



## **The importance of tobacco prices to roll-your-own (RYO) smokers (national survey data): higher tax needed on RYO**

There are strong, evidence-based, public health arguments for raising tobacco taxes based on both international,<sup>1,2</sup> and New Zealand work.<sup>3-6</sup> The benefits include protecting young people from smoking. A systematic review reports evidence for greater price sensitivity among low-income adults, thereby suggesting that such a tax could potentially contribute to reducing health inequalities.<sup>7</sup> Despite this, a major report<sup>8</sup> has highlighted the lack of a real increase in tobacco prices in New Zealand since 2001. This report also showed that the proportion of tobacco consumed as loose or roll-your-own (RYO) tobacco had increased substantially over time.

RYO use is of particular concern because it enables youth to access tobacco more cheaply. A 2008 survey of Year 10 students in New Zealand found that 57% (68% Māori) of those who smoked, usually smoked RYO.<sup>9</sup> Another survey found 69% of smokers aged 15–19 years smoked RYO.<sup>10</sup>

To further understand how the popular use of RYO tobacco in New Zealand may be related to tobacco prices, we analysed relevant data from a cohort study of smokers. The data came from a national survey of 1376 New Zealand adult (18+ years) smokers (surveyed between March 2007 and February 2008). This study was the New Zealand arm of the International Tobacco Control Policy Evaluation Survey (ITC Project).<sup>11,12</sup> Specific questions identified the type of cigarettes/tobacco consumed, and the reasons for consuming RYOs. These same questions were repeated in the second wave of the survey, over the subsequent year. Further detail on the survey methods are available in an online Methods Report<sup>13</sup> and in other journal article publications from this project.<sup>14,15</sup>

All the results were adjusted for the complex sample design and weighted to reflect the national population of smokers in New Zealand. These results showed that price (i.e. RYOs being less expensive) was the most commonly reported reason for smoking RYOs in both waves. This was true for both exclusive RYO smokers (84%, 82%) and mixed RYO smokers (80%, 82%) (Wave 1 and 2 results respectively: Table 1).

That RYO cigarettes “taste better” was the next most common reason given by RYO smokers (Table 1). Around half of RYO smokers gave a potential health-related reason—i.e. rolling them reduces the amount smoked. However this could also be seen as a cost-saving reason. More specifically, at least a fifth gave the reason of RYOs being not as bad for your health.

**Table 1: Reasons for smoking roll-your-own (RYO) cigarettes**

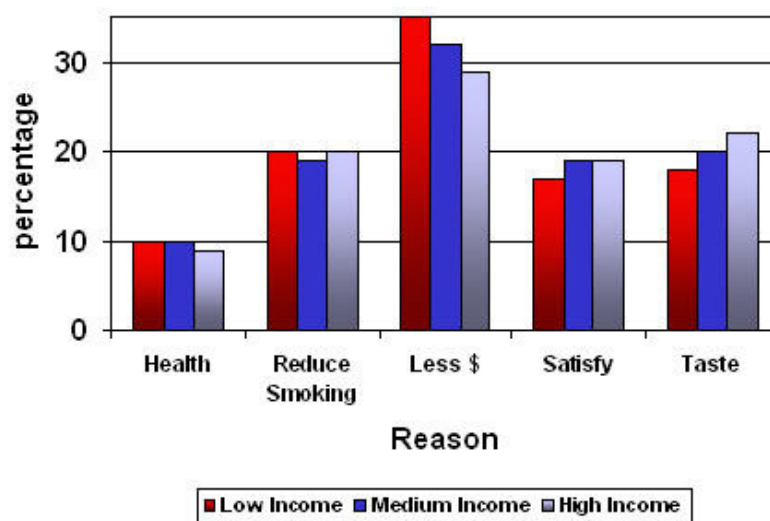
(with all results weighted and adjusted for the complex sample design to represent the national population of smokers in New Zealand)

