

Vaping Works

International Best Practices:

United Kingdom, New Zealand, France and Canada

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Introduction

The Property Rights Alliance congratulates Christopher Snowden (Institute of Economic Affairs, the UK), Louis Houlbrooke (New Zealand Taxpayers' Union, New Zealand), Patrick Coquart (IREF, France), and Prof. Ian Irvine (Concordia University, Canada) on the contributed case studies on vaping from their respective countries to the white paper, "Vaping Works. International Best Practices: United Kingdom, New Zealand, France and Canada." These case studies analyze the policies implemented by governments on electronic cigarettes and combustible tobacco products for smoking cessation efforts in the UK, New Zealand, France and Canada.

There is currently a global debate about the efficacy of vaping in reducing smoking prevalence. While the debate is ongoing, there are imminent events at which vaping will be discussed, including the WHO's Framework Convention on Tobacco Control, meeting in November (COPg). This paper explores the experience of four countries – France, the UK, New Zealand, and Canada – who have chosen to build upon their existing tough regulation of combustible tobacco products by adopting a harm reduction approach towards electronic cigarettes.

The case studies indicate there is clear and comprehensive evidence indicating electronic cigarettes are "95 percent safer" than combustible tobacco products and are "twice as effective as traditional nicotine replacement therapies." A supportive approach to electronic cigarettes like the absence of taxes and encouragement from public health officials to use vaping as quit aids leads to a significant decrease in smoking rates. Countries that embrace vaping, such as France, the United Kingdom, New Zealand, and Canada have witnessed a decrease in smoking rates that is twice as fast as the global average. Although the regulations in these countries can always improve, the effects of this flexible approach to date are very positive and should be mirrored.

In the United Kingdom, the government's liberal approach to vaping has led to a significant reduction in smoking rates. More precisely, between 2012 and 2016, the smoking rate fell from 20.4 percent to 16.1 percent. This drop can be attributed to the extensive evidence supporting vaping by the government agency, Public Health England (PHE), the embrace of harm reduction by public health officials, as well as no taxation and limited prohibition on public usage for electronic cigarettes. The UK dropped 25% in its smoking rate since 2012, unlike the European Union that only decreased one percentage point between 2014 and 2020. In addition, the percentage of daily smokers decreased from 17.90% to 15.50% while e-cigarette usage increased from 4.50% to 5.50% from 2015 to 2019 (see Figure 1). As a result, the UK now has a "lower smoking rate than any EU country apart from Sweden." Furthermore, as Snowdon notes, the UK shines as a bright example of the success of vaping policies. Although positive, the UK should improve the 20 mg/ml limit on nicotine products and decrease advertising restrictions to achieve more tobacco cessation.

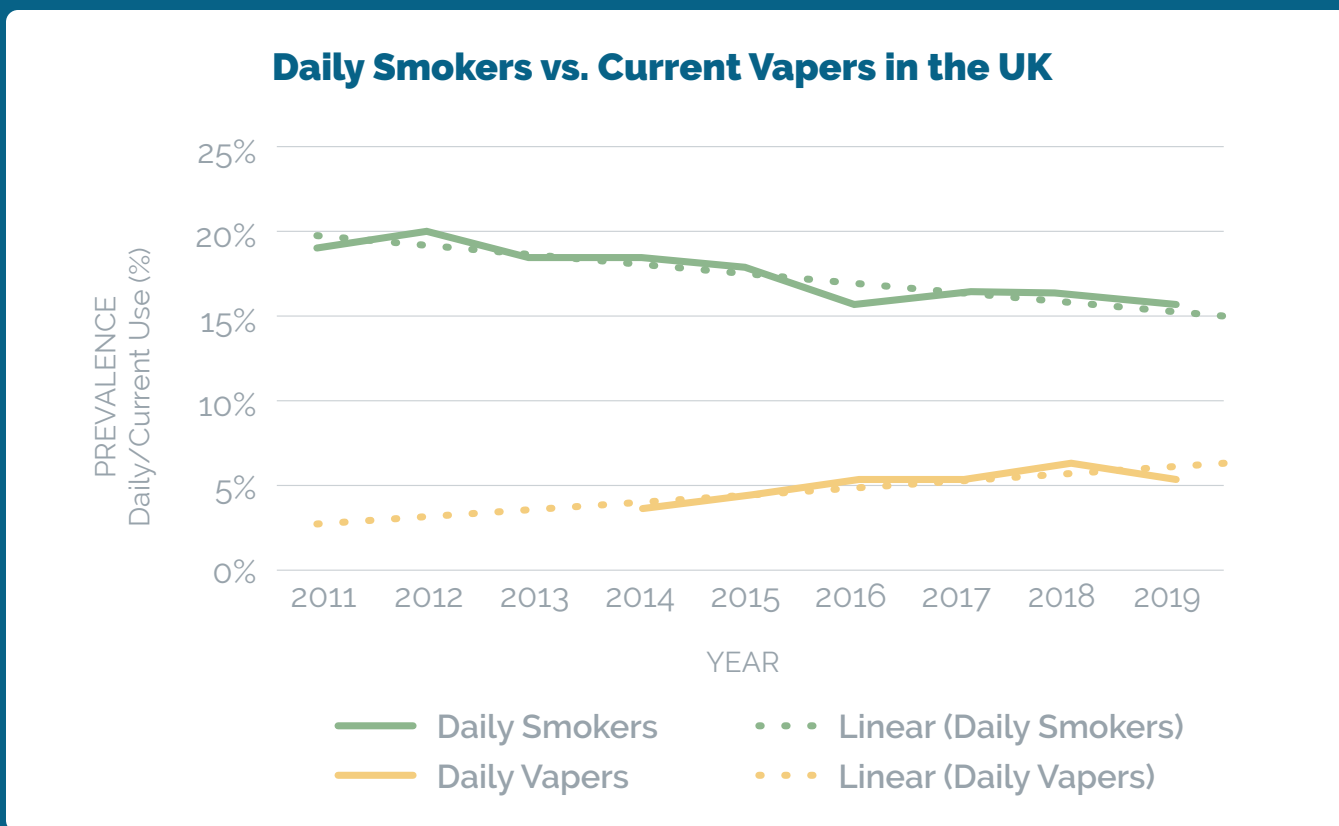


Figure 1. Daily Smokers vs. Current Vapers in the United Kingdom^{1,2}

- Office for National Statistics. Adult smoking habits in England. (2020) Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/adultsmokinghabitsinengland>
- Office for National Statistics. E-Cigarette use in England. (2020). Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/ecigaretteuseinengland>

In New Zealand, despite the major influence of the WHO's Framework Convention on Tobacco Control (FCTC), this developed country has demonstrated positive progress towards achieving the nation's SmokeFree 2025 goal. Although New Zealand has the highest tobacco excise as a proportion of income in the OECD resulting in cigarette packets costing \$21 USD and 11.5% of these products are linked to illicit trade, the legalization and unregulated market of vaping products caused a significant decline in smoking rates. Stalled regulation on vaping products by the government as well as the elimination of annual excise tax hikes in 2020 resulted in smoking rates dropping while vaping usage increased. Specifically, the smoking rate dropped from 12.0% in 2020 to 10.5% in 2021, while e-cigarettes usage increased 2.3%. Overall, daily tobacco usage dropped from 14.2% to 11.60% while daily vaping usage augmented from 0.09% to 3.50% from 2016 to 2020 (See Figure 2). These statistics are particularly important given the increase in vaping did not lead to augmented usage of this product for youth. Less than 1 percent of students in 2019 who never smoked reported daily use of e-cigarettes. Houlbrooke concludes that New Zealand's success in vaping should be linked to the delayed approach of the government rather than the prohibitionist methodology of the WHO's FCTC.

