

# **Tobacco Control: A Blue Chip Investment in Public Health**

*The economic case and a detailed proposal for greater investment in  
tobacco control in Australia*

## **SECTION 8**

**Attachment 4**

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## **Attachment 4. Summary of anticipated costs and benefits of a comprehensive tobacco control strategy to Australian families, business, governments and the community**

### **I. Benefits to smokers and their families evidence**

#### *Early gains*

1. Improved access to Tobacco Dependence Treatment (TDT) particularly in rural areas

#### *Evidence*

Apart from in SA and Victoria where Quitlines operate call-back services, smokers in rural areas have almost no access to intensive specialist smoking cessation assistance. Severe time pressures on rural GPs restrict their capacity to provide smoking cessation advice. Smokers unable to use Zyban receive no subsidy for tobacco dependence treatments (TDTs).

2. Additional money for spending on other goods and services, equivalent to a \$50 per week pay rise, a \$1,450 per annum tax cut or a \$92 per fortnight pension increase

A pack of Peter Jackson 30s – cost \$9.95 in June 2001. At average 20 cigarettes a day, that totals \$2,312 per year per smoker. “All employees” total average weekly earnings in February 2001 were \$810.00, totally around \$42,120 per annum [1].

3. Less asthma and fewer coughs and colds; fewer school and childcare absences; subsequent improvements in parents' workplace productivity and children's school performance

After adjusting for the age, education level, and employment status of mothers—as well as infants' birth weight, method of delivery, breastfeeding status, and birth order—Chinese investigators found that ETS exposure through the mother in utero was positively associated with higher consultation (adjusted odds ratio [OR]: 1.26; 95% confidence interval [CI]: 1.14, 1.39) and hospitalisation (OR: 1.18; 95% CI: 1.05, 1.31) use in infants with nonsmoking mothers attributable to any illness. In addition, postnatal exposure to ETS at home was linked to higher rates of hospitalisations for any illness compared with nonexposed infants (OR: 1.12; 95% CI: 1.00, 1.25). The OR for higher hospital use in infants exposed to 2 or more smokers at home was 1.30 (95% CI: 1.08, 1.58). The investigators concluded that use of tobacco products by household members, even among nonsmoking mothers, has an enormous adverse impact on the health of children, as well as increases health services use and cost. The present data support the revision of public policy to reflect an evidence-based approach to the promotion of smoking cessation in all household members during and after pregnancy [2].

Children miss a great deal of school due to asthma and respiratory disease suffered more frequently with exposure to ETS [3]. Children's illnesses are a major source of absenteeism for parents. Poor school attendance is a predictor of school failure [4].

4. Improved fitness; greater pleasure from improved sense of taste and smell

Smoking causes long-term but reversible adverse effects on the ability to smell [5], and nicotine is also thought to affect taste preferences and perceptions [6–10].

5. Improved appearance

Current smokers are much more likely to suffer moderate to severe wrinkling (OR 2.72; CI: 1.32-3.21,  $p < 0.05$ ), with microscopic superficial wrinkling noted even in younger smokers (20–39 years) [11].



6. Fewer families suffering
- the tragedy of still-birth or sudden infant death
  - the shock of a child or parent dying suddenly during an asthma attack
  - the trauma of a child killed in a house-fire
  - the devastation of an infant or adolescent child dying from or severely disabled by meningitis
- SIDS, low birth weight and birth trauma are all in the top ten leading cause of disease burden for children less than 14 years of age in Australia [12]. Around 15% of SIDS is attributable to passive smoking, assuming half of female smokers with children under two years smoke only outdoors [13].
- Asthma is the leading cause of disease burden among boys and girls less than 14 years of age in Australia, accounting for almost 20% of disease burden [12]. In 1997–98 passive smoking caused 1,428 hospitalisations among this age group with another 540 hospitalisations for all other age groups [13]. Active smoking impairs the efficacy of short-term cortico-steroid treatment in mild asthma [14].
- Australian and international figures suggest between 25% and 33% of unintentional house fires which cause death are caused by smoking or associated material (lighters, matches) [15–17].
- The risk of invasive meningococcal disease in infants is 8 times higher where parents are smokers compared with infants whose parents do not smoke [18].
- It seems also that paternal cigarette smoking is a potential risk factor for childhood cancers [19].
- For an estimate of the costs of caring for a sick family member see Leistikow BN, The human and financial costs of smoking, 2000 [20].
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### *Continuing returns*

