Appendix

Background Information: New Zealand's Tobacco Control Programme

Report from the Ministry of Health

April 2016

Contents

The cost of smoking to individuals and society

In New Zealand between 4500 and 5000 people die prematurely each year of a smoking related disease.

About one in five deaths in New Zealand is directly attributable to smoking. Approximately 1,500 people die in middle age (35-69) per year from smoking and 23 years of life are lost on average by those dying in middle age. Smoking causes about three times as many deaths as all non-medical causes combined (for example, murder, suicide, drowning, road accidents).

Tobacco is a leading major health risk factor, accounting for 9.1 percent of health loss from all causes (86,900 disability adjusted life years lost in 2006).

The most recent data show that 15 percent of adults (15 years and over-) continue to be daily smokers. This equates to around 550,000 people.

Tobacco use contributed to 40 percent of health loss from cancers (mainly lung cancer) and 26 percent of the burden of vascular disorders and diabetes[1]. Smoking during pregnancy contributes to lower birth weight and poorer outcomes for infants. Smoking in the home has been linked to higher rates of asthma and glue ear in children.

The economic cost of smoking calculations were last updated in 2005[2] when it was estimated that tangible[3] costs of smoking to the health and welfare system were in the order of $1.7 billion representing 1.1 percent of GDP. This percentage, if applied to 2014 GDP figures would represent tangible costs of $2.5 billion.

Intangible costs were estimated in 2005 to be between $3.1 and $11.2 billion with 81,650 quality adjusted life years (QALYs) lost. The difference in estimates comes from having different values for each QALY. Treasury guidance for value of a QALY is $38,110 whereas the authors of the 2005 report used $137,500 per QALY. The New Zealand Burden of Disease study[4] estimated that tobacco was responsible for 86,900 disability adjusted life years (DALYs) in 2006.

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[1] Ministry of Health, *Health Loss in New Zealand: A report from the New Zealand Burden of Diseases, Injuries and Risk Factors Study 2006–2016*, August 2013.

[2] O'Dea D, Thompson G et al. 2007. *Report on Tobacco Taxation in New Zealand*. Smokefree Coalition.ASH

[3] Intangible Costs include (taken from O'Dea D, Thomson et al):
- Lost life-years due to tobacco-induced premature mortality
- Lost health-related quality of life due to tobacco-induced morbidity

Tangible or Economic Costs include:
- Lost work-force production due to smoking-induced premature mortality
- Lost work-force production due to smoking-induced illness, absenteeism, reduced productivity
- Lost resources to addictive consumption. That is, those resources consumed in smoking solely because of the addictive properties of nicotine
- Costs in treating smoking induced diseases and their consequences
- Property damage from smoking-caused fires.

[4] Ministry of Health. 2013. *Health Loss in New Zealand: A report from the New Zealand Burden of Diseases, Injuries and Risk Factors Study 2006–2016*. Ministry of Health. http://www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets/new-zealand-burden-diseases-injuries-and-risk-factors-study-2006-2016
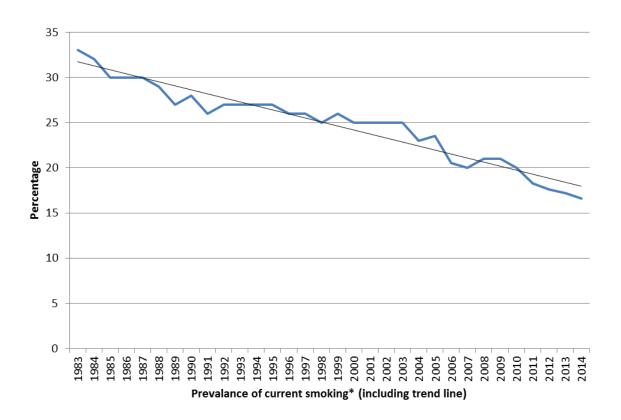
What impact is New Zealand's tobacco control programme having?

There has been a continuous decline in both smoking prevalence (the number of people who are smokers) and tobacco consumption (the amount of tobacco smoked).

Progress to reach New Zealand's Smokefree 2025 goal has accelerated over the past five years with the range of tobacco control interventions implemented. Of particular significance are the gains made in reducing population-wide smoking prevalence and reducing smoking uptake in children 15 and under. Figures 1-5 below highlight key trends in smoking prevalence and tobacco consumption.

Figure 1 Smoking prevalence in New Zealand 1983 – 2014 (Source: Ministry of Health)

Prevalence of current* smoking by adults has steadily declined from 33 percent in 1983 to 16.6 percent in 2014. Each 1 percent decline in smoking prevalence equates to about 36,000 fewer smokers.

*A current smoker is someone who has smoked more than 100 cigarettes in their lifetime and are smoking at least once a month.