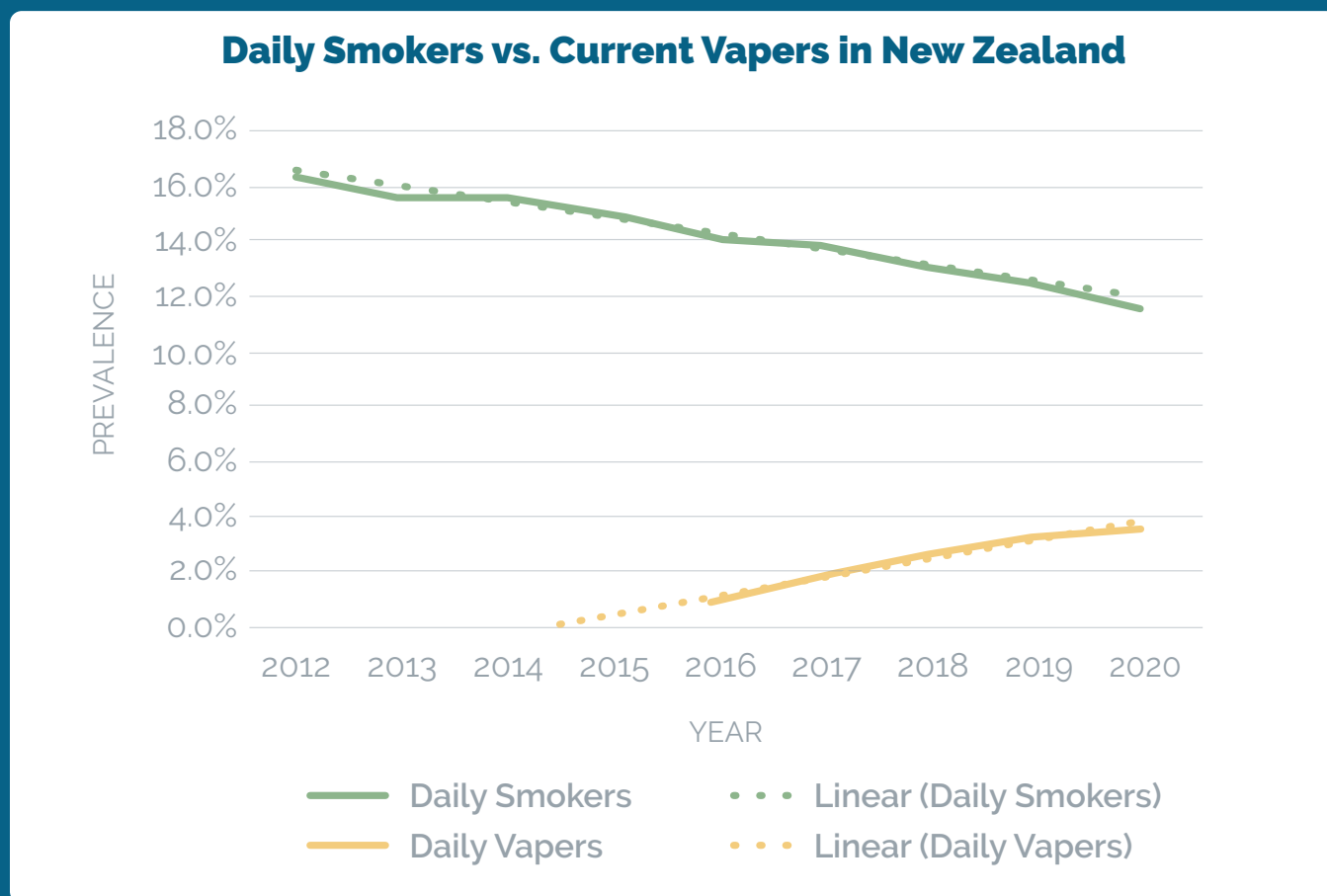


Figure 2. Daily Smoking vs. Daily Vaping in New Zealand³

3. New Zealand Ministry of Health. New Zealand Health Survey, November 2020. Available at: https://minhealthnz.shinyapps.io/nz-health-survey-2019-20-annual-data-explorer/_w_f43d1245/#!/

In France, although electronic cigarettes are subject to prohibitions in advertising, and usage in certain public places can result in penalties of up to 150 euros, smoking cessation efforts are encouraging given there are nearly 700,000 individuals that quit tobacco via e-cigarette usage. Since electronic cigarettes are not bound by additional taxes besides a VAT of 20% and health authorities recognize the safeness and efficacy of quit-aids, individuals are more inclined to purchase and use these alternative measures. 80.3% of vape-smokers reduced consumption by an average cut of 10.4 cigarettes per day. Not only are electronic cigarettes successful but they do not encourage tobacco usage given 0.01% of vapers have never smoked. Coquart notes it is true vaping usage has gradually increased 2.5% to 4.4% from 2016 to 2019; nevertheless, the role vaping plays in public health cannot be overlooked given daily smoker usage has decreased from 29.4% in 2016 to 24% in 2019 (See Figure 3). This statistic means that tobacco users are actively seeking to vape for smoking cessation in France.

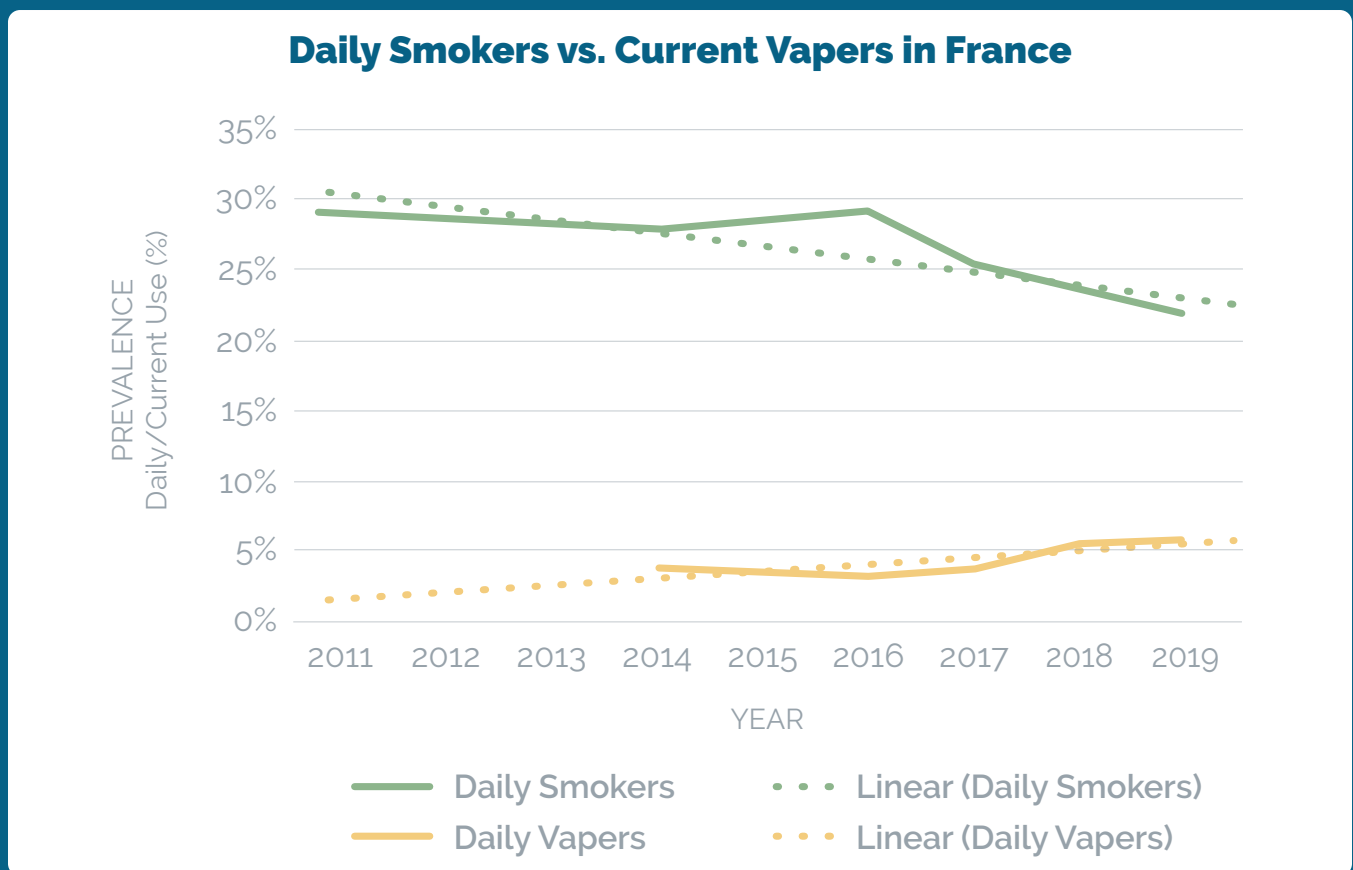


Figure 3. Daily Smoking vs. Daily Vaping Prevalence in France^{4,5,6,7,8}

4. Santé Publique France. Tobacco use among adults: a review of five years of the national tobacco control program, 2014-2019 (2020) Available at: <https://www.santepubliquefrance.fr/determinants-de-sante/tabac/documents/article/consommation-de-tabac-parmi-les-adultes-bilan-de-cinq-annees-de-programme-national-contre-le-tabagisme-2014-2019>
5. Santé Publique France. Decrease in the prevalence of daily smoking among adults: results of the Public Health France Barometer 2018 (2019). Available at: <https://www.santepubliquefrance.fr/docs/baisse-de-la-prevalence-du-tabagisme-quotidien-parmi-les-adultes-resultats-du-barometre-de-sante-publique-france-2018>

In Canada, despite the government's implementation of higher taxes on cigarettes, public-place smoking bans, menthol flavor prohibitions, and advertising restrictions, the growth of vaping sales in 2019 led to the largest decline in smoking for the past decade. Specifically, the introduction of Juul and Vuse in 2018 played a significant role in the Canadian market as the twelve-month cumulative cigarette shipments decreased 7.5 percent in 2019 compared to 1.5 percent *per annum* between 2011 and 2018. However, from late 2019 to the present, the decline in cigarette sales stagnated partly as a result of the EVALI scare that was caused by contaminated THC in cannabis and partly due to the COVID-19 epidemic. Likewise, with anxiety and smoking usage linked to the pandemic, Canada's smoking cessation decline flattened.

The role of electronic cigarettes and vaping should not be overlooked. Between 2013 to 2019, daily smokers decreased from 10.9% to 8.6% while vaping prevalence (past 30-day use) increased from 2% to 4.7% (See Figure 4). Most notably, statistics Canada noted that for 20 to 24-year-olds, smoking declined by 40% between 2019 and 2020. Recent federal policy to limit the concentration of nicotine in vaping products to 20 milligrams per milliliter is essentially an indirect tax on consumers to be forced to buy double the content to achieve satisfaction. Not to mention, given that 20% of Canada's cigarette market is illegal, this measure will increase illicit trade as consumers are driven to the black market to purchase higher, and even cheaper, nicotine concentrations. A planned excise tax of \$1 per 10 ml of liquid by the federal Department of Finance on vaping for 2022, as well as a flavor ban, will undoubtedly augment illicit trade. The decline in smoking rates among teens and young adults has been greatly abetted by the arrival of e-cigarettes in the marketplace, as these groups have replaced cigarettes with a lower risk product.