1. Increased household savings, quicker transition to home buying and ownership
2. Fewer children taking up smoking and thus perpetuating health and material inequality
3. Lower household spending on medical services
4. Over the next 15 years, at least 14,000 fewer families grieving middle-aged fathers or mothers dying prematurely from heart attack or stroke
5. Fewer families losing providers at the peak of their income-earning capacity

### *Evidence*

Consider effects on cumulative savings and ability to enter into home ownership, and consequent capital gains.

Farkas et al have demonstrated that children whose parents give up smoking are far less likely to take up smoking than children whose parents continue to smoke [21].

Collins and Lapsley estimate that expenditure by smokers and their families on additional health cares attributable to their smoking totalled \$145.3m in 1998–9 [22].

Amongst men and women less than 65 years of age, smoking causes more than 40% of all coronary heart disease deaths (45% in men; 40% in women) [17].

In 2001 alone, at least 5,400 young Australians are likely to lose a middle-aged father and 1,770 are likely to lose a middle-aged mother due to tobacco smoking. Many of the people suffering this terrible loss will be younger than 18 years of age. Calculation based on tobacco-attributable deaths in those 35 to 64 years in 1998 [13], allowing for a total fertility rate of 1.78 in 1997 [23]. A US study has recently estimated that survivor insurance costs for children who have lost a father or mother due to smoking totalled around US\$1.4b in 1994 [24].

Half of all long-term smokers will be killed by tobacco-related illness, and, of these, half will die during productive middle years, losing 20 to 25 years of life. Furthermore, families in lower socioeconomic groups feature predominantly in these statistics [25].

### Maturing investments

1. Greater generation of wealth; long-term financial support for spouses; greater inheritance for children
2. Lower spending on medical services
3. Less incapacitation from macular degeneration, high-frequency hearing impairment, osteoarthritis and possibly rheumatoid arthritis, and greater enjoyment of activities reliant on sight, hearing or mobility
4. Fewer men suffering impotence
5. Over the next 30 years, at least 8,000 fewer middle aged and older parents incapacitated by stroke, and tens of thousands fewer suffering from emphysema or peripheral vascular disease

### Evidence

Online brokers Charles Schwab Australia have estimated what smokers can save if they quit. A two-pack-a-week smoker would save \$873.60 a year, which, if invested over ten years with 10% interest, could turn into the tidy sum of around \$55,000. (*Personal Investor*, February 2001 p16).

In 1997-98 there were more than 142,000 hospital separations and more than 940,000 hospital patient days attributable to tobacco smoking in Australia [13].

Smoking is a major preventable risk-factor for age-related blindness [26], hearing impairment [27], osteoarthritis [28, 29] and rheumatoid arthritis [30, 31]. A meta-analysis by Ward et al of the epidemiologic literature on smoking as a risk factor for low bone mass concluded that cigarette smoking has a negative effect on bone mass at several major sites of osteoporotic fractures and these effects appear to be dose related [32]. Smoking has also recently been linked to multiple-sclerosis in women [33].

A meta-analysis by Tengs et al indicated that 40% of impotent men were current smokers compared with 28% of men in the general population [34]. Among diabetic men, erectile dysfunction is more common among smokers. Bortolotti et al found that taking into account the effect of age, the odds ratio of erectile dysfunction in comparison with never smokers was 1.4 (95% CI 1.3–1.6) for smokers and 1.5 (95% CI 1.3–1.6) for ex-smokers. Duration and intensity of the smoking habit was associated with increased risk [35]. Smoking reduces success in IVF treatments [36] and it has recently been reported that it reduces the efficacy of the anti-impotence drug, *Viagra* [37].

Among men and women less than 65 years, smoking causes more than 39% of strokes (44% in males; 39% in females) [17]. Tobacco-related chronic obstructive pulmonary disease accounted for 28,268 hospital separations and 237,136 hospital patient days in 1997–98 [13].

