



Four policies to end the sale of cigarettes and smoking tobacco in New Zealand by 2020

Murray Laugesen, Marewa Glover, Trish Fraser, Ross McCormick, John Scott

Abstract

Aim To phase out sales of cigarettes and of smoking tobacco products in New Zealand by the year 2020.

Current situation 99% of tobacco is smoked as cigarettes. Cigarettes are highly addictive, lethal, and cannot be made safer. Since 1950 commercial cigarettes have prematurely killed over 160,000 New Zealanders. Despite causes-disease warnings on tobacco packaging (from 1987) and graphic warnings (2007), bans on tobacco advertising and promotions (1990), bans on indoor workplace smoking (1990, 2004), subsidies on medicinal nicotine (2000), and despite one-third of smokers annually making serious attempts to quit, 1 in 5 New Zealand adults smoke, 2 in 5 Māori adults smoke, and cigarette consumption per adult remains virtually unchanged since 2003. Four in 5 smokers regret they ever started.

Proposed policies Four policies combined could make cigarette smoking less attractive and the use of nicotine-only products more attractive, with respect to relative price, availability and addictiveness. These mean increasing tax on all cigarettes equally; and a bill to strengthen the Smoke-free Environments (SFE) Act: to allot cigarette sales quotas and then gradually lower them; reduce the nicotine content of cigarettes gradually by a sinking lid or by nicotine tax; and permit the sale of satisfying non-combustible nicotine-only products for smokers. As supply reduces, prices rise, and nicotine satisfaction decreases, smokers will quit; and black market risk will be minimised. Commercial cigarettes will no longer be obtainable, and even if some smoke tobacco grown legally for their own use, or even if some is obtainable illegally, tobacco consumption will greatly reduce.

Conclusion The smoking of tobacco sold legally kills 5000 New Zealanders annually. The SFE Act can be amended to phase out legal sales within this decade. Intensive policy research is needed now as public interest increases. Support from the public and from legislators to promote a suitable amendment bill is now needed.

Background

The Māori Affairs Parliamentary Select Committee is conducting an Inquiry into the tobacco industry and the consequences of tobacco use for Māori, and has called for submissions on policy and legislative measures needed to address the Inquiry's findings. Board members of End Smoking New Zealand, a charitable trust, here propose a set of national policies designed to give effect to the Inquiry's concerns and show how the sale of commercial cigarettes and smoking tobacco can be phased out by 2020.

Smoking is reducing extremely slowly because smokers are addicted to smoking legally-sold commercial cigarettes, aided by manufacturers maintaining the supply. In 2004, Crane emphasised that nicotine inhaled without the smoke, could safely supply the nicotine hit that smokers craved, and provide the option of temporary nicotine replacement in place of smoking abstinence.¹

The use of nicotine instead of smoking (harm reduction) is developed further in this paper. Researchers in 2005 proposed a tobacco control authority to regulate tobacco products,² but cigarettes would still kill by the thousand, whether government-regulated or not. As documented in this *Journal* in 2007,³ and now updated, End Smoking NZ board members have come to independently agree on the necessity of ending cigarette sales altogether.

To replace cigarettes, nicotine products have advantages over oral tobacco snuff: although oral snuff has much lower risks than smoking, nicotine risks are lower; oral snuff is banned from sale; and some Māori want an end to all tobacco product use. Nasal snuff remains legal, largely unstudied, less toxic, but attracting miniscule sales.

In 2007, we said “This epidemic is spread by commercial cigarettes, and will persist until society demands legislation to outlaw their sale”.³ As society shows increasing interest in ending cigarette sales, we describe the legislative changes needed. Innovative policies are always challenged, particularly if they appear to restrict freedom of choice or liberty, but the freedom of the next generation from tobacco addiction is at stake.

Commercial cigarettes are not only lethal (killing one in two persistent smokers)⁴ but they cannot be made safe,^{5,6} despite tobacco company research efforts. Eighty-five percent of New Zealand smokers want the toxins in cigarette smoke reduced,⁷ but our own research^{5,6} shows smoke toxicants cannot be reduced to acceptable levels. Even if per-cigarette risk could be halved, one in four smokers would die early.⁵

Since per cigarette harm cannot be lowered to an acceptable level, and manufacturers wish to sell more not less, we conclude that reducing cigarette harm depends on society supporting legislation to reduce the cigarette supply, and phase out cigarette sales.

The cigarette deaths epidemic is man-made, and needs effective government policy to end it. The Smoke-free Environments Act (SFE Act) was (in 1990) the means of ending tobacco advertising and sponsorship, and of ending smoking in offices and shops; and (in 2004) of ending smoking in restaurants, bars, all workplaces, school grounds and indoor public places.