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6. Santé Publique France. Public health barometer France 2017. Use of electronic cigarettes, smoking and opinions of 18-75 year olds (2019). Available at: <https://www.santepubliquefrance.fr/determinants-de-sante/tabac/documents/enquetes-etudes/barometre-de-sante-publique-france-2017.-usage-de-la-cigarette-electronique-tabagisme-et-opinions-des-18-75-ans>
 7. Santé Publique France. Tobacco and e-cigarettes in France: levels of use according to the first results of the 2016 Health Barometer (2017). Available at: http://beh.santepubliquefrance.fr/beh/2017/12/2017_12_1.html
 8. Santé Publique France. The use of electronic cigarettes in France in 2014 (2015). Available at: https://www.santepubliquefrance.fr/content/download/119631/file/152093_1689.pdf

Daily Smokers vs. 30-day E-cigarette Use in Canada

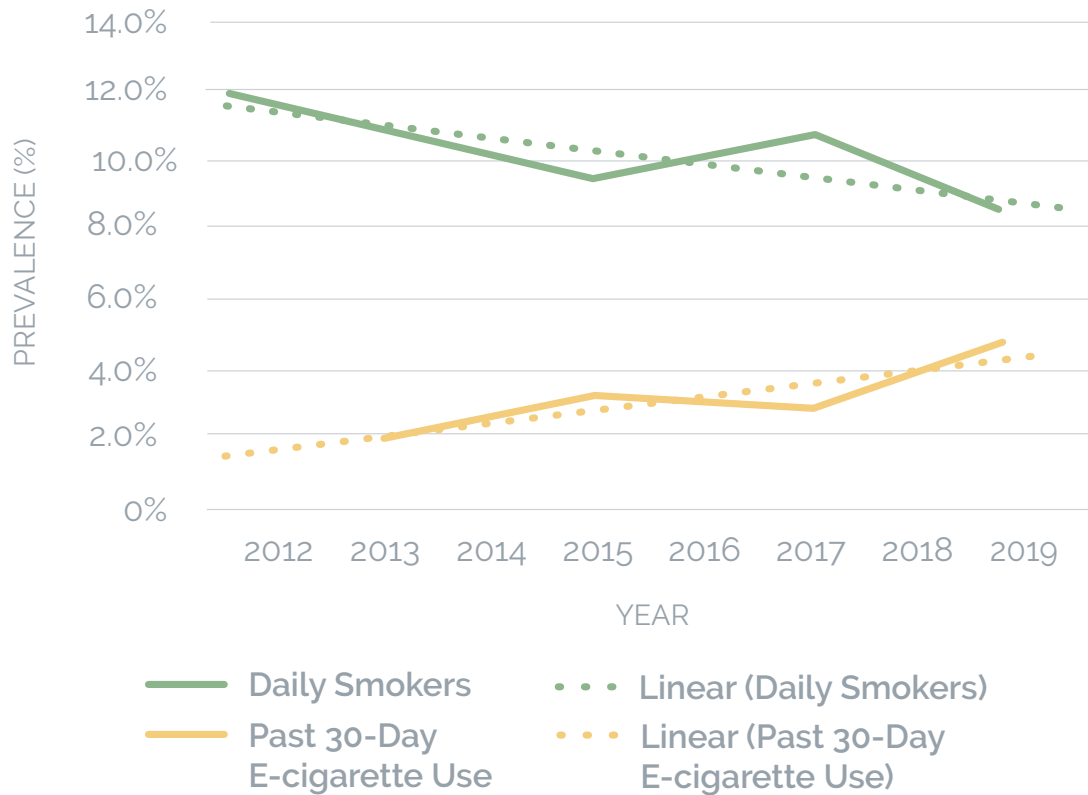


Figure 4. Daily Smoking vs. 30-day E-cigarette Use in Canada^{9,10,11,12,13,14}

9. Health Canada. Canadian Tobacco Use Monitoring Survey (CTUMS) 2012: supplementary tables. Available at: <https://www.canada.ca/en/health-canada/services/publications/healthy-living/canadian-tobacco-use-monitoring-survey-2012-supplementary-tables.html#t1>
10. Health Canada. Canadian Tobacco Alcohol and Drugs (CTADS): 2013 summary. Available at: <https://www.canada.ca/en/health-canada/services/canadian-tobacco-alcohol-drugs-survey/2013-summary.html>
11. Health Canada. Canadian Tobacco Alcohol and Drugs (CTADS): 2013 supplementary tables. Available at: <https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2013-supplementary-tables.html>
12. Health Canada. Canadian Tobacco Alcohol and Drugs (CTADS): 2015 supplementary tables. Available at: <https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2015-supplementary-tables.html>
13. Health Canada. Canadian Tobacco, Alcohol and Drugs Survey (CTADS): 2017 detailed tables. Available at: <https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2017-summary/2017-detailed-tables.html>
14. Health Canada. Canadian Tobacco and Nicotine Survey (CTNS): 2019 detailed tables. Available at: <https://www.canada.ca/en/health-canada/services/canadian-tobacco-nicotine-survey/2019-summary/2019-detailed-tables.html>

Overall, with the intentional support of vaping as a harm reduction method from France and the United Kingdom paired with the benefits of stalled government regulation on alternative products in New Zealand, as well as success of vaping in the Canadian market, the smoking cessation rates in these countries are twice as fast compared to the global average (See Figure 5).

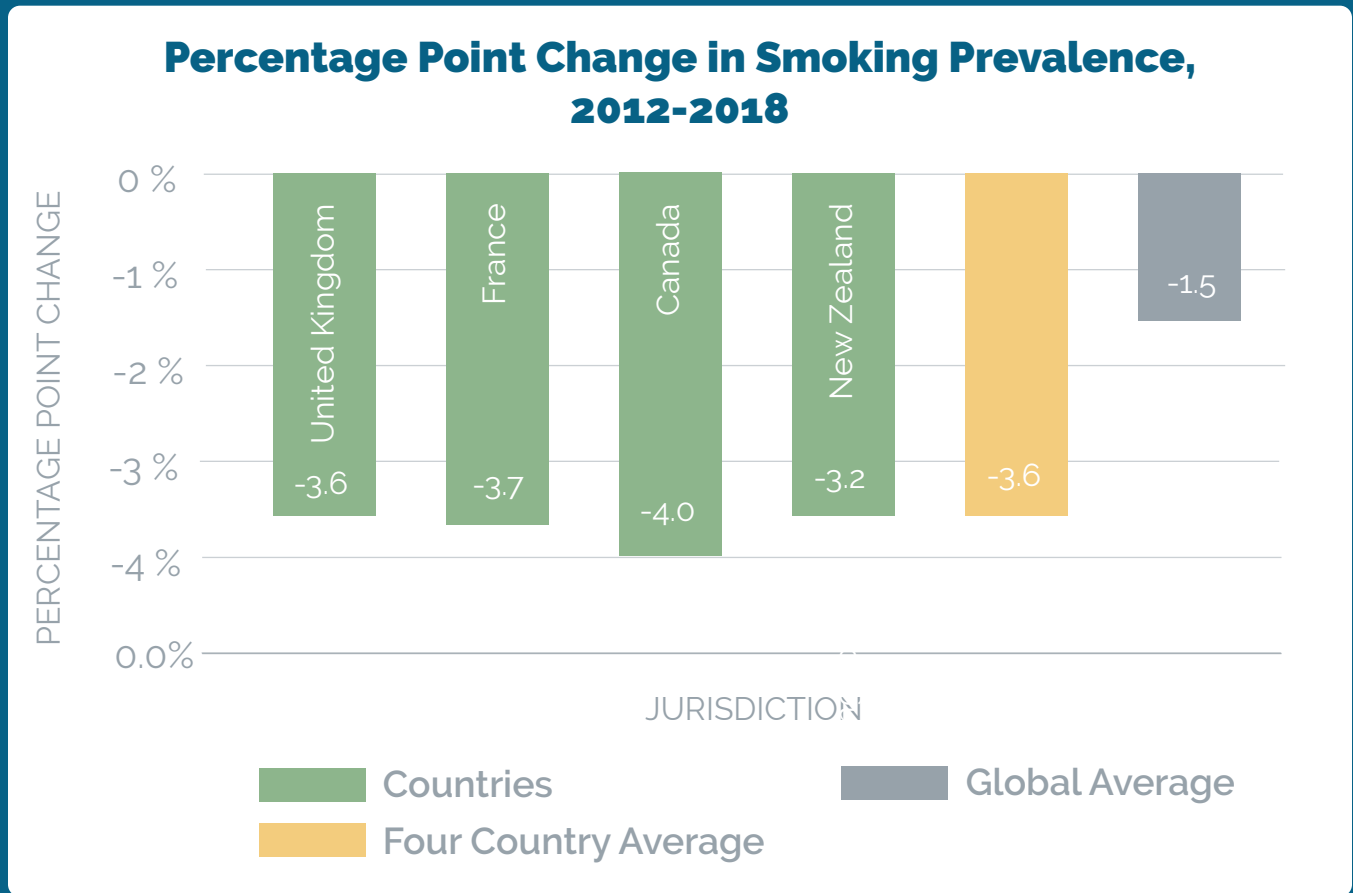


Figure 5. Percentage Point Change in Smoking Prevalence, 2012-2018^{15,16,17,18,19,20}

15. Office for National Statistics. Adult smoking habits in England. (2020) Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/adultsmokinghabitsinengland>
16. Santé Publique France. Tobacco use among adults: a review of five years of the national tobacco control program, 2014-2019 (2020) Available at: <https://www.santepubliquefrance.fr/determinants-de-sante/tabac/documents/article/consommation-de-tabac-parmi-les-adultes-bilan-de-cinq-annees-de-programme-national-contre-le-tabagisme-2014-2019>
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18. Health Canada. Canadian Tobacco and Nicotine Survey (CTNS): 2019 detailed tables. Available at <https://www.canada.ca/en/health-canada/services/canadian-tobacco-nicotine-survey/2019-summary/2019-detailed-tables.html>

It is significant to note that from 2012 to 2018, the Four Country Average of -3.6% change compares to the Global Average of -1.5%. It is clear and supported by extensive data that vaping plays a major role in smoking cessation. Other countries should welcome harm reduction via vaping. Likewise, they should question the orthodoxy of the WHO's FCTC. However, there is still room to improve especially regarding controls on vaping flavors, nicotine restrictions, public usage constraints, and tax hikes. With the COP9 approaching in November of 2021, France, the United Kingdom, New Zealand, and Canada should attest their success stories of harm reduction policies and suggest improvements on the FCTC to benefit global public health.

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19. New Zealand Ministry of Health. New Zealand Health Survey, November 2020. Available at: https://minhealthnz.shinyapps.io/nz-health-survey-2019-20-annual-data-explorer/_w_f43d1245/#!/
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The Positive Impact of E-Cigarettes in the UK

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Few countries have embraced vaping with as much enthusiasm as the United Kingdom. It currently has three million regular vapers (six per cent of the adult population) and Public Health England's evidence reviews on e-cigarettes are cited around the world. In contrast to much of Europe and North America, public health professionals in Britain broadly regard the emergence of e-cigarettes as a welcome development that has significantly reduced the smoking rate since they became popular a decade ago.

