

# 4 Determinants of health

Indicator 2.01 Children exposed to tobacco smoke in the home

Indicator 2.02 Availability of fluoridated water

Indicator 2.03 Income inequality

Indicator 2.04 Informal care

Indicator 2.05 Adult smoking

Indicator 2.06 Risky alcohol consumption

Indicator 2.07 Fruit and vegetable intake

Indicator 2.08 Physical inactivity

Indicator 2.09 Overweight and obesity

Indicator 2.10 Low birthweight babies

Indicator 2.11 High blood pressure

# Introduction

The factors involved in the development of disease are likely to begin years before the onset of disease, through complex interactions between individual people, their environment and broad socioeconomic factors.

‘Determinants of health’ is the term used for factors that affect health at the individual or population level. These factors can be classified into proximal factors (those acting almost directly to cause disease, such as tobacco smoking); and distal causes that are further back in the causal chain and act via a number of intermediary causes (such as socioeconomic status). Individuals have a degree of control over some determinants (such as physical inactivity), but other determinants act primarily or entirely at a population level (such as the fluoridation of drinking water).

Reliable information on the size and distribution of determinants of health is crucial for:

- evaluating the effects of current health and social policies;
- developing and prioritising strategies for health gain;
- highlighting areas for possible intersectoral action; and
- determining research priorities.

Figure 4.1 shows the dimensions of health determinants included in the national health performance framework and selected indicators presented in this report.

**Table 4.1: Tier 2 health system performance dimensions and selected indicators**

Determinants of health (Tier 2)				
Are the factors that determine good health changing for the better? Is it the same for everyone?				
Where and for whom are these factors changing?				
Environmental factors	Socioeconomic factors	Community capacity	Health behaviours	Person-related factors
2.01 Children exposed to tobacco smoke in the home	2.03 Income inequality	2.04 Informal care	2.05 Adult smoking	2.10 Low birthweight babies
2.02 Availability of fluoridated water			2.06 Risky alcohol consumption	2.11 High blood pressure
			2.07 Fruit and vegetable intake	
			2.08 Physical inactivity	
			2.09 Overweight and obesity	

This report considers determinants of health that are protective as well as hazardous – it presents information about the protective benefits of water fluoridation, fruit and vegetable intake and physical activity. It highlights important negative trends in levels of overweight and obesity, insufficient physical activity, and risky patterns of alcohol consumption.

- In 2001, 58% of adult males and 42% of adult females were overweight or obese (Indicator 2.09), and this was much higher than in 1995.
- In 2001, 13% of males and 9% of females reported risky levels of drinking (Indicator 2.06).

- In 2000, 54% of Australians were insufficiently active to achieve a health benefit (Indicator 2.08) and this was worse than in 1997.

These disturbing trends are accompanied by some more positive ones.

- The prevalence of high blood pressure has continued to drop. Over the period 1980 to 1999–2000, the prevalence of high blood pressure halved to 21% among adult males and to 16% among adult females (Indicator 2.11).
- Tobacco use continues to decline. Daily smoking dropped from 33% of males 14 years and over in 1985 to 21% in 2001, and female daily smoking dropped from 26% in 1985 to 18% in 2001. However, smoking is still responsible for more deaths and disability than any other health behaviour, and smoking rates vary dramatically according to socioeconomic status and the health status of Aboriginal and Torres Strait Islander persons (Indicator 2.05).
- Around 780,000 Australian children aged 0–14 years are still exposed to environmental tobacco smoke at home, though the proportion of households with dependent children where someone smoked inside dropped from 31% in 1995 to 20% in 2001 (Indicator 2.01).

By presenting discrete information on individual indicators, this report provides only a limited picture of how determinants of health may act jointly to cause disease. For example, globally, 50% of cardiovascular disease among people aged 30 years and over can be attributed to high blood pressure, 31% to high blood cholesterol and 14% to tobacco, but the joint effect of these three risks amounts to about 65% of cardiovascular disease (WHO 2002b).

Although the determinants of health are increasingly well characterised and well reported, comparatively few resources are currently directed towards improving them (AIHW 2002g). Expenditure on preventive and promotional services, as a proportion of total health expenditure, has remained static over the last 30 years (Deeble 1999). The *World Health Report 2002* (WHO 2002b) focuses on the health gains – and reductions in health inequalities – that can be achieved by tackling the determinants of health.

The *World Health Report* (WHO 2002b) identifies a number of interventions that are cost-effective in all settings, including: population-wide salt- and cholesterol-lowering strategies; taxes on tobacco products; strategies to improve the safety of water supplies and measures to encourage safe injecting practices. The report recommends that governments should:

- play a stronger role in formulating risk prevention policies, including more support for scientific research and improved surveillance systems;
- give top priority to developing effective strategies for the prevention of large risks to health such as tobacco use, unhealthy diet, obesity and unsafe sex;
- use cost-effectiveness analyses to prioritise interventions;
- increase intersectoral and international collaboration to reduce major extraneous risks to health, such as lack of education; and
- seek to strike a balance between government, community and individual action (WHO 2002b).