#### **Significant differences in life expectancy between smokers and non-smokers**

A recent Statistics Canada study which analyses data from the National Population Health Survey, found that smoking not only reduces the number of years that a person may hope to live, it also has a negative impact on their quality of life.

Of every 100 non-smoking men aged 45 in 1995, about 90 will survive to the age of 65, and 55 will still be living at the age of 80. However, of every 100 male smokers aged 45, 80 will survive to the age of 65, and fewer than 30 will still be living at the age of 80. Among women, the percentage of survivors is higher for both smokers and non-smokers. However, the consequences of tobacco use are just as evident. Among women who were aged 45 in 1995, about 70% of non-smokers will survive to the age of 80, compared with only about 40% of those who smoked.

Even at age 65, differences in life expectancy between smokers and non-smokers remain important. Almost six years of life expectancy separate men who smoke from those who do not, and the gap is 8.5 years among women. Tobacco use, therefore, has a major impact on life expectancy, eliminating close to one-quarter of the remaining years that a woman aged 45 could expect to live.



A study by Taylor et al, found that life expectancy of smokers who quite at age 35 exceeded that of continuing smokers by 6.9–8.5 years for men and 6.1–7.7 years for women. Among smokers who quit at age 65, men gained 1.4–2.0 years and women 2.7–3.2 years of life [38].

#### **Disability-free life expectancy**

This study also calculated disability-free life expectancy at various ages. Analysis shows that the negative impact of tobacco use is not limited to mortality. Tobacco use also has a negative impact on an individual's quality of life.

For example, a male smoker who was aged 45 in 1995 could expect to live another 18 years without some form of related disability. However, a male non-smoker could expect to live another 25 years, or seven years longer, without disability. Among women, non-smokers could live eight more years without disability than smokers.

In short, 95% of the additional years that a male non-smoker can expect to live over a smoker will be spent without disability. Not only will a smoker, on average, die younger than a non-smoker, as other studies have already shown, but the smoker will also be more likely to be limited or dependent in his or her activities of daily living at a younger age than a non-smoker.

Non-smokers can expect not only to live longer than smokers, and to live longer without disability, but also to spend a smaller percentage of their life with a disability. The lower incidence of disability among the non-smoking population, combined with their increased chance of regaining their independence, means that they will spend a larger proportion of their total life expectancy without disability. This finding is especially remarkable given that the risk of acquiring a disability increases with age and non-smokers enjoy a longer life than smokers.

In 1997-98 there were almost 27,000 hospital separations and over 187,000 hospital patient days attributable to smoking-caused cancers in Australia [13].

Recent evidence suggests that exposure to tobacco smoke (through either active or passive smoking) during periods when breast tissue is developing may increase the risk of developing breast cancer in later life [39].

6. At least 10,000 fewer people dying from cancers of the lung, pharynx, larynx, lips, tongue, stomach, cervix, colon, anus, penis
7. Possible reductions in young women developing breast cancer in the future

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## **II. Benefits to Australian businesses**

### *Early gains*

1. Reduced property, motor and Workcover insurance premium costs (fewer fires, fewer back injury and passive-smoking related claims)
2. Reduced risk of litigation by employees suffering discrimination or illness due to failure of employers to provide smoke-free workplaces

### *Evidence*

Stutts and his colleagues have estimated that, in the US, smoking is a significant cause of accidents attributable to driver distraction, almost two thirds as many as are caused by use of mobile phones [40].

Numerous employees who have had their health damaged by passive smoking in the workplace have received compensation payments, mostly, to date, in out-of-court settlements [41]. A recent lawsuit saw a registered Club in NSW sued for more than \$450,000 in damages by a non-smoking barmaid who contracted throat cancer.