Figure 2 Smoking by ethnicity 2006 – 2013 (Source: Census)

Smoking prevalence for Māori has decreased since 2006 but remains high compared with other ethnic groups.
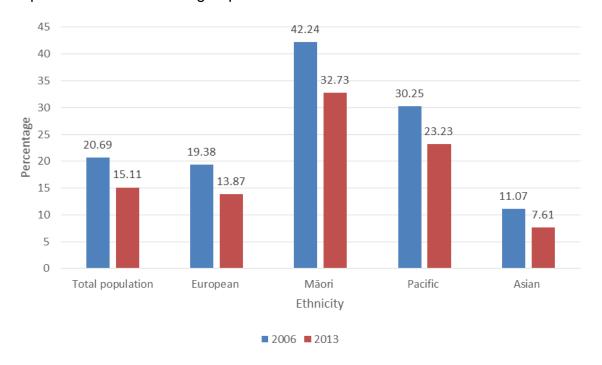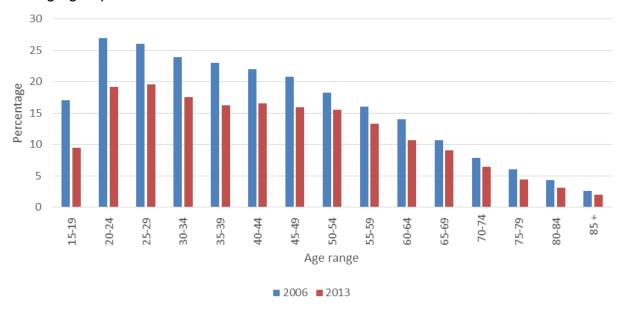

Figure 3 Smoking by age 2006 – 2013 (Source: Census)

Smoking rates have traditionally peaked in the 20-24 year age group. Recently we have seen that this peak is moving and as shown in the graph below smoking rates are now highest in the 25-29 age group. The graph also shows a large decline in the 15-19 age group.

Figure 4 Daily smoking prevalence - Year 10 Students (Source: ASH Year 10 Smoking Survey)

Consistent reductions in the rates of smoking amongst Year 10 students is a success story for the tobacco control programme. The data shows that total rates are coming down and importantly Māori rates are falling the fastest.

Figure 5 Tobacco consumption (Source: Tobacco industry returns)
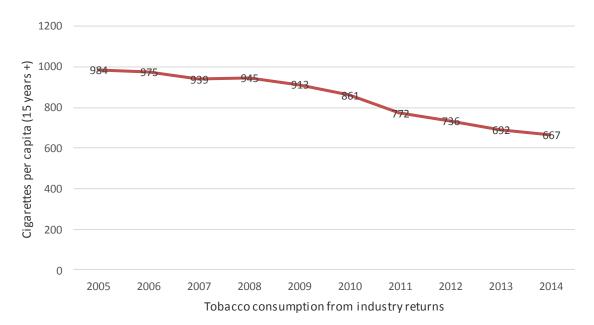
Between 2010 and 2014 there has been a 23 percent decline in tobacco consumption.

In the 1970's New Zealand's annual consumption of cigarettes and cigarette equivalents per adult was over 3000. Since then there has been a steady reduction so that in 2014 the per capita consumption was around 650 – or about a fifth of what it was 44 years ago.

Smoking is a large driver of health inequalities

Māori have significantly higher smoking prevalence with 35.5 percent of Māori being daily smokers in 2014/15 – compared with 22.4 percent of Pacific Peoples, 13.5 percent of European/Other and only 5.9 percent of Asian people (Source: New Zealand Health Survey 2014/15).

Lung cancer was the leading cause of death for Māori females and the second leading cause of death for Māori males. Māori female lung cancer mortality was over four times that of non-Māori females. There are many other smoking related diseases where similar disparities can be shown.

Reducing the harm from smoking remains the single most effective method of improving public health and reducing health inequalities.
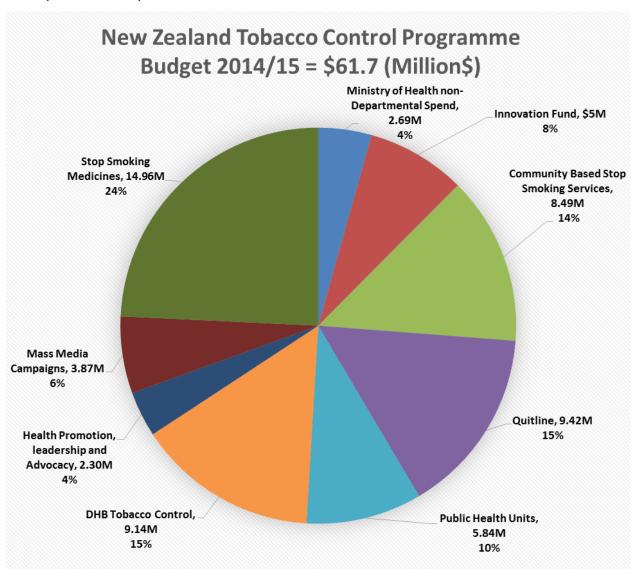
In New Zealand, reducing the harm caused by tobacco means primarily reducing smoking prevalence and reducing non-smokers' exposure to second-hand smoke. Smoking prevalence is decreased by reducing the initiation of smoking by young people and increasing the rate of permanent cessation by current smokers.

