Chapter 3.4

Socioeconomic status

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

In this chapter

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

Introduction

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

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

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

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

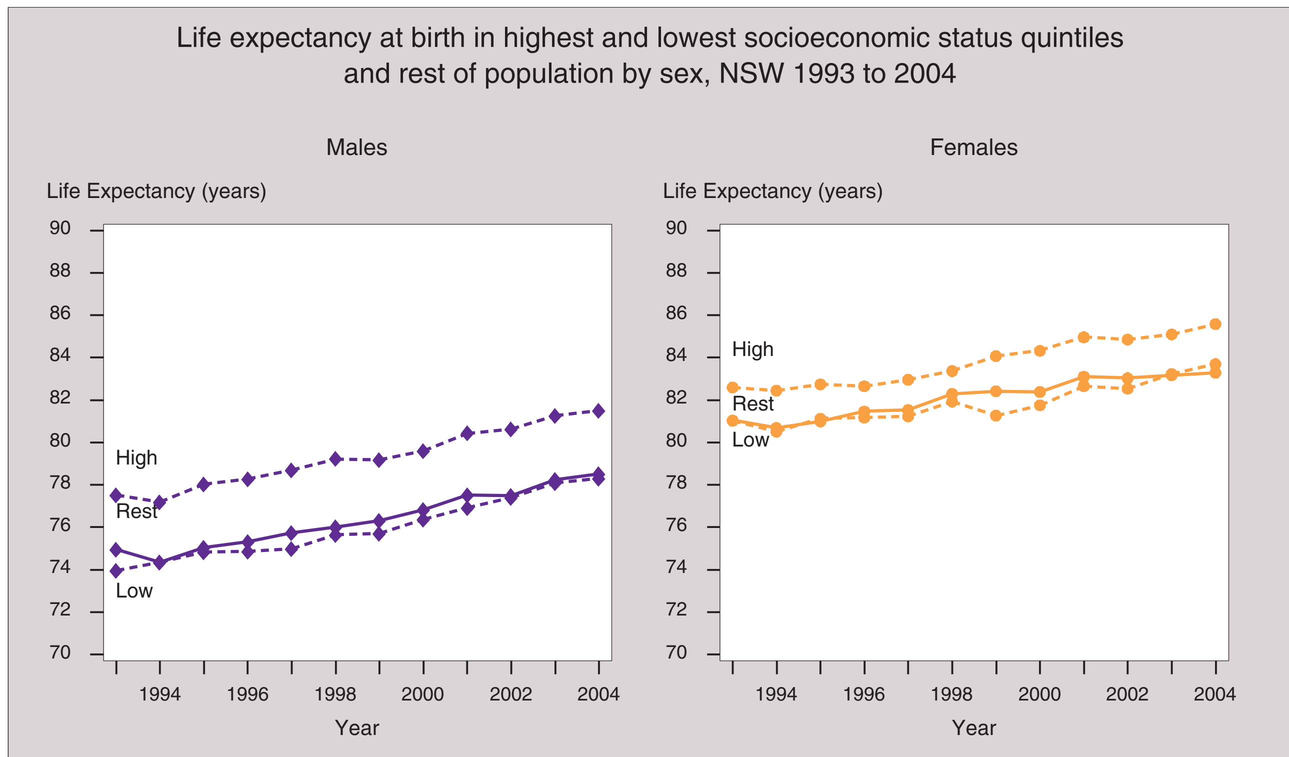
This chapter considers the trends across socioeconomic groups in NSW of several key health indicators, many of which relate to various forms of potentially avoidable conditions. These include premature mortality from all causes (death before the age of 75, potentially avoidable deaths, potentially avoidable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