The outcome of these changes brought about by the SFE Act was uncertain until late in the parliamentary process. Now these changes enjoy high public support. The task is now to once again amend the SFE Act, to spell out the policies to mandate the end of the cigarette deaths epidemic, and save the \$56 million now spent annually on tobacco control,⁸ by ending commercial cigarette sales altogether.

The current situation

New Zealand’s tobacco control programme, now spending \$85 per smoker per year⁸ (recouped from tax on 2 to 3 weeks’ of smoking), has been more comprehensive and

better funded since 2003, yet one in five adults were smoking in 2008.⁹ Cigarette smoking in the 2002–2006 period killed an estimated 4500 to 5000 New Zealanders each year;¹⁰ indeed, since 1950, the premature deaths of over 160,000 New Zealanders are attributable to smoking cigarettes.¹¹

Two in five Māori adults smoke¹⁰ and over one-fifth of all cigarettes smoked are smoked by Māori,^{10,12}—mainly roll-your-own (RYO) cigarettes, which attract less tax. The national Māori lung cancer mortality rate is three times the non-Māori rate,¹² and similarly the hospitalisation rate for chronic obstructive respiratory disease (COPD; often called smokers' lung) was three times the non-Māori rate in Canterbury [based on the one-tick ethnic classification used by Canterbury's largest primary health organisation for hospital patients and its enrolled population for 2006–7 (Prof L Malcolm, personal communication, 2009)].

One-third of smokers (over 200,000) said they had quit for more than 24 hours in 2008, (median number of attempts = 2, or some 1000 serious quit attempts every day),¹³ yet cigarette consumption is not reducing. From 2003 to 2009, the number of cigarettes released for sale (counting 0.5 g tobacco per RYO cigarette) remained above 4 billion annually,¹⁴ while consumption per adult (smoker or not) decreased slightly only in 2009. This is despite more comprehensive controls and improved smoking cessation services. In 2006, the Census reported that 654,000 were daily smokers, that is 20.7% of the adult population age 15 and over.¹⁵

The proportion of adolescents aged 14–15 years, smoking daily, weekly or monthly, declined from 29% in 1999 to 14% in 2008.¹⁶ Many, however, begin smoking in late adolescence, so that 16,000 youth each year enter their 20s as smokers.¹⁵ In 2008, 19,600 adults age 15–64 years said they quit smoking successfully (that is, for 6 to 12 months)¹³ but even adding 5000 cigarette deaths, the smoking population is declining by only 1% per year, suggesting that despite increased efforts by the Ministry of Health, smoking is here for another century.

No main political party is yet in support of ending tobacco sales. Hone Harawira MP and the Māori Party wish to end tobacco product sales over the next decade, and half the public agree,¹⁷ as do one in four smokers;¹⁸ indeed if effective nicotine-only substitutes are made available, nearly half of smokers would agree “cigarettes and tobacco should not be sold in New Zealand in 10 years time”.⁷

The proposed policies

With the aim of phasing out sales of cigarettes and tobacco for smoking by 2020, we propose a set of policies to fundamentally change the tobacco to nicotine product ratios of relative prices, availability, and addictiveness, to make the healthy choice the easy and less costly choice.

Cigarettes and cigarette tobacco, cigars, cigarillos, and pipe tobacco sales (hereafter, cigarettes) would all be phased out gradually by increasing tobacco tax in 2010, and then amending the SFE Act, to usher in stepwise changes to be completed by 2020 to:

- Lower the sales quotas on cigarettes, to progressively reduce supply;
- Lower the nicotine in cigarettes to reduce addictiveness; and
- Allow smokers to buy satisfying nicotine substitutes.

Tobacco products for smoking would be defined in the Act as toxic, no longer to be imported, sold or exported. The proposed policies would preserve current freedoms in law for people to smoke, possess or grow tobacco for private use, and thus differing markedly from the policy on cannabis, which cannot be smoked, owned or grown for private use. It could take 3 years to amend the SFE Act, and another 3 to 7 years to implement the phase out.