How much is spent on tobacco control in New Zealand?

The tobacco control programme budget is approximately $61.7 million per annum.

This budget funds a range of activities including stop smoking services, stop smoking medicines, education, social media campaigns (and associated mass media) and compliance and enforcement activities – see the figure below for a breakdown of the budget.

The Ministry of Health is the key agency for policy development in the tobacco control area and is involved in funding a large number of policy, service development and operational aspects of tobacco control.

New Zealand Tobacco Control Programme Budget 2014/15 = $61.7 (Million$)

- Ministry of Health non-Departmental Spend, 2.69M 4%
- Innovation Fund, $5M 8%
- Community Based Stop Smoking Services, 8.49M 14%
- Stop Smoking Medicines, 14.96M 24%
- Quitline, 9.42M 15%
- Mass Media Campaigns, 3.87M 6%
- Health Promotion, leadership and Advocacy, 2.30M 4%
- DHB Tobacco Control, 9.14M 15%
- Public Health Units, 5.84M 10%

This pie graph does not include departmental costs (staffing) from the Ministry of Health or Health Promotion Agency. It also excludes activities funded by DHBs or PHOs within their general allocation to improve performance or achieve targets relating to this area.

Government revenue from tobacco taxes

Tobacco excise tax currently raises approximately $1.5 billion gross per year and accounts for just under 2 percent of consolidated government revenue.

Goods and Services Tax is not included in this figure.

Cost effectiveness of tobacco control interventions

Tobacco control measures are one of the most cost effective interventions in the health sector. While smoking addiction can be hard to treat you do not need to get many people to quit to save money.

The cost-effectiveness of health care is commonly measured using QALYs that illustrate how many extra years of life of a reasonable quality a person might gain as a result of a particular intervention. To examine the cost-effectiveness of different interventions, treatment cost per QALY is used. The guide commonly used by NICE (National Institute for Health care Excellence, UK) to judge whether a treatment can be provided by the National Health Service in the United Kingdom on economic criteria alone is £20,000 per QALY[5]. Many health care interventions, including treatments for smoking-related diseases such as cancer and heart disease exceed this guidance. In contrast, all smoking cessation interventions fall well below this figure. An economic analysis conducted for NICE found that cessation interventions of the type offered by stop smoking services cost up to £985 per QALY (2005-06 prices) with some forms of support offered by the services being cost neutral[6].

It is recognised internationally[7] that it is difficult to attribute and measure the impact of individual interventions within a broad comprehensive programme, such as New Zealand's. Although there is clear evidence that the combined effect of New Zealand's comprehensive programme has seen a significant downward trend in smoking rates over time, it is difficult to separate out the marginal impact of individual measures, especially the smaller scale initiatives. It can also take some time for the additional impact of a new measure, for example standardised tobacco packaging, to become apparent.

To assess the cost-effectiveness of an intervention the Ministry has worked with New Zealand public health modellers to estimate the net benefit per each additional smoker who quits (or potential new smoker who does not start) as a result of the measure. This can be estimated by using life tables to determine the average number of life years or QALYs gained by a smoker who quits, taking into account the population distribution of smokers by age band and also the age band in which they quit (which determines the expected health benefits).

Analysis in two studies in New Zealand (O'Dea and Thomson 2007, Blakely et al 2015) has estimates of 2 to 2.3 QALYs per ex-smoker. These estimates are similar to results in studies in the UK and Australia.

