

Supplementary Report to the Māori Affairs Select Committee

Phasing-out tobacco sales via a “sinking lid” on supply: Additional detail to address potential concerns, particularly around illicit activities

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Summary

This Supplementary Report builds on our previous submission to the Māori Affairs Select Committee. In the context of our key recommendation for a law requiring a phase-out of tobacco sales, this Report outlines solutions to potential problems that could arise during the phase-out of tobacco sales in New Zealand (eg, over the next decade). We consider that there are practical solutions to all the potential problems. In particular we address concerns around: (i) the adverse economic impacts of price increases on deprived smokers; (ii) smuggling; (iii) the risk of illegal sale of the sale of black-market tobacco grown in New Zealand; and (iv) increases in the theft of tobacco products.

Adjunct measures which act to enhance demand reduction are a particularly important way to avoid or minimise such potential problems. These measures include greatly enhanced cessation support as well as others such as increased mass media campaigns, improved health warnings, removal of point-of-sale displays, reducing the number and density of tobacco retailers, plain packaging of tobacco products and expanding the range smokefree areas. Such measures will reduce the number of smokers and hence reduce the number of deprived smokers who can be adversely affected, and will reduce the market for smuggled, stolen and illicit tobacco. However, there may also be a need for enhancements of the normal work by Customs and Police. Further policy analysis (eg, by the Ministry of Health) could be preformed to refine the solutions we suggest and on-going monitoring and research could assist with fine tuning as the phase-out proceeds.

Commercial vested interests may dispute some of our suggested solutions in this Report. But they should explain to the Committee and to the New Zealand public and policymakers why their concerns would justify the thousands of additional premature deaths that would accompany any delay to the end of the tobacco epidemic in this country.

Introduction

We commend the Māori Affairs Select Committee for undertaking an inquiry into “the tobacco industry in Aotearoa and the consequences of tobacco use for Māori”.¹ Our previous submission to the Committee (in January 2010), emphasised the primacy of tobacco endgame policies eg, to have a sinking lid on tobacco imports so as to phase-out sales this decade.² As we detailed in this submission, a sinking lid on imports could result in a 10% reduction in supply per year (eg, with industry bidding for the decreasing quotas) and with subsequent price escalations. Our view is that such a phase-out will greatly accelerate the end of the tobacco epidemic in this country, and hence prevent thousands of premature deaths. It will also accelerate the reduction in health inequalities in this country and help close the large gap in Māori vs non-Māori life expectancy.

Critics of such an approach are likely to assert various potential problems, including the adverse impacts of high tobacco prices on deprived smokers during the phase-out process, and increased risks of smuggling, theft and the associated criminal activity.³ We recognise that the subject area is complex with substantial uncertainties. Nevertheless, we think that the issues can all be substantially addressed and introduce some of the arguments for this below.

1) Adverse impacts from high tobacco prices on deprived smokers

Our first submission to the Select Committee² gives emphasis to the need to balance supply-side interventions with those that also reduce demand for tobacco products. Some of us have also recently published information about these key evidence-based tobacco control measures.^{4 5}

We would highlight the following as being particularly important in a phase-out process, to minimise the impact of high tobacco prices on socio-economically deprived smokers:

- a) Boosting of current **mass media campaigns** promoting quitting and quitting techniques. In particular such additional campaigns should continue to focus on television advertising and also maximise coverage in Māori media (eg, Māori TV and iwi radio). Some of these campaigns could further build on the successful “for Māori, by Māori” campaign of “Its About Whanau”.^{6 7}
- b) Introducing a new and larger set of **pictorial health warnings** on tobacco packs that include a stronger focus on quitting techniques (eg, some countries such as Australia already use such “quitting technique” warnings). Of note is that once these new warnings are passed into regulations, they cost tax payers nothing. Research has shown that Māori and more deprived New Zealanders pay attention to pictorial warnings on tobacco packaging.⁸⁻¹⁰ Nevertheless, current pictorial warnings are not particularly designed for a Māori and Pacific audience (eg, when considering the eye colour and skin colouring of the pictures). This could be rectified with new sets of warnings, along with images such as showing a Māori caller ringing a Māori quit adviser at the Quitline.
- c) Improving funding and promotion of the **Quitline service**, included boosted resources to attract and to support Māori quitters. Unpublished research we have performed (and submitted to a journal) has indicated disproportionately higher usage of the Quitline by Māori smokers (ie, for smokers studied in the ITC Project). The effectiveness¹¹ and cost-effectiveness,¹² of the Quitline service is well established and other work indicates that it is used by smokers from all ethnic groups.¹³
- d) Improving the provision of smoking **cessation support services** in all health care settings and in a wider variety of community settings (eg, pharmacies, schools, and community facilities). Provision of these additional services should be particularly focused on high deprivation communities.
- e) Using pictorial health warnings (but on the scale of large posters) at the **point-of-sale** in tobacco retailers.
- f) Improving access to **pharmacotherapies** such as nicotine replacement therapy (NRT) by increasing the subsidy level further, and similarly for other types of evidence-based smoking cessation treatments. Media campaigns could also help reduce misperceptions among smokers around nicotine causing cancer.¹⁴
- g) Creating a more **supportive environment** that minimises the risk of ex-smoker relapse (eg, removal of point-of-sale displays in retailers, requiring the plain packaging of tobacco products as planned for Australia, and expanding the range smokefree areas to include smokefree cars etc).

