



EVIDENCE
AND
FEASIBILITY
REVIEW
SUMMARY
REPORT

ACKNOWLEDGEMENTS

The Quit Group Trust commissioned a project to review the current status of the Smokefree Aotearoa 2025 goal and present a comprehensive action plan to set out how the goal can be achieved. This report accompanies the main report *Achieving Smokefree Aotearoa by 2025*, and should be read in conjunction with that report (see aspire2025.org.nz/smokefree-actionplan).

The authors would like to acknowledge the funding provided by the Quit Group Trust, and the excellent work of the Hāpai te Hauora team in organising the consultation process. We are grateful for the important contributions made by members of the expert advisory group, the intervention experts and the many members of the Aotearoa New Zealand tobacco control sector who took part in consultation hui (meetings).

Authors and project team

Louise Thornley, Professor Richard Edwards, Associate Professor George Thomson and Andrew Waa, with administrative support provided by Beck O'Shaughnessy, all from the Department of Public Health, University of Otago, Wellington, Aotearoa New Zealand.

Hāpai te Hauora team

Zoe Hawke, Stephanie Erick, Rangī McLean, Edward Cowley, Arnīa Appleby, Mason Ngawhika, Selah Hart and Felicia Mesui.

Expert advisory group

Emeritus Professor Robert Beaglehole, Auckland University
Professor Chris Bullen, Auckland University
Professor Chris Cunningham, Massey University and The Quit Group Trust
Stephanie Erick, Hāpai te Hauora
Zoe Hawke, Hāpai te Hauora
Kate Matthews, Canterbury District Health Board
Shayne Nahu, Cancer Society of New Zealand
Dr Jan Pearson, The Quit Group Trust
Louisa Ryan, New Zealand Heart Foundation
Dr El-Shadan Tautolo, Auckland University of Technology
Professor Nick Wilson, University of Otago, Wellington
Martin Witt, Canterbury-West Coast Division of the Cancer Society of New Zealand

Intervention experts

Professor Frank Chaloupka, University of Illinois at Chicago School of Public Health, Illinois, United States
Professor Melanie Wakefield, University of Melbourne, Victoria, Australia
Professor Janet Hoek, University of Otago, Dunedin, Aotearoa New Zealand
Dr Lindsay Robertson, University of Otago, Dunedin, Aotearoa New Zealand
Professor Joseph DiFranza, MD, University of Massachusetts Medical School, Worcester, Massachusetts, United States
Associate Professor George Thomson, University of Otago, Wellington, Aotearoa New Zealand
Professor Christopher Bullen, University of Auckland, Auckland, Aotearoa New Zealand
Associate Professor Natalie Walker, University of Auckland, Auckland, Aotearoa New Zealand
Professor Ron Borland, Cancer Council Victoria, Victoria, Australia
Professor Eric Donny, University of Pittsburgh, Pennsylvania, United States
Professor Jon Berrick, National University of Singapore, Singapore.

CONTENTS

Introduction	1
Evidence review method and process	2
Evidence summary for the actions	5
Objective 1: Affordability – Make tobacco less affordable	6
Objective 2: Availability – Make tobacco less available	11
Objective 3: Appeal – Make tobacco less appealing and less addictive	21
'Doing more of what we already do'	29
Comparative summary table of interventions	42
Conclusion	44
References	45

Published in Wellington, Aotearoa New Zealand, August 2017.



INTRODUCTION

The evidence and feasibility review focused on the findings from recent systematic reviews and key studies, in Aotearoa New Zealand and overseas studies.

To help select and prioritise potential interventions to achieve the Smokefree 2025 goal, we carried out:

1. an evidence and feasibility review, and
2. two rounds of stakeholder consultation on potential interventions to include in the Smokefree 2025 action plan.

An accompanying report on the stakeholder consultation is available online at

aspire2025.org.nz/smokefree-action-plan

EVIDENCE REVIEW METHOD AND PROCESS

Aim and review questions

The evidence review aimed to identify which tobacco control interventions are likely to have the greatest potential to achieve the Smokefree 2025 Aotearoa goal. We considered the following components: effectiveness, equity (greatest impact on reducing Māori and Pacific smoking prevalence), feasibility and acceptability, based on international and local literature. An initial list of 23 potential tobacco control interventions was selected.

Full list of 23 reviewed interventions

1. Incremental tobacco tax increases
2. Enhanced mass media and social media campaigns
3. Packaging and product-related smokefree communications and other interventions, such as information on contents/additives, enhanced pictorial health warnings, dissuasive sticks, pack inserts
4. Incremental controls to reduce retail availability and supply, such as licensing, limited proximity or density restrictions
5. Reduced youth access/increased age of purchase
6. Incremental increases in smokefree place policies, such as bars and outdoor dining, national level restrictions for smokefree cars, playgrounds, sports fields and other children's areas
7. Smoking cessation support
8. Increased accessibility and promotion of use by smokers of electronic cigarettes and other harm-reduction products/approaches (population impact on smoking prevalence and quitting)
9. Product modifications and removal of menthol and other additives
10. Interventions to reduce uptake among adolescents and young adults
11. Major tobacco tax increases (along with complementary measures, such as minimum price controls, allocating tobacco tax revenue to tobacco control and smoking cessation services)
12. Major reductions in tobacco imports and release to market, such as a 'sinking lid' policy
13. Comprehensive controls and reductions in retail availability and supply, such as sales restricted to pharmacies or specialist shops
14. Nicotine reduction – mandated very-low-nicotine-content tobacco products
15. Market restructuring, such as regulated market model, state-run distribution and sale of tobacco products, industry-focused interventions
16. Controls on accessibility of tobacco, such as smoker's licence, prescription-only sale of tobacco products
17. Tobacco-free generation proposal
18. Removing all additives and ending roll-your-own tobacco sales
19. Comprehensive restrictions on smoking in outdoor public places, such as smokefree business areas for cities (including disallowing smoking in all public places)
20. Mass media and social media campaigns using more radical, anti-industry smokefree messages, such as using court findings of industry malpractice, exposing industry statements
21. Stringent measures to control alcohol, such as large tax increases on alcohol, major reductions in availability
22. Management and structures for tobacco control, such as increased capacity for tobacco control sector and Ministry of Health, separate tobacco control authority, equitable funding formulas
23. Total ban on supply of tobacco.

Four key questions guided the review:

1. For each intervention, what is the evidence for effectiveness, equity/reducing disparities and feasibility (including technical and political feasibility, cost-effectiveness and acceptability)?
2. Of all the 23 interventions, which are likely to be most effective and have the greatest impact on reducing Māori and Pacific smoking prevalence?
3. Which interventions are most likely to be feasible (cost-effective, politically and technically plausible) and acceptable (to the public and key stakeholders) in Aotearoa New Zealand?
4. What is the evidence for the most feasible and acceptable mix and balance of interventions across a comprehensive tobacco control programme?

Search and selection of papers

The literature search included three components: 1) primary searching for systematic reviews, 2) supplementary searching for individual key papers to fill gaps when necessary (e.g. when recent reviews were not identified on a particular topic), and 3) specific searching for relevant Aotearoa New Zealand studies. Criteria used for selecting individual key papers included recommendations by topic experts (see below), Aotearoa New Zealand studies, or recent high-quality intervention studies not included in the systematic reviews. Project team members also suggested additional papers when they reviewed the references and summaries for each topic.

We identified potential relevant literature by searching electronic databases (Cochrane Database of Systematic Reviews, Medline, Embase and Scopus). Google Scholar was also used to supplement searches in some topics.

Specific searches were carried out to fill gaps and for Aotearoa New Zealand material. Additional searches of key websites and general Google searches were also used, when necessary, to fill gaps and identify unpublished material.

Most of the reviewed papers were systematic reviews published in reputable academic journals. The references on each intervention were checked by topic experts (see below) who provided input and suggested additional references as appropriate.

One researcher identified potential references and saved an initial set of 541 papers into Endnote. The inclusion/exclusion criteria were used to select papers relevant to this review. Literature was selected by one researcher;

however, if there was ambiguity about a paper, that researcher sought a second opinion from a project team member. Topic-specific experts (see section on page 4 below) recommended inclusion of additional papers. A final set of 189 papers was selected. An experienced librarian from the University of Otago medical library in Wellington assisted with developing the search strategy and advising on effective search techniques.

Selection criteria

Relevant systematic reviews published since 2006 were included. For topics with multiple recent systematic reviews, only reviews published since 2011 were included. Where no systematic reviews were identified, selected key articles published since 2010 were included, with priority given to recent Aotearoa New Zealand studies (controlled studies if available), and recommended individual studies from topic experts (see page 4).

For Aotearoa New Zealand studies, a wider range of papers was included, such as qualitative research, descriptive studies, and unpublished papers on feasibility or stakeholder views. For some interventions with little evidence available, other documents were included (e.g. media reports) to shed light on potential precedents.

Papers reporting a range of outcomes were included, primarily effectiveness and equity-related outcomes, such as smoking prevalence (in general and for population groups of interest), quitting rates and smoking initiation. Papers that reported unintended outcomes and co-benefits were included where available.

Reviews and studies that related to any age-group were included. However, population groups of particular interest included Māori, Pacific, overseas indigenous and ethnic minority populations, low SES, young adults (aged 18-25 years), pregnant women and people with mental health conditions.

Literature from countries comparable to Aotearoa New Zealand was prioritised, e.g. Australia, UK, US, Canada, EU and Scandinavia. Given the time constraints, the review also prioritised papers written in the English language. Literature from or focused on developing countries was excluded, unless it was clearly relevant to Aotearoa New Zealand or filled an important gap.

Review and appraisal of papers

The project team read and appraised the included papers using an adapted Canadian public health appraisal framework¹. Each paper was appraised for evidence or

expert commentary related to the following components: effectiveness, equity (especially reducing disparities for Māori and Pacific), cost-effectiveness, unintended impacts, technical and political feasibility (both short and longer term), acceptability, public support, and precedents from other contexts. Notes on each paper were written into an Excel summary table under the component headings listed above.

One researcher then summarised the findings into summary tables and drafted potential policy options for each of the 23 interventions. Each summary table was reviewed by another member of the project team, and then sent to a topic expert.

Advice from topic experts

We sought brief advice from a topic expert for 22 of the 23 interventions (see next paragraph). Each expert was asked to comment on the list of initial papers and summary table, in particular to identify any gaps, inconsistencies or incorrect information. This advice was then incorporated into the review and additional references were reviewed and appraised.

Advice from topic experts was sought and included for most, but not all, topics. We did not seek advice from a topic expert on a total ban on tobacco supply (number 23), and we did not receive a response for the topics of interventions to reduce uptake among adolescents and young adults (number 10) and stringent measures to control alcohol (number 21).

Comparative appraisal of interventions/potential policy options

Following appraisal of individual papers, the project team then appraised the 23 interventions against each of the following components: effectiveness, equity/impact on Māori and Pacific disparities, unintended impacts, cost-effectiveness, technical and political (short- and long-term) feasibility, and acceptability. A comparison table was completed to compare the interventions across all components.

Selection of interventions for consultation

Based on the comparative appraisal, the project team agreed on a set of six possible priority interventions to discuss with stakeholders in the phase 2 engagement, with more detailed options proposed under each heading. The broad intervention areas were:

Box 1: Six intervention areas for stakeholder engagement

1. Increase the price of tobacco products through tax increases and other strategies
2. Reduce retail availability of tobacco products
3. Increase the legal minimum purchase age for tobacco products
4. Expand controls on packaging and design of tobacco products
5. Reduce the nicotine content of tobacco products
6. Remove additives from tobacco products.

Due to limited time availability in the engagement meetings, we could not include all 23 interventions and had to prioritise those where we thought feedback would be most useful in determining the interventions to include in the action plan. We focused particularly on interventions which seemed most promising based on the evidence review, and where political and public feasibility was more uncertain. Some interventions were not selected for discussion with stakeholders, for example: enhanced mass media interventions, improved and better targeted smoking cessation interventions, and extended smokefree environment policies. This is because these involve enhancing existing interventions that are highly feasible and we expect the Government will continue or extend existing work in these areas.

Increasing access to safe, effective alternative nicotine-delivery devices, such as e-cigarettes, and other potential cessation and harm reduction products, was not included in this consultation. The Government had already announced a policy change in March 2017 to make e-cigarettes more widely available, so we assumed this intervention will go ahead regardless of stakeholder feedback. Standardised packaging and enhanced pictorial warning labels were also not included as these will be implemented in 2018.

Finally, several other interventions were excluded from the stakeholder engagement due to a perceived lack of feasibility or acceptability at present. These included proposals for prescription-only tobacco, a smoker's licence, market restructuring (e.g. regulated market or state-run models), and a total ban on tobacco products. These may become more feasible in the future, however.

EVIDENCE SUMMARY FOR THE ACTIONS

This section summarises the evidence for the actions included in the action plan, *Achieving Smokefree Aotearoa by 2025*. The main interventions covered here are:

1. Tax and price interventions
2. Retail interventions
3. The 'tobacco-free generation' proposal
4. Additives and product modifications
5. Reducing the nicotine content of tobacco products
6. Alternative nicotine-delivery products (such as e-cigarettes)
7. Mass media interventions
8. Smoking cessation interventions
9. Smokefree environment interventions
10. Increasing the legal minimum purchase age for tobacco products

These interventions include the seven actions in our action plan, as well as four of the planned and enhanced existing activities ('Doing more of what we already do'). The topic of alternative nicotine-delivery products is included here because it is of high public and policy interest, and areas of policy debate remain.

The minimum purchase age topic is also included because we considered this as an alternative option to the tobacco-free generation (but selected the tobacco-free generation).

Standardised packaging (and enhanced pictorial health warnings) is in our action plan, but not covered here. This is because the regulations to implement changes in this area have already been released.

This includes evidence on packaging and product-related smokefree communications and other interventions, including enhanced pictorial health warnings. Standardised packaging was excluded from our review because the New Zealand Government had already committed to introducing this measure. We have also not included evidence here on the Smokefree New Zealand 2025 Innovations fund, as this was not part of our evidence review.

Affordability – Make tobacco less affordable

Summary of rationale for Objective 1:

We have prioritised an increase to tobacco excise tax based on compelling evidence of effectiveness and the impact on reducing socioeconomic and ethnic disparities in smoking (and resulting health inequalities). Modelling evidence predicts greater health gain for Māori compared to non-Māori from ongoing annual tax increases.²

In addition, New Zealand stakeholders strongly supported this policy option. Tax increases are an established measure that attract high public support. There are precedents in other countries for higher tax increases, for example Australia has legislated annual tobacco tax increases that are higher than 10% until the year 2020 (in 2010 they increased tax by 25%).³

Potential adverse effects need to be considered, particularly the impact on low-income smokers and retailers, but we believe these impacts can be mitigated.

Minimum price regulation is a relatively new policy measure internationally, but it is considered promising in the research literature. The measure is used in many US states. In Aotearoa New Zealand, there have been recent increases in the availability and sales of budget brands, and survey evidence indicates that smokers switch to budget brands in response to tobacco tax increases. This suggests minimum price regulation is needed to maximise the impact of tobacco tax increases in promoting smoking cessation.

KEY ADVANTAGES

1.1 Increase annual tobacco excise tax by 20%

Likely to help achieve 2025 goal as tax increases are supported by strong evidence of effectiveness and may help reduce disparities in smoking.

Higher tax increases are recommended by international expert bodies (such as IARC).

Incremental extension of an established measure is relatively feasible and could be introduced fairly rapidly as a Budget measure in 2018.

Larger tax increases are acceptable to NZ tobacco control stakeholders⁴ and the public (particularly if some of the additional revenue is used for helping smokers quit).³⁰

1.2 Minimum price regulation

Recommended in the recent literature as a way to counter industry efforts to keep prices low, particularly for budget brands.

May raise prices, reduce price dispersion and complement increased excise taxes.

Already implemented in many US states and jurisdictions.

KEY DISADVANTAGES

Potential for hardship among those who don't quit.

This needs to be mitigated, for example, by intensifying and better targeting support for smoking cessation to reduce the impact on Māori, Pacific and low-income smokers.

Potential opposition from Treasury to higher tax increases.

The tobacco industry will oppose tax rises.

Possible increased risk to retailers of tobacco-related crime. This should be mitigated by rapid reductions in smoking prevalence and demand for tobacco with the implementation of the action plan and specifically by Action 2.1 (reducing the number of retailers selling tobacco products – these could have enhanced storage and security in place).

Risk of illicit tobacco trade – not a large problem in NZ but requires continued vigilance and robust enforcement.

Only limited evidence is available to base decisions on, as it is an emerging area of tobacco control.

Reviewed papers – tax and price

Our review included:

- Eight recent systematic reviews (2011-2016) on the effectiveness or cost-effectiveness of tax and price interventions.⁵⁻¹²
- Six other reviews including:
 - One narrative scoping review on public support¹³
 - One systematic overview of systematic reviews on social inequalities¹⁴
 - One brief review on taxation as part of a wider paper on US tobacco control strategies¹⁵
 - One large review of evidence on the impact of tobacco taxes and prices on tobacco use, and the added impact from dedicating tobacco tax revenues to other tobacco control efforts¹⁶
 - One review on cost-effectiveness of various interventions including tax and price¹⁷
 - One qualitative review of the literature on tobacco control endgame strategies, including minimum price regulation and price cap regulation¹⁸
- One individual paper on price cap regulation¹⁹
- Eight New Zealand studies: two modelling studies,^{20, 24} one qualitative study on low-income smokers' responses to tax increases,²¹ one qualitative study of Māori and Pacific tobacco control stakeholder views on large tax increases and other endgame policies,⁴ and four surveys of smokers.^{22, 23, 25, 26}

Summary of evidence – tax and price interventions

Action 1.1 Increase tobacco excise tax by 20% (above inflation) annually in 2019, 2020 and 2021

Aotearoa New Zealand has a history of regular annual tobacco excise tax increases, including current increases of 10% annually above inflation, which have occurred since 2010. The 2016 Budget introduced ongoing 10% tax rises for the four years until 2020.

We recommend increasing the current annual tobacco excise tax by 20% above inflation annually for three years from 2019-2021, with a review in 2021 to assess the need for continued increases. This is a potential source of funding for enhanced smoking cessation support and other measures recommended in this action plan. Available evidence and monitoring tells us the increases should be timed to maximise impact in prompting people to quit smoking.

Evidence on the effectiveness of raising the price of tobacco

Our evidence review found compelling evidence that tobacco tax and price interventions are highly effective in reducing tobacco use, preventing children and young people from taking up smoking, and motivating smokers to quit. The evidence is consistent and includes the findings of eight recent systematic reviews (2011-2016).⁵⁻¹²

Some researchers and expert tobacco control organisations, including the US National Cancer Institute and the World Health Organization, point to tax increases as the single most effective tobacco control intervention, compared with all other interventions.^{5, 8}

The effectiveness of tobacco tax/price increases in reducing tobacco-related morbidity and mortality is supported by a small, but growing, evidence base.⁵

Examples of the effect of tobacco prices on smoking prevalence

The World Bank estimated that a 10% cigarette price increase results in a 7% decrease in smoking consumption by young people and 4% by adults.⁸

One authoritative US review estimated that increasing the unit price for tobacco products by 20% would reduce overall consumption of tobacco products by 10.4%, prevalence of adult tobacco use by 3.6%, and youth initiation of tobacco use by 8.6%.¹²

The University of Otago's Burden of Disease Epidemiology, Equity and Cost-Effectiveness Programme (BODE³) has carried out modelling on the impact of annual 10% and 20% increases in tobacco tax. This work suggests it will have a substantial impact on smoking prevalence, but will be insufficient on its own to achieve the Smokefree Aotearoa 2025 goal.^{2, 24} This work also showed that tax increases can result in major health gains and cost-savings to the health sector.

Tax and price increases are considered the most cost-effective of traditional tobacco control interventions. They cost the least, while raising new revenue, so are politically attractive.⁵

Evidence is not yet available to inform the specific size and timing of tax increases. For example, the question of whether to introduce smaller regular increases or a sudden, larger increase at three-yearly intervals. Both approaches have potential merits. For this action plan, we have selected ongoing increases of 20% annually rather than a 'shock' increase. Our reasons for this include consistency with the current incremental approach, which is a well-established measure in many settings.

Effects on equity and reducing disparities

Evidence from Aotearoa New Zealand and overseas suggests that increasing tobacco tax can help to reduce socioeconomic disparities in smoking. Consistent research in high-income countries indicates that lower-income populations are more responsive to tobacco tax/price rises, and tax/price increases are associated with reduced income disparities. Our review identified four systematic reviews from 2014-16 to support this finding,^{6, 9, 10, 20} as well as Aotearoa New Zealand evidence on the positive effects of tax increases in socio-economically disadvantaged communities.²⁵

Some research indicates that tax/price interventions can be effective in reducing ethnic disparities.¹² Recent Aotearoa New Zealand evidence suggests that annual tobacco tax increases may have a greater positive impact on reducing Māori and Pacific tobacco use, compared with non-Māori.²⁶ Modelling evidence also predicts greater gain for Māori, compared to non-Māori, from ongoing annual tax increases.²⁰

In contrast, another study suggests the 2012 tax increase may have had stronger effects on non-Māori (compared to Māori) quitting behaviour.²² The study authors noted that Māori participants nonetheless reported more financial pressure to quit.

Further research is needed to investigate the effects on ethnic disparities, and the financial hardship experiences of low-income smokers.²¹ Any adverse effects should be monitored, as part of the ongoing evaluation of the action plan's impact, so that appropriate measures to mitigate these impacts can be introduced.

Importance of complementary measures

It may be argued that tobacco products are already expensive in Aotearoa New Zealand, and that previous tax increases have not yet significantly reduced Māori and Pacific smoking. Our proposal is for a much larger increase than previously (20% instead of 10% annual increases), which we expect to have a greater positive impact. Complementing the tax increases with the other measures in the action plan is likely to enhance effectiveness for Māori and Pacific smokers. Complementary measures include targeted smoking cessation support, enhanced and targeted mass media campaigns, additional increases on roll-your-own (RYO) tobacco (these are smoked much more commonly by Māori)²⁷ and ensuring that alternative nicotine delivery products (such as electronic cigarettes) are more accessible and affordable than smoked tobacco products.