As in many other countries, vaping initially grew through word-of-mouth recommendation. In the early days - before 2013 - the market was exclusively made up of independent retailers online and on high streets. They appeared to spark little interest in either the public health lobby or the tobacco industry, but they had a cult following, and networks of vapers emerged on internet forums exchanging information about new products. The early first generation 'cig-a-like' e-cigarettes had limited appeal and were soon overtaken by refillable second generation products which allowed consumers to choose from a much wider variety of flavours. Rapid improvements in the technology were accompanied by exponential growth of the category and health research struggled to keep pace with the vaping phenomenon.

By 2011, there was no consensus in UK tobacco control on how e-cigarettes should be regulated. The government initially handed the category over to the Medicines and Healthcare Products Regulatory Authority (MHRA) with instructions to produce 'light touch' regulation, but vapers feared that regulation by an agency that was used to dealing with pharmaceuticals would result in the e-cigarette market being handed over to a few large corporations who would produce unappealing products. The resulting regulation proposed by MHRA confirmed these fears, with the agency recommending all vape products be taken off the market, but when the European Commission announced plans to regulate the category, the market was left alone until a new Tobacco Products Directive was enforced in 2016. The European Commission also leant towards medical regulation at first, but this was later dropped after vapers successfully lobbied against it.

There is a parallel universe in which the UK e-cigarette market was crushed by regulation and vaping devices were available only on prescription. Why didn't this happen?

Firstly, the UK has a history of understanding and appreciating tobacco harm reduction as a concept. It was a British nicotine researcher, Michael Russell, who observed in the 1970s that "people smoke for nicotine but they die from the tar". Other British academics, such as Robert West and Richard Peto, explored ways of delivering nicotine to smokers without the carcinogenic smoke. With some exceptions, anti-smoking activists in the UK have not displayed the moral objections to nicotine use that are often seen in the USA and Australia. The British anti-smoking group Action on Smoking and Health, under the leadership of Clive Bates (1997-2003), campaigned for the EU's ban on oral tobacco to be lifted.

With the intellectual groundwork for tobacco harm reduction in place, support for the vaping revolution became a matter of political will. David Halpern, the head of the UK's Behavioural Insights Team (popularly known as the Nudge Unit) encountered e-cigarettes by chance in 2010 and told the government to "seek to make e-cigs available, and to use regulation not to ban them but to improve their quality and reliability" (Halpern 2015: 190).

By 2012, e-cigarettes were becoming popular all over the country and a backlash was underway. The Chief Medical Officer, Sally Davies, was opposed to them and later crystallised the 'quit-or-die' approach by saying: "I don't think the evidence is strong enough to say they do help people stop. They really ought to just stop." The makers of nicotine patches and gum began lobbying against e-cigarettes and the British Medical Association called for vaping to be banned in public places.

At the same time, a growing number of academics, such as Linda Bauld and Lynne Dawkins, were seeing the benefits of vaping with their own eyes, and the highly influential anti-smoking group Action on Smoking and Health was being persuaded of its potential. After five years in which the smoking rate had barely moved despite a slew of tough anti-smoking policies, more smokers were suddenly quitting. Vapers were sharing their stories of giving up cigarettes after decades of smoking, often without intending to quit when they first tried an e-cigarette. From 2013, this began to be shown in randomised controlled trials, the gold standard of scientific evidence (Caponnetta et al. 2013; Bullen et al. 2013).

In 2014, Public Health England (PHE) published a report by two leading anti-tobacco academics which concluded that the "opportunity to harness" the potential of e-cigarettes "should not be missed" (Britton and Bogdanovica 2014: 24). The following year, PHE released its landmark report on e-cigarettes, a 113 page document looking at every aspect of the issue. It found regular use of e-cigarettes by nonsmokers to be rare and noted the growing evidence showing that vaping helped smokers quit. It concluded that medical licensing of e-cigarettes was "not commercially attractive" and would likely favour "larger manufacturers including the tobacco industry" (McNeill et al. 2015: 8). Most famously, it officially endorsed previous estimates that e-cigarettes were 95 per cent safer than cigarettes (ibid.: 80).

The Public Health England report was followed in 2016 by a report from the Royal College of Physicians (RCP) which confirmed that the health risks of long-term vaping are "unlikely to exceed 5% of the harm from smoking tobacco smoke" (RCP 2017: 185) and concluded that there were likely to be "significant health gains" to be had from promoting "the use of non-tobacco nicotine, including e-cigarettes, as widely as possible" (ibid.: 131). This was a significant intervention as the RCP had first confirmed the association between smoking and lung cancer in 1962. The following year, the British Medical Association reversed its position on banning vaping in public places and admitted that its concerns about vaping 'renormalising' smoking "have not materialised" (BMA 2017: 10).

Today, the UK continues to abide by the EU's advertising restrictions and product regulation, including a 20 mg/ml limit on nicotine content, but has never 'gold-plated' these rules. Unlike many European countries, it has no 'sin tax' on e-cigarette fluid and there are few legal restrictions on where people can vape.

Between 2012 and 2016, the UK's smoking rate fell from 20.4 per cent to 16.1 per cent. Official statistics for e-cigarette use were not available until 2014, but the number of vapers was negligible in 2010 before rising to 3.7 per cent of adults aged 16 and over in 2014 and to 5.6 per cent in 2016 (ONS 2020a). None of Britain's millions of vapers appears to have died or contracted any serious disease as a result of their new habit. Fears that vaping would act as a 'gateway' to smoking have been shown to be unfounded. In 2019, according to the Office for National Statistics, "the proportion of vapers was highest among current cigarette smokers (15.5%) and ex-cigarette smokers (11.7%). Only 0.4% of people who have never smoked reported that they currently vape" (ONS 2020b).

The UK now has a lower smoking rate than any EU country apart from Sweden (where another reduced risk nicotine product, snus, has acted as an effective substitute for cigarettes). There is very little public demand for more regulation of e-cigarettes. Public Health England has opposed a ban on flavoured e-cigarette fluid and the House of Commons Select Committee on Science and Technology (2018) has criticised the EU's legal nicotine limits on e-cigarettes, its advertising ban, and its restrictions on tank size. It called for a review of these "regulatory anomalies".

The success of the UK's relatively liberal approach to vaping is plain to see. The smoking rate has dropped by a quarter since 2012. By contrast, in the EU - where only two per cent of adults are regular vapers - smoking prevalence fell by just one percentage point between 2014 and 2020.

Unfortunately, there have been signs of the vaping revolution flagging in recent years. British government agencies and health organisations have been generally positive about e-cigarettes, but have not been able to stem the tide of misinformation from other countries, particularly the USA. A recent report from Public Health England (2021: 17) noted that: "Perceptions of the harm caused by vaping compared with smoking are increasingly out of line with the evidence". In England, 53 per cent of smokers wrongly believe that vaping is as dangerous or more dangerous than smoking, up from 36 per cent in 2014. Less than a third of them know that vaping is less harmful than smoking and 40 per cent of them wrongly believe that nicotine causes cancer.

Growing ignorance about e-cigarettes is largely the result of junk science and scare stories being reported in the media. The so-called 'EVALI' (E-cigarette or Vaping Product Use-Associated Lung Injury) outbreak in the USA in 2019 caused the death of dozens of people and was the

result of black market THC oil being vaped but was wrongly attributed to normal e-cigarettes. Studies derived from exposing small animals to extremely high levels of various chemicals have been used to make fear-mongering claims about the risks of e-cigarettes. For example, it has been claimed that vaping by pregnant women increases the risk of the child having behavioural issues (based on a study of zebra fish) and that vaping causes bladder cancer (based on a flawed study of mice).

This is likely to be part of the reason why the UK's vaping rate has been almost flat since 2016 and smoking prevalence has fallen only slightly. Another likely factor is the EU's Tobacco Products Directive which came into full effect in 2017 and made vaping less appealing by restricting consumer options and advertising. Whatever the reason, there was a notable drop in the number of smokers using e-cigarettes in quit attempts after 2016 (Smoking Toolkit Study 2021).

There remains much untapped potential in Britain for e-cigarettes and other reduced risk products. 52.7 per cent of smokers say they want to quit (ONS 2020), but a third of smokers have still never tried an e-cigarette (ASH 2020). Many of those who have tried vaping but have not made the switch might be tempted if the products were improved through technological innovation or better regulation. For those who do not like vaping, newer products such as heated tobacco and nicotine pouches might be more to their liking.

The policy of the British government - and of governments worldwide - should be to let a thousand flowers bloom. The UK has an ambitious target of reducing the smoking rate to below five per cent by 2030. With barely half the nation's smokers expressing a desire to quit, this is unrealistic unless they are offered satisfying alternatives. Having left the European Union in January 2020, Britain has an opportunity to act on the Select Committee on Science and Technology's recommendation to review the laws that regulate e-cigarettes and other nicotine products.

One of the main problems with the current regulations is that they have removed e-cigarette fluids containing more than 20 mg/ml nicotine from the legal market. Although this has not been the subject of much academic research, it is well known in the vaping community that smokers often require a bigger nicotine 'hit' to help them switch to vaping exclusively. It is common for vapers to reduce the strength of their fluid over time, but the initial transition often demands more nicotine than EU law allows, especially for heavy smokers. There has never been a scientific justification for the 20 mg/ml cap. It is counter-productive and should be removed.

Several other EU regulations act to deter e-cigarette consumption (and therefore promote cigarette consumption). There is evidence that restrictions on e-cigarette advertising lead to fewer smokers quitting cigarettes (Dave et al. 2019) and the health warnings on e-cigarette products mandated by the EU have been found to make smokers less willing to purchase them (Cox et al. 2018).