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

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

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

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

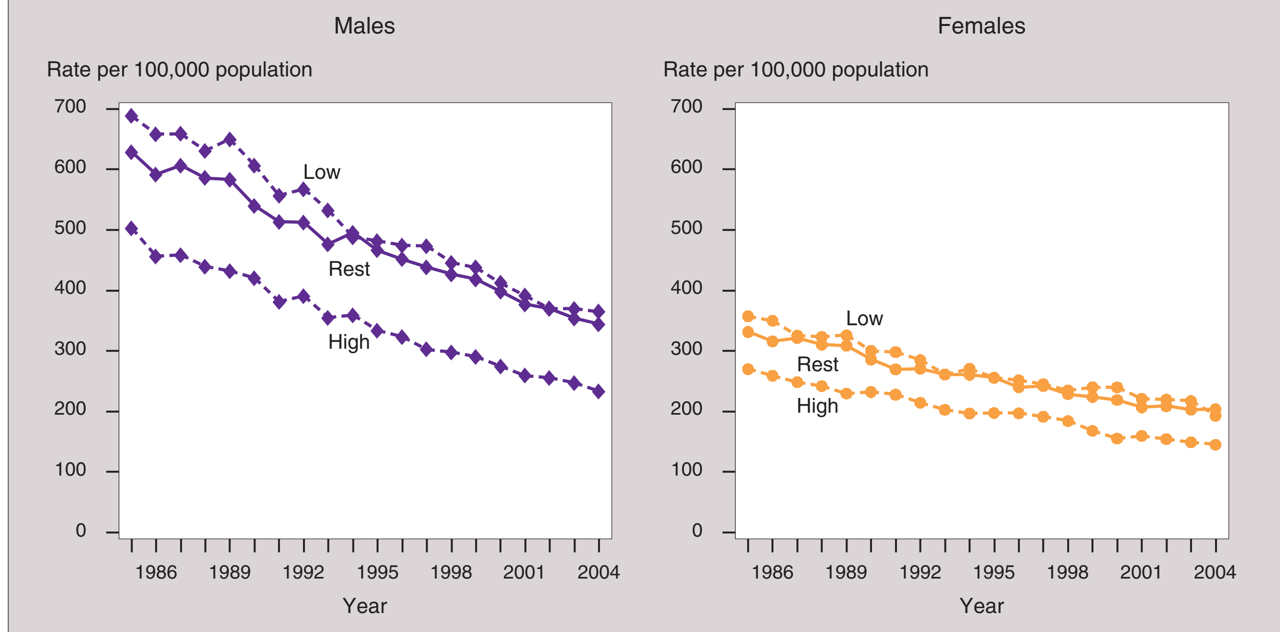


SES group	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Lowest quintile	Persons	77.9	77.9	78.0	78.7	78.4	79.0	79.8	80.0	80.6	81.0
Rest of population	Persons	78.0	78.4	78.6	79.1	79.3	79.6	80.3	80.2	80.7	80.9
Highest quintile	Persons	80.5	80.6	81.0	81.4	81.8	82.1	82.9	82.9	83.3	83.7
NSW	Persons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

