 1984 and 1992 (Riley et al. 1995).

References: Riley MD, McCarty DJ, Couper DJ, et al., 'The 1984 Tasmanian insulin treated diabetes mellitus prevalence cohort: an 8 1/2 year follow-up investigation' *Diabetes Research and Clinical Practice*, Vol. 29, 1995, pp. 27-35.
Whittal DE, Glatthaar C, Knuiman MW and Welborn TA, 'Deaths from diabetes are under-reported in national mortality statistics' *Medical Journal of Australia*, Vol. 152, 1990, pp. 598-600.



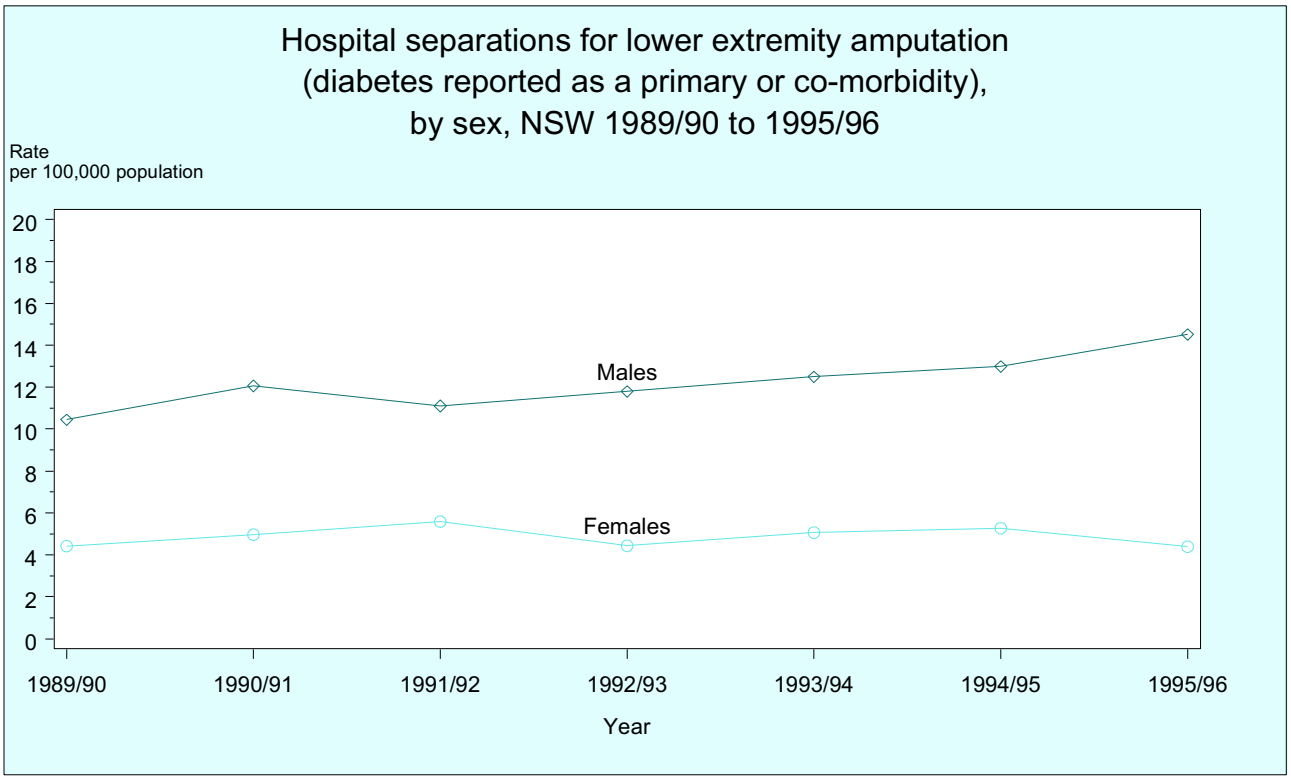
Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Number	Males	2499	2595	2719	2685	2576	2951	3168
	Females	2916	2762	2987	2769	2569	2800	2965
	Persons	5415	5357	5706	5454	5145	5751	6133
Rate	Males	91.6	93.3	95.3	93.2	87.8	98.9	104.9
	Females	92.8	86.6	92.7	84.7	78.5	83.7	87.4
	Persons	91.8	89.5	93.7	88.3	82.5	90.7	95.4

Note: Diabetes was classified according to the ICD9 code 250. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Rates for hospital separations recorded as due to diabetes have fluctuated in NSW over recent years. Inaccuracy in recording the principal diagnosis for hospital admission (as for deaths, see page 198) makes interpretation of trends problematic (Connell et al. 1984).
- The slight increase in hospital separations recorded for 1994/95 may reflect an increasing awareness of diabetes as a significant cause of ill-health, increased case finding or a real (though small) increase in prevalence.
- Regardless, the hospital separation rate undoubtedly underestimates the real community burden of diabetes, which is substantially determined by the prevalence of complications.
- Complications of diabetes affect on the eyes leading to diabetic retinopathy, visual impairment and blindness; the kidneys, producing renal impairment and failure; and the nervous system, contributing to impotence in men and neuropathic ulcers and lower limb amputation. What are sometimes referred to as ‘macrovascular complications' of diabetes are in fact related to cardiovascular disease due to accelerated atherosclerosis. These include ischaemic heart disease, stroke and peripheral vascular disease (leading to ulceration and lower limb amputation, see page 200).

Reference: Connell FA, Blide LA, Hanken MA, ‘Ambiguities in the selection of the principal diagnosis: impact on data quality, hospital statistics and DRGs', *Journal of the American Medical Records Association*, Vol. 55, 1984 pp. 18-23.



Year		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Number	Males	271	323	305	333	359	382	442
	Females	152	173	198	162	184	195	171
	Persons	423	496	503	495	543	577	613
Rate/100,000	Males	10.4	12.1	11.1	11.8	12.5	13.0	14.6
	Females	4.4	5.0	5.6	4.4	5.1	5.3	4.4
	Persons	7.1	8.2	8.1	7.8	8.4	8.7	9.1

Note: Diabetes was classified according to the ICD9 code 250 and selected when used as one of the first five diagnosis fields of a record. The procedure for lower extremity amputation was classified according to the ICD9 procedure code 84.1. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Inaccuracy in recording diabetes as a principal diagnosis or co-morbidity in hospital separation data makes interpretation of trends in these data problematic (see page 199).
- The steady increase in separations for lower limb amputation among people (especially men) with diabetes in NSW may reflect improved recording of diabetes in hospital data.
- The increased risk of lower extremity amputation among people with diabetes is due to neuropathy, peripheral vascular disease and infection. Around 30-50 per cent of such amputations can be prevented by improved blood glucose control, foot-care education and appropriate treatment of foot problems (Bild et al. 1989).

Reference: Bild DE, Selby JV, Browner WS, Braveman P and Showstack JA, 'Lower-extremity amputation in people with diabetes: epidemiology and prevention', *Diabetes Care*, Vol. 12, 1989, pp. 24-31.

Chapter 4.5

Cancer

- In NSW in 1994, there were 26,138 new cases of cancer (14,850 males, 11,288 females) and 11,502 deaths from cancer (6,580 males, 4,922 females).
- The age-adjusted rate for new cancer cases increased in the 10-year period from 1985 to 1994. In the same period, the death rate from all cancers declined.
- For NSW women in 1994, breast cancer was the single largest cause of potential years of life lost (PYLL) before age 75. Lung cancer and colorectal cancer were the next most important cancer causes of PYLL in women. Lung cancer was the most important cancer cause of PYLL in males, followed by colorectal cancer and melanoma.
- For women in 1994, breast cancer was the most common type of malignant cancer diagnosed and the leading cause of cancer death. The number of new cases of breast cancer has increased gradually in recent years, partly because of increased screening and early detection.
- Colorectal cancers were the second most common malignant cancer in both sexes. The number of new cases of colorectal cancer has increased over the past 20 years.
- The number of new cases of melanoma of the skin has increased rapidly in recent years, at least in part because of increased detection of melanomas that have not spread, and earlier detection in general.
- Lung cancer was the most common cause of cancer death for males and the second most common for females, after breast cancer. Death rates from lung cancer in males have declined in recent years, but female death rates from lung cancer continue to rise.
- Cervical cancer new cases and deaths have declined in recent years, but further decreases can be achieved by increasing screening rates.
- Prostate cancer was the most common malignant cancer in men and the second most common cause of cancer death. The reported rate for new cases of prostate cancer has risen rapidly in recent years, at least in part owing to earlier detection of localised cancers.

In this chapter

Introduction

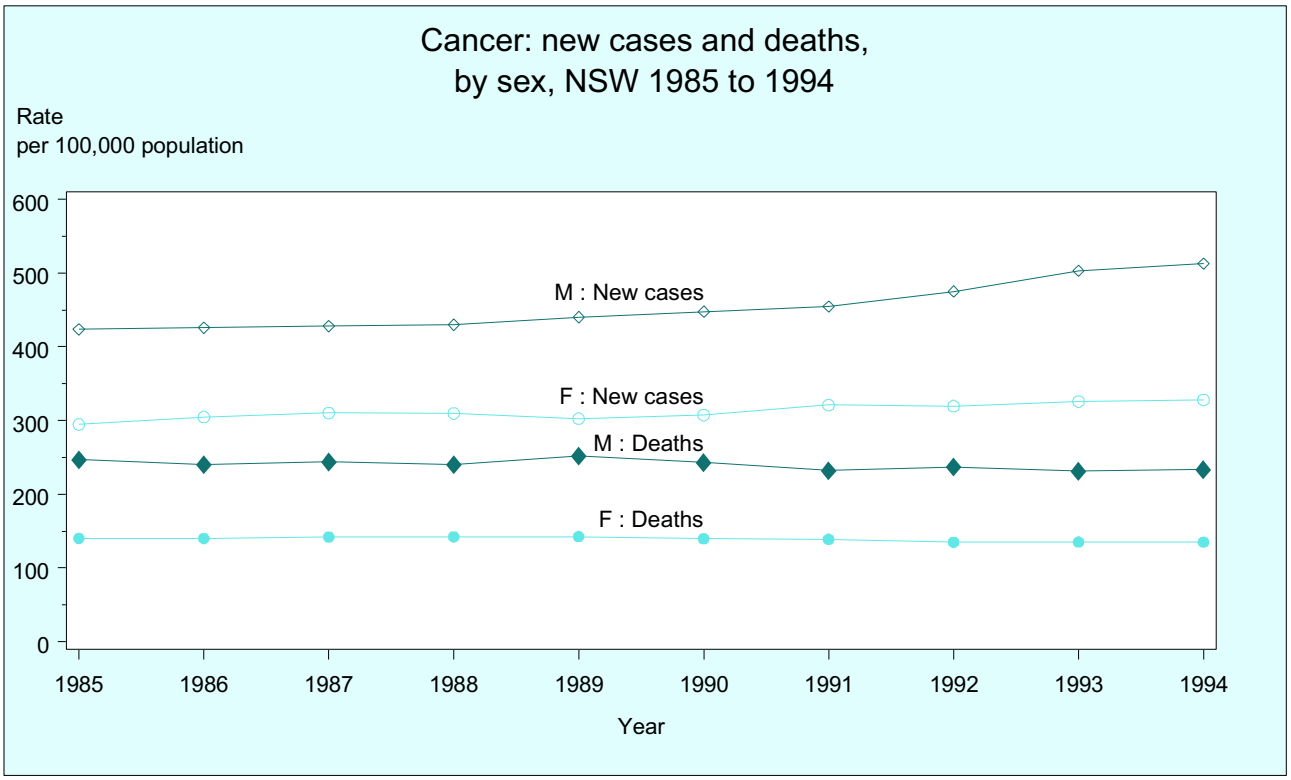
Notification of cancer is a statutory requirement for all public and private hospitals, radiotherapy departments, nursing homes, pathology laboratories and outpatient departments in NSW. The NSW Central Cancer Registry collects and reports annually on cancer cases and deaths in NSW. The latest published data are for cases diagnosed in 1994.

An analysis of the epidemiology of six cancers follows. Breast, prostate, colorectal, lung and skin cancer have been selected because of their overall impact on numbers of new cases and deaths, cancer of the cervix because of the potential for prevention.

The figures tabulated in this report and those quoted in the reference reports are slightly different. This is because of the way the statistical analyses were conducted. This report uses the Australian population as the standard population to adjust rates to reflect the Australian demographic composition. Following international convention, reports from the NSW Central Cancer Registry use the "world" population as the standard for adjusting rates presented in the body of their reports. This results in lower rates owing to the younger age structure of the "world" population compared with the Australian population.

The methods used for analysing and presenting death and hospitalisation data are described in more detail in the Methods section (see page 257).

Benign skin cancers (non-melanocytic squamous and basal cell carcinomas) are the most common cancers in NSW. However, data on these are not collected routinely because of difficulties in defining cases, the expected large volume of notifications (estimated at more than 50,000 annually), and difficulties involved in collecting data from general practitioners, who treat most cases.



			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	New cases	Males	423.6	425.9	428.4	429.9	440.3	447.7	454.9	475.0	503.1	513.1
		Females	294.8	304.8	310.2	309.7	302.5	307.5	321.1	319.5	325.9	328.0
		Persons	344.5	351.5	355.7	356.5	357.7	363.3	374.2	381.9	398.4	404.6
	Deaths	Males	247.0	240.5	243.8	240.4	252.1	243.0	232.3	236.9	231.3	233.5
		Females	140.4	140.2	142.1	142.4	142.7	139.8	139.0	135.1	135.3	135.2
		Persons	183.4	180.4	183.2	182.3	187.3	182.2	177.4	177.3	174.9	175.8
AUSTRALIA	New cases	Males	438.0	426.4	425.2	421.2	–	–	–	–	–	–
		Females	303.7	300.8	305.9	302.5	–	–	–	–	–	–
		Persons	356.0	349.3	352.0	348.9	–	–	–	–	–	–
	Deaths	Males	246.4	238.8	238.3	242.5	241.5	238.1	234.8	238.2	235.5	–
		Females	144.5	143.2	139.2	142.1	140.8	140.7	142.7	139.4	141.0	–
		Persons	186.0	182.3	180.0	183.4	182.3	180.9	181.0	180.8	180.2	–

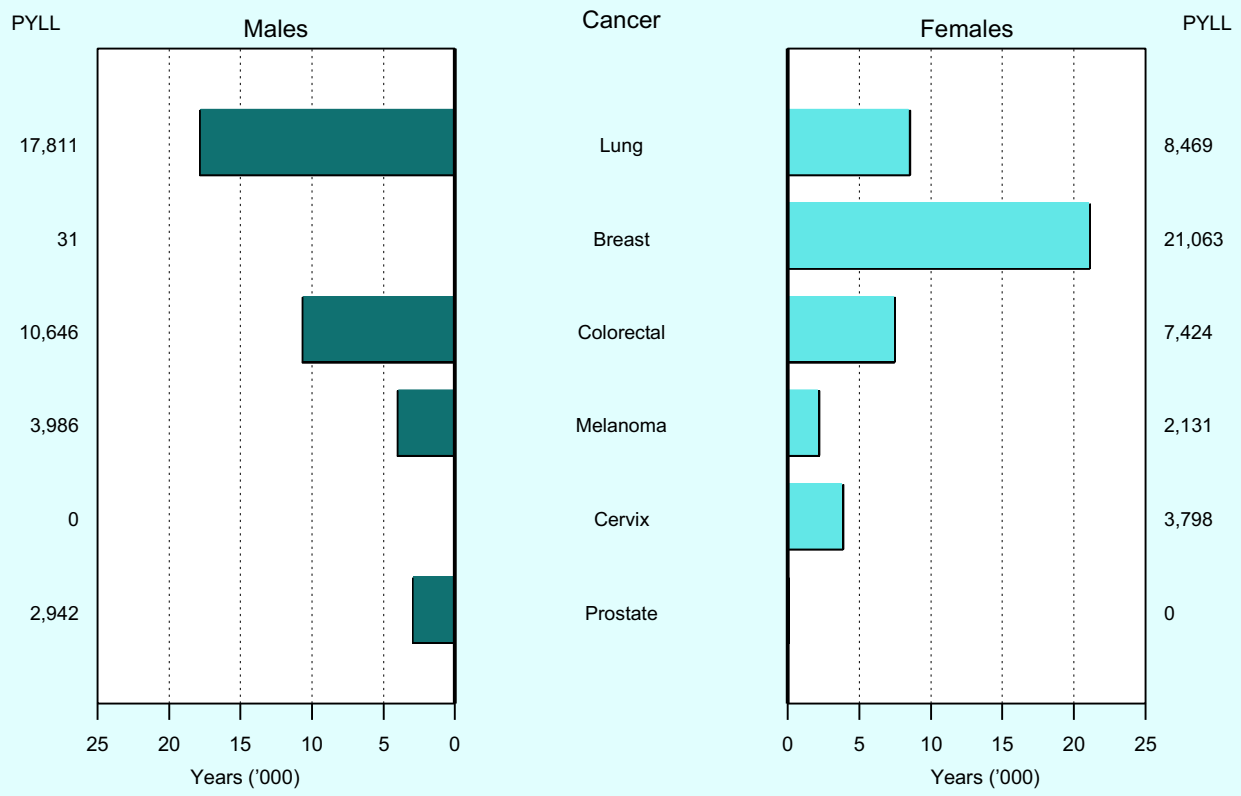
Note: Cancers were classified according to the ICD9 codes 140-208. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- In NSW in 1994, there were 26,138 new cases of cancer (14,850 males, 11,288 females) and 11,502 deaths from cancer (6,580 males, 4,922 females).
- The age-adjusted rate for new cancer cases increased in the 10 years from 1985 to 1994. This was due to factors including:
  - improved notification of cancer cases;
  - a real rise in new cases of some cancers (such as melanoma of the skin in both sexes and lung cancer in females); and
  - earlier diagnosis of some cancers (such as breast and prostate cancer) owing to increased screening.
- In the same period, the death rate from all cancers declined. This reflects:
  - successful treatment of some cancers (such as childhood leukaemias); and
  - the cumulative effect of small decreases in deaths for other cancers (including cancers of the testes and colon in young males and cancers of the breast and melanoma in females).

For more information, see: Coates M and Armstrong B, *Cancer in New South Wales, incidence and mortality 1994*, NSW Cancer Council, Sydney, 1997.
Taylor R and McNeil D, *Projections of incidence of major cancers in NSW to 2001*, NSW Cancer Council, Sydney, 1997.
Coates M, Smith D, Taylor R and McCredie M, *Trends in incidence by region, New South Wales 1972-1990*, NSW cancer Council, Sydney, 1997.
McCredie M, Hoyer A, Coates M and Taylor R, *Trends in cancer incidence and mortality, in New South Wales 1972-1989*, NSW Cancer Council, Sydney, 1992.
NSW Cancer Council, Phone (02) 9334 1900, Web site at http://www.nswcc.org.au

Potential years of life lost (PYLL) before age 75 for selected cancers, NSW 1994

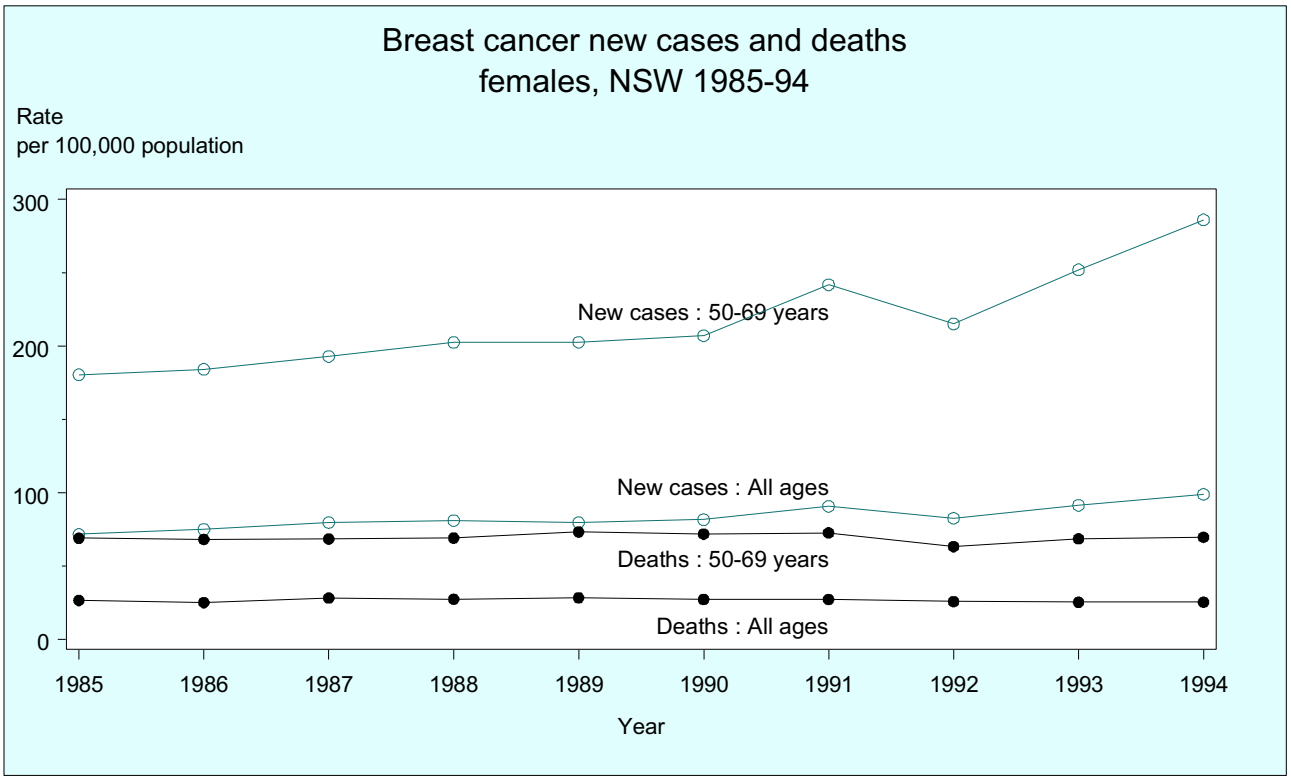


Note: Cause-deleted potential years of life lost were calculated from the 1994 NSW current life table. Cancers were classified according to ICD-9 codes 162 (lung), 174 (female breast), 175 (male breast), 153-154 (colorectal), 172 (melanoma), 180 (cervix) and 185 (prostate).

Source: ABS mortality data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Potential years of life lost (PYLL) before age 75 is a measure of premature mortality. It emphasises diseases or conditions which cause death among younger people. The potential years of life lost shown here are calculated by subtracting the total number of years up to age 75 which a group of 100,000 males or females would be expected to live from the total number of years the same group would be expected to live if no-one in that group died of the disease or conditions specified. This is known as "cause-deleted" potential years of life lost. More details of the method of calculation appear in the Methods section (see page 262).
- Among major *categories* of cause of death (see Life Expectancy and Deaths chapter, page 47), cancers were the largest cause of PYLL in females (79,167 PYLL). For males, cancers (88,731 PYLL) ranked second after injury and poisoning (98,921 PYLL) as a category of causes of PYLL.
- Among *individual* cancers, breast cancer (21,063 PYLL) was the most important cause of PYLL in females, followed by lung cancer (8,469) and colorectal cancer (7,424). Lung cancer was the most important cancer cause of PYLL in males (17,811 PYLL), followed by colorectal cancer (10,646), melanoma of the skin (3,986), and prostate cancer (2,942).

For more information, see: Australian Institute of Health and Welfare Web site http://www.aihw.gov.au/home.html. Australian Bureau of Statistics Web site at http://www.abs.gov.au/



			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	New cases	All ages	71.6	75.0	79.6	81.0	79.6	81.7	90.7	82.6	91.4	98.9
		50-69 years	180.5	184.2	192.9	202.5	202.6	207.0	241.8	215.1	252.0	286.1
	Deaths	All ages	26.6	25.1	28.2	27.4	28.4	27.2	27.2	25.8	25.3	25.4
		50-69 years	69.0	68.2	68.4	69.1	73.2	71.8	72.7	63.2	68.6	69.6
AUSTRALIA	New cases	All ages	73.8	73.8	78.9	76.9	–	–	–	–	–	–
		50-69 years	27.3	26.9	26.5	26.9	27.1	26.9	27.0	25.5	26.9	–

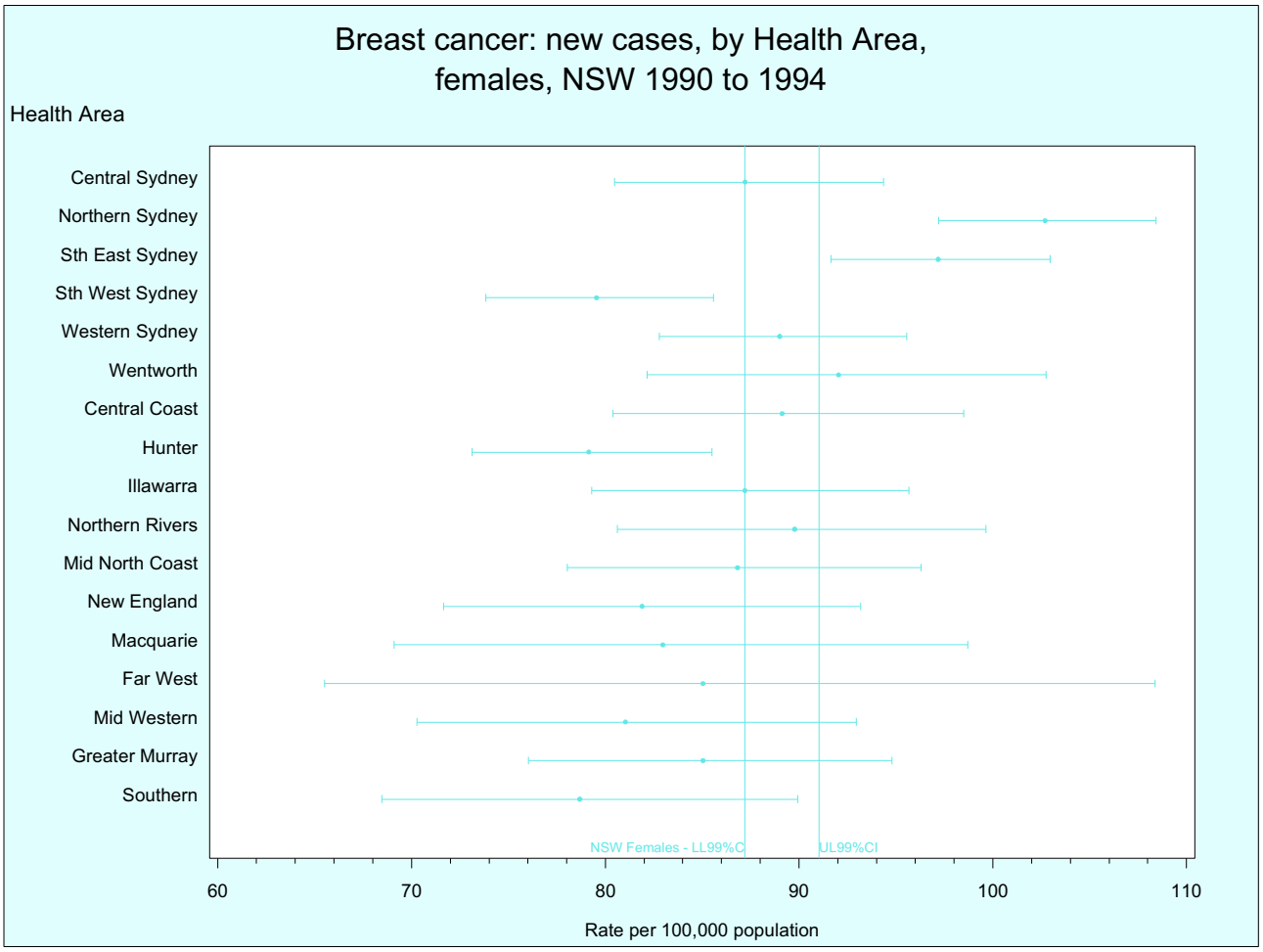
Note: Breast cancer was classified according to the ICD9 code 174. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- Breast cancer was the most common site for new cases of malignant cancer and the leading cause of cancer death for NSW women in 1994.
- There is some evidence that the rise in new cases of breast cancer is partly due to increased breast screening and consequent earlier cancer detection. BreastScreen NSW began in 1991 and is aimed at women aged 50-69 years. Before the program reaches a steady state, the incidence of breast cancer can be expected to increase, but in time should stabilise and reflect the influence of risk factors only.
- Most of the known or postulated risk factors for breast cancer are not readily amenable to change, so prevention efforts focus on secondary prevention through breast screening.
- There was little change in the death rate from breast cancer in the 10 years from 1985 to 1994, though a slight decline was noted in 1992.
- The five-year relative survival in women with breast cancer in NSW has steadily increased. In 1972-1976 the survival was 70 per cent, in 1977-1986 it was 73-74 per cent and in 1987-1991 it was 77 per cent (Taylor et al. 1994).
- A combination of increased mammographic screening and the implementation in NSW of the evidence-based National Health and Medical Research Council National Breast Cancer Centre's *Clinical practice guidelines for the management of early breast cancer* should bring an increase in survival rates in the long term.

Reference: Taylor R, Smith D, Hoyer, A, Coates M and McCredie M, *Breast Cancer in Ne South Wales 1972-91,* NSW Cancer Council, Sydney, 1994.

For more information, see: Kricker A and Jelfs P, *Breast cancer in Australian women 1921-1994,* Cancer series no. 6, Australian Institute of Health and Welfare, Canberra, 1996. NSW Cancer Council, Phone (02) 9334 1900, Web site at http://www.nswcc.org.au



Health Area	New cases Number	Rate/ 100,000	LL99%CI	UL99%CI	Deaths Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	1096	87.2	80.5	94.4	384	28.0	24.3	32.0
Northern Sydney	2321	102.7	97.2	108.4	681	28.2	25.4	31.2
South Eastern Sydney	2029	97.2	91.6	103.0	636	28.6	25.7	31.7
South Western Sydney	1242	79.6	73.8	85.6	376	24.5	21.4	28.0
Western Sydney	1308	89.0	82.8	95.6	394	27.1	23.7	30.9
Wentworth	554	92.0	82.1	102.8	158	26.8	21.5	32.8
Central Coast	704	89.1	80.4	98.5	196	23.5	19.2	28.3
Hunter	1121	79.1	73.1	85.5	360	24.2	21.0	27.7
Illawarra	775	87.2	79.3	95.7	240	26.8	22.5	31.6
Northern Rivers	620	89.8	80.6	99.6	167	23.5	19.0	28.7
Mid North Coast	636	86.8	78.0	96.3	176	22.9	18.6	27.8
New England	396	81.9	71.6	93.2	132	26.6	21.0	33.2
Macquarie	216	83.0	69.1	98.7	81	30.3	22.3	40.1
Far West	110	85.0	65.5	108.4	24	17.7	9.7	29.3
Mid Western	353	81.0	70.3	92.9	119	26.2	20.3	33.1
Greater Murray	563	85.0	76.0	94.8	170	24.7	20.1	30.1
Southern	367	78.7	68.5	89.9	107	22.4	17.2	28.6
NSW	14411	89.1	87.2	91.0	4401	26.2	25.2	27.2

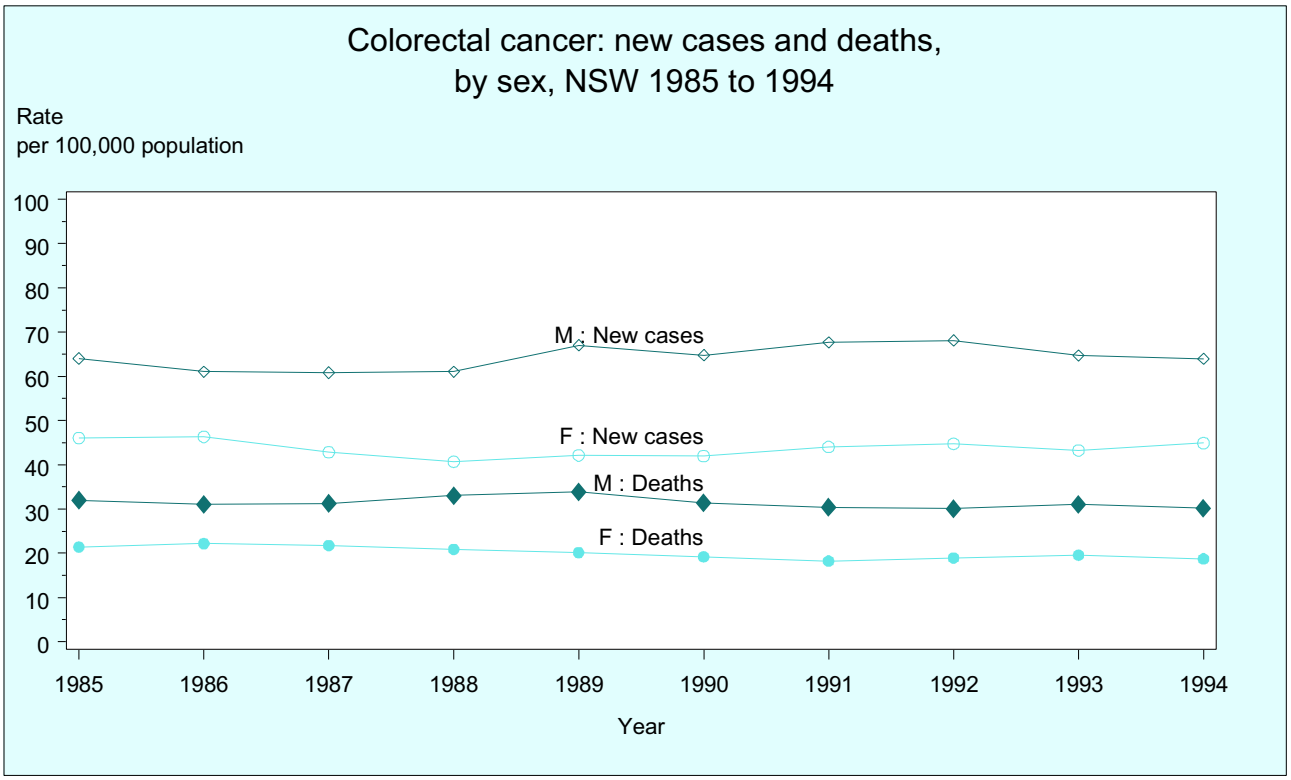
Note: Breast cancer was classified according to the ICD9 code 174. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Sources: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990 to 1994, the age-adjusted rate for new cases of breast cancer in females was significantly higher in Northern Sydney and South Eastern Sydney than for NSW overall. It was significantly lower than for NSW overall in the South Western Sydney and Hunter Health Areas.