## Indicator 2.01 Children exposed to tobacco smoke in the home

### Indicator definition

**Description:** The proportion of households with dependent children (0–14 years) where adults report smoking inside.

**Numerator:** Households with a household member who smokes inside that contain any dependent children aged 0–14 years (as reported by a member of that household).

**Denominator:** Households with dependent children aged 0–14 years.

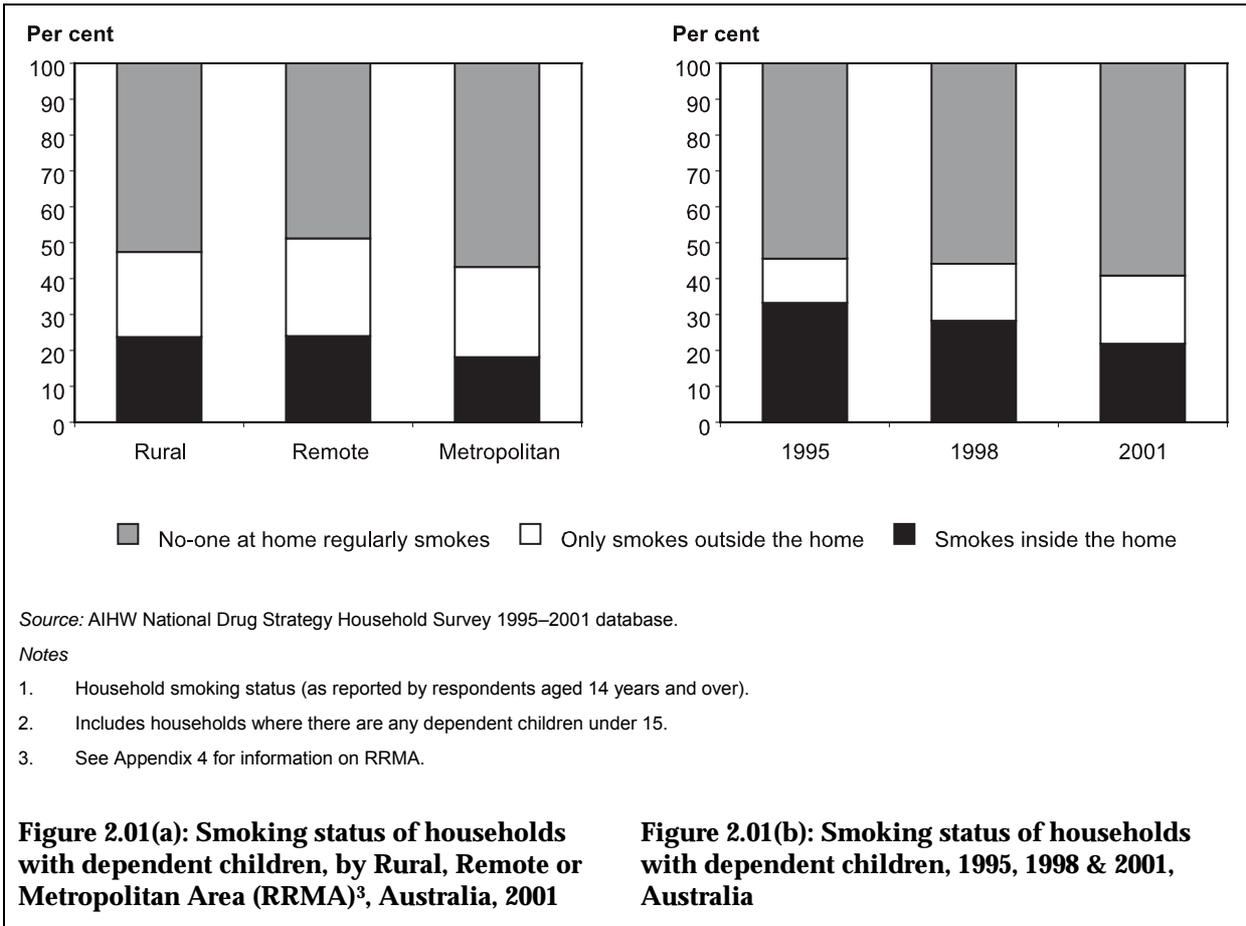
**Presentation:** Percentage of households by household smoking status.

### Rationale and evidence

The home is the most important source of exposure to environmental tobacco smoke for children. Children are particularly susceptible to the effects of environmental tobacco smoke. Passive smoking increase the risk of lower respiratory tract infections, middle ear disease, onset and worsening of asthma, decreased lung function, eye and nose irritation, low birthweight and SIDS in children (NHMRC 1997b; National Drug Strategy 2002). The benefits of reducing children's exposure to environmental tobacco smoke at home also include reduced school absenteeism, possibly increased school performance, reduced uptake of smoking and decreased consumption of tobacco among children who smoke (National Drug Strategy 2002).