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

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

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

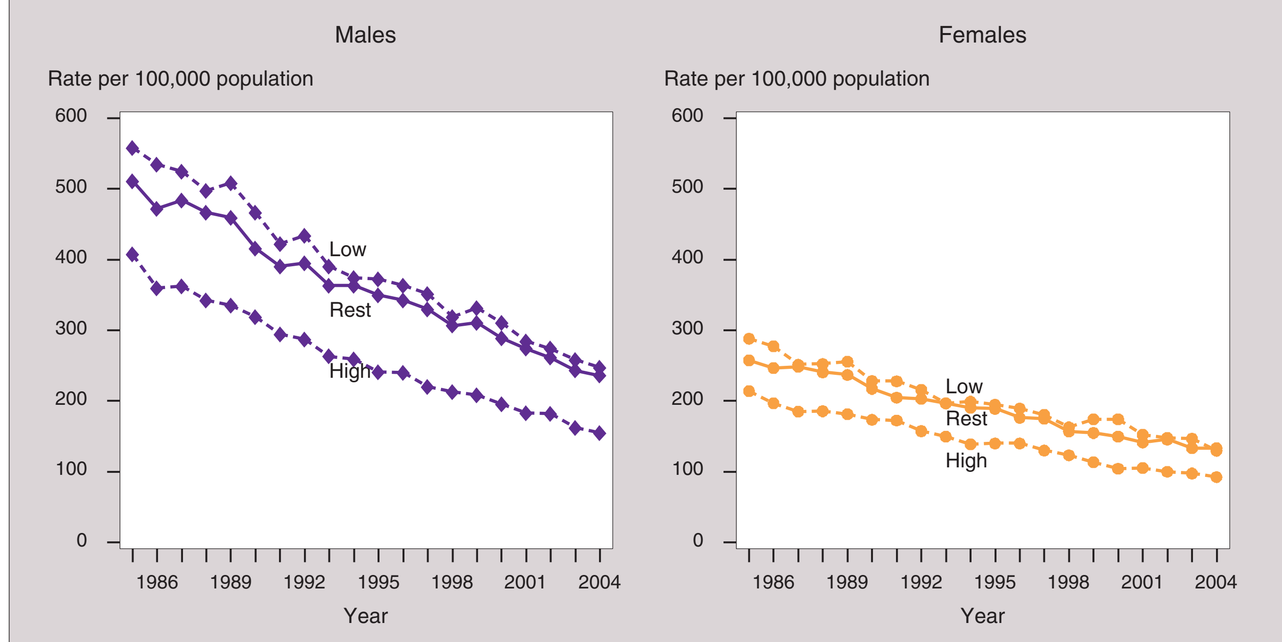


	SES group	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Lowest quintile	Persons	4427	4455	4277	3378	3299	3161	3093	3111	2988
	Rest of population	Persons	11896	11897	11606	12377	12057	11575	11622	11300	11244
	Highest quintile	Persons	3145	3011	2963	2886	2731	2689	2654	2582	2485
	NSW	Persons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