- No Health Area had an age-adjusted breast cancer death rate that differed significantly from the NSW rate.

For more information, see: Taylor R and Coates M, Breast cancer survival by NSW regions, 1980 to 1991, *Australian and New Zealand Journal of Public Health*, Vol. 21, 1997, pp.206-210.



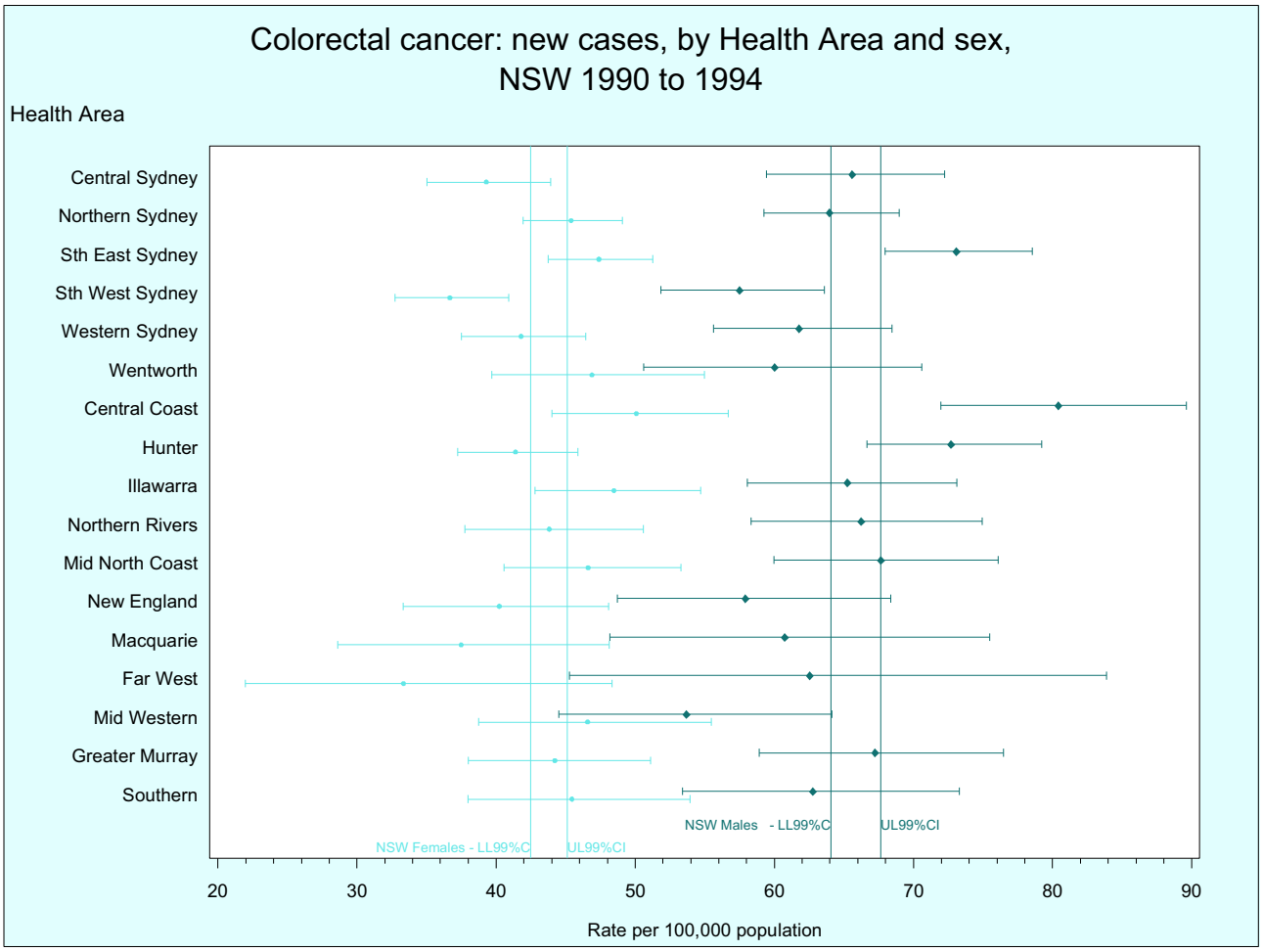
			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	New cases	Males	64.0	61.0	60.9	61.0	67.0	64.8	67.7	68.1	64.7	63.9
		Females	46.1	46.3	42.9	40.7	42.2	42.0	44.0	44.8	43.3	44.9
		Persons	53.7	52.8	50.4	49.6	53.1	51.8	54.5	55.0	52.9	53.4
	Deaths	Males	32.0	31.1	31.3	33.1	33.9	31.4	30.4	30.1	31.1	30.2
		Females	21.4	22.2	21.8	20.9	20.2	19.2	18.3	18.9	19.6	18.7
		Persons	25.9	26.0	25.6	26.1	25.9	24.4	23.6	23.7	24.5	23.7
AUSTRALIA	New cases	Males	64.8	62.4	62.0	62.3	–	–	–	–	–	–
		Females	47.5	45.9	44.7	42.8	–	–	–	–	–	–
		Persons	54.9	53.0	52.1	51.2	–	–	–	–	–	–
	Deaths	Males	32.3	31.8	31.8	31.6	30.8	30.3	29.8	29.7	30.0	–
		Females	23.6	23.5	22.5	21.4	20.4	20.6	20.3	19.7	20.1	–
		Persons	27.4	27.1	26.5	25.8	24.8	24.8	24.5	24.0	24.4	–

Note: Colorectal cancers were classified according to the ICD9 codes 153-154. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian Health Trends*, AIHW, Canberra, 1995.

- Cancers of the colon and rectum (combined) were the second most common malignant cancer in both sexes in NSW in 1994, and ranked third as a cause of cancer death in males and second in females.
- In NSW between 1973-1977 and 1994, the age-adjusted rate for new cases of colorectal cancer rose by 33 per cent for males and 21 per cent for females. For females, death rates fell by 18 per cent, but there was little change in the death rate for males.
- Factors that have been consistently associated with risk of colorectal cancer include a diet high in fat, meat or protein, and low in vegetables and fibre, and low levels of physical activity.
- The five-year relative survival for colorectal cancer had been steadily improving, from 42 per cent in 1972-1976, through 54 per cent in 1982-1986 to 58 per cent in 1987-1991. This increase in survival is ascribed to improved treatment because there is no evidence that colorectal cancer was being diagnosed earlier in 1992 than in 1972.
- Earlier diagnosis could further increase survival rates. The Australian Health Technology Advisory Committee of the National Health and Medical Research Council is expected to report soon on the advisibility or otherwise of introducing population-wide screening for colorectal cancer.

For more information, see: Bell J, Coates M, Day P and Armstrong B, *Colorectal cancer in NSW in 1972 to 1993,* NSW Cancer Council, Sydney, 1996.
NSW Cancer Council, phone (02) 9334 1900, Web site at http://www.nswcc.org.au



Note: Colorectal cancers were classified according to the ICD9 codes 153-154. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Sources: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990 to 1994, the age-adjusted rate for new cases of colorectal cancer was significantly higher than for NSW overall in males from the South Eastern Sydney and Central Coast Health Areas.
- The age-adjusted rate for new cases of colorectal cancer was significantly lower than for NSW overall in the South Western Sydney (males and females) and Mid Western Health Area (males).
- No Health Area in NSW had an age-adjusted death rate for colorectal cancer that differed significantly from the NSW rate.

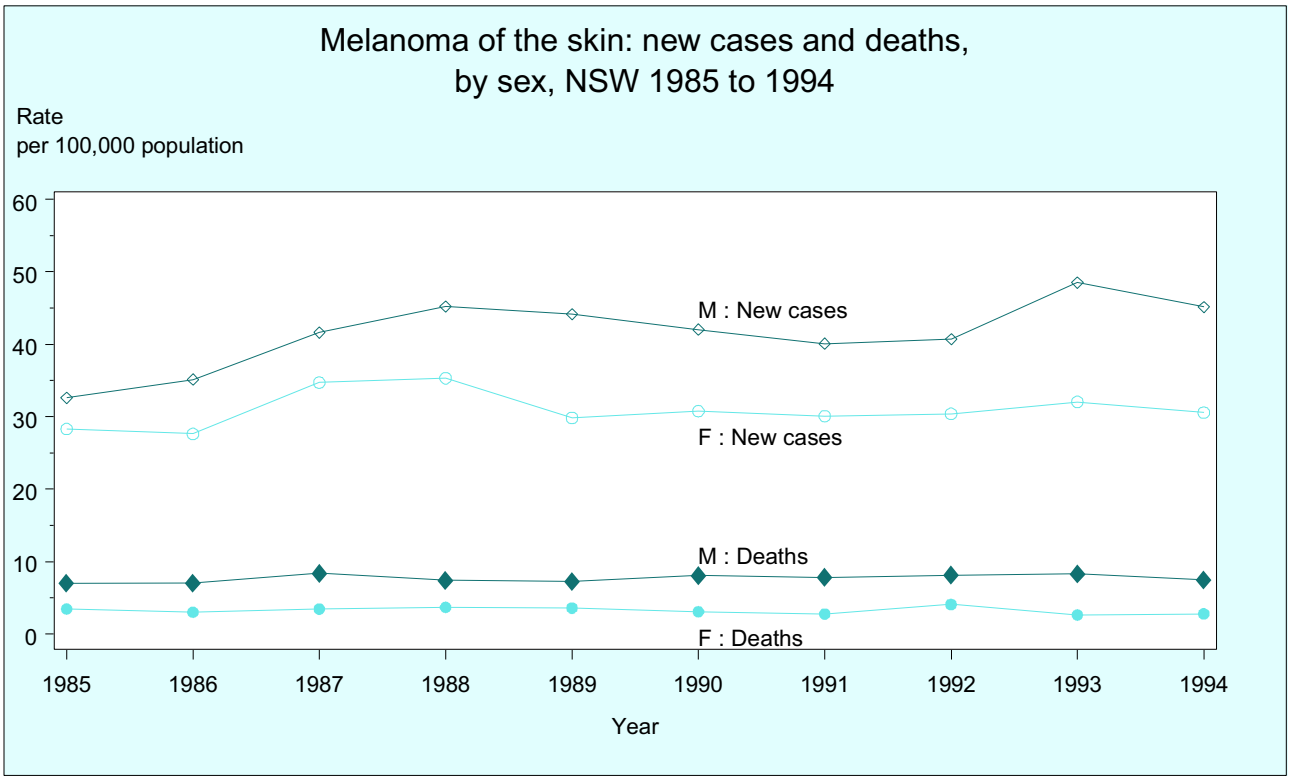
For more information, see: Bell J, Coates M, Day P and Armstrong B, *Colorectal cancer in NSW in 1972 to 1993,* NSW Cancer Council , Sydney, 1996.
NSW Cancer Council, Phone (02) 9334 1900, Web site at http://www.nswcc.org.au

Colorectal cancer: new cases and deaths, by health area and sex, NSW 1990 to 1994

Health Area	Sex	New cases Number	Rate/ 100,000	LL99%CI	UL99%CI	Deaths Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	Males	718	65.6	59.4	72.2	356	33.4	29.0	38.3
Central Sydney	Females	561	39.3	35.0	43.9	253	17.1	14.4	20.2
Central Sydney	Persons	1279	50.9	47.3	54.7	609	24.0	21.5	26.6
Northern Sydney	Males	1168	64.0	59.2	69.0	523	29.3	26.1	32.7
Northern Sydney	Females	1150	45.4	41.9	49.1	543	20.2	17.9	22.6
Northern Sydney	Persons	2318	52.9	50.1	55.8	1066	23.7	21.8	25.6
South Eastern Sydney	Males	1307	73.1	68.0	78.5	583	33.6	30.1	37.4
South Eastern Sydney	Females	1117	47.4	43.8	51.2	497	19.9	17.6	22.3
South Eastern Sydney	Persons	2424	58.5	55.5	61.6	1080	25.6	23.6	27.7
South Western Sydney	Males	705	57.5	51.8	63.6	312	27.7	23.6	32.3
South Western Sydney	Females	547	36.7	32.8	40.9	256	17.3	14.6	20.3
South Western Sydney	Persons	1252	45.8	42.5	49.3	568	21.6	19.3	24.1
Western Sydney	Males	689	61.8	55.6	68.4	340	31.6	27.2	36.6
Western Sydney	Females	596	41.8	37.5	46.4	256	18.0	15.2	21.1
Western Sydney	Persons	1285	50.2	46.6	54.0	596	23.9	21.4	26.6
Wentworth	Males	260	60.0	50.6	70.6	111	26.5	20.3	34.0
Wentworth	Females	260	46.9	39.7	55.0	119	21.5	16.7	27.1
Wentworth	Persons	520	52.3	46.5	58.6	230	23.6	19.7	27.9
Central Coast	Males	585	80.5	72.0	89.6	257	35.9	30.2	42.2
Central Coast	Females	451	50.1	44.0	56.7	186	19.7	16.1	23.8
Central Coast	Persons	1036	63.5	58.5	68.9	443	26.7	23.5	30.2
Hunter	Males	918	72.7	66.6	79.2	385	31.3	27.3	35.7
Hunter	Females	633	41.4	37.2	45.9	332	20.6	17.8	23.7
Hunter	Persons	1551	55.8	52.2	59.5	717	25.6	23.2	28.1
Illawarra	Males	537	65.3	58.1	73.1	224	28.1	23.4	33.5
Illawarra	Females	452	48.5	42.8	54.7	192	20.4	16.8	24.5
Illawarra	Persons	989	56.5	52.0	61.3	416	24.1	21.1	27.3
Northern Rivers	Males	441	66.3	58.3	74.9	168	26.0	21.0	31.8
Northern Rivers	Females	324	43.8	37.7	50.6	125	16.4	12.8	20.6
Northern Rivers	Persons	765	54.5	49.5	59.8	293	20.6	17.6	23.9
Mid North Coast	Males	496	67.7	60.0	76.1	209	29.3	24.3	35.1
Mid North Coast	Females	376	46.6	40.6	53.3	121	14.9	11.6	18.8
Mid North Coast	Persons	872	56.5	51.6	61.6	330	21.6	18.7	24.9
New England	Males	243	57.9	48.7	68.4	135	33.0	26.0	41.2
New England	Females	206	40.2	33.3	48.1	98	18.7	14.1	24.2
New England	Persons	449	47.9	42.3	54.1	233	24.9	20.9	29.5
Macquarie	Males	141	60.8	48.2	75.5	73	32.4	23.3	43.7
Macquarie	Females	104	37.5	28.6	48.1	44	15.5	10.1	22.7
Macquarie	Persons	245	48.1	40.5	56.6	117	23.0	17.9	29.0
Far West	Males	78	62.5	45.3	83.9	35	30.9	18.7	47.7
Far West	Females	46	33.3	22.0	48.3	20	13.5	6.9	23.4
Far West	Persons	124	46.3	36.3	58.2	55	21.0	14.4	29.5
Mid Western	Males	207	53.7	44.5	64.1	105	27.6	21.1	35.4
Mid Western	Females	217	46.6	38.7	55.5	95	19.4	14.6	25.2
Mid Western	Persons	424	49.2	43.3	55.7	200	22.9	19.0	27.5
Greater Murray	Males	402	67.3	58.9	76.5	186	31.7	26.0	38.2
Greater Murray	Females	313	44.2	38.0	51.1	153	21.2	17.0	26.0
Greater Murray	Persons	715	54.3	49.2	59.8	339	25.7	22.3	29.5
Southern	Males	281	62.8	53.4	73.3	133	30.6	24.1	38.3
Southern	Females	223	45.5	38.0	53.9	106	21.4	16.4	27.4
Southern	Persons	504	53.8	47.8	60.3	239	25.9	21.7	30.5
NSW	Males	9176	65.8	64.0	67.6	4135	30.6	29.4	31.9
NSW	Females	7576	43.8	42.5	45.1	3396	18.9	18.1	19.8
NSW	Persons	16752	53.5	52.4	54.6	7531	24.0	23.3	24.7

Note: Colorectal cancers were classified according to the ICD9 codes 153-154. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Sources: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	New cases	Males	32.6	35.1	41.6	45.2	44.2	42.0	40.1	40.7	48.5	45.1
		Females	28.3	27.6	34.7	35.3	29.8	30.8	30.1	30.4	32.1	30.6
		Persons	29.9	30.8	37.6	39.6	36.1	35.5	34.3	34.9	39.3	36.9
	Deaths	Males	7.0	7.0	8.4	7.4	7.2	8.1	7.8	8.1	8.3	7.5
		Females	3.5	3.0	3.5	3.7	3.6	3.1	2.8	4.1	2.6	2.8
		Persons	5.0	4.7	5.7	5.4	5.3	5.3	5.0	5.8	5.2	4.8
AUSTRALIA	New cases	Males	30.8	32.6	37.3	40.2	38.2	–	–	–	–	–
		Females	29.0	28.5	32.3	32.8	28.7	–	–	–	–	–
		Persons	29.4	30.1	34.4	35.9	32.8	–	–	–	–	–
	Deaths	Males	6.1	6.0	7.1	6.6	6.5	6.7	6.5	6.6	7.0	–
		Females	3.3	3.2	3.4	3.4	3.1	3.4	3.2	3.6	2.8	–
		Persons	4.6	4.4	5.0	4.8	4.6	4.9	4.7	4.9	4.7	–

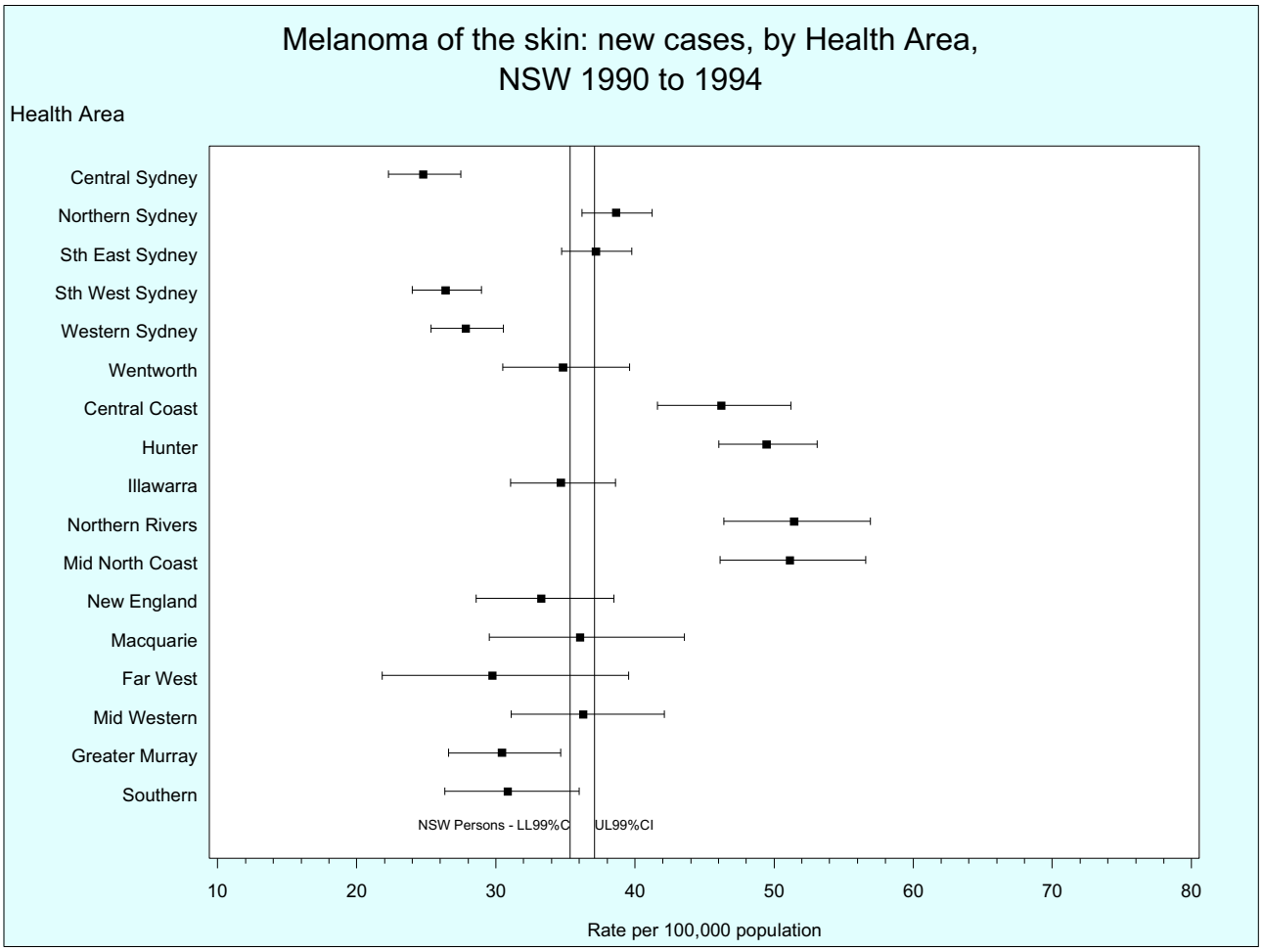
Note: Melanoma of the skin was classified according to the ICD9 code 172. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- Melanoma was the third most common type of malignant cancer diagnosed in both sexes in NSW in 1994, and ranked tenth in males and fourteenth in females as a cause of cancer death.
- Between 1976 and 1994, new cases of melanoma in NSW increased by 107 per cent in males and 22 per cent in females, peaking in 1993 (males) and 1988 (females). This increase may be partly due to increased detection of melanomas that have not spread and earlier detection in general.
- Risk factors for melanoma include: exposure to sunlight, especially intermittent exposure and childhood exposure resulting in development of pigmented moles; sensitivity of the skin to the sun; and family history of melanoma.
- Melanoma deaths in 1931-1994 Australia-wide peaked in 1985 and have not risen since (Giles et al. 1996). Deaths of NSW men though, continued to rise in 1990 to 1994. This may be because of a later start of public education about early diagnosis in NSW, and its smaller effect on males.
- Longer-term reduction in the new cases of melanoma will be achieved through a combination of personal protection measures and environmental changes.

Reference: Giles G, Armstrong B, Burton R, Staples M and Thursfield V, 'Has mortality from melanoma stopped rising in Australia? Analysis of trends between 1931 and 1994' *BMJ*, Vol. 312, 1996, pp.1121-1125.

For more information, see: Nguyen HL, Armstrong B and Coates M, C*utaneous melanoma in NSW in 1983 to 1995*, NSW Cancer Council, Sydney, 1997.
NSW Cancer Council and NSW Health Department, *Skin cancer control in New South Wales, health promotion strategic plan 1995-2000*, NSW Cancer Council, Sydney, 1995.



Note: Melanoma of the skin was classified according to the ICD9 code 172. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Sources: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990 to 1994, the age-adjusted rates for new cases of melanoma of the skin among males was significantly higher than for NSW overall in the Northern Rivers, Mid North Coast, Central Coast, Hunter and Northern Sydney Health Areas. The rate for new cases in males were significantly lower than for the state as a whole in the Central Sydney, South Western Sydney, Western Sydney, Greater Murray and Southern Health Areas.
- For females, the rate for new cases of melanoma was significantly higher than for NSW overall in the Hunter, Northern Rivers and Mid North Coast Health Areas and was significantly lower in the South Western, Central Sydney and Western Sydney Health Areas.
- No Health Area in NSW had an age-adjusted death rate for melanoma of the skin that differed significantly from the NSW rate.

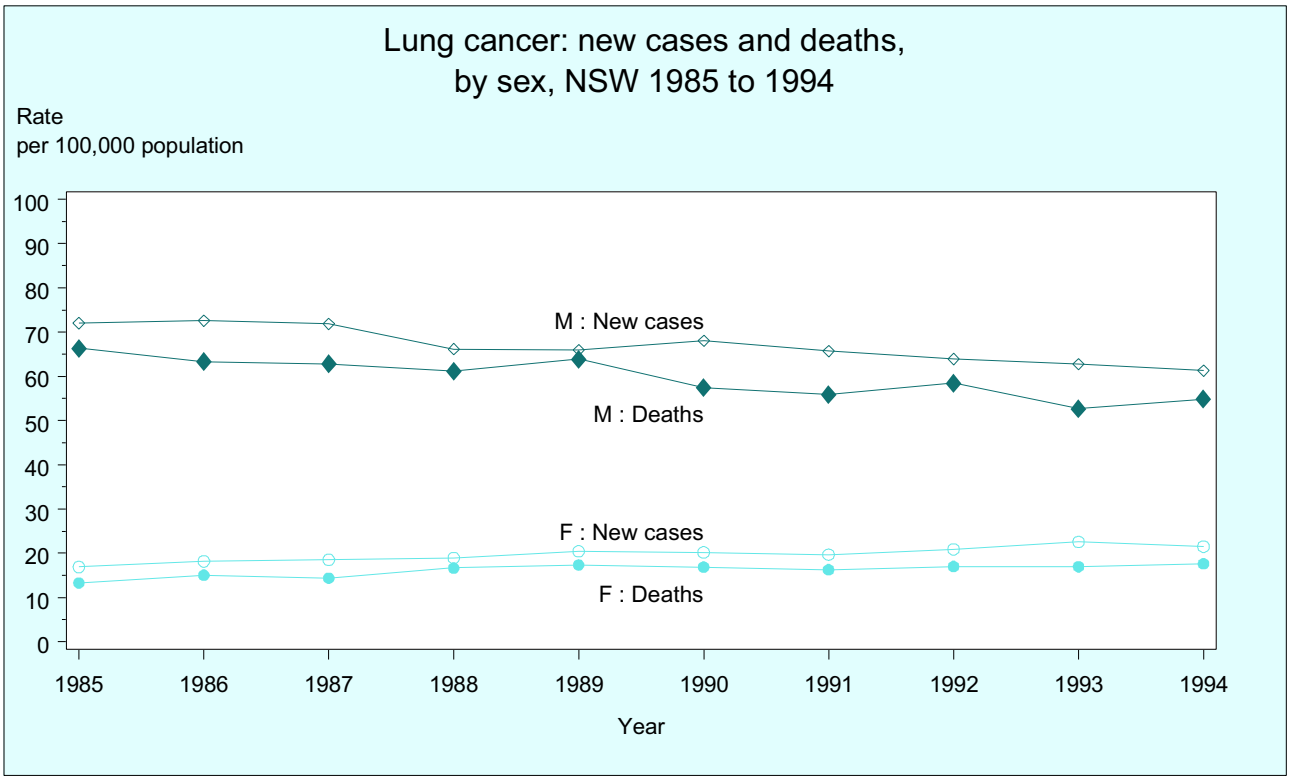
For more information, see: Nguyen HL, Armstrong B and Coates M, *Cutaneous melanoma in NSW in 1983 to 1995*, NSW Cancer Council, Sydney, 1997.

