http://www.tobaccoinaustralia.org.au/17-2-the-costs-of-smoking

17.2 AUSTRALIA - The costs of smoking

This section first describes two major studies of the cost of smoking to Australian society: the burden of disease study and the study of the social costs of smoking. Both studies, as well as analyses of the lifetime costs of smoking also described in this section, rely on modelling to estimate the consequences attributable to smoking. Studies that have measured the actual costs of smoking and Australian tax revenues from smoking are also summarised.

17.2.1The cost of smoking to Australian society

17.2.1.1 The Australian Institute of Health and Welfare burden of disease study

An Australian Institute of Health and Welfare (AIHW) study estimated the burden of disease and injury in Australia in 2003.[1] The study used the measure known as the disability-adjusted-life-year (DALY), see Section 17.1.3. The DALY provides a measure of both the present and future consequences of disease and injury that occur in the baseline year (2003 in the AIHW study). For example, the number of DALYs lost due to cancer in 2003 will reflect the number of years of life lost due to cancer (the number of deaths multiplied by the life expectancy at the time of death) plus the years lost due to disability (the number of new cases multiplied by the average survival multiplied by a severity weight for that cancer).

The study estimated that in 2003 more than 2.63 million DALYs were lost due to disease and injury in Australia. The role of 14 risk factors, including six lifestyle behaviours (tobacco smoking, physical inactivity, alcohol consumption, low fruit and vegetable consumption, use of illicit drugs and unsafe sex), was considered. Together, these 14 risk factors accounted for 32.2% of the total burden of disease and injury. **Tobacco was responsible for the greatest disease burden** (7.8% of total). It was the cause of 15, 551 deaths and the loss of 204,778 DALYs. It was responsible for 20.1% of the disease burden due to cancer, and 9.7% of the disease burden due to cardiovascular disease.

Alcohol was responsible for a much smaller proportion of the disease burden than tobacco—3.3% of total.

17.2.1.2 Collins and Lapsley's studies of social costs

In reports for the Department of Health and Ageing, Collins and Lapsley have estimated the economic costs of tobacco use in Australian society for the years 1988,[2] 1992,[3] 1998–99[4] and 2004–05.[5] They also estimated the costs of tobacco use in 1998–99 for Victoria,[6] New South Wales[7] and Western Australia[8] in reports for these state governments. This chapter of Facts and Issues focuses on their national report for 2004–05.[5]

Three methodologic points need to be noted in relation to Collins and Lapsley's cost estimates. First, they use the term 'abuse' when referring to tobacco use, **on the basis that virtually all consumption is harmful to the smoker and in some instances others as well.**

Second, in contrast to the burden of disease study described in Section 17.2.1.1, Collins and Lapsley use what they refer to as a *demographic* approach (see Section 17.1.4.2). They compare the actual population size and structure in the specified year with a hypothetical alternative population in which there was no past abuse and there is no current abuse. Costs of past and present abuse are estimated in the year of the study only. So, for example, the cost in 2004–05 of a death due to tobacco smoking (death that occurred either in or before the year 2004–05) is estimated as the value of lost productive capacity in that year only. The value of a lost life, i.e. production foregone in subsequent years because of that death, is not estimated.

Third, Collins and Lapsley estimate the *net* costs of smoking, taking into account both those costs that are made *greater* and those that are *reduced* because of current and past tobacco use. For example, smoking *increases* some health care costs because of the higher prevalence of diseases caused by smoking (in smokers and ex-smokers who are still alive). These are the *gross* health care costs attributable to smoking. However, certain other health care costs are *lower* than they otherwise would be because of the premature deaths of many people who smoked over the past 40 years. These people did not live to use health care that they otherwise would have, so Collins and Lapsley subtract the costs that would have been incurred from the gross health care costs attributable to smoking in order to estimate the *net* cost. Similarly, in terms of labour (production) costs first costs that are made greater by smoking are estimated. For example, the time spent undertaking domestic duties because a home-maker is ill or has died prematurely is costed assuming domestic help will be hired. Then, savings due to reduced consumption—for example, household spending on food and clothing—are subtracted because these costs will be *lower* when there are fewer people in the household as a result of smokers dying earlier.

Collins and Lapsley estimated that in 2004–05 the total cost of smoking in Australia was a$31.5 billion (Table 17.2.1), an increase of 23.5% from the 1998–99 estimate (adjusted to 2004–05 prices).[5] This increase occurred despite steady falls in smoking prevalence since the mid-1970s, and a decline in the annual number of deaths attributable to tobacco use from 19 429 in 1998–99 to 14 901 in 2004–05. Costs did not decrease because the impact of the previous decades of tobacco use was still being observed in 2004–05. Collins and Lapsley predicted that 'as the lagged effects work their way through the system, and assuming that smoking prevalence continues to decline, real smoking costs (adjusting for the effects of inflation) should eventually fall very significantly'.[5]

Table 17.2.1
The social costs of tobacco to Australian society in 2004–05 and 1998–99
(adjusted to 2004–05 prices)

	1998–99	2004–05	
	$m		Per cent change
Tangible costs	9 184.8	12 026.2	30.9
Intangible costs	16 315.2	19 459.7	19.3
Total costs	25 500.0	**31 485.9**	**23.5**

Source: Collins and Lapsley 2007[1], Table 35

Of the total estimated social cost of tobacco abuse in 2004–05, $12 billion (38%) were tangible costs and about $19.5 billion (62%) were intangible (Table 17.2.1). Collins and Lapsley include the following resources in their estimates of **tangible costs: lost productive capacity due to premature death or smoking-associated illness (labour costs), health care for smoking-associated illness, fires attributable to smoking, and abusive consumption (i.e. the cost of purchasing tobacco, estimated at market prices, less taxes).** They define the intangible costs of tobacco abuse as the sum of the psychological costs of premature death (incurred by family and friends) and the loss of enjoyment of life (incurred by the smoker) as a consequence of smoking-associated illness. Intangible costs are difficult to value and only the intangible cost of premature death was included in Collins and Lapsley's report for 2004–05. They used the Bureau of Transport Economics' estimate of A$2 million as a reasonable valuation of a lost life. Adjustment to 2004–05 prices and reference to the average life expectancy of the Australian population gave an estimate of $53 267 for the average intangible value of the loss of one year's living (as opposed to the loss of a life).