Advertising restrictions should be relaxed and should focus on content rather than on the medium. There should be no objection to advertising reduced-risk nicotine products on television, radio and online if the advertisement is decent, honest and truthful. Labelling should be scientifically accurate and address genuine areas of consumer ignorance. As noted above, the main problem with public understanding of e-cigarettes at the moment is that people think e-cigarettes are far more dangerous than they are. Labelling, along with government education campaigns, offers an opportunity to debunk myths about vaping.

The restriction on bottle size serves no obvious purpose, raises costs, causes inconvenience and increases consumption of single-use plastics. It should be abolished, along with the equally unnecessary restriction on tank sizes.

Current regulations also ban the use of messages in and on cigarette packs which could be used to promote reduced-risk products. This law should be repealed, as should the prohibition of snus which was banned decades ago despite its extremely low risk profile and its proven ability to slash the smoking rate in Sweden and Norway.

All this and more should be on the table in the government's efforts to create a suitable environment for businesses to design, manufacture and market life-saving alternatives to cigarettes. Other countries should learn from the UK's success and follow suit.

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Case study: New Zealand – Positive Outcomes, in Spite of the FCTC

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Introduction

Relatively small countries like New Zealand are particularly vulnerable to the “argument from authority” fallacy. Our lawmakers, sadly, lack faith in our own ability to interpret data and science and pursue an independent regulatory path.

For a politician in a country of five million at the bottom of the world, the voice of a body like the WHO almost sounds like the voice of God. Then, when we follow the WHO's advice, ramping up tobacco taxes and restricting access to vaping, the WHO tells our politicians that they are special, they are world leaders, that they deserve awards.

For a small country with an underdog complex, such praise from the man upstairs feels very powerful. If this is the case in New Zealand, a reasonably wealthy country that excels in many fields of science, business, and sport, one can only imagine the sway the WHO has in developing nations.

The WHO, and specifically the FCTC, has had a major influence on New Zealand's tobacco control regime. For a case study to only acknowledge the positive results of this influence would be to insult the intelligence of the delegates at this year's COP9 meetings. Policy positions held by the FCTC can be traced to real harms dealt to New Zealand smokers, their families, and even our law and order.

Meanwhile, recent progress towards our Smokefree 2025 goal cannot be linked to FCTC positions. In fact, a rapid reduction in smoking rates and corresponding uptake of vaping has occurred in the context of an effectively unregulated market in vaping products – a situation that flies in the face of the established WHO orthodoxy on reduced-harm nicotine products.

The FCTC's influence on tobacco control in New Zealand

In New Zealand, positions promoted by the FCTC have been cited in Parliament to justify tobacco plain packaging laws, smoke free environments, a ban on smoking in vehicles, and perhaps most significantly, annual compounding increases to tobacco tax excise.

New Zealand's decade of compounding tobacco tax hikes began in 2010 and were justified on the basis of recommendations from the FCTC³ (New Zealand ratified the FCTC in 2004). New Zealand now has the highest tobacco excise as a proportion of income in the OECD, and consequently some of the most expensive cigarettes in the world,⁴⁵ with even the cheapest packets of 20 cigarettes costing the consumer around \$21 USD.

The WHO indeed commends this programme of excise tax under its 'MPOWER' scorecard system⁶ and even awarded the architect of New Zealand's tobacco excise regime its Western Pacific Region award for work on tobacco control.⁷

The FCTC's recommended programme of tobacco tax hikes has an obvious appeal to governments seeking to raise revenue. In New Zealand's case, revenue from tobacco tax were forecast to reach about 2.5 percent of the Government's total annual tax take in 2021.⁸ Helpfully for politicians seeking re-election, the FCTC's recommended excise tax regime disproportionately affects low income earners, who are less likely to vote. For that reason, it is no surprise that until recently annual tobacco tax increases have enjoyed support from both of New Zealand's major political parties.

Of course, the FCTC's favoured taxation regime has led to economic harms: New Zealand's own Ministry of Health has repeatedly acknowledged surveys of smokers reporting they have had to go without or spend less on groceries and utilities due to high tobacco prices.⁹

The FCTC's recommended programme of tax hikes is also driving black market activity and crime.¹⁰ 11.5% of cigarettes smoked in NZ are now smuggled from untaxed markets, or home-grown.¹¹ There is international precedent to suggest this figure could grow far higher; in Australia, the black market share of tobacco consumption is 20.7%.¹² New Zealand has also

3. Health Promotion Agency, [The Beginner's Guide to Tobacco Control](#)

4. New Zealand Taxpayers' Union, [Ka Tukuna Atu](#)

5. WHO, [Tobacco Excise Data](#), table 9.2

6. WHO, [Country profile: New Zealand](#)

7. Ministry of Health, [Tobacco Achievements](#)

8. <https://www.newsroom.co.nz/government-addicted-to-17-billion-in-cigarette-revenue>

9. Ministry of Health, [Evaluation of the tobacco excise increases as a contributor to Smokefree 2025](#)

10. Stuff, [Organised crime targets tobacco smuggling as prices rise](#)

11. KPMG, [Illicit tobacco in New Zealand, 26 May 2020](#)

12. KPMG, [Illicit tobacco in Australia, 5 May 2020](#)

seen a surge in often violent robberies of retailers selling cigarettes, now described as 'gold bars'.¹³¹⁴¹⁵

In New Zealand, there is now widespread acknowledgement (from academics and NGOs,¹⁶¹⁷¹⁸ and now from the Government¹⁹) that tobacco excise causes disproportionate harm to those on low incomes and indigenous households. In 2020, the New Zealand Government abandoned its programme of annual tobacco tax hikes.²⁰

How New Zealand bucked the WHO orthodoxy on vaping

In 2017, the New Zealand Government promised to legalise and regulate vaping products.²¹ However, progress towards legalisation stalled upon the election of the Jacinda Ardern Government later that year.

In practice, many retailers had already been selling vaping products in the context of what was perceived to be a legal grey area.

Retailers of vaping products were subsequently given greater confidence of their legal position by a District Court judgment in 2018. The Ministry of Health argued that Philip Morris NZ's "heat-not-burn" product was prohibited under existing laws against oral tobacco products. The Judge found that banning a reduced-harm product would in fact contradict the purpose of New Zealand's key tobacco control law, which focuses on reducing harmful effects on health.²²

13. NZ Herald, [Five hundred cigarette robberies in a year](#)

14. RNZ, [Dairy owners blame cigarette price hikes for robberies](#)

15. Stuff, [Constant theft leave dairy and convenience store workers feeling helpless](#)

16. Tax Working Group, [Future of Tax](#)

17. ASH New Zealand and End Smoking New Zealand, [A Surge Strategy for Smokefree Aotearoa 2025: The role and regulation of vaping and other low-risk smokefree nicotine products](#)

18. ASH New Zealand, [ASH Welcomes The Smokefree 2025 Plan But Calls For Immediate Action](#)

19. Hon Jenny Salesa, [Cabinet Paper](#)

20. Newshub, [Labour promises to end tobacco excise tax hikes](#)

21. New Zealand Government, [Nicotine e-cigarettes to become legal](#)

22. New Zealand Initiative, [Smoke and Vapour: the changing world of tobacco harm reduction](#)

This Court decision, combined with the Ministry's decision not to pursue similar legal action against producers and retailers of other reduced-harm products, saw vaping effectively 'accidentally' legalised in New Zealand, with regulation led by the voluntary initiatives of producers and retailers.

This would surely be an appalling state of affairs from the perspective of the FCTC, which in 2016 told member states "to consider applying regulatory measures ... to prohibit or restrict the manufacture, importation, distribution, presentation, sale and use of ENDS [electronic nicotine delivery systems]". In New Zealand, however, the sky has not fallen. In fact, we are seeing extremely positive outcomes.

Despite an end to annual tobacco tax hikes, smoking rates in New Zealand have continued to decline, corresponding with an increase in the use of vaping products.

A survey by Roy Morgan from May 2021 suggests that the smoking rate for cigarettes (factory-made and/or roll-your own) has dropped from 12.0% in 2020 to 10.5% in 2021.²³ This is a large movement for such a short period of time and, although arguably COVID-19 has contributed to this drop as well, it indicates an acceleration of progress toward the smoke free goal.

The 1.5 percentage point drop in smoking comes at the same time as e-cigarette use has increased by 2.3 percentage points. In fact, for the first time, vaping now appears to be more popular than either roll-your-own or factory-made cigarettes as standalone categories.

Further, the New Zealand Treasury has now revised its original 2021 tobacco tax revenue forecast downward by 33 per cent.²⁴ This is extraordinary progress.

And despite well-aired concerns over youth experimentation with vaping products, available data does not indicate significant daily usage. In fact, the most recent survey of Year 10 (14-year-old) students in 2019 revealed that fewer than 1 per cent of those students who never smoked reported daily use of e-cigarettes.²⁵ This is in line with findings from the United Kingdom, where Public Health England acknowledges youth experimentation with vaping but found that "regular use is rare and confined almost entirely to those who already smoke" with "no evidence to support concern that e-cigarettes are increasing youth smoking".²⁶

23. Roy Morgan New Zealand, [Single Source Survey](#), New Zealanders 18-64 May 2020 MAT n= 8,898, May 2021 MAT n=9,099

24. Treasury, [Budget Economic and Fiscal Update 2021](#)

25. ASH New Zealand, [2019 ASH Year 10 Snapshot](#)

26. Public Health England, [8 things to know about e-cigarettes](#)

The FCTC can claim no credit for New Zealand's recent progress away from smoking and toward vaping; this transition was in fact aided by the slowness of the New Zealand Government to translate WHO orthodoxy into hard legislation. The current Government did not succeed in passing legislation to regulate vaping until late 2020, and even now, regulations to restrict convenient access to flavoured products and limit nicotine strength are not fully implemented.²⁷

New Zealand's planned vaping regulations are still far more permissive than the approach of the FCTC. In fact, the Ministry of Health along with its Health Promotion Agency now runs a 'vaping to quit' public information campaign and cites Public Health England's statements that vaping is 95% less harmful than smoking. Pictured is a brochure distributed by the Government²⁸ and a screenshot from the Government's Vaping Facts website.²⁹

RELATIVE HARM

Smoking



Smoking less and vaping



Vaping only



Not smoking or vaping



27. Ministry of Health, [Regulation of vaping and smokeless tobacco products](#)

28. Health Promotion Agency, [Vaping Facts – English Version](#)

29. Health Promotion Agency, [Vaping to Quit Smoking](#)

Conclusion

While it is tempting for New Zealand's proponents of tobacco harm reduction to take a 'doom and gloom' perspective focused on impending regulations that will reduce access to alternative nicotine products, we ought to be more positive. We have arrived at positive health outcomes without stringent regulation, let alone the prohibitionist approach that the FCTC has endorsed.