If the above moves are not sufficiently successful, and some deprived smokers remained dependent on nicotine after tobacco sales cease, the residual options for them could be: (i)

long-term continuous NRT use (provided by the health system); (ii) other less hazardous forms of nicotine delivery (eg, Medsafe approved e-cigarettes); or (iii) home-grown tobacco for personal use which would remain legal in New Zealand (see below).

The demand reduction interventions listed above will also reduce the demand for illicit tobacco and any associated criminal activity (which are further considered below).

2) Cross-border smuggling

New Zealand's remoteness probably makes smuggling harder and the recorded levels of illicit tobacco are lower than for countries such as the UK, Canada and the USA. Also, New Zealand's relatively high quality border control operations are likely to be another reason for this pattern (this applies to both NZ and Australia border control compared to many other developed countries, due to the economic need to protect the primary produce sector from biohazards). Historical evidence of the relative difficulty of drug smuggling to New Zealand is suggested by the development of various local illicit drugs industries over the decades^{15 16} (eg, local "homebake" to replace imported opiates).

Our current assessment, based on recent data we obtained from a survey of discarded cigarette packs, suggests that tobacco smuggling is a minor problem in the current New Zealand setting.¹⁷ This is also notable, considering that New Zealand has relatively high tobacco prices compared to other countries.¹⁸ The view of a major tobacco company in New Zealand is that smuggling of contraband tobacco into the country is relatively minimal at 0.1% to 0.3% of domestic tailor-made cigarette consumption.¹⁹

Nevertheless, a phase-out in sales would result in local price increases and potentially stimulate smuggling activity. Some specific ways to address such concerns during a phase-out could include the following:

- a) Closer monitoring by Customs and Police of the activities of the trans-national tobacco companies, given the evidence of industry involvement in smuggling in other markets.²⁰⁻²³ Similarly, Police monitoring may be necessary for emerging tobacco smuggling by criminal gangs in New Zealand with trans-national connections.
- b) Continued high quality border control of freight imports and mail by Customs. At the point where there was no longer any commercial imports of tobacco products, the methods currently used for detecting tobacco on which import duty has not been paid, would apply to all tobacco imported.
- c) Increased support by the New Zealand Government for the international development of comprehensive "coding and tracking" systems for detecting smuggled and contraband tobacco products.²⁴ New Zealand authorities could introduce such systems both here and offer to support other countries in the Asian Pacific region to do likewise. New Zealand Customs already provides assistance to South Pacific nations.²⁵
- d) If smuggling problems became quite substantive during the sinking-lid phase out, a more complete policy solution would be to introduce an additional ban on the import of commercial brands. This could be via introducing a system of non-commercial, non-branded tobacco supply packaged in New Zealand,²⁶ an approach first articulated by Borland.²⁷ This would make the identification of smuggled "branded" tobacco much easier. But we recognise that this move would substantially add to the intensity

of tobacco industry opposition, and may not be worth the additional regulatory efforts by policymakers.