Increasing tobacco tax and price

Background—The last two increases in cigarette taxes and price above the level of inflation were in May 2000, and then April 2010. In March 2010, smokers paid 31 cents tax per factory-made cigarette but only 20 cents tax per RYO cigarette if rolled to contain the average weight of 0.5 g tobacco.⁶ New Zealand RYO smokers we studied inhaled no less carbon monoxide than factory-made cigarette smokers;⁶ the harm per cigarette is the same for each type of cigarette; the cigarette is the unit of harm, meriting taxation on a per cigarette basis.⁶

Proposal—Harmonisation of the tax rates for RYO and packet cigarettes is thus a priority¹⁹ which in 2010 would have required smokers to pay 60% more per RYO cigarette. Instead, on 28 April 2010 Parliament raised tobacco excise tax on RYOs by 24% initially, with further increases in 2011 and 2012; by 40% in total. The new RYO tax rate was equalised as for the tobacco weight in a factory-made (FM) cigarette which contains 0.7 g on average. But as noted, the average RYO cigarette contains 0.5 g. So now although all cigarettes have increased in price, for FM smokers reluctant to quit smoking, RYO smoking may still cost less, so that switching to RYOs may still occur instead of quitting. In future years, this anomaly hopefully will be corrected.

Secondly, uniformly increased tax rates for all cigarettes and smoking tobacco are also needed. Based on historical data, we assume the price recommended by the manufacturers to retailers will increase by the same percentage as the tax increase; and that price responsiveness will ensure sales decrease by 5% for a 10% increase in price.¹⁹

On 28 April 2010 Parliament also voted (118 for versus 4 against) to raise tobacco tax on all FM cigarettes by 10% initially and by a total of 30% by 2012. The Ministry of Health expected the packet price for 25s to increase from \$13.00 to \$17.30 (an increase of 33%), and for 30 g of RYO tobacco from \$21.30 to \$29.80, a 40% increase.

Support—Surveys show New Zealand smokers support increased tax on cigarettes if it is used to help them quit smoking and for health promotion.¹⁸ It is not earmarked in this way, but quit smoking services are generally free or subsidised.

Feasibility—Past cigarette tax increases in New Zealand show price rises reduce cigarette sales volumes, and also the numbers smoking.²⁰

Caveats—True, tobacco tax increases can induce financial hardship and resulting ill health in families if smoking continues, but overall, increased tobacco tax benefits poor families far more; the harms from smoking are far greater than harms from tobacco tax.²¹

Secondly, if the tax is unevenly applied, the number smoking may not reduce. For example, in 2000, when tax and price were increased 20%, 80,000 smokers (12%) quit, but resumed smoking within 3 months, switching to cheaper RYOs.²²

Thirdly, when prices increase greatly, 33% to 40% in the present case, prediction of consumption is less certain. As the four policies take effect, however, government would face gradual decline in its revenue from tobacco tax—currently over 1 billion dollars a year.²³ No wealth is lost, however, as tax is a transfer payment, which Treasury would then, over 5–10 years, recoup from another source.

Benefits—In 2010–2012, the government’s tax increases are expected to lower consumption by around 18%, a decrease of some 0.8 billion cigarettes annually. The Ministry of Health conservatively estimates 500 cigarette deaths averted over the next 20 years. These benefits depend on smokers quitting and not switching to RYOs instead.

Decreasing the supply and availability of cigarettes

Background—Every reduction in supply reduces sales, consumption and harm in equal proportion. Decreased supply as a standalone policy implies unmet demand (scarcity) and risk of a black market, which can, however, be minimised by companion policies that lower demand in tandem.

Proposal—Government would amend the SFE Act to allocate national sales quotas per manufacturer or importer, with stepwise reduction of quotas, either by mandated reduction, or by “cap and trade”. Supply quotas could commence at 95% of the previous year’s sales, and then be reduced further by say 5% every 6 months. Exceeding quotas would be made a serious offence.

Efficacy—Efficacy of reduction of sales quota is not in doubt, and reductions would be reflected at retail within weeks or months.

Feasibility—It is simpler to reduce quotas for manufacturers and importers (fewer than 20) than to gradually reduce the number of shops (8000 to 9000 currently) selling tobacco, which would simply concentrate sales in remaining shops, with little reduction in overall sales for years.

Reducing supply induces scarcity and raises the price, which in turn lowers sales. Real cigarette prices would rise steadily, in addition to any increase in price due to increased tax. Using government-mandated targets or ‘cap and trade’, government caps the quotas, and manufacturers with retailers set the price. With cap and trade, however, manufacturers trade their quota permits, and set prices higher to recover their costs, thus expediting the decline in supply.

Cap and trade—used in environmental economics for recruiting big polluters to reduce their emissions—was first proposed for lowering cigarette consumption by Senator Enzi in the United States in 2007.²⁴ According to its inventor, economist Thomas Crocker, cap and trade is best suited to fixing discrete problems, where a government has the power to apply it and obtain a rapid fix to limit a known harm.²⁵

Caveats—As supply is reduced, smokers perforce smoke fewer cigarettes, and may at first smoke their supply more intensively, neutralising any health gain. Some smokers

may quit, leaving more cigarettes per remaining smoker. Eventually, however, as supply reduces further and prices rise, the pressure to quit would gradually increase.