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

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

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

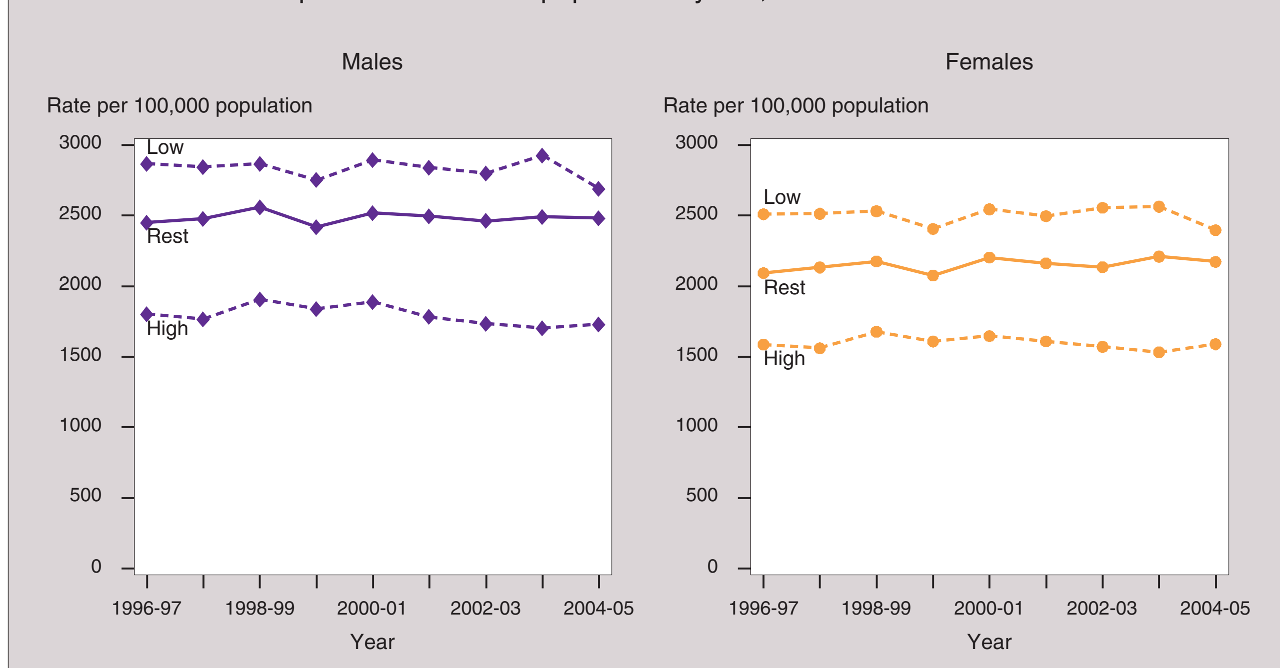


	SES group	Sex	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Lowest quintile	Persons	3409	3363	3292	3024	2516	2452	2254	2210	2143	2022
	Rest of population	Persons	9160	8924	8807	8213	8940	8558	8219	8159	7614	7570
	Highest quintile	Persons	2277	2293	2136	2063	2028	1902	1852	1826	1698	1624
	NSW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