Stakeholder support

Consistent with the evidence, stakeholders in our engagement process expressed strong support for increasing the price of tobacco products. The consulted stakeholders strongly agreed that increasing tax/price and reducing retail availability and supply were the two highest priorities of the six intervention areas discussed (see above).

An online survey of 32 stakeholders, carried out as part of the engagement process, revealed that 20% annual increases were favoured over two other options (continuation of the current 10% annual increase, and a larger one-off increase of 30% followed by 20% increases annually).

Feasibility and public support

Drawing on the evidence and expert views of Aotearoa New Zealand stakeholders, we assess the recommended annual tax increase as a highly feasible and acceptable intervention. Increasing tax is an established measure with a long history in Aotearoa New Zealand, which can be implemented simply by amending finance legislation. This could be introduced as part of the Budget in 2018.

Aotearoa New Zealand and international evidence suggests the public endorse tax increases,^{7, 28, 29} including some evidence of smoker support and among young people. Public and smoker support appears particularly strong if some of the additional revenue raised is allocated to the national tobacco control programme to help support smokers to quit.³⁰

Possible adverse effects of tobacco price rises

Potential impact on low-income smokers

We have considered the potential for adverse impacts of tax/price increases – particularly on poorer smokers and on crime affecting tobacco retailers. Low-income smokers who quit as a result of the tax increases will benefit financially. However, some low-income smokers who continue to smoke may be disadvantaged financially as a result. Others who continue to smoke will not be disadvantaged, for example, if they compensate by smoking less tobacco.

Some Aotearoa New Zealand research suggests hardship may have increased for some low-income smokers following recent tax increases.²¹ In particular, potential negative impacts on the children of smokers will need to be carefully monitored and addressed. For example, addicted smokers, including parents with dependent children, may forgo spending on household essentials in order to buy tobacco. More research is needed.

This potential effect should be mitigated by enhancing access to free high-quality services for smoking cessation support targeted to low-income, Māori and Pacific smokers; possibly using dedicated tax revenue to fund this support. Without such supporting interventions to help increase quitting, the adverse financial effects of tax increases are likely to impact disproportionately on low-income smokers who continue to smoke. As noted earlier, close monitoring of the impact of the tax increases should occur so that further mitigation measures can be considered if necessary.

Potential impact of tax increases on retail crime

Recently, media reports have drawn attention to various crimes targeted at retailers in Aotearoa New Zealand, including the theft of tobacco products and violence against small retailers in dairies and service stations. Such crimes

are clearly undesirable and unacceptable. At present, data is not available to confirm whether these crimes are increasing, and if they are, what factors are driving the increase. However, understandable concern and anxiety is being expressed by retailers and others.

We believe the response to retail crime should not be to abandon the established, evidence-based policy of tobacco tax increases. This would harm the health of New Zealanders since tobacco price increases are so strongly associated with reducing and preventing tobacco use and prompting smokers to quit. Reversing the tax increases would benefit tobacco manufacturers, who have a vested interest in keeping tobacco products affordable. Finally, the effects of abandoning tax increases on retail crime are unknown.

Our view is that implementing a comprehensive action plan for achieving Smokefree Aotearoa by 2025, as in the accompanying action plan, offers the best solution to the issue of tobacco-related retail crime for the following reasons.

1. Large reductions in smoking prevalence that result from implementation of a comprehensive action plan will have an impact on reducing demand for tobacco products, which in turn will reduce an important driver of tobacco-related retail crime.
2. Another objective in our action plan – to greatly reduce the availability of tobacco products – will help reduce tobacco-related retail crime by dramatically reducing the number of tobacco retail outlets. This will decrease the availability of tobacco products for theft and require tobacco to be sold from stores with adequate storage and security arrangements.

Potential increase in illicit trade (smuggling) of tobacco

Smuggling is unlikely to be a major problem in Aotearoa New Zealand because of geographic isolation, strong border controls, and effective tax administration and enforcement. The risk of illicit trade is probably greatly overstated as a problem and has not been a major issue to date in Aotearoa New Zealand, despite ongoing tax increases.³¹

Action 1.2 Establish a minimum retail price that must be charged for tobacco products, with effect from December 2019

Minimum price regulation is a relatively new, but growing, area of tobacco control. Laws to regulate the minimum price of tobacco products are already in place in at least 24 US states and the District of Columbia.¹⁸ As noted in the *Achieving a Smokefree Aotearoa by 2025* action plan, the main rationale for regulating the minimum price of tobacco is to counter the tobacco industry's efforts to keep prices low in response to increases in tax, such as price discounting.

Evidence on the effectiveness of minimum price regulation

Evidence is emerging on the effects of minimum price laws, so only limited evidence is currently available. A systematic review in 2016 found the most common 'non-tax' price interventions were minimum price regulation and restrictions on price promotions.⁷ The review noted that these two interventions are seen as promising complements to tobacco taxes, and recommended the use of both interventions.

The current literature includes few studies that measured the impact of these interventions on average prices, price dispersion or disparities in tobacco consumption, since much of the literature focuses on policy development and potential legal challenges.⁷ Of the three studies in the 2016 review that explicitly measured the effects of minimum price laws on price-related outcomes, two found no evidence that average cigarette prices were higher in places with minimum price laws, and one found no average price impacts of a voluntary, industry-led policy. Three other studies found that policies to restrict price promotions were associated with lower awareness of promotional offers.⁷ The review's authors emphasise there is a need for further research in this area.

Aotearoa New Zealand survey research suggests that smokers do switch to cheaper brands of tobacco products in response to increased tobacco taxes, which minimum price regulation would help to deter. One survey revealed that more than a fifth of smokers and recent ex-smokers on low incomes switched from premium to cheaper brands following tobacco tax increases.²⁵ Analysis of the annual tobacco returns by tobacco manufacturers and importers provides evidence of brand positioning and growth in the availability and sales of budget brands.³²

Stakeholder support

Minimum price regulation was not specifically discussed in our stakeholder engagement process, as the focus was on increasing tobacco taxes.

Feasibility and acceptability

Several papers analysed in a 2016 review of 'non-tax' price interventions, including minimum price regulation, found evidence of public support for these types of tobacco pricing policies.⁷ No Aotearoa New Zealand evidence on public support for minimum price regulation was located for our review; the current evidence on public support appears focused on tobacco tax increases.

Summary of evidence on tax and price interventions

Evidence assessment	Strong evidence for tobacco tax increases. Newly-emerging limited evidence for minimum price regulation.
Effectiveness	We assessed increasing tobacco tax as highly effective and minimum price regulation as uncertain (because it is an emerging area with limited evidence available).
Equity and reducing disparities	We assessed the likely impact on equity and reducing disparities as positive for tobacco tax increases and uncertain for minimum price regulation. The evidence suggests that people on low incomes and young people are more responsive to tobacco tax increases. Some evidence, including from Aotearoa New Zealand, is available to suggest tobacco tax increases can reduce disparities in terms of income and ethnicity.
Cost-effectiveness	Tobacco tax increases are highly cost-effective, and minimum price regulation is likely to be cost-effective.
Unintended impacts	We considered three main potential adverse effects: possible impact on smokers on low incomes, impacts on retail crime, and impacts on illicit trade (smuggling) of tobacco products. The first two are important considerations for Aotearoa New Zealand, but can be mitigated, whereas illicit trade is less likely to be a major problem.
Technical feasibility	We assessed technical feasibility of tobacco tax increases as high – because it is an established measure that can be done by amending finance legislation. Minimum price regulation, as a new measure, is assessed as moderately feasible.
Political feasibility	Tobacco tax increases are assessed 'moderate to high' in terms of political feasibility, and minimum price regulation is assessed as moderately feasible politically.
Acceptability / public support	We assess acceptability of tobacco tax increases as moderate to high, based on strong international and Aotearoa New Zealand evidence of public and smoker support for tax and price interventions in general, including among young people. (Majority support is found among smokers only if the extra revenue is ear-marked to support smokers to quit). Acceptability of minimum price regulation is assessed as moderate based on overseas evidence of public support.
Precedents	Tobacco tax increases are standard practice in multiple countries including Aotearoa New Zealand. Acceptability of minimum price regulation is in place in at least 24 US states and the District of Columbia. Integrated mass media campaigns and concurrent enhanced cessation support has been implemented in Iceland, Switzerland and Vietnam.

Availability – Make tobacco less available

Summary of rationale for Objective 2:

A substantial reduction of tobacco retail outlets is likely to make an important contribution to achieving the Smokefree Aotearoa 2025 goal. Work in Aotearoa New Zealand suggests potential positive effects on reducing ethnic and social disparities in smoking and health outcomes.^{2, 33} Stakeholders in our engagement process overwhelmingly rated reducing retail availability and supply as an urgent priority. The public, including smokers, also view this intervention as likely to be effective. The proposed two-stage mechanism of a transitional phase-out period followed by mandated restrictions of tobacco sales to a very limited number of retailers seems a feasible approach. There are strong precedents for restrictions on retail availability in other jurisdictions.

Our main rationale for prohibiting the sale of tobacco from all alcohol on-licensed premises is to help weaken the link between smoking and drinking – to make it easier for people to quit smoking. The evidence shows a close association between smoking and drinking behaviours. This

policy measure would help to reduce relapse by people trying to quit, as it would remove the option of purchasing tobacco in a licensed venue at the same time as alcohol. While Aotearoa New Zealand surveys suggest mixed support for this measure, it would be an important step in reducing the link between tobacco and alcohol.

The tobacco-free generation proposal is an innovative idea which hasn't yet been implemented in any jurisdiction, although several places are considering the proposal (including Tasmania, Singapore and Russia). New Zealand could be a world leader by adopting this measure.

Our key reasons for supporting this measure are that preventing youth from starting to smoke is critical to achieving the Smokefree Aotearoa 2025 goal. New Zealand modelling studies predict that this policy would be highly effective, cost-saving, and have a substantial positive impact on reducing smoking-related ethnic and social disparities. It would be relatively easy to implement, both for government and retailers, and there is a low risk of adverse effects.

KEY ADVANTAGES

2.1 Transition retailers out of selling/sales to limited specified outlets

Likely to help achieve 2025 goal as emerging evidence, NZ modelling and precedents in other countries support potential effectiveness.

Specifying time period for initial phase-out period is transparent and gives retailers and smokers time to adjust.

Establishes a pathway to the second phase where sale is restricted to a limited number of specialist outlets.

This approach avoids the need to set up a new licensing scheme and may be more acceptable to some stakeholders than licensing (for example, retailers, politicians, smokers).

This would decrease thefts and so reduce illegal sales of stolen tobacco, because there would be fewer outlets and the remaining outlets could have enhanced storage and security.

KEY DISADVANTAGES

Potential opposition from retailers and smokers.

Details of process for phased reduction in number of retailers to be determined, and retailer response uncertain.

The evidence base for this approach in other jurisdictions is still emerging.

Reduction in retailers could promote illicit trade, though this risk could be mitigated by appropriate enforcement measures and other aspects of the action plan working to reduce smoking prevalence and demand for tobacco products (for example, reducing the number of tobacco retail outlets and increasing the security of outlets).

KEY ADVANTAGES

2.2 Prohibit sales in alcohol on-licensed premises

Would help reduce impulse purchases due to alcohol use, and help reduce smoking initiation and increase the ability to quit (relapse while drinking is a major risk).

There is evidence that smoking behaviours and relapse are associated with alcohol intake, particularly in social environments such as bars.²²¹

NZ tobacco control stakeholders have expressed support for this idea.²²²

2.3 Tobacco-free generation

Strong potential to reduce youth uptake – and to reduce ethnic and social disparities in smoking, as suggested by modelling evidence and because Māori and Pacific populations have more youth and greater smoking prevalence among youth and young adults.

Would be a way to address the problems and limited effects of minimum age laws (rite-of-passage effect, adverse signalling).

Emphasis is on welfare of future generations, while also not impacting on current smokers (politically attractive message).

Potential to use media to portray smoking as 'last century'.

Clear message that smoking is no longer a rite of passage for young people.

Strong signal of shifting to a tobacco-free context may adult smokers' decisions to quit.

KEY DISADVANTAGES

Likely to have only minimal impact on the overall supply/availability of tobacco products on its own (but positive impact from 'decoupling' smoking and drinking).

Opposition from parts of hospitality industry, some of whom see smokers as an essential market.

Concern about age discrimination and opposition from young people – this can be addressed by engaging with youth and young adults about the policy.

Some see this as 'denial of choice' – inhibits adults from the opportunity to take 'informed risks' (but there are arguments against this, for example, it is justifiable to constrain choices over toxic products).

Potential demand for illegal sales (but less likely if smoking branded as 'last century', and as youth uptake reduces).

The proposal doesn't address current adult smokers (so will need to be introduced alongside other policies).

Reviewed papers – reducing the availability of tobacco

Our review included:

- One qualitative review of the literature on tobacco control endgame strategies.¹⁸
- Two longitudinal studies on the effects of retail outlet density and proximity on smoking outcomes,^{34, 35} one longitudinal study on retail policy activities including licensing,³⁶ one longitudinal study on the association between retail outlet proximity over time and smoking outcomes,⁵⁷ and one longitudinal study on retail availability and relapse after quit attempts.⁵⁹
- Six descriptive articles or policy papers which analyse retail policy options.^{37-41, 60}
- Two qualitative studies that report on retailers' decisions to stop selling tobacco (US, Australia).^{42, 43}
- Eighteen NZ studies, including a descriptive paper that summarises overseas experience with tobacco retail regulation,⁵² cross-sectional and modelling studies,^{2, 33, 44, 45} and research with stakeholders, retailers, smokers and the wider public,^{4, 46-49, 51-53, 56, 63} an evaluation of the impact of national smokefree legislation,⁵⁴ two PhD theses^{55, 219} and a study with pharmacists (submitted for publication).⁶⁴

Three broad areas of retail intervention were considered in this review:

1. Licensing or registration of tobacco retailers
2. Reductions in the number and/or density of tobacco retail outlets (e.g. prohibiting sales from alcohol on-licensed premises, banning sales close to schools)
3. Restriction of tobacco sales to certain retail outlets (e.g. specialist R18 retailers, pharmacies, non-profit or government-run outlets)

Action 2.1: Require all existing tobacco retailers to transition out of selling tobacco products by December 2021. Tobacco products will be sold only by a small number of specified tobacco retail outlets from 2022

Tobacco control efforts in Aotearoa New Zealand – as in most jurisdictions – have focused mainly on reducing demand through measures such as tobacco tax increases, restrictions on marketing, mass media campaigns and encouragement and support to quit. The supply side of tobacco control has rarely been addressed.

Tobacco may be sold anywhere, and by anyone, in Aotearoa New Zealand at present, with no restrictions (aside from the minimum purchase age of 18 years and the restriction on minimum quantities). As a result, tobacco products

are sold in around 6,000 locations including in almost all dairies, supermarkets, service stations and convenience stores. Tobacco products are also sold in some liquor stores and pubs/bars alongside the sale of alcohol. Previous research has shown that tobacco products are very widely available in Aotearoa New Zealand, particularly in more disadvantaged areas,⁴⁵ with one tobacco retailer per 129 smokers and at least one tobacco retailer within a 500 m walk of almost half of all secondary schools in Aotearoa New Zealand.⁴⁵

A licence is not required to sell tobacco nor are there regulations about how to store tobacco securely. In contrast, retailers require a licence to sell other high-risk products such as ammunition, pharmaceuticals and agricultural chemicals, and regulations on their secure storage are in place.

We recommend substantially reducing the retail availability of tobacco products by requiring all tobacco retailers to transition out of selling tobacco between December 2018 and December 2021. From 2022, tobacco products would only be permitted for sale by a small number of specified tobacco retail outlets.

Evidence on the effectiveness of reducing retail outlets

Strategies to reduce tobacco retail availability and accessibility are a newly emerging area of tobacco control. There is some evidence that supports the effectiveness of reducing retail outlets. However, limited evidence is available, since retail reduction policies have only been implemented recently. Current evidence is mostly from cross-sectional studies, a few cohort studies and modelling studies.

Recent Aotearoa New Zealand modelling studies suggest that drastically reducing the number of tobacco outlets in NZ could reduce smoking prevalence, achieve health gains, and reduce health system expenditure.^{33, 44} The effects were modest, but the effects may have been underestimated as they were based on the costs of additional travel-related time and expenses, without accounting for possible impacts of inconvenience or wider 'denormalisation' impacts.

Several papers have attempted to use modelling to assess the relative effectiveness of various approaches to reducing tobacco retail outlet density (e.g. eliminating retail outlets near schools versus only permitting sales in 50% of liquor stores) or other retail-focused interventions.^{41, 56} For example, one Aotearoa New Zealand study has modelled a large reduction in the number of outlets resulting in one per Territorial Local Authority (TLA) with a population size of 50,000 or more.²

As yet, there is little 'real world' policy evaluation. In Finland, one longitudinal study measured the association between change in proximity to retail outlets over time and change in smoking behaviours.⁵⁷ This supports the idea that such interventions may work and is as close as currently possible to an estimate of what would happen as a result of reduced tobacco retail proximity. This study is unique in

measuring both exposure and outcome measures over two points in time to date.

Links between tobacco retail availability and smoking outcomes

Substantial evidence suggests that wide availability of, and access to, tobacco outlets is associated with smoking initiation and relapse after quit attempts. Research indicates, for example, that living in an area with more tobacco outlets increases the odds of smoking.^{37, 59}

Evidence points to links between higher retail density and/or proximity and adverse smoking-related outcomes.^{37, 59, 60} This suggests that reducing the numbers and/or density of retail outlets may reduce smoking uptake and increase smoking cessation.

Higher retail outlet density is associated with various youth smoking outcomes, including greater initiation, increased prevalence, increased number of cigarettes consumed and purchased, and increased adult smoking prevalence.^{37, 59} Several cohort studies have found an association between proximity of retail outlets and adult smokers' relapse during cessation attempts.^{37, 59}

Restricting sales to certain outlets

Very little evidence is available on restricting tobacco sale to specified retail outlets. Pharmacy-only sales have been proposed in Iceland and Oregon, but in neither case has the proposal been implemented.^{18, 64, 219}

Effects on equity and reducing disparities

Although evidence is limited, Aotearoa New Zealand research suggests that substantially reducing retail availability would have potential positive impacts on equity. A modelling study of four retail supply restriction interventions, including a 95% reduction in retail outlets, found a large effect on reducing health inequalities between Māori and non-Māori.³³ This is partly due to higher background smoking prevalence and estimated higher price sensitivity among Māori.

A recent study that modelled five tobacco 'endgame' options predicted that substantial retail reduction would help to reduce disparities in smoking between Māori and non-Māori.²

Qualitative research with Aotearoa New Zealand tobacco control stakeholders found they anticipated a potential positive equity impact from a large (90%) reduction in retail availability.⁴

Further, most smokers in Aotearoa New Zealand reside in areas of lower SES⁶¹ – and lower SES residents are exposed to far higher numbers of tobacco outlets. The known positive association between tobacco retail density and SES/ethnicity suggests that policies that reduce density might also reduce ethnic and SES disparities in access to tobacco products.

Stakeholder support

Reduction of tobacco retail availability and supply was the most-preferred intervention across all stakeholder meetings in our engagement. All seven groups of stakeholders ranked retail reduction as either 1 or 2 (where 1 was the highest priority in terms of effectiveness and feasibility). Five of the seven groups rated this intervention area as their highest priority; the remaining two groups agreed it was their second-highest priority. See Box 1 above.

These findings were consistent with the online survey of stakeholders, which also showed a clear preference for reducing retail availability and supply as the top priority.

The stated reasons for favouring this intervention included the lack of current action to reduce retail availability or supply, and as a way to help address tobacco-related crime. The Northland group believed its region would likely support this option due to its relative isolation, strong community support, and the need to reduce burglaries of tobacco products.

Despite agreeing on the importance of reducing retail availability and supply in general, stakeholder views were mixed on the specific options presented for how such reductions could be achieved. It is worth noting that views may change on these options as some of these ideas were quite novel and the advantages and disadvantages have not yet been clearly established or debated. The two most preferred options, across groups, were:

- a) a phased reduction in retail outlets, where the Government would require tobacco retailers to transition away from selling tobacco over a specified period of time.
- b) a sinking lid reduction to phase out commercial tobacco sales altogether.

There was less support among stakeholders for restricting tobacco sales near schools or for limiting the type of stores that could sell tobacco products to liquor stores or pharmacies. Suggested alternative ideas included restricting tobacco sale to supermarkets or specialist vape shops.

After considering the evidence and stakeholder views, we decided against recommending a licensing system for tobacco retail in Aotearoa New Zealand. Reasons for our decision include: the relatively high implementation costs, the time and financial burden of setting up new administrative and bureaucratic systems, and that it was assessed to be politically less appealing than other retail options.

Feasibility and public support

Based on the views of Aotearoa New Zealand tobacco control experts and preliminary evidence, we assess the recommended action to significantly reduce retail outlets over time (by requiring retailers to transition out of selling tobacco by a specified date) as a moderately feasible and

acceptable policy option, with likely high public support. Recent research with Aotearoa New Zealand tobacco control stakeholders suggests that gradual reduction of retail availability may be more politically acceptable than licensing or immediate large reductions in availability.⁵⁶

One Aotearoa New Zealand survey suggests that smokers view policies that significantly reduce the availability of tobacco (i.e. reductions of 88% or more) as potentially more effective than standalone location-based policies aimed at high-risk settings, such as eliminating tobacco sales at alcohol on-licensed premises.⁵¹

Political feasibility may increase in future. If further tax policies become less acceptable over time, for instance, then the political feasibility of retail interventions may increase.

Aotearoa New Zealand surveys indicate strong public support for reducing the number of tobacco retailers.^{53, 63, 218} Interestingly, a recent survey suggests New Zealand smokers see large reductions in retail availability as relatively more effective than other retail policies based on location (such as restricting tobacco retail near schools).⁵¹

A recent New Zealand study is the first to survey pharmacists for their views on restricting tobacco sales to pharmacies.⁶⁴ This is one option to consider in deciding which specified retail outlets should be allowed to sell tobacco after 2022. The survey found moderate, but adequate, support from pharmacists to suggest potential viability of this strategy. Twenty-six per cent of pharmacists said they would be very or extremely likely to sell tobacco under a pharmacy-only sales policy, and this increased to 37% if the strategy was proven successful elsewhere after 12 months' implementation. Nearly all pharmacists believed they had a role in providing tobacco smoking cessation counselling to smokers, and a majority of them already provided such support on a regular daily basis.