### What the data show

- In 2001, 44.6% of all Australian households with children under the age of 15 years contained people who were regular smokers. Nearly half of these households (19.7% of total households) contained smokers who smoked inside the house (AIHW National Drug Strategy Household Survey 1995–2001 database).
- Among all households containing smokers, those where someone was reported to smoke inside declined steadily from 1995 (31.9%) to 2001 (20.8%). For households containing smokers with dependent children aged under 15 years, this level declined from 31.3% in 1995 to 22.6% in 1998 and declined further in 2001 to 19.7%.
- From these data, it is estimated that approximately 780,000 Australian children aged 0–14 years may be exposed to environmental tobacco smoke at home.
- Smoking inside the home was more common in remote and rural regions (24% of households with dependent children), compared with metropolitan regions, where smoking occurred inside the home in 18% of households with dependent children.



**Indicator related to:**

2.05 Adult smoking

3.02 Teenage purchase of cigarettes

## Indicator 2.02 Availability of fluoridated water

### Indicator definition

**Description:** Proportion of the population served by a reticulated water supply that provides satisfactory fluoride levels whether artificially fluoridated or naturally occurring.

**Numerator:** Number of people served by a reticulated water supply that is fluoridated at satisfactory levels.

**Denominator:** All people.

**Presentation:** By state and territory.

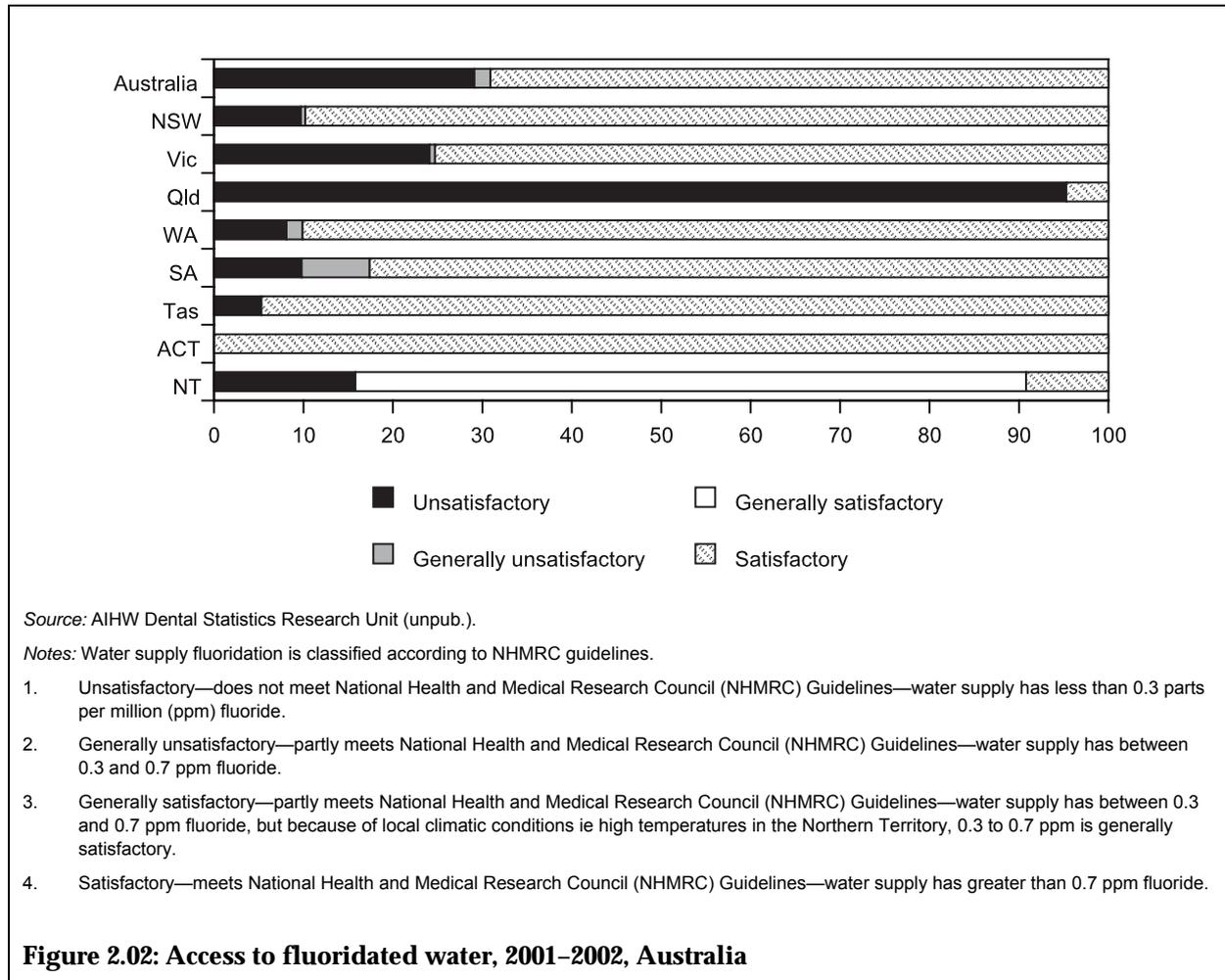
### Rationale and evidence

- Dental decay is one of the most common health problems in Australia.
- Water fluoridation at optimal levels provides significant benefits in the prevention of caries for both deciduous and permanent teeth. Its protective effect is greatest in children, but is also demonstrated in adults (NHMRC 1999).
- Water fluoridation acts to reduce the significant social inequality in experience of dental caries in children. Its impacts are greatest among children from low income households (AIHW DSRU 1999).