Estimates of tangible costs are summarised in more detail in Table 17.2.2. Collins and Lapsley disaggregated lost productivity (labour) costs into 'workforce' and 'household' costs because different valuation methods were used for paid work and unpaid domestic work. Workforce labour costs were further disaggregated into reduction in the workforce due to premature death and absenteeism due to smoking-associated illness. Reduced on-the-job productivity due to smoking was not included in their estimates because of lack of data. Costs due to the reduced workforce size were estimated from national accounts data. The estimate for absenteeism was based on Australian research which found that smokers were 1.4 times more likely to be absent from work, and ex-smokers 1.3 times more likely, than those who had never smoked.[9]

Table 17.2.2
Tangible social costs of tobacco use in Australia, 2004–05, ($m)

Cost category	$m
Labour	
Labour in the workforce	
Reduced workforce	4 969.5
Absenteeism	779.6
Total	5 749.1
Labour in the household	
Premature death	9 156.4
Sickness	686.7
Total	9 843.1
Total workforce and household labour	15 592.2
Less consumption resources saved	(7 583.1)
Net labour costs	8 009.1
Health care (net)*	
Medical	158.4
Hospital	223.4
Nursing home	(177.3)

Pharmaceuticals	77.3
Ambulances	36.6
Total net health care costs	318.4
Fires	63.0
Resources used in abusive consumption (purchase of tobacco)	3 635.6
Total tangible costs A$	12 026.2

Note: Bracketed figures are negative (i.e. gains)

Sources: Collins and Lapsley 2008,[5] Table 33

Household labour costs due to smoking were valued using Australian Bureau of Statistics methodology; the cost of hiring the market replacement for each individual household function was used to estimate the value of time lost due to death or illness.

Table 17.2.2 shows that loss of household and workforce labour due to illness and premature death caused by tobacco abuse is the biggest component of the tangible costs of smoking, representing 67% of the total in Australia. Spending on tobacco products by addicted smokers is also a major component of total costs (30%). The net health care costs attributed to smoking were $318.4 million (2.65% of the total). The gross health care costs attributable to smoking, before adjustment for savings due to premature death, were $1.836 billion.

Collins and Lapsley's estimates of the social costs of tobacco abuse are extremely conservative; the actual costs are likely to be much higher. Lack of data prevented Collins and Lapsley assigning values to many of the social costs known to be attributable to smoking. For example, the following are not included: the purchase of over-the-counter medicines, domiciliary care and allied health services.[5] As mentioned previously, reduced on-the-job productivity was not costed. However, a study published in 2006 estimated that between eight to 30 minutes per day are lost due to smoking. If five minutes are spent daily on smoking outside of normal break times, the employee is 1% less productive.[10]

Collin and Lapsley also note that some of their cost estimates were almost certainly too low. For example, the cost of pharmaceutical products is based only on the highest volume drug categories on the Pharmaceutical Benefits Scheme. The hospital cost estimates are based on average treatment costs for each condition and do not reflect the fact that health care costs for smokers are likely to be higher than for non-smokers.[11] For example, smoking up to the time of any surgery increases cardiac and pulmonary complications, impairs tissue healing and is associated with more infections, therefore increasing the average length of stay, staff workload and requirements for medicines.[12,13] Costs associated with the management of birth complications for women in the United States who smoke during pregnancy exceed those of non-smokers by 66%.[14] Costs for smokers having orthopaedic surgery can be up to 38% higher than those of non-smokers due to infections resulting in prolonged hospital stay and double the re-admission rate.[15]

The distribution by payer of the tangible costs of smoking in 2004–05 is summarised in Table 17.2.3. More than half the costs was borne by households, 42% was borne by business, and 7.6% was borne by governments.[5] By their nature, all intangible costs are borne by individuals.

Table 17.2.3
Distribution by payer of the tangible social costs of tobacco abuse in Australia, 2004–05 ($m)

	Households	Business	Government	Total
Workforce labour	0.0	4 517.4	1 231.6	5 749.1
Household labour	9 843.1	0.0	0.0	9 843.1
Health care				
Hospitals	7.3	37.6	178.5	223.4
Medical	17.6	16.1	124.8	158.4
Nursing homes	(37.2)	(0.4)	(139.6)	(177.3)
Pharmaceuticals	12.7	0.0	64.6	77.3
Ambulances	11.4	4.2	21.0	36.6
Total health care	11.8	57.5	249.3	318.4
Fires	16.4	36.5	10.2	63.0
Resources used in abusive consumption (purchase of tobacco)	0.0	3 635.6	0.0	3 635.6
Total	9 871.2	8 247.0	1 491.1	19 609.3
Percentage of total costs	50.3%	42.1%	7.6%	100%

Sources: Collins and Lapsley 2008,[5] Tables 33

Over 99% of the cost borne by households was for labour (due to premature death and illness) but smokers and their families bore an estimated $11.8 million in health care costs and $16.4 million for smoking-related fires.