Melanoma of the skin: new cases and deaths, by health area and sex, NSW 1990 to 1994

Health Area	Sex	New cases Number	Rate/ 100,000	LL99%CI	UL99%CI	Deaths Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	Males	329	29.2	25.1	33.6	71	6.5	4.7	8.8
Central Sydney	Females	287	22.1	18.8	25.7	33	2.2	1.3	3.5
Central Sydney	Persons	616	24.8	22.3	27.5	104	4.1	3.2	5.3
Northern Sydney	Males	914	49.0	44.9	53.3	154	8.5	6.8	10.5
Northern Sydney	Females	677	31.0	28.0	34.3	92	3.9	2.9	5.1
Northern Sydney	Persons	1591	38.6	36.2	41.2	246	5.7	4.8	6.7
South Eastern Sydney	Males	835	45.6	41.7	49.9	164	9.2	7.4	11.2
South Eastern Sydney	Females	638	30.9	27.8	34.3	75	3.3	2.4	4.4
South Eastern Sydney	Persons	1473	37.2	34.7	39.8	239	5.9	4.9	6.9
South Western Sydney	Males	454	32.8	28.9	37.2	94	7.2	5.3	9.5
South Western Sydney	Females	337	21.2	18.4	24.4	35	2.3	1.4	3.5
South Western Sydney	Persons	791	26.4	24.0	29.0	129	4.5	3.6	5.7
Western Sydney	Males	437	34.0	29.7	38.6	94	8.2	6.1	10.8
Western Sydney	Females	350	23.5	20.4	27.0	39	2.7	1.7	4.0
Western Sydney	Persons	787	27.9	25.3	30.5	133	5.2	4.1	6.4
Wentworth	Males	234	43.6	36.2	51.9	31	6.2	3.6	9.9
Wentworth	Females	182	28.3	23.1	34.2	13	2.2	0.9	4.3
Wentworth	Persons	416	34.8	30.5	39.6	44	4.0	2.6	5.8
Central Coast	Males	406	59.2	51.7	67.3	70	10.1	7.2	13.7
Central Coast	Females	262	35.8	30.1	42.1	26	3.3	1.8	5.4
Central Coast	Persons	668	46.2	41.6	51.2	96	6.2	4.7	8.1
Hunter	Males	720	56.7	51.4	62.4	94	7.8	5.9	10.2
Hunter	Females	597	44.1	39.5	49.0	47	3.0	2.0	4.4
Hunter	Persons	1317	49.5	46.0	53.1	141	5.2	4.1	6.4
Illawarra	Males	318	39.2	33.7	45.4	65	8.1	5.7	11.2
Illawarra	Females	263	31.1	26.3	36.4	26	2.9	1.6	4.7
Illawarra	Persons	581	34.7	31.1	38.6	91	5.3	4.0	6.9
Northern Rivers	Males	384	60.9	53.1	69.5	59	9.4	6.5	13.1
Northern Rivers	Females	280	43.8	37.2	51.1	24	3.2	1.7	5.3
Northern Rivers	Persons	664	51.4	46.4	56.9	83	6.0	4.4	7.9
Mid North Coast	Males	402	60.2	52.5	68.7	57	8.2	5.6	11.5
Mid North Coast	Females	287	43.6	37.0	50.9	30	3.8	2.2	6.1
Mid North Coast	Persons	689	51.2	46.1	56.6	87	5.8	4.3	7.6
New England	Males	161	36.6	29.6	44.8	32	7.5	4.5	11.8
New England	Females	146	30.8	24.6	38.1	25	5.0	2.8	8.2
New England	Persons	307	33.3	28.6	38.5	57	6.1	4.2	8.6
Macquarie	Males	96	38.9	29.3	50.4	11	4.4	1.7	9.2
Macquarie	Females	86	32.9	24.4	43.2	2	0.8	0.0	3.5
Macquarie	Persons	182	36.1	29.5	43.5	13	2.5	1.1	4.9
Far West	Males	38	29.2	18.2	44.1	6	4.5	1.1	11.9
Far West	Females	41	31.4	20.2	46.5	5	3.6	0.8	10.1
Far West	Persons	79	29.7	21.8	39.5	11	4.1	1.6	8.5
Mid Western	Males	159	40.3	32.5	49.3	37	9.6	6.0	14.4
Mid Western	Females	139	33.3	26.4	41.4	14	3.2	1.4	6.1
Mid Western	Persons	298	36.3	31.1	42.1	51	6.0	4.1	8.6
Greater Murray	Males	198	32.1	26.5	38.5	45	7.4	4.9	10.8
Greater Murray	Females	189	29.2	24.0	35.1	20	2.9	1.5	5.1
Greater Murray	Persons	387	30.4	26.6	34.7	65	5.0	3.6	6.9
Southern	Males	151	33.7	27.0	41.5	19	4.4	2.2	7.7
Southern	Females	130	28.8	22.7	36.1	19	4.0	2.0	7.1
Southern	Persons	281	30.9	26.3	36.0	38	4.2	2.6	6.2
NSW	Males	6236	43.4	42.0	44.8	1103	8.0	7.4	8.6
NSW	Females	4891	30.8	29.7	31.9	525	3.1	2.7	3.5
NSW	Persons	11127	36.2	35.3	37.1	1628	5.2	4.9	5.6

Note: Melanoma of the skin was classified according to the ICD9 code 172. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	New cases	Males	72.0	72.6	71.9	66.1	66.0	68.0	65.8	63.9	62.7	61.3
		Females	16.9	18.2	18.5	18.9	20.5	20.2	19.7	20.9	22.6	21.5
		Persons	40.8	41.6	41.9	39.7	40.4	41.3	40.0	39.9	40.2	38.9
	Deaths	Males	66.4	63.3	62.8	61.2	63.9	57.4	55.9	58.4	52.7	54.8
		Females	13.3	15.1	14.4	16.7	17.4	16.9	16.3	17.0	17.0	17.6
		Persons	36.2	35.7	35.2	35.8	37.4	34.5	33.5	35.1	32.5	33.8
AUSTRALIA	New cases	Males	76.5	72.3	71.7	66.1	–	–	–	–	–	–
		Females	18.3	18.6	18.4	19.0	–	–	–	–	–	–
		Persons	43.6	41.8	41.7	39.7	–	–	–	–	–	–
	Deaths	Males	67.6	64.4	64.0	65.0	63.9	60.0	59.6	59.4	56.9	–
		Females	15.3	16.1	15.0	17.4	17.4	17.2	18.3	17.9	18.5	–
		Persons	38.0	36.9	36.3	38.0	37.6	35.9	36.4	36.2	35.3	–

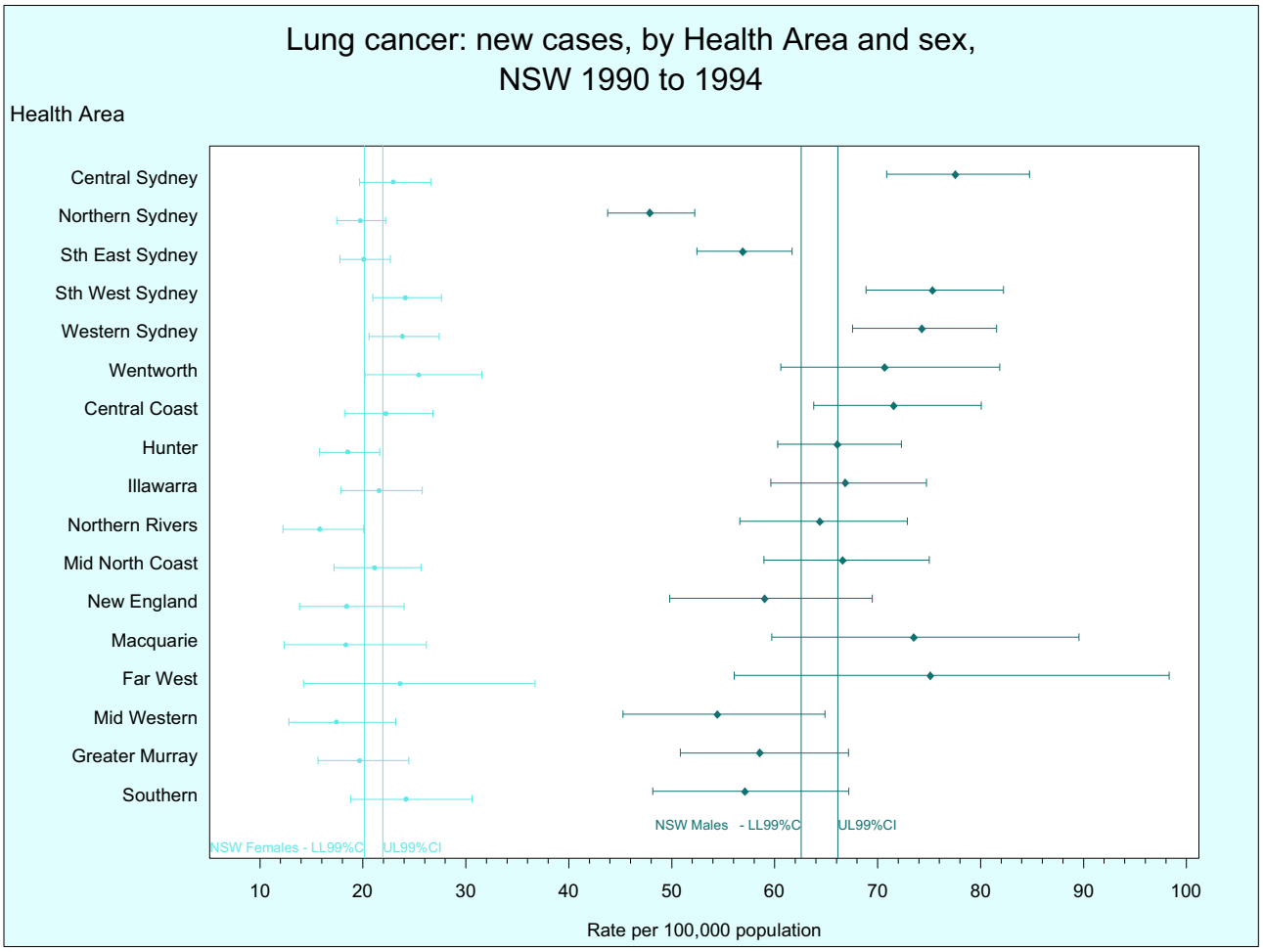
Note: Lung cancer was classified according to the ICD9 code 162. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- Lung cancer was the most common cause of malignant cancer death in NSW in 1994. It was the most common cause of cancer death for males and the second most common for females (after breast cancer).
- Between 1973-1977 and 1994, new cases fell by 11 per cent for males but almost doubled (94% increase) for females. Death rates fell by 13 per cent for males and rose by 91 per cent for females.
- Tobacco smoke exposure is the most important risk factor for lung cancer. Trends in lung cancer largely reflect the change in smoking habits which took place more than 20 years ago. Exposure to agents in the workplace (such as asbestos) is also an important cause for some occupational groups. Lung cancers detected now may relate to workplace exposures more than 20 years ago.
- There are no survival figures for lung cancer in NSW. In South Australia in 1987-1995, 14 per cent of people with lung cancer were still alive 5 years after diagnosis. Survival varied with the stage of cancer at diagnosis (SA Cancer Registry 1997).
- Preventing teenagers from taking up smoking is the most effective way of decreasing the rates of new cases and death from lung cancer in the long term.

Reference: South Australian Cancer Registry, *Epidemiology of Cancer in South Australia*, SA Cancer Registry, Adelaide, 1997.

For more information, see: Drug and Alcohol Directorate, *NSW Tobacco and Health Strategy 1995-1999,* NSW Health Department, Sydney, 1995.



Note: Lung cancer was classified according to the ICD9 code 162. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990-1994, the age-adjusted rate for new cases of lung cancer in males was significantly higher in the Central Sydney, South Western Sydney and Western Sydney Health Areas than for NSW as a whole. The male rate was lower than for NSW as a whole in the Northern Sydney and South Eastern Sydney Health Areas.
- For females, no Health Area had an age-adjusted rate for new cases of lung cancer significantly higher than for NSW as a whole. The rate for new cases of lung cancer in females from the Northern Rivers Health Area was marginally lower than for NSW as a whole.
- Parallelling rates for new cases, age-adjusted male death rates for lung cancer were significantly higher in the Central Sydney, South Western Sydney and Western Sydney Health Areas than for NSW overall, and significantly lower in the Northern Sydney and South Eastern Sydney Health Areas.
- For females, the lung cancer death rate was significantly lower than for NSW overall in the Northern Rivers Health Area. No Health Area had an age-adjusted female death rate for lung cancer significantly higher than for NSW as a whole.

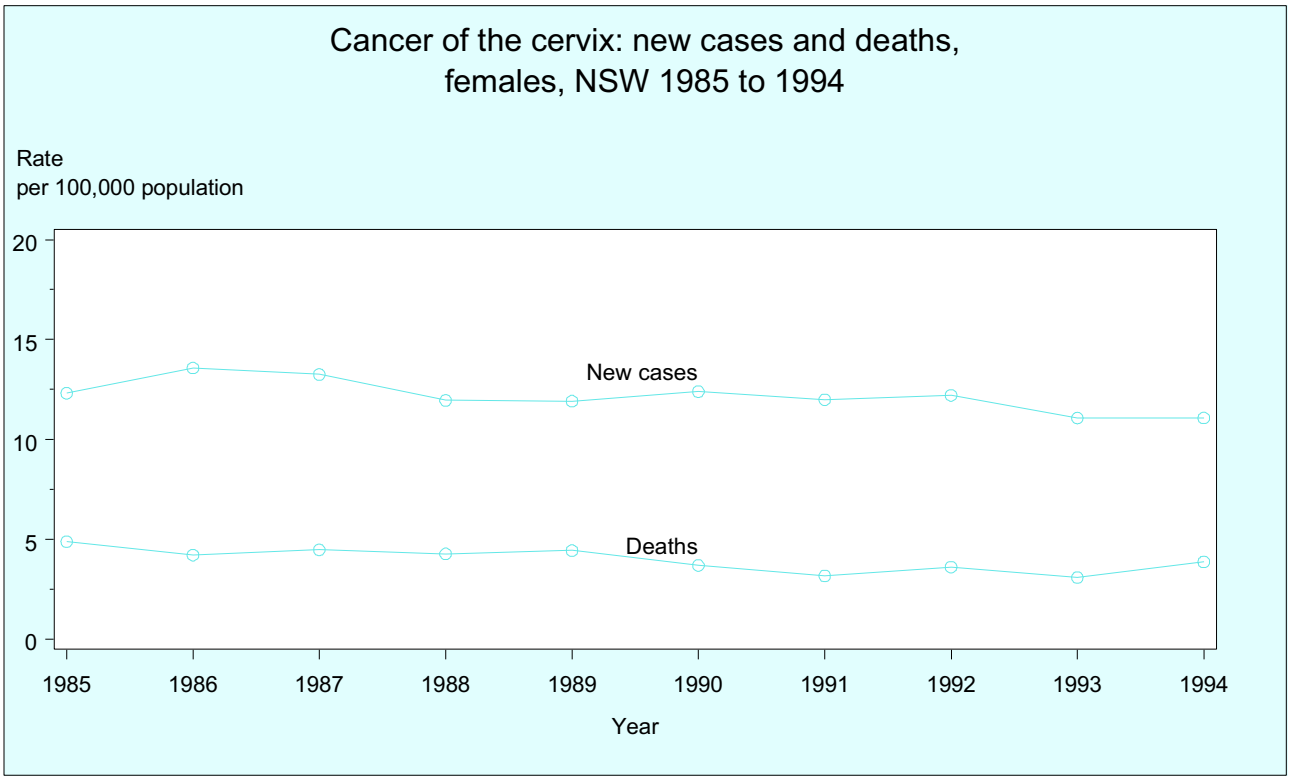
For more information, see: Drug and Alcohol Directorate, *NSW Tobacco and Health Strategy 1995-1999,* NSW Health Department, Sydney, 1995.

Lung cancer: new cases and deaths, by health area and sex, NSW 1990 to 1994

Health Area	Sex	New Cases Number	Rate/ 100,000	LL99%CI	UL99%CI	Deaths Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	Males	847	77.6	70.8	84.8	735	67.8	61.5	74.6
Central Sydney	Females	308	22.9	19.7	26.6	252	18.3	15.4	21.6
Central Sydney	Persons	1155	46.8	43.3	50.4	987	39.8	36.6	43.1
Northern Sydney	Males	872	47.9	43.8	52.2	722	39.8	36.1	43.8
Northern Sydney	Females	488	19.7	17.5	22.2	405	16.1	14.1	18.3
Northern Sydney	Persons	1360	31.3	29.2	33.6	1127	25.7	23.8	27.8
South Eastern Sydney	Males	1023	56.9	52.4	61.7	881	49.4	45.2	53.9
South Eastern Sydney	Females	463	20.1	17.7	22.7	401	17.0	14.9	19.4
South Eastern Sydney	Persons	1486	36.1	33.8	38.6	1282	30.9	28.7	33.2
South Western Sydney	Males	928	75.3	68.9	82.2	795	65.8	59.7	72.3
South Western Sydney	Females	359	24.1	21.0	27.6	285	19.2	16.4	22.4
South Western Sydney	Persons	1287	46.9	43.6	50.4	1080	39.7	36.6	43.0
Western Sydney	Males	819	74.3	67.6	81.6	688	63.9	57.5	70.7
Western Sydney	Females	335	23.9	20.6	27.4	262	18.6	15.7	21.8
Western Sydney	Persons	1154	45.4	42.0	49.0	950	37.6	34.5	40.9
Wentworth	Males	314	70.7	60.6	81.9	236	55.0	46.0	65.2
Wentworth	Females	140	25.4	20.2	31.5	115	21.1	16.4	26.8
Wentworth	Persons	454	45.4	40.1	51.2	351	35.6	30.9	40.9
Central Coast	Males	543	71.6	63.8	80.0	468	61.5	54.3	69.4
Central Coast	Females	199	22.2	18.2	26.8	170	18.6	15.0	22.7
Central Coast	Persons	742	43.9	39.8	48.4	638	37.3	33.5	41.3
Hunter	Males	834	66.1	60.3	72.3	739	59.3	53.8	65.2
Hunter	Females	281	18.5	15.8	21.6	228	14.7	12.3	17.5
Hunter	Persons	1115	39.6	36.6	42.7	967	34.2	31.4	37.1
Illawarra	Males	555	66.9	59.6	74.7	476	58.8	51.9	66.4
Illawarra	Females	205	21.6	17.9	25.8	167	17.6	14.3	21.4
Illawarra	Persons	760	42.4	38.5	46.5	643	36.2	32.6	40.0
Northern Rivers	Males	435	64.4	56.6	72.9	380	56.9	49.6	65.0
Northern Rivers	Females	116	15.8	12.2	20.1	82	10.9	8.0	14.4
Northern Rivers	Persons	551	38.2	34.1	42.6	462	31.8	28.1	35.8
Mid North Coast	Males	485	66.6	58.9	75.0	398	54.2	47.3	61.7
Mid North Coast	Females	174	21.1	17.2	25.7	137	16.6	13.2	20.7
Mid North Coast	Persons	659	41.9	37.8	46.3	535	33.7	30.0	37.7
New England	Males	250	59.1	49.8	69.5	229	54.8	45.8	64.9
New England	Females	92	18.4	13.8	24.0	75	14.9	10.8	20.0
New England	Persons	342	36.9	32.0	42.4	304	32.9	28.2	38.1
Macquarie	Males	171	73.6	59.7	89.5	146	63.4	50.6	78.4
Macquarie	Females	50	18.3	12.3	26.2	44	16.2	10.6	23.7
Macquarie	Persons	221	43.5	36.3	51.6	190	37.5	30.9	45.1
Far West	Males	93	75.2	56.1	98.3	79	61.9	45.1	82.7
Far West	Females	32	23.6	14.2	36.7	21	15.5	8.2	26.6
Far West	Persons	125	46.5	36.5	58.3	100	36.8	28.0	47.4
Mid Western	Males	212	54.4	45.3	64.9	200	51.6	42.6	61.8
Mid Western	Females	80	17.4	12.8	23.2	67	14.5	10.3	19.8
Mid Western	Persons	292	34.0	29.1	39.4	267	31.0	26.3	36.2
Greater Murray	Males	354	58.6	50.8	67.2	323	54.2	46.7	62.5
Greater Murray	Females	138	19.7	15.6	24.4	120	16.9	13.2	21.3
Greater Murray	Persons	492	37.4	33.2	41.9	443	33.6	29.6	37.9
Southern	Males	254	57.1	48.2	67.2	226	51.1	42.6	60.8
Southern	Females	117	24.2	18.8	30.6	86	17.7	13.2	23.3
Southern	Persons	371	39.3	34.2	44.9	312	33.1	28.4	38.2
NSW	Males	8989	64.3	62.6	66.1	7721	55.8	54.2	57.5
NSW	Females	3577	21.0	20.1	22.0	2917	17.0	16.2	17.8
NSW	Persons	12566	40.1	39.2	41.0	10638	33.9	33.1	34.8

Note: Lung cancer was classified according to the ICD9 code 162. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.



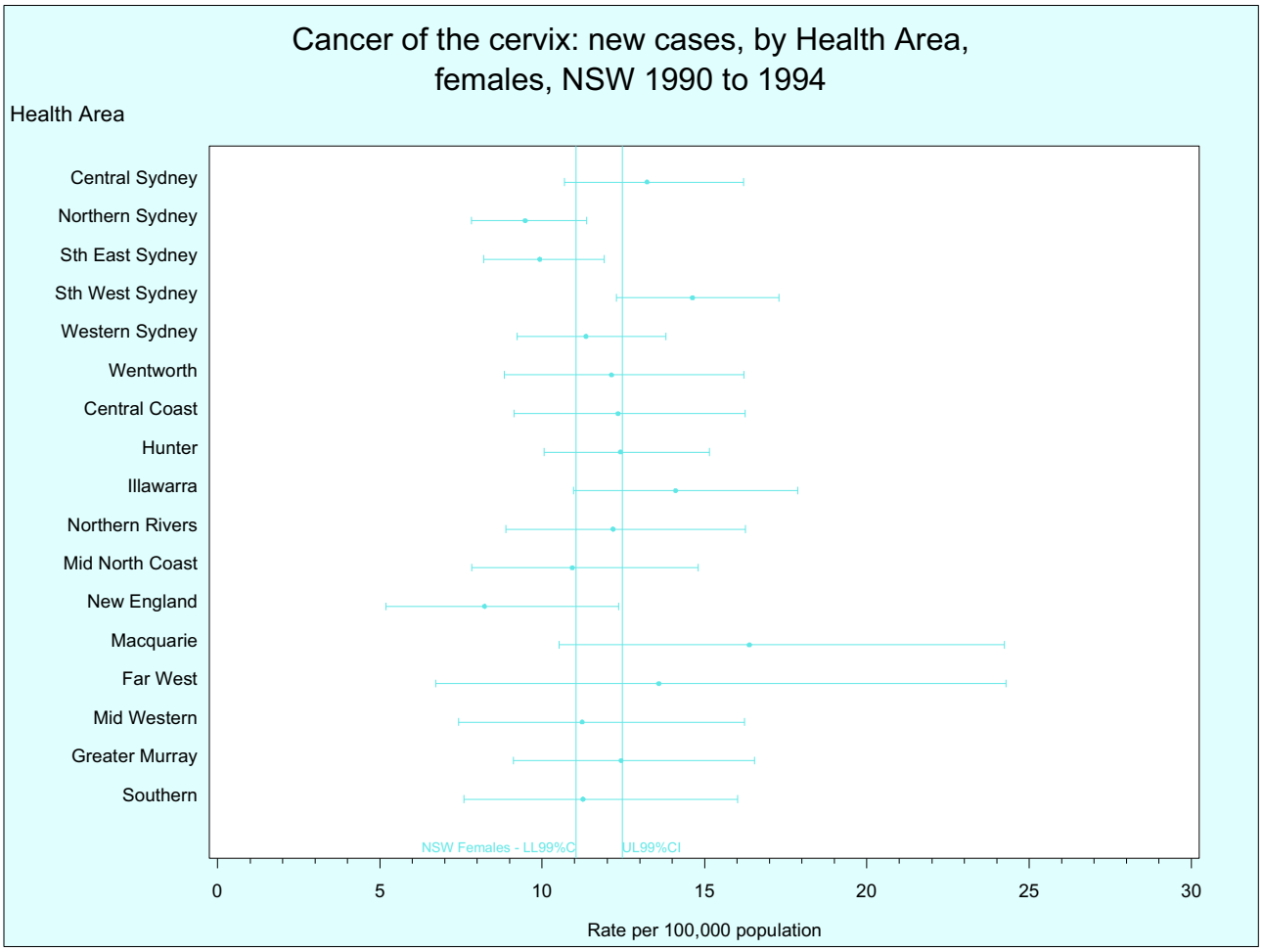
			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	New cases	All ages	12.3	13.6	13.3	12.0	11.9	12.4	12.0	12.2	11.1	11.1
		20-69 years	17.0	18.6	17.8	16.7	16.4	16.7	15.9	16.6	14.9	14.7
	Deaths	All ages	4.9	4.2	4.5	4.3	4.4	3.7	3.2	3.6	3.1	3.9
		20-69 years	5.3	4.9	5.3	4.5	4.9	4.2	3.5	3.7	3.2	4.4

Note: Cancer of the cervix was classified according to the ICD9 code 180. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- In 1994, cervical cancer was the ninth most common cause of new cases of cancer in NSW females (a decrease from its fourth position in 1973). It ranked thirteenth as a cause of cancer death.
- Cervical cancer cases and deaths decreased between 1972 and 1994, by 28 per cent and 33 per cent, respectively.
- The five-year relative survival for cervical cancer in NSW improved from 64 per cent in 1972-1976 to 72 per cent in 1987-1991. The greatest improvement was between 1972-1976 and 1977-1981 and no significant improvement has been evident since then.
- Cancer of the cervix is one of the six priority cancers targeted by national and state programs, because of the potential for arresting the disease in the precancerous stage.
- Pap-test screening is an effective method of detecting precancerous lesions and some early invasive cancers. In the presence of an effective screening program, the number of new cases and deaths rates can be considerably reduced. The optimal (and realistic) screening level is thought to be 85 per cent of eligible women (women over 18 years who are or have ever been sexually active). The 1999 target for the NSW Program for the Prevention of Cancer of the Cervix is to screen 75 per cent of all eligible women.

For more information, see: Kricker A, Bell J, Coates M, Taylor R and Armstrong B, *Cancer of the Cervix in NSW in 1972 to 1992,* NSW Cancer Council, Sydney, 1996.
NSW Cancer Council, Phone (02) 9334 1900, Web site at http://www.nswcc.org.au



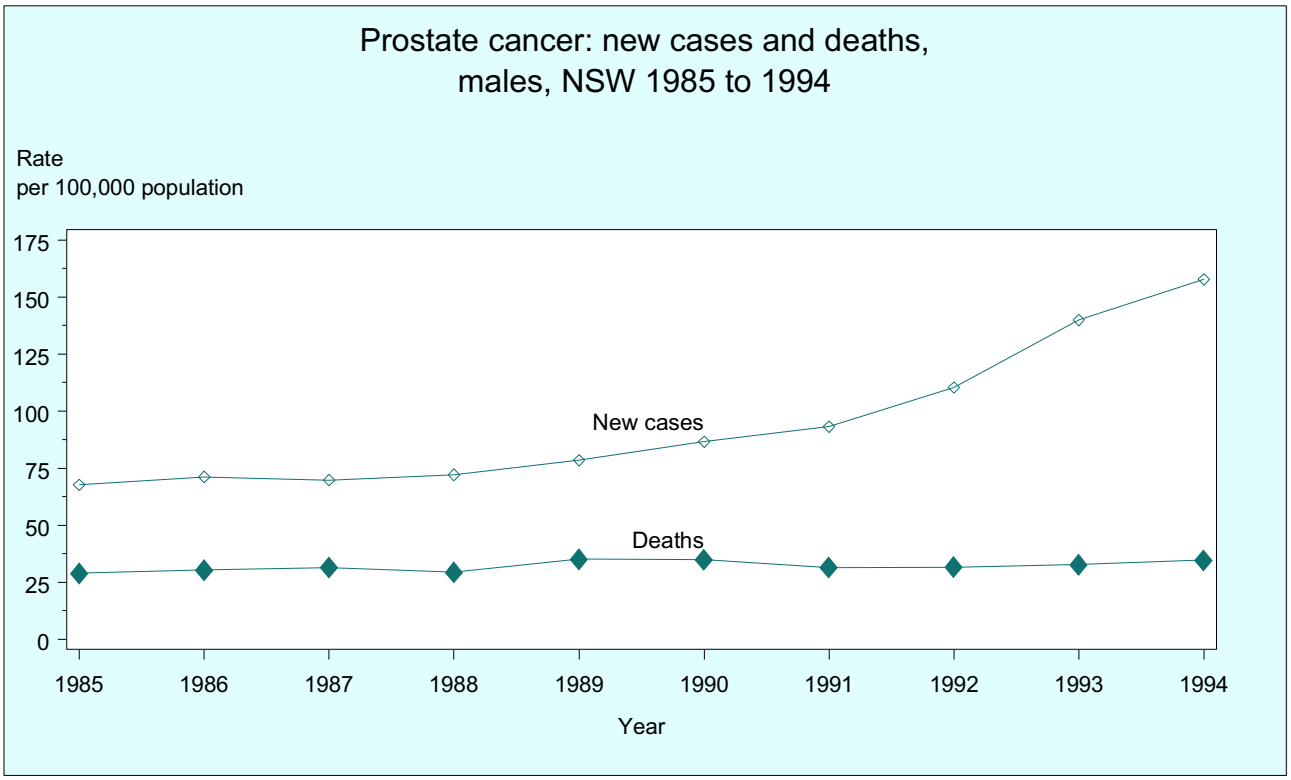
Health Area	New cases Number	Rate/ 100,000	LL99%CI	UL99%CI	Deaths Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	161	13.2	10.7	16.2	52	3.9	2.7	5.6
Northern Sydney	200	9.5	7.8	11.4	61	2.6	1.8	3.7
South Eastern Sydney	198	9.9	8.2	11.9	60	2.7	1.9	3.8
South Western Sydney	234	14.6	12.3	17.3	68	4.4	3.2	6.0
Western Sydney	169	11.4	9.2	13.8	52	3.6	2.4	5.1
Wentworth	78	12.1	8.8	16.2	36	6.1	3.8	9.3
Central Coast	91	12.3	9.1	16.2	23	2.4	1.2	4.0
Hunter	166	12.4	10.1	15.1	58	4.2	2.9	5.8
Illawarra	117	14.1	11.0	17.9	27	3.1	1.8	5.0
Northern Rivers	79	12.2	8.9	16.3	24	3.5	1.9	5.8
Mid North Coast	72	10.9	7.8	14.8	18	2.5	1.2	4.5
New England	38	8.2	5.2	12.4	14	2.9	1.3	5.7
Macquarie	41	16.4	10.5	24.2	14	5.6	2.5	10.7
Far West	18	13.6	6.7	24.3	6	4.3	1.1	11.4
Mid Western	47	11.2	7.4	16.2	21	4.4	2.3	7.6
Greater Murray	79	12.4	9.1	16.5	23	3.5	1.9	5.9
Southern	51	11.3	7.6	16.0	20	4.1	2.1	7.2
NSW	1839	11.7	11.0	12.5	577	3.5	3.1	3.9

Note: Cancer of the cervix was classified according to the ICD9 code 180. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990-1994, no Health Area in NSW had an age-adjusted rate for new cases of cervical cancer or deaths from cervical cancer which differed significantly from NSW overall.

For more information, see: Kricker A, Bell J, Coates M, Taylor R and Armstrong B, *Cancer of the Cervix in NSW in 1972 to 1992,* NSW Cancer Council, Sydney, 1996.
NSW Cancer Council, Phone (02) 9334 1900, Web site at http://www.nswcc.org.au



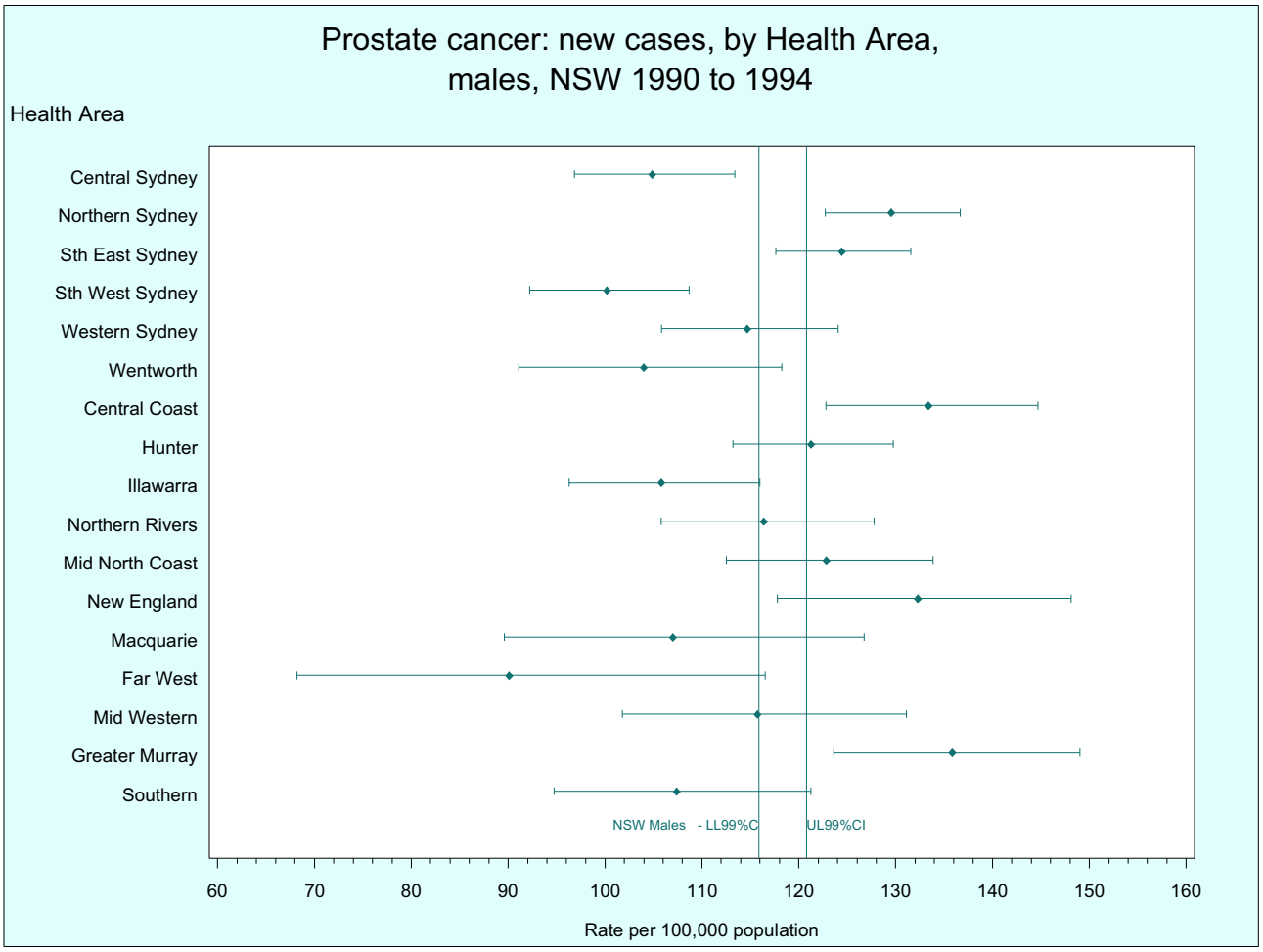
			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW	New cases	Males	67.7	71.2	69.8	72.1	78.5	86.6	93.2	110.4	139.8	157.8
	Deaths	Males	29.0	30.4	31.4	29.4	35.1	34.9	31.4	31.7	32.7	34.6
AUSTRALIA	New cases	Males	70.7	69.4	70.4	69.0	–	–	–	–	–	–
	Deaths	Males	29.2	28.7	29.4	30.5	31.5	32.1	31.2	33.7	35.2	–

Note: Prostate cancer was classified according to the ICD9 code 185. The new cases and death rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham B, d'Espaignet ET and Stevenson C, *Australian health trends*, AIHW, Canberra, 1995.