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|--|--|
| <p>3. More goods and services (including many more employment generating services) purchased by those no longer buying tobacco</p>   | <p>A falling demand for tobacco products results in money that was once spent on cigarettes being spent on other goods and services, generating new jobs, potentially more than offsetting jobs lost from the tobacco industry</p>   |
| <p>4. A reduction in the estimated \$1.5b in absenteeism costs attributable to smoking: fewer smoking breaks; less time off work due to serious smoking-related diseases; less sick leave due to fewer respiratory infections in both smokers and non-smoking colleagues; less severe/faster healing back injuries</p> | <p>Robbins et al have found that among male US Army personnel who were smokers, 7.5% of hospitalisations and 14% of lost workdays were due to smoking [42].</p> <p>Businesses incur greater costs from increased absenteeism, decreased productivity of employees smoking in non-break periods, and increased life insurance premiums in smokers compared to non-smokers. This was estimated at \$75 per smoking employee per year in Canada [43].</p> <p>In Australia the probability of a male smoker being absent from work is estimated to be 66% greater than that for a male who has never smoked. For females, the corresponding figure is just 23% [44].</p> <p>Based on a study of Telecom employees, Hocking et al have estimated that smoking-related diseases would be costing Australian businesses more than \$1.5 b per annum [45].</p> <p>Workplace productivity is increased and absenteeism is decreased among former smokers as compared to current smokers [46].</p> |

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### *Continuing returns*

1. Avoidance of lost expertise and performance due to premature death, disease and disability

### *Evidence*

Consider for example the loss to journalism, political accountability and public interest resulting from the recent death of prominent journalist Paul Lyneham.

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### *Maturing investments*

1. More goods and services purchased by people and families of people who do not die early because they quit smoking

50% of all long-term smokers die prematurely, half in middle age.

When people quit, their excess risk of a heart attack is cut in half **in just one year** [47].

Consider the potential additional lifetime expenditure by one quarter of Australia's 3 million smokers who quit who would otherwise die in their 50s or early sixties due to smoking.



### III. Benefits to Federal government

#### *Early gains*

1. Reductions in need for pharmacological treatments for elevated blood fats and other cardiovascular disease (CVD), and consequent reductions in PBS expenditure  
Statins (drugs to treat elevated blood fats) are the biggest single contributing cost to Australia's Pharmaceutical Benefits Scheme, and the biggest contributor to the increase since the previous financial year [48].  
Ebrahim and colleagues in their review on statins concluded that if smokers were assigned to smoking cessation counselling and then further screening, then more than half of those who quit would need no further treatment. Total treatments costs could be reduced from 357m to only 42m pounds [49].  
9350 UK pounds per life saved compared with 543 pounds for smoking cessation.
2. Increased taxes paid on profits by companies selling goods and services consumed by smokers no longer purchasing tobacco products (offsetting reduced tobacco taxes paid by smokers)

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#### *Continuing returns*

1. Improved management and likely reductions of cost of pharmaceutical subsidies and medical treatment of asthma and diabetes and a range of other chronic diseases made worse by smoking  
Prospective data from the US Physicians' Health Study support the hypothesis that cigarette smoking is an independent and modifiable determinant of type 2 diabetes mellitus [50], and that both diabetes and smoking are risk factors for cardiovascular disease [51]. Smoking accelerates the onset of diabetes, and quitting reduces delays onset and reduces severity [52].  
In 1997-98 there were more than 37,000 hospital separations and more than 158,100 hospital patient days for ischaemic heart disease attributable to smoking (Ridolfo and Stevenson, 2001, p.106-109) [13].  
Tobacco related chronic obstructive pulmonary disease accounted for 28,268 hospital separations and 237,136 hospital patient days in 1997-98 (Ridolfo and Stevenson, 2001, p. 106-109) [13].

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#### *Maturing Investments*

1. Increased income taxes paid by smokers not dying early, and increased taxes on profits of companies producing products purchased by smokers who do not die early (offsetting increased pensions)  
*Evidence*  
50% of all long term smokers die prematurely, half in middle age. When people quit, their excess risk of a heart attack is cut in half in just one year [47].