Approximately 55% of the cost to business was for labour. The other major cost to business according to Collins and Lapsley is the amount (net of all taxes) spent by smokers on tobacco products, spending that smokers do not direct to the purchase of other goods and services. Spending on tobacco products is construed as a cost to businesses outside the tobacco industry rather than as a cost to individual smokers.

The most significant cost to government results from a reduction in public sector workforce labour. This was estimated to total $1 231.6 million. The other major cost to government is net health care costs, which are estimated at $249.3 million.

17.2.2The actual costs of smoking

Studies such as those of Begg et al.[1] and Collins and Lapsley[5] base their cost estimates on aetiological fractions. This section by contrast summarises studies of the *actual* costs of smoking, i.e. smoking status is recorded for individuals in a cohort and data are collected on the pertinent outcome. Only one study is Australian because of limitations of Australian databases.

17.2.2.1 Smokers' health service utilisation and costs

Studies comparing actual health care utilisation rates (or health care costs) for smokers and non-smokers consistently report higher health service usage and costs for smokers. The following are examples of such studies.

- English et al. compared the hospitalisation rates of smokers, former smokers and never smokers over the period 1978–94 in Busselton, Western Australia.[16] Smokers' hospitalisation rates were 1.32 times higher than never smokers and their use of hospital bed-days was 1.4 times higher. Former smokers' rates for hospitalisation and bed-days were 1.13 and 1.22 times higher than never-smokers, respectively. English and colleagues point out that these rates give estimates of the number of hospitalisations and bed-days in Australia attributable to smoking that are about 40% higher than estimates obtained using the aetiological fraction methodology normally used, and described in Section 17.1.4.1. In other words, the health care costs attributed to smoking are usually underestimated. Hurley used the rates calculated by English *et al*. to estimate hospital costs attributable to smoking in 2004–05.[17] She estimated that almost 300 000 hospitalisations and 1.47 million bed days costing $682 million could be attributed to smoking in Australia in 2001–02 alone.[17] Hurley noted that this estimate was still conservative; the actual costs would be even greater than $682 million because costs for those aged 80 years and over, and costs of pharmaceuticals provided from hospital, were not included. In comparison, Collins and Lapsley's estimate for the gross costs of hospitalisation attributable to smoking in 2004–05 was $669.6 million.[5]
- In the United States, Vogt and Schweitzer, surveyed about 2500 members of a health maintenance organisation between 1967 and 1974 and found that current smokers used 20% more hospital days than non-smokers.[18] Bland et al. studied almost 8000 members of a Minnesota health plan in 1999 over 18 months.[19] They found that medical costs were 16% higher for smokers than never smokers.
- Hvidtfeldt et al. in Denmark studied hospital admission data over a 20-year period for approximately 12 000 people enrolled in the Copenhagen City Heart Study in 1981–83.[20] Smoking increased hospital admissions and the duration of hospitalisations for all diseases, not just smoking-related illnesses. For example, for men who smoked more than 20 gm of tobacco per day in 1981–83, the risk of an admission to hospital over the next 20 years for a smoking-related condition was 2.77 times that of a non-smoker, and the risk of admission for other conditions was 1.32 times higher than for non-smokers.
- A 1995 study of 43 408 people living in rural Japan found that male smokers' medical costs were 11% higher than those of non-smokers over a 30-month period. Costs for female smokers were not higher.[21]

The pattern is more complex when costs for smokers who have quit are compared with those of smokers and non-smokers. Warner reviewed the issue and data in a commentary published in 2003.[22] He concluded that former smokers who quit recently (up to four years ago) consistently have higher health service utilisation and health care costs than both current smokers and never-smokers. This counterintuitive finding occurs because many smokers who quit do so because they are already unwell, a phenomenon referred to as the 'quitting ill'. After three to five years, their health care utilisation rate falls to that of current smokers, and after many years ex-smokers' health care costs approximate those of never smokers. Warner attributes this in part to 'survivor bias', i.e. the sicker ex-smokers are no longer included in the study sample because they have died. For example, in the analysis by Vogt and Schweitzer,[18] mentioned above, the usage of most health services was higher for former smokers than current smokers, but the longer the time since quitting, the lower the hospital discharge rate.

Studies by Martinson et al.[23] and Musich et al.[24] provide further support for Warner's commentary. Martinson and colleagues studied 8000 health plan members in Minnesota from 1995 to 1997. Higher health care costs increased the likelihood of a smoking cessation attempt. Musich et al. found that it took twice as long (10 years rather than five years) for medical charges after smoking cessation to drop to the level of non-smokers if the smoker had one of three chronic conditions (arthritis, allergies or back pain). They studied General Motors Corporation employees from 1996–99. These three chronic conditions are not normally regarded as smoking-associated illnesses.

17.2.2.2 Health care costs attributable to passive smoking

Hill and Liang in the United States linked data on smoking in the home, from National Health Interview Surveys (1998 and 2000), and health service usage and costs for almost 3000 children aged less than five years, from Medical Expenditure Panel Surveys (1999 and 2001).[25] Exposure to smoking inside the home was associated with an increased risk of the child being taken to the emergency department and being admitted to hospital. Of children exposed to smoking at home, 4.3% were admitted to hospital for respiratory conditions at least once per year, compared with 1.1% of children living in homes without an adult smoker. Annual expenditures for care of respiratory conditions were $117 higher ($274 versus $150) for exposed children.