- In 1994, prostate cancer was the most common malignant cancer in NSW men and the second most common cause of cancer death.
- The reported rates for new cases of prostate cancer in NSW and other states in Australia, rose rapidly from 1984 to 1993, especially after 1988. There is some evidence that part of this increase was due to earlier detection of localised cancers through increased blood testing of men for prostate-specific antigen (PSA).
- The rate of new cases of prostate cancer increases with age. It is rare in men under the age of 50. Risk factors remain uncertain, but may include diet, body mass, physical activity, genetic factors and vasectomy.
- Prostate cancer death rates remained relatively stable during the period 1985 to 1994. There was, however, a progressive increase in five-year relative survival from 51 per cent in the early 1970s to 65 per cent in 1987-1991. Screening with PSA testing increases survival because of the increased detection of localised cancers, which may represent relatively benign disease that would not otherwise be detected. Thus, the improvement in survival may not indicate a better outcome through improved treatment.
- Screening for prostate cancer is not supported by the Australian Health and Technology Advisory Committee (AHTAC) of the National Health and Medical Research Council. A review conducted by AHTAC concluded that currently there is no conclusive evidence that screening for prostate cancer reduces deaths from this cancer, nor that early detection and treatment of prostate cancer will result in improved quality of life.

For more information, see: Australian Health Technology Advisory Committee, *Prostate cancer screening*. Commonwealth Department of Health and Family Services, Canberra, 1996.
Taylor R and Coates M, *Prostate cancer 5 year survival in NSW men 1972-1991*, NSW Cancer Council, Sydney, 1995.
NSW Cancer Council, Phone (02) 9334 1900, Web site at http://www.nswcc.org.au



Health Area	New cases Number	Rate/ 100,000	LL99%CI	UL99%CI	Deaths Number	Rate/ 100,000	LL99%CI	UL99%CI
Central Sydney	1088	104.9	96.8	113.4	282	28.5	24.3	33.2
Northern Sydney	2313	129.6	122.7	136.7	526	30.6	27.3	34.3
South Eastern Sydney	2169	124.5	117.7	131.6	559	34.1	30.5	38.1
South Western Sydney	1083	100.2	92.2	108.7	265	27.4	23.0	32.3
Western Sydney	1143	114.7	105.9	124.0	280	31.9	27.0	37.3
Wentworth	411	104.0	91.1	118.2	106	27.7	21.2	35.5
Central Coast	1037	133.4	122.8	144.7	257	34.8	29.3	40.9
Hunter	1481	121.3	113.2	129.8	413	36.8	32.2	41.8
Illawarra	836	105.8	96.3	116.0	249	36.3	30.4	43.0
Northern Rivers	780	116.4	105.8	127.8	199	31.5	25.9	37.9
Mid North Coast	924	122.9	112.5	133.9	232	34.4	28.7	40.8
New England	526	132.3	117.8	148.1	160	43.5	35.1	53.3
Macquarie	233	107.1	89.6	126.7	68	34.4	24.5	46.9
Far West	102	90.2	68.2	116.5	30	29.0	16.8	46.3
Mid Western	427	115.8	101.8	131.1	146	42.5	33.9	52.5
Greater Murray	783	135.9	123.6	149.0	186	34.7	28.5	41.9
Southern	465	107.4	94.8	121.2	119	30.5	23.6	38.8
NSW	15801	118.3	115.9	120.8	4077	33.1	31.7	34.5

Note: Prostate cancer was classified according to the ICD9 code 185. Rates were age-adjusted using the Australian population as at 30 June 1991. LL/UL99% CI = lower/upper limits of 99% confidence interval for standardised rate.

Source: NSW Central Cancer Registry incidence and mortality data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- In the period 1990-1994, the age-adjusted rate for new cases of prostate cancer was significantly higher in the Northern Sydney, Central Coast and Greater Murray Health Areas than for NSW overall. It was significantly lower than for NSW overall in the South Western Sydney and Central Sydney Health Areas.
- The New England Health Area had an age-adjusted death rate for prostate cancer significantly higher than for NSW as a whole. Deaths rates from prostate cancer in other Health Areas did not differ significantly from the NSW rate.

Chapter 4.6

Communicable diseases

- Rates of *Haemophilus influenzae* type b (Hib) disease have declined dramatically since the introduction of an effective vaccine in 1993. There were 14 notifications for Hib invasive disease in NSW in 1996.
- Measles case reports in 1996 were substantially down on previous years.
- NSW has been in the grip of an extended outbreak of pertussis (whooping cough) since 1993. In 1996, 471 cases were reported in NSW. During the last quarter of 1996 and first half of 1997, six NSW infants died of pertussis.
- Major epidemics of rubella (German measles) occurred in NSW in 1993 and 1995. In 1996, 271 cases were reported.
- Despite free availability of safe and effective vaccines, immunisation rates in NSW remain unacceptably low. Only 53.9 per cent (or 32.1% based on the most recently introduced immunisation schedule) of NSW children aged 3 months to 6 years were fully immunised in 1995.
- More than 400 new or reactivated cases of tuberculosis (TB) were reported in NSW in 1996. Most cases of TB occur among people born overseas.
- Case reports for gonorrhoea increased in NSW in the 1990s, particularly in males. More than 500 cases were reported in 1996.
- Hepatitis C is the most commonly reported communicable disease in NSW, with 8,589 cases reported in 1996.
- The incidence of food poisoning in NSW appears to be increasing, with 1,248 reported cases of salmonella infection in 1996.
- Arboviral illness reports rose sharply in 1996, owing to a record number of reported Ross River Virus infections.

In this chapter

Introduction

This chapter presents information on reported cases of communicable diseases in NSW in the period 1991 to 1996 and, where appropriate, hospitalisations for these diseases.

Doctors, laboratories and hospitals are required by law to notify a range of communicable disease to the NSW Health Department. Since 1991, notifications have been recorded in the NSW Infectious Diseases Surveillance System (IDSS) database, and this is the source of the notification data presented here.

Data on hospitalisation for communicable diseases come from the NSW Inpatients Statistics Collection. For details of the methods used for analysing these, refer to the Methods section (page 257).

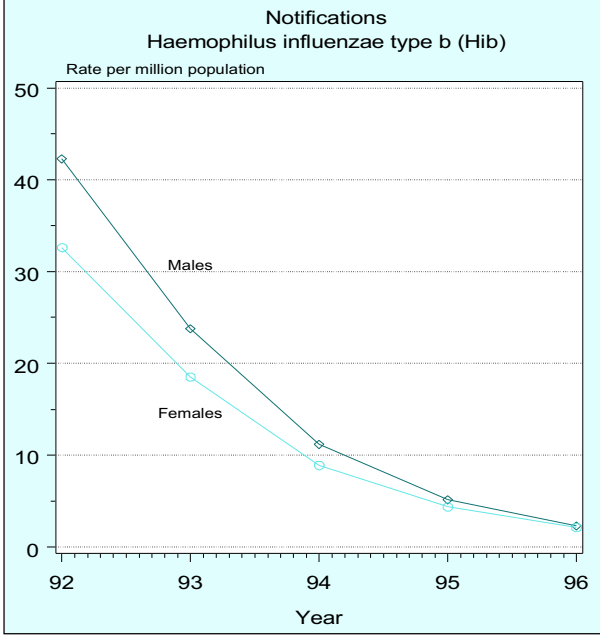
Notifications for infectious diseases, NSW 1992 to 1996

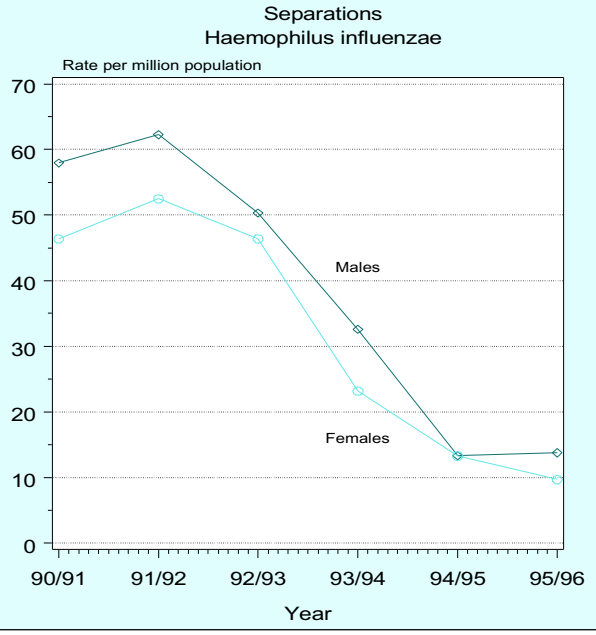
	1992		1993		1994		1995		1996	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Adverse event after immunisation	31	5.2	24	4.0	37	6.1	27	4.4	53	8.6
AIDS	425	71.3	471	78.5	520	85.9	430	70.3	284	45.9
Arboviral infection	341	57.2	653	108.9	385	63.6	555	90.8	1278	206.6
Brucellosis	2	0.3	4	0.7	4	0.7	2	0.3	1	0.2
Cholera	0	-	1	0.2	0	-	1	0.2	4	0.6
Diphtheria	0	-	0	-	0	-	0	-	0	-
Foodborne illness	254	42.6	118	19.7	223	36.9	285	46.6	213	34.4
Gastroenteritis (in an institution)	413	69.3	439	73.2	291	48.1	1372	224.4	566	91.5
Gonorrhoea	483	81.1	386	64.4	360	59.5	434	71.0	526	85.0
Hepatitis A	933	156.6	593	98.9	587	97.0	630	103.0	971	157.0
Hepatitis B	3470	582.3	4046	674.6	4680	773.4	4977	813.9	4450	719.4
Hepatitis C	4276	717.6	6693	1115.9	9326	1541.1	8374	1369.4	8589	1388.5
Hepatitis D	8	1.3	13	2.2	20	3.3	20	3.3	8	1.3
Hepatitis E	0	-	1	0.2	2	0.3	0	-	3	0.5
Hepatitis, viral (not specified)	16	2.7	6	1.0	2	0.3	2	0.3	3	0.5
Haemophilus influenzae type b	221	37.1	127	21.2	61	10.1	30	4.9	14	2.3
HIV	638	107.1	518	86.4	431	71.2	439	71.8	411	66.4
Hydatid disease	6	1.0	4	0.7	19	3.1	20	3.3	13	2.1
Legionnaires' disease	105	17.6	66	11.0	60	9.9	76	12.4	71	11.5
Leprosy	8	1.3	5	0.8	3	0.5	2	0.3	2	0.3
Leptospirosis	20	3.4	16	2.7	14	2.3	6	1.0	32	5.2
Listeriosis	14	2.3	13	2.2	9	1.5	14	2.3	22	3.6
Malaria	113	19.0	176	29.3	184	30.4	99	16.2	213	34.4
Measles	812	136.3	2370	395.2	1504	248.5	604	98.8	190	30.7
Meningococcal disease	123	20.6	153	25.5	143	23.6	113	18.5	165	26.7
Mumps	23	3.9	13	2.2	11	1.8	14	2.3	27	4.4
Mycobacterial (atypical)	407	68.3	480	80.0	555	91.7	512	83.7	445	71.9
Mycobacterial tuberculosis	399	67.0	399	66.5	399	65.9	466	76.2	423	68.4
Whooping cough	221	37.1	1548	258.1	1421	234.8	1387	226.8	1171	189.3
Poliomyelitis - late effects	0	-	0	-	0	-	0	-	0	-
Poliomyelitis	0	-	0	-	0	-	0	-	0	-
Q fever	207	34.7	407	67.9	268	44.3	206	33.7	295	47.7
Rubella	323	54.2	1185	197.6	233	38.5	1249	204.2	271	43.8
Salmonella infection	820	137.6	1006	167.7	1126	186.1	1403	229.4	1248	201.7
Syphilis	881	147.9	760	126.7	1060	175.2	915	149.6	727	117.5
Tetanus	2	0.3	5	0.8	4	0.7	0	-	1	0.2
Typhoid and paratyphoid	28	4.7	35	5.8	36	5.9	39	6.4	35	5.7

Note: Data were generated on 8 September 1997. The number included persons whose sex or age was unknown. The crude rate per million used ABS population estimates as at 30 June each year.

Source: NSW Health Department Infectious Diseases Surveillance System (IDSS) data (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

Notifications and hospital separations for Haemophilus influenzae infections, children aged 0-4 years, NSW 1992 to 1996 (notifications), NSW 1990/91 to 1995/96 (separations)





Notifications		1992	1993	1994	1995	1996
Number	Males	126	72	34	16	7
	Females	94	54	27	14	7
	Persons	221	127	61	30	14
Rate per million	Males	42.3	23.8	11.2	5.1	2.3
	Females	32.6	18.5	8.9	4.4	2.1
	Persons	37.4	21.4	10.2	4.8	2.2

Separations		90/91	91/92	92/93	93/94	94/95	95/96
Number	Males	173	186	152	99	40	42
	Females	133	151	134	68	39	29
	Persons	306	337	286	167	79	71
Rate per million	Males	57.9	62.2	50.3	32.6	13.4	13.8
	Females	46.4	52.5	46.4	23.2	13.3	9.7
	Persons	52.3	57.3	48.3	27.9	13.1	11.6

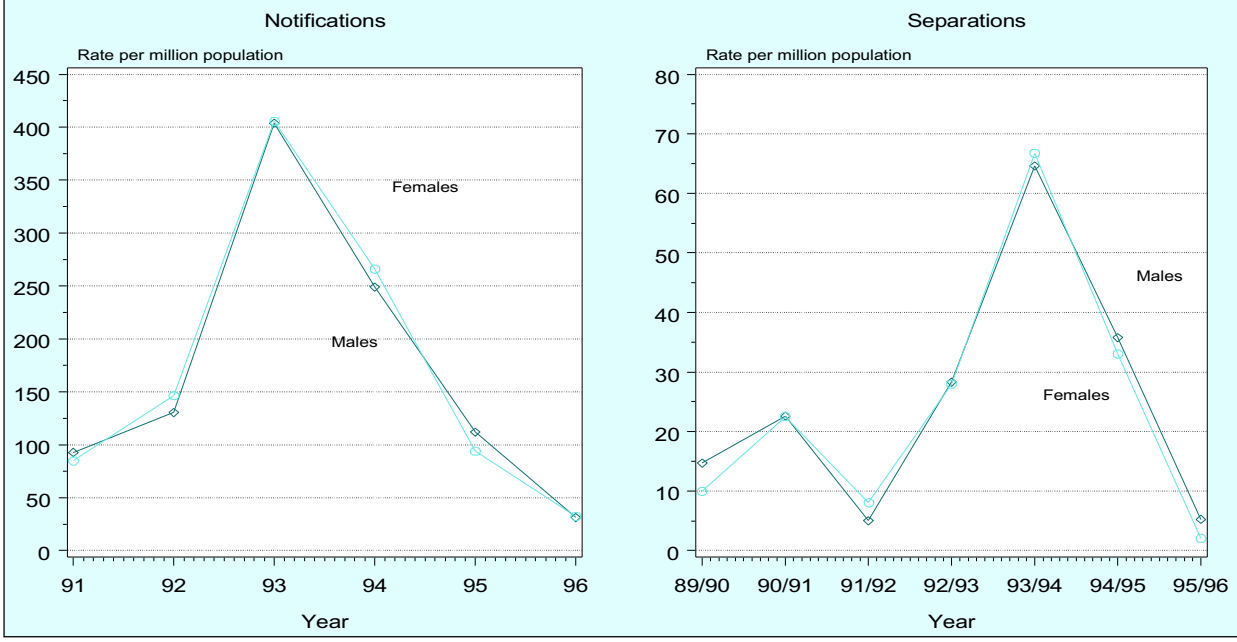
Note: Data were generated on 15 October 1997, and included children aged 0-4 years whose sex was unknown. Notification rates were age-adjusted using the Australian population as at 30 June 1991. *Haemophilus influenzae* separations were classified according to the ICD-9 codes 320.0 or 464.3. *Haemophilus influenzae* by type is not specified as an ICD-9 code. Hospital separation rates were age-adjusted using the Australian population as at 30 December 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- *Haemophilus influenzae* type b (Hib) is a serious disease in small children, and until the early 1990s, was the most common cause of bacterial meningitis in children under 5 years of age.
- Laboratories and hospitals are required by law to notify cases of Hib invasive disease to NSW Health.
- Notifications for Hib disease, particularly among children aged under 5 years, have declined substantially in NSW and throughout Australia since an effective vaccine was introduced in 1993.
- Hospitalisations due to *Haemophilus influenzae* (type unspecified) infection have also declined dramatically since 1993.
- Between 1985 and 1994, 19 deaths of NSW children were attributed to *Haemophilus influenzae* (type unspecified).
- Rates of disease can be further reduced through complete immunisation of small children. Immunisations are recommended for most children at ages 2, 4, 6 and 18 months of age, and for Aboriginal and Torres Strait Islander children (with the special PRP-OMP vaccine) at 2, 4 and 12 months of age.

For more information, see: See *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.

Notifications and hospital separations for measles, by sex, NSW 1991 to 1996 (notifications), NSW 1989/90 to 1995/96 (separations)



Notifications		1991	1992	1993	1994	1995	1996
Number	Males	275	390	1200	740	332	95
	Females	241	418	1153	755	271	95
	Persons	516	810	2360	1499	604	190
Rate per million	Males	92.8	130.6	403.8	248.9	112.0	31.4
	Females	84.8	146.5	405.5	266.0	94.0	32.4
	Persons	88.7	138.7	405.8	258.1	103.4	32.0

Separations		89/90	90/91	91/92	92/93	93/94	94/95	95/96
Number	Males	43	67	15	85	193	107	16
	Females	28	64	23	80	190	94	6
	Persons	72	131	38	165	383	201	22
Rate per million	Males	14.7	22.6	5.0	28.3	64.6	35.8	5.3
	Females	10.0	22.5	8.1	28.0	66.8	33.1	2.1
	Persons	12.4	22.5	6.5	28.1	65.7	34.5	3.7

Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown and included persons whose sex was unknown. Notification rates were age-adjusted using the Australian population as at 30 June 1991. Measles separations were classified according to ICD-9 codes 055. Hospital separation rates were age-adjusted using the Australian population as at 30 December 1991. Hospital separation in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

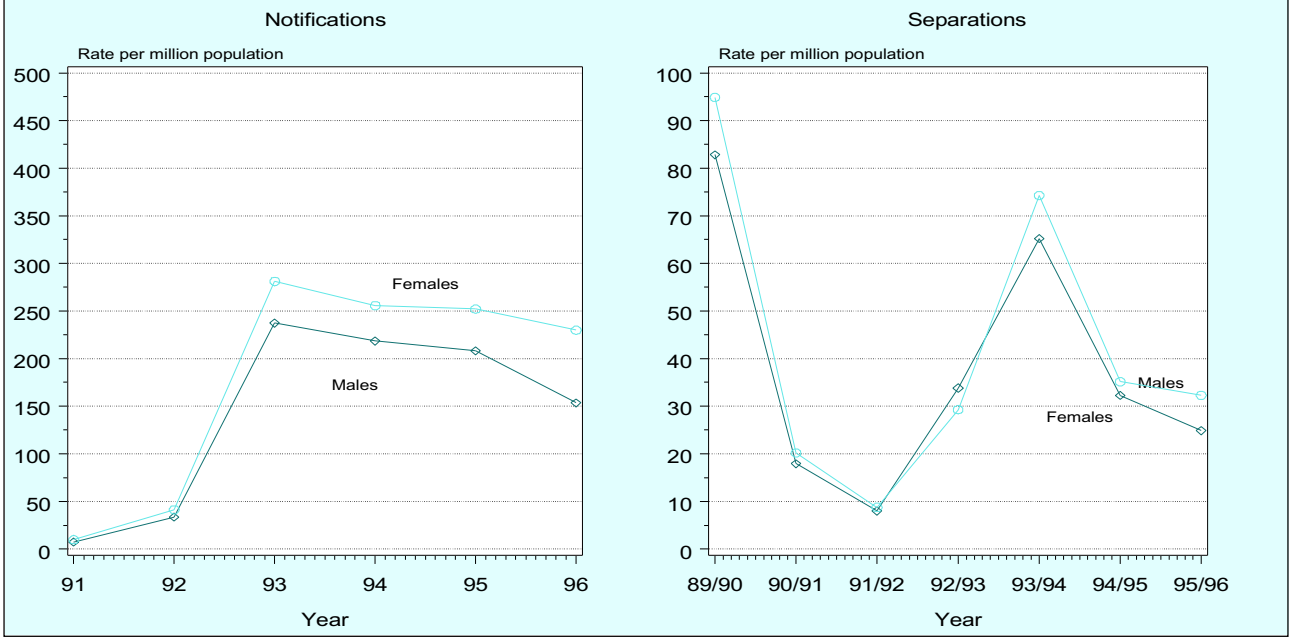
Source: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Measles is an infectious disease characterised by fever, rash, runny nose, sore eyes and cough. Serious complications, including otitis media, pneumonia, encephalitis and death, can follow infection.
- All doctors, laboratories and hospitals are required by law to notify cases of measles to NSW Health.
- Between 1985 and 1994, there were 13 deaths of NSW residents attributed to measles and 18 deaths from subacute sclerosing panencephalitis, a devastating long-term complication of measles.
- NSW, with much of the rest of Australia, experienced its last major epidemic of measles in 1993-94. Case notifications in 1996 were substantially down on previous years, most likely because of high rates of either natural or induced immunity.
- A highly effective vaccine against measles has been available in Australia for more than 25 years. The vaccine is recommended at 12 months of age. Since 1994, a second dose in high school has been recommended. A 1995 Australian Bureau of Statistics survey indicated 91.8 per cent of NSW children aged six years were immunised against measles (ABS 1997).

Reference: Australian Bureau of Statistics, April 1995 Childrens' Immunisation Survey (unpublished data).

For more information, see: See *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.

Notifications and hospital separations for pertussis, by sex, NSW 1991 to 1996 (notifications), NSW 1989/90 to 1995/96 (separations)



Notifications		1991	1992	1993	1994	1995	1996
Number	Males	21	100	712	656	633	471
	Females	29	119	818	754	748	696
	Persons	51	220	1532	1412	1382	1170
Rate per million	Males	7.3	33.5	237.5	218.6	208.4	153.5
	Females	9.9	41.4	280.8	255.6	252.1	229.9
	Persons	8.7	37.5	259.5	237.3	230.0	191.9

Separations		89/90	90/91	91/92	92/93	93/94	94/95	95/96
Number	Males	244	51	24	102	198	98	76
	Females	268	57	25	84	216	102	94
	Persons	512	109	49	186	414	200	170
Rate per million	Males	82.8	17.9	8.0	33.8	65.2	32.3	24.9
	Females	94.9	20.2	8.7	29.2	74.3	35.1	32.3
	Persons	88.4	18.7	8.4	31.5	69.7	33.7	28.5

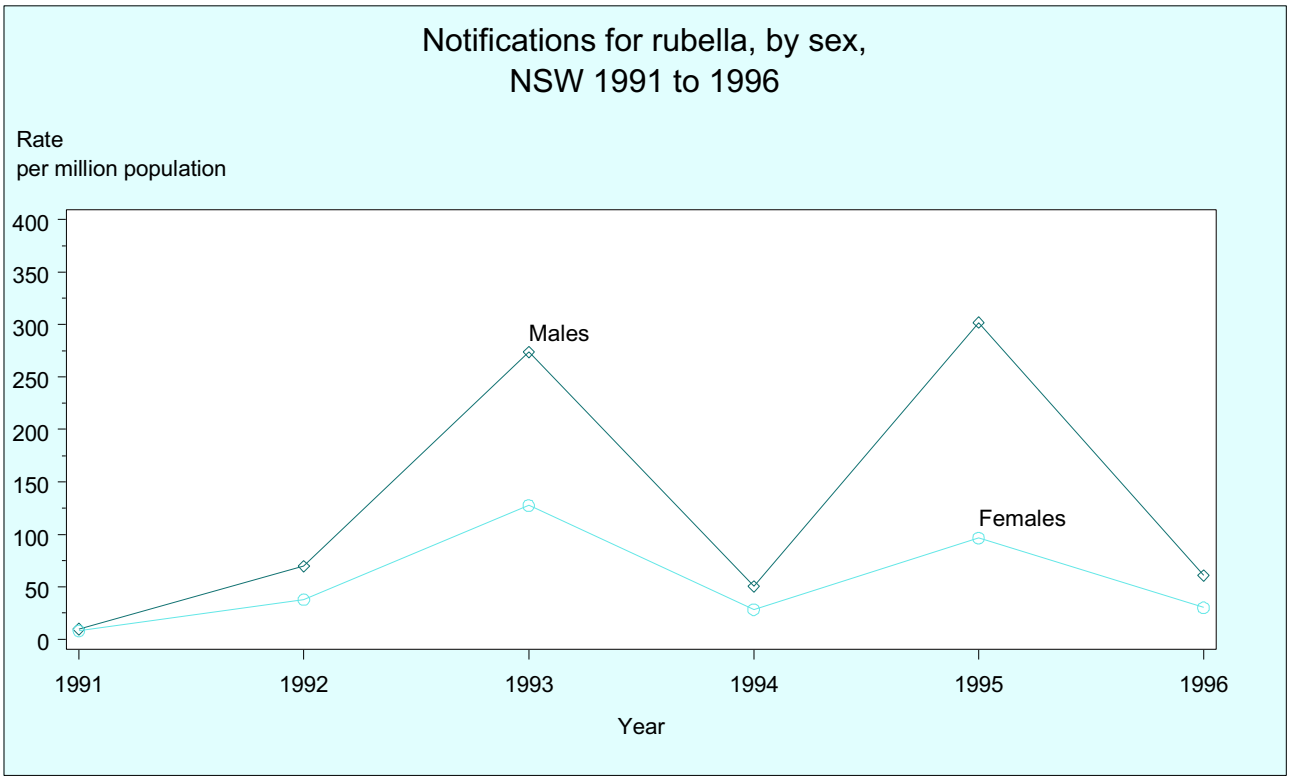
Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Notification rates were age-adjusted using the Australian population as at 30 June 1991. Pertussis separations were classified according to ICD-9 codes 033. Hospital separation rates were age-adjusted using the Australian population as at 30 December 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Pertussis (also known as whooping cough) is an infectious disease caused by infection with *Bordetella pertussis*. Illness is characterised by an irritating cough that occurs in paroxysms of violent coughing, followed by a whooping sound as the child gasps for breath, which is often followed by vomiting. The cough may last several weeks. The disease is particularly serious among young babies.
- All doctors, laboratories and hospitals are required by law to notify cases of pertussis to NSW Health.
- NSW, with much of the rest of Australia, has been in the grip of an extended outbreak of pertussis since 1993. Between 1985 and 1994 three deaths of NSW children were caused by pertussis, one each in 1985, 1988, and 1989. However, in the last quarter of 1996 and first half of 1997, doctors reported six NSW infants who died of pertussis.
- Triple antigen vaccine (or DTP) provides protection against pertussis. The vaccine is recommended at two, four and six months of age, with boosters at 18 months and 4-5 years of age.
- A 1995 Australian Bureau of Statistics survey indicated that only 62 per cent of NSW children aged three months to six years were fully immunised against pertussis (ABS 1997).

Reference: Australian Bureau of Statistics 1997, April 1995 Childrens' Immunisation Survey (unpublished data).

For more information, see: See *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



		1991	1992	1993	1994	1995	1996
Number	Males	29	204	802	147	878	179
	Females	23	109	368	82	283	89
	Persons	54	315	1175	231	1168	270
Rate per million	Males	9.8	69.7	273.7	50.5	301.9	60.9
	Females	8.0	37.8	127.6	28.3	96.6	30.2
	Persons	9.3	54.3	202.7	40.0	202.4	46.2

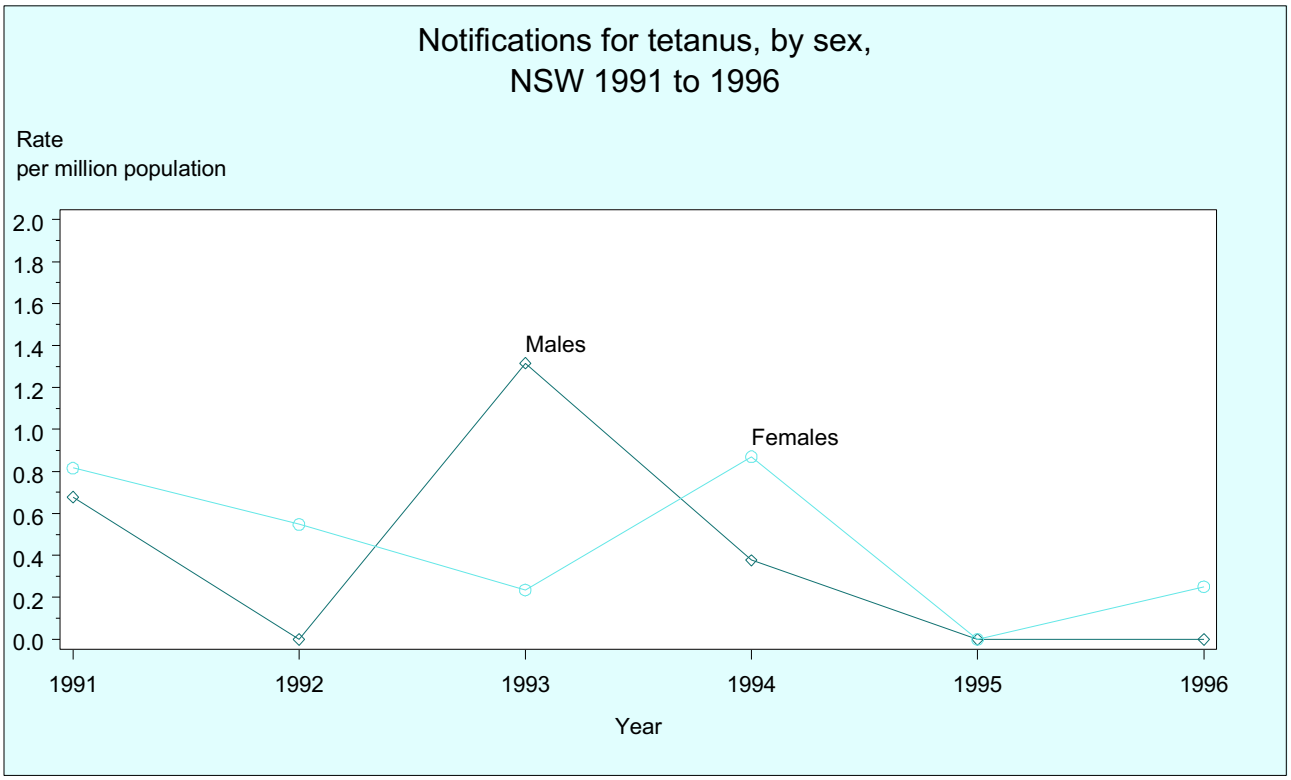
Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Rubella (also known as German measles) is an infectious disease caused by a virus. Rubella is generally a mild illness, characterised by a fever and rash. It is of major public health concern because fetal infection (resulting from infection in non-immune pregnant women) causes birth defects.
- Only laboratories (not doctors) are required by law to notify cases of rubella to NSW Health.
- Major epidemics of rubella occurred in NSW in 1993 and 1995. The 1995 outbreak was fuelled largely by infections among adolescent boys, many of whom had missed out on rubella immunisation as babies.
- In NSW, rubella vaccination has been routinely offered to teenage girls in early high school in a largely successful attempt to minimise the risk of fetal infections. Since 1989, rubella vaccine has been recommended for all children at age 12 months (as part of measles-mumps-rubella or MMR vaccine), and since 1994 to all high school children (as MMR). A 1995 Australian Bureau of Statistics survey indicated that only 74 per cent of NSW children aged six years were fully immunised against rubella (ABS 1997).

Reference: Australian Bureau of Statistics 1997, April 1995 Childrens' Immunisation Survey (unpublished data).