Media campaigns, reduction of nicotine per cigarette, and approval of alternative products for commercial sale, can encourage smokers to accept this situation as an opportunity to quit smoking. Every smoker quitting reduces demand for black market tobacco derived from burglaries, smuggling, or on-selling from home plots.

Border security services already inspect luggage, freight, parcels, and shipping containers: tobacco import duty payable on a container of contraband cigarettes is currently 3 million dollars. Unburnt tobacco emits volatiles detectable by sniffer dogs and sniffer machines (SIFT-MS Voice200, Syft Technologies Ltd, Christchurch).

Benefits—A law committing government to reduce supply stepwise to zero ensures that commercial cigarettes will be phased out and gives smokers reason to quit ahead of time. Additionally, if reducing supply increased the price by say 60%, then using the usual cigarette price elasticity of demand (minus 0.5), sales might reduce by 30%. Research is required to clarify the effects of reductions in supply on price and sales, comparing a mandated sinking lid with cap and trade.

Reducing the addictiveness of cigarettes

Background—One in four New Zealand smokers aged 14–15 years show signs of addiction to smoking after just one cigarette.²⁶ Four out of five New Zealand smokers say they are addicted to smoking (tobacco).²⁷ Addiction explains the high proportion (over 90%) of serious attempts of 24 hours or more estimated from Ministry of Health data as likely to be unsuccessful.¹³

Nicotine is the main addictive drug in tobacco. Manufacturers currently ensure the nicotine content of cigarettes (for example, by choice of leaf blend) is sufficient to provide ample nicotine in the smoke, so that even low nicotine-yield commercial cigarettes satisfy cravings.

Proposal—Currently cigarettes contain an average 13 mg per cigarette,²⁸ whereas 0.17 mg would no longer be addictive, (estimated at 25 cigarettes yielding less than 5 mg of nicotine, the estimated daily threshold for maintaining addiction.²⁹)

Nicotine could be reduced substantially in one of three ways:

- Mandated nicotine reductions, all brands together, by say 20% annually. This “nicotine sinking lid” is technically feasible. Some seven reductions at 2 mg per step (spaced 6 to 12 months apart to allow time for all brands to be reduced together at each reduction step) would require 3.5 to 7 years in total to reduce nicotine content to very low levels.
- Mandated annual 20% increases in the proportion of cigarettes sold with very low nicotine levels (<0.5 mg content). These low levels provide no smoking satisfaction, though cravings are reduced, as we note below.
- Taxing the nicotine content in tobacco products (in addition to current tobacco excise rates) deserves further research. Levying 2.5 cents per mg nicotine, tax would be 32 cents per average cigarette (equal to the March 2010 tobacco tax level) in contrast to only 1.25 cents per very-low nicotine content cigarette.

With nicotine threatening to add \$6 per pack, manufacturers, if given a few months notice, could reconfigure their cigarettes to lower nicotine content. Behavioural economics studies could suggest the best formulae for calculating the tax so as to maximise public health benefit.

Support—85% of New Zealand smokers want addictiveness reduced.¹⁸ The nicotine sinking lid policy was adopted by the American Medical Association in 1998,³⁰ but has not been implemented in any country.

Efficacy—Nicotine reduction is technically feasible. As average cigarette nicotine content reduces, smokers inhale more smoke to maintain nicotine absorption, until at yields below 0.4 mg nicotine per cigarette this is no longer possible.³¹ At low doses, nicotine loses its ability to provide smoking pleasure. Smoking a reduced nicotine content (RNC) cigarette yielding only 0.05 mg nicotine nevertheless occupies 26% of the main type ($\alpha_4\beta_2$) of brain nicotine acetylcholine receptors,³² though sufficient to relieve cravings this does not release dopamine, the pleasure drug, and so the cigarette does not satisfy;³³ motivation to smoke may be reduced by nearly one-third.³⁴

Feasibility—The reduction programme can be easily monitored by bench top testing of products for nicotine content at an independent government-approved laboratory, at manufacturer's expense. Nicotine tax is the most feasible method, delivering its main results in the first year.