- Residence in a fluoridated area may not necessarily indicate consumption of fluoridated water. Some households may receive unfluoridated water because the supply is fluoridated at a point after their distribution main. Domestic water filters or softeners may remove fluoride from the water supply. Some households rely largely on tank or bottled water for drinking (NHMRC 1999).

### What the data show

- Satisfactory levels of fluoride in artificially fluoridated water vary according to the climate. In tropical Darwin 0.6 parts per million (ppm) fluoride is satisfactory but in temperate Hobart, 1.1 ppm is required (NHMRC 1999).
- Among Australian states, Tasmania has the best population coverage of fluoridated water, with 94.7% of the population living in areas with satisfactory water fluoridation levels. In contrast, only 4.7% of the Queensland population live in areas with satisfactory water fluoridation levels.
- Overall, 69.1% of Australians receive more than 0.7 ppm fluoride in their water supply, indicating a satisfactory level of water fluoridation.
- Caries of the permanent dentition of 12-year-old children (counted as the mean number of decayed, missing and filled teeth – DMFT) declined steadily from 4.79 in 1977 to 0.9 in 1996, a reduction of 83%. Since then, the trend has been stable, with a mean DMFT score of 0.83 in 1999 (Armfield et al. 2003).

- Queensland, which has the lowest levels of fluoridation, has the highest levels of caries experienced in both 5–6-year-old (deciduous dentition) and 12-year-old children (permanent dentition) of all States and Territories in Australia.
- Comparisons with OECD countries with national data within two years of that presented for Australia indicate that Australian 12-year-old children had the second lowest DMFT score (second to Luxembourg) and the highest proportion of that age group without caries.



## Indicator 2.03 Income inequality

### Indicator definition

**Description:** Ratio of equivalised weekly incomes at the 80th percentile to the 20th percentile income.

**Numerator:** High income: income at 80th percentile ranked by equivalised income.

**Denominator:** Low income: income at 20th percentile ranked by equivalised income.

**Presentation:** High/low income ratio over time.

### Rationale and evidence

There is strong evidence, from Australia and other developed countries, that low income is associated with poor health (Turrell & Mathers 2000; Wagstaff & van Doorslaer 2000).