For more information, see: See *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



		1991	1992	1993	1994	1995	1996
Number	Males	2	0	4	1	0	0
	Females	3	2	1	3	0	1
	Persons	5	2	5	4	0	1
Rate per million	Males	0.7	0.0	1.3	0.4	0.0	0.0
	Females	0.8	0.5	0.2	0.9	0.0	0.3
	Persons	0.8	0.3	0.8	0.6	0.0	0.1

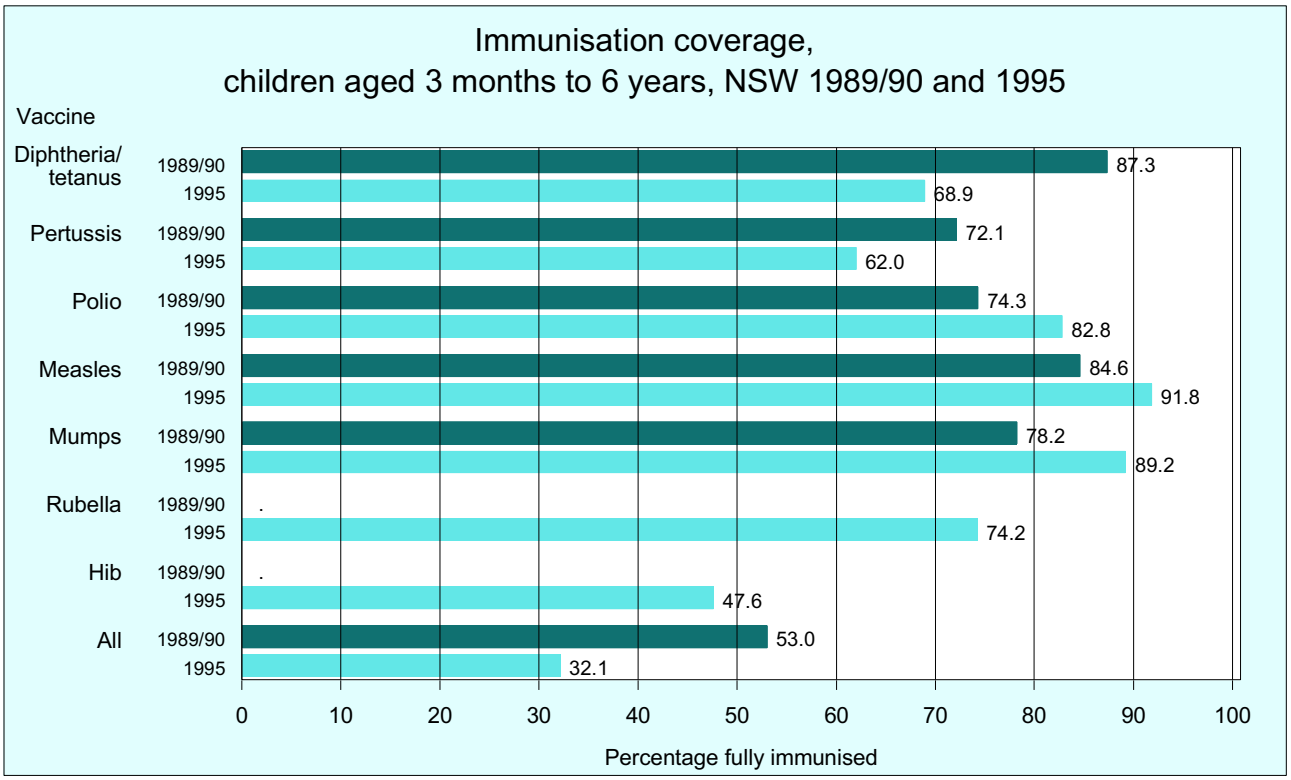
Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatients Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Laboratories and hospitals are required by law to notify cases of tetanus to NSW Health.
- Tetanus is caused by an exotoxin of the tetanus bacillus that infects wounds. The disease is characterised by painful muscle contractions affecting the jaw ("lock jaw") and neck, and the trunk muscles. Up to 90 per cent of cases are fatal.
- This once relatively common disease has been largely forgotten thanks to an effective vaccine. Since 1991, a handful of cases has been reported each year, largely among persons with no or incomplete immunisation.
- Vaccination (as triple antigen, that is, diphtheria-tetanus-pertussis vaccine or DTP) is recommended at two, four and six months, with boosters at 18 months and 4-5 years of age.
- A 1995 Australian Bureau of Statistics survey indicated that only 68.9 per cent of NSW children aged three months to six years were fully immunised against tetanus (ABS 1997). Boosters are recommended (as combined tetanus-diphtheria vaccine) every 10 years throughout life.

Reference: Australian Bureau of Statistics 1997, April 1995 Childrens' Immunisation Survey (unpublished data).

For more information, see: See *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



Note: To allow a comparison, the 1995 results were based on the immunisation schedule current during the 1989/90 survey. Hib vaccine was introduced in 1993 and rubella vaccine was given at age 12 in 1989/90.

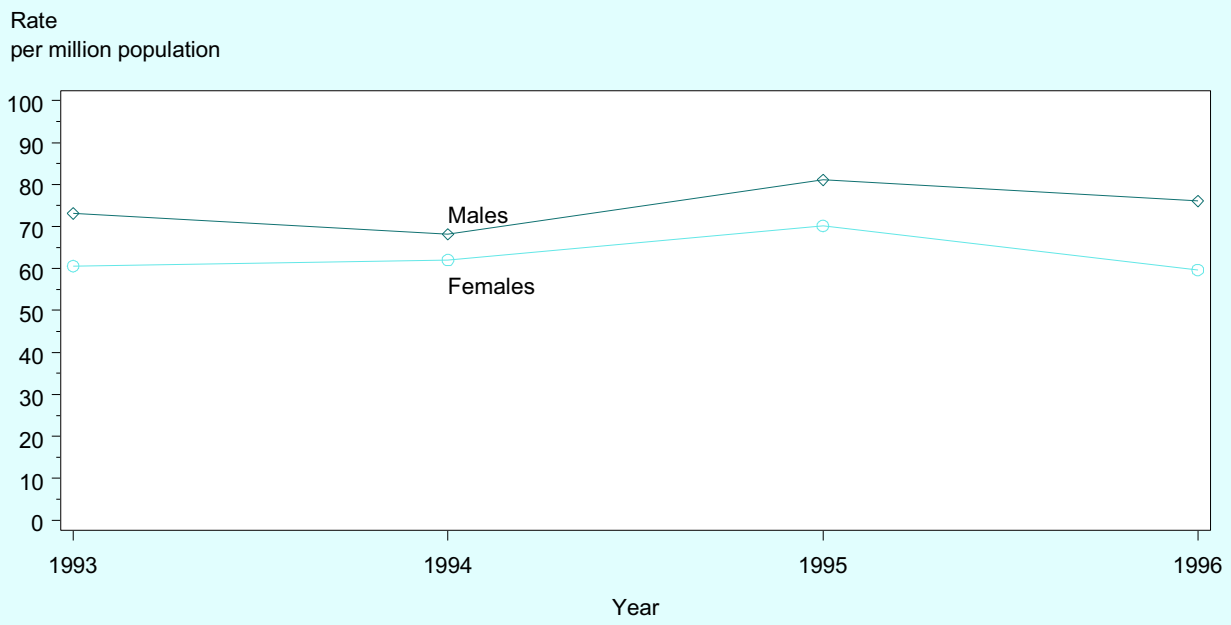
Source: ABS April 1995 Childrens' Immunisation Survey (unpublished data).

- Along with environmental engineering feats that have produced clean drinking water, and better housing, childhood immunisations are among the most effective public health measures ever introduced, preventing countless cases of illness and deaths.
- Despite the free availability of safe and effective immunisations in NSW, these data indicate suboptimal immunisation rates in NSW, and largely explain why many vaccine-preventable diseases remain rampant in our community. Of particular concern are low immunisation rates for (and subsequent epidemics of) pertussis, rubella, and measles.
- The drop in the proportion of children fully immunised against diphtheria and tetanus between 1989/90 and 1995 may have resulted from the collection of more detailed data on age of a child in the 1995 survey, which enabled immunisation status to be derived more accurately (ABS 1996).
- The difference in proportions of children fully immunised against measles (91.8%), mumps (89.2%) and rubella (74.2%) found in the 1995 survey is not understood as the combined one-dose measles-mumps-rubella (MMR) vaccine has been available since 1989. The difference may be because parents do not realise that the MMR vaccine includes the rubella component, as rubella vaccine was previously available only to girls.
- One modern success story, however, has been the near defeat of *Haemophilus influenzae* type b (Hib) disease, the incidence of which has been greatly reduced thanks to the introduction of Hib vaccine in 1993 (see page 224).

Reference: Australian Bureau of Statistics, *April 1995 Childrens' Immunisation Survey*, cat. no. 4352.0, ABS, Canberra, 1996.

For more information, see: See *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.

Notifications for tuberculosis (new and re-activated), by sex, NSW 1993 to 1996



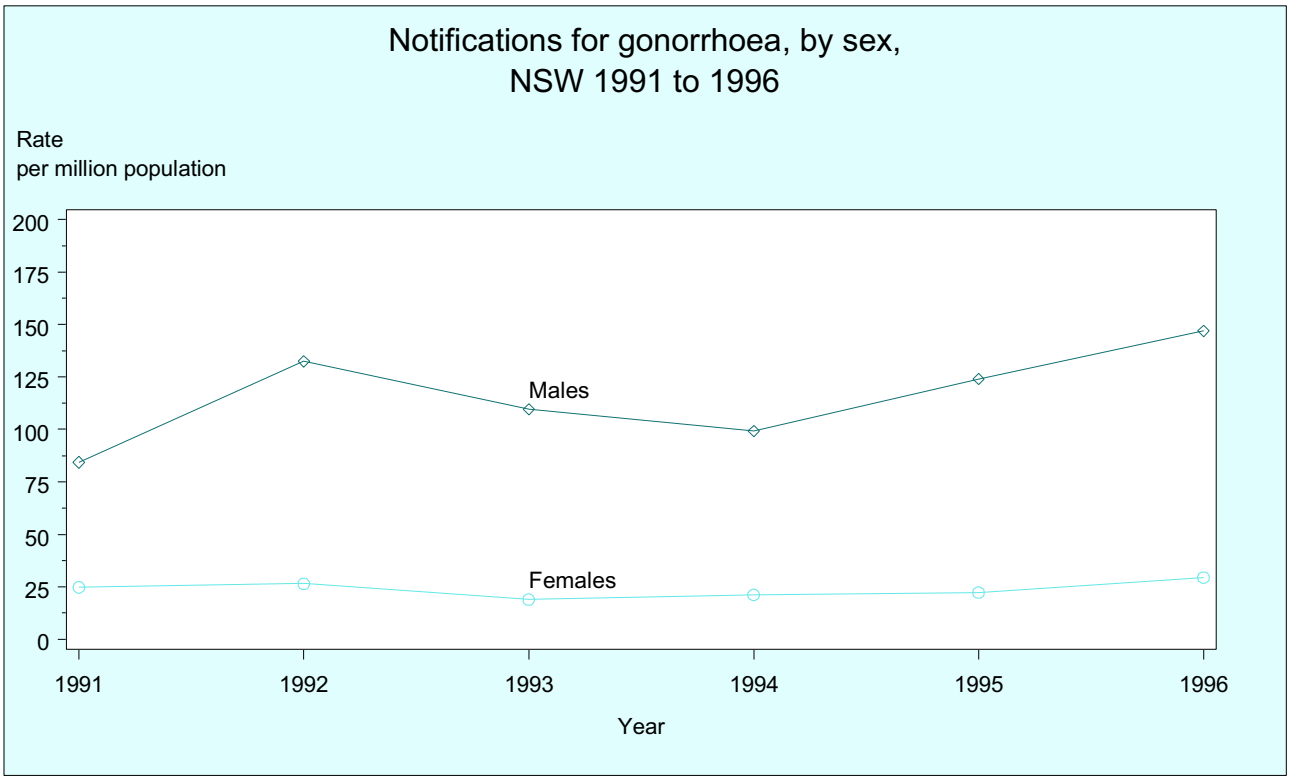
		1993	1994	1995	1996
Number	Males	213	201	243	234
	Females	185	198	222	189
	Persons	398	399	466	423
Rate per million	Males	73.1	68.2	81.1	76.0
	Females	60.6	62.0	70.2	59.7
	Persons	65.4	64.5	74.8	67.1

Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Tuberculosis (TB) is caused primarily by the bacterial organism *Mycobacterium tuberculosis.* TB can present itself in a variety of ways, most commonly as pulmonary disease characterised by a chronic cough, weight loss, fevers, and night sweats.
- All doctors, laboratories and hospitals are required by law to notify cases of TB to NSW Health.
- 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. Case reports rapidly declined after the war, but have levelled out since the mid-1980s.
- In NSW, most cases occur among people born in high-prevalence countries and people living in urban areas.
- A network of chest clinics exists throughout the state to provide directly supervised therapy for persons with disease, and to identify, screen and treat persons at risk of infection.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI), a publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand includes an article summarising yearly TB data, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm



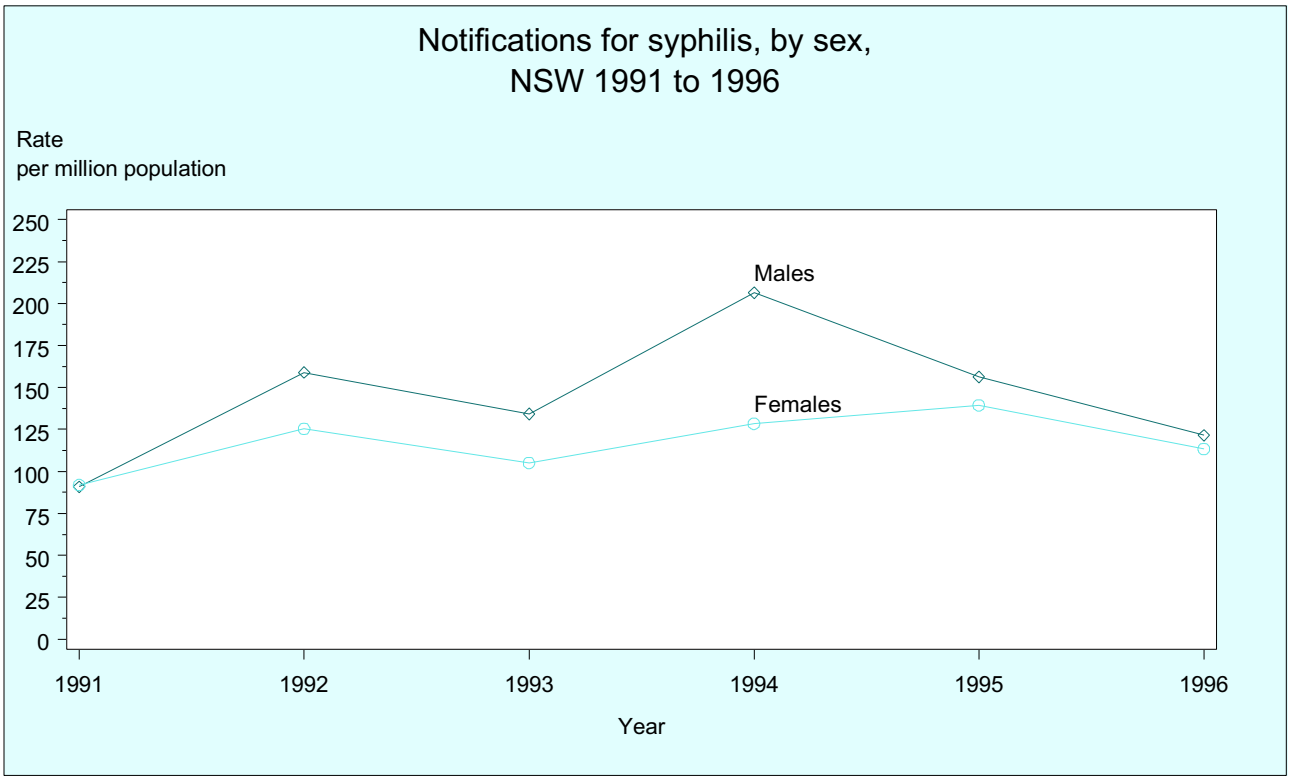
		1991	1992	1993	1994	1995	1996
Number	Males	248	391	323	295	368	442
	Females	71	76	54	60	63	83
	Persons	324	470	380	357	432	525
Rate per million	Males	84.4	132.5	109.6	99.4	124.1	147.0
	Females	24.8	26.5	19.0	21.2	22.3	29.5
	Persons	55.8	80.5	65.2	61.0	73.5	88.5

Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Gonorrhoea is a sexually transmitted disease caused by an infection with the bacterium *Neisseria gonorrhoea*. Infection usually causes a purulent discharge, with difficulty urinating in males, and inflammation of the urethra or cervix, and later pelvic inflammatory disease and infertility, in females. Pharyngeal and ano-rectal infections are also reported.
- Only laboratories (not doctors) are required by law to notify cases of gonorrhoea to NSW Health.
- Case reports of gonorrhoea declined sharply in the 1980s, perhaps because of safe sex campaigns. In the 1990s, rates of disease stabilised and then began to increase again, particularly among males. This suggests increasing risky sexual behaviour for this and other sexually transmitted diseases, including HIV infection.
- Safe sex practices, early case identification and treatment and contact tracing are the most effective methods for controlling gonorrhoea.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



		1991	1992	1993	1994	1995	1996
Number	Males	263	469	404	634	482	381
	Females	271	366	311	384	412	336
	Persons	561	850	750	1053	906	722
Rate per million	Males	90.8	159.0	134.3	206.5	156.3	121.2
	Females	92.0	125.4	105.1	128.4	139.1	113.1
	Persons	95.3	143.2	125.0	172.5	148.3	117.5

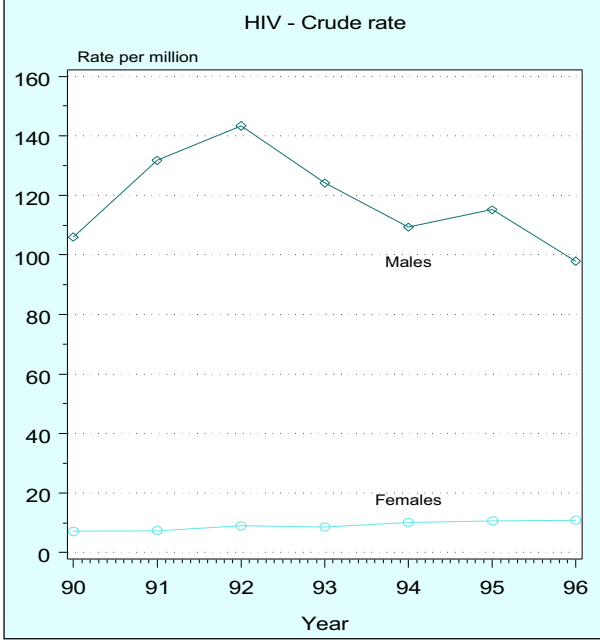
Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

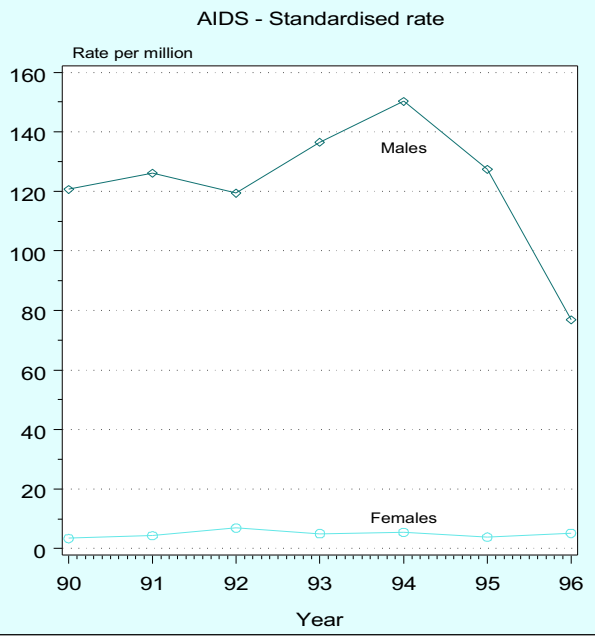
Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Syphilis is a sexually transmitted disease caused by infection with the spirochaete *Treponema pallidum*. Infection is characterised by a primary lesion (a chancre), a secondary rash involving skin and mucous membrane, and late involvement (perhaps years later) of the skin, bone, internal organs and nervous and cardiovascular systems. Fetal infection leads to abortion, still births, and a range of congenital abnormalities.
- All doctors, laboratories and hospitals are required by law to notify cases of syphilis to NSW Health. The data through to 1996, however, include laboratory markers of syphilis, many of which may indicate old, rather than new infections.
- Safe sex practices, early case identification and treatment, and contact tracing are the most effective methods of syphilis control. Prevention of congenital syphilis through identification and treatment of pregnant women is essential.
- Improved accuracy of data on incident syphilis cases is a high priority, to allow better monitoring of trends in case rates.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.

Notifications for HIV and AIDS, by sex, NSW 1990 to 1996





HIV		1990	1991	1992	1993	1994	1995	1996
Number	Males	308	387	425	370	329	350	301
	Females	21	22	27	26	31	33	34
	Persons	333	417	455	402	366	392	338
Crude rate/ million	Males	106.0	131.8	143.4	124.1	109.4	115.2	97.9
	Females	7.2	7.4	9.0	8.6	10.2	10.7	10.9
	Persons	57.1	70.7	76.4	67.0	60.5	64.1	54.6

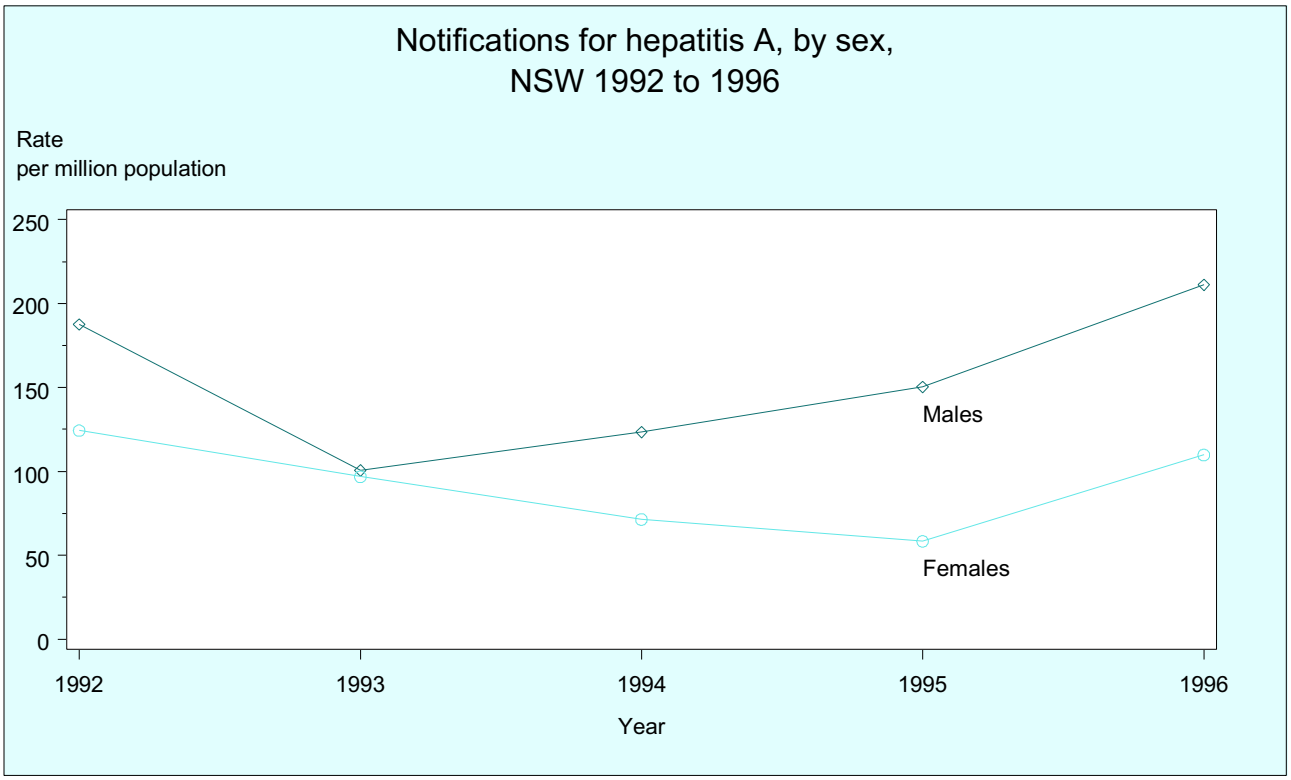
AIDS		1990	1991	1992	1993	1994	1995	1996
Number	Males	353	374	358	414	459	396	242
	Females	10	13	21	15	16	12	16
	Persons	363	388	381	431	477	408	259
Age-adjusted rate/million	Males	120.6	126.1	119.4	136.5	150.2	127.4	76.8
	Females	3.5	4.4	6.9	5.0	5.5	3.9	5.2
	Persons	62.7	66.0	64.0	71.5	78.5	66.0	41.3

Note: Data were generated on 8 September 1997. HIV included persons whose age/sex was unknown. AIDS excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Health Department Infectious Diseases Surveillance System (IDSS) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Human immunodeficiency virus (HIV) was first identified as the cause of acquired immunodeficiency syndrome (AIDS) in 1984. Persons infected with HIV may develop a two- to three-week nonspecific illness that resembles glandular fever. The infection then becomes latent for some years. Eventually, however, a progressive immunodysfunction develops, predisposing infected people to infectious diseases, tumours and other conditions.
- Laboratories that confirm HIV tests are required by law to notify cases of new diagnoses of HIV, and all doctors and hospitals are required to report cases of AIDS to NSW Health.
- Notification data indicate that the HIV epidemic continues in NSW, predominantly among males, although the rate among females is slowly, but steadily, rising. Statistical modelling indicates that the incidence of HIV infection declined in the mid- to late-1980s. The decline in AIDS cases and deaths in 1996 reflects a delay in notification.
- Community education, safe sex practices, avoidance of contaminated blood and blood products, contact tracing, and increasingly, early case identification and treatment, all contribute to the control of HIV in the community.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Yearly *Australian HIV Surveillance Report* of the National Centre for HIV Epidemiology and Clinical Research, University of NSW, Sydney.
Or contact your local Public Health Unit.



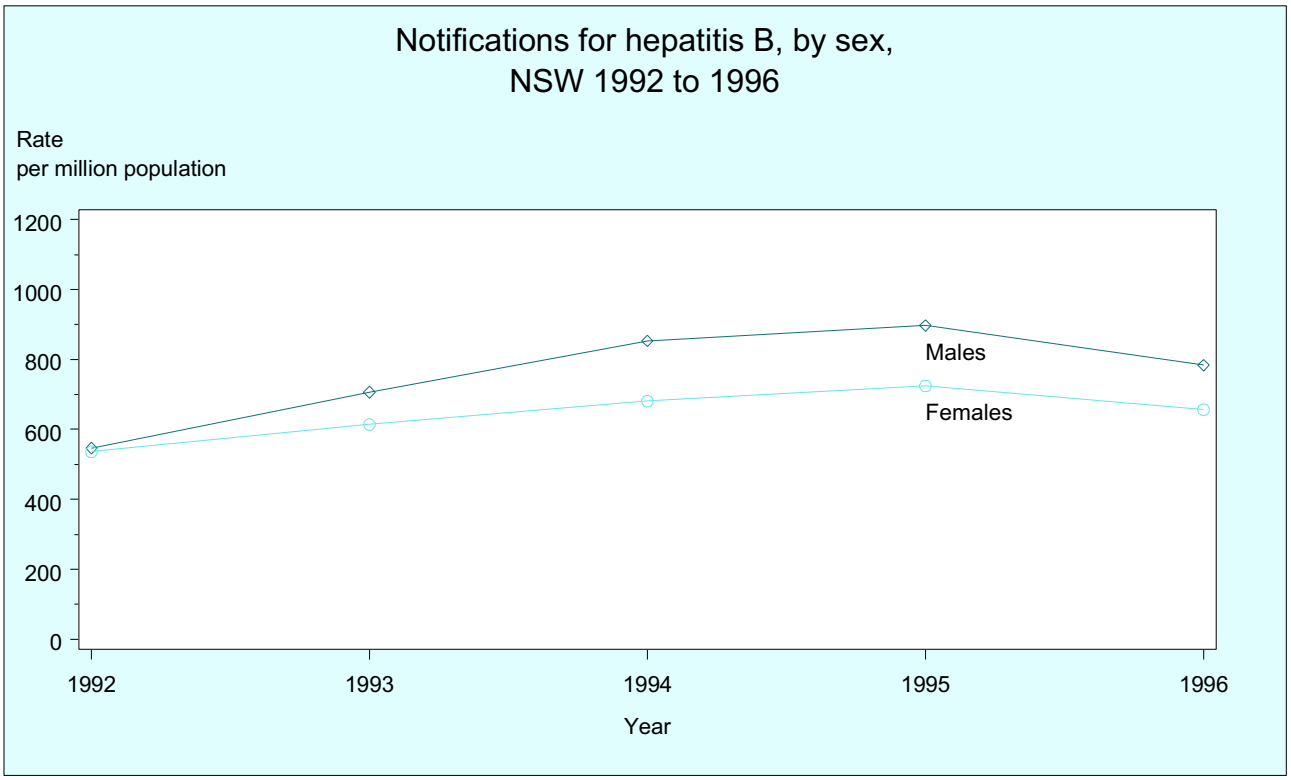
		1992	1993	1994	1995	1996
Number	Males	556	301	368	451	637
	Females	360	283	208	174	325
	Persons	924	590	582	625	963
Rate per million	Males	187.6	100.6	123.5	150.5	211.3
	Females	124.4	96.9	71.4	58.4	109.8
	Persons	157.4	99.6	98.7	104.9	161.0

Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Heatlh Department Infectious Diseases Surveillance System (IDSS) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Hepatitis A is caused by infection with the hepatitis A virus, and is transmitted by the faecal-oral route, most often from person to person or in food. The disease is characterised by general malaise, fever, abdominal discomfort, dark urine, pale stools and jaundice. Major epidemics occurred, mainly among gay men, in the Eastern Sydney Area in 1991 and 1996.
- Doctors, hospitals and laboratories are required by law to notify cases of hepatitis A to NSW Health.
- Prevention depends mainly on early reporting of cases, education about good hand washing and avoidance of food handling among cases, and administration of immunoglobulin to close contacts of cases.
- A hepatitis A vaccine was licensed in Australia in the early 1990s. It is recommended by the National Health and Medical Research Council for travellers to endemic countries, certain occupational groups, gay men, persons with chronic liver disease, blood product recipients and food handlers.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



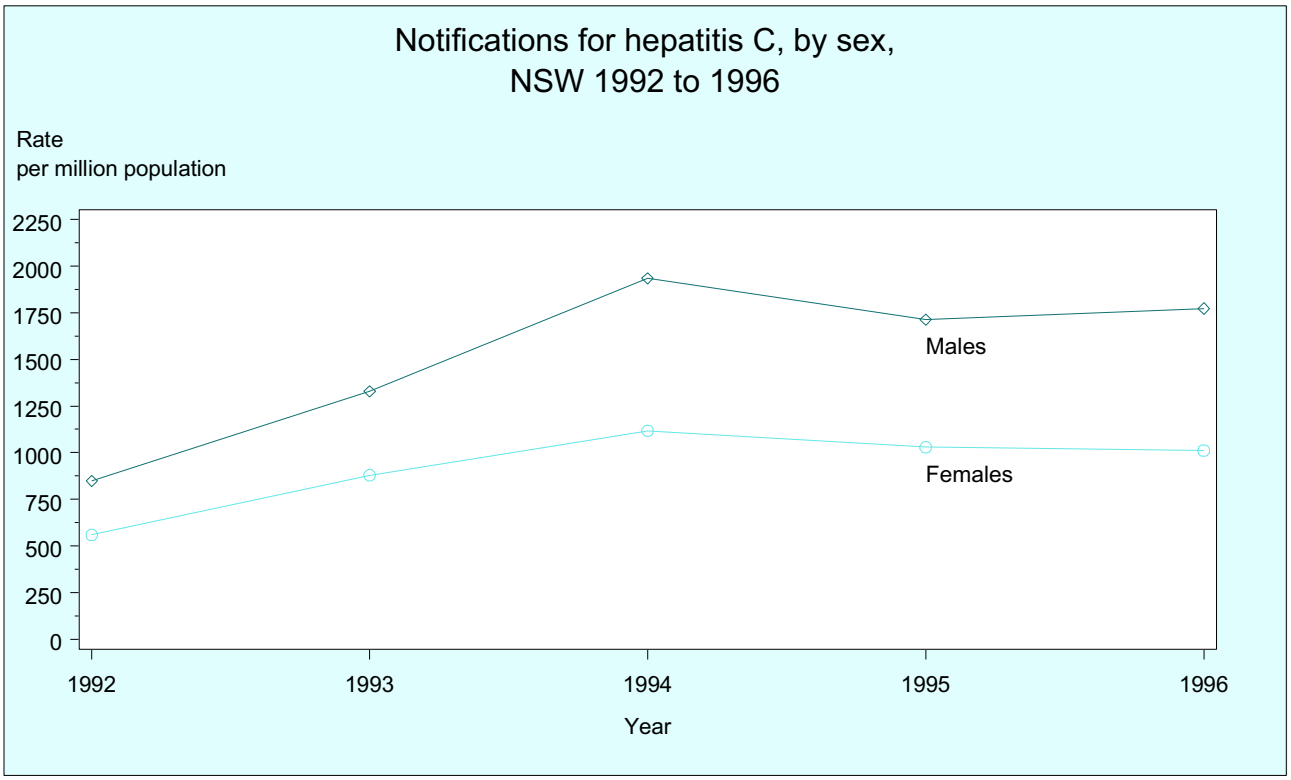
		1992	1993	1994	1995	1996
Number	Males	1628	2118	2575	2731	2415
	Females	1567	1804	2012	2164	1978
	Persons	3400	4010	4660	4961	4440
Rate per million	Males	546.7	706.9	852.8	897.6	784.7
	Females	536.4	614.2	681.4	724.5	656.4
	Persons	575.5	675.0	778.4	821.1	727.5

Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Hepatitis B is caused by infection with the 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 persons have no symptoms when first infected, but those who have experience anorexia, malaise, abdominal discomfort, and jaundice.
- Doctors, hospitals and laboratories are required by law to notify cases of hepatitis B to NSW Health. The notification data do not distinguish between persons acutely infected with hepatitis B (incident cases) and persons who carry the virus and were infected some time in the past.
- Prevention depends mainly on education of infectious persons (those who are surface-antigen positive) about modes of spread, avoidance of contact of their blood or sexual fluids with other persons, administration of vaccine to household contacts of persons who carry the virus and administration of hepatitis B immunoglobulin and vaccine to children born to infectious mothers.
- A hepatitis B vaccine has been available in Australia since in the early 1980s. It is recommended for persons at increased risk for the disease, and from 1997, for pre-adolescent children.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



		1992	1993	1994	1995	1996
Number	Males	2522	3958	5793	5183	5405
	Females	1649	2599	3330	3083	3067
	Persons	4222	6616	9264	8323	8547
Rate per million	Males	850.1	1330.1	1935.6	1715.6	1773.8
	Females	560.0	880.3	1118.7	1029.5	1012.5
	Persons	713.5	1114.9	1550.6	1381.5	1405.5

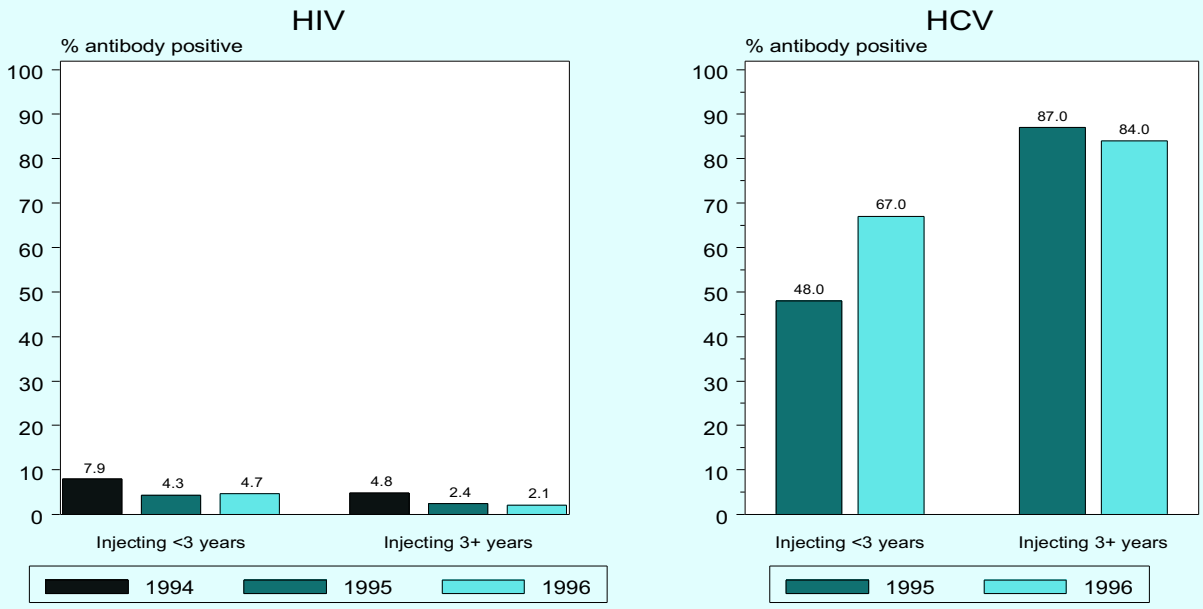
Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Source: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatients Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Hepatitis C is caused by infection with the hepatitis C virus, first discovered in 1990, and is transmitted mainly by contact with an infected person's blood. Today, most new infections are acquired through sharing contaminated needles and syringes. Most persons have no symptoms when first infected, but those who have experience anorexia, malaise, abdominal discomfort, and jaundice.
- Doctors, hospitals and laboratories are required by law to notify cases of hepatitis C to NSW Health. In practice, however, most notifications are made by laboratories of persons with antibodies to the virus.
- The notification data do not distinguish between persons acutely infected with hepatitis C (incident cases) and persons who carry the virus and were infected some time in the past. Hepatitis C is the most commonly reported infectious disease in NSW, and continues to represent a large burden of illness on the community.
- No vaccine against hepatitis C has been developed. Prevention depends on minimisation of the sharing of contaminated needles and syringes, primarily through education of injecting drug users, and provision of sterile needles through needle exchange programs.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.

Antibodies to human immunodeficiency virus (HIV) and hepatitis C virus (HCV), by injecting history, for clients of selected NSW needle exchanges, 1994 to 1996



		1994	1995	1996
% HIV positive (number tested)	Injecting <3 years	7.9 (38)	4.3 (23)	4.7 (43)
	Injecting >=3 years	4.8 (227)	2.4 (381)	2.1 (435)
	Not reported	0.0 (6)	0.0 (8)	0.0 (18)
	Total	5.2 (271)	2.4 (412)	2.2 (496)
% HCV positive (number tested)	Injecting <3 years	-	48.0 (23)	67.0 (43)
	Injecting >= 3 years	-	87.0 (381)	84.0 (435)
	Not reported	-	88.0 (8)	89.0 (18)
	Total	-	85.0 (412)	83.0 (496)

Note: Participating sites: Bourke Street, Kirketon Road, St George (Kogarah), Western Sydney AIDS Prevention Service (Harris Park and Blacktown).

Source: National Centre in HIV Epidemiology and Clinical Research, University of New South Wales, Sydney (unpublished data)

- Injecting drug use is an important risk behaviour for viruses transmitted via body fluids, such as human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C (HCV) virus.
- All clients attending selected NSW needle and syringe exchanges (three exchanges in 1994, four in 1995 and 1996) during one week (in February 1994, March 1995 and June 1996) were asked to complete a questionnaire and provide a finger-prick blood sample (or saliva sample in 1994). The response rate was 35, 40 and 48 per cent in 1994, 1995 and 1996, respectively.
- HIV prevalence among injecting drug users was low, except for men who also reported homosexual contact. Almost one-third of these men were HIV positive in each test period (30.3%, 23.1% and 28.1% in 1994, 1995 and 1996, respectively).
- HIV prevalence did not differ significantly with duration of injecting drug use.
- HCV prevalence was high among people new to injecting (though the number of people in this category was very small) and increased significantly with a longer history of injecting drug use.
- Heroin was reported as the last drug injected by 51 per cent in 1994, 31 per cent in 1995 and 39 per cent in 1996. 'Speed' was reported as the last drug injected by 15 per cent in 1994 and 9 per cent in 1995 and 1996. About 5 per cent of users each year reported cocaine as the last drug injected.
- At least daily injection was reported by increasing numbers of users (32%, 44% and 46% in 1994, 1995 and 1996, respectively). Many users reported reuse of a needle and syringe after someone else in the past month (25%, 33% and 30% in 1994, 1995 and 1996, respectively).

For more information, see: MacDonald et al., 'HIV prevalence and risk behaviour in needle exchange attenders: a national study', *Medical Journal of Australia,* Vol. 166, 1997, pp.237-240.

Notifications and hospital separations for food-borne illness, by sex, NSW 1992 to 1996 (notifications), NSW 1990/91 to 1995/96 (separations)

Notifications		1992	1993	1994	1995	1996
Number	Males	408	567	559	713	625
	Females	403	431	561	684	620
	Persons	820	1006	1126	1402	1248
Rate per million	Males	132.4	187.8	181.2	233.1	205.3
	Females	133.9	143.4	187.5	227.5	204.9
	Persons	134.1	166.9	185.4	230.6	205.5

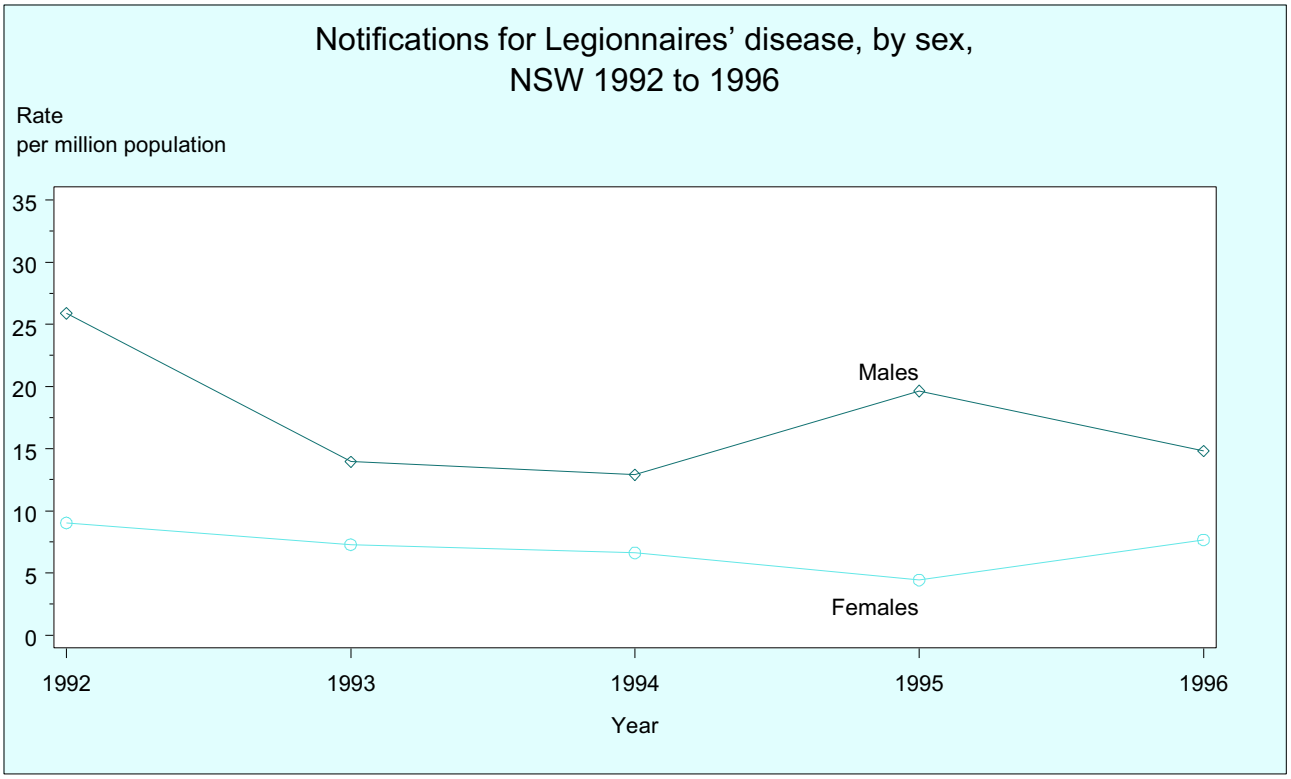
Separations		90/91	91/92	92/93	93/94	94/95	95/96
Number	Males	269	264	266	277	329	307
	Females	260	254	307	258	310	333
	Persons	529	518	573	535	639	640
Rate per million	Males	92.7	89.2	90.6	93.3	109.8	102.1
	Females	87.8	86.3	101.5	86.4	102.2	108.0
	Persons	90.0	87.8	95.8	89.4	105.9	105.2

Note: Data were generated on 23 October 1997 and excluded persons whose age was unknown and included whose sex unknown. Notification rates were age-adjusted using the Australian population as at 30 June 1991. Food poisoning separations were classified according to the ICD-9 codes 003 or 005 or the poisoning external cause code E865. Hospital separation rates were age-adjusted using the Australian population as at 30 December 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, West Australia or Queensland.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatients Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Salmonella infection is the most frequently reported notifiable food-borne disease.
- The incidence of salmonella infection and food poisoning generally appears to be increasing in many industrialised nations. This can largely be explained by the changing patterns of food consumption, including the increasing popularity of takeaway and pre-prepared foods and the increasing variety and availability of novel and unconventional food products.
- Only a small proportion of cases of salmonella infection are clinically investigated and reported, so the true rate of infection is likely to be much higher than the data suggest.
- Infants and young children are the most vulnerable to salmonella infection, and the rate of reported infections in this age group is higher than for all other ages.
- The NSW notification rate for salmonella infection has been lower than the national rate in recent years.
- Hospitalisations following food poisoning in NSW increased slightly over the period 1990/91 to 1995/96. Only a small proportion of food poisoning cases are serious enough to require hospitalisation.
- The NSW Health Department's Food and Nutrition Unit is developing a statewide computerised food safety surveillance system to enhance coordination of activities directed at improving food safety.

For more information, see: The Commonwealth Department of Health and Family Services *Communicable Diseases Intelligence* Web site http://www.health.gov.au/pubs/cdi/cdihtml.htm
US Food and Drug Administration *Bad Bug Book* Web site http://vm.cfsan.fda.gov/~mow/intro.html
CSIRO Division of Food Science and Technology Web site http://www.dfst.csiro.au/



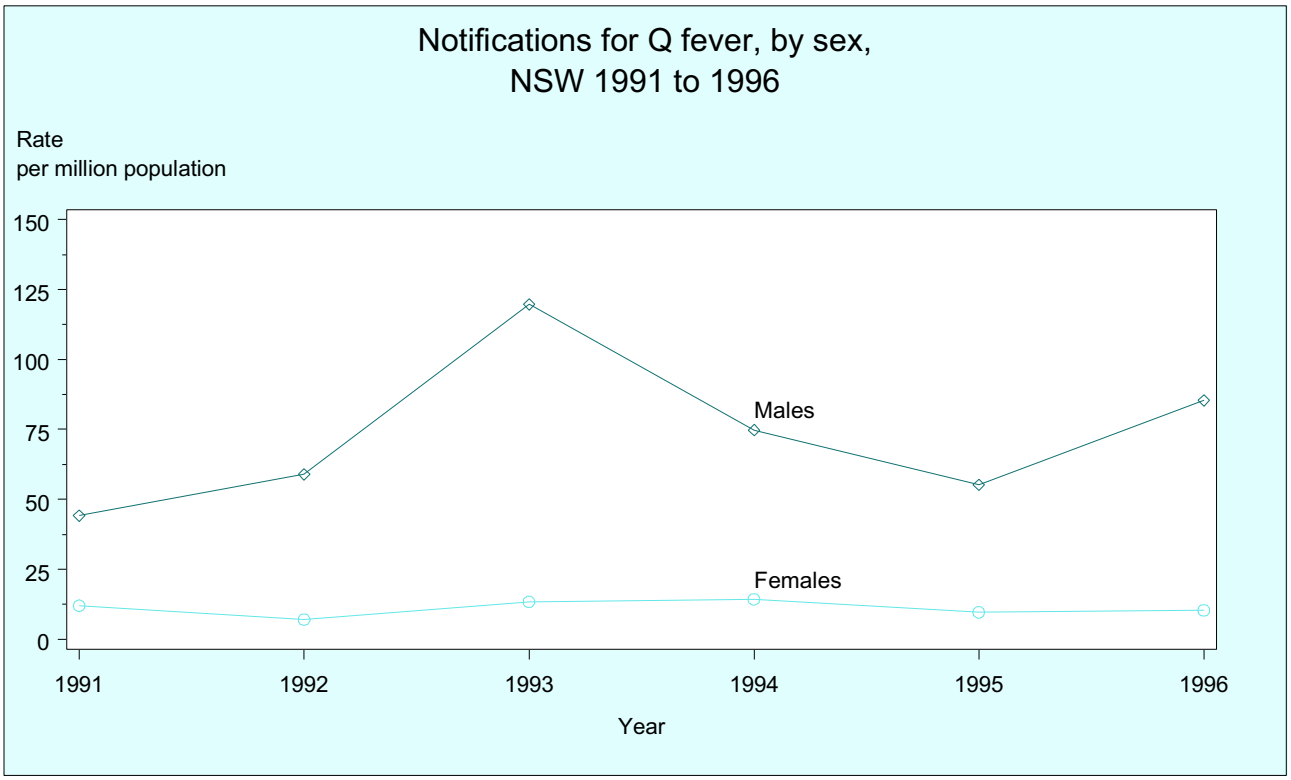
		1992	1993	1994	1995	1996
Number	Males	76	41	39	60	45
	Females	29	24	21	15	26
	Persons	105	66	60	76	71
Rate per million	Males	25.9	14.0	12.9	19.6	14.8
	Females	9.0	7.3	6.6	4.4	7.7
	Persons	17.1	10.5	9.6	11.7	10.9

Note: Data was generated on 9 October 1997. NSW population as at 30 June each year. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Health Department's Infectious Diseases Surveillance System (IDSS) data and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Legionnaires' disease is caused by *Legionella pneumophila* which is often associated with air conditioning cooling towers and also *Legionella longbeachea* which has been associated with potting mix.
- Up to 39 per cent of people admitted to hospital with Legionnaires' disease die, but deaths can be reduced by early detection and treatment (Benenson 1995).
- There were 71 notifications for Legionnaires' disease in NSW in 1996. Notification numbers have been highly variable in recent years, with a peak in 1992 of 105 notifications.
- Notifications appear to represent mainly individual unrelated cases rather than outbreaks, although there is evidence that there may be many undiagnosed cases of *Legionella* infection in the community for each case of Legionnaires' disease diagnosed and notified (Broadbent 1996).
- In 1996, there were 26 notifications for females (7.7 per million population) and 45 for males (14.8 per million population). Males appear to be generally more at risk of Legionnaires' disease, particularly if they are smokers.

References: Benenson AS (ed.), *Control of communicable diseases*, 16th edition, American Public Health Association, Washington DC, 1995.
Broadbent C, *Guidance for the control of Legionella*, National Environmental Health Forum Monographs, Water series no. 1, Adelaide, 1996.
For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



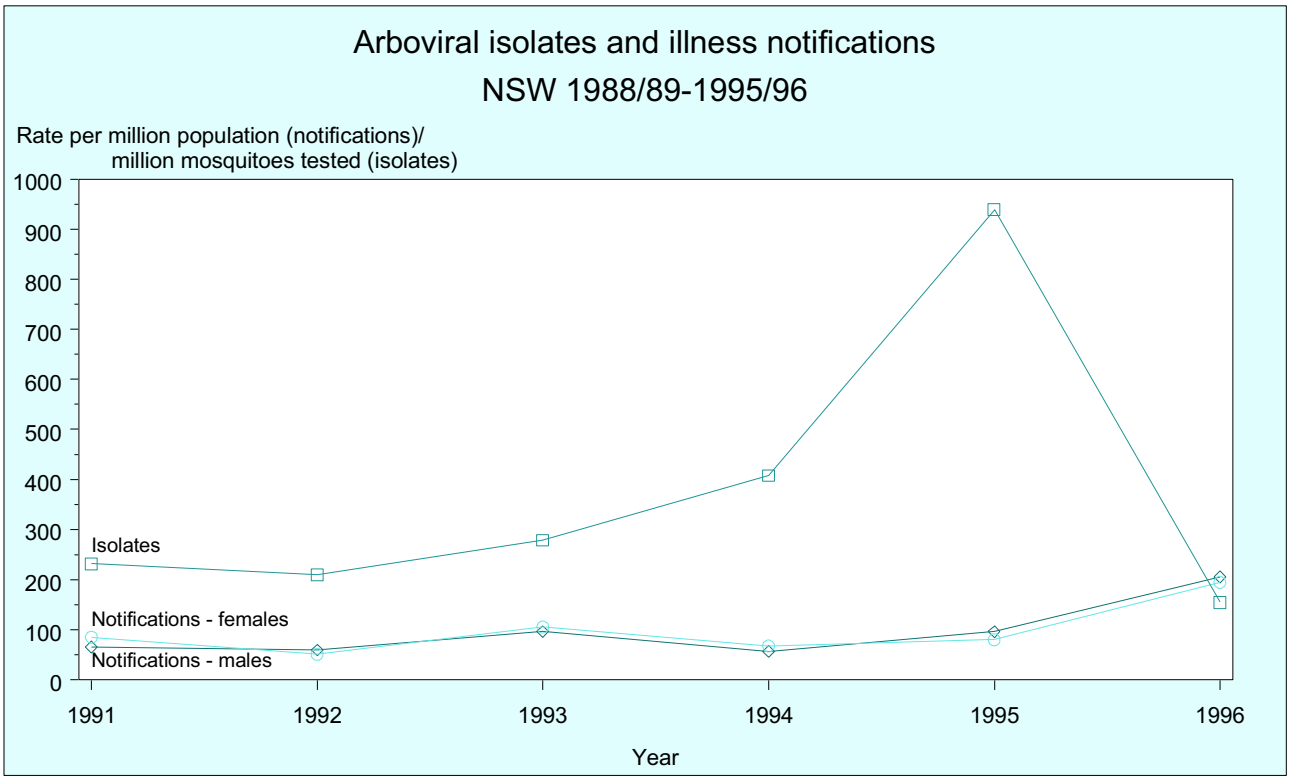
		1991	1992	1993	1994	1995	1996
Number	Males	130	174	353	223	171	261
	Females	35	21	40	43	30	33
	Persons	165	201	404	268	203	294
Rate per million	Males	44.2	58.9	119.7	74.8	55.2	85.4
	Females	12.0	7.1	13.4	14.3	9.7	10.4
	Persons	28.1	34.0	68.7	45.1	33.0	48.2

Note: Data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.

Sources: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatients Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Q fever is a zoonotic disease caused by infection with the rickettsia *Coxiella burnetti*. It is transmitted usually by inhalation of dust contaminated by birth products or faeces of certain animals (including sheep, cattle, and goats), and is especially associated with abattoirs. Symptoms include sudden onset of chills, headache, weakness, malaise and sweats. It may be complicated by endocarditis in a minority of patients.
- Laboratories are required by law to notify cases of Q fever to NSW Health.
- Despite a highly effective vaccine, notification data indicate cases are still occurring unnecessarily among occupational groups including (mainly male) abattoir workers and farmers. Several abattoir-associated outbreaks have been reported in rural areas of the state in the 1990s.
- Prevention depends mainly upon implementation of vaccination programs in at-risk workplaces such as abattoirs.

For more information, see: *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.



			1991	1992	1993	1994	1995	1996
Notifications	Number	Males	192	179	292	174	300	645
		Females	253	152	320	207	249	620
		Persons	446	333	628	382	551	1268
	Rate per million	Males	65.3	59.8	96.9	56.6	96.4	205.9
		Females	85.4	51.1	105.6	67.7	80.1	194.8
		Persons	75.5	55.6	104.1	62.1	88.4	200.4
Arboviral isolates	Rate per million mosquitos		232	210	279	408	939	155

Note: Notification data were generated on 8 September 1997 and excluded persons whose age was unknown. Rates were age-adjusted using the Australian population as at 30 June 1991.The mosquito collection period commences during November and runs to April. The 1989/90 period is listed under 1990, 1990/91 under 1991 and so on.

Source: NSW Health Department Infectious Diseases Surveillance System (IDSS) and Inpatients Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department and NSW Arbovirus Surveillance & Mosquito Monitoring Program, 1995/96

- In NSW, the main arboviral infections of human concern are caused by Ross River virus (RRV) and Barmah Forest virus (BFV). Both are transmitted by mosquitos, and affect most areas of the state outside Sydney. Symptoms can range from none to rash, fever, painful and swollen joints, and chronic fatigue. Some of these may last many weeks or months.
- Laboratories are required by law to notify cases of arbovirus infection to NSW Health.
- Arboviral illness notifications were relatively constant over the period 1990 to 1995, with a sharp rise in 1996 owing to a record number of reported RRV infections.
- Rates of isolation of arboviruses from mosquitos were relatively constant in the period 1989/90-1993/94, but rose sharply in 1994/95. Most of this peak was due to BFV from an outbreak on the NSW south coast. BFV emerged as a problem in this year and prior to this was not routinely tested for by general practitioners or laboratories. There were no isolates of BFV in 1995/96.
- No vaccination has been developed for RRV or BFV infections. Prevention depends on the reduction of exposure to mosquitos through environmental control and personal protection.

For more information, see: Russell RC et al., *NSW arbovirus surveillance and mosquito monitoring program 1995 - 1996*, NSW Health Department, Sydney, 1996.
See *NSW Public Health Bulletin* for monthly updates, and *NSW Infectious Diseases Annual Report, 1996*, in press.
NSW Public Health Bulletin Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html
Communicable Diseases Intelligence (CDI) is a fortnightly publication of the Commonwealth Department of Health and Family Services and the Communicable Diseases Network of Australia and New Zealand, Web site at http://www.health.gov.au/pubs/cdi/cdihtml.htm
Or contact your local Public Health Unit.

Chapter 4.7

Mental health

- Around 18 per cent of NSW children and adolescents meet criteria for mental health problems at some time during a six-month period.
- More boys than girls have mental health problems.
- Delinquent problems, thought problems, attention problems and social problems are the most common mental health problems among children.
- Nearly 30 per cent of NSW adults may have at least one mental health disorder at some time during a 12-month period.
- The most common mental disorders in adults are major depressive episode, simple phobia, social phobia and alcohol dependence. Around 1 in 4 women and 1 in 6 men will experience depression in their lifetime.
- Overall rates for suicide deaths have remained fairly constant since the 1960s, but the patterns of these deaths have changed.
- In 1994, 797 deaths in NSW were caused by suicide or self-inflicted injury. Most of these deaths were in males.
- Suicide death rates varied by age. Among males, they were highest for young men aged 20-24 and men aged 80 and over. Female death rates were highest among women aged 35-39.
- Death rates from suicide among young men aged 15-24 years have risen steadily in NSW over the past 15 years, while remaining relatively stable among young women.

In this chapter

Introduction

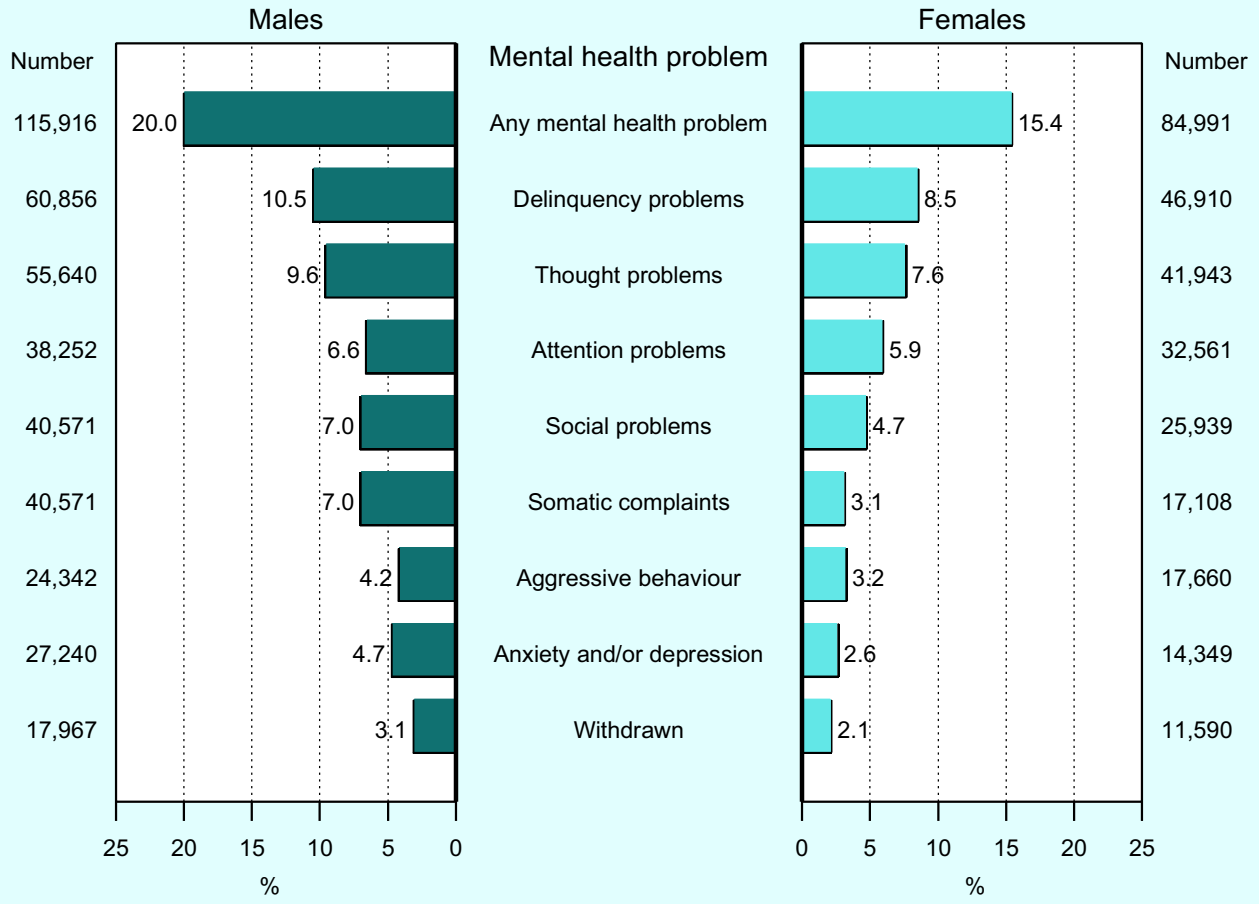
At present we lack accurate estimates of the prevalence and incidence of mental disorders in NSW for children and adults.

The Australian National Survey of Mental Health and Wellbeing (Child and Adolescent), which will be conducted in 1998 and the Australian National Survey of Mental Health and Wellbeing (currently under way) will help address this problem.

In this chapter, prevalence estimates from population surveys in Western Australia (children) and the United States (adults) have been used to give estimates of the numbers of NSW residents with mental health problems.

For details of the methods used for analysing death and hospital morbidity data, refer to the Methods section (page 257)

Estimated 6-month prevalence of mental health problems, by sex, children aged 4-16 years, NSW 1996



Note: Estimated prevalence from the Western Australian Child Health Survey was applied to NSW population for 1996.