International evidence indicates strong public support for retail interventions. For example, there is US evidence of public support for retailers who voluntarily stopped selling tobacco.⁴³ Studies have also documented positive media coverage of retailers who voluntarily adopt various measures, including ceasing tobacco sales.⁴⁷

Precedents for significant retail reduction

Overseas examples of strong tobacco retail policies can be found in various US counties (e.g. in California and New York State), Hungary, San Francisco and Cook Islands. Several jurisdictions have proposed restrictions on the location of retail outlets (e.g. in proximity to schools) or restrictions on the number of outlets, including some jurisdictions in California and Hungary.

Example of tobacco retail restrictions – Hungary

Hungary introduced a state monopoly on the retail sale of tobacco in 2013. Legislation has mandated that tobacco can only be sold at a limited number of government-licensed outlets (called National Tobacco Stores). This reduced the number of tobacco stores from around 42,000 to 7,000.⁵²

Outlets were initially run by concession-owners who paid a fee. The quota of tobacco licences was linked to the population size: a maximum of one licence in a municipality with fewer than 2,000 residents; and one licence per 2,000 residents in larger municipalities. Stores could also sell alcoholic beverages, energy drinks, coffee, soft drinks, mineral water and newspapers. Children under 18 years were not allowed in the shops.

Distribution rights were later restricted to a single company and tobacco manufacturers were prevented from directly distributing to the National Tobacco Stores network.

One mechanism for reducing the retail availability of tobacco is the licensing of retailers. Recent reports from Singapore suggest there has been a large reduction in tobacco retail outlets since licensing was introduced in 1998. Tobacco retail outlet numbers have dropped from 7,650 outlets in 1999 to 4,764 outlets in 2016.⁶⁵

Finland has recently introduced a dramatic rise in the cost of tobacco retail licence fees and also requires outlets to pay an annual surveillance fee to cover the cost of officers to check compliance.⁶⁶ However, evidence of the effects of this measure is not yet available as the law change is so new.

Another precedent can be seen in alcohol policy, where restrictions on alcohol outlets have demonstrated success in reducing alcohol use.³⁹ Tobacco restrictions may have a similar effect.³⁵

Potential adverse effects of reducing tobacco retail outlets

In one study, Aotearoa New Zealand stakeholders assessed possible adverse effects of significantly reducing tobacco retail outlets as uncertain.⁴ Stakeholders' main concerns were differential impacts on retail outlet types (e.g. dairies, convenience stores, supermarkets and service stations), and possible increases in illicit trade. However, potential effects could be minimised, particularly if an approach was taken that was equitable across all retailer types.⁴

Importantly, communication with retailers will be vital to progressing retail interventions, such as an engagement process to explain the rationale and potential advantages of proposed policy options to retailers. Other strategies could include incentives and support to retailers to switch from tobacco sales to alternative products. A gradual reduction in outlet density, as we are recommending (see the accompanying action plan), may help to reduce the likelihood of illicit trade.

Action 2.2: Prohibit tobacco sales from all alcohol on-licensed premises by December 2018

In Aotearoa New Zealand, tobacco is often sold at bars and other licensed premises. Based on recent estimates of potential retail reduction strategies,⁵¹ we estimate that tobacco is currently sold in around 1000 bars, pubs, taverns or nightclubs.

Alcohol use is known to contribute to both smoking uptake and relapse by smokers trying to quit.⁶⁷⁻⁷⁰ Smoking consumption tends to increase when cigarettes can be purchased from licensed premises, and the combination of smoking and drinking is associated with greater health risk.⁵¹

Evidence of effectiveness

As this is a new policy measure, no specific evidence was found on the effectiveness of prohibiting tobacco sales at on-licensed premises. However, the link between higher retail density and adverse smoking-related outcomes suggests that reducing retail outlets, including by banning sale of tobacco at licensed premises, may reduce smoking uptake and increase cessation.

As noted in the previous section, modelling studies suggest a modest effect of reducing the number of tobacco outlets in Aotearoa New Zealand on smoking outcomes and reduce costs.^{33, 44}

The rationale for this intervention is to 'decouple' smoking and drinking, given the evidence of association and reinforcement between the two behaviours.

Feasibility and acceptability

A recent Aotearoa New Zealand survey of tobacco control experts found mixed views for prohibiting tobacco sale at alcohol on-licensed premises.⁵⁶ Some opposed the idea as they felt it was less effective than other retail reduction options and could distract from other interventions. Others, however, supported the measure because it would challenge the link between alcohol and smoking, and remove reinforcement for people trying to quit.

One example of an overseas precedent for this policy is Quebec, which prohibits tobacco sales in bars and restaurants.

Consideration of mandatory licensing (or registration) of tobacco retailers

We considered the option of licensing (or registration) in the review and stakeholder consultation. Some evidence suggests licensing schemes may increase compliance with youth access laws and reduce the retail availability of tobacco. For instance, findings from South Australia and California (Santa Clara County) suggest that introducing a licensing fee may be sufficient to reduce numbers of tobacco retail outlets⁷¹. However, it appears that many jurisdictions have introduced licensing without any reduction in retail availability.

Increasing licence fees may produce reductions in the number of licences as rising costs deter more retailers. In some instances where licence fees have risen, data points to subsequent reductions in outlet numbers (e.g. Singapore, South Australia and unpublished data from Finland), but these reductions are only modest.⁵⁶ A reported decline in tobacco retail licenses in South Australia, for instance, after a significant cost increase, was seen almost entirely at on-licensed venues, with little impact on reducing licences in other retail outlet types. Further, none of Australia's five states and territories with mandatory licensing have introduced restrictions on the number, type and location of tobacco retail outlets. This means the effect on the number and density of outlets has been minimal to date.⁵⁶

In the US, tobacco retail policy activity is rapidly increasing. In 2014, 63% of US states had licensing fees for tobacco retailers and 80% reported some policy activity on either licensing or retailer density.³⁶ Evidence from the US has, so far, mainly evaluated aspects of implementation rather than investigating evidence of effectiveness on smoking-related outcomes.

Not all retailers comply with licensing schemes. In New South Wales, for example, 10% of outlets were unlicensed, despite the existence of a mandatory (negative) licensing scheme.⁷²

New Zealand research suggests some public support, but not among daily smokers. A 2014 survey found that current smokers and non-smokers supported the licensing of retailers, but daily smokers opposed retail licensing.⁵³

Summary of evidence on retail interventions

Evidence assessment	Newly emerging limited evidence for retail reduction interventions (including large reductions in availability and prohibiting tobacco sales in bars and pubs)
Effectiveness	<p>We assessed retail reduction (transitioning retailers away from selling tobacco and restricting sales to limited specified outlets) as an emerging area that is potentially moderately to highly effective.</p> <p>Prohibiting tobacco sales in alcohol on-licensed premises will potentially have a more modest effect.</p> <p>The link between higher retail density and adverse smoking-related outcomes suggests that reducing the numbers and/or density of retail outlets may reduce smoking uptake and increase cessation. New Zealand modelling studies suggest that drastically reducing the number of tobacco outlets could at least modestly reduce smoking prevalence, achieve health gains, and reduce health system expenditure.</p>
Equity and reducing disparities	Unknown but potentially positive (for both interventions). New Zealand research suggests potential impacts on reducing ethnic and social disparities in smoking and health outcomes.
Cost-effectiveness	Little evidence was found, although cost-effectiveness would be expected to be very high for retail reduction interventions, from a societal/government perspective.
Unintended impacts	<p>We considered potential impacts on retailers, such as financial impacts from loss of sales, and suggested ways to mitigate this. In particular, it would be important to ensure communication and engagement with retailers, and offer support to make the transition.</p> <p>Possible increases in illicit trade, but this can be mitigated with a gradual reduction in retail outlets.</p>
Technical feasibility	<p>Retail reduction: Moderate feasibility due to the need to manage impacts on retailers and implementation challenges</p> <p>Prohibiting tobacco sales in on-licensed premises: High feasibility</p>
Political feasibility	<p>Retail reduction: Moderate feasibility as supply-side measures have not been implemented in Aotearoa New Zealand before (but the 2011 Smokefree Aotearoa 2025 goal aims to reduce tobacco availability to minimal levels and the Government committed to assess supply-sided options in its response to the Māori Affairs Select Committee report).²²⁰</p> <p>Prohibiting tobacco sales in on-licensed premises: High feasibility</p>
Acceptability / public support	<p>Retail reduction: Likely high or moderate public support. NZ and international evidence suggests high levels of public support for a range of retail reduction policies, including our recommended options.</p> <p>Prohibiting tobacco sales in on-licensed premises: Likely high feasibility – one NZ survey found mixed support among stakeholders.</p>
Precedents	<p>Retail reduction: Examples where strong retail reduction policies are being implemented include: several California counties (e.g. Santa Clara County, Huntington Park), a New York county (Cayuga), Hungary, San Francisco, Singapore, Finland and Cook Islands.</p> <p>Pharmacy-only sales: We are aware of two examples of intended implementation of pharmacy-only sales – Iceland and Oregon</p> <p>Alcohol restrictions are also a precedent for substantial retail reduction. There is demonstrated success of restrictions on alcohol outlets in reducing alcohol use.³⁹ Tobacco restrictions may have a similar effect.</p>

To summarise, a substantial reduction of tobacco retail outlets is likely to make an important contribution to achieving Smokefree Aotearoa 2025. New Zealand work suggests potential effects on reducing disparities. Stakeholders in our engagement process overwhelmingly rated reducing retail availability and supply as an urgent priority. The public, including smokers, also view this intervention as likely to be effective. The proposed two-stage mechanism of a transitional phase-out period followed by mandated restrictions of tobacco sales to a very limited number of retailers seems a feasible approach. There are strong precedents in for restrictions on retail availability in other jurisdictions.

Action 2.3: Introduce a ‘tobacco-free generation’ policy to restrict access to tobacco products for future generations, with an annual increase in the minimum purchase age, starting in December 2020

What is the ‘tobacco-free generation’ proposal?

The tobacco-free generation idea would prohibit retailers from selling tobacco to new generations from a specified date. We propose introducing legislation to make it illegal for any person born on or after 1 January 2003 to purchase commercial tobacco.

This would be implemented with an annual increase in the minimum purchase age for tobacco products, by one year each year from December 2020. For example, the minimum purchase age would be increased to 19 years in 2021, 20 years in 2022, 21 years in 2023, and so on. Over time this policy would effectively phase out the sale of tobacco. A key advantage of this policy measure is that it sends a clear message that tobacco is unsafe at any age – and avoids the ‘coming of age’ implication of minimum purchase laws.

This proposal recognises that while the cigarette is too dangerous to be allowed if newly created, it is also too addictive simply to be prohibited overnight. The aim is instead to phase it out by ‘grandfathering’ existing customers and forbidding vendors from selling to new generations. Existing smokers would not be affected by this policy.

This idea has been proposed by researchers in Singapore, and a tobacco-free generation bill was introduced to Tasmania’s Parliament in November 2014, but has not yet been enacted. The policy is under consideration in some Scandinavian countries, Russia and Singapore, and is being advocated in Queensland.

A tobacco-free generation bill was introduced to Tasmania’s Parliament in November 2014. A Parliamentary Committee has reported back on the Bill. A vote in the Upper House is pending.

Reviewed papers on the tobacco-free generation

This review included:

- one qualitative review on tobacco endgame policy options¹⁸
- six descriptive articles on the rationale, policy implications and/or ethical issues⁷⁴⁻⁷⁹
- two background papers^{80, 81}
- one qualitative study with NZ stakeholders^{4, 82}
- one NZ modelling study.²

Evidence to support the tobacco-free generation

No direct evidence is available since this measure has not yet been implemented. Research into the effects of advertising of age-related products has found that most youthful non-compliance under an age-specific law disappears when a universal law is introduced instead.⁸¹

Numerous studies reveal the importance in smoking initiation of peer influence and the desire to appear ‘grown-up’.⁸⁰ Having a fixed minimum age creates a transition and rite of passage. This is a key flaw in minimum age laws.

Despite the absence of direct evidence, the rationale for the intervention is sound. Preventing youth uptake may be key to ending the tobacco epidemic – since more than 80% of smokers start by age 18, and virtually all by age 26.⁷⁴ This intervention recognises the difficulty of persuading adults to quit. By focusing on the sale of tobacco, rather than purchase, the policy makes enforcement relatively easy, especially in settings where tobacco retailers are licensed.

Aotearoa New Zealand modelling evidence suggests strong potential for effectiveness and health system cost-savings from this policy.² A recent study estimated that a tobacco-free generation policy would reduce smoking prevalence to 11.2% for Māori, and 5.6% for non-Māori by 2025. The measure was also predicted to result in large health gains and cost-savings to the health system, particularly for Māori.

Effects on equity and reducing disparities

Again, little evidence is available as this is a new proposal. The New Zealand modelling study, referred to in the previous section, provides modelling evidence for the proposal’s potential positive impact on equity.²

That work suggests the tobacco-free generation policy is likely to massively reduce smoking prevalence, and contribute substantially to ending smoking disparities for Māori. If well-enforced, the policy is predicted to halve smoking rates within 10-15 years of implementation – and would result in 5 times’ larger health gains per capita for Māori compared to non- Māori. The modelling research ranked it as the most effective endgame measure from an equity perspective.²

A qualitative study of Aotearoa New Zealand tobacco control experts found concern that the policy could widen ethnic and social disparities in smoking.⁴ This was because social supply to minors and retail non-compliance were considered more prevalent in Māori and Pacific communities and neighbourhoods. Interestingly, though, Pacific tobacco control experts were the most optimistic about this policy receiving community support, from both parents and community leaders.

Unintended effects

The tobacco-free generation proposal has a low risk of adverse effects. There may be potential for increased illicit trade in tobacco products; however, this can be mitigated.⁴ This possibility would be minimised by choosing a cohort later than 2000 for introduction of the policy. Further, illicit trade requires demand: as long as sales are prohibited only to those cohorts that are not yet addicted, the demand will be minimal.

Stakeholder support

The introduction of a tobacco-free generation policy in Aotearoa New Zealand attracted support in our stakeholder engagement process, although views were diverse. Some stakeholders strongly disagreed with increasing the minimum purchase age, and instead preferred the tobacco-free generation policy.

Stakeholders ranked raising the minimum purchase age (either with an increase to the legal age to 21 or a tobacco-free generation policy) as the fourth most important intervention in terms of likely effectiveness and feasibility.

A concern raised about the tobacco-free generation option was the length of time the policy may take to have effect, with potential health impacts occurring into the future. Many stakeholders also expressed concern about age anomalies with the option of raising the minimum age (either to 21 or with a tobacco-free generation policy). Some felt the proposals would need further discussion and engagement with young people to address concerns about age-based prohibition and inconsistency with other age-based laws, such as for alcohol or marriage.

Feasibility and acceptability

Technically, the tobacco-free generation proposal would be relatively easy to implement. It would simply require changing the wording of the current minimum age legislation to also include citizens born on or after 1 January 2003.

This intervention may be easier for tobacco retailers because they wouldn't need to calculate the age of customers anymore; they could just view the customer's ID to confirm the year born.

Some Aotearoa New Zealand tobacco control experts have expressed pessimism about feasibility and mixed views on the likelihood of public support.⁴ It will be vital to hold a public engagement process – especially with young people – to establish the need and increase support for the policy. As noted in the action plan, this engagement should happen before introducing the policy.

The proposal has several political advantages. The emphasis on future generations and incrementalism may appeal to governments. This measure is no-cost, requires no new machinery to implement, and would be consistent with Aotearoa New Zealand's 'clean and green' image. The measure is consistent with international human rights commitments, and is likely to produce some 'quick wins' (e.g. for young pregnant women and babies).

There is evidence of strong public support in Tasmania, Queensland and Singapore.^{74, 75, 78}

Precedents for this policy

A precedent for the tobacco free generation proposal occurred in colonial Taiwan (Japanese Formosa) and British Ceylon in the early part of the 20th century.¹⁸ Opium smoking was phased out over 20 years by requiring smokers to display a licence in order to purchase opium; after an initial registration period, no further licences were granted.

In both settings, complementary initiatives were introduced to enhance the effectiveness of the generational measure – in the areas of supply control, registration/licensing of addicts, cessation programmes and education.⁷⁴

Summary of evidence on the tobacco-free generation proposal

Evidence assessment	Newly-emerging area – hasn't yet been implemented in any country, but is being considered in several jurisdictions.
Effectiveness	<p>No direct evidence because not yet implemented, but Aotearoa New Zealand modelling suggests it is likely to be highly effective.</p> <p>Numerous studies reveal the importance in smoking initiation of peer influence and the desire to appear grown-up.⁸⁰ This is a key flaw in minimum age laws.</p> <p>Despite the absence of direct evidence, the rationale for the intervention is sound. Preventing youth uptake may be key to ending the tobacco epidemic – since more than 80% of smokers start by age 18, and virtually all by age 26.⁷⁴ This intervention recognises the difficulty of persuading adults to quit.</p>
Equity and reducing disparities	Modelling suggests it is likely to have a positive impact on equity. ²
Cost-effectiveness	NZ modelling evidence suggests strong potential for health system cost-savings. ²
Unintended impacts	Low risk of adverse effects; possibly potential for increased illicit trade but can mitigate to reduce this risk, e.g. by choosing a cohort later than 2000.
Technical feasibility	<p>Relative ease of implementation – the Government could simply change the wording of current minimum age legislation to also include citizens born on or after 1 Jan 2003.</p> <p>This policy would be easier for retailers than the current minimum purchase age law because they wouldn't need to calculate the age of customers anymore (would just view ID to confirm year born).</p> <p>The impacts may be immediate, because the policy's message that there is no 'safe age' for smoking is more convincing than minimum purchase age laws. Further, this would have an intensifying effect as respective cohorts age over time.</p>
Political feasibility	<p>In the short-term it may be difficult to convince politicians of the merits of this policy – Tasmania's experience suggests strong opposition from the tobacco industry is likely. NZ stakeholders expressed pessimism about feasibility and mixed views on the likelihood of public support in NZ.</p> <p>On the other hand, some Tasmanian MPs strongly support the proposal and it is still under consideration. The emphasis on future generations and incrementalism may appeal to governments.</p> <p>Longer term feasibility may increase over time if other jurisdictions implement this policy.</p>
Acceptability / public support	<p>Evidence of strong public support in Tasmania, Queensland and Singapore.</p> <p>A NZ qualitative study found mixed views among stakeholders on whether the NZ public would support this policy. Some felt public support could be stronger if the policy is framed as supporting young people.</p>
Precedents	A precedent for the tobacco free generation proposal occurred with the phase-out of opium smoking over 20 years in Japanese Formosa (colonial Taiwan) and British Ceylon in the early part of the 20th century.

Summary of rationale for Objective 3:

Appeal – Make tobacco less appealing and less addictive

As well as the supply side of tobacco control, another neglected area of policy in Aotearoa New Zealand – and until recently most other countries – is the regulation of the product. There are almost no regulations for how cigarettes are designed and manufactured, or on their constituents or emissions. As a result, the tobacco industry can ensure that cigarettes are highly appealing, palatable and addictive to encourage use and minimise quitting, and are not required to make their products safer for users.

One of the key areas for intervention in the action plan to achieve Smokefree Aotearoa 2025 is to legislate to reduce the appeal and addictiveness of the product, for example by eliminating additives and reducing the nicotine content of cigarettes and other tobacco products.

Little evidence exists on the effects of removing additives from tobacco products but that is unsurprising as this is a newly-emerging area of tobacco control. Stakeholders in our engagement process did not prioritise this option highly overall, but when asked to rank more detailed options in this area, they favoured banning all additives rather than a more incremental approach.

Yet, we believe there is a strong rationale for this option for other reasons. It is highly plausible that additives

act to enhance the appeal and palatability of cigarettes, particularly to young people and to people trying to quit smoking. They may also enhance addictiveness. Intervening to reduce the appeal and palatability of smoking may help prevent youth in particular from taking up smoking or becoming addicted. Further, several precedents are available in other countries and evidence from their implementation will emerge in future.

Despite the lack of precedent and absence of evidence for the impact of a mandated nicotine-reduction strategy, we believe there is strong emerging supporting evidence and theoretical reasons to believe that implementation of mandated very-low-nicotine-content (VLNC) tobacco products would have a major impact on reducing smoking prevalence. Some research suggests that nicotine levels are particularly high in New Zealand tobacco.⁸³ This is another reason to implement this action.

Feasibility issues around lack of precedents and probable opposition from the tobacco industry and politicians would need to be addressed. Robust monitoring and evaluation mechanisms must be put in place to assess impact and, if necessary, reappraise the intervention.

KEY ADVANTAGES

3.1 Ban appeal- and addictive-enhancing additives

Likely to help achieve 2025 goal by dramatically reducing the appeal of tobacco products, potentially helping current smokers to quit and preventing youth from taking up smoking.

Some overseas precedents are in place and evidence will increase rapidly in future based on other countries' experience, particularly with removal of menthol.

May be possible to implement this policy with regulations rather than requiring new legislation.

3.2 Restrict sales to VLNC

Likely to help achieve 2025 goal by greatly reducing the addictiveness of tobacco products, potentially helping current smokers to quit and reducing risk of youth taking up smoking.

Active areas of research with strong supportive evidence and substantial evidence likely to emerge in the next few years.

May be possible to implement this policy with regulations rather than requiring new legislation.

NZ surveys find strong support among the public⁸⁵ and smokers.^{85, 95, 115}

KEY DISADVANTAGES

Evidence base is still emerging.

Possible legal and international trade challenges.

Tobacco industry opposition and potential for manufacturers to take action to counter the effects of additive removal.

Possible increases in illicit trade which may undermine the intervention effectiveness.

Evidence base is still emerging and there is no evidence yet for a mandated nicotine reduction policy.

Possible legal and international trade challenges.

Feasibility may be limited by lack of precedents and probable tobacco industry and political opposition.

Possible increases in illicit trade which may undermine the intervention effectiveness.

May be logistical challenges in implementation.