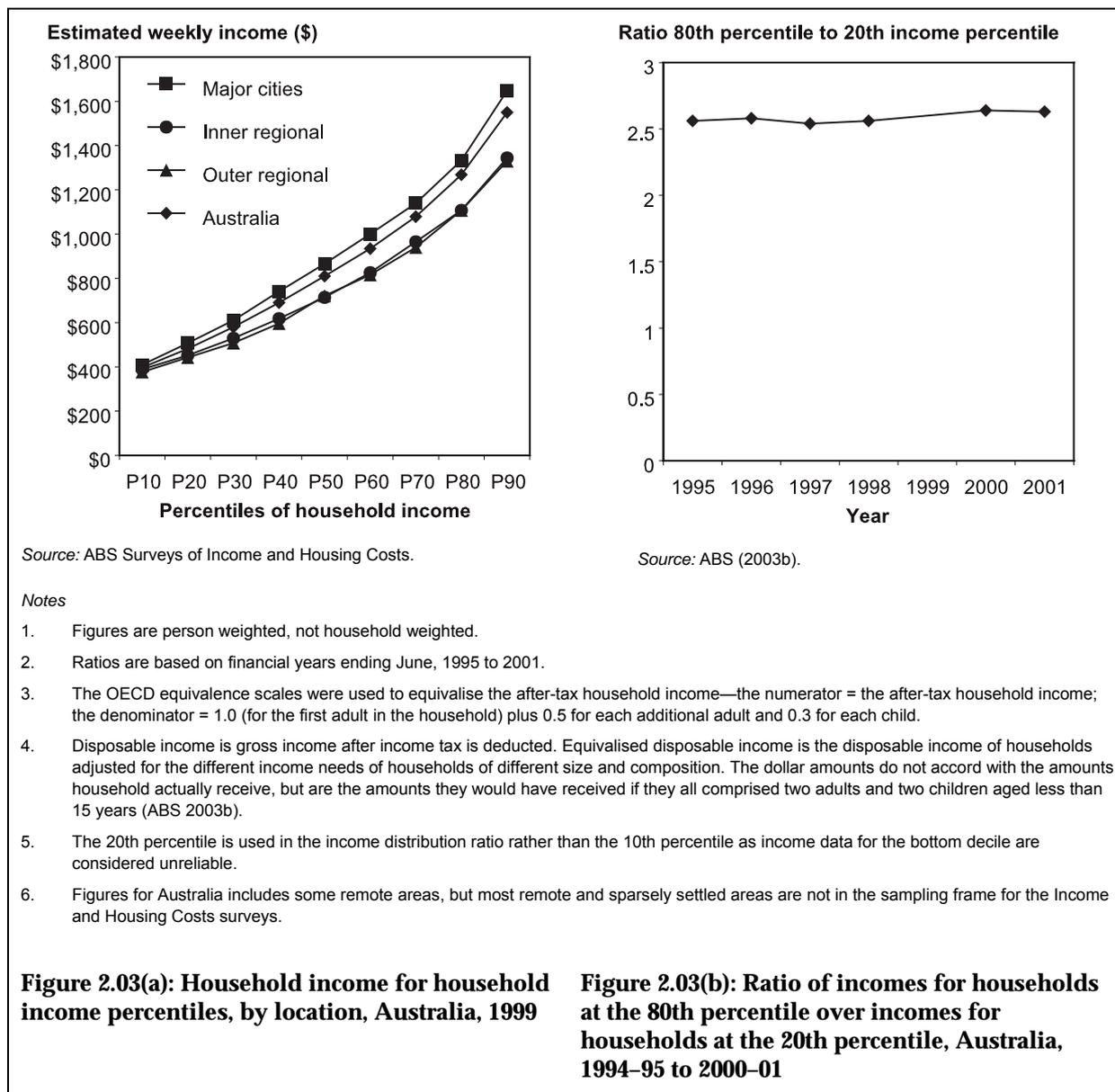
Socioeconomic inequalities in health are important from both social justice and economic perspectives. Not only can they be considered 'unfair' and preventable, but they also have high direct and indirect costs for the health system (Sainsbury & Harris 2001).

The number of earners present in a household is an important determinant of household income. Low-income households are most likely to have government pensions and allowances as their major source of income, while most high-income households have employment-related income as their principal source of income.

### What the data show

- There has not been much movement in inequality measures of household disposable income from 1994–95 to 2000–01, but what movement there is indicates a worsening of inequality. The Australian Bureau of Statistics (ABS) concludes that 'the indicators therefore suggest some possible rise in income inequality over the second half of the 1990s (ABS 2003b). The National Centre for Social and Economic Modelling (NATSEM) estimates that there was little change in overall income inequality in the period 1982 to 1996–97 (Harding 2001).
- From 1994–95 to 2000–01 the ratio of the household income of the 80th percentile of households compared to the income of the 20th percentile of households remained much the same (ranging from 2.56 to 2.63). This indicates that households at the bottom of the income distribution have come close to maintaining their position compared to those at the top (Figure 2.03(b)).
- The share of all income received by high- and low-income households was relatively stable over this period. In 2000–01, the second and third deciles of households from the bottom received 11% of all income, while the top 20% of households received 39% of all income. These proportions were similar to, but somewhat worse, than the proportions in 1994–95.

- In 1999, the high income households in major cities had significantly higher equivalised weekly disposable incomes than those in high income households in outer and inner regional areas, but there was little difference for the lower income households. Thus inequality was greater in the major cities than in the outer and inner regional areas. (Outer and inner regional areas are defined by distances from major population centres. Appendix 4 shows the location of outer and inner regional areas in Australia).