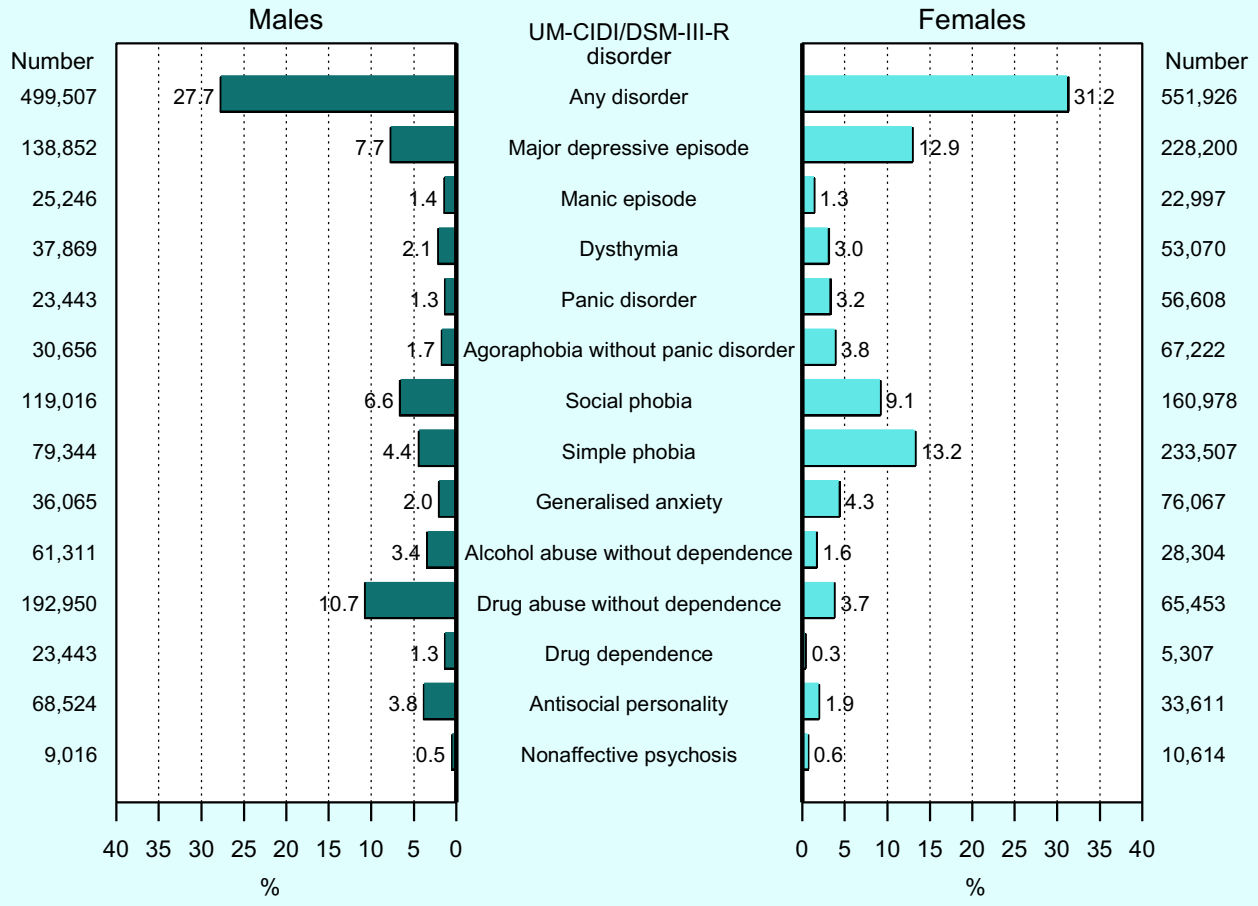
Sources: Zubrick SR, et al., *Western Australian Child Health Survey: Developing health and well-being in the nineties*, ABS and Institute for Child Health, Perth, 1995. ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- A major difficulty in planning mental health services in NSW is the lack of accurate estimates of the prevalence and incidence of mental disorders.
- In 1998, the Australian National Survey of Mental Health and Wellbeing (Child and Adolescent) will estimate the prevalence of mental health problems and mental disorders. In the interim, it is useful to extrapolate from data from the Western Australian Child Health Survey (Zubrick et al. 1995).
- Using this method, an estimated 18 per cent of children and adolescents meet criteria for mental health problems during a six-month period. This is consistent with similar studies in Australia and overseas, which have reported the prevalence of significant mental health problems in children and adolescents as between 16 and 20 per cent.
- It is estimated that more NSW boys (115,916) than girls (84,991) have mental health problems.
- Delinquent problems, thought problems, attention problems and social problems are the most common mental health problems among children. Sixty-eight per cent of children with a mental health problem have more than one problem (Zubrick et al. 1995).
- Mental health problems are associated with a three-fold relative risk of drug and alcohol use (SAHMSA 1996) and a similar risk of performing below grade level at school (Zubrick et al. 1997).

References: Zubrick SR, et al., *Western Australian Child Health Survey: Developing health and well-being in the nineties*, ABS and Institute for Child Health, Perth., 1995
Zubrick SR et al., *Western Australian Child Health Survey: Education health and competence*, ABS and TVW Telethon Institute of Child Health Research, Perth, 1995.
SAHMSA, *Mental health estimates from 1994 National Household Survey of Drug Use*, US Department of Health and Human Services. Public Health Service, Maryland, 1996.

For more information, see: NSW Suicide Prevention Statement, NSW Health Department, Sydney,1997.
NHMRC *Clinical practice guidelines: Depression in young people- a guide for general practitioners*, NHMRC, Canberra, 1997.

Estimated 12-month prevalence of mental disorders, by sex, persons aged 15-64 years, NSW 1996



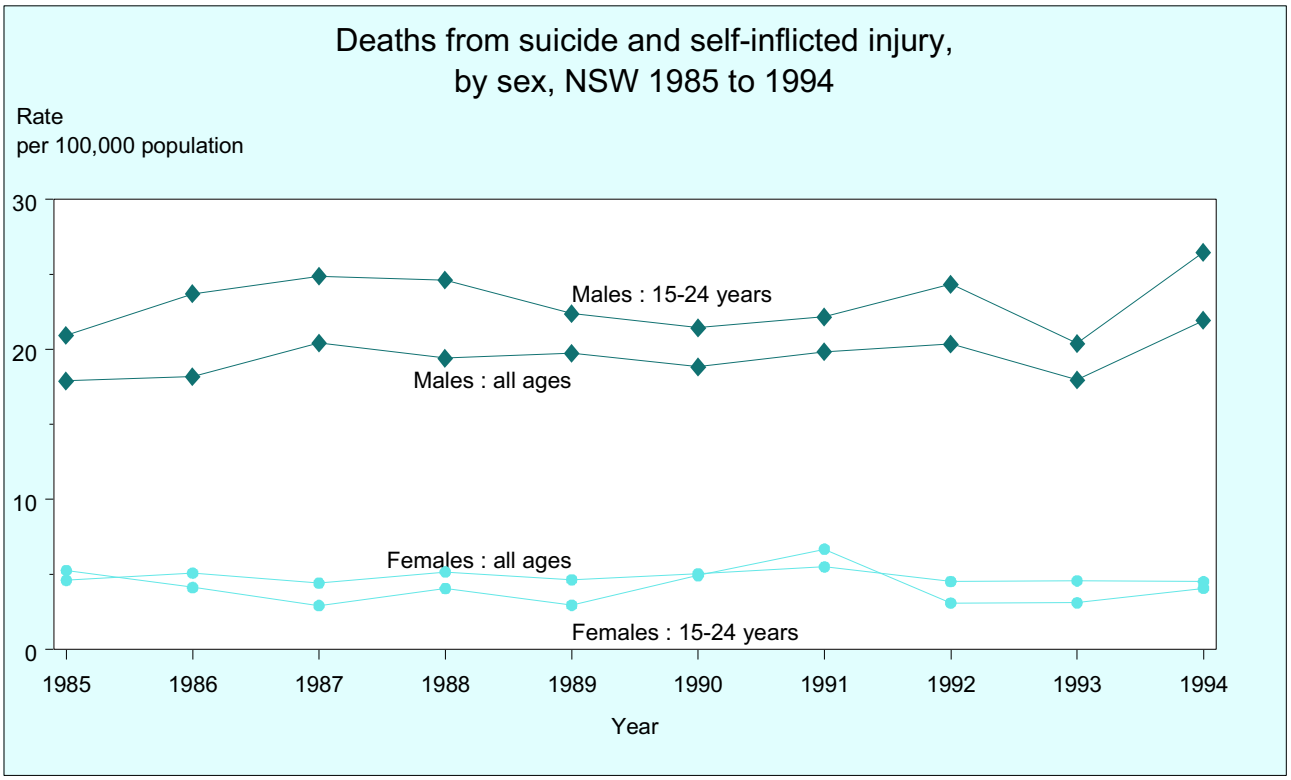
Note: Estimated 12-month prevalence from the United States National Comorbidity Survey was applied to NSW population for 1996. UM-CIDI = University of Michigan, Composite International Diagnostic Interview, version 1.0. DSM-III-R = *Diagnostic and Statistical Manual of Mental Disorders*, third edition.

Sources: Kessler RC, et al., 'Lifetime and 12-month prevalence of DSM-IIIR psychiatric disorders in the United States'. *Archives of General Psychiatry*, Vol. 51, 1994, pp. 8-19. ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- We currently lack accurate local estimates of the prevalence and incidence of mental disorders in NSW. The Australian National Survey of Mental Health and Wellbeing (currently under way) will help address this problem. Until these data are available (1998), prevalence data from the US National Comorbidity Survey have been used to estimate prevalence in NSW.
- Nearly 30 per cent of NSW adults may have at least one mental health disorder at some time during a 12-month period.
- The most common disorders are major depressive episode, simple phobia, social phobia and alcohol dependence.
- Around 1 in 4 women and 1 in 6 men will experience depression in their lifetime. The estimated 12-month prevalence of depressive disorders (major depressive episode, manic episode and dysthymia) is about 8.5 per cent (males) and 14.1 per cent (females) (Kessler et al. 1994).
- Depression causes a substantial burden of morbidity, disability and mortality. Even with as few as only two depressive symptoms, it is associated with household and financial strain, limitations in physical, social and job functioning, and poor health status (Judd et al. 1996).
- Depression is a highly preventable and treatable disorder.

References: Kessler RC, et al., 'Lifetime and 12-month prevalence of DSM-IIIR psychiatric disorders in the United States'. *Arch Gen Psychiatry*, Vol. 51, 1994, pp. 8-19.

Judd LL, et al., 'Socioeconomic Burden of Subsyndromal Depressive Symptoms and Major Depression in a Sample of the General Population', *American Journal of Psychiatry*, Vol. 153, 1996, pp. 1411-1417.



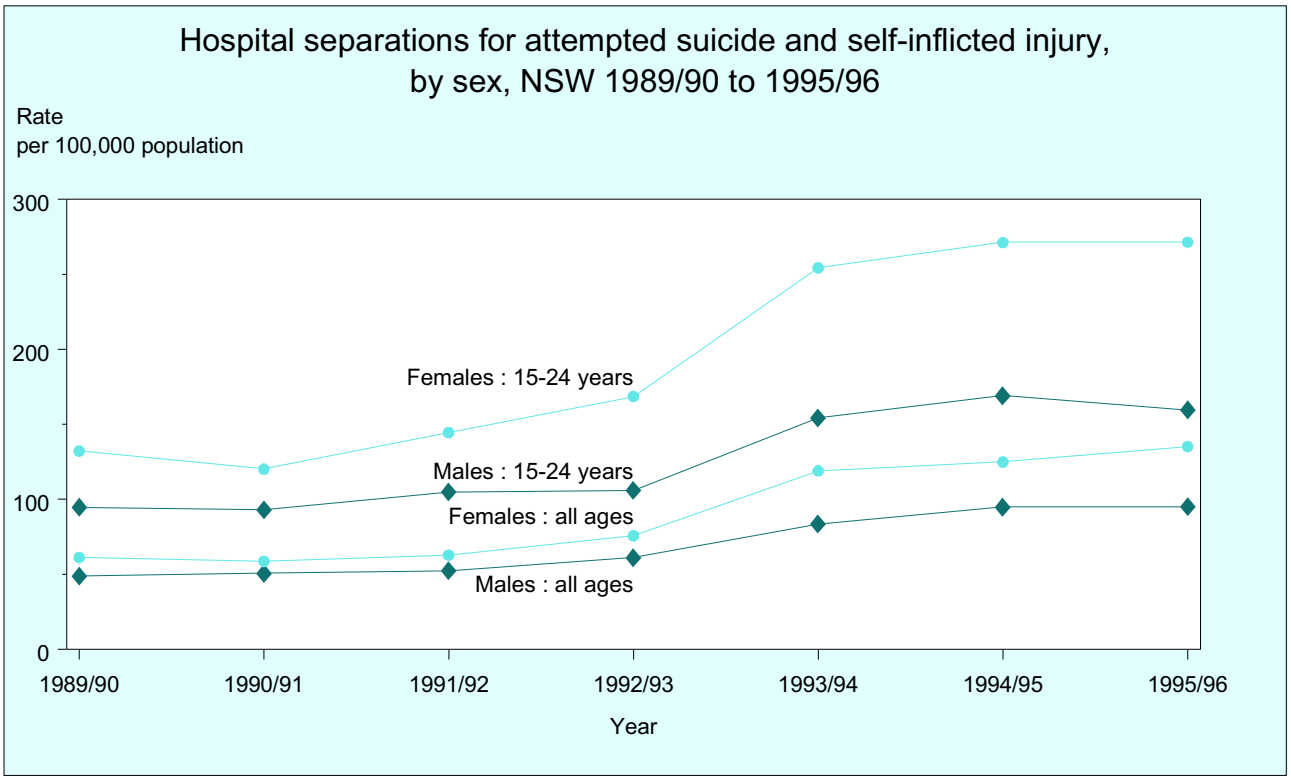
			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
NSW												
Rate	All ages	Males	17.9	18.2	20.4	19.4	19.7	18.9	19.8	20.4	18.0	21.9
per 100,000		Females	4.6	5.1	4.4	5.2	4.6	5.0	5.5	4.5	4.6	4.5
		Persons	11.1	11.5	12.2	12.2	12.1	11.8	12.5	12.3	11.1	13.1
	15-24 years	Males	20.9	23.7	24.9	24.6	22.4	21.5	22.2	24.3	20.4	26.5
		Females	5.3	4.1	2.9	4.1	2.9	4.9	6.7	3.1	3.1	4.1
		Persons	13.3	14.1	14.1	14.6	12.9	13.4	14.6	13.9	11.9	15.5
AUSTRALIA												
Rate	All ages	Males	18.8	19.8	22.5	21.5	20.1	20.7	21.7	21.1	19.3	-
per 100,000		Females	5.1	5.7	5.8	5.6	5.2	4.9	5.9	5.3	4.4	-
		Persons	11.8	12.6	13.9	13.4	12.5	12.7	13.7	13.1	11.7	-

Note: Suicide and self-inflicted injury were classified according to the ICD9 external cause codes E950-959. NSW population estimates at 31 December each year. Death rates were age-adjusted using the Australian population at 30 June1991.

Source: ABS Mortality data and population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department. Figures for Australia are from Abraham, B., d'Espaignet, E.T. & Stevenson, C., 1995, Australian Health Trends, AIHW, Canberra.

- Overall rates for suicide deaths have remained fairly constant since the 1960s, but the patterns of these deaths have changed. Suicide replaced road vehicle accidents as the leading cause of injury death in males in NSW from 1991 onwards.
- In 1994, 797 deaths in NSW were caused by suicide or self-inflicted injury. Most of these deaths (82%) were in males.
- Suicide death rates varied by age. Among males, they were highest for young men aged 20-24 (accounting for 16% of all suicide deaths) and men aged 80 and over (3%). Female death rates were highest among women aged 35-39.
- Death rates from suicide among young males aged 15-24 years have risen steadily in NSW over the past 15 years, while remaining relatively stable among young women.
- In 1994, hanging was the leading method of suicide death for both males (29% of male suicides) and females (20%). The rate of suicide by hanging in males more than doubled between 1985 and 1994, and hanging replaced firearms as the leading method of suicide from 1985 onwards.
- In males, other leading causes of suicide death were poisoning by motor vehicle exhaust gas (20% of male suicides) and firearms (18%). The rate of suicide by firearms decreased by one-third between 1985 and 1994.
- In females, the second leading cause of suicide death was poisoning by tranquillizers and other psychotropic agents (18% of female suicides).

For more information, see: *NSW suicide prevention statement*, NSW Health Department, Sydney, 1997.
The *NSW Public Health Bulletin* Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html



		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	48.9	50.8	52.3	61.1	83.6	95.0	95.0
	Females	61.3	58.8	62.9	75.9	119.6	125.4	135.7
	Persons	54.8	54.5	57.5	68.3	101.1	109.8	115.0
15-24 years	Males	94.7	93.1	104.4	104.6	151.5	165.4	156.1
	Females	132.2	120.2	144.5	168.4	254.7	270.4	270.5
	Persons	113.0	106.3	123.9	135.7	201.8	216.6	211.9

Note: Attempted suicide and self-inflicted injury were classified according to the ICD9-CM external cause codes E950-959. NSW population estimates as at 31 December each year. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Source: NSW Health Department Inpatient Statistics Collection (ISC) and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- For every suicide death, between 30 and 40 people attempt suicide. Very little information is available on suicide attempts, except for those resulting in admission to hospital.
- Only about 7 per cent of those who make a fatal suicide attempt reach hospital before they die. In 1995/96, suicide attempts accounted for 6944 episodes of inpatient care, 4028 (58%) for females and 2916 (42%) for males.
- The rates of inpatient episodes for attempted suicide increased by about 80 per cent (males) and 115 per cent (females) in the period 1991/92-1995/96. Prior to this the rates were stable. Factors contributing to this dramatic change may include changes in hospital admission policies, or judgements of the patient's intent.
- In females in 1995/96, hospitalisation following attempted suicide peaked in the 15- to 24-year age group. For those over age 25, the hospitalisation rate declined with increasing age, levelling out above age 60.
- In males, hospitalisation following attempted suicide peaked in the 20-29 age group. For those over age 29, the rate declined with increasing age, levelling out above age 60 before a second peak above age 84.
- Poisoning by medicinal agents was the cause attributed to 87 per cent of suicide attempts resulting in admission to hospital in females and 70 per cent in males. The major substances for both sexes were tranquillisers and other psychotropic agents, accounting for 48 per cent of all such suicide attempts in females and 39 per cent in males. Analgesics, antipyretics and antirheumatics were the next most common substances, accounting for 23 per cent in females and 15 per cent in males.

For more information, see: *NSW suicide prevention statement*, NSW Health Department, Sydney, 1997.
The *NSW Public Health Bulletin* Web site at http://www.health.nsw.gov.au/public-health/phb/phb.html

Chapter 4.8

Dental health

- In 1996, approximately two-thirds of NSW kindergarten children had experienced no tooth decay. Kindergarten children had on average one decayed, missing or filled tooth.
- In the same year, 57 per cent of NSW children in grade 6 had experienced no tooth decay. Grade 6 children had on average one decayed, missing or filled tooth.
- Hospitalisations for the removal or restoration of teeth among infants and young children aged 0-4 years increased slightly over the period 1988/89 to 1994/95. The main reason for inpatient dental care of children in this age group is rampant dental caries caused by the prolonged daily use of nursing bottles.
- Hospitalisations for the removal or restoration of teeth among children aged 5-14 years rose by almost 30 per cent over the same period. The main reason for inpatient dental care of children in this age category is extensive dental caries.
- Hospitalisations for removal and restoration of teeth in persons aged over 15 years increased by around 60 per cent in males and almost 70 per cent in females over the period 1988/89 to 1994/95.
- Most admissions for people aged 15-24 years are for removal of impacted teeth (for example, wisdom teeth).
- Among persons aged 25 years and over, most admissions are for removal of teeth for dental caries or periodontal disease.

In this chapter

Introduction

Data presented in this chapter come from three main sources.

Data on the dental health of children aged 0-14 years for the period 1986 to 1995 were collected from around 1.5 per cent of all NSW children, sampled from the 26 per cent of children who attended public dental services. They did not include children attending private practitioners (an estimated 40% of all NSW children) or those who did not use either public or private dental care (34%).

Data for children for 1996 are not directly comparable with earlier data because they come from the Save Our Kids Smiles (SOKS) program, a schools-based risk assessment and managed care program for all NSW children in years K, 2, 4, 6 and 8.

Data on hospitalisation for removal or restoration of teeth come from the NSW Inpatient Statistics Collection. For details of the methods used for analysing these, refer to the Methods section (page 257).

Mean DMFT score and decay-free rate in six-year-old children, NSW 1986 to 1996

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Mean DMFT scores	2.0	2.0	1.9	2.5	2.2	2.1	2.1	2.1	2.0	1.9	1.0
Decay free rates (%)	50.2	50.3	51.6	47.8	52.4	48.3	54.7	50.8	48.8	54.5	66.2

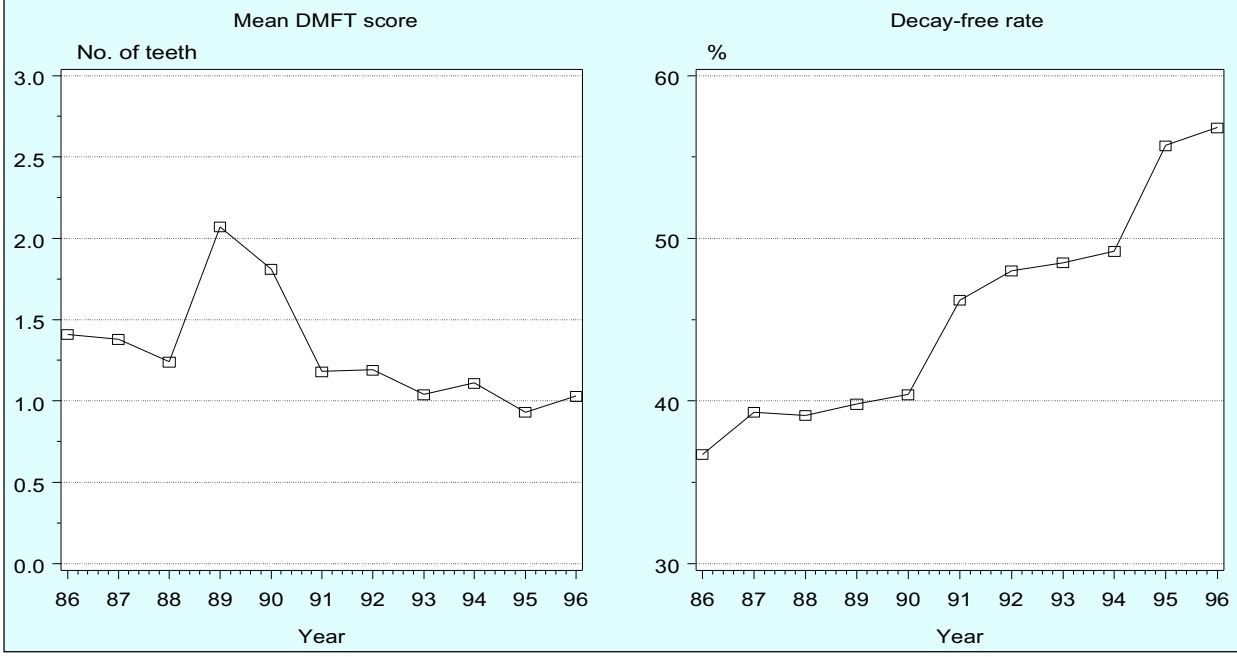
Note: Data from 1996 are not directly comparable with other years. Mean DMFT score=mean number of decayed, missing or filled primary and secondary teeth (dmft+DMFT). Decay-free=no decayed, missing or filled primary or secondary teeth (dmft+DMFT=0).

Source: 1986 to 1995: AIHW Child Dental Health Survey Reports, 1996: Save Our Kids' Smiles (SOKS) database, Dental Health Branch, NSW Health Department.

- Oral health of children is most commonly assessed by their dental caries (decay). The score for decayed, missing or filled teeth (DMFT) is the sum of the number of teeth affected by decay, including teeth filled or missing because of decay. DMFT scores for 6-year-old children reflect caries experience in primary and permanent teeth.
- The decay experience of NSW six-year-olds was relatively constant in the period 1986 to1995. These data were collected from around 1.5 per cent of NSW kindergarten children, sampled from the 26 per cent of children who attended public dental services. They did not include children attending private practitioners (an estimated 40% of all NSW children) or those who did not use either public or private dental care (34%). Children attending public dental services tended to come from two distinct groups: children of parents who are highly motivated and often socioeconomically advantaged, and children in urgent need of dental care.
- The figures shown for 1996 are not directly comparable because they come from the Save Our Kids Smiles (SOKS) program, a schools-based risk assessment and managed care program for all NSW children in years K, 2, 4, 6 and 8.
- The SOKS program commenced in 1996, with the long-term objective of preserving permanent teeth and increasing the number of children who have no experience of dental disease. In the first year of operation, 66 per cent of children had parental consent for an assessment, and 221,806 children were assessed.
- The figures for 1996 are for all kindergarten children assessed by SOKS (median age 5 years 9 months), representing 79 per cent of all NSW kindergarten children.
- In 1996, approximately two-thirds of NSW kindergarten children assessed by the SOKS program had experienced no tooth decay. The children had on average one decayed, missing or filled tooth.

For more information see: AIHW Dental Statistics Research Unit, *Child Dental Health Survey*, DSRU, Adelaide, 1986-1995.
NSW Health Department, *Child dental health report*, in press.
National Health Strategy, *Improving dental health in Australia*, Background paper no. 9, National Health Strategy, Canberra, 1992.
Australian Dental Association Web site at http://www.ozemail.com.au/~adainc/info/index.htm

Mean DMFT score and decay-free rate in 12-year-old children, NSW 1986 to 1996



	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Mean DMFT scores	1.4	1.4	1.2	2.1	1.8	1.2	1.2	1.0	1.1	0.9	1.0
Decay free rates (%)	36.7	39.3	39.1	39.8	40.4	46.2	48.0	48.5	49.2	55.7	56.8

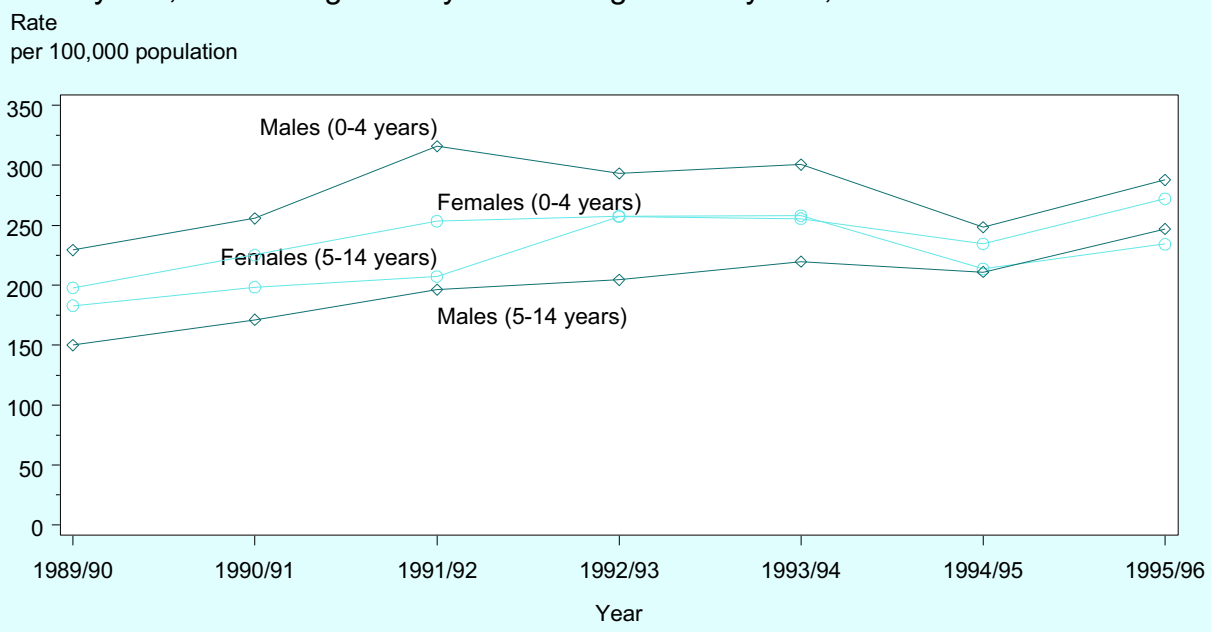
Note: Data from 1996 are not directly comparable with other years. Mean DMFT score=mean number of decayed, missing or filled primary and secondary teeth (dmft+DMFT). Decay-free=no decayed, missing or filled primary or secondary teeth (dmft+DMFT=0).

Sources: 1986-1995: Child Dental Health Survey Reports, 1996: Save Our Kids' Smiles (SOKS) database, Dental Health Branch, NSW Health Department.

- Oral health of children is most commonly assessed by their dental caries (decay). The score for decayed, missing or filled teeth (DMFT) is the number of teeth affected by decay, including teeth filled or missing because of decay. DMFT scores for 12-year-old children reflect caries experience in permanent and some primary teeth.
- The DMFT score of NSW 12-year-olds declined slowly between 1986 and 1996, but was higher than the national average (AIHW 1986-1995). In the same period, the proportion of children who were decay-free increased rapidly, from 36.7 per cent to 55.7 per cent. This indicates that children who had experienced decay in 1996 (at 2.4 DMFT) had a greater disease burden than their counterparts a decade before (2.2 DMFT).
- The data for the period 1986 to 1995 were collected from around 1.5 per cent of NSW children , sampled from the 26 per cent of children who attended public dental services (see page 251).
- Although consistent with previous data, the figures shown for 1996 are not directly comparable because they come from the Save Our Kids Smiles (SOKS) program, a schools-based risk assessment and managed care program for all NSW children in kindergarten and years 2, 4, 6 and 8 (see page 251).
- The figures for 1996 are for all children in grade 6 assessed by SOKS (median age 11 years 9 months), representing 61 per cent of all NSW children in grade 6.
- In 1996, 57 per cent of NSW children in grade 6 assessed by the SOKS program had experienced no tooth decay. The children had on average one decayed, missing or filled tooth.

Reference:
AIHW Dental Statistics Research Unit, *Child Dental Health Survey*, DSRU, Adelaide, 1986-1995.
For more information, see:
NSW Health Department, *Child Dental Health Report*, in press.
National Health Strategy, *Improving Dental Health in Australia*, Background Paper no. 9, National Health Strategy, Canberra, 1992.
Australian Dental Association Web site at http://www.ozemail.com.au/~adainc/info/index.htm

Hospital separations for removal or restoration of teeth, by sex, children aged 0-4 years and aged 5-14 years, NSW 1989/90 to 1995/96



		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
0-4 years	Males	229.3	255.8	315.9	293.3	300.4	248.4	288.0
	Females	197.9	225.2	253.5	257.8	258.1	213.6	234.3
	Persons	214.0	240.9	285.4	276.0	279.8	231.4	261.8
5-14 years	Males	150.2	171.2	196.2	204.4	219.7	211.1	246.9
	Females	183.0	198.4	207.3	257.2	255.5	234.5	272.1
	Persons	166.2	184.5	201.6	230.1	237.1	222.5	259.2

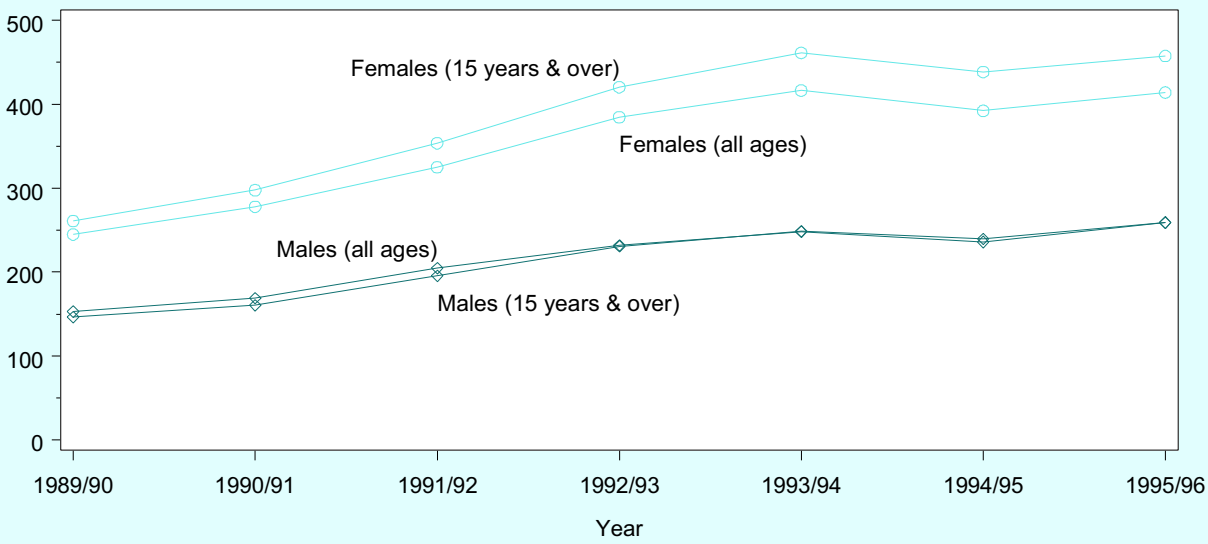
Note: Removal or restoration of teeth was classified according to the ICD9 procedure code 23. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Inpatients Statistics Collection and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

- Hospital inpatient separations for the removal or restoration of teeth among children under the age of four years increased in the period 1988/89 to 1991/92, and subsequently declined, rising again slightly in 1994/95.
- The main reason for inpatient dental care of infants and young children is rampant dental caries caused by the prolonged daily use of nursing bottles.
- Hospital inpatient separations for the removal or restoration of teeth among children aged 5-14 years rose by almost 30 per cent over the period 1988/89 to 1994/95.
- The predominant reason for inpatient dental care of children in this age category is extensive dental caries. Among younger children (5-6 years) in this age group, this is likely to be the result of prolonged nursing bottle use, while among older children, poor dietary and oral hygiene practices are a major contributing factor. Some children may also be admitted because of behavioural problems.

For more information, see: AIHW Dental Statistics Research Unit 1986-95, *Child Dental Health Survey*, DSRU, Adelaide.
NSW Health Department 1996 *Child Dental Health Report*, in press.
Improving Dental Health in Australia, National Health Strategy Background Paper No 9, May 1992
Australian Dental Association Web site at http://www.ozemail.com.au/~adainc/info/index.htm

Hospital separations for removal or restoration of teeth, by sex, persons of all ages and aged 15 years and over, NSW 1989/90 to 1995/96



		1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
All ages	Males	153.2	169.3	204.6	231.7	248.3	236.1	259.4
	Females	245.0	278.0	325.1	384.7	416.4	392.3	414.1
	Persons	198.2	222.5	263.7	306.8	330.8	312.8	335.2
15 years and over	Males	146.6	160.8	195.7	231.0	248.8	239.6	259.0
	Females	261.0	297.8	353.8	420.4	461.3	438.5	457.5
	Persons	202.7	227.8	273.2	324.0	353.1	337.3	356.3

Note: Removal or restoration of teeth was classified according to the ICD9 procedure code 23. Hospital separation rates were age-adjusted using the Australian population as at 30 June 1991. Hospital separations in 1995/96 do not include NSW residents treated in Victoria, South Australia, Western Australia or Queensland.