17.2.2.3 Productivity costs

Studies in the United States,[26,27] Finland[28] and Sweden[29] confirm that smokers take more sick leave than non-smokers. The Finnish study found that smoking and obesity were the two health-related behaviours most associated with sick leave; 16.4% of self-certified absences in men and 10.3% in women were due to smoking.[28] One of the US studies, by Bunn and colleagues,[26] measured unproductive time at work as well as sick leave. Between 2001 and 2005, more than 45 000 workers from 147 companies completed a Wellness Inventory, reporting on their smoking status, health conditions, and the number of days of work lost and hours they were unproductive due to these conditions. The average annual cost for lost productivity was about 70% higher for current smokers than non-smokers ($4430/year versus $2623/year). About 60% of the productivity losses for smokers were due to unproductive time at work.

Studies in Finland,[30] Germany[31] and Sweden[32] have found that the likelihood of receiving a disability pension is higher for smokers than non-smokers. The Swedish study, for example, followed over 45 000 men for 38 years and found that men who smoked more than 10 cigarettes per day were twice as likely to receive a disability pension as non-smokers.

17.2.2.4 Impact on smokers' wealth

Zagorsky investigated the impact of smoking on the wealth of American baby boomers (born 1957–64) using data from the National Longitudinal Survey of Youth, which tracked the lives of approximately 10 000 people from 1979 to 2002.[33] Heavy smokers had a reduction in net worth of almost $8400 compared to non-smokers (after adjustment for other socioeconomic factors) and every year a person smoked during their adult life was associated with an additional drop of $410 in net worth. Zagorsky concluded that smokers appear to pay for tobacco from income that is saved by non-smokers.

Siahpush and colleagues in Australia have investigated the association of smoking with financial stress (measured by indicators such as being unable to afford meals or heat the home due to lack of money)

and have studied the prevalence of smoking-induced deprivation, which reflects behaviour such as spending money on cigarettes that should otherwise have been spent on essentials such as food.[34–37] Their analysis of 1998–99 Household Expenditure Survey data found that financial stress was more frequent in households where a smoker lived, irrespective of the household income. In the lowest and highest income quintiles, smoking households were about 2.5 times more likely to report severe financial stress as non-smoking households, although financial distress per se was much less common in high income households.[34] Siahpush and colleagues' analysis of International Tobacco Control Policy Evaluation Survey data for 2003–05 found that 33% of Australian smokers reported smoking-induced deprivation, compared with 28% in the United States and Canada and 20% in the United Kingdom.[35]

17.2.3Lifetime costs for smokers and non-smokers

Models have been developed to estimate the *lifetime* costs for smokers and non-smokers. Such models link data on life expectancy with per capita cost data. Note that the magnitude of the lifetime cost will depend on the age from which the estimate starts; lifetime costs from age 20 years, for example, will be larger than those from age 40 years, if all other assumptions are identical. The discount rate is also relevant. As mentioned in Section 17.1.2, economists discount future streams of costs and benefits to present value.[38] The higher the discount rate, the less impact costs occurring at the end of life have on a lifetime cost estimate.

Some researchers have estimated that the lifetime health care costs for smokers are *lower* than for non-smokers. In the models these researchers used, the health care cost savings attributed to smokers' premature death from smoking-associated illnesses more than offset their higher annual medical costs.[39,40] Other analysts have found the reverse—that although smokers do, on average, die earlier than people who have never smoked, this 'saving' in terms of medical expenditures does not fully offset their higher medical costs—the lifetime medical costs for smokers are *higher* than for non-smokers.[41,42]

The key studies addressing this issue are summarised in Table 17.2.4. Hodgson, who authored the 1992 publication that reported higher lifetime costs for smokers than non-smokers, has critiqued studies with the opposite finding.[41,43] He believes that their results are due to underestimation of annual health care costs for smokers and discount rates that are too low. For example, Hodgson pointed out that Barendregt and colleagues assumed that per capita health care costs for male smokers are 40% higher than for non-smokers, whereas the actual peak difference in costs is more than 100%. Further, he pointed out that Barendregt et al. inappropriately focused on undiscounted lifetime costs. The recommended discount rate for future costs is between 3 and 5% (see Section 17.1.2). When Barendregt et al. discounted future costs for men at annual rates of 4.5% or higher, and for women at 5.5% or higher, smokers' lifetime costs were greater than those of non-smokers, despite the fact that smokers' per capita health care costs were still substantially under-estimated.

Table 17.2.4
The social costs of tobacco to Australian society in 2004–05 and 1998–99 (adjusted to 2004–05 prices)

Reference	Country and year of study	Main findings
Manning et al.[44]	United States, 1986	Lifetime net cost (including productivity) of smoking (smokers minus non-smokers): $0.15 per pack of cigarettes smoked

Lippiatt[40]	United States, 1986	Difference in lifetime medical costs between a continuing smoker and a smoker who quits at age 35-39: –$796 i.e. a smoker has a lower lifetime costs (3% pa discount rate)
Hodgson[43]	United States, 1990	Lifetime medical costs (from age 17), smokers vs never-smokers: Men: $35 914 vs $27 276 Women: $52 902 vs $42 783 (3% pa discount rate)
Barndregt et al.[39]	Netherlands, 1988 (costs in US$)	Lifetime health care costs (from age 40), smokers vs non-smokers: Men: $72 700 vs $83 400 Women: $94 700 vs $111 000 (undiscounted; smokers' lifetime costs > non-smokers when discount rate ≥ 4.5% for men and ≥ 5.5% for women)
Rasmussen et al.[42]	Denmark, 1999	Total (direct +productivity) lifetime costs (from age 35), ever-smokers vs never-smokers: Men: 505 344 DKK vs 284 098 DKK Women: 559 808 DKK vs $315 905 DKK (5% pa discount rate)
Hayashida et al.[45]	Japan, 2007 (costs in US$)	Cumulative medical expenditure (age 40 to 90), smokers vs non-smokers $48 542 vs $49 710 (3% pa discount rate; smokers' and non-smokers' cumulative medical expenditures were the same with a 5% pa discount rate)