Action 3.1: Ban all additives and innovations in tobacco products that may enhance their appeal or addictiveness by December 2019

Over 350 known additives are contained in cigarettes sold in New Zealand.⁴ Additives include flavours, sugars, menthol, liquorice, preservatives, and many other chemicals. These can change the properties of tobacco or enhance the experience of smoking, which adds to the appeal, particularly for young people and experimental smokers. Some additives may have the effect of increasing the addictiveness of tobacco products.⁹⁸

Information on use of menthol cigarettes in Aotearoa New Zealand is limited – 13% of smokers in the 2016-17 ITC study (preliminary unpublished data), similar to the level in the 2007 ITC study.⁸⁶

The removal of additives was a recommendation by the MASC, although this has not yet been acted upon. There is increasing international precedent for removing additives such as menthol from cigarettes and tobacco.

We recommend that the Government regulate to remove all additives in tobacco products that have the potential to enhance appeal, palatability or addictiveness by December 2020. The ban could apply to additives with a proven or potential effect to increase addictiveness or appeal (with the onus on the industry to demonstrate that an additive has no such effects) and may be able to be introduced by regulation under existing legislation (the 1990 Smokefree Environments Act). Alternatively, the Act could be amended if necessary.

Reviewed papers on additives

Our review included:

- one systematic review on the removal of (non-menthol) flavours⁸⁷
- one qualitative review on tobacco endgame policy options¹⁸
- one descriptive article that documents the approach taken by the US FDA to estimate the public health consequences of menthol cigarettes and lessons learned for extending the approach to all flavours in tobacco products⁸⁸
- two policy guidance papers^{89, 90}
- one qualitative study describing the tobacco industry response to a menthol ban in Alberta and Nova Scotia⁹¹
- four other papers that were included for background information⁹²⁻⁹⁵
- one Aotearoa New Zealand qualitative study on Māori and Pacific tobacco control stakeholder views^{4, 82} and one New Zealand article reporting on public support from the International Tobacco Control (ITC) survey findings.⁹⁶

Evidence to support removing additives

Limited evidence is available on the effects of removing all additives from tobacco products, as this is a newly emerging area. Given the limited evidence on the effects of existing regulations, we need to consider the impact of current tobacco product features and its likely effect on tobacco control efforts. Current features, such as the inclusion of flavours, are known to increase the appeal of cigarettes and hinder tobacco control strategies.⁸⁷

Menthol is the one of the best known and most studied additives. Menthol use is associated with uptake of smoking and menthol cigarettes are smoked by more young people and women in various jurisdictions,⁹¹ and also by some ethnic groups (e.g. Black Americans).⁸⁷ Menthol may make tobacco products more attractive, particularly to younger smokers due to its pleasant flavour and its ability to reduce the harshness of tobacco smoke because of its cooling and local anaesthetic properties. Reducing harshness may facilitate deeper inhalation and so enhance addictiveness. Reviews have concluded that menthol cigarettes have a major impact on increasing initiation of smoking and reducing cessation among established smokers.^{88, 97, 98}

Modelling evidence predicts that a ban on menthol would result in a reduction in smoking prevalence of 10% overall,⁸⁹ and major reductions in smoking initiation.⁹⁰ In the 2016-17 ITC study, 38% of menthol cigarettes smokers said that they would quit smoking entirely if menthol cigarettes were banned (unpublished preliminary data).

Therefore, a 'prima facie' case may be argued for regulation to remove additives, based on theory and emerging evidence of the impacts of additives. If flavourings such as menthol are removed, then tobacco products will be more distasteful and less palatable, particularly for young smokers. If constituents like ammonia are removed, then tobacco products may be less addictive. And, removal of preservatives would mean a lower shelf life, which is likely to push up the price of tobacco products.

Internationally, little is available in the way of evaluations of regulatory experience to draw upon, although governments are increasingly considering potential tobacco product regulatory measures.³⁷ The international precedents for such regulations are covered below.

Effects on equity and reducing disparities

In the US, one modelling study suggested that banning menthol, specifically, may have a positive equity impact for Black Americans.⁸⁹ The study projected that a menthol ban would lead to a 25% reduction in smoking prevalence for Black Americans, but only 10% for the overall population.

In a qualitative study, removing additives was perceived by Aotearoa New Zealand stakeholders as likely to have a neutral effect on equity.⁴ However, if there is evidence of greater menthol use among Māori/Pacific smokers, then banning menthol is likely to have a pro-equity effect.

Stakeholder support

In our engagement process, stakeholders ranked removing additives as among the least-preferred priorities (rated number five overall). Respondents to the stakeholder survey ranked this option relatively higher (rated number three overall). When asked in the survey to rate three detailed options on additives, stakeholders favoured removing all additives over reducing additives annually over time or simply requiring tobacco companies to publicly report the elements of tobacco products.

Feasibility and public support

On balance, we rate removing additives as moderately feasible from a technical perspective. Qualitative research with tobacco control experts has revealed mixed views, but they noted this policy could be implemented with regulations rather than requiring new legislation.⁴

Political feasibility may be lower than some other interventions because of legal and international trade implications, though these should not be problematic provided any regulations are applied to all tobacco products equally. Legal challenges have been made by the tobacco industry in places that have implemented menthol bans (although unsuccessfully challenged to date).⁸⁹ The Framework Convention on Tobacco Control, to which Aotearoa New Zealand is a party, provides support for removal of additives from tobacco products.

New Zealand and overseas research indicates high support for removal of additives. For example, one New Zealand study found almost 88% of non-Māori smokers, and almost 85% of Māori smokers, expressed support (either 'a little or a lot') for laws to reduce the toxins in cigarette smoke.¹¹⁵ Over half of smokers supported restricting additives like sugar in cigarettes.¹¹⁵

Precedents for removal of additives

Overseas precedents for removing menthol and/or other flavour additives include the EU, Canada, Brazil, San Francisco and New York City. Brazil has introduced the most comprehensive measure to date, with a ban on all additives. The European Commission has agreed to ban menthol as part of the Tobacco Products Directive (TPD). Canada amended its Tobacco Act in 2009 to ban the use of additives that have flavouring properties or enhance flavour; however, the act excludes menthol. Five Canadian provinces (Alberta, Ontario, Quebec, New Brunswick and Nova Scotia) have since enacted regulations to prohibit use of all flavourings, including menthol.⁸⁹

In Aotearoa New Zealand, there is a precedent from other products in existing regulations that put the 'onus of proof' about the safety of additives on manufacturers (e.g. food safety and psychoactive substances regulation).

Potential adverse effects of removing all additives from tobacco products

Little evidence is available, but possible risks may include increases in illicit trade in imported products which do not have additives removed, or tobacco manufacturers may identify and use other ingredients or design features to counter the effects of additive removal.

Summary of evidence on additives and other product modifications

Evidence assessment	<p>Newly-emerging area – so only limited evidence is available on the actual or potential effects of removing additives.</p> <p>There is evidence on the links between additives and adverse smoking outcomes. Since current tobacco products are engineered with additives to increase appeal and palatability, thereby increasing the harm to smokers, there is a 'prima facie' case for regulation to remove or restrict additives.</p>
Effectiveness	<p>We assessed the effect of removing additives as emerging evidence of effectiveness, but potentially moderately to highly effective.</p> <p>Flavours in tobacco products are associated with tobacco use, dual/poly use, youth experimentation and reduced intentions to quit.</p>
Equity and reducing disparities	<p>Unknown.</p>
Cost-effectiveness	<p>No evidence identified but likely to be highly cost-effective because low initial cost and no ongoing implementation costs for government (especially if the costs fall on the tobacco industry).</p>
Unintended impacts	<p>Little evidence, but possible risks of contraband products, illicit trade, or industry adding other ingredients to counter the effects of additive removal.</p>
Technical feasibility	<p>We assessed technical feasibility as moderate. One study found mixed views among NZ stakeholders.</p> <p>The measure could probably be implemented with regulations rather than a new act.</p>
Political feasibility	<p>There is support in the World Health Organization Framework Convention on Tobacco Control (FCTC) and likely public support, but also legal and international trade implications. Legal challenges have been made by the tobacco industry in other jurisdictions, but have so far been unsuccessfully challenged.</p>
Acceptability / public support	<p>We assessed acceptability as uncertain, but there is some evidence of strong public and smoker support, from Aotearoa New Zealand and overseas research.</p>
Precedents	<p>Overseas precedents exist for removing menthol and/or other flavour additives (e.g. EU, Canada, Brazil). NZ precedents include regulating to put the 'onus of proof' on manufacturers (e.g. food safety and psychoactive substances regulations).</p>

Action 3.2: Introduce a mandated nicotine reduction policy to restrict the sale of tobacco to very-low-nicotine content tobacco products from December 2021

The composition of tobacco products can be regulated as a strategy to reduce addictiveness, aiming to help current smokers to cut down or quit, and prevent new smokers from becoming addicted. Nicotine is thought to be the main addictive component of tobacco products. It is possible to remove most of the nicotine content, similar to the way that coffee can be decaffeinated, to make cigarettes only minimally addictive. Reduced-nicotine cigarettes are already available in the US and are called Very Low Nicotine Content (VLNC) cigarettes. The nicotine content of VLNC is generally less than 0.4 mg per gram of tobacco.

There is growing interest in nicotine-reduced tobacco products as a tobacco control action, stimulated partly by the US Food and Drug Administration being given powers to reduce the nicotine content of tobacco products through the 2009 Tobacco Control Act.

Reviewed papers on reducing nicotine content

This review included:

- one Cochrane systematic review on harm reduction strategies including reduced nicotine⁹⁹
- two descriptive overviews of evidence,^{100, 101}
- four trials¹⁰²⁻¹⁰⁵ including one NZ trial¹⁰⁵
- one qualitative review¹⁸
- one advisory note from the World Health Organization¹⁰⁷
- five descriptive articles / opinion pieces¹⁰⁸⁻¹¹²
- one NZ technical paper on modelling¹¹⁴
- one qualitative study with NZ stakeholders^{4, 82}
- two NZ studies on public support.^{85, 96, 115}

Evidence to support reducing nicotine content

Moderately strong, but consistent, evidence from observational studies and trials suggests the potential effectiveness, and relatively few harms, of a mandated nicotine reduction policy.^{101, 104, 107, 112}

However, there is no evidence yet on an existing mandated nicotine reduction policy, as none have been implemented. In recent RCTs and observational studies, smokers have been provided with low-nicotine (also called 'denicotinised') cigarettes, including in a New Zealand trial.^{101, 103-105, 107}

These studies demonstrate that VLNC cigarettes can reduce the number of cigarettes smoked per day and increase the

likelihood of contemplating, making and succeeding at a quit attempt without causing significant increases in craving or withdrawal symptoms, or a compensatory increase in the numbers smoked, as had been feared.^{102, 106, 107}

A large New Zealand trial found that addition of very low nicotine content (VLNC) cigarettes to standard Quitline smoking cessation support may help some smokers to become abstinent.¹⁰⁵ Compared with usual Quitline support, the provision of VLNC achieved a marked increase in quit rates, a positive impact on the time to relapse, and high acceptability among participants.

The World Health Organization concluded that mandated nicotine reduction could decrease the acquisition of smoking and progression to addiction among experimenters, limit the number of cigarettes smoked by some proportion of addicted smokers and both increase the number of addicted smokers who stop smoking and reduce the number of those who relapse.¹⁰⁷ It is highly plausible that by making smoked tobacco products ineffective as a nicotine delivery device and hence less addictive, a mandated nicotine reduction strategy could be complementary to other interventions, particularly expanding access to alternative products such as electronic cigarettes.

One early model estimated that the prevalence of smoking in the US would decline from 23% to 5% with a VLNC policy that was introduced over 6 years, but there is a need for more recent, updated, modelling.¹⁰¹ This study estimated a gain of 157 million QALYs over a timeframe of 50 years.¹¹⁴

More research is needed, however. Some experts believe that expanding access to alternative nicotine delivery products will be sufficient to greatly reduce smoking prevalence, but this is yet to be tested.

New research findings are imminent with around many more trials underway. In particular, existing studies have been performed in contexts in which nicotine-containing cigarettes were available to participants (even if use was discouraged), so the impact of mandated nicotine reduction could not be tested. Furthermore, no country has yet implemented mandated nicotine reduction so the impacts of this intervention in real-world settings is uncertain.

Effects on equity and reducing disparities

Little evidence is available yet, but one large New Zealand trial of VLNC cigarettes for smoking cessation found no ethnic differences in quitting behaviour with use of VLNC cigarettes combined with NRT and behavioural support (24% of the sample identified as Māori).¹⁰⁵

Stakeholder support

In our engagement process, stakeholders ranked reducing nicotine content as among the least-preferred priorities (rated number six overall in both the meetings and survey). One group noted that VLNC cigarettes would still have the effect of normalising smoking and providing undesirable role modelling to children.

Of the three specific options discussed, stakeholders in the survey preferred a phased approach, where the nicotine content in tobacco products would be reduced over time. The next preferred option was a mandated nicotine reduction strategy.

Feasibility and public support

Feasibility may be moderate because of lack of precedents for a mandated policy, logistical issues about implementation (e.g. would the tobacco industry agree to supply VLNC versions of existing brands, how would nicotine content be monitored?), acceptability (e.g. how would smokers respond if their preferred brands were no longer available), and concerns about tobacco industry and political opposition (e.g. it could be portrayed as de facto prohibition). Implementation would probably require new legislation, though this may be possible through fairly simple amendments of the 1990 Smokefree Environments Act. Logistical support may be possible through international collaboration (e.g. with the US FDA). There are as yet no precedents overseas for a mandated nicotine reduction strategy.

However, there is evidence of strong public and smoker support in NZ and other countries. For example, a New Zealand survey for the International Tobacco Control (ITC) study found 86% support for nicotine reduction among smokers – and this was similar in Māori and Pacific smokers.^{96, 115}

Another New Zealand survey found that a strong majority of smokers (63%, and even higher in quit attempters) supported reducing nicotine content in cigarettes – with 81% support overall.⁸⁵

In contrast, a recent New Zealand qualitative study of smokers found initial support for VLNC use instead of regular cigarettes – but over time the support appeared to reduce.⁸⁴

Potential adverse effects of mandated nicotine reduction

Possible unintended adverse effects include a perception that VLNCs are safer than conventional cigarettes, resulting in greater uptake and reduced incentive to quit. This runs counter to the existing evidence of smoker behaviour and could be addressed with appropriate public information campaigns.

Another possible risk is that the policy stimulates illicit trade in nicotine-containing cigarettes. However, that could be mitigated by appropriate enforcement measures (and is unlikely to be a major problem due to Aotearoa New Zealand's geographical isolation and strong border controls, and would be less likely if ECs are widely available and provide an effective alternative nicotine delivery system.

Summary of evidence on reducing nicotine content

Evidence assessment	We assessed the current evidence as moderate – although a newly emerging area, there is consistent evidence from trials to date and further trials are underway. Strong evidence indicates that nicotine is the main addictive component in tobacco products.
Effectiveness	As this is a newly emerging area, we assess the effectiveness as emerging - but potentially high.
Equity and reducing disparities	Little evidence is available yet, so we assessed this as unknown. One NZ trial found no differences by ethnicity in the use of VLNC in quitting.
Cost-effectiveness	No evidence was identified.
Unintended impacts	We considered two potential adverse effects, which could both be mitigated (the perception that VLNCs are safer than conventional cigarettes and potential increase in illicit trade).
Technical feasibility	We assessed this intervention as moderately feasible. NZ's location increases the feasibility (border control reduces risk of black market), but risks include a longer implementation period than other interventions, and uncertainty around the tobacco industry's response (e.g. problems with supply or restricted choice of tobacco products)
Political feasibility	In terms of political feasibility, we assessed this as moderate to low, because of legal and international trade implications (although industry opposition can be mitigated). The policy and may not attract strong public advocacy. The policy is comparably more palatable politically than an outright ban on sales or use of tobacco products.
Acceptability / public support	We assessed this as moderate – there is good evidence of strong public and smoker support in NZ and other countries, but some recent NZ research suggests support from smokers may reduce over time.
Precedents	No country has yet implemented nicotine reduction. US legislation allows for nicotine reduction (not to zero but to very low levels). Some brands are available for purchase in the US.

Doing more of what we already do

Planned actions

We now discuss evidence on the first of the planned actions, ensuring access to alternative nicotine-delivery products.

1. Ensure access to safe alternative nicotine-delivery products, along with complementary information and smoking cessation support

This review focused on e-cigarettes (ECs) as the main non-pharmacological alternative nicotine-delivery product currently used in Aotearoa New Zealand. The market is rapidly developing, with numerous types of ECs and other products emerging. Product diversity is likely to increase in future.

This section provides more detail than the other topics that are planned or existing activities, given the current interest in and policy change on electronic cigarettes.

Background

Electronic cigarettes (ECs) are electrical devices that mimic smoked tobacco products by delivering nicotine (where they contain nicotine) by heating an e-liquid solution to produce a vapour which the user then inhales or 'vapes'. This summary focuses on ECs, of which there are numerous types with the technology rapidly evolving. Other products that deliver nicotine are becoming available, and may emerge in future, that could also be used as part of a harm reduction approach.

A harm minimisation approach could be used to help achieve the Smokefree Aotearoa 2025 goal. Harm minimisation has a wide scope; it aims to prevent anticipated harm as well as reduce actual harm, and to improve health, social and economic outcomes for communities and individuals. Components of this approach include harm reduction, demand and supply reduction and abstinence strategies. ECs potentially offer a harm reduction approach, in contrast to abstinence approaches that aim to achieve tobacco- or nicotine-free goals. It should be noted, though, that harm reduction requires a full transition from smoking to vaping, which many smokers do not make.

At present, Aotearoa New Zealand policy nominally prevents the sale of nicotine containing ECs and e-liquids, although it is permissible to import nicotine liquid ('e-juice') for personal use (up to three months' supply). Despite this policy, the illegal sale of nicotine e-juice exists, and no enforcement action is taken. ECs and e-juice without nicotine are freely available for sale in Aotearoa New Zealand.

In March 2017, the Associate Health Minister announced the sale of nicotine ECs and e-liquid will be made legal as consumer products, with some controls (see below). The Government plans to align the vaping regulations with those for cigarettes, which will require legislative change. The Ministry has indicated this will likely happen from

the middle of 2018 at the earliest. Proposed new rules for all ECs, whether or not they contain nicotine, include:

- Prohibiting sale, and supply in a public place, to youth under 18 years
- restricting sale via vending machines to R18 settings
- allowing all retailers to display ECs and e-liquid at point-of-sale
- allowing R18 retail settings to display ECs and e-liquid in-store (including window display), promote products on the outside of the store, and offer discounts, free samples, loyalty awards etc.
- Restricting advertising to limit the attraction of ECs to non-smokers, especially children and young people – e.g. by prohibiting broader advertising, e.g. billboards, radio, TV, Internet (the rules above will apply to retailers' websites)
- Prohibiting vaping in indoor workplaces and other areas where smoking is banned under the Smoke-free Environments Act
- Requiring all vaping products to meet quality and safety standards, such as nicotine concentration, child-resistant closures etc. (to be developed by a technical advisory group).

In addition, a regulatory regime will be established to assess the need for regulating other emerging tobacco and nicotine-delivery products in future. The Government intends to introduce an amendment to the Smoke-free Environments Act in 2017, and to implement the changes in 2018.

Review of evidence on electronic cigarettes

Our review included:

- Five recent systematic reviews (2014-2016) on the impact of e-cigarette use on smoking cessation, and/or the health effects of e-cigarette use^{99, 116-119}
- one qualitative review¹⁸
- two other reviews^{120, 121}
- five policy papers^{37, 122-125}
- one assessment of the population impact of e-cigarettes on smoking cessation¹²⁶
- one comparative health risk assessment of ECs and conventional cigarettes¹²⁷
- one modelling study¹²⁸
- five surveys¹²⁹⁻¹³³
- five descriptive articles¹³⁴⁻¹³⁸
- three papers from Aotearoa New Zealand:
 - one EC trial¹³⁹
 - one policy paper¹⁴⁰
 - one cross-sectional survey¹⁴¹

Evidence on EC use, smoking cessation and potential health effects

As a new and rapidly emerging product category, there is, unsurprisingly, limited, and sometimes conflicting, evidence to inform decision-making on ECs as smoking cessation aids and on their potential for causing harm to individuals. Much of the evidence of efficacy as cessation aids to date is from observational studies rather than clinical trials. However, emerging evidence, for example from the United Kingdom where ECs are widely available, is increasingly suggesting that they are making a positive contribution to recent reductions in smoking prevalence.^{118, 122, 123}

More trials are urgently needed to inform policy development in this area. In 2016 fifteen trials were underway that are expected to add further evidence on the possible role of ECs in smoking cessation.¹¹⁸

Effectiveness in supporting or increasing smoking cessation

The most recent Cochrane systematic review, published in 2016, found evidence that nicotine ECs were effective compared to ECs that didn't deliver nicotine, but concluded that the level of evidence was low, due to the small number of studies (two) included in the meta-analysis.¹¹⁸

Preliminary evidence is emerging of a modest effect for helping some individual smokers to quit smoking altogether, or to cut down the number of cigarettes they usually smoke (although cutting back may not significantly reduce harm). One Aotearoa New Zealand trial found similar quit rates at six months to those found with nicotine patches when no behavioural support is provided.¹³⁹ However, as yet there is insufficient evidence of effectiveness in terms of increasing smoking cessation when EC use is initiated by the smoker rather than by a cessation service.

In summary, evidence from the two available clinical trials and observational studies suggests that ECs may be effective as cessation aids when used as a smoking cessation intervention, but confidence in this result is low due to the small number of trials and low quality of studies.^{118, 140} There is evidence from one cross-sectional study in the UK that daily use is necessary to confer a cessation benefit.¹³¹ The tobacco control policy context is also important.¹²⁸ Further trial evidence is needed.

Evidence of the role of ECs in reducing smoking prevalence

ECs could potentially lead to a reduction in smoking prevalence even if only modestly effective at helping individuals to quit smoking so long as their use was widespread among smokers with the intention of substituting them for conventional cigarettes. ECs are widely available from a range of retail outlets and on the internet; and they are more appealing to smokers than pharmaceutical nicotine replacement products. Evidence to show ECs have led to a reduction in smoking prevalence thus far is limited, however. West and colleagues (2016)

estimated that in 2014 in the UK the numbers of additional quitters due to ECs was in the 'tens of thousands'.¹²⁶

Evidence on health effects of ECs

The evidence suggests few, if any, significant short-term adverse effects of EC use.^{123, 142} Compared with smoked tobacco, current research suggests a much lower negative health impact of ECs in the short-term, although the evidence base is still developing. The current best estimate is that EC use is around 95% less harmful to health than smoking.^{123, 142} This estimate is a collation of expert views, rather than an empirical comparison.