Caveats—With the sinking lid method, cigarette imports would be limited to RNC brands of progressively lower strength. Increased smoking to obtain sufficient nicotine (compensatory smoking) was a concern in past years, but recent research indicates nicotine content can be safely lowered to near zero, thus increasing the intake of smoke, carcinogens or other toxicants little or not at all.³⁵ Either RNC brands or commercial low yield brands can be used.³¹

Expected benefits—The effects of a nicotine tax on the average nicotine content of cigarettes sold will be seen within months, though how much this would reduce consumption and smoking prevalence is difficult to forecast without clinical studies. In contrast, the sinking lid policy has its main effects in the later stages. By the 5th of 7 steps, when nicotine content and yield are 70% below previous levels, numbers smoking and cigarettes smoked will reduce greatly. By the last or second to last reduction step, we assume 30% may have quit due to lowered motivation.³³

In addition, released from the *need* to smoke, smokers will still be influenced by price and the attraction of nicotine in substitute products. With all four policies simultaneously influencing remaining smokers, we assume that most (say 80%) of smokers obtaining less than 0.05 mg nicotine from their cigarette will quit entirely, or switch to nicotine products during the final two steps of the reduction programme. Although in harmony with the cited reports, this forecast needs testing in simulation-scenario studies.³⁶

Relapse—For those who make a serious attempt to quit smoking, relapse is much less likely if the remaining very-low-nicotine cigarettes on sale give reduced pleasure and satisfaction. In 2008, as noted above, one-third of New Zealand smokers (200,000) said they made an average of two serious attempts to quit,¹³ (about 1000 attempts daily); and 20,000 (10%) succeeded in quitting without relapse for 6–12 months.

Due to lack of satisfaction from trying cigarettes again, in each of the final 2 years of mandated nicotine reduction (for example, 2018–2019) we would expect successful quitters to quadruple to 80,000 per year, equivalent in total to 24% of those smoking in 2010. Further research may refine these estimates.

Regulating to permit sale of more effective cigarette-substitutes

Background—Whereas medicinal nicotine products are widely used and heavily subsidised by government, many smokers, judging on overseas experience, will be happy to pay for the pleasure of inhaling nicotine without the smoke until they wish to quit entirely.

We argue that the SFE Act already permits sale of effective nicotine cigarette substitutes as tobacco products (that is, made from tobacco).³⁷ Substitute products on sale within New Zealand are: 1) likely to facilitate legislation to end tobacco cigarette sales; 2) replace the hand rituals and throat sensations of smoking; and 3) provide nicotine to relieve cravings.³⁸

Cigarette-like smoking-simulator devices include:

- *The medicinal nicotine inhaler*, available from pharmacies, which delivers nicotine vapour to the blood within 20 minutes.³⁹ No visible aerosol is inhaled or exhaled.
- *The electronic cigarette*, an inhaler, delivers aerosolised nicotine to the blood within 15 minutes and is more pleasant to use.³⁷ Its nicotine is made from tobacco and thus saleable as a tobacco product under the SFE Act.³⁶ Nicotine delivery varies by brand.
- *The nicotine pyruvate inhaler*, tested in 2009 at Christchurch Clinical Studies Trust, and now at prototype stage, provides rapid lung delivery of adequate aerosolised nicotine to the blood,³⁸ and should be commercially available within 5 years.

Proposal—The SFE Act would permit the sale of nicotine products under regulations imposing reasonable manufacturing standards, providing a shorter, less costly and more expeditious route to licensed sale than currently possible for medicines under the Medicines Act.

Support—Nearly half of smokers will support ending cigarette sales if effective nicotine substitutes are available,¹⁸ as against one in four smokers otherwise in support.¹⁷

Efficacy—All three product types above reduce cigarette cravings and increase blood nicotine.^{38,39}

Feasibility—Regulations under the SFE Act could be drafted and passed within 12 months. Licensing as a cigarette substitute, at the manufacturer's expense, could involve an on-going monitoring and testing regime, carried out by a nominated local laboratory.

Caveats—New products require substantial testing and research.

Benefits—Substitute products, even if sales were to stay low, would model enjoyable nicotine use, showing that legislation to end cigarette sales need not wait for the last smoker to agree.

Effectiveness of the combined policies

The proposed policies in combination, would steadily reduce the commercial supply of manufactured cigarettes and tobacco to zero by 2020. Reduction of supply is essential, while the other policies are needed to reduce demand for tobacco. Decreasing nicotine is highly effective but not until nicotine is greatly reduced. Effective alternative nicotine products may take several years to develop commercially and win acceptability, but they provide proof of the concept that quitting can be pleasurable.

Demand-reduction policies, as estimated above for each policy, in total can match the 100% reduction in commercial supply, as follows: by increased price due to increased tobacco tax, an 18% reduction likely from the 2010-2012 increases; reduction by increased price due to scarcity, 30% (to be confirmed by further research); and 30% in the final year or two by loss of smoking satisfaction due to nicotine reduction; and 24% reduction of demand due to less relapse, also due to nicotine reduction.