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[5] NICE. Public Health Guidance Methods Manual. London, National Institute for Health and Clinical Excellence, 2006

[6] Flack S, Taylor M, Trueman P. Cost-effectiveness of interventions for smoking cessation. York, York Health Economics Consortium, 2007

[7] West, R. and L. Shahab, Smoking cessation interventions, in Effectiveness and efficiency in public health: systematic approaches to evidence and practice. , A. Killoran and M. Kelly, Editors. 2010, Oxford University Press: Oxford

The Blakely et al study, published in the PLOS Medicine journal, used a New Zealand specific model that took account of 16 tobacco-related diseases in parallel[8]. In collaboration with the authors, the Ministry of Health has extrapolated from the published Blakely study to develop estimates of the QALYs gained per smoker who quits and per expected smoker who avoids starting. The results are presented in the following table:

Intervention / scenario	QALYs gained (total population over their remaining lifetime)	QALYs gained among quitters	QALYs gained among averted initiators	Number of quitters (over and above business-as-usual (BAU))	Number of averted initiators (over and above BAU)	QALYs gained per quitter	QALYs gained per averted initiator
All smoking ceases in 2011 in NZ and no future uptake (Discount rate [DR] = 0%)	1,625,000	1,138,000	487,000	497,700	231,100	2.29	2.11*
- As above but DR = 3%	464,700	383,900	80,800	Same as above	Same as above	0.77	0.35

Combining the QALY gained per quitter result (of 0.77 QALYs discounted at 3%[9]) with Treasury's suggested valuation of $38,110 per QALY yields a preliminary figure of $29,344.70 per individual ex-smoker as the "break-even" point for a tobacco control initiative. The same calculation for avoided initiators yields a break-even point of $13,338.50.

A targeted stop smoking support intervention that costs $100,000 a year needs to cause an additional three to four individual smokers to quit to break even (on average). Similarly, a $2 million media campaign would need to create either 68 additional successful quits or prevent 150 would-be smokers from ever starting, to be considered cost-effective and therefore good value for money.

Between the 2006 and 2013 census the number of regular smokers in the 15-19 age bracket reduced by over 25,500. If we apply the break-even point of $13,338.50 to each of these people and spread this figure over the seven years between the two censuses there is a potential accrued benefit of up to approximately $48 million per year for this age group alone.

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[8] The modelling used rich national data on all-cause mortality and morbidity (illness) by sex, age, and ethnicity, to estimate quality-adjusted life-years (QALYs) gained and net health system costs saved from raising tobacco excise. The impacts were modelled over the 50-plus year lifetime of the 2011 population, and results were reported both undiscounted and discounted at 3 percent.

[9] The tobacco excise scenarios modelling forms part of a bigger Health Research Council funded research programme on health intervention cost effectiveness (BODEEE) and a 3% discount factor has been consistently applied to all health interventions modelled.

How does the New Zealand tobacco control programme compare internationally?

The New Zealand tobacco control programme is comprehensive, evidence based and designed to comply with international obligations.

New Zealand is Party to the World Health Organization's Framework Convention on Tobacco Control (FCTC) – the world's first global health treaty. The FCTC outlines what an effective comprehensive programme should look like through the framework itself and its associated guidelines. The FCTC guides Parties to develop evidence based tobacco programmes both through obligatory (large health warnings on tobacco products, prohibiting tobacco advertising) and voluntary (graphic pictures in the health warnings) measures.

The World Health Organization states that the cost-effectiveness of tobacco treatment is well established and has one of the best cost-effectiveness ratios for any preventive or healthcare intervention.

International literature[10] reports evidence for most of the population-level tobacco control interventions used in New Zealand. In many cases there is supportive New Zealand-specific evidence for such interventions being effective. However, for some population-level interventions there is limited or insufficient evidence currently available for which further research may be required, for example the use of electronic cigarettes.

Evidence[11] shows that comprehensive tobacco control programmes have proved effective in reducing smoking prevalence both in New Zealand and other countries.

Financial Cost to the Smoker

Because smoking rates are higher among low income groups and therefore the tobacco tax burden falls more heavily on these groups, tobacco excise is a regressive tax. However, while low income groups are the heaviest smokers, they are also significantly more price responsive[12] and more likely to reduce consumption as a result of price increases than other interventions. Because lower income groups, and young people in particular, are relatively more price-responsive than other groups, increasing the tobacco excise tax usually has the effect of making the overall incidence of tobacco excise tax less regressive.

At an individual level the negative impacts on people (especially children) in households where smokers do not quit or cut back remain substantial and should be taken into account, for example in ensuring the availability and targeting of stop smoking support services and subsidised stop smoking medicines. However any negative health impacts of tobacco taxation due to financial hardship on the households of those who do not quit are much lower than benefits of avoiding the harm from smoking for those that do quit[13.].

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[10] WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER package. Geneva, World Health Organization, 2008
[11] ibid
[12] Farelly MC, Bray JW, Pechacek T, Woolery T. 2001 'Response by Adults to increases in Cigarette Prices by Sociodemographic Characteristics' *Southern Economic Journal,* 2001. 68(1). 156-165.
[13] Wilson, N., et al. "How much downside? Quantifying the relative harm from tobacco taxation." *Journal of epidemiology and community health* 58.6 (2004): 451-454.