### Indicator related to:

1.06 Potentially avoidable deaths (by socioeconomic status)

3.17 Bulk billing for non-referred (GP) attendances

## Indicator 2.04 Informal care

### Indicator definition

**Description:** Number engaged in informal care.

**Numerator:** Number of carers – primary and not primary.

**Denominator:** Total number of people living in households.

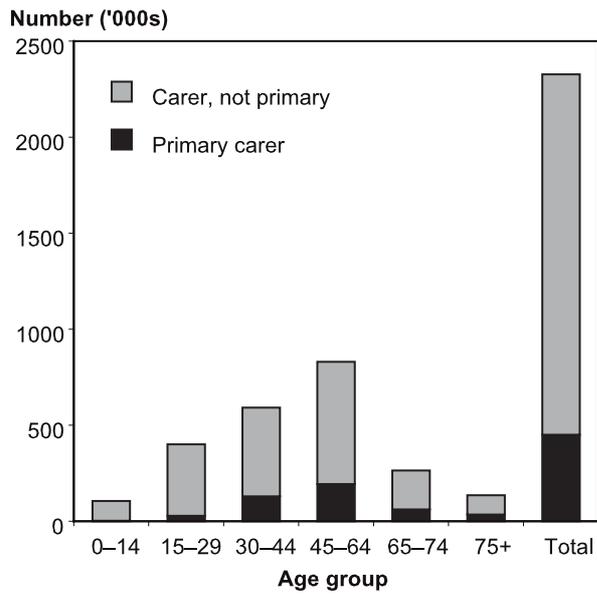
**Presentation:** Number of carers and carers as percentage of people living in households.

### Rationale and evidence

- The number of people who are providing informal assistance to care for others represents an important indicator of community capacity.
- The need for this support is likely to increase in the future, with a growing population of older Australians, an increase in the prevalence of disability and a growing emphasis on home-based care.
- In 1998, 3.6 million people in Australia had a disability (19% of the total population). More than half (57%) of the 3.4 million people with a disability living in households needed assistance to move around or to go out, shower or dress, prepare meals, do housework, light property maintenance or paperwork, or to communicate (ABS 1999).
- Primary carers are those who provide most informal assistance with personal activities to another person in need of care. Caring has a major impact on the lives of primary carers.

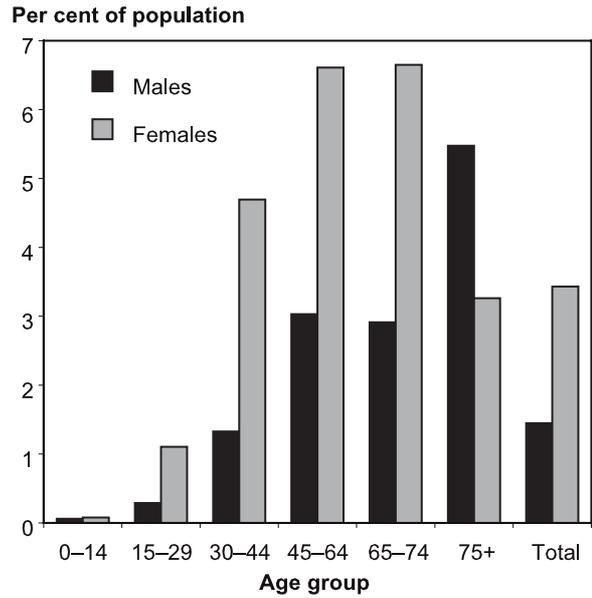
### What the data show

- Consistent data are not available to show trends in carer numbers over time.
- In 1998, 2.3 million people provided some assistance to those who needed help because of disability or ageing. Of these, 19% (450,900) were primary carers.
- Most primary carers were female (70%). Primary carers were most commonly aged 45–64 years (43%), followed by 30–44 years (28.7%) and 65 years and over (21.4%).
- Most primary carers (79%) cared for a person in the same household. Of these co-resident carers, most were caring for a partner (54%), child (26%) or parent (15%). Among non-resident carers, most were providing care to a parent (63%), and most were daughters (AIHW 1999a).
- Females (3.4%) were more than twice as likely as males (1.4%) to be primary carers. The proportion of females serving as primary carers peaked in the 45–74 year age group (6.6%), while for males this proportion peaked in the 75 years and over age group (5.5%).
- While most primary carers reported relatively good health, one in three were themselves classified as having an impairment or long-term condition that restricted their everyday activities (AIHW 1999a).



Source: AIHW analysis of 1998 ABS Survey of Disability, Ageing and Carers.

**Figure 2.04(a): Carers, by carer status and age group, Australia, 1998**



Source: AIHW analysis of 1998 ABS Survey of Disability, Ageing and Carers.

**Figure 2.04(b): Primary carers, by age, by sex, Australia, 1998**

Note: A carer is a person who provides any informal assistance, in terms of help or supervision, to persons with disabilities or long-term conditions, or persons who are elderly. Primary carers are persons who provide the most informal assistance, in terms of help or supervision, to a person with one or more disabilities.

## Indicator related to:

1.03 Severe or profound core activity limitation

3.25 Health workforce

## Indicator 2.05 Adult smoking

### Indicator definition

- Description:** Proportion of adults who are daily smokers.
- Numerator 1:** People aged 14 years and over who smoke tobacco every day.
- Denominator 1:** People aged 14 years and over.
- Numerator 2:** People aged 18 years and over who smoke tobacco every day.
- Denominator 2:** People aged 18 years and over living in private dwellings.
- Presentation:**
1. Proportion of population over time who are daily smokers. This is not age-standardised.
  2. Aboriginal and Torres Strait Islander peoples and non-Indigenous Australian smoking rates for various age groups.