3) Diversion for illegal sale of “large-scale” NZ-grown tobacco

There have been a number of problems in the Motueka area over the last 10 or more years, because of the continued presence of plantation tobacco produced by mechanised agriculture, which growers allege is for sharing with or ‘selling at cost’ to friends. Prosecutions have been difficult.²⁸⁻³⁰ The tobacco industry in New Zealand itself may also be concerned about this phenomenon, as judged by a recent industry-commissioned report.¹⁹ But we have numerous concerns about the quality of this industry-funded report and so have doubts about its estimates on the scale of this problem. For example, their report is not peer-reviewed, has many unreferenced statements and makes various calculations based on completely inadequate data. For example, it estimates an amount (“20 tonnes”) for annual loose tobacco production in Northland. This is based on nothing more than interview data from an undisclosed number of smokers in Northland, who are reportedly more aware of black-market tobacco than smokers in the rest of New Zealand. But these interview data are mixed in with that of smokers with those from the Motueka region – so it is all very unclear. In particular, the report fails to acknowledge that the tobacco industry has a very plausible commercial bias to exaggerate black-market concerns in New Zealand so as to prevent additional increases in excise tax on their own loose tobacco products (ie, for roll-your-own [RYO] use). The report also fails to undertake any reasonable comparison between its own highly hazardous products and those of its “black-market” competitors (see the Table below for our comparison from a public health perspective).

As a result of these quality deficits, we would suggest that the Committee treat this industry-funded Report with particular scepticism and suggest that it request that Ministry of Health staff provide a full critique of its contents. (We can provide on request a list of quality deficits in this industry-funded report to either the Committee or the Ministry). Such work could be considered in the context of Ministry of Health survey data which suggests at most a very minimal role for black-market tobacco in New Zealand (see Appendix). It should also be considered in the context of past tobacco industry behaviour³¹ and suggestions of exaggerated industry claims on the smuggling issues.³²

Despite the uncertainties, there are solutions that could largely address the potential problem of ‘home-grown’ tobacco now and also during the phase-out process:

- a) Ban all large-scale and commercial growing of tobacco in New Zealand. That is, changing the current law to restrict growing of any tobacco to 50 plants for each adult who smokes in a household. This amount would allow for around 2.25kg of tobacco per year or around 12 cigarettes of 0.5 grams each per adult smoker per day. (Our calculations are based on estimates in Smith³³ of 10 home-grown plants to provide 450 grams of tobacco when allowing for wastage). This contrasts with the much higher 15kg limit in the current New Zealand law (which is equivalent to 82 RYO cigarettes per day of 0.5 grams each).
- b) Consider clearer wording to the current law on the giving of home-grown tobacco to others. The current law bans “disposition to any other person”³⁴, but further clarity may be desirable.

- c) Require licensing of tobacco seed importers and retailers, and restrict the amount of seed that can be dispensed to individual purchasers (eg, only slightly more than enough for the 50 plant limit per year). One potential option is that purchasers of seeds would also require a zero-fee license (see below).

If ‘home-grown’ tobacco was the only legal option, then an ongoing educational campaign would be necessary to warn about the problems of both illicit and “legal” tobacco, the health risks of RYO tobacco, and to continue to increase the remaining smokers’ interest in quitting.

4) Diversion for illegal sale of micro “home-grown tobacco”

As per current law it is legal for individuals to grow tobacco for personal use in New Zealand. We consider that the legality of home growing for personal use should continue (past the ending of retail tobacco sales) as the overall emphasis should be on removing commercial incentives for sale, rather than making tobacco *use* illegal. There is some modest evidence of home-growing occurring in New Zealand (eg, seeds are for sale on the website “TradeMe” and on one website: <http://www.badhabitsstore.biz/BadHabitsTabacalera.html>). However, we know of no examples of illegal sales from individual level home-growing (in contrast to the subsection above which relates to large-scale growing operations).

Nevertheless, home-growing of tobacco may not be that easy, since the relatively damp New Zealand climate is not generally regarded as favourable for this crop,³⁵ a reason why commercial production in this country became limited to the Motueka region. Furthermore, the amount of effort involved with home growing appears to be fairly large. As detailed in one do-it-yourself (DIY) guide to tobacco production, this process involves substantial amounts of labour, various complex processes and a long time course.³³ Whole crops can be lost to mildew if local humidity levels are too high and good air flow is not maintained during air-dried curing. Drying a crop in an oven and the toasting process requires careful and constant supervision to avoid fires. This DIY guide also suggests substantial investments in additional ingredients and equipment for conducting the whole process (eg, a “tobacco shredder” with “brick press” which has a starting price of \$NZ 249.95 on “TradeMe”). Similarly, a New Zealand DIY guide mentions complicating issues relating to the indoor growing of tobacco (eg, light via a 100 watt bulb for 8-10 hours per day and use of heat pads to achieve a minimum of 26 degrees Celsius for nurturing seedlings).³⁶ It also refers to the risk of mould damage, the use of hydroponic nutrient broth, and the need to use slug and snail repellents.