A recent study measuring biomarkers (nicotine, tobacco-specific N-nitrosamines (TSNAs), and volatile organic compounds (VOCs)) found that former smokers with long term exclusive EC use have substantially reduced levels of measured carcinogens and toxicants relative to those smoking only combustible cigarettes and dual users.¹³³ A comparative health risk assessment, which compared ECs to conventional cigarettes, found that although the health effects of ECs are still not well understood, current evidence indicates that ECs are less harmful than conventional cigarettes.¹²⁷

However, longer-term adverse effects of short-term and long-term EC use have not yet been studied so cannot be ruled out.¹²³

Evidence on Aotearoa New Zealand use of e-cigarettes

As there is increasing use of ECs in NZ currently, and an emerging retailer industry, there was some pressure to legalise the use of nicotine ECs. In two 2013 studies, 7% of adults and youth (aged 14-15 years) reported that they had used ECs.^{143, 144}

Preliminary analysis of the 2016 Health and Lifestyles Survey suggests an increase in the past few years – 17% of adult respondents reported they had used ECs.¹⁴⁵ People aged 15 to 24 years (30%) and 25 to 34 years (27%) were more likely to report that they had ever tried an e-cigarette when compared with people aged 35 to 54 years (16%) and 55 years and over (6%). When asked about frequency of EC use, the vast majority (84%) reported they do not use an EC now. Only 6% reported using ECs at least once a day.

Importance of synergistic effects from combining interventions

We believe that increasing the potentially positive role of ECs in smoking cessation can be maximised through many of the other interventions in our *Achieving a Smokefree Aotearoa by 2025* action plan, for instance making tobacco products less affordable, less available, less appealing and less addictive relative to ECs. Such changes would enhance the likelihood that ECs would be attractive alternatives to smoked tobacco products for addicted smokers who continue to require nicotine, and so will encourage quitting and switching to ECs.

Our recommendation of substantial annual tax increases on smoked tobacco products will make smoked tobacco products relatively less affordable, and alternative nicotine delivery products relatively more affordable. We therefore support a differential tax policy where excise tax is applied to smoked tobacco products, but not to alternative products such as ECs.

Nonetheless, there may still be areas of policy debate over ECs. For example, the above logic would suggest that, while retail availability of tobacco products should be greatly restricted, ECs should be made available everywhere. But there could be downsides of making ECs too widely available. Such a policy may promote use by children and result in ongoing encouragement of new EC users and nicotine addiction. That would be undesirable given the modest adverse effects of nicotine use and possible long-term adverse effects of EC use.

Long-term adverse effects of EC use are currently unknown, but are likely to be much less than smoked tobacco products. In addition, the option of restricting sales to specialist shops and pharmacies would be a way to ensure availability, while minimising the risk of purchase by minors and ensuring that smokers get the best possible advice about use of ECs in quitting.

We recommend there should be rigorous discussion and debate about EC-related policy (such as permitted place of sale, packaging and marketing, controls on use of flavours and vaping in places where smokefree policies are in place) with the aim of implementing policy in 2018 which strikes the best balance of positive impacts of ECs on smoking prevalence, while minimising the risk of adverse effects of wider availability and use.

There should also be rigorous monitoring and evaluation of the impact of e-cigarettes (and other alternative nicotine delivery products) on smoking cessation and uptake by December 2019, and potential adverse impacts. Policies should be reviewed and modified as necessary.

Selected country experiences

It is useful to consider how other comparable countries have approached ECs. The following box summarises the approaches of three selected countries: UK, US and Finland.

Box 2: Selected countries' approaches to EC regulation

UK: The UK has taken a liberal approach to ECs, with little regulation apart from age and advertising restrictions. The UK Royal College of Physicians has recommended that ECs, NRT and other non-tobacco nicotine products should be promoted "as widely as possible" as a substitute for smoking, and that regulation doesn't inhibit the harm reduction potential of ECs.

US: In contrast, the US has taken a more cautionary approach. In May 2016 the US FDA regulated e-cigs and all other products (current and future). Licences or permits are required to sell ECs in 14 states including California.¹²⁰ ¹²¹ The US Preventive Services Task Force concluded the current evidence is insufficient to recommend e-cigs for tobacco cessation.³⁷

Finland: Finland has decided against a harm reduction approach, aiming to phase out ECs and other alternative products, as well as phasing out tobacco (Finland's 2040 goal is to get to less than 2% for all tobacco and nicotine products including ECs). ECs are currently sold in retail shops, however they have strict rules. As of August 2016 ECs faced the same restrictions in terms of sales and public use as regular cigarettes, such as age limits – and are no longer allowed to have any flavours.⁶⁶

Summary of evidence on ECs and other products

Evidence assessment	Newly emerging area - To date there is limited, but increasingly emerging evidence on the role of ECs as smoking cessation aids and as 'gateway' products to smoking for youth or ex-smokers. A number of trials are underway that will add further evidence.
Effectiveness	EC role in smoking cessation: Preliminary, growing evidence of potential effectiveness, but the quality and level of evidence has been low. Evidence of the overall impact on smoking prevalence is still emerging. Some evidence from the UK suggests a modest positive effect. ^{126, 223} More research is needed.
Equity and reducing disparities	Little equity-specific evidence was located for this review. One NZ trial on the use of nicotine ECs for smoking cessation (compared with patches and non-nicotine ECs) found no difference in cessation efficacy between Māori and non-Māori smokers ¹³⁹
Cost-effectiveness	No evidence was found on the cost-effectiveness of interventions involving ECs.
Unintended impacts	<p>Concerns have been raised about potential youth uptake, uptake by non-smokers, normalisation of smoking, dual-use and erosion of smokefree laws.</p> <p>Gateway effect: Evidence is uncertain on whether EC use facilitates smoking initiation by non-smokers who would otherwise not have taken up smoking¹⁴⁰. The focus of research to date has been on young adolescent experimentation, with a lack of current information about youth aged over 18 years. Further research is needed.</p> <p>Dual use: There are concerns that vaping will allow or encourage smokers to continue smoking, by allowing nicotine intake in places where smoking is not permitted. Trials and surveys suggest dual use may be as high as 70-80% of EC users, but it is not yet clear to what extent this represents a transition away from smoking cigarettes.¹⁴⁰</p> <p>Health effects of ECs: Relatively lower health risks than smoked tobacco in the short-term; evidence on longer-term effects is not yet available.</p> <p>Second-hand exposure: A large evidence review for Public Health England concluded that ECs release negligible levels of nicotine into ambient air and there are no identified health risks to bystanders.¹⁴²</p>
Technical feasibility	<p>This measure is highly feasible. Work on a national policy and regulatory framework for ECs in NZ is underway, with a recent Ministry of Health consultation and the Government announcement in March 2017 to allow the legal sale of ECs with regulatory controls.</p> <p>Legislative change will be required and a Bill to amend the Smoke-free Environments Act 1990 is expected in early 2018.</p> <p>Policies need to support the potential of ECs in facilitating smoking cessation, while also discouraging dual use and non-smokers from taking up ECs.</p>
Political feasibility	This measure is highly politically feasible. The recent government announcement indicates feasibility of legalising sale of ECs and e-liquids with some controls. It may also be feasible to further restrict availability to a small number of outlets (e.g. pharmacists and specialist vape shops).
Acceptability / public support	Acceptability of regulatory options: Findings of the recent Ministry of Health consultation provides information about the acceptability of various options for regulating ECs. ²⁵⁰ submissions were received, 98 from vapers and 152 from non-vapers. Most (90.8%) submitters agreed the sale and supply of nicotine ECs and nicotine liquids should be allowed on the local market, with appropriate controls. ¹⁴⁶
Precedents	<p>The UK has taken a liberal approach to EC regulation, in contrast to the US which has adopted a more cautious approach. Finland has strict regulation and aims to achieve an endgame goal for both smoked tobacco and ECs.</p> <p>This review didn't find examples of other countries that have restricted sale of EC products to certain outlets such as pharmacies or specialist vape shops.</p>

As noted earlier, evidence on standardised packaging (and enhanced pictorial health warnings) is not covered here because the regulations to implement changes in this area had already been released.

Enhance or extend existing tobacco control activity

The sections below follow a slightly different structure to the earlier sections, where relatively fewer topics are included in the text. A summary table includes the full range of topics, however. The reason for the difference in structure is because these activities are supporting actions, rather than the core (new) actions in the action plan.

1: Enhance mass media and social media campaigns, including about smoking cessation support and the Smokefree Aotearoa 2025 goal

Background

Mass media campaigns aim to reduce smoking prevalence and smoking-related harm among young people or adults, and may use a variety of media channels, including television, internet, radio, billboards, print media – as well as social media.

Current campaigns include cessation-oriented campaigns to promote use of the Quitline and the 'Stop Before You Start' campaign to prevent initiation of smoking among young adults. A review of New Zealand mass media campaigns in 2014 revealed several areas that fell short of best practice:

- falling expenditure on mass media campaigns, with current intensity at or below the recommended intensity
- lack of use of emotion-arousing campaign themes
- some campaigns were only of short duration.⁴³

We recommend implementing well-funded, best-practice mass media and social media campaigns as part of a comprehensive communications strategy – as originally recommended in the MASC report. Resources for the campaigns could be allocated additional revenue from tobacco tax increases.

Evidence reviewed included:

- Four recent systematic reviews of mass media campaigns (two general, one focused on adults and two focused on youth)¹⁴⁷⁻¹⁵⁰
- One systematic review of major tobacco control interventions which included assessment of mass media campaign⁶
- Two systematic reviews of equity effects of tobacco control interventions which included assessment of mass media campaign^{9, 10}
- One systematic review of cost effectiveness of mass media campaigns¹⁵¹
- One systematic review of stigma and smoking¹⁵² and one narrative review of the potential impact of mass media campaign and TID on stigma¹⁵³

- One systematic review and one narrative review of TID mass media campaigns^{154, 155}
- One NZ overview of the possible role of mass media campaigns and one overview of recent practice in mass media campaign in NZ^{156, 157}
- One study of support for a range of tobacco control interventions among smokers in four developed countries¹⁵⁸
- Four NZ studies of support for tobacco control measures and the Smokefree Aotearoa 2025 goal among adults and adolescents.^{157, 159-161}

Evidence of effectiveness

The effectiveness of mass media campaigns occurs by promoting quitting directly (and possibly other indirect mechanisms e.g. changing social norms, promoting interpersonal discussion about smoking and quitting, and supporting tobacco control policy introduction).

International evidence on the effectiveness of mass media campaign comes from four systematic reviews of mostly epidemiological (before-after, interrupted time series and quasi-experimental) studies,¹⁴⁷⁻¹⁵⁰ which found positive effects in reducing smoking prevalence by increasing quitting and intention to quit and reducing initiation behaviours among youth and adults in many different settings, particularly various American states. There is also specific evidence of impacts of mass media campaigns from Australia.

Evidence from NZ of impacts of mass media campaigns on smoking-related outcomes is limited, but there is no reason to believe the findings would be different from those found in the systematic reviews.

There is evidence indicating that general adult campaigns also reduce youth uptake of smoking,^{147, 149, 162} which suggests less need for youth-specific campaigns.

Tobacco industry denormalisation (TID) campaigns

A systematic review found moderate evidence that TID-themed mass media campaigns are effective at reducing smoking among youth – with weaker evidence for impact on young adults and adults.¹⁵⁴

There is some evidence that TID mass media campaigns are most effective in settings where knowledge about the tobacco industry anti-industry sentiment is already present. The latter may be a problem in NZ as there have not been any previous TID campaigns in NZ with wide reach, the tobacco industry mostly maintains a low profile in NZ and as a result there may be a lack of awareness of the tobacco industry presence and its activities in NZ.

Impact on equity and reducing disparities

The international evidence is mixed, but viewed overall suggests that mass media campaigns have similar impacts on priority groups such as indigenous, ethnic minority, and low SES smokers, particularly if of sufficient intensity.^{9, 10} Negative health effects and personal testimony messages may be particularly effective with low SES groups.

However, one review noted there were substantial methodological shortcomings with studies of mass media campaign in low SES groups and an absence of evidence from multiple disadvantaged groups.¹⁵⁰ Another review noted that empirical evidence of lack of impact on low SES groups may often be due to insufficient intensity of campaigns.¹⁶⁴

Two overviews of equity impacts of tobacco control interventions both found mass media campaigns to have mixed effects, because campaigns vary in intensity and mode of delivery.^{9, 10} Low SES groups tend to have higher rates of television viewing.

Cost-effectiveness

Little evidence was found in the general reviews. Durkin and colleagues noted that mass media campaigns can be highly cost-effective as they can reach large audience at low cost. Targeted mass media campaigns may be less cost-effective depending on relative costs and efficacy of targeting. 'Recycling' (i.e. repeating previous) campaigns (where pre-testing is supportive) may be used to reduce costs and improve cost-effectiveness.

One systematic review¹⁵¹ concluded there was consistent evidence that mass media campaigns of various types in different settings were cost-effective interventions and could be cost-saving when healthcare costs averted were taken into account.

Unintended impacts

There are risks that negative campaigns (e.g. graphic negative effects, moral undertones) may increase stigma, create resistance and stress, cause social withdrawal, and/or reduce self-esteem and well-being among smokers who are unable to quit.

On the other hand studies of the impact of negative self-stereotypes among smokers due to media campaigns report a mix of the above negative effects, but also report approximately equal positive effects such as smoking cessation, decreased risk of lapse or relapse, and increased intentions to quit.¹⁵²

Precedents

Well-resourced and sustained mass media campaigns have been prominent features of comprehensive tobacco control strategies in many countries (e.g. Australia) and jurisdictions (e.g. California). These two examples are leaders in tobacco control and in reducing smoking prevalence.

Industry denormalisation campaigns have most commonly been implemented in the US, and have mostly included a strong youth focus. Mass media campaigns have been a feature of tobacco control in NZ for 20 years or more. The Te Reo Marama 'Māori Killers' and "Endangered species' campaigns offer a precedent for hard-hitting campaigns in NZ, though these were short-lived and poorly funded.

Summary of evidence on mass media interventions

Evidence assessment	<p>There is strong evidence that mass media campaigns are effective at reducing smoking prevalence and uptake among adults and young people.</p> <p>Although Cochrane reviews of mass media campaigns have rated the evidence as moderate, these reviews include many dated demonstration projects that did not have adequate reach. Further, the Cochrane reviews rate non-RCT studies as poor or very poor quality, when an RCT is an inappropriate design for evaluating media campaigns. The US Surgeon-General's report has a better approach from a public health perspective.¹⁶⁵</p> <p>There is moderate evidence to support tobacco industry denormalisation (TID)-themed mass media campaigns.</p>
Effectiveness	<p>Systematic reviews indicate positive effects in reducing smoking prevalence by increasing quitting and quit attempts, and reducing smoking initiation.</p>
Equity and reducing disparities	<p>Mixed evidence but overall suggests similar impacts on priority groups such as indigenous, ethnic minority, and low SES smokers, particularly if of sufficient intensity</p>
Cost-effectiveness	<p>Limited evidence, but some research suggests a cost-saving impact.</p>
Unintended impacts	<p>Some risks of increasing stigma and stress for smokers who cannot quit, but studies also show positive effects such as smoking cessation and lower risk of relapsing.</p>
Technical feasibility	<p>We assessed technical feasibility as high. No legislation is required, but there would be a resource requirement for the development of new campaigns and/or intensification of mass media campaign delivery.</p>
Political feasibility	<p>Existing national mass media campaigns demonstrate that these interventions are politically feasible, however there may be some political barriers for more substantial interventions like TID campaigns. The tobacco industry (and its allies), in particular, is likely to vigorously oppose such interventions, and they may create political controversy which makes policy-makers reluctant to proceed.</p>
Acceptability / public support	<p>Acceptability is likely to be high for interventions to strengthen mass media campaigns, e.g. Aotearoa New Zealand surveys suggest high public support.^{159, 161}</p> <p>It is less certain whether TID approaches would gain support (although the acceptability of Truth campaigns seems very high among target audiences).</p>
Precedents	<p>Strong precedents in Australia, California and other settings. US precedent for industry denormalisation campaigns.</p>

2: Enhance targeted smoking cessation advice and support

Background

Currently, the government has a strong focus on smoking cessation programmes at the individual level. Individual-level smoking cessation interventions, such as nicotine-replacement therapy (NRT) and Quitlines, enable individuals who engage with the intervention to increase their chance of long-term quitting. However, evidence suggests that only a minority of smokers use these interventions.

In contrast, population-level interventions enable whole populations to increase their quit rate (and usually to lower their smoking prevalence), such as by providing a whole population with cues to quit or increased chance of avoiding relapse. Examples of population-level interventions include the measures included in our action plan to reduce affordability, availability, appeal and addictiveness of tobacco products, as well as enhanced mass media and smokefree policies.

We believe that individual smoking cessation support will be insufficient to achieve the Smokefree Aotearoa 2025 goal, and that enhancements in this support will only make a small contribution to reducing overall prevalence. Broad-based population level will also be vital.

We base this on several lines of argument, described in more detail in the Smokefree Aotearoa 2025 Progress Report aspire2025.org.nz/smokefree-actionplan. For example:

- (i) The overall numbers of people quitting through face-to-face and other cessation services and the⁴⁰ Quitline are currently well below the numbers required to achieve the Smokefree Aotearoa goal, particularly for Māori and Pacific people. Substantial increases seem unlikely to be possible within feasible resource allocations
- (ii) Most quit attempts occur without the use of formal smoking cessation support services (only 12% of smokers had used Quitline or formal smoking cessation services during their last quit attempt in the 2012/13 New Zealand Health Survey)⁵⁷
- (iii) The emergence of ECs may encourage quitting without formal support. In the United Kingdom, as EC use has increased, the use of NHS smoking cessation services has declined (though this may also have been due to cuts in funding).

However, smoking cessation support may enhance the impact of population-based interventions like increases in tax. Furthermore there is a moral imperative to make such support available to those who want it – particularly among poorer smokers – to mitigate possible adverse economic impacts of tobacco tax increases.

Targeted efforts to promote and support cessation among priority and high prevalence groups seem the best approach to take. For example, workplace-based smoking

cessation support and broader smokefree interventions have been relatively little used in Aotearoa New Zealand, despite good evidence of the impact of smoking cessation support in this setting.⁴⁴ The recent announcement of a Smokefree Defence Force is a good example of a setting for such an initiative.

Workplace interventions could focus particularly on occupational groups with high smoking prevalence or 'role model' status, such as teachers and nurses.

Exploration of smoking cessation support in a greater variety of settings may also be a promising approach, such as through community-based outreach, pharmacies and WINZ offices. Ensuring cessation information and support is available wherever cigarettes and e-cigarettes are sold (including advice on use of ECs for quitting) is likely to maximise uptake and impact of cessation services.

Better targeting of smoking cessation advice and support to achieve sufficient reach and impact with priority groups, particularly Māori and Pacific smokers, is important to ensure that these groups have appropriate cessation support available. Other groups that should receive targeted cessation support include post-release prisoners and pregnant women.

Our review included:

- Ten reviews focused on smoking cessation^{99, 166-174}
- Four general reviews that include smoking cessation^{6, 8-10}
- Four trials^{105, 171, 175, 176}
- One policy paper³⁷
- One summary of Australian indigenous cessation support¹⁷⁷
- One small Aotearoa New Zealand qualitative study with Māori women former smokers¹⁷⁸
- One Aotearoa New Zealand survey on public support.⁹⁶

Evidence of effectiveness

Effects of NRT: A large 2012 Cochrane review, including 150 trials, found evidence that all these forms of NRT can increase the likelihood of quitting smoking.¹⁶⁷ A general 'rule of thumb' is that NRT doubles quit success rates. There is some evidence, although low quality, for the effectiveness of NRT for those smokers who don't want to quit.

Improving access to and choice of NRT: Aotearoa New Zealand trial evidence explored whether smokers with better access to NRT, more product choice and no financial barriers to NRT were more likely to stop smoking at 6 months than smokers in a control group. No increase in long-term quit rates was found compared to usual care, despite a significant impact on short-term quit rates, time to relapse, high participant acceptability and greater use of NRT. The authors suggest that despite reporting more use

of NRT, participants (particularly highly dependent smokers) in the intervention group may still have been 'under-dosed' with NRT, which is why no effect was seen on quit rates.¹⁷⁵

Potential effects of NRT on harm reduction among those who continue to smoke: A recent Cochrane review found some evidence of effectiveness for NRT use among those smokers who continued to smoke, but wanted to cut down or replace their usual cigarettes with alternatives (NRT, pharmaceutical drugs, e-cigarettes, very-low-nicotine-content [VLNC] cigarettes, nicotine inhalers etc.) – although rated the evidence as low quality.

Incentives to quit smoking: There is some emerging evidence on the effectiveness of financial incentives to quit, and on quit-smoking competitions.³⁷ Financial interventions for smoking cessation are most effective when targeted at smokers to reduce the cost of cessation products, but incentivizing quitting may be effective as well (mixed findings from reviews to date).⁶ Tobacco price increases, due to raising tobacco taxes, could be argued as a form of financial incentive to quit.

Use of VLNC cigarettes for smoking cessation: Recent trial evidence suggests that very-low-nicotine-content VLNC-cigarette use can reduce the number of cigarettes smoked per day and increase the likelihood of contemplating, making and succeeding at a quit attempt.^{101, 103}

A large Aotearoa New Zealand trial found that addition of very low nicotine content (VLNC) cigarettes to standard Quitline smoking cessation support may help some smokers to become abstinent.¹⁰⁵ Compared with usual Quitline support, the provision of VLNC achieved a marked increase in quit rates, a positive impact on the time to relapse, and high acceptability among participants.

Nicotine inhaler: Another recent NZ trial found that use of a nicotine inhaler, from a metered dose inhaler and combined with a nicotine patch, substantially improved abstinence for 6 months among adult nicotine-dependent smokers wanting to quit.¹⁷⁹ This is the first trial to suggest that use of a simple nicotine inhaler increases cessation over and above nicotine patch therapy.