Source: Collins and Lapsley 2007[1], Table 35

17.2.4The economic benefits of the tobacco industry

In 2009, retail sales of cigarettes and other tobacco products totalled $9.98 billion in Australia, representing about 2.86% of retail sales.[46] British American Tobacco Australia (BATA) claims that 40 000 retail businesses sell cigarettes and tobacco products in Australia[46] though an earlier study commissioned by BATA put this figure at 35 000.[47]

The tobacco industry has often argued both in Australia and elsewhere that it generates much-needed employment and government revenue. A study commissioned by BATA estimated that in 1999–2000, about 57 500 full-time equivalent jobs were generated by the demand for tobacco products.[47] This total included 310 people employed in growing, 3270 in manufacturing, 18 460 in retailing and distribution and 35 650 as a result of the flow-on effect in other sectors.[48] Since 2001 there have been major changes to the growing and production of tobacco products in Australia. All tobacco is now sourced from overseas and two of the three major tobacco companies now manufacture products overseas too.[56] See Chapter 10 for a fuller and more up-to-date discussion of the tobacco industry in Australia.

Warner and Fulton have highlighted two key flaws in the industry's economic arguments against tobacco control.[49] First, industry arguments typically ignore the health effects of smoking. Second, they overstate

and inaccurately reflect the economic importance of the tobacco industry by assuming that resources devoted to tobacco production and distribution would disappear if tobacco sales declined. Warner and Fulton point out that if smoking prevalence were to reduce significantly, some, if not all, expenditure previously allocated to tobacco would be reallocated to alternative goods and services. They outline a standard economic methodology for quantifying the impact of removal of an activity such as tobacco consumption from the economy. Spending on tobacco consumption is first removed from a model of the country's economy to obtain an estimate of the gross impact. Then the same amount of money is reintroduced into the model and redistributed according to standard consumption and saving patterns. Warner and Fulton claim that when this methodology is applied, the economic impact of reductions in tobacco use are typically much lower than the tobacco industry estimates. In non-tobacco growing economies, the impact can in fact be positive, because the replacement purchases are associated with greater economic benefits. Although tax revenues could decline if governments chose not to raise the levels of other taxes to compensate for declines in tobacco excise, new non-tobacco economic activity would generate tax income for government.

Junor and colleagues applied the methodology suggested by Warner and Fulton to the economy of New South Wales.[50] They modelled the macroeconomic and distributional effects of annual reductions in smoking prevalence from 2002–03, leading to a 25% reduction in expenditure on tobacco products by 2007–08 and a 50% reduction by 2012–13. The change in NSW economic output varied from an increase of 0.003% to a decrease of 0.006%, depending on how the released smoking expenditures were reallocated. State employment did decrease under all assumptions, but only by a maximum of 0.034%, i.e. a reduction of 908 jobs.

Collins and Lapsley, in a report for the Cancer Council Western Australia,[51] review analyses of the social benefits and costs of the Australian tobacco industry. They conclude that a reduction in tobacco use is unlikely to cause a contraction in the Australian economy, although it would undoubtedly cause a contraction in the tobacco industry itself. In fact, they predict that a reduction in the Western Australian smoking prevalence rate to 5% (a 15.5% absolute reduction) would result in social benefits for the state. If the reduction occurred over 10 years, the predicted social benefit is approximately A$4.4 billion.

A report commissioned by the tobacco company Philip Morris, when the Czech government proposed raising cigarettes taxes in 1999, is also instructive in relation to this issue. The analysis, carried out by the international consulting firm Arthur D. Little International, Inc, concluded that the effect of smoking on the public finance balance in the Czech Republic in 1999 was positive, an estimated net benefit of 5 815 million CZK (Czech koruny), or about US$298 million.[52] The analysis included taxes on tobacco, and health care and pension savings because of smokers' premature death, as economic benefits of smoking, and these benefits exceeded the negative financial effects of smoking, such as increased health care costs. The report created a furore; public health advocates found the explicit assumption that premature death is beneficial morally repugnant. The controversy was described by the journalist Chana Joffe-Walt on the radio program *This American Life*,[53] and was reported in the *British Medical Journal*.[54] According to *This American Life*, Philip Morris distanced itself from the report in response to the controversy, banning its employees from citing the findings. In fact, as Bates pointed out in a letter to the *British Medical Journal*,[55] the report's claim that smoking was beneficial relies on its inclusion of taxes as a benefit, not any savings due to smokers' premature deaths. Costs associated with smoking while the smoker was still alive totalled 15 647 million CZK, 13 times more than the 'benefits' associated with early death. The net benefit reported in the analysis arose because the tobacco tax revenue of 20 269 million CZK was regarded as a benefit. As detailed in Section 17.1.1, taxes are not an economic cost

(or benefit**); they are a transfer payment**. The recipient (the government) gets richer, while the taxpayer gets poorer. No economic benefit or cost results.