Furthermore, home-growing may decline once new users experience the rough taste of home-grown tobacco which lacks the blending, the sugars and the flavouring of manufactured products. Similarly, the variation in nicotine levels in the final product may count against it developing sustained popularity (relative to the far more consistent nature of manufactured tobacco).

In contrast to cannabis production in New Zealand, tobacco growing conditions are more constrained, the threat of fungal infection is probably greater and there is the generally greater extra effort required for processing (eg, curing, toasting and blending).

For these reasons, along with the societal-wide trend towards convenience products and services in all their forms, we suspect that home-production of tobacco will probably never become particularly popular during or after a tobacco sales phase-out. Nevertheless, if illegal sales from this source became a significant problem, then we suggest a public health approach to the problem, which focuses on demand reduction (as per the smoking cessation support options described above).

If necessary, this approach would be further enabled by a zero-fee “tobacco home-growing licence”. A licence coupled with an existing plot would provide proof of legality for the tobacco possessed or being smoked, whereas the opposite could become the basis for a fine or other legal action. Such licensing could also allow these smokers to be provided with additional quitting information, and access to quitting support, at regular intervals (since most NZ smokers regret having started smoking³⁷ and regularly attempt quitting¹³).

Regardless of the popularity of home growing, some public education will be desirable on the hazards of this product. These are briefly outlined in the table below – along with some characteristics that may make branded commercial loose tobacco even more hazardous.

Table: Comparison between branded commercial loose tobacco and product from illicit commercial-scale growing and legal home-grown in terms of health-related hazards

Characteristic	Branded commercial loose tobacco	Illicit commercial-scale and legal home-grown loose tobacco
Ready availability	High – thousands of sales outlets nationally.	Low – only available to those who know the outlets or networks. Unless home production is large, home growers may also run out of supplies.
Attractive to children	High – attractively packaged, branded, displayed in shops, easier to roll* and routinely includes sweeteners and flavours.	Low – possibly in rare situations where some children may adopt the tobacco growing “hobby” from observing adults.
Lack of health warnings	No – Graphic health warnings are required and shown on all loose tobacco packaging.	Yes – no warnings, but in contrast there is also no attractive packaging and branding (as on most of the packaging surfaces of branded commercial loose tobacco pouches).
Higher amount smoked per day	Possibly worse for those who can afford to smoke commercial RYO (as is more convenient to access supplies and easier to roll*).	Possibly worse for the poorest smokers as provides cheaper tobacco* that may allow them to defer quitting.
Hazard per cigarette smoked	Unclear relative to home-grown (but possibly more hazardous than manufactured tailor-made cigarettes (see studies reviewed in O'Connor et al ³⁸). Yet some NZ smokers have the misperception that RYOs are less harmful. ³⁹	Unclear – but possibly higher if poor processing results in greater fungal contamination (which is associated with lung inflammation ⁴⁰).
Fire risk	Probably generally higher per RYO cigarette as the drying process is more standardised so burning time might be increased (but this is not as problematic as for tailor-made cigarettes which keep burning).	Possibly safer per RYO cigarette since moisture levels may be variable if the curing process has variable quality control (meaning that burning times might be shorter when moisture levels are higher). But oven-drying and toasting of home-grown will entail increased fire risk.

Characteristic	Branded commercial loose tobacco	Illicit commercial-scale and legal home-grown loose tobacco
Green tobacco sickness ⁴¹ (acute nicotine poisoning from handling tobacco leaves)	A risk for workers in the country the tobacco is produced in, but not in NZ (all leaf used in branded products is imported)	Potentially a risk for naïve growers in NZ.

* Based on an industry report¹⁹ – but we note that we consider this report to be of low quality (for reasons outlined above).

