A continuation of 10% annual tobacco tax increases until 2020: Modelling results for smoking prevalence by sex and ethnicity

Frederieke Sanne van der Deen, Nick Wilson, Tony Blakely

On 26 May 2016 the New Zealand Government announced it would continue its programme of annual 10% tobacco tax increases from 2017 to 2020 inclusive. Since 2010, the Government has increased tobacco tax by 10% each year, albeit with a higher increase in 2010 (all above a routine annual inflation adjustment). Tobacco tax is the single most effective tool used by governments to prevent young people from taking up smoking and reducing current smoking rates, while simultaneously benefiting population health and generating large savings on healthcare spending.1–3

Given this background we aimed to project future smoking prevalence for Māori and non-Māori men and women under the four additional years of tobacco tax compared to no continuation of this programme (ie, tax increases to January 2016 only). This letter extends previous work reported in an online blog, that projected smoking prevalence under the scenario of tax increases until 2020 for specific ethnic groups only.4 In addition, in this letter, we also aimed to discuss how such a programme could be enhanced by using collected tobacco tax revenue to fund tobacco control activities, and the need for the NZ Government to explore more novel (and substantive) measures to increase the chances of achieving its Smokefree Nation 2025 goal.

Methods

We used a peer-reviewed dynamic tobacco forecasting model4 that itself was initially derived from a published Australian model.7 This model was used to project future smoking prevalence for a continuation of annual 10% tobacco tax increases until 2020 compared to the business-as-usual trends (albeit with the tax increases that have occurred to January 2016). Briefly, this model is built in Microsoft Excel and includes a base and forecasting model using demographic and mortality data for New Zealand. In the base model recent annual trends in smoking uptake and cessation by sex, age and ethnicity were ‘solved’ by using smoking prevalence data from the 2006 and 2013 censuses. To project future smoking prevalence in New Zealand by sex and ethnicity under a series of annual 10% tax increases, these baseline trends in prevalence were tweaked by using age group-specific tobacco price elasticities (ie, responsiveness to tax increases as observed in the past). We used the following age group-specific tobacco price elasticities derived from previous BODE3 tobacco tax modelling work: -0.38 (15–20 years), -0.29 (21–24 year olds), -0.19 (25–34 years), and -0.10 (35+ years).3 The applied tobacco price elasticities were scaled up by 20% for Māori as done in previous BODE3 tobacco tax modelling work.1 There is some international evidence suggesting greater tobacco price elasticities among low-income populations,3 and as such one would expect higher price elasticities among Māori. While there is no direct evidence of greater responsiveness to tobacco price increases among Māori, there is some indirect evidence from an experimental study,4 and some parallel evidence from a study suggesting greater sensitivity to food pricing policies among Māori.8
Results

Our model projects that a continuation of 10% tax increases from 2017 to 2020 inclusive will see daily adult smoking prevalence rates reduce to 20.7% and 22.1% for Māori men and women and to 10.2% and 7.7% for non-Māori men and women by 2020 (see Figures 1 and 2). These compare to projected smoking rates of 22.0%, 23.5%, 10.6% and 8.0% for Māori and non-Māori men and women respectively if such a programme had not continued beyond January 2016. Assuming a continuation of baseline trends in smoking uptake and cessation after 2020 was projected to produce further reductions in smoking rates to 17.0% and 17.6% for Māori men and women by 2025 and to 8.3% and 6.1% for non-Māori respectively. Furthermore, the additional four rounds of tax increases have the potential to reduce the absolute ethnic gap in smoking prevalence observed in New Zealand by nearly one percentage point in 2025 (eg, from 9.6% to 8.7% for men and from 12.4% to 11.5% for women).

Discussion

A continuation of the programme of 10% annual tobacco tax increases was predicted to see tobacco smoking rates reduce further, but not sufficiently to achieve a below 5%
smoking prevalence for Māori or non-Māori men and women by 2025. Yet there is
uncertainty around the stability of tobacco prevalence elasticities into the future as they
may increase with tobacco reaching higher prices, or increase with changes in access
to nicotine-containing electronic cigarettes (both of which would probably favour
larger smoking reductions than we project). There may also be various tipping points
for higher quit rates as smoking becomes more denormalised in New Zealand society
or psychologically significant prices are achieved (eg, the “$30” per pack threshold).
Conversely, others have argued that the effect of tobacco taxation may be under-
mined by a growing illicit tobacco market. But in our past modelling we have shown
that even a substantial growth in the illicit market had little impact on overall popula-
tion-wide prevalence of tobacco smoking.2

While a continuation of the 10% annual tobacco taxation programme is a solid step
forward towards the NZ Government’s Smokefree 2025 goal, such a programme
could be enhanced by dedicating some of the collected tobacco tax revenue to fund
tobacco control activities. This revenue could particularly fund additional cessation
support services and mass media campaigns targeting low-income smokers who may be
disproportionately affected by tax rises if they continue to smoke. Earmarking tobacco
tax for tobacco control is already common practice in various jurisdictions overseas
(eg, Iceland, California, Switzerland, Vietnam).10,11 Indeed, it seems unethical
for the New Zealand Government to not provide smokers with more motivation to
quit and more direct support to quit when it is dealing with a highly addictive substance.
(The argument about smokers paying their way or not is not directly relevant when
a democratically-elected government has opted for a Smokefree Nation goal. Also
the issues are very complex and not all are easily quantifiable: health costs from
smokers and non-smokers harmed by second-hand smoke (SHS), superannuation
costs, nuisance impacts from SHS and environmen
tal impacts such as tobacco-related litter and fires.)

Also this and past New Zealand modelling work2,6,12 strongly suggest that the need for
further intensification of existing tobacco control measures or completely novel
measures remains. More incremental measures such as the proposed law on plain
packaging, expansion of smokefree areas (including a law for smokefree cars) and
more mass media campaigns (especially targeted at Māori and Pacific audience)
remain worthwhile. Novel measures, and potentially more substantive in terms of
reducing smoking, that the New Zealand Government could explore include the
tobacco-free generation idea (thereby essentially preventing new generations
from becoming addicted to tobacco13) or a substantive reduction in the number of
tobacco retail outlets (which is currently estimated at around 6,000 outlets12).

Competing interests:
Nil.

Author information:
Frederieke Sanne van der Deen, Public Health, University of Otago, Wellington; Nick Wilson,
Public Health, University of Otago, Wellington; Tony Blakely, Public Health, University of
Otago, Wellington.

Corresponding author:
Frederieke Sanne van der Deen, Public Health, University of Otago, Wellington.
frederieke.vanderdeen@otago.ac.nz

URL:
1441-9-september-2016/7006
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