17.2.5 Tax revenue

Although not an economic cost or benefit, tax revenue will nevertheless always be a consideration for governments. In Australia, revenue from excise and customs duty and GST on the sale of tobacco products exceeded $7 billion in 2009–10 and comprised about 3% of total government revenue.[56]

In their 2004–05 national report,[5] Collins and Lapsley contrast revenue received by governments from duties and Goods and Services Tax (GST) on tobacco products with expenditure related to treatment of tobacco-caused diseases and other economic costs of tobacco use borne by government. The excise and customs duty, totalling over $5.7 billion, accrued to the federal government; the GST revenue, totalling $937 million, accrued to state governments. The tobacco-related revenue and expenses in 2004–05 for the federal government and state governments are summarised in Table 17.2.5 and 17.2.6, respectively.[5]

Table 17.2.5
Impact of tobacco abuse upon the federal government budget, 2004–05

Expenses	$m	$m	Revenue	$m	$m
Health			Excise duty	5 220.0	
Hospitals	93.6		Customs duty	518.0	
Medical	124.8		Total tobacco revenue		5 738.0
Nursing homes	(132.8)		Less		
Pharmaceuticals	64.6		Revenue forgone		
Ambulances	4.3		Income tax	1 025.0	
Total health		154.4	Indirect taxes	1 848.9	
Fires		0.4	Total revenue forgone		2 873.9
Total outlays		154.8	Total net revenue		2 864.1
Net revenue minus outlays		2 709.3			

Note: Bracketed figures are negative (i.e. gains)

Source: Collin and Lapsley 2008,[5] Table 42

Table 17.2.6
Impact of tobacco abuse upon the state government budgets, 2004–05

Outlays	$m	$m	Revenue	$m	$m
Health					
Hospitals	84.9				
Medical	0.0		GST	937.4	
Nursing homes	(6.8)				

Pharmaceuticals				
Ambulances	16.7			
Total health		94.8		
Fires		9.8		
Total expenses		104.7	Total net revenue	937.4
Net revenue minus outlays		832.7		

Note: Bracketed figures are negative (i.e. gains)

Source: Collin and Lapsley 2008,[5] Table 42

Apart from the costs of treatment of smoking-associated diseases, tobacco abuse also reduces revenue to government from income tax, duties on other goods and other indirect taxes. This is because people who smoke tend to leave the workforce earlier. Further, many smokers die prematurely. Collins and Lapsley estimated the income tax and indirect taxes forgone by government because of both morbidity and mortality. **Even after these adjustments, in 2004–05 tobacco tax revenue exceeded tobacco-attributable expenses borne by the public sector by more than $3.5 billion.** Of this surplus, $2.7 billion accrued to the Commonwealth and about $800 million to state and territory governments.

As the prevalence of smoking declines, fewer tobacco products will be purchased and fewer products will attract excise and customs duty and GST. Governments will inevitably ask: will reduced tobacco consumption reduce our budget? **The answer to this question is 'no' if declines in tobacco consumption are achieved through increases in tobacco taxation.**

As detailed in Chapter 13, Section 13.11, tobacco taxes make up less than 70% of the final price of a pack of cigarettes. **When tobacco taxes are increased, demand for tobacco always decreases by a smaller percentage than the percentage price increase**. **So, increases in tobacco taxes always result in additional revenue for government even though consumption of tobacco decreases.**

If the reduction in smoking is achieved through strategies other than increased tobacco taxes, government revenue will decline, unless other taxes are increased. Although people who do not purchase tobacco are likely to purchase other goods and services, many of which attract GST, only a limited number of goods attract customs and excise duty. To compensate for declining indirect tax revenue due to reduced tobacco use the government would need to increase income tax rates, increase other taxes and charges, reduce expenditure on programs and services, or implement a combination of these strategies.

References

1. Begg S, Vos T, Barker B, Stevenson C, Stanley L and Lopez A. The burden of disease and injury in Australia 2003. PHE 82. Canberra: AIHW, 2007. Available from: http://www.aihw.gov.au/publications/index.cfm/title/10317

2. Collins DJ and Lapsley HM. Estimating the economic costs of drug abuse. National Campaign Against Drug Abuse Monograph Series No. 15. Canberra, 1991.

3. Collins DJ and Lapsley HM. The social costs of drug abuse in Australia in 1988 and 1992. National Drug Strategy Monograph Series No. 30. Canberra, 1996. Available from: http://www.health.gov.au/internet/main/publishing.nsf/Content/6DC5B92CE2170EA3CA256F190004483D/$File/mono30.pdf

4. Collins DJ and Lapsley HM. Counting the cost: estimates of the social costs of drug abuse in Australia in 1998-9. National Drug Strategy Monograph Series No 49. Canberra: Commonwealth Department of Health and Ageing, 2002. Available from: http://www.health.gov.au/internet/main/publishing.nsf/Content/F97029E30374AE2CCA25748A0024F75C/$File/mono49.pdf

5. Collins D and Lapsley H. The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004/5. P3-2625. Canberra: Department of Health and Ageing, 2008. Available from: http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/34F55AF632F67B70CA2573F60005D42B/$File/mono64.pdf

6. Collins D and Lapsley H. Counting the costs of tobacco and the benefits of reducing smoking prevalence in Victoria. Victorian Department of Human Services, 2006. Available from: http://www.health.vic.gov.au/tobaccoreforms/social.htm

7. Collins D and Lapsley H. Counting the costs of tobacco and the benefits of reducing smoking prevalence in New South Wales. Sydney: New South Wales Department of Health, 2005. Available from: http://www.health.nsw.gov.au/pubs/2005/smoking_reduction.html

8. Collins D and Lapsley H. Counting the costs of tobacco and the benefits of reducing smoking prevalence in Western Australia. Monograph Series, No 4. Perth: The Cancer Council Western Australia, 2004.