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

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

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

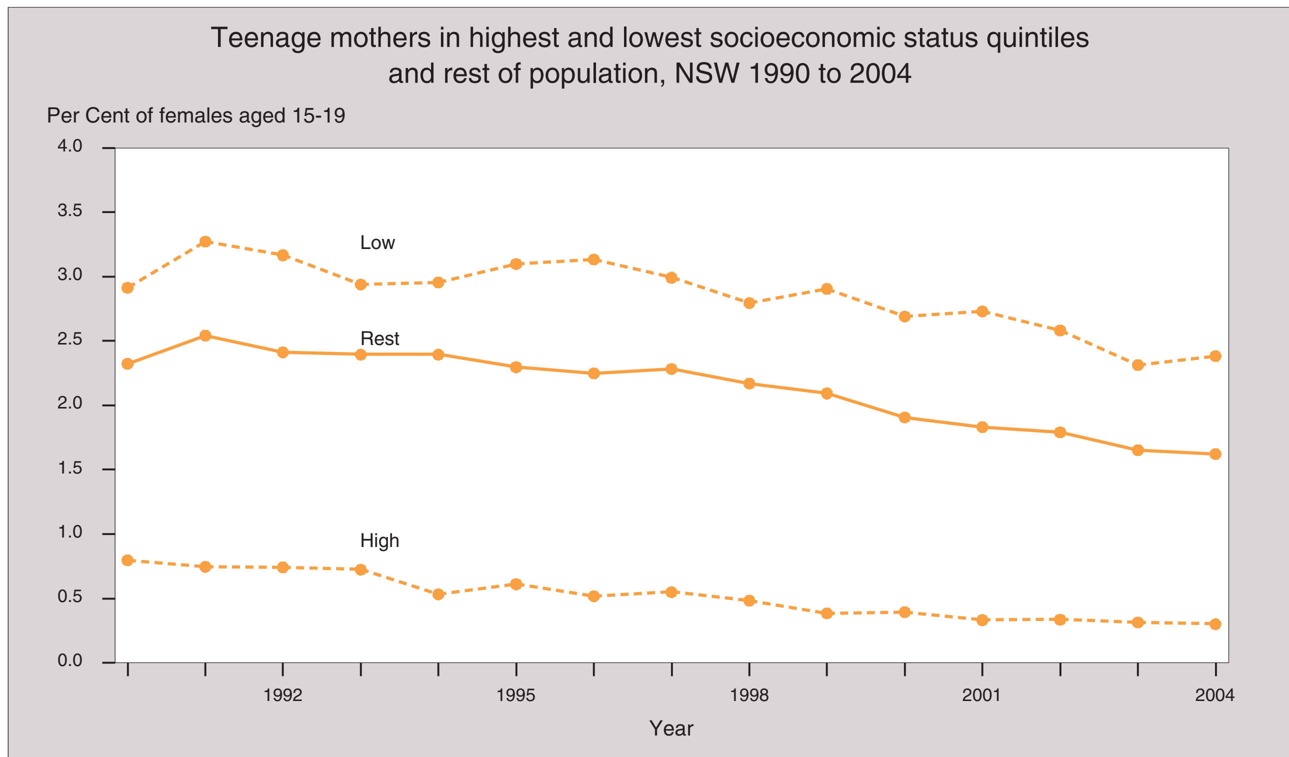


	SES group	Sex	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04	2004–05
Number	Lowest quintile	Persons	34219	35164	30677	32992	33155	33449	34850	32790
	Rest of population	Persons	84053	87631	87097	93592	94290	94307	97863	98401
	Highest quintile	Persons	21531	23493	23349	24387	23831	23502	23202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

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

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

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

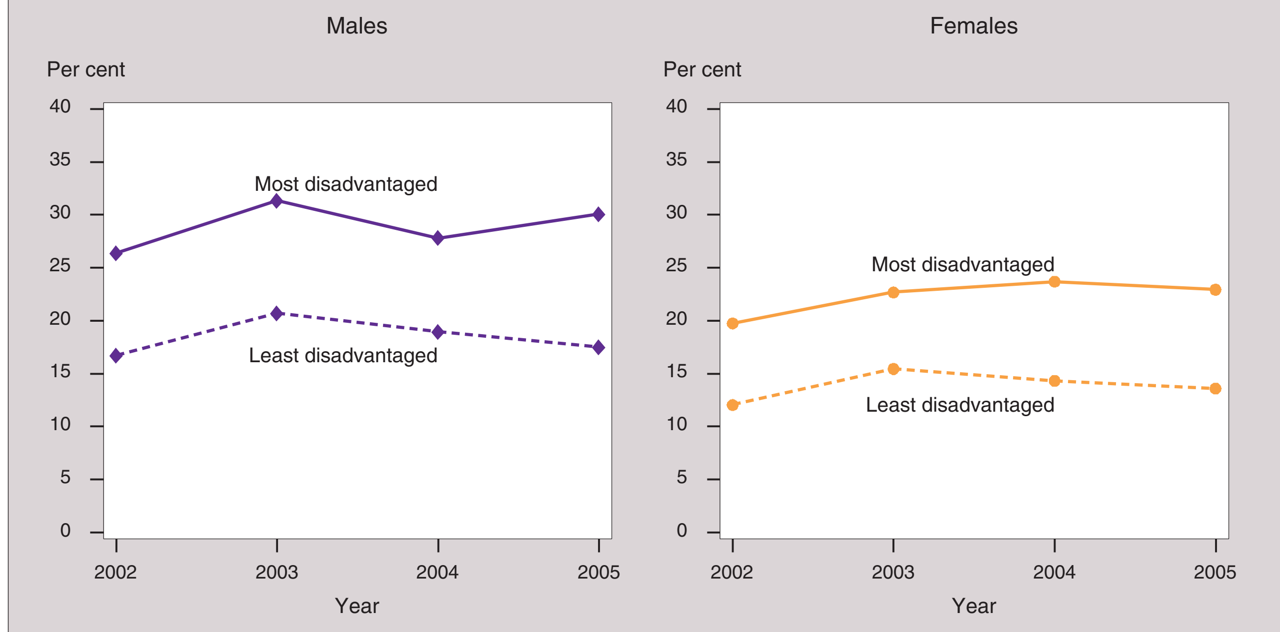


	SES group	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number	Lowest quintile	1296	1201	1137	1331	1250	1285	1215	1093	1129
	Rest of population	2754	2840	2720	2569	2390	2340	2298	2142	2107
	Highest quintile	220	232	203	161	167	144	147	138	133
	NSW	4270	4273	4060	4061	3807	3769	3660	3373	3369
Per cent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