The WHO should not allow the perfect to be the enemy of the good. If the 'perfect' is a nicotine-free future, the 'good' is surely a near-term reduction in harm caused by nicotine products. New Zealand's uptake of non-combustible technological innovations demonstrates the realistic prospect of a rapid, consumer-led reduction in tobacco harm.

New Zealand's positive outcomes have at least partly been achieved through dumb luck – the unintentional result of a stalled legislative process and a legal grey area. However, there is no reason other countries cannot achieve similar results on a more considered, intentional basis. New Zealand's story should be heard at COP9.

A Stronger Commitment of French Public Authorities in Favor of the Electronic Cigarette Would Reduce the Number of Smokers

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France has strict regulation and high taxation of tobacco products. On the other hand, the regulation is less strict about electronic cigarettes, which is not subject to specific taxes. Does this policy have any effect on reducing the number of smokers? Does it lack more voluntarism to be really effective?

The electronic cigarette is not taxed

In France, e-cigarettes are subject to prohibitions that restrict their distribution. For example, advertising for electronic cigarettes is prohibited except in places of sale. The sale is prohibited to those under 18 years. Since October 1, 2019, vaping is prohibited in certain public places such as schools & buildings intended to host minors, in public transport spaces, and indoor workplaces for collective use (*open space*). Fines for offenders can go up to 150 euros. Signage reminding people of the conditions of smoking is mandatory in the places concerned by penalty of fine. Bars and restaurants are not, for the moment, affected by this measure, nor hotels, hospitals, shopping malls or stadiums. In fact, the French can vape in most public places unless the specific rules of the owners of the places or a municipal by-laws prohibit it.

There is another regulation concerning the labeling of vaping liquids. These labels must not include a graphic representation of the fruit or plant symbolizing the product's flavor; they must not be likely to attract or encourage the active curiosity of children or to mislead consumers about the nature of the product. If the vaping liquid contains nicotine, the labeling must include precautionary statements and specific mentions according to the nicotine content and classify the product as toxic or dangerous.

However, unlike many European countries, France does not apply specific taxes on electronic cigarettes. They only bear the VAT (20%).

We can therefore consider that French legislation is relatively flexible vis-à-vis the electronic cigarette, mainly due to the absence of tax. This is confirmed by the 2021 Nanny State Index³¹ where France is ranked at the bottom (23rd place) when it comes to electronic cigarettes.

31. Christopher Snowdon, « Nanny State Index 2021 », Epicenter & IEA, May 2021.

Health authorities are rather favorable to vaping

The multiple French health authorities have regularly declared themselves to be more or less in favor of the electronic cigarette.

In 2014, in its recommendation, the High Authority of Health (HAS) stated that "*the electronic cigarette, with or without nicotine, is not a harmless consumer product.*" Therefore, "*considering today's knowledge, the electronic cigarette is not among the recommended treatments to stop smoking.*" However, if the HAS does not recommend the electronic cigarette as a mean to stop smoking, it "*considers that its use for a smoker who has begun to vape and who wants to stop smoking should not be discouraged*"³².

In 2015, the Health Minister Marisol Touraine said in a Senate meeting that "*the electronic cigarette can help with withdrawal; yes, the electronic cigarette is preferable to the traditional cigarette in terms of public health*"³³. The same year, the National Academy of Medicine indicated that vaping is less harmful than smoking and encouraged smokers "*to switch to vaping instead of smoking.*"

In 2016, an advisory body of the HAS, the High Council for Public Health, concluded that, "*It appears that electronic cigarettes can be seen as a tool in stopping or reducing tobacco consumption by smokers*"³⁴. The advisory body recommended "*informing... health professionals and smokers that electronic cigarettes are a tool in quitting smoking; and a method of reducing the risks of exclusively using tobacco*".

In February of 2017, a group of French respiratory, pneumology, addiction, and psychiatry experts backed this statement in the publication of "*Practical guidelines on e-cigarettes for practitioners*

32. Haute Autorité de Santé, « Arrêter de fumer et ne pas rechuter : la recommandation 2014 de la HAS. Questions / réponses : sevrage tabagique », 2014 (https://www.has-sante.fr/upload/docs/application/pdf/2014-01/question_reponse_sevrage_tabagique.pdf).

33. Sénat. Session of September 16, 2015. Retrieved 28 April 2021, from <http://www.senat.fr/seances/s201509/s20150916/s20150916002.html>

34. Haut Conseil de la Santé Publique Benefits-risks of electronic cigarettes for the general population. Translated from: "la cigarette électronique peut être considérée comme une aide pour arrêter ou réduire la consommation de tabac des fumeurs." Retrieved 25 April 2021, from <https://www.hcsp.fr/explore.cgi/avisrapportsdomaine?clefr=541>

and other health professionals"³⁵. This work asserted three breakthrough points: (1) "The e-cigarette, trialed by a large proportion of smokers, is a safer product than tobacco"; (2) "E-cigarettes offer much lower risks than tobacco"; (3) "Smokers who wish to use e-cigarettes in order to quit with or without associated pharmacological treatment should be encouraged and not discouraged".

In a statement published at the end of 2019, the National Academy of Medicine recalled "the proven benefits and unduly alleged disadvantages of the electronic cigarette" following the "vaping disease"³⁶ (epidemic of lung diseases) that has hit mainly the United States. The Academy insisted that in France, e-cigarettes "are subject to standards of quality and safety, unlike in the United States" and that we should "not accuse the container to be harmful when it is the content that is actually harmful and responsible for the American alert". The institution seized this opportunity to take the opposite side of the World Health Organization (WHO), which in a report describes the electronic cigarette as "indisputably harmful". For the Academy of Medicine, the position of the WHO is not scientifically proven and, like the American deaths, risks undermining confidence in the electronic cigarette. "This crisis of confidence could cause the deaths of thousands of smokers", says the Academy of Medicine, because "the vape is less dangerous than cigarettes and helps to stop and reduce tobacco consumption."

Also in 2019, the National Cancer Institute (INCa) highlighted the effectiveness of the electronic cigarette to quit smoking. It pointed out that "the most recent trial, published in the *New England Journal of Medicine*, compared the effectiveness of the electronic cigarette (with nicotine) compared to nicotine replacement therapy (NRT). It showed a significant number of cessation twice as important among users of electronic cigarettes compared to those who used NRT (18% vs 9.9%)."³⁷ The INCa insists, however, on the conditions of these trials and the inherent limitations of the studies that, today, "do not yet allow to affirm that the electronic cigarette is a validated tool to help stop smoking". Nevertheless, for the INCa, we can "reasonably give credit to the use of the electronic cigarette as a way to stop smoking by advancing a pragmatic argument of risk reduction by switching from cigarettes to the electronic cigarette".

Finally, we note that the government website www.tabac-info-service.fr has indicated in the last campaign "Month Without Tobacco" that "we think that vaping can help you reduce your consumption of tobacco and stop smoking".

35. Dautzenberg, B. et al. "Practical e-cigarette recommendations for doctors and other healthcare professionals", *Respiratory Disease Review*. (2016). Retrieved 25 April 2021, from <https://www.sciencedirect.com/science/article/abs/pii/S0761842517300220>

36. Statement from the Académie nationale de médecine du 12 décembre 2019 (<https://www.academie-medecine.fr/lacademie-nationale-de-medecine-rappelle-les-avantages-prouves-et-les-inconvenients-indument-allegues-de-la-cigarette-electronique-vaporette/>).

37. Institut national du cancer, « Cigarettes électroniques : ce qu'il faut savoir », 12 août 2019 (<https://www.e-cancer.fr/Comprendre-prevenir-depister/Reduire-les-risques-de-cancer/Tabac/La-cigarette-electronique>).

Proof of encouraging results (although the practice of vaping is progressing slowly)

The latest figures for the prevalence (regular or occasional) of smoking in France are not good, mainly because governments have not adopted a real risk reduction policy. They prefer the triptych of taxation, prohibition, and guilt of smokers. In 2020, 31.8% of people aged 18 to 75 years reported smoking tobacco versus 30.4% in 2019 (an increase of 4.6%). The increase was 6.25% for daily smoking, which increased from 24% in 2019 to 25.5% in 2020.³⁸

While the number of people smoking is increasing, the number of people vaping seems to be progressing slowly. Available since 2011, the electronic cigarette has so far attracted only 3 million people in France. In comparison, there are still about 11 million who smoke regularly or occasionally. In 2020, the use of vape was declared by 5.4% (versus 5.7% in 2019) of French people aged 18 to 75 years, and the prevalence of daily vaping was 4.3% (versus 4.4% in 2019 and 3% in 2014).

The most recent survey made by Santé Publique France (French national health agency) on vaping was in 2019 but covered the years 2014 to 2017.³⁹ It showed that 39.7% of people vaping in 2017 also reported smoking daily—admittedly still a high proportion, but drastically down from 64.5% in 2014. In just three years, people vaping who were also smokers had therefore dropped by 38.4%. At the same time, people vaping who no longer smoked increased by 110.6% from 23.5% of the vaping population in 2014 to 49.5% in 2017 (see graph below).