These policies may overlap by influencing the same smoker, or work synergistically with other policies to overcome inertia. We assume that the one in four who favour an end to commercial cigarettes, will stop smoking when sales cease, or sooner. Nearly as many again said they would welcome an end to commercial cigarette sales if they had satisfying nicotine substitute products to use, in which case these smokers too would be less likely to seek black market cigarettes.

Most smokers will be persuaded (by price or reduced nicotine) to quit smoking before the 2020 target date. Those still smoking in 2020 will be a minority paying high prices for small quantities of cigarettes yielding very little nicotine and little satisfaction.

Once sales end, an uncertain proportion of smokers will continue to smoke, by cultivating their own tobacco, or locating an illicit supply. For comparison, despite the social pressures 3% to 4% of doctors continue to smoke tobacco cigarettes,³⁹ and 4% of adults regularly smoke cannabis.⁴⁰

Media campaigns—Campaigns in support of the four policies will be needed to keep a high profile for the quit or switch message—providing some choice in addition to the traditional, abstinence-only, quit or die message. Importantly, the combined policies are designed to impinge each day on those willing to quit, or who have begun to quit, who must decide today to either stay quit, or relapse. With about 1000 smokers daily making a serious quit attempt lasting 24 hours or more,¹³ the four policies will impinge each day on a somewhat different 1000 smokers trying to quit.

Research—Effects of the proposed policies should be tested in a behavioural research laboratory before adoption, recruiting New Zealand smokers to participate in scenarios involving various policy combinations and sequences to end cigarette sales.³⁶

International legal aspects will also need study with respect to trademarks, and trade agreements. Of 2.5 million tourists a year (including children) perhaps half a million smoke. The best way to identify genuine smokers on arrival, and balance their needs for cigarettes without subverting the ending of cigarette sales, needs further study.

Deaths averted—Follow-up of thousands of individual smokers for decades after quitting smoking suggests that deaths due to smoking will decrease markedly within 5 years and return to never-smoker rates within 10 to 15 years.⁴² The benefits of the whole nation quitting smoking are substantial. If all current smokers quit and became ex-smokers, mortality rates would reduce by 11% for men overall and 5% for women, based on 1996–9 data.

If everyone was a never smoker (that is, an historically nonsmoking society), all-cause mortality rates would have been 26% lower for men and 25% lower for women.⁴³

Conclusion

Four out of five smokers regret they ever started.¹³ Continued legalised sale and supply of tobacco, through smoking, destroys the health and life of thousands of New Zealanders annually (Māori in particular) and threatens the next generation.

Cigarette and tobacco sales can be ended by 2020, by strengthening the SFE Act, making cigarettes less affordable, less available and less satisfying; and making quitting, or switching to safe effective substitution products, more attractive.

Competing interests: The authors have long been involved in government, various voluntary health and tobacco control agencies, in tobacco control research, and national tobacco and drug control programmes. None of the authors has any financial interest in any nicotine, pharmaceutical or tobacco company. End Smoking NZ, a trust founded 2006, and registered under the Charities Commission, is apolitical. Its policies are described at www.endsmoking.org.nz

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Author information: Murray Laugesen, Public Health Physician, Health New Zealand Ltd, Lyttelton, Canterbury; Marewa Glover, Director, Centre for Tobacco Control Research, University of Auckland, Auckland; Trish Fraser, Director, Global Public Health, Glenorchy, Otago; Ross McCormick, Professor and Associate Dean (postgraduate), Faculty of Medicine and Health Sciences, University of Auckland, Auckland; John Scott, Emeritus Professor of Medicine, University of Auckland, Auckland. (All authors are board members of End Smoking New Zealand Trust.)

Correspondence: Dr Murray Laugesen, End Smoking NZ Trust, 36 Winchester St, Lyttelton 8082, New Zealand. Email: chair@endsmoking.org.nz; website www.endsmoking.org.nz

References:

1. Crane J, Blakely T, Hill S. Time for major roadworks on the tobacco road? *N Z Med J* 2004;117(1190). <http://www.nzmj.com/journal/117-1190/801/content.pdf>
2. Thomson G, Wilson N, Crane J. Rethinking the regulatory framework for tobacco control in New Zealand. *N Z Med J* 2005;118(1213). <http://www.nzmj.com/journal/118-1213/1405/content.pdf>
3. Laugesen M. Snuffing out cigarette sales and the cigarette smoking epidemic. *N Z Med J* 2007;120(1256). <http://www.nzma.org.nz/journal/120-1256/2587/>
4. Doll R, Peto R, Wheatley K, et al. Mortality in relation to smoking: 40 years observations on male British doctors. *Brit Med J* 1994;309:901-11.