Reasons provided for smoking RYO cigarettes	Wave 1 (%)		Wave 2 (%)	
	Exclusive RYO smokers (n=510)	Mixed* RYO smokers (n=177)	Exclusive RYO smokers (n=313)	Mixed* RYO smokers (n=106)
Less expensive	83.6 (79.2–87.9)	80.0 (71.1–88.8)	82.4 (76.7–88.2)	82.2 (71.3–93.1)
Taste better	81.7 (77.4–86.0)	50.5 (40.2–60.7)	79.8 (73.5–86.0)	55.6 (43.1–68.1)
More satisfying	69.8 (64.2–75.5)	43.0 (32.9–53.1)	66.1 (58.4–73.7)	46.3 (32.9–59.6)
Rolling them reduces the amount smoked	49.6 (43.5–55.6)	51.6 (41.3–61.9)	60.2 (52.6–67.8)	41.8 (29.0–54.7)
Not as bad for your health	21.5 (16.8–26.1)	20.1 (12.8–27.5)	29.3 (22.2–36.5)	27.6 (15.8–39.5)

\* Smokers who reported smoking both RYOs and factory-made cigarettes.

These results for the price reason are consistent with the data indicating increased RYO prevalence, as the price of tobacco has risen in New Zealand in past decades.<sup>8</sup> Indeed, smokers appear to be responding to price signals by both shifting to RYOs and also by rolling their RYO cigarettes much thinner than factory-made cigarettes.<sup>16</sup> This is a public health concern in that such behaviours may provide a perceived alternative to quitting. The results are also consistent with the findings of international studies,<sup>17,18</sup> as illustrated by Figure 1. This graph clearly indicates that price (“Less \$”) is both the chief motive for switching to RYO smoking, and is clearly correlated with income.

**Figure 1. Reasons for smoking RYOs among switchers from factory-made cigarettes, by income (data from Australia, Canada, UK and US; Base = total responses)<sup>18</sup>**



Furthermore, as shown in our New Zealand data, the beliefs among many RYO users that RYO smoking is less hazardous, provides them with a behavioural change they can make in response to their concerns about health effects. This response may result in them deferring quitting. This perception about lower hazard also contrasts to New Zealand evidence by Laugesen et al that smoking of RYOs is more intensive than for factory-made (FM) cigarettes,<sup>16</sup> as also found in a four-country study.<sup>17</sup> Similarly for other work demonstrating the equally toxic nature of RYO tobacco.<sup>19</sup>

If RYO smoking is equally or even more hazardous than smoking factory-made cigarettes, and if the RYO option does significantly delay quitting decisions, its usage may be contributing to health inequalities in New Zealand. This is because Māori smokers have a relatively higher prevalence of RYO use (exclusive or mixed with factory-made) compared to the European/Other ethnic group of smokers (ie, 63% vs 53%, Wave 1 data). The difference for the most deprived quintile of smokers versus the least deprived quintile is even more marked (60% vs 38% based on a small area deprivation index: NZDep 2006).

The most important policy response needed is to differentially place a higher tax by weight on RYO tobacco, as has been recommended previously for the New Zealand setting.<sup>8,20,21,6,16</sup> Ideally, this would be in the context of a substantial tax increase on all tobacco products, with tax revenue being used to provide additional quitting support.

Other supplementary policy responses could be to: (i) make all tobacco (including RYO tobacco) less palatable by banning the addition of sugar and various flavours; (ii) warn smokers via tobacco packaging warnings about the RYOs being at least equally as hazardous as factory-made cigarettes (an intervention that would cost tax payers nothing); and (iii) require that all tobacco is in plain packaging (so that misleading descriptors can not be used). Measures to completely reform the tobacco distribution system,<sup>22,23</sup> so as remove tobacco industry promotional activities (e.g. point-of-sale displays) also need to be considered further.

**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.

**Acknowledgements:** The ITC Project New Zealand team thank: the interviewees who kindly contributed their time; the Health Research Council of New Zealand which has provided the core funding for this Project; and our other project partners (see: <http://www.wnmeds.ac.nz/itcproject.htm> ).