5) Theft of tobacco from stores

The issue of theft from stores is a potential problem during the countdown to zero commercial sales, but not thereafter. Even so, this may be a lesser problem than anticipated, due to the reduction in demand that occurs due to the sinking lid and supporting demand reduction policies. In any case, vendors are expected to cope with the increased risk in various ways: (i) enhancing store security; (ii) reducing the amount of tobacco stock routinely held; or (iii) ceasing to stock tobacco altogether. Insurance companies could themselves play a role by increasing premiums (for theft coverage) for stores without appropriate security systems. Of note is that there are other types of stores that have much more valuable stock (eg, jewellery stores) than dairies with tobacco, and these seem to be able to manage their security issues. Furthermore, the proposed demand reduction measure of the removal of point-of-sale tobacco displays and requirement that all tobacco products are kept out of sight under the counter (see section 1 above), is likely to reduce visibility and hence opportunistic theft.

6) Desirable monitoring and research

The complexities and inadequate information around some of the issues detailed in this Report should not prevent action by policymakers to pass a sinking lid phase-out law within the next year. This is because the scale of the ongoing tobacco epidemic for Māori and other New Zealanders requires an immediate response so that thousands of premature deaths can be prevented.

Nevertheless, to refine the phase-out process and minimise all potential problems we suggest that ongoing monitoring and research is desirable. Such work could help inform adapting control measures during six-monthly or annual reviews during the phase-out process. Various options for such monitoring and research include:

- Routine detailed reporting by Customs on interceptions of illicit tobacco (to health authorities managing the phase-out).
- Routine detailed reporting by Police on tobacco theft and investigations around illegal sale (to health authorities).
- Routine collation and reporting of data on tobacco seed imports and monitoring of the prices and number of sellers on “Trademe” (eg, by health authorities).
- Routine periodic aerial surveys of tobacco growing (eg, in the Motueka area) by Customs/Police.

- Inclusion of additional questions on illicit tobacco use in the routine *NZ Tobacco Use Survey* or other similar surveys (run by the Ministry of Health or by Statistics NZ).

Furthermore, once the phase-out began it would be desirable to establish an actual monitoring and research plan, along with some modest workforce and resources (eg, located in the Ministry of Health).

Final comments

We commend the Maori Affairs select Committee for addressing the tobacco epidemic issue and wish it all the best with its deliberations. We are most willing to further clarify any of the points made in this Report and to provide any additional information on request to the Committee or to the Ministry of Health.

Declaration of competing interests: Although we do not consider it a competing interest, for the sake of full transparency we note that some of the authors have undertaken work for health sector agencies working in tobacco control. The authors admit to a professional concern that it is undesirable that thousands of New Zealanders continue to die prematurely from the tobacco epidemic.

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References

1. New Zealand Parliament. Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Maori. http://www.parliament.nz/en-NZ/PB/SC/BusSum/e/1/6/00DBSCH_INQ_9591_1-Inquiry-into-the-tobacco-industry-in-Aotearoa-and.htm 2009.
2. Group of researchers at the Department of Public Health University of Otago Wellington. Submission to the: Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori. Wellington: University of Otago, Wellington: http://www.parliament.nz/NR/rdonlyres/FA7DEFFA-0AFF-4CC8-85C6-CD5B805D34C9/128156/49SCMA_EVI_00DBSCH_INQ_9591_1_A31755_UniversityofO.pdf, 2010.
3. Haywood D. David Haywood: Ban will bring in the gangs. *NZ Herald* 2006;(4 June). http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10384960.
4. Wilson N, Thomson G, Blakely T, et al. A new opportunity to eliminate policy incoherence in tobacco control in New Zealand. *NZ Med J* 2010;**123(1311)**:89-92.
5. Wilson N, Thomson G, Edwards R. Use of four major tobacco control interventions in New Zealand: a review. *New Zealand Medical Journal* 2008;**121**:71-86.
6. Wilson N, Grigg M, Graham L, et al. The effectiveness of television advertising campaigns on generating calls to a national Quitline by Maori. *Tob Control* 2005;**14**:284-6.