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

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

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



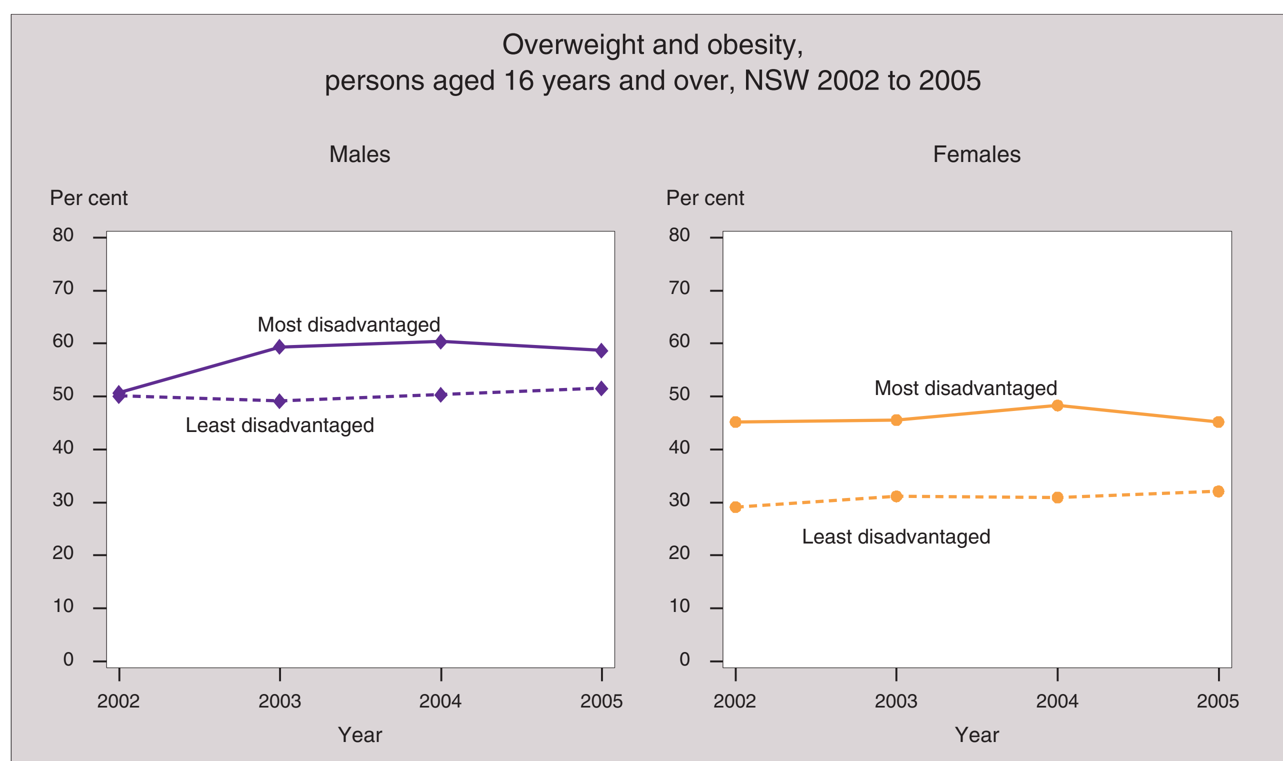
SES group	Sex	2002	2003	2004	2005
Lowest quintile	Persons	22.9	27.1	25.6	26.5
4th Quintile	Persons	24.8	21.9	22.3	20.9
3rd Quintile	Persons	21.7	22.5	22.5	20.3
2nd Quintile	Persons	21.2	20.6	18.9	15.5
Highest quintile	Persons	14.3	17.8	16.7	15.6
NSW	Persons	21.5	22.3	20.9	20.1

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

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

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

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



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

Note: Estimates for 1997 and 1998 are based on over 16,500 respondents for each year. Estimates for 2002 onwards are based on around 9,000 to 12,000 respondents for each year. Less than 5% were not stated (Don't know or Refused). The indicator includes those with a Body Mass Index (BMI) of 25 or higher. The questions used to define the indicator were: 'How tall are you without shoes?' and 'How much do you weigh without clothes or shoes?' BMI is calculated as follows: BMI = weight (kg)/height²(m). Categories for this indicator include overweight (BMI between 25 and 29.9) and obese (BMI of 30 and over).

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

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

For more information

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