In the same survey, we learned that for 76.3% of ex-smokers who vape, the electronic cigarette helped them to stop smoking (67.8% without other means of cessation and 8.6%

38. Anne Pasquereau and alii, « Consommation de tabac parmi les adultes en 2020 : résultats du baromètre de Santé Publique France », Bulletin épidémiologique hebdomadaire, n°8, 26 mai 2021 (<https://www.santepubliquefrance.fr/determinants-de-sante/tabac/documents/article/consommation-de-tabac-parmi-les-adultes-en-2020-resultats-du-barometre-de-sante-publique-france>).

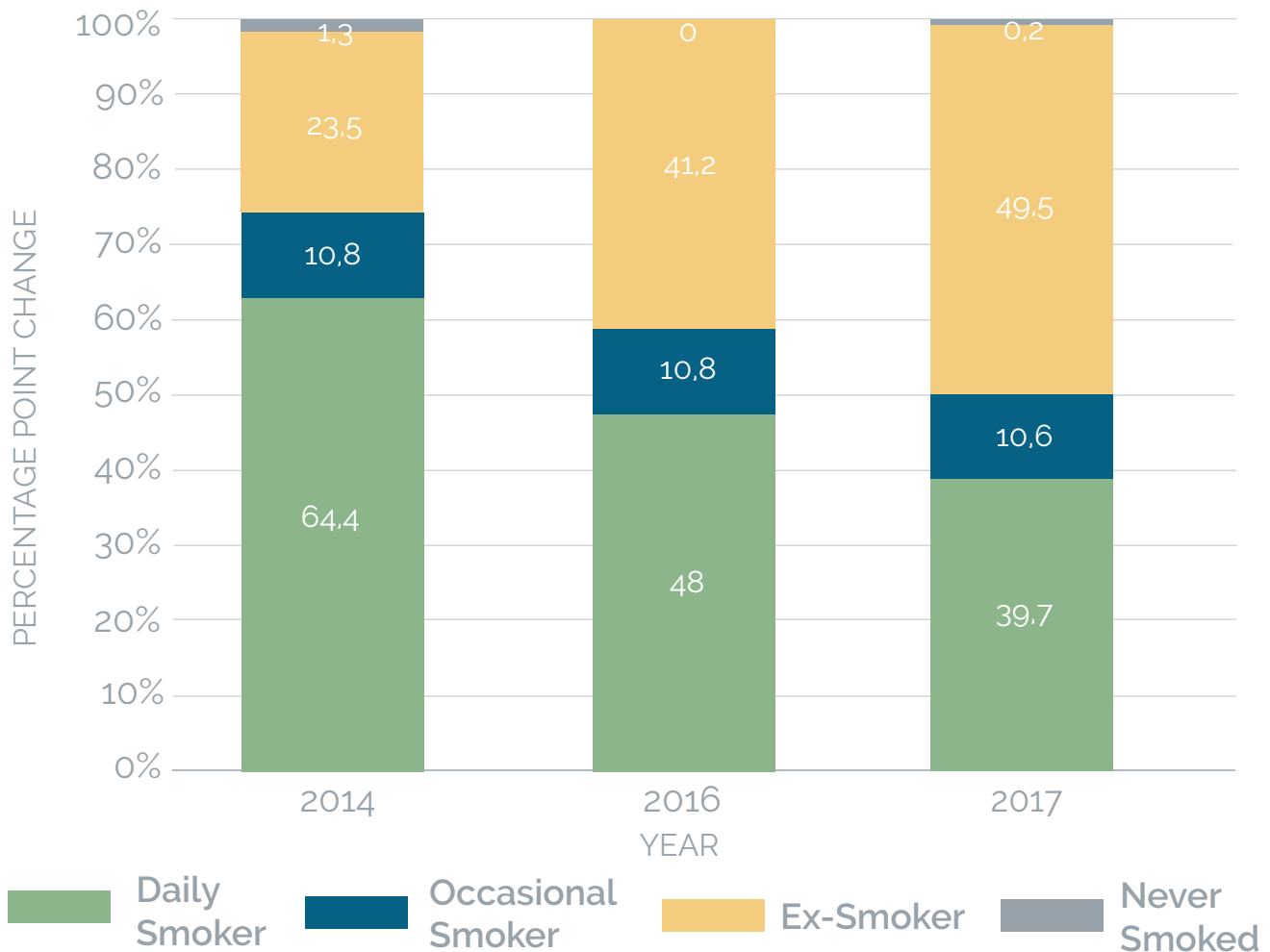
39. Anne Pasquereau and alii, « Baromètre de Santé publique France 2017. Usage de la cigarette électronique, tabagisme et opinions des 18-75 ans », Santé publique France, 2019 (<https://www.santepubliquefrance.fr/determinants-de-sante/tabac/documents/enquetes-etudes/barometre-de-sante-publique-france-2017-usage-de-la-cigarette-electronique-tabagisme-et-opinions-des-18-75-ans>).

combined with another means of cessation). Thus, Santé Publique France estimates that about 700,000 people have stopped smoking thanks to the e-cigarette (alone or combined with other means of cessation).

Moreover, 80.3% of vape-smokers (who combine smoking and vaping) are estimated to have reduced their consumption of cigarettes or other tobacco products by using an electronic cigarette. They even declared an average reduction of 10.4 cigarettes (or equivalent) per day.

According to Santé Publique France, it is clear that in the adult population the proportion of people vaping who have never smoked is very small (< 0.01%), and that the e-cigarette is mostly used with the objective of reducing its consumption of tobacco or as a tool to stop smoking. It does not therefore seem to be becoming a new product used in the adult population that is not related to tobacco.

Smoking status of daily vapers aged 18-75 in 2014, 2016 and 2017 in France



Sources : Santé Publique France Barometers, 2014, 2016, 2017.

Three proposals by way of conclusion

In conclusion, we can say that in France, the regulations are rather favorable to the electronic cigarette, and the absence of specific taxes makes the e-cig particularly competitive compared to tobacco products. In addition, many health authorities have pronounced themselves favorably towards vaping. According to the latest Santé Publique France survey on vaping, while 23.5% of vapers had given up on cigarettes in 2014, the statistic was 49.5% in 2017. Santé Publique France estimates that about 700,000 people have stopped smoking thanks to the e-cigarette. Yet, the latest surveys show that the number of vapers has stagnated in France.

We believe that Santé Publique France would benefit from conducting more regular surveys on the use of electronic cigarettes: firstly, to better understand the effects of vaping on the reduction of smoking, and secondly, to better inform the population. The French are, in fact, requesting information: 88% of them believe that the government must inform smokers on all current scientific knowledge on the electronic cigarette⁴⁰.

At IREF, we make three proposals⁴¹:

- to create a committee of independent experts--widely open to the humanities and social sciences--and stakeholders, whose task would be to scientifically assess the risks but also the benefits of tobacco products and nicotine, and to provide simple and clear information on these same products;

40. Barometer 2020 (4th édition) « La cigarette électronique : informations, usage et image » réalisé par Odoxa pour France Vapotage, septembre 2020 (https://static1.squarespace.com/static/5ae8bde79f87701429942543/t/5f92aacf-fe44af57cb14198a/1603447504799/Etude+Odoxa+pour+France+Vapotage+-+Mois+sans+tabac+2020_compressed.pdf).

41. Patrick Coquart, « Repenser la fiscalité des nouveaux produits du tabac pour lutter contre le tabagisme », IREF, mars 2021 (<https://fr.irefeurope.org/Publications/Etudes-et-Monographies/article/Repenser-la-fiscalite-des-nouveaux-produits-du-tabac-et-de-la-nicotine-pour-lutter-contre-le>).

- to develop, on the basis of this scientific evaluation, a clear and coherent tax system that takes into account the risks of the products and the way they are consumed, following the example of the United Kingdom and Italy;
- to start thinking about an insurance system (end of the Social Security monopoly and introduction of competition) which would encourage smokers to take more responsibility.

We can also suggest that smoking cessation campaigns (such as the “Month Without Tobacco”) should promote all alternatives to smoking more widely, and not just the nicotine treatments reimbursed by social security. Without this, France cannot claim to be truly committed to a harm reduction policy.

But this is not without risk. Indeed, in France the weight of taxes on tobacco products is such that the state cannot do without them. They represent 5.5% of tax revenue forecast for the year 2020. Thus, if the number of smokers fell significantly and at the same time the number of people vaping increased, it is likely that the government would consider introducing a specific tax on the electronic cigarette. It would occur at the expense of the fight against smoking.

In France, the reduction of public spending seems to be the prerequisite for any effective public policy, including in the field of health.

A Recent History of Alternative Nicotine Delivery Systems in Canada and an Analysis of their Potential Role in Combating the Smoking Epidemic

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Disclosure: I have advised the federal government of Canada on alcohol and tobacco policy and also advised clients in the private sector who counsel nicotine suppliers.

Introduction and philosophy

The new millennium has brought dramatic transformations to the nicotine and tobacco markets in Canada. Smoking has declined in all age groups to levels not seen in 80 years. New government regulations and higher prices from the eighties to the present day have driven much of the reduced tobacco consumption. New technologies, particularly in the 2000-teens, have revolutionized the consumption of nicotine; vapes, heat-not-burn products and nicotine pouches have partially displaced traditional combustible products.

These developments are manifest in statistics that define the sales and shipments of cigarettes, loose-leaf tobacco, chewing tobacco and cigars, and in the reduction of smoking prevalence that emerges from surveys.

Yet morbidity and premature deaths attributable to tobacco use remain unacceptably high and, while governments are to be commended in fighting the cigarette epidemic, almost 40,000 Canadians still die prematurely from stroke, cancer and cardio-vascular disease annually. Smokers, particularly heavy smokers, suffer from elevated morbidity and can expect to lose ten years of life.

The objective of this commentary is to explore the role that alternative nicotine delivery systems (ANDS) have played in transforming the tobacco/nicotine market in Canada, and to explore the role that ANDS could play in the future in reducing the incidence of tobacco-related disease.

I adopt the philosophy of harm reduction, rather than harm elimination, and this has strong implications in the formation of nicotine and tobacco policy. Examples of the harm reduction approach to health problems are supervised injection sites, the use of naloxone to revive drug overdose cases or simply the replacement of sugar with saccharine.