7. Grigg M, Waa A, Bradbrook SK. Response to an indigenous smoking cessation media campaign - it's about whanau. *Aust N Z J Public Health* 2008;**32**:559-64.
8. Li J, Wilson N, Hoek J, et al. Smokers' responses to New Zealand graph warnings by ethnicity and deprivation [Oral presentation]. Society for Research on Nicotine and Tobacco, 16th Annual Meeting, 24-27 February, Baltimore, USA.
<http://www.wnmeds.ac.nz/academic/dph/research/HIRP/Tobacco/posters/Li%20et%20al%20-%20graphic%20warnings%20PA%202-5.pdf>, 2010.
9. Li J, Wilson N, Hoek J, et al. New graphic warnings improve knowledge of smoking harms among smokers. [Poster presentation POS3-15]. Society for Research on Nicotine and Tobacco (SRNT), 15th Annual Meeting 24 – 27 February, Baltimore, Maryland, USA. 2010.
10. Wilson N, Weerasekera D, Hoek J, et al. Increased smoker recognition of a national quitline number following introduction of improved pack warnings. [Poster presentation POS3-13]. Society for Research on Nicotine and Tobacco (SRNT), 15th Annual Meeting 24 – 27 February, Baltimore, Maryland, USA. 2010.
11. The Quit Group. New Quitline Service Evaluation – Longitudinal Survey. Wellington: The Quit Group.
<http://www.quit.org.nz/file/research/FINAL%20REPORT%202007%2008%20Quitline%20Evaluation.pdf>, 2009.
12. O'Dea D. An evaluation of the economic value of the Quitline NRT Programme (Report for the Ministry of Health). Wellington: The Quit Group.
<http://www.quit.org.nz/file/research/FINAL%20-%20NRT%20economic%20evaluation%20Aug%2004.pdf>, 2004.
13. Ministry of Health. New Zealand Tobacco Use Survey 2008: Quitting results. Wellington: Ministry of Health, 2009.
14. Edwards R, Wilson N, Peace J, et al. Edwards R, Wilson N, Peace J, Weerasekera D. Smokers commonly have misperceptions concerning nicotine as a major carcinogen: National survey data. [Poster presentation POS1-49]. Society for Research on Nicotine and Tobacco (SRNT), 15th Annual Meeting 24 – 27 February, Baltimore, Maryland, USA. 2010.
15. Bedford KR, Nolan SL, Onrust R, et al. The illicit preparation of morphine and heroin from pharmaceutical products containing codeine: 'homebake' laboratories in New Zealand. *Forensic Sci Int* 1987;**34**:197-204.
16. Wilkins C, Bhatta K, Casswell S. The emergence of amphetamine use in New Zealand: findings from the 1998 and 2001 National Drug Surveys. *N Z Med J* 2002;**115**:U256.
17. Wilson N, Thomson G, Edwards R, et al. Estimating missed government tax revenue from foreign tobacco: survey of discarded cigarette packs. *Tob Control* 2009;**18**:416-8.
18. Blecher EH, van Walbeek CP. Cigarette affordability trends: an update and some methodological comments. *Tob Control* 2009;**18**:167-75.
19. Ernst & Young. Out of the shadows: An independent report of New Zealand's illicit tobacco market. Auckland: Ernst & Young.
http://www.parliament.nz/NR/rdonlyres/DB8BE348-0351-4EA3-B0BD-C24E9B2FB1C8/132463/49SCMA_EVI_00DBSCH_INQ_9591_1_A38235_BritishAmeric.pdf, 2010.
20. Collin J, Legresley E, MacKenzie R, et al. Complicity in contraband: British American Tobacco and cigarette smuggling in Asia. *Tob Control* 2004;**13 Suppl 2**:ii104-11.
21. Lee K, Collin J. "Key to the future": British American tobacco and cigarette smuggling in China. *PLoS Med* 2006;**3**:e228.