5. Laugesen M, Fowles J. Marlboro Ultra Smooth: a potentially reduced exposure cigarette? *Tobacco Control* 2006;15:430-435; doi:10.1136/tc.2006.016055.
6. Laugesen M, Epton, M., Frampton, C., et al. Hand-rolled cigarette smoking patterns, compared with factory-made cigarette smoking in New Zealand men. *BMC Public Health* 2009;9:194. <http://www.biomedcentral.com/1471-2458/9/194>
7. Edwards R, Wilson N, Weerasekera D, Thomson G. Majority support by Māori and non-Māori smokers for many aspects of increased tobacco control regulation: national survey data [Letter]. *N Z Med J* 2009;122(1307). <http://www.nzmj.com/journal/122-1307/3931/content.pdf>
8. Ministry of Health. Letter to Mr Carrick Graham. 16 July 2009. Official Information request re How much does Ministry of Health intend to spend on tobacco control and educating New Zealanders on the dangers of tobacco smoking in 2009/2010.
9. Evison K. Achieving a Smokefree Aotearoa: the afterburners are on. Oceania 2009 conference Darwin. October 2009: NZ Ministry of Health. <http://www.oceaniatc2009.org/images/stories/events/evison%20karen.pdf>
10. Ministry of Health 2009. Tobacco Trends 2008. A brief update of tobacco use in New Zealand. Wellington: MOH. [http://www.moh.govt.nz/moh.nsf/pagesmh/9081/\\$File/tobacco-trends-2008.pdf](http://www.moh.govt.nz/moh.nsf/pagesmh/9081/$File/tobacco-trends-2008.pdf)
11. Peto R, Lopez AD, Boreham J, et al. Mortality from smoking in developed countries 1950-2000. Oxford: Oxford University Press, 2004.
12. Robson B, Harris R. (eds). 2007. Hauora: Māori Standards of Health IV. A study of the years 2000-2005. Wellington: Te Rōpū Rangahau Hauora a Eru Pomare. http://www.hauora.maori.nz/downloads/hauora_chapter04_web.pdf
13. Ministry of Health 2009. Tobacco Use Survey 2008. Quitting Results. Wellington: Ministry of Health. [http://www.moh.govt.nz/moh.nsf/pagesmh/9665/\\$File/2008-nztus-quitting-results-nov09-v2.pdf](http://www.moh.govt.nz/moh.nsf/pagesmh/9665/$File/2008-nztus-quitting-results-nov09-v2.pdf)
14. Statistics New Zealand. Alcohol and Tobacco available for consumption. Tables. February 2010. <http://search.stats.govt.nz/nav/ct1/alcoholandtobaccoavailability/>
15. District Health Board Area and Cigarette Smoking Status by Age group and Sex, 2006 Census. <http://www.stats.govt.nz/NR/rdonlyres/7010C24E-D738-4227-93E6-CF37AAE382C6/0/DHBtables.xls>
16. Paynter J. National year 10 ASH snapshot survey, 1999-2008; trends in tobacco use by students aged 14-15 years. Auckland: Action on Smoking and Health. http://www.ash.org.nz/site_resources/library/ASH_Year_10/ASH_Year_10_Snapshot_Survey_2008.pdf
17. Telephone poll 'Do you support a ban on the sale of all tobacco products in New Zealand?' March 2006 TNS poll for TV3, released 2 April 2006. www.endsmoking.org.nz/polls1.htm
18. Thomson G, Wilson N, Edwards R. Kiwi support for the end of tobacco sales: New Zealand governments lag behind public support for advanced tobacco control policies [Letter]. *N Z Med J*. 2010;123(1308). <http://www.nzmj.com/journal/123-1308/3957/content.pdf>
19. Wilson N, Young D, Weerasekera D, et al. The importance of tobacco prices to roll-your-own (RYO) smokers (national survey data): higher tax needed on RYO. *N Z Med J* 2009;122(1305):92-96. <http://www.nzmj.com/journal/122-1305/3864/content.pdf>
20. Wilson N, Thomson G. Tobacco tax as a health protecting policy: a brief review of the New Zealand evidence. *NZ Med J*. 2005; 118:1213. <http://www.nzma.org.nz/journal/118-1213/1403/>
21. Wilson N, Thomson G, Tobias M, Blakely T. How much downside? Quantifying the relative harm from tobacco taxation. *J Epidemiol Community Health* 2004;58:451-4.
22. Laugesen M. Case study 2000. End Smoking NZ website. www.endsmoking.org.nz/casestudy.htm
23. The Treasury. Financial Statements of the Government of New Zealand for the Year Ended 30 June 2009, Note 2. Taxes and levies collected. <http://www.treasury.govt.nz/government/financialstatements/yearend/jun09/25.htm>