Evidence for effectiveness of different methods of organisation and delivery of cessation support:

Workplace delivery of smoking cessation support: A 2014 Cochrane review of 57 studies found strong evidence that some workplace-delivered interventions directed towards individual smokers increase the likelihood of quitting smoking.¹⁶⁹ These include individual and group counselling, pharmacological treatment to overcome nicotine addiction, and multiple interventions targeting smoking cessation as the primary or only outcome. In contrast, self-help interventions and social support were found to be less effective. However, the review also noted that while people taking up cessation interventions are more likely to stop smoking, the absolute numbers who do stop smoking are low. The review found limited evidence that participation

in programmes can be increased by competitions and incentives organized by the employer, although one trial demonstrated a sustained effect of financial rewards for attending a smoking cessation course and for long-term quitting.¹⁶⁹

Delivery of smoking cessation support by dentists: A recent evidence review concluded there is considerable evidence to support the effectiveness of smoking cessation programmes used in dentistry. Effective programmes are brief behavioural interventions combined with pharmacological treatment, and include involvement of the entire dental team.¹⁶⁶

Combining mass media interventions with smoking cessation: There is evidence of positive synergistic effects from combining mass media interventions to deliver smoking cessation messages and counselling support.⁸

Evidence on equity and reducing disparities

Our review found mixed findings on equity effects – targeted programmes, and improving access to cessation services and support, may have promise in improving equity and reducing disparities.

For example, a recent international review concluded that non-targeted smoking cessation programmes have a negative equity impact (as higher quit rates among more advantaged smokers).¹⁰ Some studies suggest, though, that cessation services can achieve greater effectiveness in low-SES smokers by concentrating support in less advantaged communities.^{9, 10} A recent Canadian policy paper states that improving access to smoking cessation may be the most promising approach to reducing smoking in disadvantaged groups, but acknowledges more research is needed.

Evidence is available on the effectiveness of smoking cessation interventions for indigenous populations. One systematic review of five trials revealed that smoking cessation products have similar efficacy for indigenous (including Māori) and non-indigenous populations.¹⁷¹ The authors concluded that not all tobacco control interventions can or necessarily need to be culturally adapted for indigenous populations, but in some circumstances this is important.

Summary of evidence on smoking cessation

Evidence assessment	<p>Strong evidence supports the use of smoking cessation programmes in helping motivated, individual smokers to quit; however, evidence suggests only a minority of smokers use cessation interventions.</p> <p>There is a lack of evidence for the effectiveness of cessation efforts in increasing successful cessation at the population level.</p>
Effectiveness	<p>The use of NRT is supported by evidence as effective in assisting individual smokers to quit smoking.</p> <p>There is emerging Aotearoa New Zealand trial evidence to support the use of both VLNC and a nicotine inhaler to assist with smoking cessation by individuals.</p> <p>The current evidence indicates the following methods of cessation delivery can be effective in helping individuals to quit: workplace delivery of cessation support, delivery of cessation support by dentists, and combining mass media interventions with smoking cessation.</p>
Equity and reducing disparities	<p>Uncertain as mixed findings were located. There is some evidence from a review of trials to suggest that smoking cessation products are equally effective for Māori and non-Māori.¹⁷¹</p>
Cost-effectiveness	<p>Overseas evidence indicates cost-effectiveness of:</p> <ul style="list-style-type: none">a) pharmacological treatment (e.g. NRT, Varenicline, Bupropion) combined with behavioural treatment (e.g. counselling by GP, proactive phone counselling)⁸b) methods of delivery such as Quitlines and pharmacy-delivered smoking cessation⁸ <p>NZ cost-effectiveness data is planned for publication this year – on mass media promotion and provision of the NZ Quitline (by Wilson and colleagues, University of Otago, forthcoming).</p> <p>Any expansion of cessation support or increase in subsidisation will have cost implications, especially relative to other policy options in tobacco control.</p>
Unintended impacts	<p>None identified aside from the opportunity cost of spending more in this area compared with other potential tobacco control interventions, which may be more effective than individual cessation support (as is the current situation in NZ).</p>
Technical feasibility	<p>Most of the smoking cessation interventions appear broadly technically feasible, but some may require greater logistical effort/resource to implement e.g. some workplace-based interventions may take time to set up (although the NZ Heart Foundation already run workplace healthy heart checks of which smoking cessation support is a key component).</p>
Political feasibility	<p>Expanding access to cessation and targeting Māori women and pregnant women, in particular, is likely to be politically palatable in the current political context – current government is supportive of individual cessation strategies. Further, cessation seems to be the main focus of the recent 'realignment' of tobacco control services, and the vast majority of tobacco control resources go towards cessation at present.</p> <p>The Māori Affairs Select Committee report noted the importance of increasing access to effective cessation services designed and delivered by Māori for Māori.⁷³</p>
Acceptability / public support	<p>Strong public support for enhanced cessation has been reported in NZ surveys.⁹⁶</p>
Precedents	<p>Smoking cessation is a well-established tobacco control measure, and enhanced, more targeted smoking cessation approaches are implemented in many overseas settings.</p>

3: Extend smokefree environment legislation to include specific outdoor areas and vehicles carrying children

Our review included six reviews or summary papers (on various aspects of this topic),^{180-187, 7} individual studies (including one intervention study and one quasi-experimental study),¹⁸⁸⁻¹⁹³ eight Aotearoa New Zealand papers,¹⁹⁴⁻²⁰³ and two descriptive or policy papers.^{204, 205}

Evidence of effectiveness

Strong evidence is available on the effectiveness of indoor public place policies and legislation; however evidence related to outdoor areas and cars is still emerging.

One population-based study in California found increased quit attempts in towns with outdoor smokefree laws (for parks, beaches and/or patios).¹⁹¹ Other studies have revealed that Canada's provincial smokefree patio laws were associated with reduced exposure to secondhand smoke (through reduced smoking on patios) in Nova Scotia and Alberta.^{188, 189}

Evidence from Queensland and Ottawa suggests that smokefree outdoor dining policies can be easily implemented with little enforcement required (as the policies tend to be self-monitoring).¹⁸² Observational research from New York City has found a reduction in observed smoking in parks 18 months after the introduction of a smokefree park law.¹⁹¹

In relation to smokefree cars, a quasi-experiment from Canada found lower reported smoking in cars after the introduction of provincial smokefree car laws.¹⁹² In contrast, another study from Canada found reduced smoking in cars in just one of seven provinces with smokefree car laws.¹⁹⁰

Impacts on equity

No specific evidence was found, but smokefree prison policies suggest potential to reduce disparities (as prisoners are of low-SES and Māori and Pacific are over-represented). Smokefree prisons appear to be effectively implemented in New Zealand, with a report in 2012 suggesting marked decreases in levels of smoking and tobacco-related contraband, along with a massive reduction in fire-related incidents.²²⁴

Feasibility

A 2016 report by University of Otago researchers found evidence for the feasibility of smokefree outdoor policies.¹⁹⁴ There is evidence of implementation, e.g. smokefree outdoor dining, and some evidence of effectiveness to support these policies. An international literature review, with a focus on England and Australia, provides some evidence of the feasibility of smokefree mental health sites.¹⁸³

The current Government recently rejected a Health Select Committee recommendation to prohibit smoking in cars carrying children aged under 18 years. Political ideology may be a threat to change, but some incremental policies,

e.g. smokefree cars, may be more feasible now that other countries are implementing policies and have evidence of effectiveness. In particular, the Australian experience with smokefree cars suggests this may be possible in New Zealand.²⁰⁵

There is likely to be a role of local action and evidence (potential) in increasing political feasibility at the national level. A 2007 article on the use of secondhand smoke (SHS) research by NZ politicians found that 10 out of 21 politicians who spoke about SHS during the 2000-2005 period either denied, or were sceptical of, harm due to SHS.²⁰³ This study noted that political support may be increased through strong advocacy of the research.

One study suggested there was low political feasibility for smokefree cars in 2008.²⁰⁶ In Australia, framing the debate in terms of protecting vulnerable children contributed to the smokefree car law being passed.²⁰⁵

Precedents

Outdoor dining: There are many international precedents, and some evidence of compliance, for smokefree outdoor dining policies.¹⁸²

Balconies and patios: Canada has provincial smokefree patio laws. Finland has recently introduced the ability to apply for a ban on people smoking on neighbouring balconies if their presence is a disturbance. Housing companies may now apply for the ban if smoke is seen to be spreading from someone's private balcony and onto other spaces. (As in many other countries, bans are in place in public areas, but this new policy addresses a smoker's private space). No evidence of change is yet available from Finland, but the policy is new.⁶⁶ This may have relatively less relevance to NZ because it has lower housing density and fewer apartments with balconies.

Cars: Australia, Finland, UK, and some Canadian provinces have implemented smokefree car laws for cars where children are present with some difference in the age limit (e.g. Finland's law relates to children aged under 15 years, UK law covers youth under the age of 18). In Australia, framing the debate in terms of protecting vulnerable children contributed to the smokefree car law being passed.²⁰⁵

Tertiary campuses: In NZ, a 2015 scan found that 9 out of 29 tertiary campuses had smokefree policies that covered both indoor and outdoor areas.²⁰¹

Evidence assessment	Newly emerging area, with some preliminary evidence on outdoor smokefree policies (e.g. outdoor dining areas, parks, beaches) and smokefree car policies. Strong evidence for the effectiveness of indoor public place policies and laws.
Effectiveness	Preliminary evidence suggests that smokefree outdoor policies may be associated with reductions in smoking and secondhand smoke exposure, and with increases in quit attempts. Some studies have found that smokefree car laws can reduce the prevalence of smoking in cars.
Equity and reducing disparities	No specific evidence on equity was located for this review.
Cost-effectiveness	Some evidence of low implementation costs compared with possible health gains – from a review of smokefree outdoor dining. ¹⁸²
Unintended impacts	Uncertain
Technical feasibility	We assess technical feasibility as moderate, as there is some evidence for feasibility from New Zealand and other countries.
Political feasibility	May be moderately politically feasible, despite the current administration's recent rejection of smokefree cars, with increasing evidence and increasing local-level smokefree action around New Zealand.
Acceptability / public support	Evidence from several countries, including Aotearoa New Zealand, suggests there is high public and stakeholder support for extending smokefree public place policies to various settings including outdoor dining areas and cars. ^{194, 225, 226}
Precedents	International precedents exist for smokefree outdoor dining and patio policies, as well as for smokefree cars.

Alternative option to tobacco-free generation: Increase the legal minimum purchase age for tobacco products

As the final section in this report, we present information from our review about an alternative way to restrict youth access to tobacco products: by increasing the legal minimum purchase age.

Aotearoa New Zealand currently has a legal minimum purchase age of 18 years for tobacco. As a strategy to reduce youth access to tobacco products – and, importantly, to discourage smoking initiation by young people – legislation could be implemented to increase the minimum purchase age for tobacco products from 18 to 21 years of age.

Reviewed papers

We examined two systematic reviews,^{9, 207} four cross-sectional studies (including one from Aotearoa New Zealand),²⁰⁸⁻²¹¹ three modelling studies (US, Finland, Netherlands),²¹²⁻²¹⁴ and one descriptive review.²¹⁵

Evidence on effectiveness

Evidence on minimum age laws in general

Evidence has built up over many years, and in multiple settings, to indicate that minimum age laws, in general, can be effective in restricting youth access to tobacco products.

Some evidence has shown large positive effects. An Australian longitudinal controlled study by Tutt and colleagues, for instance, reported that aggressive

enforcement of the minimum age law resulted in high compliance, declining attempts by minors to purchase tobacco, and a 50% reduction in youth smoking prevalence.²⁰⁷ Minimum age laws may also help to prevent youth smoking initiation. Research finds an association between the enforcement of minimum age laws and significant declines in the proportion of never smokers who believed it was easy to get cigarettes.²¹⁶

The evidence base in this area includes mixed findings, however. Some systematic reviews have reported conflicting conclusions.²¹¹ For example, a 2013 cross-sectional study found no association between retailer compliance with youth access laws and youth smoking outcomes.²¹⁰ It is likely that some youth access laws have not been sufficiently comprehensive or enforced. Another explanation for inconsistent results may be that some research has not distinguished between youth access interventions that were successful in disrupting tobacco sales to children, and those that failed to disrupt sales.²⁰⁷

In summary, youth access laws appear to reduce youth smoking prevalence, but only when accompanied by very high compliance.²¹¹ Strong enforcement of minimum age laws, which interrupt and prevent the sale of tobacco to young people, is clearly needed. In a large 2012 systematic review, all of the successful enforcement programmes comprised routine inspections and test purchases by minors.²⁰⁷

Evidence on increasing the age to 21

In the past 2-3 years, new US evidence has emerged that supports increasing the minimum age to 21 years.²¹⁵

The evidence suggests that this intervention can reduce adolescent purchasing of tobacco products – and also reduce smoking prevalence among adolescents. In 2015 the US-based Institute of Medicine (IOM) assessed the evidence base as sufficient to recommend wider adoption of stronger laws that lift the minimum age to 21 years.²¹⁷ There is some evidence from the US on the economic impact of raising the age to 21 years, which suggests the policy may result in a 2-to-3% annual decrease in total tobacco sales.²¹⁵

Drawing on this evidence, many US jurisdictions have now introduced a minimum purchase age law of 21 years for tobacco products, including California, Texas, Hawaii and more than 100 local jurisdictions.²¹⁵ Lifting the age to 21 is a relatively new policy with little empirical evidence available to date (most evidence is based on modelling). More research is needed to monitor the effects of this intervention.

Social supply of tobacco

Some researchers caution that minimum purchase age laws may be undermined by the ‘social supply’ of tobacco products, where young people receive tobacco from older peers or family members.

New Zealand research suggests that social supply plays a much greater role than commercial supply in youth access to tobacco, with an increasing relative influence of family members compared with friends – and Māori and Pacific adolescents are more likely to receive tobacco in this way²¹¹. It is possible that social sources of supply only become predominant after commercial sources have been reduced, as Aotearoa New Zealand has had a minimum purchase age of 18 in place since the late nineties.

Impact on equity and reducing disparities

A systematic review on the equity impact of interventions to reduce youth smoking suggests that strict control of youth access to cigarettes (minimum age law and electronic locking of cigarette vending machines) may have potential equity benefits for low SES youth.⁹ A US prospective cohort study in that review found an association between comprehensive, enforced minimum age laws and lower smoking initiation by low SES girls, although the effect sizes were small.

There may be synergistic effects with other interventions in this action plan. For example, restricting youth access to tobacco, combined with substantial reduction of tobacco retail outlets, may reduce social supply, with positive equity effects for Māori and Pacific youth.²¹¹

Unintended adverse effects

Some retailers may have concerns about the realities of enforcing the law with an older peer group – there could be greater concern about potential conflict, threats or violent behaviour.

Feasibility and acceptability

There is evidence of strong political support in the US – data shows that a federal Tobacco 21 law has support across the political spectrum, including about 76% of Republican and nearly 80% of Democrat respondents.

On the other hand, the likelihood of public debate and a potentially time-consuming legislative process may be political barriers. The NZ context also differs from the US, e.g. NZ has a lower minimum age for alcohol (18 compared with 21 in the US) – although this may also be raised in future.

Other political barriers may include opposition from retailers’ associations and the tobacco industry, and concern about the economic impact of the policy. The discrepancy that would be created between the legal age of purchase for alcohol (18 years) and tobacco may also represent a barrier.

Potentially, there may be evaluations or other documentation from when the tobacco purchase age was raised from 16 to 18 years in Aotearoa New Zealand, which may inform decisions in this area.

US studies show very high levels of public support for increasing the minimum age to 21 years,²¹⁵ e.g. 70 to 75% of Americans support this law change. In that study, majority support extended across all major sociodemographic groups including among young adults 18 to 24 years of age, with the exception of 18 to 20-year-old smokers. There is also high support among current and ex-smokers.²¹⁵

Notably, one recent cross-sectional study found that those smokers who had initiated smoking themselves between the ages of 18 and 20 expressed the highest level of support among smokers for raising the minimum age to 21.²⁰⁸ This study also found the highest support was from never-smokers, females, African-Americans and older adults.²⁰⁸

No specific research was found for this review on Aotearoa New Zealand public or smoker support for this policy. Public support in New Zealand may be lower than in the US given the inconsistency with the minimum purchase law for alcohol.

Overall, feasibility is likely to be relatively low given the political barriers, discrepancies in legal age laws for various products, and a relatively complex policy development and implementation process.

Summary of evidence on minimum age interventions

Evidence assessment	Moderate evidence for minimum age laws / restricting youth access in general. Newly emerging evidence from the US for increasing the minimum purchase age to 21 years.
Effectiveness	We assessed the effectiveness as moderate (Limited evidence is available on increasing the age to 21 years, but there is moderate evidence on minimum age laws in general, with evidence that youth access laws appear to reduce youth smoking prevalence, when accompanied by high compliance and strong enforcement)
Equity and reducing disparities	Likely positive impact on equity and reducing disparities
Cost-effectiveness	No evidence identified, but likely to be cost-effective and cost-saving as relatively cheap to implement.
Unintended impacts	Low risk of major adverse effects
Technical feasibility	High – but would require law change. The challenges with enforcement are likely to be similar with the current age restriction.
Political feasibility	Moderate – focus on youth, low implementation costs, learning from the US may help increase political feasibility.
Acceptability / public support	Uncertain as little New Zealand evidence available.
Precedents	Many US jurisdictions and 3 states (California, Hawaii, Texas) have raised the age to 21 and the US has previously raised the alcohol purchase age to 21.

Comparative summary table of actions

We appraised each action against a range of criteria. The appraisal criteria were:

- Effectiveness
- Equity/impact on Māori and Pacific ethnic and social disparities in smoking
- Unintended impacts
- Cost-effectiveness
- Technical and political (short- and long-term) feasibility
- Acceptability
- Whether there are precedents in other settings.

The results are summarised below.

	Action	Effectiveness	Likely impact on equity	Cost-effectiveness	Feasibility	Acceptability	Precedent
1.1	Increase annual tobacco excise tax by 20%	High	Positive	High	Moderate or high	High or moderate	Yes
1.2	Minimum price regulation	Emerging area Potentially high	Unknown	Likely high	Moderate	Moderate	Yes
2.1	Transition retailers out of selling/restricting sales to limited specified outlets	Emerging area Potentially moderate to high	Unknown Potentially positive	Likely high	Moderate	Likely high or moderate	Yes
2.2	Disallow tobacco sales in alcohol on-licensed premises	Emerging area Potentially moderate	Unknown Potentially positive	Likely high	High	Likely high	Yes
2.3	Tobacco-free generation	Emerging area Modelling suggests it is likely to be highly effective	Modelling suggests it is likely to be highly positive	Modelling suggests it is likely to be cost-saving	Moderate	Moderate	No
3.1	Remove additives that enhance appeal or addiction	Emerging area Potentially moderate to high	Unknown Some US research suggests effective for ethnic minority groups	Likely high if costs fall on tobacco industry	Moderate	Uncertain	Yes
3.2	Restrict sales to VLNC	Emerging area Potentially high	Unknown but early research suggests no ethnic differences	Likely high if costs fall on tobacco industry	Moderate	Moderate	No
	Ensure access to safe alternative nicotine-delivery products	Emerging area Potentially high	Unknown as limited evidence to date	Uncertain	Moderate	High	Uncertain
	Enhance mass media	High (adults) Moderate (youth)	Mixed findings	Moderate to high	Moderate	High	High
	Enhance smoking cessation	Moderate	Potential positive effect if well targeted	Moderate to high	High	High	Likely high
	Expand smokefree environments	Moderate (newly emerging area but indoor smokefree policies are high impact)	Little evidence available but likely to have at least a neutral effect on equity	Uncertain	Moderate	Moderate to low	High
	Increase the minimum purchase age	High to moderate (high if well-enforced)	Positive	Likely high	Low	Moderate	Likely moderate to high

CONCLUSION

We reviewed a wide range of interventions that may potentially help to achieve a Smokefree Aotearoa by 2025. Twenty-three interventions were initially reviewed, followed by a more detailed focus on ten interventions.

The evidence on each of these ten topics is summarised in this report, and presented according to our appraisal criteria: effectiveness, equity (especially reducing disparities for Māori and Pacific peoples), cost-effectiveness, unintended impacts, technical and political feasibility (both short and longer term), acceptability, public support, and precedents from other contexts.

The area with the strongest evidence of effectiveness and likely impact on equity (especially reducing disparities for Māori and Pacific peoples) was annual tobacco tax increases. Several other areas had limited or emerging evidence of effectiveness currently, but are likely to be highly effective if well implemented and the public (including young people), smokers and retailers are engaged and supported. These promising areas include large reductions in tobacco retail availability, the tobacco-free generation measure, removing all additives that may increase appeal or addictiveness, and introducing a mandated very-low-nicotine-content policy.