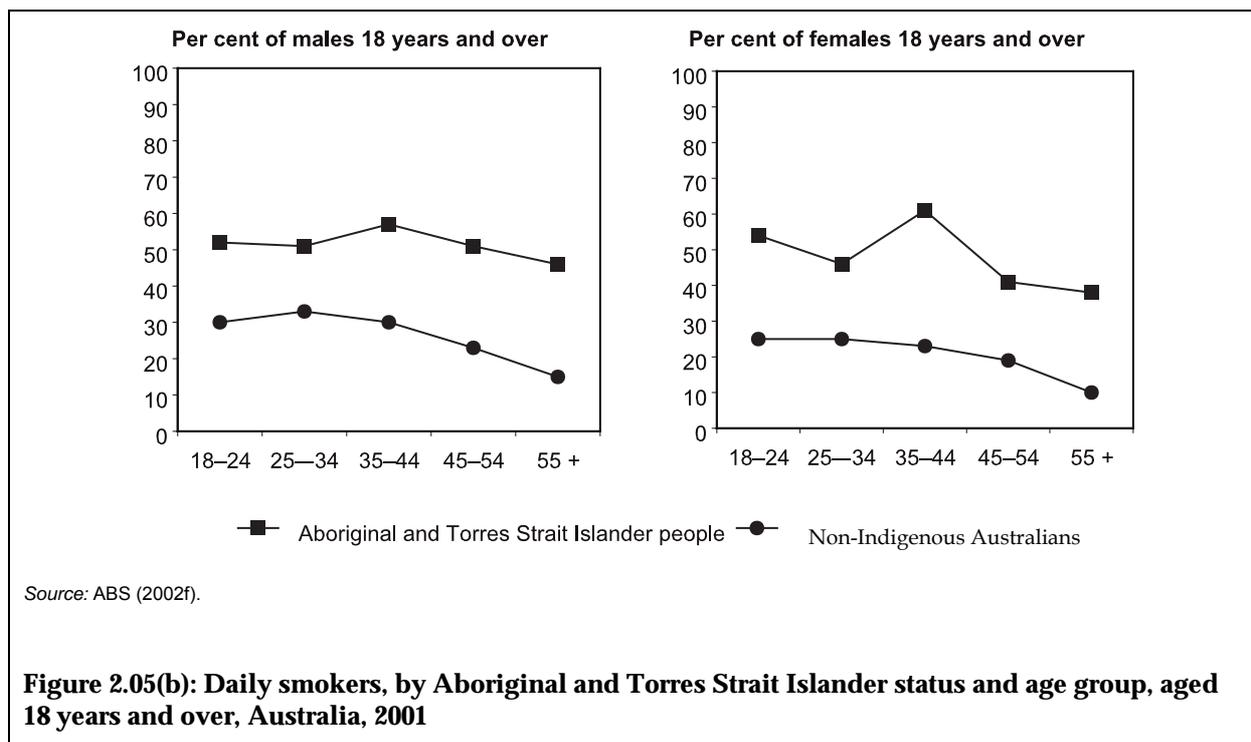
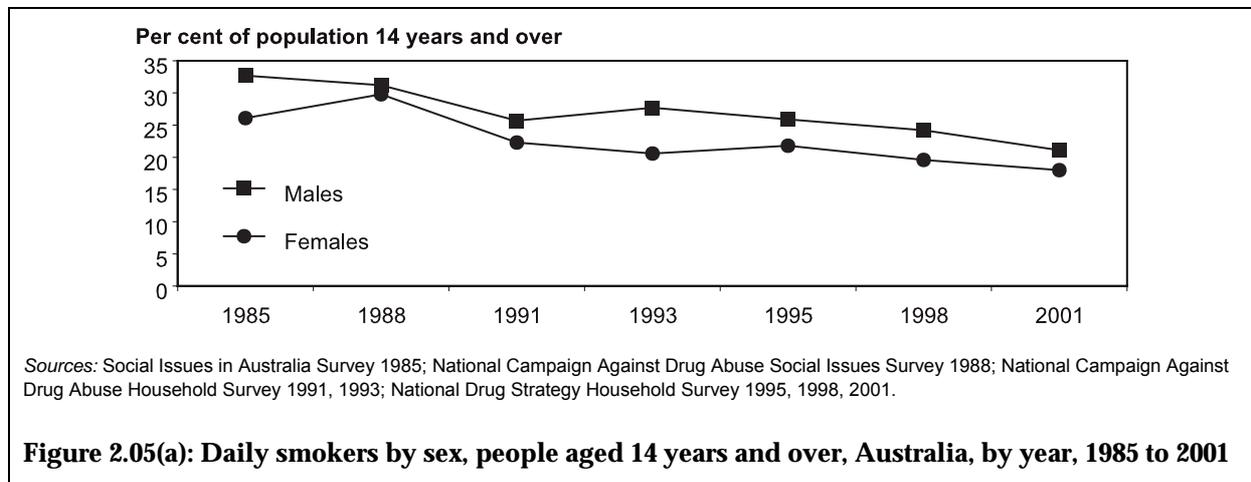
### Rationale and evidence