22. Legresley E, Lee K, Muggli ME, et al. British American Tobacco and the "insidious impact of illicit trade" in cigarettes across Africa. *Tob Control* 2008;**17**:339-46.
23. Nakkash R, Lee K. Smuggling as the "key to a combined market": British American Tobacco in Lebanon. *Tob Control* 2008;**17**:324-31.
24. Joossens L, Raw M. Progress in combating cigarette smuggling: controlling the supply chain. *Tobacco Control* 2008;**17**:399-404
25. New Zealand Customs Service. New Zealand Customs Service Strategic Outlook to 2015. <http://www.customs.govt.nz/NR/rdonlyres/A65FB326-94D8-42BF-B626-6603ABD268E7/0/StrategicOutlookto2015.pdf> 2009.
26. Thomson G, Wilson N, Crane J. Rethinking the regulatory framework for tobacco control in New Zealand. *N Z Med J* 2005;**118**:U1405.
27. Borland R. A strategy for controlling the marketing of tobacco products: a regulated market model. *Tob Control* 2003;**12**:374-82.
28. Nelson Mail. Seized tobacco returned. *Nelson Mail* 2007 25 April 2007.
29. Murdoch H. Clampdown on black-market tobacco. *The Press* 2007 28 March 2007.
30. New Zealand Press Association. Illegal tobacco sales netted more than \$54,000. *New Zealand Press Association* 2000 12 January 2000.
31. Thomson G, Wilson N. The tobacco industry in New Zealand: A case study of the behaviour of multinational companies. Wellington: Wellington School of Medicine & Health Sciences, University of Otago. <http://escholarship.org/uc/item/0bd8z7s2?query=thomson%20and%20wilson%20and%20zealand>, 2002.
32. Youdan B, Colhoun M. New Zealand: Industry's false tax claims exposed. *Tob Control* 2010;**19**:91-92.
33. Smith G. Tobacco Culture: A DIY Guide. Hill Brow, Hampshire, England: Spur Publications, 1977.
34. NZ Government. Customs and Excise Act 1996 No 27 (as at 01 January 2010), Public Act, Section 68A. <http://www.legislation.govt.nz/act/public/1996/0027/latest/DLM1658263.html>.
35. O'Shea P. The Golden Harvest: A History of Tobacco Growing in New Zealand Christchurch: Hazard Press, 1997.
36. McMichaels M. Easy-grow premium tobacco kit. Auckland: Bad Habits (publisher). Undated.
37. Wilson N, Edwards R, Weerasekera D. High levels of smoker regret by ethnicity and socioeconomic status: national survey data. *N Z Med J* 2009;**122**:99-100.
38. O'Connor R, McNeill A, Borland R, et al. Smokers' beliefs about the relative safety of other tobacco products: findings from the ITC collaboration. *Nicotine Tob Res* 2007;**9**:1033-42.
39. Wilson N, Thomson G, Weerasekera D, et al. Smoker misperceptions around tobacco: national survey data of particular relevance to protecting Maori health. *N Z Med J* 2009;**122(1306)**:123-7.
40. Pauly JL, Smith LA, Rickert MH, et al. Review: Is lung inflammation associated with microbes and microbial toxins in cigarette tobacco smoke? *Immunol Res*; **46**:127-36.
41. McKnight RH, Spiller HA. Green tobacco sickness in children and adolescents. *Public Health Rep* 2005;**120**:602-5.
42. Ministry of Health. New Zealand tobacco use survey 2006. Wellington: Ministry of Health, 2007.
43. Ministry of Health. Tobacco Trends 2008: A brief update of tobacco use in New Zealand. Appendix 1: Online data tables of the 2008 New Zealand Tobacco Use Survey.

Wellington: Ministry of Health, <http://www.moh.govt.nz/moh.nsf/indexmh/tobacco-trends-2008-appendix1>, 2009.

Appendix: Source of tobacco products according to NZ smokers (NZTUS 2008)

The following tabulated data were published online as part of the outputs of the 2008 NZ Tobacco Use Survey (NZTUS)⁴³ (a national survey organised by the Ministry of Health). The results are based on the question asked of all current smokers as to the place tobacco was purchased in the last month.

Table A1. Age-standardised prevalence by gender and ethnic groups for the place tobacco was purchased in the last month (abbreviated by dropping analyses by sex)

	Maori	Pacific	Asian	European/Other	Total
Supermarket					
Total	51.0 (44.7 - 57.4)	52.3 (41.6 - 63)	29.6 (14.8 - 48.3)	52.3 (47.9 - 56.6)	51.0 (47.5 - 54.6)
Hotel, pub or restaurant					
Total	7.7 (4.5 - 10.9)	3.9 (1.1 - 9.7)	0.3 (0 - 1.6)	8.7 (6.2 - 11.3)	7.6 (5.6 - 9.5)
Petrol station					
Total	46.7 (40.6 - 52.8)	51.0 (40.9 - 61)	50.0 (30.8 - 69.2)	55.1 (51 - 59.3)	52.4 (48.6 - 56.1)
Dairy or other shop					
Total	67.3 (61 - 73.7)	79.0 (71.3 - 86.7)	68.7 (53.7 - 83.6)	66.2 (62.4 - 70)	67.3 (64.1 - 70.6)
Mail order or internet					
Total	N/A	N/A	N/A	N/A	N/A
Duty free					
Total	5.1 (2.7 - 8.7)	5.3 (2.1 - 10.8)	6.2 (1.5 - 15.9)	8.3 (6.1 - 10.6)	7.4 (5.6 - 9.2)
Somewhere else (with analyses by sex)					
Men	0.2 (0 - 1.1)	N/A	N/A	0.2 (0 - 0.8)	0.2 (0 - 0.6)
Women	0.6 (0.1 - 2.3)	N/A	N/A	1.0 (0.2 - 3.2)	0.7 (0.1 - 2.1)
Total	0.4 (0.1 - 1.4)	N/A	N/A	0.6 (0.2 - 1.6)	0.4 (0.1 - 1.1)
No cigarettes bought in the past month					
Total	0.1 (0 - 0.5)	0.6 (0.1 - 2.4)	N/A	0.8 (0.3 - 1.9)	0.7 (0.2 - 1.4)