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### IV. Benefits to State governments

#### *Early gains*

1. Shorter hospital waiting lists  
In 1997-98 there were more than 142,000 hospital separations and more than 940,000 hospital patient days attributable to tobacco smoking in Australia [13].
2. Note that GST on tobacco products paid instead on purchase of other goods and services

### Maturing Investments

1. Increased GST paid by those who live longer and consume more goods and services

## V. Benefits to health funders and insurers (Federal and State and Territory, private and public)

### Early gains

1. Immediate or early reductions in costs of
  - GP consultations for respiratory illness
  - peri-natal care, up to 20% per annum
  - treatment for fatal and non-fatal heart attacks, stroke and peripheral vascular disease starting as early as one year after reductions in smoking prevalence, totalling almost \$100m per annum

Hoffman et al found that smoking was responsible for 5.7% of respiratory illness-related physician visits in 1996 [53].

Smoking cessation is one of the most cost-effective but least used obstetric interventions [54].

The costs of treatment of cardiovascular disease (CVD) in Australia totalled more than \$3.7b in 1993–94. [48] CVD is the biggest single contributor to health care costs in Australia [55].

**Table A4.1. Net present value of savings in treatment of CVD 1–15 years after achievement of various target prevalence levels.**

Discount rates	19%	17%	15%	13%	11%
0%	\$279m	\$607m	\$934m	\$1.2b	\$1.6b
2.5%	\$182m	\$396m	\$610m	\$824m	\$1b
5%	\$121m	\$263m	\$404m	\$547m	\$689m
7.5%	\$82m	\$177m	\$272m	\$369m	\$464m
10%	\$56m	\$121m	\$187m	\$252m	\$317m

Source: Carter and Scollo, 2001

Lightwood and Glantz have demonstrated the short-term economic and health benefits of smoking cessation from a reduction in myocardial infarction and stroke. [56]

Naidoo et al. have modelled the short term consequences of smoking cessation in England on the hospitalisation rates for acute myocardial infarction and stroke. [57]

- emergency care for asthma sufferers
- treatment of meningitis and influenza, both among smokers and, through reduced opportunities for infection, among non-smokers



### Continuing returns

1. Reduced costs due to reductions in the higher post-operative narcotic requirements, additional complications and slower bone and wound healing suffered by smokers

### Evidence

Smokers are more likely to have perioperative events, particularly of a respiratory nature, when compared to non-smokers undergoing general anaesthesia (Swilck et al 1997). See for instance:

- Woodside, J.J., *Female smokers have increased postoperative narcotic requirements*. J Addict Dis, 2000. 19(4): p. 1-10 [58].
- Padubidri AN, et al. Complications of postmastectomy breast reconstructions in smokers, ex-smokers, and nonsmokers, *Plast Reconstr Surg*. 2001 Feb;107(2):342-9 [59].
- Adams, C. I.; Keating, J. F.; Court-Brown, C. M. Cigarette Smoking and Open Tibial Fractures. *Injury-International Journal of the Care of the Injured* 32 (1): 61-65, January 2001 [60].
- Moller et al, Postoperative intensive care admittance: The role of tobacco smoking [61].
- Tang et al. Smoking Status and Body Size Increase Carbon Monoxide Concentrations in the Breathing Circuit During Low-Flow Anesthesia, *Anesth Analg*. 2001 Feb;92(2):542-547 [62].

2. Lower treatment costs for cervical cancer

Researchers studying cervical intraepithelial neoplasia (CIN), a predictor of cervical cancer, have found that smoking status is significantly associated with failure of CIN treatment. Smokers appear to require longer more intensive follow-up [63].

### Maturing Investments

1. Reduced costs for treatment of CVD, chronic obstructive lung disease and cancers of the lung, pharynx, larynx, lips, tongue, stomach, cervix, colon, anus, penis, totalling more than \$1.15b over the next 30 years

Russell has analysed hospital admissions data from the NHANES I Epidemiologic Follow-Up Study (NHEFS), a longitudinal study of a representative sample of U.S. adults. Projections based on this data showed that eliminating smoking would reduce annual rates of all-cause hospitalisation among older adults by 8.9% 20 years after baseline. When only 10% of the population at risk stopped smoking or became physically active, a percentage that reflects the effectiveness of current interventions, annual hospitalisation rates at 20 years fell by 0.9% [64].

Treatment of cancer in Australia totalled more than \$1.9b in 1993-94 [65]. Smoking is the single biggest risk avoidable risk factor for cancer.