REFERENCES

1. Morestin F. A Framework for Analyzing Public Policies: Practical Guide: National Collaborating Centre for Healthy Public Policy, 2012. Available at: http://www.ncchpp.ca/docs/Guide_framework_analyzing_policies_En.pdf (accessed 01/08/17).
2. van der Deen FS, Wilson N, Cleghorn CL, et al. Impact of five tobacco endgame strategies on future smoking prevalence, population health and health system costs: two modelling studies to inform the tobacco endgame. *Tobacco Control* 2017;0:1-9.
3. Woodhead M. Australia will price out cigarettes with 50% tax rise over four years. *BMJ* 2016;353:i2549.
4. Ball J, Edwards R, Waa A, et al. Stakeholder Appraisal of Selected Tobacco Endgame Policy Options in New Zealand. *Tobacco Regulatory Science* 2017;3(1):56-67.
5. US National Cancer Institute and World Health Organization. *The Economics of Tobacco and Tobacco Control*. National Cancer Institute Tobacco Control Monograph 21. Bethesda, MD, 2016. Available at: <https://cancercontrol.cancer.gov/brp/tcrb/monographs/21/> (accessed 01/08/17).
6. Hoffman SJ, Tan C. Overview of systematic reviews on the health-related effects of government tobacco control policies. *BMC Public Health* 2015;15:744.
7. Golden SD, Smith MH, Feighery EC, et al. Beyond excise taxes: a systematic review of literature on non-tax policy approaches to raising tobacco product prices. *Tobacco Control* 2016;25(4):377-85.
8. Ekpu VU, Brown AK. The economic impact of smoking and of reducing smoking prevalence: review of evidence. *Tobacco Control* 2015;8:1-35.
9. Brown T, Platt S, Amos A. Equity impact of population-level interventions and policies to reduce smoking in adults: A systematic review. *Drug and Alcohol Dependence* 2014;138(1):7-16.
10. Hill S, Amos A, Clifford D, et al. Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tobacco Control* 2014;23(e2):e89-e97.
11. Chaloupka FJ, Straif K, Leon ME, et al. Effectiveness of tax and price policies in tobacco control. *Tobacco Control* 2011;20(3):235-8.
12. Community Preventive Services Task Force. *Tobacco Use and Secondhand Smoke Exposure: Interventions to Increase the Unit Price for Tobacco Products: Systematic review 2012*. 2012. Available at: <https://www.thecommunityguide.org/findings/tobacco-use-and-secondhand-smoke-exposure-interventions-increase-unit-price-tobacco> (accessed 14/07/17).
13. Diepeveen S, Ling T, Suhrcke M, et al. Public acceptability of government intervention to change health-related behaviours: a systematic review and narrative synthesis. *BMC Public Health* 2013;13:756.
14. Lorenc T, Petticrew M, Welch V, et al. What types of interventions generate inequalities? Evidence from systematic reviews. *Journal of Epidemiology and Community Health* 2013;67(2):190-93.
15. Calo WA, Krasny S. Environmental Determinants of Smoking Behaviors: The Role of Policy and Environmental Interventions in Preventing Smoking Initiation and Supporting Cessation. *Current Cardiovascular Risk Reports* 2013;7(6):446-52.
16. Chaloupka FJ, Yurekli A, Fong GT. Tobacco taxes as a tobacco control strategy. *Tobacco Control* 2012;21(2):172-80.
17. Kahende JW, Loomis BR, Adhikari B, et al. A review of economic evaluations of tobacco control programs. *International Journal of Environmental Research and Public Health* 2009;6(1):51-68.
18. McDaniel PA, Smith EA, Malone RE. The tobacco endgame: a qualitative review and synthesis. *Tobacco Control* 2015;tobaccocontrol-2015-052356.
19. Gilmore AB, Branston JR, Sweanor D. The case for OFSMOKE: how tobacco price regulation is needed to promote the health of markets, government revenue and the public. *Tobacco Control* 2010;19(5):423-30.
20. Blakely T, Cobiac LJ, Cleghorn CL, et al. Health, health inequality, and cost impacts of annual increases in tobacco tax: Multistate life table modeling in New Zealand. *PLoS Medicine* 2015;12(7)/
21. Hoek J, Smith K. A qualitative analysis of low income smokers' responses to tobacco excise tax increases. *International Journal of Drug Policy* 2016;37:82-89.
22. Walton D, Li J, Newcombe R, et al. Smokers' behavioural responses before and after the 2012 tobacco excise increase. *Kotuitui* 2013;8(1-2):27-39.
23. Wilson N, Thomson G, Blakely T, et al. A new opportunity to eliminate policy incoherence in tobacco control in New Zealand. *New Zealand Medical Journal* 2010;123(1311):89-92.
24. Cobiac LJ, Ikeda T, Nghiem N, et al. Modelling the implications of regular increases in tobacco taxation in the tobacco endgame. *Tobacco Control* 2014 [published Online First: Published online first d]
25. Cowie N, Glover M, Gentles D. Taxing times? Smoker response to tax increases. *Ethnicity and Inequalities in Health and Social Care* 2014;7(1):36-48.
26. Tucker MR, Kivell BM, Laugesen M, et al. Changes to smoking habits and addiction following tobacco excise tax increases: a comparison of Maori, Pacific and New Zealand European smokers. *Australian and New Zealand Journal of Public Health* 2017;41(1):92-98.
27. Young D, Wilson N, Borland R, et al. Prevalence, Correlates of, and Reasons for Using Roll-Your-Own Tobacco in a High RYO Use Country: Findings from the ITC New Zealand Survey. *Nicotine and Tobacco Research* 2010;12(11):1089-98. [published Online First: 2010/09/18]
28. Health Promotion Agency. Public opinion on Tobacco Taxation. 5 ed, 2013. Available at <http://www.hpa.org.nz/research-library/research-publications/public-opinion-on-tobacco-taxation-in-fact> (accessed 01/08/17).

-
29. Health Promotion Agency. In Fact: Young people's opinions on tobacco control measures 2014. 17 ed, 2015. Available at: <http://www.hpa.org.nz/research-library/research-publications/young-peoples-opinions-on-tobacco-control-measures-2014-in-fact> (accessed 01/08/17).
30. Wilson N, Weerasekera D, Edwards R, et al. Characteristics of smoker support for increasing a dedicated tobacco tax: national survey data from New Zealand. *Nicotine & Tobacco Research* 2010;12(2):168-73.
31. Ajmal A, Veng Ian U. Tobacco tax and the illicit trade in tobacco products in New Zealand. *Australian and New Zealand Journal of Public Health* 2015;39(2):116-20.
32. Action on Smoking and Health. ASH New Zealand Tobacco Returns Analysis 2013. Available at: <http://www.ash.org.nz/wp-content/uploads/2015/03/TOBACCO-RETURNS-ANALYSIS-2013.pdf> (accessed 01/08/17).
33. Pearson AL, Cleghorn CL, van der Deen FS, et al. Tobacco retail outlet restrictions: Health and cost impacts from multistate life-table modelling in a national population. *Tobacco Control* 2016;0:1-7.
34. Halonen JI, Kivimaki M, Kouvonen A, et al. Proximity to a tobacco store and smoking cessation: a cohort study. *Tobacco Control* 2014;23(2):146-51.
35. Reitzel L, Cromley E, Yisheng L, et al. The Effect of Tobacco Outlet Density and Proximity on Smoking Cessation. *American Journal of Public Health* 2010;101(2)
36. Luke DA, Sorg AA, Combs T, et al. Tobacco retail policy landscape: a longitudinal survey of US states. *Tobacco Control* 2016;25(Suppl 1):i44-i51.
37. Summit Steering Committee and Action Groups. A Tobacco Endgame for Canada: Summit Background Paper: Queen's University, Canada, 2016. Available at: <http://www.queensu.ca/gazette/sites/default/files/assets/attachments/EndgameSummit-Backgroundpaper%20.pdf> (accessed 01/08/17).
38. Ackerman A, Etow A, Bartel S, et al. Reducing the Density and Number of Tobacco Retailers: Policy Solutions and Legal Issues. *Nicotine & Tobacco Research* 2017;19(2):133-40.
39. Tucker-Seeley RD, Bezold CP, James P, et al. Retail pharmacy policy to end the sale of tobacco products: What is the impact on disparity in neighborhood density of tobacco outlets? *Cancer Epidemiology Biomarkers and Prevention* 2016;25(9):1305-10.
40. Caceres L. *Case for Designated Tobacco Retail Outlets: Policy Analysis Paper*, 2011.
41. Myers ML. The FTC's evidence-based policies remain a key to ending the tobacco epidemic. *Tobacco Control* 2013;22(suppl 1):i45-i46.
42. Feletto E, Burton S, Williams K, et al. Who stops selling? A systematic analysis of ex-tobacco retailers. *Tobacco Control* 2016;tobaccocontrol-2015-052629.
43. McDaniel PA, Malone RE. Why California retailers stop selling tobacco products, and what their customers and employees think about it when they do: case studies. *BMC Public Health* 2011;11(848)
44. Pearson AL, van der Deen FS, Wilson N, et al. Theoretical impacts of a range of major tobacco retail outlet reduction interventions: modelling results in a country with a smoke-free nation goal. *Tobacco Control* 2014;0:1-7.
45. Marsh L, Doscher C, Robertson LA. Characteristics of tobacco retailers in New Zealand. *Health and Place* 2013;23:165-70.
46. Paynter J, Glover M, Bullen C, et al. An intervention to reduce the number of convenience stores selling tobacco: Feasibility study. *Tobacco Control* 2016;25(3):319-24.
47. Guthrie J, Hoek J, Darroch E, et al. A qualitative analysis of New Zealand retailers' responses to standardised packaging legislation and tobacco industry opposition. *BMJ Open* 2015;5(11)
48. Jaine R, Sr., Russell M, Edwards R, et al. New Zealand tobacco retailers' attitudes to selling tobacco, point-of-sale display bans and other tobacco control measures: A qualitative analysis. *New Zealand Medical Journal* 2014;127(1396):53-66.
49. Edwards R, Peace J, Hoek J, et al. Majority support among the public, youth and smokers for retail-level controls to help end tobacco use in New Zealand. *New Zealand Medical Journal* 2012;125(1357).
50. Robertson J, Stevenson L, Usher K, et al. A review of trends in indigenous Australian tobacco research (from 2004 to 2013), its associated outputs and evidence of research translation. *Nicotine & Tobacco Research* 2015;17(8):1039-48.
51. Robertson L, Gendall P, Hoek J, et al. Smokers' Perceptions of the Relative Effectiveness of Five Tobacco Retail Reduction Policies. *Nicotine & Tobacco Research* 2017;19(2):245-52.
52. Robertson L, Marsh L, Edwards R, et al. Regulating tobacco retail in New Zealand: what can we learn from overseas? *New Zealand Medical Journal* 2016;129(1432):74-79.
53. Whyte G, Gendall P, Hoek J. Advancing the retail endgame: public perceptions of retail policy interventions. *Tobacco Control* 2014;23(2):160-6.
54. Edwards R, Thomson G, Wilson N, et al. After the smoke has cleared: evaluation of the impact of a new national smoke-free law in New Zealand. *Tobacco Control* 2008;17(1)
55. Robertson L. *Regulating the Tobacco Retail Environment in New Zealand*. PhD Thesis, University of Otago, 2016.
56. Robertson L, Marsh L, Hoek J, et al. NZ tobacco control experts' views towards policies to reduce tobacco availability. *New Zealand Medical Journal* 2017 Jun 2;130(1456):27-35.
57. Pulakka A, Halonen JI, Kawachi I, et al. Association Between Distance From Home to Tobacco Outlet and Smoking Cessation and Relapse. *JAMA Internal Medicine* 2016;176(10):1512-19.
58. Chaiton M, Diemert L, Zhang B, et al. Exposure to smoking on patios and quitting: a population representative longitudinal cohort study. *Tobacco Control* 2016;25(1):83-8.
59. Chaiton M, Mercredy G, Cohen JE. Tobacco retail availability and risk of relapse among smokers who make a quit attempt: a population-based cohort study. *Tobacco Control* 2017;0(1-7)
60. Tilson M. Reducing the Availability of Tobacco Products at Retail: Policy Analysis: Non-Smokers' Rights Association, 2011. Available at: http://nsra-adnf.ca/wp-content/uploads/2016/07/Reducing_Retail_Availability_policy_analysis_final_2011.pdf (accessed 01/08/17).

-
61. Statistics New Zealand. The New Zealand Census of Population and Dwellings. Wellington, 2013.
62. Robertson L, Marsh L, Hoek J, et al. NZ tobacco control experts' views towards policies to reduce tobacco availability. *New Zealand Medical Journal* 2017;130(1456)
63. Edwards R, Russell M, Thomson G, et al. Daring to dream: Reactions to tobacco endgame ideas among policy-makers, media and public health practitioners. *BMC Public Health* 2011;11
64. Van der Deen F, Wilson N. Restricting tobacco sales to only pharmacies: What do pharmacists think of this endgame strategy? Submitted to Tobacco Control, 2017
65. The Straits Times. Number of shops selling cigarettes at record low. Media Report. Singapore: The Straits Times, 2017. Available at: <http://www.straitstimes.com/singapore/health/number-of-shops-selling-cigarettes-at-record-low> (accessed 01/08/17).
66. Senthilingam M. What Finland's plan to be tobacco-free can teach the world 2017. Media Report. Available from: <http://edition.cnn.com/2017/01/26/health/finland-tobacco-free-plan/> (accessed 8/6/2017).
67. Dee TS. The complementarity of teen smoking and drinking. *Journal of Health Economics* 1999;18:769–93.
68. Wilson N, Weerasekera D, Kahler CW, et al. Hazardous patterns of alcohol use are relatively common in smokers: ITC Project (New Zealand). *New Zealand Medical Journal* 2012;125(1348)
69. Guiney H, Li J, Walton D. Barriers to successful cessation among young late-onset smokers *New Zealand Medical Journal* 2015;128(1416)
70. Kahler CW, Spillane NS, Metrik J. Alcohol use and initial smoking lapses among heavy drinkers in smoking cessation treatment. *Nicotine & Tobacco Research* 2010;12(7):781-5. [published Online First: 2010/05/29]
71. Robertson L, Marsh L, Edwards R, et al. Regulating tobacco retail in New Zealand: What can we learn from overseas? *New Zealand Medical Journal* 2016;129(1432):74-79.
72. Fry R, Burton S, Williams K, et al. Retailer licensing and tobacco display compliance: are some retailers more likely to flout regulations? *Tobacco Control* 2017;26(2):181-87.
73. Māori Affairs Select Committee. *Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori*: Report of the Māori Affairs Committee 2010. Available at: https://www.parliament.nz/en/pb/sc/reports/document/49DBSCH_SCR4900_1/inquiry-into-the-tobacco-industry-in-aotearoa-and-the-consequences (Accessed 01/08/17).
74. Berrick AJ. The tobacco-free generation proposal. *Tobacco Control* 2013;22 Suppl 1:i22-6.
75. Khoo D, Chiam Y, Ng P, et al. Phasing-out tobacco: proposal to deny access to tobacco for those born from 2000. *Tobacco Control* 2010;19(5):355-60.
76. van der Eijk Y, Porter G. Human rights and ethical considerations for a tobacco-free generation. *Tobacco Control* 2015;24(3):238-42.
77. Thomas BP, Gostin LO. Tobacco endgame strategies: challenges in ethics and law. *Tobacco Control* 2013;22(suppl 1):i55-i57.
78. Walters EH, Barnsley K. Tobacco-free generation legislation. *Medical Journal of Australia* 2015;202(10):509-10.
79. The Lancet Respiratory M. How do you solve a problem like tobacco? *The Lancet Respiratory Medicine* 2015;3(4):257.
80. Oh DL, Heck JE, Dresler C, et al. Determinants of smoking initiation among women in five European countries: a cross-sectional survey. *BMC Public Health* 2010;10:74.
81. Pezzuti T, Pirouz D, Pechmann C. The effects of advertising models for age-restricted products and self-concept discrepancy on advertising outcomes among young adolescents. *Journal of Consumer Psychology* 2015;25(3):519-29.
82. Ball J, Waa A, Tautolo E-S, et al. *Future Directions to Achieve Smokefree 2025? Stakeholder perceptions of the smokefree 2025 goal and selected 'game-changer' policies for achieving it*. Public Health Monograph Series 2016: 1, 2016. Available at: <https://aspire2025.files.wordpress.com/2016/04/aspire-future-directions-report-16.pdf> (accessed 01/08/17)
83. Mariner DC, Ashley M, Shepperd CJ, et al. Mouth level smoke exposure using analysis of filters from smoked cigarettes: a study of eight countries. *Regulatory Toxicology and Pharmacology* 2011;61(3 Suppl):S39-50.
84. Fraser T, Kira A. Perspectives of key stakeholders and smokers on a very low nicotine content cigarette-only policy: qualitative study. *New Zealand Medical Journal* 2017;130(1456)
85. Li J, Newcombe R, Walton D. Responses towards additional tobacco control measures: Data from a population-based survey of New Zealand adults. *New Zealand Medical Journal* 2016;129(1428):87-92.
86. Wilson N, Weerasekera D, Peace J, et al. Smokers have varying misperceptions about the harmfulness of menthol cigarettes: national survey data. *Australian and New Zealand Journal of Public Health* 2011;35(4):364-7. [published Online First: 2011/08/03]
87. Huang LL, Baker HM, Meernik C, et al. Impact of non-menthol flavours in tobacco products on perceptions and use among youth, young adults and adults: a systematic review. *Tobacco Control* 2016;0:1-11.
88. Samet JM, Pentz MA, Unger JB. Flavoured tobacco products and the public's health: lessons from the TPSAC menthol report. *Tobacco Control* 2016;25(Suppl 2):ii103-ii05.
89. World Health Organization. *Advisory note: banning menthol in tobacco products*. WHO Tobacco Control Papers, 2016. Available at: http://www.who.int/tobacco/publications/prod_regulation/menthol-advisory-note/en/ (accessed 01/08/17).
90. California Department of Public Health. Menthol and Tobacco Fact Sheet. In: California Department of Public Health CTCP, ed., 2016. Available at: <https://www.cdph.ca.gov/Programs/CCDC/DCDC/CTCB/CDPH%20Document%20Library/ResearchandEvaluation/FactsandFigures/ApprovedMentholFactSheetwithLetterhead91216.pdf> (accessed 01/08/17).
91. Brown J, DeAtley T, Welding K, et al. Tobacco industry response to menthol cigarette bans in Alberta and Nova Scotia, Canada. *Tobacco Control* 2016

-
92. Munafo M. Understanding the Role of Additives in Tobacco Products. *Nicotine and Tobacco Research* 2016;18(7):1545.
93. Soulakova JN, Danczak RR. Impact of Menthol Smoking on Nicotine Dependence for Diverse Racial/Ethnic Groups of Daily Smokers. *Healthcare (Basel)* 2017;5(1)
94. Kienhuis AS, Staal YC, Soeteman-Hernandez LG, et al. A test strategy for the assessment of additive attributed toxicity of tobacco products. *Food and Chemical Toxicology* 2016;94:93-102.
95. Ferreira CGM, Silveira D, Hatsukami DK, et al. The effect of tobacco additives on smoking initiation and maintenance. *Cadernos de Saúde Pública* 2015;31(2):223-25.
96. Edwards R, Wilson N, Thomson G, et al. Majority support by Māori and non-Māori smokers for many aspects of increased tobacco control regulation: National survey data. *New Zealand Medical Journal* 2009;122(1307): 115-18.
97. Benowitz N, L., Samet JM. The Threat of Menthol Cigarettes to U.S. Public Health. *New England Journal of Medicine* 2011;364(23):2179-81.
98. Scientific Committee on Emerging and Newly Identified Health Risks. *Addictiveness and Attractiveness of Tobacco Additives*. Brussels, Belgium: European Commission 2010. A report produced in 2010 by the SCENIHR (Scientific Committee on Emerging and Newly Identified Health Risks) of the European Commission. Available at: https://ec.europa.eu/health/scientific_committees/opinions_layman/tobacco/en/l-2/5.htm (accessed 01/08/17).
99. Lindson-Hawley N, Hartmann-Boyce J, Fanshawe TR, et al. Interventions to reduce harm from continued tobacco use. *Cochrane Database of Systematic Reviews* 2016;10:CD005231.
100. Benowitz NL, Henningfield JE. Reducing the nicotine content to make cigarettes less addictive. *Tobacco Control* 2013;22 Suppl 1:i14-7.
101. Donny EC, Walker N, Hatsukami D, et al. Reducing the nicotine content of combusted tobacco products sold in New Zealand. *Tobacco Control* 2016
102. Donny EC, Denlinger RL, Tidey JW, et al. Randomized Trial of Reduced-Nicotine Standards for Cigarettes. *The New England Journal of Medicine* 2015;373(14):1340-9.
103. Hatsukami DK, Kotlyar M, Hertsgaard LA, et al. Reduced nicotine content cigarettes: effects on toxicant exposure, dependence and cessation. *Addiction* 2010;105(2): 343-55.
104. Hatsukami DK, Luo X, Dick L, et al. Reduced nicotine content cigarettes and use of alternative nicotine products: exploratory trial. *Addiction* 2017;112(1):156-67.
105. Walker N, Howe C, Bullen C, et al. The combined effect of very low nicotine content cigarettes, used as an adjunct to usual Quitline care (nicotine replacement therapy and behavioural support), on smoking cessation: a randomized controlled trial. *Addiction* 2012;107(10):1857-67.
106. Hammond D, O'Connor RJ. Reduced nicotine cigarettes: smoking behavior and biomarkers of exposure among smokers not intending to quit. *Cancer Epidemiology Biomarkers & Prevention* 2014;23(10):2032-40.
107. World Health Organization. *Advisory note: Global Nicotine Reduction Strategy*. In: WHO Study Group on Tobacco Regulation, ed., 2015. Available at: http://www.who.int/tobacco/publications/prod_regulation/nicotine-reduction/en/ (accessed 01/08/17).
108. Benowitz NL, Donny EC, Hatsukami DK. Reduced nicotine content cigarettes, e-cigarettes and the cigarette end game. *Addiction* 2017;112(1):6-7.
109. Kozlowski LT. Prospects for a nicotine-reduction strategy in the cigarette endgame: alternative tobacco harm reduction scenarios. *International Journal of Drug Policy* 2015;26(6):543-47.
110. Kozlowski LT. Let actual markets help assess the worth of optional very-low-nicotine cigarettes before deciding on mandatory regulations. *Addiction* 2016
111. Kozlowski LT. Cigarette prohibition and the need for more prior testing of the WHO TobReg's global nicotine-reduction strategy. *Tobacco Control* 2016:tobaccocontrol-2016-052995.
112. Hatsukami DK, Perkins KA, Lesage MG, et al. Nicotine reduction revisited: science and future directions. *Tobacco Control* 2010;19(5):e1-10.
113. Walker N, Howe C, Bullen C, et al. The combined effect of very low nicotine content cigarettes, used as an adjunct to usual Quitline care (nicotine replacement therapy and behavioural support), on smoking cessation: a randomized controlled trial. *Addiction* 2012;107(10):1857-67.
114. van der Deen F, Pearson AL, Wilson N. The effectiveness of phasing down the maximum permitted level of nicotine in cigarettes for smoking cessation – Consideration of parameters for health economic modeling. Internal Technical Report for BODE3. Wellington: University of Otago, 2013.
115. Edward R, Wilson N, Weerasekera D, Peace J, Thomson G, Young D, Gifford H, Newcombe R. *Occasional Report: Attitudes towards the tobacco industry and support for tobacco regulation in New Zealand: National survey data*. Wellington, Department of Public Health, University of Otago, Wellington: 2010. Available at: https://www.researchgate.net/publication/266447327_Occasional_Report_Attitudes_towards_the_tobacco_industry_and_support_for_tobacco_regulation_in_New_Zealand_National_survey_data (accessed 01/08/17).
116. Grana R, Benowitz N, Glantz SA. E-cigarettes: A scientific review. *Circulation* 2014;129(19):1972-86.
117. Hajek P, Etter JF, Benowitz N, et al. Electronic cigarettes: review of use, content, safety, effects on smokers and potential for harm and benefit. *Addiction* 2014;109(11):1801-10.
118. Hartmann-Boyce J, McRobbie H, Bullen C, et al. Electronic cigarettes for smoking cessation. *The Cochrane Library* 2016.
119. Kalkhoran S, Glantz SA. E-cigarettes and smoking cessation in real-world and clinical settings: a systematic review and meta-analysis. *The Lancet Respiratory Medicine* 2016;4(2):116-28.
120. Public Health Law Center and Public Health and Tobacco Policy Center. *U.S. E-Cigarette Regulation: A 50-State Review* 2016. Tobacco Control Legal Consortium. Available at: <http://www.publichealthlawcenter.org/sites/default/files/E-Cigarette-Legal-Landscape-50-State-Review-December-2016.pdf> (accessed 01/08/17).