24. Laugesen M. Put a cap on a lethal habit. NZ Herald 2007, Aug. 6. Perspectives page. http://www.endsmoking.org.nz/NZHerald6Aug07_Enzi.htm
25. Hilsenrath J. Cap-and-Trade's Unlikely Critics: Its Creators. Wall Street J. August 13, 2009. <http://online.wsj.com/article/SB125011380094927137.html>
26. Scragg R, Wellman R, Laugesen M, DiFranza J. 'Diminished Autonomy over Tobacco Can Appear With the First Cigarettes' Addictive Behaviours 2008. Doi:10.1016/j.addbeh.2007.12.002. <http://www.healthnz.co.nz/Addiction1stcigFeb08.pdf>
27. National Research Bureau. Environmental tobacco smoke study. Wellington: Ministry of Health 1996.
28. Blakely T, Laugesen M, Symons R, Fellows K. New Zealand cigarettes have a high nicotine content. NZ Public Health Report. 1997;4:33-4; update 1997;4:85.
29. Henningfield JE, Benowitz NL. Establishing a nicotine threshold for addiction. The implications for tobacco regulation. New Engl J Med. 1994;331:123-5.
30. Henningfield JE, Benowitz NL, Slade J, et al. Reducing the addictiveness of cigarettes, including recommendations adopted by the 147th meeting of the American Medical Association. Tob Control 1998;7:281-3.
31. Benowitz NL, Dains KM, Hall SM, et al. Progressive commercial cigarette yield reduction: biochemical exposure and behavioural assessment. Cancer Epidemiol Biomarkers Prev 2009;18:876-83.
32. Brody AL, Mandelkern MA, Costello MR, et al. Brain nicotinic acetylcholine receptor occupancy: effect of smoking a denicotinized cigarette. Int J Neuropsychopharmacol. 2009;12(3):305-16. Epub 2008 Aug 18.
33. Brody AL, MandelKern MA, Olmstead RE, et al. Ventral striatal dopamine release in response to smoking a regular vs a denicotinised cigarette. Neuropsychopharmacology 2009;34:282-289.
34. Donny EC, Jones M. Prolonged exposure to denicotinized cigarettes with or without transdermal nicotine. Drug Alcohol Depend 2009;104:23-33.
35. Benowitz NL, Hall SM, Stewart S, et al. Nicotine and carcinogen exposure with smoking of progressively reduced nicotine content cigarette. Cancer Epidemiol Biomarkers Prev 2007;16:2479-85.
36. Johnson MW, Bickel WK, Kirshenbaum AP. Substitutes for tobacco smoking: a behavioral economic analysis of nicotine gum, denicotinized cigarettes, and nicotine-containing cigarettes. Drug Alcohol Depend. 2004;74(3):253-64.
37. Laugesen M. Nicotine electronic cigarette sales are permitted under the Smokefree Environments Act [Letter]. N Z Med J. 2010;123(1308). <http://www.nzmj.com/journal/123-1308/3955/content.pdf>
38. Bullen C, McRobbie H, Thornley S, et al. Effect of an electronic cigarette on desire to smoke and withdrawal, user preferences and nicotine delivery: randomised cross-over trial. Tobacco Control. 2010 (in press).
39. Rose JE, Turner JE, Murugesan T, et al. Pulmonary delivery of nicotine pyruvate: sensory and pharmacokinetic characteristics. Paper, Society for Research on Nicotine and Tobacco, 16th annual conference, Baltimore MD, USA, 27 February 2010.
40. Edwards R, Bowler T, Atkinson J, Wilson N. Low and declining cigarette smoking rates among doctors and nurses: 2006 New Zealand Census data. N Z Med J. 2008;121(1284):43-51. <http://www.nzmj.com/journal/121-1284/3310/content.pdf>
41. Alcohol and Public Health Research Unit, University of Auckland Drug Use in New Zealand, National Surveys comparison 1998 & 2001, cited by NZ Drug Foundation 2009. <http://www.nzdf.org.nz/cannabis/drug-trends>
42. United States Department of Health and Human Services. The health benefits of smoking cessation. A report of the Surgeon general, USHHS. Centers for Disease Control. Office of Smoking and Health.1990.

43. Blakely T, Wilson N. The contribution of smoking to inequalities in mortality by education varies over time and by sex: two national cohort studies, 1981-4 and 1996-9. *Int J Epidemiol* 2005;34:1054-62.