Compared with never smokers, male smokers of more than 20 cigarettes/day tend to be hospitalised more frequently (odds ratio (OR) 1.31; 95% confidence limits (CL) 0.89-1.93), and make greater use of hospital emergencies (OR 1.51; 95%CL 1.13-2.01; P < 0.01). Compared with never smokers, ex-smokers of both sexes make greater use of health care services (P < 0.01 for most services. Smokers and ex-smokers make greater use of health care services. Control of smoking will reduce the use of such services and the ensuing human and economic costs [66].

**Table A4.2 Net present value of savings in treatment of cancer, chronic obstructive pulmonary disease and CVD, 1 to 30 years after achievement of various target prevalence levels.**

Discount rates	19%	17%	15%	13%	11%
0%	\$650m	\$1.4b	\$2.16b	\$2.9b	\$3.7b
2.5%	\$350m	\$750m	\$1.15b	\$1.6m	\$2.0b
5%	\$200m	\$420m	\$640m	\$870m	\$1.1b
7.5%	\$120m	\$240m	\$380m	\$510m	\$640m
10%	\$70m	\$150m	\$230m	\$300m	\$390m

Source: Carter and Scollo, 2001

Note that these estimates relate only to reductions in the cost of treating the three major diseases caused by smoking. Not included are the costs associated with treatment of at least a dozen more conditions made worse by smoking.

The reductions in these health care costs are great and would result in substantial savings even taking into account the cost of implementing this proposal, and even assuming there would be no further reductions in smoking prevalence beyond the level achieved in 2006.

## VI. Benefits to the community

### *Early gains*

1. Increased public enjoyment of smoke free facilities and of public recreational and natural resources due to reduced litter and bushfires

### *Evidence*

Quit Victoria studies show that 72% of people are slightly bothered or bothered a lot by other people's smoke. More than 50% of people try to avoid places that are smoky, in particular, bars/nightclubs/pubs, restaurants/cafes and the casino [67]. Overseas studies have also shown similar levels of avoidance of smoky venues [68] and a perceived expectation of increased enjoyment and patronage after bans on smoking [69].

Cigarette butts are the most common form of litter in Australia, with over 32 billion butts discarded in Australia each year – if placed end to end they would extend 640 000 kilometres and circle the planet 16 times. This is a serious environmental issue as the butts take up to 15 years to break down [70].

### *Continuing returns*

2. Reduced distress and disruption for individuals and institutions who lose colleagues and mentors who die suddenly in middle age



### *Maturing investments*

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|---|---|
| 3. Increased years of healthy independent life – shorter lifetime periods of disease and disability; reduced burdens on family members and other volunteer carers | Smokers generally accept that quitting would extend their life, but some believe that this would simply increase the number of years that they would live with significant disability. Nusselder et al [71] and more recently Brønnum-Hansen and Juel [72] have demonstrated, however, that quitting smoking not only extends life, but also results in an increase in the number of years without disability. That is, non-smokers on average experience a shorter number of years with disability [71]. |
| 4. Child minding contributions and volunteering activities of retirees and pensioners who do not die prematurely.   | Estimated by Collins and Lapsley (2002) to total \$6,880 m in 1998–9. [22]  |

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## **VII. Benefits to regional Australia**

### *Early gains*

1. Adjustment assistance to those families currently dependent on sales of tobacco crops
2. Increased rural tourism spending by people no longer smoking – weekends away, holidays

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### *Continuing returns*

1. Improvements in demand for rural commodities used (raw materials etc) in products purchased by people no longer buying tobacco products

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### *Maturing investments*

1. Reduced pressures on health services particularly in rural areas.
2. Significant reductions in premature deaths and disability among rural Australians among whom rates of smoking and of CVD and cancer incidence and mortality are significantly higher

### *Evidence*

About one in three people living in remote areas in Australia report smoking, which is significantly higher than in capital cities or rural areas [73]. Death rates from CVD were higher in rural areas than in urban areas in 1996-98 with male death rates from coronary heart disease slightly higher than urban areas and heart failure death rates higher for both males and females in rural areas [74].

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