121. Tremblay MC, Pluye P, Gore G, et al. Regulation profiles of e-cigarettes in the United States: a critical review with qualitative synthesis. *BMC Medicine* 2015;13(1):130.
122. Public Health England. *E-cigarettes: a new foundation for evidence-based policy and practice*, 2015. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/454517/Ecigarettes_a_firm_foundation_for_evidence_based_policy_and_practice.pdf (accessed 01/08/17).
123. Royal College of Physicians. *Nicotine without smoke: Tobacco harm reduction*. London: Royal College of Physicians, 2016. Available at: <https://www.rcplondon.ac.uk/projects/outputs/nicotine-without-smoke-tobacco-harm-reduction-0> (accessed 01/08/17).
124. Ayers JW, Althouse BM, Allem JP, et al. Revisiting the Rise of Electronic Nicotine Delivery Systems Using Search Query Surveillance. *American Journal of Preventive Medicine* 2016;50(6):e173-81.
125. Bhatnagar A, Whitsel LP, Ribisl KM, et al. Electronic Cigarettes: a Policy Statement from the American Heart Association. *Circulation* 2014;130(16):1418-36.
126. West R, Shahab L, Brown J. Estimating the Population Impact of e-cigarettes on smoking cessation in England. *Addiction* 2016;111
127. Chen J, Bullen C, Dirks K. A Comparative Health Risk Assessment of Electronic Cigarettes and Conventional Cigarettes. *International Journal of Environmental Research and Public Health* 2017;14(4):382.
128. Levy DT, Borland R, Villanti AC, et al. The Application of a Decision-Theoretic Model to Estimate the Public Health Impact of Vaporized Nicotine Product Initiation in the United States. *Nicotine & Tobacco Research* 2017;19(2):149-59.
129. Adkison SE, O'Connor RJ, Bansal-Travers M, et al. Electronic nicotine delivery systems: International Tobacco Control Four-Country Survey. *American Journal of Preventive Medicine* 2013;44(3):207-15.
130. Fraser D, Weier M, Keane H, et al. Vapers' perspectives on electronic cigarette regulation in Australia. *International Journal of Drug Policy* 2015;26(6):589-94.
131. Hitchman SC, Brose LS, Brown J, et al. Associations Between E-Cigarette Type, Frequency of Use, and Quitting Smoking: Findings From a Longitudinal Online Panel Survey in Great Britain. *Nicotine & Tobacco Research* 2015;17(10):1187-94.
132. Printz C. UCSF study: E-cigarettes are not helping smokers quit. *Cancer* 2016;122(11):1636-37.
133. Shahab L, Goniewicz ML, Blount BC, et al. Nicotine, Carcinogen, and Toxin Exposure in Long-Term E-Cigarette and Nicotine Replacement Therapy Users: A Cross-sectional Study. *Annals of Internal Medicine* 2017;166(6):390-400.
134. Cahn Z, Siegel M. Electronic cigarettes as a harm reduction strategy for tobacco control: a step forward or a repeat of past mistakes? *Journal of Public Health Policy* 2011;32(1):16-31.
135. Gourdet CK, Chriqui JF, Chaloupka FJ. A baseline understanding of state laws governing e-cigarettes. *Tobacco Control* 2014;23 Suppl 3:iii37-40.
136. Rahman MA, Hann N, Wilson A, et al. Electronic cigarettes: Patterns of use, health effects, use in smoking cessation and regulatory issues. *Tobacco Induced Diseases* 2014;12(1)
137. Wagener TL, Meier E, Tackett AP, et al. A proposed collaboration against big Tobacco: Common Ground Between the Vaping and Public Health Community in the United States. *Nicotine & Tobacco Research* 2015;18(5):730-6.
138. Zeller M, Hatsukami D, et al. The strategic dialogue on tobacco harm reduction: a vision and blueprint for action in the US. *Tobacco Control* 2009;18(4):324-32.
139. Bullen C, Howe C, Laugesen M, et al. Electronic cigarettes for smoking cessation: a randomised controlled trial. *The Lancet* 2013;382(9905):1629-37.
140. Edwards R, Bullen C, Walker N, et al. *E-cigarettes and their potential contribution to achieving the Smokefree 2025 goal*, 2016. Background paper prepared for the National Smokefree Working Group, August 18 2016. Available at <http://www.otago.ac.nz/wellington/otago644048.pdf> (accessed 01/08/17).
141. Wilson N, Borland R, Weerasekera D, et al. Smoker interest in lower harm alternatives to cigarettes: National survey data. *Nicotine & Tobacco Research* 2009;11(12):1467-73.
142. McNeill A, Brose LS, Calder R, et al. *E-cigarettes: an evidence update*. A report commissioned by Public Health England, 2015. Available at: <https://www.gov.uk/government/publications/e-cigarettes-an-evidence-update> (accessed 01/08/17).
143. Li J, Bullen C, Newcombe R, et al. The use and acceptability of electronic cigarettes among New Zealand smokers. *New Zealand Medical Journal* 2013;126(1375).
144. White J. Young people's use of electronic cigarettes and tobacco products other than cigarettes. In *Fact: Research Facts from the HPA*. Wellington, NZ: Health Promotion Agency, 2013. Available at: <http://www.hpa.org.nz/research-library/research-publications/young-people%E2%80%99s-use-of-electronic-cigarettes-and-tobacco-products-other-than-cigarettes-in-fact> (accessed 01/08/17).
145. Health Promotion Agency. Data Release: Preliminary Analysis on 2016 Health and Lifestyle Survey Electronic Cigarette Questions, 2017. Available at http://www.hpa.org.nz/sites/default/files/2016%20HLS%20E-cig%20preliminary%20analysis%20for%20MoH_O.pdf (accessed 01/08/17)
146. Ministry of Health. Consultation on Electronic Cigarettes: Analysis of submissions, 2017. Available at <http://www.health.govt.nz/publication/consultation-electronic-cigarettes-analysis-submissions> (accessed 01/08/17).
147. Bala MM, Strzeszynski L, Topor-Madry R, et al. Mass media interventions for smoking cessation in adults. *Cochrane Database of Systematic Reviews* 2013(6):CD004704.
148. Brinn MP, Carson KV, Esterman AJ, et al. Mass media interventions for preventing smoking in young people. *Cochrane Database of Systematic Reviews* 2010(11).
149. Durkin S, Brennan E, Wakefield M. Mass media campaigns to promote smoking cessation among adults: an integrative review. *Tobacco Control* 2012;21(2):127-38.
150. Guillaumier A, Bonevski B, Paul C. Anti-tobacco mass media and socially disadvantaged groups: a systematic and methodological review. *Drug and Alcohol Review* 2012;31(5):698-708.

-
151. Atusingwise E, Lewis S, Langley T. Economic evaluations of tobacco control mass media campaigns: a systematic review. *Tobacco Control* 2015;24(4):320-7.
152. Evans-Polce RJ, Castaldelli-Maia JM, Schomerus G, et al. The downside of tobacco control? Smoking and self-stigma: A systematic review. *Social Science & Medicine* 2015;145:26-34.
153. Voigt K. "If you smoke, you stink." Denormalisation strategies for the improvement of health-related behaviours: the case of tobacco. *Ethics in Public Health and Health Policy* 2013:47-61.
154. Malone RE, Grundy Q, Bero LA. Tobacco industry denormalisation as a tobacco control intervention: a review. *Tobacco Control* 2012;21(2):162-70.
155. Lavack AM. Ads That Attack the Tobacco Industry: A Review and Recommendations. *Journal of Nonprofit & Public Sector Marketing* 2004;12:51-71.
156. van der Deen F, Pearson AL, Wilson N. Intensive nationwide anti-tobacco mass media campaigns - Consideration of parameters for health economic modelling. Internal Technical Report for BODE3 (unpublished draft), 2016.
157. Edwards R, Hoek J, van der Deen F. Smokefree 2025—use of mass media in New Zealand lacks alignment with evidence and needs. *Australian and New Zealand Journal of Public Health* 2014;38(4):395-96.
158. Moore K, Borland R, Yong H-H, et al. Support for tobacco control interventions: do country of origin and socioeconomic status make a difference? *International Journal of Public Health* 2012;57(5):777-86.
159. Edwards R, Wilson N, Peace J, et al. Support for a tobacco endgame and increased regulation of the tobacco industry among New Zealand smokers: results from a National Survey. *Tobacco Control* 2012 [published Online First: 2012/04/27].
160. Gendall P, Hoek J, Edwards R. What does the 2025 goal mean to the New Zealand public? *New Zealand Medical Journal* 2014;127:1406.
161. Jaine R, Healey B, Edwards R, et al. How adolescents view the tobacco endgame and tobacco control measures: Trends and associations in support among 14–15 year olds. *Tobacco Control* 2015;24(5):449-54.
162. Durkin S, Wakefield M. Commentary on Sims et al. (2014) and Langley et al. (2014): Mass media campaigns require adequate and sustained funding to change population health behaviours. *Addiction* 2014;109(1003–1004).
163. Malone RE. Tobacco endgames: what they are and are not, issues for tobacco control strategic planning and a possible US scenario. *Tobacco Control* 2013;22(suppl 1):i42-i44.
164. Niederdeppe J, Kuang X, Crock B, et al. Media campaigns to promote smoking cessation among socioeconomically disadvantaged populations: what do we know, what do we need to learn, and what should we do now? *Social Science & Medicine* 2008;67(9):1343-55.
165. Centers for Disease Control and Prevention. *Preventing Tobacco Use Among Youth and Young Adults: US Surgeon-General's Report*. Summary Booklet, 2012. Available at: <https://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/index.html> (accessed 01/08/17).
166. Omana-Cepeda C, Jane-Salas E, Estrugo-Devesa A, et al. Effectiveness of dentist's intervention in smoking cessation: A review. *Journal of Clinical and Experimental Dentistry* 2016;8(1):e78-83.
167. Stead LF, Perera R, Bullen C, et al. Nicotine replacement therapy for smoking cessation. *Cochrane Database of Systematic Reviews* 2012(11):CD000146.
168. Hajek P, Stead LF, West R, et al. Relapse prevention interventions for smoking cessation. *Cochrane Database Syst Rev* 2013(8).
169. Cahill K, Lancaster T. Workplace interventions for smoking cessation. *Cochrane Database of Systematic Reviews* 2014(2):CD003440.
170. Cahill K, Perera R. Quit and Win contests for smoking cessation. *Cochrane Database of Systematic Reviews* 2008(4).
171. Johnston V, Westphal DW, Glover M, et al. Reducing smoking among indigenous populations: new evidence from a review of trials. *Nicotine & Tobacco Research* 2013.
172. Whittaker R, McRobbie H, Bullen C, et al. Mobile phone-based interventions for smoking cessation. *Cochrane Database of Systematic Reviews* 2012(11)
173. Pierce JP, Cummins SE, White MM, et al. Quitlines and nicotine replacement for smoking cessation: do we need to change policy? *Annual Review of Public Health* 2012;33:341-56.
174. Carson KV, Brinn MP, Peters M, et al. Interventions for smoking cessation in Indigenous populations. *Cochrane Database of Systematic Reviews* 2012(1).
175. Walker N, Howe C, Bullen C, et al. Does improved access and greater choice of nicotine replacement therapy affect smoking cessation success? Findings from a randomized controlled trial. *Addiction* 2011;106(6):1176-85.
176. Walker N, Howe C, Glover M, et al. Cytisine versus nicotine for smoking cessation. *New England Journal of Medicine* 2014;371(25):2353-62.
177. Gould GS, Cadet-James Y, Clough AR. Getting over the shock: Taking action on Indigenous maternal smoking. *Australian Journal of Primary Health* 2016;22(4):276-82.
178. Fernandez C, Wilson D. Maori women's views on smoking cessation initiatives. *Nursing Praxis in New Zealand* 2008;24(2):27-40.
179. Caldwell BO, Crane J. Combination nicotine metered dose inhaler and nicotine patch for smoking cessation: a randomized controlled trial. *Nicotine & Tobacco Research* 2016;18(10):1944-51.
180. Barnoya J, Navas-acien A. *Protecting the world from secondhand tobacco smoke exposure: Where do we stand and where do we go from here?* [Review]. 2013 [789-804]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3601911/pdf/nts200.pdf> (accessed 28 July 2017).
181. Bartholomew KS. Policy options to promote smokefree environments for children and adolescents. *Current Problems in Pediatric and Adolescent Health Care* 2015;45(6):146-81.
182. Cancer Society Auckland. *Smokefree Outdoor Dining: A review of current evidence and lessons from overseas*, Cancer Society of New Zealand, 2014.

-
183. Lawn S, Champion J. Achieving smoke-free mental health services: Lessons from the past decade of implementation research. *International Journal of Environmental Research and Public Health* 2013;10(9):4224-44.
184. Lupton JR, Townsend JL. A systematic review and meta-analysis of the acceptability and effectiveness of university smoke-free policies. *Journal of American College Health* 2015;63(4):238-47.
185. Kilgore EA, Mandel-Ricci J, Johns M, et al. Making it harder to smoke and easier to quit: The effect of 10 years of tobacco control in New York city. *American Journal of Public Health* 2014;104(6):e5-e8.
186. Wong G, Pawson R, Owen L. Policy guidance on threats to legislative interventions in public health: a realist synthesis. *BMC Public Health* 2011;11:222.
187. Kabir Z, Alpert HR, Goodman PG, et al. Effect of smoke-free home and workplace policies on second-hand smoke exposure levels in children: an evidence summary. *Pediatric Health* 2010;4(4):391-403.
188. Azagba S. Effect of smoke-free patio policy of restaurants and bars on exposure to second-hand smoke. *Preventive Medicine* 2015;76:74-81.
189. Azagba S, Kennedy RD, Baskerville NB. Smoke-free school policy and exposure to secondhand smoke: a quasi-experimental analysis. *Nicotine & Tobacco Research* 2016;18(2):170-76.
190. Elton-Marshall T, Leatherdale ST, Driezen P, et al. Do provincial policies banning smoking in cars when children are present impact youth exposure to secondhand smoke in cars? *Preventive Medicine* 2015;78:59-64.
191. Johns M, Farley SM, Rajulu DT, et al. Smoke-free parks and beaches: an interrupted time-series study of behavioural impact in New York City. *Tobacco Control* 2015;24(5):497-500.
192. Nguyen HV. Do smoke-free car laws work? Evidence from a quasi-experiment. *Journal of Health Economics* 2013;32(1):138-48.
193. Zablocki RW, Edland SD, Myers MG, et al. Smoking ban policies and their influence on smoking behaviors among current California smokers: a population-based study. *Preventive Medicine* 2014;59:73-8.
194. Thomson G, Martin J, Gifford H, et al. *Expanding smokefree outdoor areas in Wellington City: Rationale and options*. University of Otago, 2016.
195. Thomson G, Wilson N. Public attitudes to laws for smoke-free private vehicles: a brief review. *Tobacco Control* 2009;18(4):256-61.
196. Thomson G, Wilson N, Collins D, et al. Attitudes to smoke-free outdoor regulations in the USA and Canada: A review of 89 surveys. *Tobacco Control* 2016;25(5):506-16.
197. Thomson G, Wilson N, Edwards R. At the frontier of tobacco control: a brief review of public attitudes toward smoke-free outdoor places. *Nicotine & Tobacco Research* 2009:ntp046.
198. Wilson N, Blakely T, Edwards R, et al. Support by New Zealand smokers for new types of smokefree areas: National survey data. *New Zealand Medical Journal* 2009;122(1303):80-89.
199. Wilson N, Weerasekera D, Blakely T, et al. What is behind smoker support for new smokefree areas? National survey data. *BMC Public Health* 2010;10.
200. Marsh L, Robertson LA, Cameron C. Attitudes towards smokefree campus policies in New Zealand. *New Zealand Medical Journal* 2014;127(1393):87-98.
201. Robertson LA, Marsh L. Smoke-free policies in New Zealand public tertiary education institutions. *Health Educ Res* 2015;30(2):347-58.
202. Lanumata T, Thomson G, Wilson N. Pacific solutions to reducing smoking around Pacific children in New Zealand: a qualitative study of Pacific policymaker views. *New Zealand Medical Journal* 2010;123(1308).
203. Thomson G, Wilson N, Howden-Chapman P. The use and misuse of health research by parliamentary politicians during the development of a national smokefree law. *Australia and New Zealand Health Policy* 2007;4 (1) (no pagination)(24).
204. Rouch G, Thomson G, Wilson N, et al. Public, private and personal: Qualitative research on policymakers' opinions on smokefree interventions to protect children in 'private' spaces. *BMC Public Health* 2010;10.
205. Freeman B, Chapman S, Storey P. Banning smoking in cars carrying children: an analytical history of a public health advocacy campaign. *Aust N Z J Public Health* 2008;32(1):60-5.
206. Tapp D, Thomson G. Smokefree cars in New Zealand: rapid research among stakeholders on attitudes and future directions. *New Zealand Medical Journal* 2009;122(1303).
207. DiFranza JR. Which interventions against the sale of tobacco to minors can be expected to reduce smoking? *Tobacco Control* 2012;21(4):436-42.
208. Winickoff JP, McMillen R, Tanski S, et al. Public support for raising the age of sale for tobacco to 21 in the United States. *Tobacco Control* 2016;25(3):284-88.
209. Winickoff JP, Hartman L, Chen ML, et al. Retail impact of raising tobacco sales age to 21 years. *American Journal of Public Health* 2014;104(11):e18-e21.
210. Farrelly MC, Loomis BR, Han B, et al. A comprehensive examination of the influence of state tobacco control programs and policies on youth smoking. *American Journal of Public Health* 2013;103(3):549-55.
211. Gendall P, Hoek J, Marsh L, et al. Youth tobacco access: trends and policy implications. *BMJ Open* 2014;4(4):e004631.
212. Ahmad S, Billimek J. Limiting youth access to tobacco: Comparing the long-term health impacts of increasing cigarette excise taxes and raising the legal smoking age to 21 in the United States. *Health Policy* 2007;80(3):378-91.
213. Levy DT, Blackman K, Currie LM, et al. SimSmokeFinn: how far can tobacco control policies move Finland toward tobacco-free 2040 goals? *Scandinavian Journal of Public Health* 2012:544-52.
214. Nagelhout GE, Levy DT, Blackman K, et al. The effect of tobacco control policies on smoking prevalence and smoking-attributable deaths. Findings from the Netherlands SimSmoke Tobacco Control Policy Simulation Model. *Addiction* 2012;107(2):407-16.
215. Morain SR, Winickoff JP, Mello MM. Have tobacco 21 laws come of age? *New England Journal of Medicine* 2016;374(17):1601-04.

-
216. Pierce JP, White VM, Emery SL. What public health strategies are needed to reduce smoking initiation? *Tobacco Control* 2012;21(2):258-64.
217. Institute of Medicine, Board on Population Health and Public Health Practice, Committee on the Public Health Implications of Raising the Minimum Age for Purchasing Tobacco Products. *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products*, National Academies Press, 2015.
218. Gendall P, Hoek J, Maubach N, Edwards R. Public support for more action on smoking. *New Zealand Medical Journal*. 2013 May 31;126(1375):85-94.
219. van der Deen, FS. *Moving beyond just tried and true, something bold, something new!? Using simulation modelling to estimate the future smoking prevalence, health, and costs impacts of tobacco endgame strategies*. 2017. (Unpublished doctoral thesis). University of Otago, Wellington, New Zealand.
220. New Zealand Parliament. Government Response to the Report of the Māori Affairs Committee on its Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori (Final Response). Wellington: New Zealand Parliament. 2011.
221. Wilson N, Weerasekera D, Kahler CW, et al. Hazardous patterns of alcohol use are relatively common in smokers: ITC Project (New Zealand). *New Zealand Medical Journal* 2012;125(1348):34-41.
222. Robertson, L., et al., NZ tobacco control experts' views towards policies to reduce tobacco availability. *New Zealand Medical Journal*. 2nd June 2017, Volume 130 Number 1456.
223. Beard E, West R, Michie S, et al. Association between electronic cigarette use and changes in quit attempts, success of quit attempts, use of smoking cessation pharmacotherapy, and use of stop smoking services in England: time series analysis of population trends. *British Medical Journal* 2016;354:i4645.
224. Department of Corrections. 2012. *Smoke-free Prisons Evaluation Summary Report*. Wellington: Department of Corrections. August 2012.
225. Li J, Newcombe R. (2013). Acceptability of extended smokefree areas and smokefree cars. *In Fact*. Wellington: Health Promotion Agency Research and Evaluation Unit. Available at: <http://www.hpa.org.nz/sites/default/files/Acceptability%20of%20extended%20sf%20areas%20and%20sf%20cars.pdf> (accessed 25/07/17).
226. Li J, Nelson S, Newcombe R, Walton D. Smoking in cars: knowledge, behaviours and support for smokefree cars legislation among New Zealand smokers and recent quitters. *New Zealand Medical Journal*. 2016;129:1439.