Table A2. Additional data for purchasing tobacco from "somewhere else" by deprivation level (age-standardised rates by gender and NZDep2006 quintile)

	NZDep2006 quintile					Total
	1 (Least deprived)	2	3	4	5 (Most deprived)	
Men	0.6 (0 - 3.4)	N/A	N/A	0.4 (0 - 2.3)	0.1 (0 - 0.7)	0.2 (0 - 0.6)
Women	3 (0 - 16.9)	0.9 (0 - 4.9)	0.7 (0 - 4.3)	N/A	0.1 (0 - 0.8)	0.7 (0.1 - 2.1)
Total	1.8 (0.1 - 8.1)	0.4 (0 - 2.2)	0.4 (0 - 2)	0.2 (0 - 1.2)	0.1 (0 - 0.5)	0.4 (0.1 - 1.1)

Table A3. Additional data for purchasing tobacco from “somewhere else” by deprivation level and by age-group

Age group in years (unadjusted)								
	15-19	20-24	25-29	30-39	40-49	50-59	60-64	Total
Men	N/A	N/A	N/A	N/A	0.6 (0-3.2)	0.3 (0-1.9)	1.8 (0-10.5)	0.3 (0-0.8)
Women	2.9 (0.1-15.9)	N/A	N/A	0.6 (0-3.6)	0.3 (0-1.5)	1.2 (0-6.7)	N/A	0.7 (0.2-2.0)
Total	1.5 (0-8.4)	N/A	N/A	0.3 (0-1.7)	0.4 (0-1.6)	0.8 (0.1-3.5)	1.1 (0-6.1)	0.5 (0.2-1.1)

Comment: If all these smokers are being completely truthful in their responses, then these results would suggest that black-market tobacco could be comprising up to 0.4% of total purchases (95% confidence intervals 0.1 to 1.1%), ie, the “somewhere else” category in the fourth to last row of Table A1. But even this estimate could be an overestimate since “somewhere else” could include:

- Buying tobacco from friends and family who have purchased it duty-free.
- Buying tobacco from friends and family who have purchased it from the usual commercial settings (eg, when friends or family have purchased tobacco for smokers who live in remote locations or who are unable to buy it themselves because of disability or for convenience reasons etc).

The pattern in Table A1 of the “somewhere else” category tending to be higher in women (in each ethnic group) may also suggest a minimal role for black-market purchases. This is because crime data for New Zealand usually show a strong male predominance. A similar argument for a minimal role for black-market purchases comes from the lower “somewhere else” category for the most deprived New Zealand smokers vs the least deprived ones (0.1% vs 1.8%, Table A2). One would expect any black-market purchases to be much higher in the more price-sensitive “most deprived” group.

The relatively high “somewhere else” results for the 15-19 year age group (at 1.5% in Table A3) are not surprising and probably reflect obtaining tobacco from friends and family (for those below the legal age of purchase of 18 years).

In contrast to the above arguments, the estimate of 0.4% (Table A1) could also be an underestimate of black-market purchases if:

- NZTUS respondents who purchase illicit tobacco are not being frank about the source of their tobacco (to protect their suppliers).
- If they are buying illicit tobacco from dairies, pubs, clubs or other commercial sources. In the case of counterfeit and smuggled tobacco, some smokers may even be unaware that they have purchased illegal product.

Given these uncertainties, further work on such national datasets is desirable along with investigative studies in areas where illegal tobacco is thought to be available (eg, the Motueka area).