9. Bush R and Wooden M. Smoking and absence from work: Australian evidence. Social Science and Medicine. 1995;41(3):437-46. Available from: http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=Retrieve&db=PubMed&list_uids=7481938&dopt=Abstract

10. Javitz HS, Zbikowski SM, Swan GE and Jack LM. Financial burden of tobacco use: an employer's perspective. Clinics in Occupational and Environmental Medicine. 2006;5(1):9–29, vii. Available from: http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=Retrieve&db=PubMed&list_uids=16446251&dopt=Abstract

11. Bertakis KD and Azari R. The influence of obesity, alcohol abuse, and smoking on utilization of health care services. Family Medicine. 2006;38(6):427-34. Available from: http://www.stfm.org/fmhub/fm2006/June/Klea427.pdf

12. Peters MJ. Should smokers be refused surgery? British Medical Journal. 2007;334(7583):20. Available from: http://www.bmj.com/cgi/content/full/334/7583/20

13. Theadom A and Cropley M. Effects of preoperative smoking cessation on the incidence and risk of intraoperative and postoperative complications in adult smokers: a systematic review. Tobacco Control. 2006;15(5):352–8. Available from: http://tc.bmjjournals.com/cgi/content/abstract/15/5/352

14. Medical care expenditures attributable to cigarette smoking during pregnancy - United States, 1995. Morbidity and Mortality Weekly Report. 1997;46(44):1048-50. Available from: http://www.cdc.gov/mmwr/PDF/wk/mm4644.pdf

15. Whitehouse JD, Friedman ND, Kirkland KB, Richardson WJ and Sexton DJ. The impact of surgical-site infections following orthopedic surgery at a community hospital and a university hospital: adverse quality of life, excess length of stay, and extra cost. Infection Control and Hospital Epidemiology. 2002;23(4):183-9. Available from: http://www.journals.uchicago.edu/ICHE/journal/issues/v23n4/4183/4183.text.html?erFrom=-2198106237673852801Guest

16. English DR, Vu HTV and Knuiman MW. The impact of smoking on use of hospital services: the Busselton study. Australian New Zealand Journal of Public Health. 2002;26(3):225–30.

17. Hurley SF. Hospitalisation and costs attributable to tobacco smoking in Australia: 2001-2002. Medical Journal of Australia. 2006;184(1):45. Available from: http://www.mja.com.au/public/issues/184_01_020106/letters_020106_fm.pdf

18. Vogt TM and Schweitzer SO. Medical Costs of Cigarette Smoking In A Health Maintenance Organization. American Journal of Epidemiology. 1985;122(6):1060–66.

19. Bland PC, An L, Foldes SS, Garrett N and Alesci NL. Modifiable health behaviors and short-term medical costs among health plan members. American Journal of Health Promotion. 2009;23(4):265–73. Available from: http://apt.allenpress.com/perlserv/?request=get-abstract&doi=10.1043%2F0890-1171-23.4.265&ct=1

20. Hvidtfeldt U, Rasmussen S, Gronbaek M, Becker U and Tolstrup J. Influence of smoking and alcohol consumption on admissions and duration of hospitalization. European Journal of Public Health. 2009;[Epub ahead of print] Available from: http://eurpub.oxfordjournals.org/cgi/content/full/ckp153v1

21. Izumi Y, Tsuji I, Ohkubo T, Kuwahara A, Nishino Y and Hisamichi S. Impact of smoking habit on medical care use and its costs: a prospective observation of National Health Insurance beneficiaries in Japan. International Journal of Epidemiology. 2001;30(3):616–21.

22. Warner KE. The costs of benefits: smoking cessation and health care expenditures. American Journal of Health Promotion. 2003;18(2):123–4, ii.

23. Martinson BC, O'Conner PJ, Pronk NP and Rolnick SJ. Smoking Cessation Attempts in Relation to Prior Health Care Charges: The Effect of Antecedent Smoking-related Symptoms? American Journal of Health Promotion. 2003;18(2):125–32.

24. Musich S, Faruzzi SD, Lu C, McDonald T, Hirschland D and Edington DW. Pattern of medical charges after quitting smoking among those with and without arthritis, allergies, or back pain. American Journal of Health Promotion. 2003;18(2):133–41.

25. Hill SC and Liang L. Smoking in the home and children's health. Tobacco Control. 2008;17(1):32–7. Available from: http://tobaccocontrol.bmj.com/cgi/content/abstract/17/1/32

26. Bunn WB, III, Stave GM, Downs KE, Alvir JM and Dirani R. Effect of smoking status on productivity loss. Journal of Occupational and Environmental Medicine. 2006;48(10):1099–108. Available from: PM:17033509

27. Pai C, Mullin J, Payne G, Love J, O'Connell G and Edington D. Factors associated with incidental sickness absence among employees in one health care system. American Journal of Health Promotion. 2009;24(1):37–48. Available from: http://www.healthpromotionjournal.com/publications/journal/ib2009-09.htm

28. Laaksonen M, Piha K, Martikainen P, Rahkonen O and Lahelma E. Health-related behaviours and sickness absence from work. Occupational and Environmental Medicine. 2009;66(12):840–7. Available from: http://oem.bmj.com/content/66/12/840.long

29. Skillgate E, Vingard E, Josephson M, Holm L and Alfredsson L. Is smoking and alcohol consumption associated with long-term sick leave due to unspecific back or neck pain among employees in the public sector? Results of a three-year follow-up cohort study. Journal of Rehabilitation Medicine. 2009;41(7):550–6. Available from: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19543666

30. Koskenvuo K, Broms U, Korhonen T, Laitinen L, Huunan-Seppala A, Keistinen T, et al. Smoking strongly predicts disability retirement due to COPD: the Finnish Twin Cohort Study. European Respiratory Journal. 2010 Available from: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=20516052 http://erj.ersjournals.com/content/early/2010/06/01/09031936.00008910