Sources: NSW Inpatients Statistics Collection and ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department,

- Hospital separations for removal and restoration of teeth in persons aged over 15 years increased by around 60 per cent in males and almost 70 per cent in females over the period 1988/89 to 1994/95.
- The hospital separation rate for females in this age group was consistently around 1.8 times the male rate.
- Inpatient care for adults, unlike children, is predominantly for reasons other than dental caries.
- Most admissions for people aged 15-24 were for removal of impacted teeth (for example, wisdom teeth).
- Among persons aged 25 years and over, most admissions were for removal of teeth for dental caries or periodontal disease.

For more information, see: National Health Strategy, *Improving dental health in Australia*, Background paper no. 9, National Health Strategy, Canberra, 1992.
Australian Dental Association Web site at http://www.ozemail.com.au/~adainc/info/index.htm

Appendices

- Methods
- List of NSW Local Government Areas by Health Areas
- Acknowledgements
- Evaluation form

Methods

Introduction

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 and surveys. Where possible, it presents trends based on the most recent 10 years of data available. 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 Version 6.12 (SAS, 1996) was used for all data analysis and for production of data tables and charts.

1. Data sets

1.1 Health Outcomes Statistical Toolkit (HOIST)

The Health Outcomes Information Statistical Toolkit (HOIST) is a SAS-based "data warehouse" operated by the Epidemiology and Surveillance Branch of NSW Health. It brings together most of the data collections often used in population health surveillance in NSW and contains all the available (or usable) historical data for each collection. HOIST data is in one format — SAS datasets — and HOIST code values are, as far as possible, consistent across time and between datasets. HOIST provides a common data analysis environment across the NSW Public Health Network, enabling easier interchange of ideas, techniques and programs, and allowing easier movement of staff from one part of the network to another, as well as opening the possibility of collaborative projects between elements of the network.

1.2 Population data

All population data used in this report come from the Australian Bureau of Statistics. Estimated resident populations (ERPs) at 30 June (for calendar year data) or 30 December (for financial year data), by age, sex and statistical local area, were used for the calculation of rates. NSW Area Health Service populations were derived by aggregating statistical local area ERPs, using Area Health Service boundaries as at 31 May 1997.

The 1991 Australian mid-year ERP, given below, was used as the standard population for age-adjustment (see Methods section 2.2).

Country-of-birth-specific populations used in Chapter 3.2 (*Country-of-birth differentials*) came from the Australian Bureau of Statistics 1991 Census, as intercensal estimates were not available.

Australian standard population (30 June 1991)

Age	Males	Females	Persons
0-4 yrs	1271703	1271703	2543406
5-9 yrs	1272208	1272208	2544416
10-14 yrs	1241619	1241619	2483238
15-19 yrs	1364074	1364074	2728148
20-24 yrs	1396764	1396764	2793528
25-29 yrs	1399663	1399663	2799326
30-34 yrs	1425735	1425735	2851470
35-39 yrs	1328387	1328387	2656774
40-44 yrs	1294271	1294271	2588542
45-49 yrs	1029145	1029145	2058290
50-54 yrs	846934	846934	1693868
55-59 yrs	725950	725950	1451900
60-64 yrs	736868	736868	1473736
65-69 yrs	671390	671390	1342780
70-74yrs	510755	510755	1021510
75-79 yrs	384495	384495	768990
80-84 yrs	229828	229828	459656
85+ yrs	154247	154247	308494
All ages	17284036	17284036	34568072

Source: ABS population estimates (HOIST), Epidemiology and Surveillance Branch, NSW Health Department.

1.3 Australian Bureau of Statistics Mortality Collection

Since Federation in 1900, all deaths for which a coronial inquiry is not required must be certified as to cause and date by a registered medical practitioner and the certificate registered by the Registrar of Births, Deaths and Marriages in each State or Territory. Most deaths due to accidental causes, deaths occuring 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 four weeks of the date of death. However, coronial inquiries can take months, and in some cases years to conclude.

Deaths are classified according to the 9th revision of the International Classification of Diseases (ICD-9, World Health Organization 1977). Currently, a single code for a single underlying cause of death is applied. Starting in 1998, multiple cause-of-death codes will be applied to each death record if more than one cause contributed to the death.

Mortality data are supplied by the ABS by year of registration. Therefore, deaths occuring 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.

Important issues affecting the reliability and interpretation of mortality data include:

- The accuracy of the diagnosis recorded on the death certificate. If multiple conditions are present at the time of death, the decision about which was the underlying cause of death may be equivocal.
- Misinterpretation of the guidelines for determining the underlying cause of death by the attending physician completing the death certificate (Weeramanthri and Beresford 1992).
- Errors in transcription and coding of death certificates.

ABS mortality data were accessed via the Health Outcomes Information and Statistics Toolkit (HOIST). Deaths are presented by year of death for calendar years from 1985 to 1994.

1.4 NSW Inpatient Statistics Collection

The NSW Inpatient Statistics Collection (ISC) is maintained by the NSW Health Department's Information and Data Services Branch and consists of demographic and clinical information collected on separation (discharge, transfer or death) from all NSW public, private and Department of Veterans' Affairs hospitals and public nursing homes. The reason for a hospital admission is coded according to the 9th revision of the International Classification of Diseases (ICD-9). The principal diagnosis is the first ICD-9 coding variable reported on the hospital separation form and refers to the principal reason for admission. Up to 11 other diagnoses are recorded. In addition, an external cause code (E-code) is recorded for admissions for injury and poisoning. The ISC is a financial year collection.

Important issues affecting the reliability and interpretation of ISC data include:

- Ambiguities in determining principal diagnosis and sequencing diagnoses (Connell, Blide and Hanken 1984)
- Completeness of the information supplied on the discharge summary
- Accuracy of coding

The ISC was accessed via the Health Outcomes Information and Statistics Toolkit (HOIST). Hospitalisations are presented for the financial years from 1989/90 to 1995/96. Most conditions were classified on the basis of the principal diagnosis. For lower-extremity amputations in persons with diabetes mellitus, the first five diagnoses were examined.

1.5 NSW Midwives Data Collection (MDC)

The New South Wales Midwives Data Collection (MDC) is a population-based surveillance system 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 mid-1986. It encompasses all live births 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 and has undergone three revisions over the years. Completed forms are sent to the Patient Data Management Unit of the Information and Data Services Branch of NSW Health, where they are compiled into the MDC database. Since 1994, some hospitals have sent data in electronic form rather than on paper.

The MDC was accessed via the Health Outcomes Information and Statistics Toolkit (HOIST). Data are presented for calendar years from 1990 to 1995.

1.6 NSW Birth Defects Register

The NSW Birth Defects Register (BDR) was established in 1990, initally as part of the Midwives Data Collection but more recently as a separate register. It currently operates on a voluntary basis, but legislation to make notification of birth defects recognised up to one year of age mandatory will come into effect from 1 January 1998.

The BDR was accessed via the Health Outcomes Information and Statistics Toolkit (HOIST). Data are presented for calendar years from 1992 to 1994.

1.7 NSW Health Promotion Survey 1994

The NSW Health Promotion Survey 1994 (HPS) has been the largest and most comprehensive survey of health behaviours and personal and environmental health risk factors to be conducted in NSW. It used a geographically stratified random sample of approximately 16,000 NSW residents aged 18 years and over, and collected information via telephone interview (Graham-Clarke et al. 1995).

HPS data were accessed via the Health Outcomes Information and Statistics Toolkit (HOIST). The Area Health Service boundaries used for presenting HPS data were those current in 1994.

More recent statewide data will soon be available through the NSW Health Survey Program. This will collect information on a wide range of health-related issues, including health status, health risk behaviours, prevalence of health conditions and use of and satisfaction with health services. Yearly statewide telephone surveys will be conducted, with the first commencing in July 1997.

1.8 ABS National Health Survey

This series of five-yearly surveys, conducted by the ABS, collects national information on illness and injury, health care use and health risk factors. Data from both the 1989/90 and 1995 National Health Surveys is presented in this report. The 1989/90 data were accessed via the Health Outcomes Information and Statistics Toolkit (HOIST), or obtained as special tabulations

from the ABS. The 1995 data were not available in unit record form, and were obtained as special tabulations from the ABS.

1.9 School surveys

NSW Health has conducted surveys focusing on drug and alcohol use in NSW secondary schools on a three-yearly basis since 1993, and in NSW primary schools (years 5 and 6) every three years since 1986. Data from these surveys were obtained from published reports (Conney, Dobbinson & Flaherty 1994; Bauman et al 1994) and from Roberto Forero from the Centre for Disease Prevention and Health Promotion, NSW Health Department.

The most recent secondary school survey (1996) was conducted in conjunction with the NSW Cancer Council and the Anti-Cancer Council of Victoria. It collected information on a wide range of health issues, including sun protection, nutrition, physical activity, mental health and injuries. Data from this survey will be available for inclusion in the next edition of this report.

1.10 NSW Central Cancer Registry

The NSW Central Cancer Registry was established by the NSW Health Department in 1971 under the NSW Public Health Act. Notification of all newly diagnosed cases of and deaths due to malignant neoplasm by hospitals, doctors and the Registrar of Births, Deaths and Marriages was compulsory. In 1991 the Public Health Act was amended to make notification by pathology laboratories compulsory as well. Notification has traditionally been via the notification form prescribed in the Public Health Act regulations, although electronic notification by hospitals (but not pathology laboratories as yet) has been introduced in the last few years.

A case of cancer is the occurance 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 cancers and deaths are classified according to the 9th revision of the International Classification of Diseases (ICD-9, World Health Organization 1977). NSW Central Cancer Registry data are supplied to NSW Health as separate unlinkable datasets for new cases (incidence data) and deaths (mortality data).

Cancer data were accessed via the Health Outcomes Information and Statistics Toolkit (HOIST). Cancer incidence and mortality data are presented for the years 1985 to 1994.

1.11 NSW Infectious Diseases Surveillance System

The NSW Infectious Diseases Surveillance System (IDSS) is a networked database used by 17 Public Health Units (PHUs) located across NSW to register infectious disease notifications. Under authority of the Public Health Act 1991, the NSW Health Department receives notifications of infectious 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 Australia, New Zealand (maintained by the Commonwealth Department of Human Services and Health).

This collection was accessed via the Health Outcomes Information and Statistics Toolkit (HOIST). IDSS data are presented for the years 1991 to 1996. IDSS is a "living" collection which is updated daily and so the date of analysis is included in table footnotes.

2. Statistical methods

2.1 Crude death rates

The crude death rate is an estimate of the proportion of a population that dies in a specifiied 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.

2.2 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 1991 was used as the standard population (this is given in Methods section 1.2). The same population was used for males and females to allow valid comparison of age-standardised rates between the sexes.

Ninety-nine percent 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 and Berry 1994).

The graph on the next page allows comparison of the age-adjusted mortality rates for all causes of death for the years 1990 to 1994 for each of the NSW Health Areas. The lower and upper 99% confidence limits for the standardised rate for NSW as a whole are indicated by the vertical reference lines. The standardised rate, with its 99% confidence limits, for each Health Area, is shown as a horizontal line, with a central box indicating the point estimate.

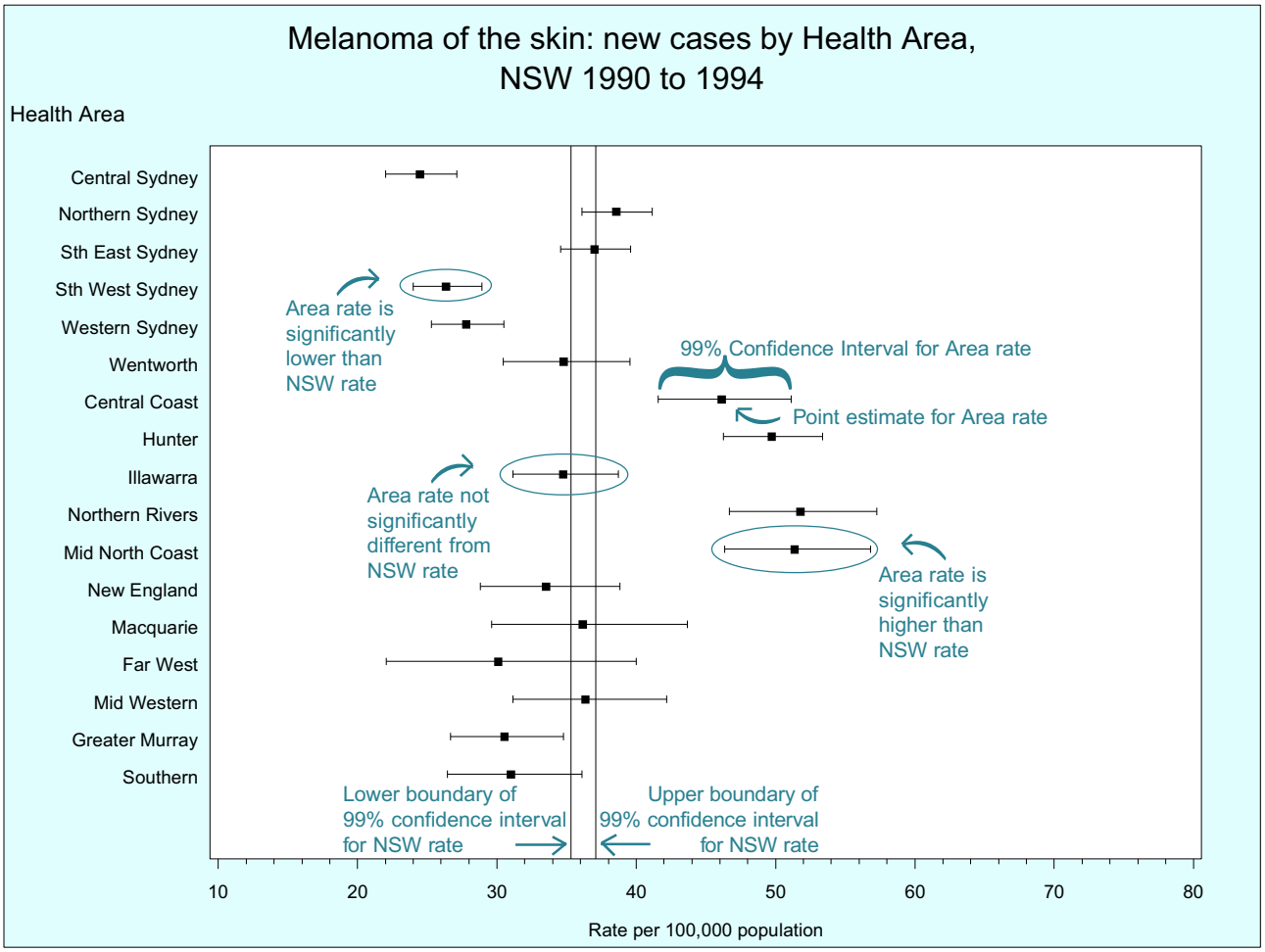
2.3 Life expectancy at birth

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, life expectancy was calculated using abridged current life tables based on five-year age groups and 1994 death rates. The adjustment for mortality in the first year of life (Greville 1943) was used.

2.4 Life expectancy at age 65

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



2.4 Life expectancy at age 65

For this report, life expectancy was calculated using abridged current life tables based on 5-year age groups and 1994 death rates. The adjustment for mortality in the first year of life (Greville 1943) was used.

2.5 Potential years of life lost

Potential years of life lost (or PYLL) is a measure of the impact of various diseases and lethal forces on society. PYLL highlights the loss to society as a result of youthful or early deaths. PYLL for a particular cause is usually calculated by summing, for all persons dying from that cause, all the years that these persons would have lived until a particular age, such as 75 years (Last 1995). However, for this report, we have calculated cause-deleted PYLL. This is done by subtracting the total number of years up to age 75 which a group of 100,000 males or females would be expected to live from the total number of years that the same group would be expected to live if no-one in that group died of the disease or conditions specified. The usual method of calculating PYLL incorrectly assumes that if people did not die of the disease or condition of interest, they automatically live to 75 years, whereas the cause-deleted method used here assumes that if a person does not die of the disease or cause of interest, they are still at risk of dying from all other causes. The cause-deleted calculations are performed using current life tables as described above.

2.6 Methods used for Chapter 3.3 *Socioeconomic status and health*

The analyses in this chapter used a composite measure of socioeconomic status (SES), the index of relative socioeconomic disadvantage (IRSD, Australian Bureau of Statistics 1993) based on data from the 1991 ABS population census. The IRSD is a single score available for any configuration of geographical census areas. It is derived from multiple weighted variables relating to education, occupation, non-English-speaking background, Indigenous origin and the economic resources of households. Lower scores indicate lower SES.

Analyses of death, cancer and hospitalisation data were ecological, using the local government area (LGA) as the unit of analysis. These routinely collected data do not capture SES information at the individual level, so directly age-standardised rates were calculated for all adults in each LGA and plotted against the corresponding index of socioeconomic disadvantage. The analysis included 177 NSW LGAs. The LGAs of Sydney and South Sydney were treated as a single unit because of multiple boundary changes over recent years. The degree of association was measured by the Pearson correlation coefficient and depicted by plotting the corresponding regression line.

Analyses of NSW Health Promotion Survey 1994 data come from an unpublished report by Stuart Howell and Adrian Bauman (1996). Survey respondents were classified into quintiles of IRSD for the postcode of their usual residence, as follows:

- 1st quintile (Q1): IRSD > 1040.1
- 2nd quintile (Q2): 1011.9 < IRSD <= 1040.1
- 3rd quintile (Q3): 982.9 < IRSD <= 1011.9
- 4th quintile (Q4): 953.3 < IRSD <= 982.9
- 5th quintile (Q5): IRSD <= 953.3.

Age-adjusted rates for each quintile were calculated for various health indicators. Rates were directly age-standardised to the NSW population for 1991, using five-year age groups. Differentials between the quintiles were expressed as rate ratios with 95% confidence limits, using the rate in the first quintile as the reference rate. Rate ratios with confidence intervals that do not overlap with a rate ratio of 1.00 were considered statistically significant (Howell and Bauman 1996).

References

Armitage P and Berry G, *Statistical Methods in Medical Research*, 3rd edn, Blackwell Scientific Publications, Oxford, 1994, p. 438.

Australian Bureau of Statistics, *Information paper: 1991 census socioeconomic indices for areas,* cat. no. 29120, ABS, Canberra, 1993.

Bauman A, Chen JC, Cooney A, Dobbinson S, Flaherty B, *1993 Survey of drug use by NSW primary school children*, NSW Health Department, Sydney, 1994.

Connell FA, Blide LA, Hanken MA, 'Ambiguities in the selection of the Principal Diagnosis: Impact on data quality, hospital statistics and DRGs', *Journal of the American Medical Records Association*, Vol. 55, 1994, pp.18-23.

Cooney A, Dobbinson S, Flaherty B, *1992 Survey of Drug Use by NSW Secondary School Students*, NSW Health Department, 1994.

Dobson A, Kuulasmaa K, Eberle E, Schere J, 'Confidence intervals for weighted sums of Poisson parameters', *Statistics in Medicine*, Vol. 10, 1991, pp. 457-62.

References (continued)

Graham-Clarke P, Howell S, Bauman A, Nathan S, *NSW Health Promotion Survey 1994 Technical Report*, National Centre for Health Promotion and NSW Health Department, Sydney, 1995.

Greville TNE, 'Short methods of constructing abridged life tables', *Record of the American Institute of Actuaries*, Vol. 32, 1943, Part I, pp.29-42.

Howell S, Bauman A, *Health differentials - the NSW Health Promotion Survey data,* Unpublished Report, National Centre for Health Promotion, University of Sydney, Sydney, 1996.

Last JM, *A Dictionary of Epidemiology*, third edition, Oxford University Press, New York, 1995.

SAS, *The SAS System for Windows version 6.12 (*computer program), SAS Institute, Cary, NC, 1996.

Weeramanthri T and Beresford B, 'Death certification in Western Australia - classification of major errors in certificate completion', *Australian Journal of Public Health* , Vol. 16, 1992, pp. 431-434.

World Health Organization, *International Classification of Diseases, Ninth Revision 1975*, WHO, Geneva, 1977.

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 using registration procedures.
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.
Co-morbidity	Disease(s) that coexist(s) in an individual in addition to the condition that that is the subject of study.
Contact	A person or animal who has been in association with an infected person or animal or a contaminated environment that may provide an opportunity to acquire the infection.
Confidence interval	The computed interval with a given probability (eg. 99%) that the true value of a variable such as a rate, mean or proportion, is contained within the interval.
Correlation	The degree to which variables change together. A correlation coefficient is a measure of that association, where +1 indicates a perfect linear positive relationship and -1 indicates a perfect linear negative relationship and 0 indicates no relationship between the two.
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.
Dependency ratio	The proportion of the population of non-working age (<15 years and 65 years or older) who are dependent on the population of working age (15-64 years).
Disability	Any restriction or lack of ability (resulting from an impairment) to perform an activity in the manner or within the range considered normal for a human being. In this report it refers to one or more of a selected group of limitations, restrictions or impairments lasting for six months or more.
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. Includes only fetuses weighing at least 500 grams or, where birthweight was unknown, of at least 22 weeks' gestation.
Handicap	A handicap limits a person's ability to perform certain tasks associated with daily living. It is the result of a disability.
Hospital separation	See SEPARATION
Illicit drugs	The following drugs used for non-medicinal purposes: speed, cocaine, sleeping pills/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.
Labour force 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 (see Methods section, page 262)
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 500 grams at birth or, where birth weight is unknown, of at least 22 weeks' gestation.
Neonatal death	Death within 28 days of birth of any child who after delivery, breatheed or showed any other evidence of life such as a heartbeat. Includes only infants weighing at least 500 grams at birth or, where birth weight is unknown, of at least 22 weeks' gestation.
Perinatal death	A fetal or neonatal death.
Potential years of life lost	A measure of the impact of various diseases and lethal forces on society. PYLL highlights the loss to society as a result of youthful or early deaths (see Methods section, page 262).
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 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 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
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 unemployed expressed as a percentage of the labour force (that is, employed and unemployed).

Health Area	LGA
Central Sydney	Ashfield
Central Sydney	Burwood
Central Sydney	Canterbury
Central Sydney	Concord
Central Sydney	Drummoyne
Central Sydney	Leichhardt
Central Sydney	Marrickville
Central Sydney	South Sydney
Central Sydney	Strathfield
Central Sydney	Sydney
Northern Sydney	Hornsby
Northern Sydney	Hunters Hill
Northern Sydney	Ku-ring-gai
Northern Sydney	Lane Cove
Northern Sydney	Manly
Northern Sydney	Mosman
Northern Sydney	North Sydney
Northern Sydney	Pittwater
Northern Sydney	Ryde
Northern Sydney	Warringah
Northern Sydney	Willoughby
Western Sydney	Auburn
Western Sydney	Baulkham Hills
Western Sydney	Blacktown
Western Sydney	Holroyd
Western Sydney	Parramatta
Wentworth	Blue Mountains
Wentworth	Hawkesbury
Wentworth	Penrith
South Western Sydney	Bankstown
South Western Sydney	Camden
South Western Sydney	Campbelltown
South Western Sydney	Fairfield
South Western Sydney	Liverpool
South Western Sydney	Wingecarribee
South Western Sydney	Wollondilly
Central Coast	Gosford
Central Coast	Wyong
Hunter	Cessnock
Hunter	Dungog
Hunter	Lake Macquarie
Hunter	Maitland
Hunter	Merriwa
Hunter	Murrurundi
Hunter	Muswellbrook
Hunter	Newcastle
Hunter	Port Stephens
Hunter	Scone
Hunter	Singleton
Illawarra	Kiama
Illawarra	Shellharbour
Illawarra	Shoalhaven
Illawarra	Wollongong
South Eastern Sydney	Botany
South Eastern Sydney	Hurstville
South Eastern Sydney	Kogarah
South Eastern Sydney	Randwick
South Eastern Sydney	Rockdale
South Eastern Sydney	South Sydney
South Eastern Sydney	Sutherland
South Eastern Sydney	Sydney
South Eastern Sydney	Waverley
South Eastern Sydney	Woollahra
South Eastern Sydney	Lord Howe Island
Northern Rivers	Ballina
Northern Rivers	Byron
Northern Rivers	Casino
Northern Rivers	Copmanhurst
Northern Rivers	Grafton
Northern Rivers	Kyogle
Northern Rivers	Lismore
Northern Rivers	Maclean
Northern Rivers	Nymboida
Northern Rivers	Richmond River
Northern Rivers	Tweed
Northern Rivers	Ulmarra
Mid North Coast	Bellingen
Mid North Coast	Coffs Harbour
Mid North Coast	Gloucester
Mid North Coast	Greater Taree
Mid North Coast	Great Lakes
Mid North Coast	Hastings
Mid North Coast	Kempsey
Mid North Coast	Nambucca
New England	Armidale
New England	Barraba
New England	Bingara
New England	Dumaresq
New England	Glen Innes
New England	Gunnedah
New England	Guyra
New England	Inverell
New England	Manilla
New England	Moree Plains
New England	Narrabri
New England	Nundle
New England	Parry
New England	Quirindi
New England	Severn
New England	Tamworth
New England	Tenterfield
New England	Uralla
New England	Walcha
New England	Yallaroi
Macquarie	Bogan
Macquarie	Cobar
Macquarie	Coolah
Macquarie	Coonabarabran
Macquarie	Coonamble
Macquarie	Dubbo
Macquarie	Gilgandra
Macquarie	Mudgee
Macquarie	Narromine
Macquarie	Warren
Macquarie	Wellington
Mid Western	Bathurst
Mid Western	Blayney
Mid Western	Cabonne
Mid Western	Cowra
Mid Western	Evans
Mid Western	Forbes
Mid Western	Greater Lithgow
Mid Western	Lachlan
Mid Western	Oberon
Mid Western	Orange
Mid Western	Parkes
Mid Western	Rylstone
Mid Western	Weddin
Far West	Balranald
Far West	Bourke
Far West	Brewarrina
Far West	Broken Hill
Far West	Central Darling
Far West	Walgett
Far West	Wentworth
Far West	Unicorp Far West
Greater Murray	Albury
Greater Murray	Berrigan
Greater Murray	Bland
Greater Murray	Carrathool
Greater Murray	Conargo
Greater Murray	Coolamon
Greater Murray	Cootamundra
Greater Murray	Corowa
Greater Murray	Culcairn
Greater Murray	Deniliquin
Greater Murray	Griffith
Greater Murray	Gundagai
Greater Murray	Hay
Greater Murray	Holbrook
Greater Murray	Hume
Greater Murray	Jerilderie
Greater Murray	Junee
Greater Murray	Leeton
Greater Murray	Lockhart
Greater Murray	Murray
Greater Murray	Murrumbidgee
Greater Murray	Narrandera
Greater Murray	Temora
Greater Murray	Tumbarumba
Greater Murray	Tumut
Greater Murray	Urana
Greater Murray	Wagga Wagga
Greater Murray	Wakool
Greater Murray	Windouran
Southern	Bega Valley
Southern	Bombala
Southern	Boorowa
Southern	Cooma-Monaro
Southern	Crookwell
Southern	Eurobodalla
Southern	Goulburn
Southern	Gunning
Southern	Harden
Southern	Mulwaree
Southern	Queanbeyan
Southern	Snowy River
Southern	Tallaganda
Southern	Yarrowlumla
Southern	Yass
Southern	Young

Acknowledgements

Editors
Gerard Fitzsimmons and Louisa Jorm

SAS Programming
Ru Nguyen, Michael Ryan, Gerard Fitzsimmons, Louisa Jorm, Michele Puech, Tim Churches and Devon Indig

Contributors (in alphabetical order)

Jody Aiken
Bruce Armstrong
Rona Baruch
Adrian Bauman
Bill Bellew
Lucy Burns
Jennifer Chipps
Tim Churches
Glenn Close
Stephen Corbett
Christine Cowie
Kate Cunningham
Gerard Fitzsimmons
Roberto Forero
Shing Chung Fung
Devon Indig
Louisa Jorm
Ed Kraa
Margaret MacDonald
Edwina Macoun
Jeremy McAnulty
Rob Menzies
Helen Moore
Geoff Morgan
David Muscatello
Hanna Noworytko
Ru Nguyen
Michele Puech
Debra Sinclair
Gavin Stewart
Beth Stickney
Lee Taylor
Pat Ward
Rob Weidenhofer
Kim White
Maxine Whitlock
Margaret Williamson

Editorial assistance
Rhana Pike, Ru Nguyen and Devon Indig

Desktop Publishing
Jodey Wills, Leanne Erkes, Gerard Fitzsimmons and Louisa Jorm

QUESTIONNAIRE

Evaluation of the 1997 Chief Health Officer's Report

Please answer each question and fax to Gerard Fitzsimmons on (02)9391-9232.

1 INFORMATION ABOUT YOU

1.1 Name: _____

1.2 Position: _____

1.3 Contact telephone number: (_____) _____

1.4 E-mail address: _____@_____

1.5 What is your main work activity? [Tick *one* box]

Planning health services _____ 1 ❒
Health policy development _____ 2 ❒
Managing health services _____ 3 ❒
Patient care _____ 4 ❒
Public health practice _____ 5 ❒
Health monitoring and surveillance _____ 6 ❒
Health promotion _____ 7 ❒
Health research and development _____ 8 ❒
Informing consumers _____ 9 ❒
Teaching _____ 10 ❒
Other _____ 11 ❒
Please specify below

Main activity: _____
_____
_____
_____

2 USE OF THE REPORT

2.1 How have you used the Report? [Tick *one* box]

I haven't read or used it yet _____ 1 ❒
Go to section 4 [page 3]

I have read or used some of it _____ 2 ❒
Please describe below

I have read or used all of it _____ 3 ❒
Please describe below

Description of use: _____
_____
_____

QUESTIONNAIRE

3 REPORT CONTENT AND PRESENTATION

How would you rate the following aspects of the Report?

[Tick *one* box for each question]

		Excellent		OK		Poor
3.1	Ease of finding information	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒
3.2	Organisation and layout	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒
3.3	Presentation and appearance	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒

		Too many		About right		Too few
3.4	Number of tables	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒
3.5	Number of figures and graphs	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒

		Too much		About right		Not enough
3.6	Amount of verbal description of data	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒
3.7	Amount of interpretation of data	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒
3.8	Amount of breakdown by Area Health Service	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒

How would you rate the quality of the following chapters?

[Please tick *one* box for each question, tick "N/A" if you have not read that chapter]

Patterns of Health and Illness		Excellent		OK		Poor	N/A
3.9	Demography	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.10	Health of mothers and babies	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.11	Health status and disability	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.12	Illness	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.13	Life expectancy and death	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒

Determinants of Health		Excellent		OK		Poor	N/A
3.14	Health-related behaviours	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.15	Health and the environment	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒

Health Inequalities		Excellent		OK		Poor	N/A
3.16	Health of Aboriginal and Torres Strait Islander peoples	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.17	Country of birth differentials	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.18	Socioeconomic status and health	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒

Health Priority Areas		Excellent		OK		Poor	N/A
3.19	Injury and poisoning	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.20	Asthma	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.21	Cardiovascular diseases	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.22	Diabetes mellitus	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.23	Cancer	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.24	Communicable diseases	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.25	Mental health	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒
3.26	Dental health	1 ❒	2 ❒	3 ❒	4 ❒	5 ❒	6 ❒

QUESTIONNAIRE

3.27 Do you have any further comments about the content and presentation of the Report? Please write below

Comments:_____
_____
_____
_____

4 FUTURE EDITIONS OF THE REPORT

4.1 Do you think we should routinely include any additional chapters in future editions? [Please tick *one* box]

No _____ 1 ❒

Yes _____ 2 ❒

Please specify below

Chapter(s) for inclusion:_____
_____
_____

4.2 Do you have any further suggestions for future editions of the Report, or any other comments? Please write below

Suggestions/comments:_____
_____
_____

Please photocopy and return **by fax** to:

Gerard Fitzsimmons
Surveillance Officer
Epidemiology and Surveillance Branch
NSW Health Department
LMB 961
North Sydney NSW 2059

Phone: (02) 9391-9269
E-mail: gfits@doh.health.nsw.gov.au

Fax No: (02) 9391-9232
Questionnaire: 3 pages total

Thank you for taking the time to complete our evaluation.