- Smoking is the main cause, or a significant cause, of many diseases including cancer and cardiovascular disease, and is one of the leading causes of death.
- Smoking is responsible for the greatest burden of premature death and disability of all behavioural risk factors. In 1996, it accounted for around 14% of years of life lost due to premature mortality, and 5% of healthy years lost due to disability. Most of this burden is caused by lung cancer, chronic obstructive pulmonary disease and ischemic heart disease (AIHW: Mathers et al. 1999).
- Smoking is responsible for around 19,000 deaths and 143,000 hospital separations each year in Australia (AIHW: Miller & Draper 2001).

### What the data show

- Over the period 1985–2001, the proportion of people aged 14 years and over reporting that they smoked every day declined by around 30%, from 32.7% to 21.1% for males, and 26.1% to 18.0% for females (Figure 2.05(a)).
- In 2001, one in four people aged 18 years and over (24%) currently smoked: 22% were daily smokers and 2% smoked less often than once a day. Almost half (49%) reported that they had never smoked regularly, while 26% reported they were ex-smokers (ABS 2002e).
- For both males and females, the prevalence of daily smoking was higher in younger age groups than in older age groups. It was highest among males aged 25–34 years (33%) and females aged 18–34 years (25%) (ABS 2002e: 66).
- Smoking is more common among Aboriginal and Torres Strait Islander people. In 2001, 49% of Aboriginal and Torres Strait Islander people were daily smokers, compared with 22% of non-Indigenous Australians (ABS 2002f).
- Among Aboriginal and Torres Strait Islander people, the proportion of daily smokers was highest among those aged 35–44 years (57% of males and 61% of females).

- A higher proportion of people 14 years and over in the lowest socioeconomic quintile (23.4%) smoked daily, compared with those of the highest socioeconomic quintile (13.8%) in 2001. These proportions had declined from 25.3% and 17.0% respectively in 1998 (AIHW: Miller & Draper 2001.)



**Indicator related to:**

1.01 Incidence of heart attacks

2.01 Children exposed to tobacco smoke in the home

3.02 Teenage purchase of cigarettes

## Indicator 2.06 Risky alcohol consumption

### Indicator definition

**Description:** Proportion of the population aged 18 years and over at risk of long term harm from alcohol.

**Numerator:** People classified to a health risk level (low-risk, risky or high-risk), based on their estimated average daily consumption of alcohol during the previous week.

**Denominator:** People aged 18 years and over.

**Presentation:** Proportion age-standardised to the 2001 Australian population in scope for the National Health Survey.

### Rationale and evidence

- Excessive alcohol consumption increases the risk over time of chronic ill health and premature death (NHMRC 2001).
- Road traffic accidents and liver cirrhosis are the main causes of deaths associated with alcohol, while alcohol dependence is the leading cause of alcohol-related disability (AIHW: Mathers et al. 1999).
- 'Low-risk' levels of drinking are associated with only a minimal risk of harm, and may provide health benefits for some people (particularly by reducing the risk of heart disease from middle age). 'Risky' levels of drinking are those at which the risk of harm exceeds any possible benefits, while 'high-risk' levels of drinking are those at which there is a substantial risk of serious harm (NHMRC 2001) (see Table 2.06 for amounts of alcohol that define 'risky' and 'high risk').

### What the data show

- In 2001, the majority of Australians aged 18 years and over (62%) had consumed alcohol in the previous week (71% of males and 52% of females). 12% of males and 22% of females had never consumed alcohol, or had last consumed alcohol 12 months or more previously (ABS 2002e).
- The majority of those who drank alcohol did so at a level which would pose a low risk to health (87% of males and 92% of females) (ABS 2002e).
- Just over one in ten (10.8%) adults reported that they drank alcohol at risky or high-risk levels. Males (13.2%) were more likely than females (8.5%) to report risky or high-risk levels of drinking.
- Among both sexes, the proportion reporting risky or high-risk levels of drinking in 2001 was higher than in 1995. In females, the 2001 level (8.5%) also exceeded that recorded in 1989–90 (7.4%), but in males the 2001 level (13.2%) was slightly lower than that recorded in 1989–90 (14.2%).
- Overall consumption of alcohol per head of population reached a peak of 9.8 litres of alcohol per person per year in 1981–82. It declined to 7.8 litres of alcohol per person per year in 1999–00, and has been relatively constant since (AIHW 2003f).