31. Claessen H, Arndt V, Drath C and Brenner H. Smoking habits and disability pension - a cohort study of 14 483 construction workers. Occupational and Environmental Medicine. 2009;67(2):84–90. Available from: http://oem.bmj.com/cgi/rapidpdf/oem.2009.046318v1.pdf

32. Neovius K, Neovius M and Rasmussen F. The combined effects of overweight and smoking in late adolescence on subsequent disability pension: a nationwide cohort study. International Journal of Obesity (2005). 2009;34(1):75–82. Available from: http://www.nature.com/ijo/journal/vaop/ncurrent/full/ijo2009178a.html

33. Zagorsky JL. The wealth effects of smoking. Tobacco Control. 2004;13(4):370–374.

34. Siahpush M, Borland R and Scollo M. Smoking and financial stress. Tobacco Control. 2003;12(1):60-6. Available from:

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12612364 http://pubmedcentralcanada.ca/picrender.cgi?artid=690693&blobtype=pdf

35. Siahpush M, Borland R and Yong HH. Sociodemographic and psychosocial correlates of smoking-induced deprivation and its effect on quitting: findings from the International Tobacco Control Policy Evaluation Survey. Tobacco Control. 2007;16(2):e2. Available from: PM:17400932

36. Siahpush M, Spittal M and Singh GK. Association of smoking cessation with financial stress and material well-being: results from a prospective study of a population-based national survey. American Journal of Public Health. 2007;97(12):2281–2287.

37. Siahpush M, Yong HH, Borland R, Reid JL and Hammond D. Smokers with financial stress are more likely to want to quit but less likely to try or succeed: findings from the International Tobacco Control (ITC) Four Country Survey. Addiction. 2009

38. Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ and Stoddart GL. Methods for the economic evaluation of health care programmes. Third ed. Oxford: Oxford Medical Publications, 2005.

39. Barendregt JJ, Bonneux L and van der Maas PJ. The health care costs of smoking. New England Journal of Medicine. 1997;337(15):1052–57.

40. Lippiatt BC. Measuring medical cost and life expectancy impacts of changes in cigarette sales. Prev Med. 1990;19(5):515-32. Available from: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=2122438

41. Hodgson TA. The health care costs of smoking. New England Journal of Medicine. 1998;338(7):470. Available from: PM:9463152

42. Rasmussen SR, Prescott E, Sorensen TI and Sogaard J. The total lifetime costs of smoking. European Journal of Public Health. 2004;14(1):95–100. Available from: PM:15080400

43. Hodgson TA. Cigarette Smoking and Lifetime Medical Expenditures. The Milbank Quarterly. 1992;70(1):81–125.

44. Manning WG, Keeler EB, Newhouse JP, Sloss EM and Wasserman J. The taxes of sin. Do smokers and drinkers pay their way? JAMA. 1989;261(11):1604–1609.

45. Hayashida K, Imanaka Y, Murakami G, Takahashi Y, Nagai M, Kuriyama S, et al. Difference in lifetime medical expenditures between male smokers and non-smokers. Health Policy. 2009;94(1):84–9. Available from: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19775772

46. British American Tobacco Australia. Australia's tobacco industry. 2010. Available from: http://www.bata.com.au/group/sites/BAT_7WYKG8.nsf/vwPagesWebLive/DO7WYLAS?opendocument&SKN=1

47. PricewaterhouseCoopers. Sales of cigarettes and tobacco products by type of retail business. An analysis of the significance of sales of cigarettes and tobacco products to tobacco retailers in Australia. Sydney, 2005. Available from: http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/2b14b998dda58536ca2571620017ecd2/$FILE/Sub%2046%20BATA%20-%20Attachment%202.pdf

48. British American Tobacco Australia. Australia's tobacco industry. 2006, Last modified Last Modified Date [viewed 14 July 2010] . Available from: http://www.bata.com.au/group/sites/BAT_7WYKG8.nsf/vwPagesWebLive/DO7WYLAS?opendocument&SKN=1

49. Warner K and Fulton G. Importance of tobacco to a country's economy: an appraisal of the tobacco industry's economic argument. Tobacco Control. 1995;4(2):180-3. Available from: http://tobaccocontrol.bmj.com/cgi/reprint/4/2/180

50. Junor W, Collins D and Lapsley H. The macroeconomic and distributional effects of reduced smoking prevalence in New South Wales. Sydney, Australia: The Cancer Council New South Wales, 2004, Last modified Last Modified Date [viewed 1 March] . Available from: http://www.nswcc.org.au/editorial.asp?pageid=1891

51. Collins D and Lapsley H. Evaluating the social benefits and costs of the Australian tobacco industry. Perth: Cancer Council Western Australia, 2009. Available from: http://www.cancerwa.asn.au/resources/2009-10-21-Report-Weighing-the-evidence.pdf

52. Arthur D Little International Inc. Public finance balance of smoking in the Czech Republic. 2000. Available from: http://tobaccofreekids.org/reports/philipmorris/pmczechstudy.pdf

53. Million Dollar Idea: Get Rich or Die Trying. Originally aired 16 July 2010, in Editor^Editors. United States, 2010. Available from: http://www.thisamericanlife.org/radio-archives/episode/412/million-dollar-idea

54. Kmietowicz Z. Tobacco company claims that smokers help the economy. BMJ. 2001;323(7305):126.

55. Bates C. Study shows that smoking costs 13 times more than it saves. BMJ. 2001;323(7319):1003.

56. Swan W. Budget 2010-11 Budget Paper No. 1: Statement 5: Revenue: Revenue estimates by revenue head Canberra: Treasury, 2010. Available from: http://www.budget.gov.au/2010-11/content/bp1/html/bp1_bst5.htm