Nick Wilson ([nick.wilson@otago.ac.nz](mailto:nick.wilson@otago.ac.nz)),<sup>1</sup> David Young,<sup>2</sup> Deepa Weerasekera,<sup>1</sup> Richard Edwards,<sup>1</sup> George Thomson,<sup>1</sup> Marewa Glover<sup>3</sup>

1. Department of Public Health, University of Otago, Wellington
2. VicHealth Centre for Tobacco Control, Melbourne, Australia
3. Centre for Tobacco Control Research, University of Auckland, Auckland

## References:

1. Hopkins DP, Briss PA, Ricard CJ, et al. Reviews of evidence regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke. *Am J Prev Med.* 2001;20:16–66.
2. Jha P, Chaloupka FJ. *Curbing the Epidemic: Government and the economics of tobacco control.* Washington DC: The World Bank, 1999.
3. Wilson N, Thomson G. Tobacco tax as a health protecting policy: a brief review of the New Zealand evidence. *N Z Med J.* 2005;118:U1403.
4. Wilson N, Thomson G, Tobias M, et al. How much downside? Quantifying the relative harm from tobacco taxation. *J Epidemiol Community Health.* 2004;58:451–4.
5. Wilson N, Thomson G, Edwards R. Use of four major tobacco control interventions in New Zealand: a review. *N Z Med J.* 2008;121:71–86.
6. Wilson N, Thomson G, Edwards R. What's new in tobacco tax research for New Zealand and is it time for a tax hike now? *N Z Med J.* 2009;122:3574.
7. Thomas S, Fayter D, Misso K, et al. Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tob Control.* 2008;17:230–7.
8. O'Dea D, Thomson G, Edwards R, et al. Report on Tobacco Taxation in New Zealand (Volume 1, Main Report). Wellington: Smokefree Coalition and ASH, 2007. <http://www.sfc.org.nz/pdfs/TobTaxVolOneNovember.pdf>
9. Health Sponsorship Council. 2008 HSC Year 10 In-depth Survey Report. Wellington: Health Sponsorship Council, 2009.
10. Ministry of Health. New Zealand tobacco use survey 2006. Wellington: Ministry of Health, 2007.
11. Fong GT, Cummings KM, Borland R, et al. The conceptual framework of the International Tobacco Control (ITC) Policy Evaluation Project. *Tobacco Control.* 2006;15 Suppl 3:iii3–11.
12. Thompson ME, Fong GT, Hammond D, et al. Methods of the International Tobacco Control (ITC) Four Country Survey. *Tobacco Control.* 2006;15 Suppl 3:iii12–8.
13. Wilson N. Methods report for the New Zealand arm of the International Tobacco Control Policy Evaluation Survey (ITC Project) (Updated 2009). Wellington: University of Otago, Wellington, 2009. <http://www.wnmeds.ac.nz/itcproject.html>
14. Wilson N, Weerasekera D, Peace J, et al. Misperceptions of "light" cigarettes abound: national survey data. *BMC Public Health.* 2009;9:126.
15. Wilson N, Borland R, Weerasekera D, et al. Smoker interest in lower-harm alternatives to cigarettes: National survey data. *Nicotine Tob Res.* 2009;[Advance Access published on October 14, 2009]. doi:10.1093/ntr/ntp152.
16. Laugesen M, Epton M, Frampton CM, et al. Hand-rolled cigarette smoking patterns compared with factory-made cigarette smoking in New Zealand men. *BMC Public Health.* 2009;9:194.
17. Young D, Borland R, Hammond D, et al. Prevalence and attributes of roll-your-own smokers in the International Tobacco Control (ITC) Four Country Survey. *Tob Control.* 2006;15 Suppl 3:iii76–82.
18. Young D, Fong G, Borland R, et al. Roll-Your-Own (RYO) Cigarettes: Prevalence, Reasons for Use and the Use of Filters. Findings from the ITC Four Country Survey (2002-06). Poster presented at SRNT 14th Annual General Meeting, Portland, Oregon, 2008.
19. Shahab L, West R, McNeill A. A comparison of exposure to carcinogens among roll-your-own and factory-made cigarette smokers. *Addict Biol.* 2009;14:315–20.
20. Laugesen M. Has smoking prevalence markedly decreased despite more cigarettes released for sale? *N Z Med J.* 2009;122:76–82.
21. Laugesen M. Increase tax on RYO cigarettes in line with the risk. Christchurch: SmokeLess New Zealand, 2007. <http://www.smokeless.org.nz:80/ryotax.htm>
22. Borland R. A strategy for controlling the marketing of tobacco products: a regulated market model. *Tob Control.* 2003;12:374–82.

23. Callard C, Thompson D, Collishaw N. Transforming the tobacco market: why the supply of cigarettes should be transferred from for-profit corporations to non-profit enterprises with a public health mandate. *Tob Control*. 2005;14:278–83.