Harm reduction is a feasible approach to tobacco policy in the current era on account of technological developments in the nicotine sector of the economy. Intense research and development in new products have led to the point where the consumption of nicotine can now be largely separated from the toxins that come with combustible products. It is primarily combustion that causes morbidity and early mortality. Nicotine is a dependence-inducing substance in any form, but it is a reduced-risk substance if consumed in moderation in non-combustible form

The tragedy of tobacco use prior to the current era is that toxicity and nicotine consumption were largely inseparable.

I do not advocate a policy of *laissez-faire* towards nicotine or tobacco. In particular, youth access to nicotine and tobacco should be strictly limited. Surveys since 2015 in Canada indicate an increase in the use of alternative nicotine delivery devices (ANDS) among the younger cohorts. Governments should actively inform the public about the relative risks associated with combustible cigarettes relative to e-cigarettes.

ANDS are not zero risk products, they are reduced-risk products. Numerous studies have analyzed the content of ANDS and combustible cigarettes and most have concluded that ANDS contain hazardous and potentially hazardous compounds (HPHCs) that are at least one order of magnitude less than combustible products. Public Health England (McNeill, 2018) and the Royal College of Physicians (2016) have each illustrated that e-cigarettes contain no more than 5% of the HPHCs of a combustible cigarette. Nonetheless, since e-cigarettes are essentially new products, the health risk associated with life-long use is not known with certainty at present. Caution is thus in order, particularly where youth use is concerned.

I interpret the harm-reduction philosophy as permitting nicotine consumption in society as a means of generating satisfaction or utility on the part of the user. Nicotine consumption in alternative forms should not be seen purely as a means of quitting combustibles. Numerous studies support the role that ANDS can play in quitting smoking; but that does not mean that individuals become subject to a moral imperative to quit using ANDS having quit smoking. Modern societies do not view saccharine as a means of quitting sweeteners; saccharine provides a means of continuing to consume a sweetener indefinitely without having to consume sugar.⁴³

Both ANDS and the broad array of nicotine replacement therapies each support tobacco quitting. However, nicotine consumption gives solace to a sizable part of our population and therefore ANDS should not be seen in just a single role.

Objections to the market availability of ANDS are frequently based upon hostility towards corporate producers of tobacco products, in this context mostly 'big tobacco'. The deceptive historical practices of cigarette producers are not to be condoned. However, that history should not be used to validate attacks of the existence of ANDS or their use or their sale. Indeed, big tobacco produces market leaders in electronic cigarettes, heat-not-burn deliv-

43. Other examples are beer and cannabis. Beer is not deemed tolerable because it might induce consumers to ingest less liquor; cannabis is legal in many jurisdictions as a recreational substance not as a short-term off-ramp from heroin. The consumption of these goods is an individual right and their moderate use should not be considered to be a health disorder.

ery systems and in moist snuff/modern oral products. But the Canadian vaping market is not dominated by major producers. Euromonitor (2020) indicates that vape shops account for almost half of sales, on-line stores for one fifth of sales and gas and convenience stores (where the 'leader' products are concentrated) for about thirty percent of sales. Thus, the suggestion that the vaping market is in the hands of big tobacco is not consistent with the facts, even though big tobacco has produced market leaders in both vaping (Juul and Vuse) and HNB (IQOS)

It is also important to take all of the scientific literature as being potentially insightful. Scientific articles should not be dismissed *ex ante* because they are financed by sources that favor or disfavor ANDS. For example, Physicians for a Smoke Free Canada (PSFC, 2020) provide excellent information on the structure of ANDS taxation in Canada despite being opposed to the development of the ANDS marketplace.

Recent data

Sales and production

Shipments of cigarettes to retailers and wholesalers in Canada for the period January 2010 – April 2021 are displayed in figure 1. Statistics Canada is the source. They are presented in both past-three-month and past twelve-month format in order to even out the series for the considerable volatility that characterizes month-to-month sales.

A clear downward trend is in evidence though the trend is not particularly strong. This trend continues a longer-term pattern dating back to the nineteen seventies when governments in Canada began to implement consumption-reducing policies in the form of higher taxes, public-place smoking bans, limits on advertising, bans on flavors etc.

The decline in the two series is small between 2011 and 2018. The temporary peak at the end of 2016 signifies an increase in sales immediately prior to the federal banning of menthol flavors in cigarettes; this was followed by a compensatory decline. The greatest annual decline in sales was registered in 2019. For the years 2011-2018, the decline averaged about 1.5 percent, whereas in 2019 it was 7.5 percent. I attribute the lion's share of the 2019 decline

to the expansion of e-cigarette sales. Other potential explanations (such as tax increases, increase in illegal sales) for the decline are explored in Irvine (2021), but the case for this drop not being attributable to e-cigs is difficult to maintain. Nugent (2020) provides compelling evidence to support the role of e-cigarettes.

The data on combustible cigarette sales between late 2019 to the present display no definite downward trend. One reason for the decline in cigarette sales coming to a halt in the fall of 2019 was the EVALI scare (e-cigarette and vaping-related lung injury). While most known deaths attributable to EVALI were caused by contaminated THC in cannabis (technically an inappropriate suspension agent), the health community recommended vapers to stay away from all types of vaping. This advice likely triggered a discontinuation of the move to substitute e-cigs for c-cigs.

The year 2020 saw the arrival of the corona virus. A speculation is that the anxiety that accompanied this saw c-cig patterns flattening relative to what might otherwise have been a continuing downward trend in sales. In addition, workers who moved from a formal workplace to the home were no longer subject to workplace smoking bans.

The peak in 2020 sales in the midsummer months (figure 1b) was attributable to a closure of production on First Nation reservations from mid-March to early June on account of covid-19. Since about 20% of Canadian cigarette sales are illegal (much coming from First Nations producers), legal producers saw a temporary surge in demand at that time.

FIGURE 1A: Twelve-month cumulative shipments 2011-2021

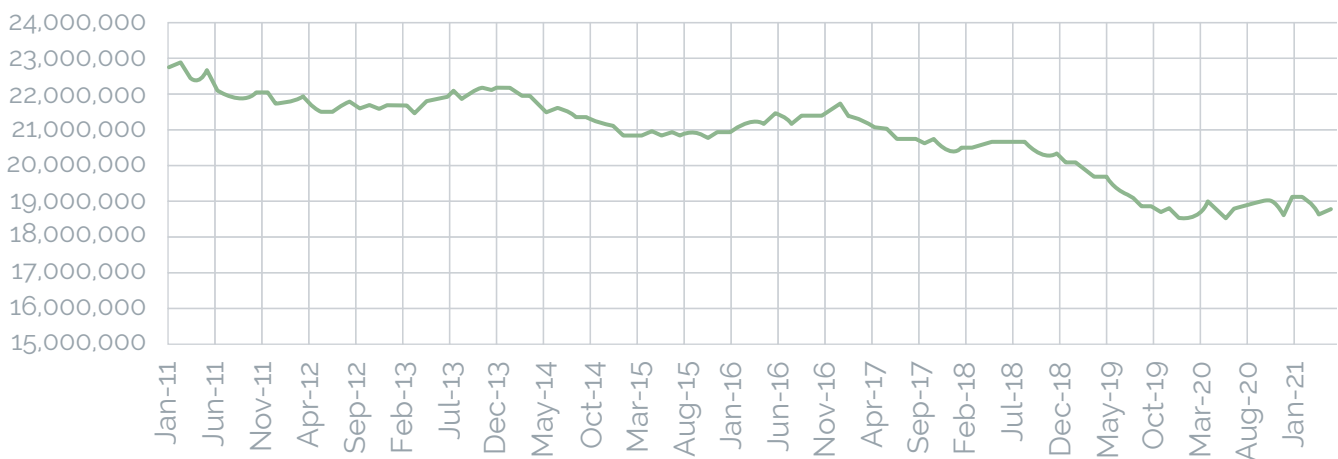
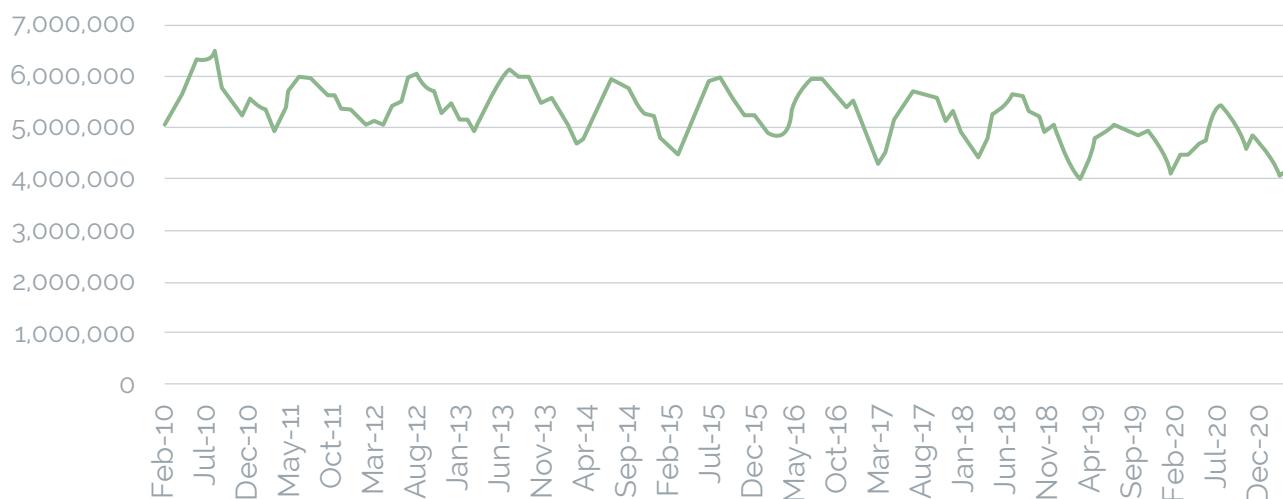


FIGURE 1B: Three month cumulative cigarette sales 2010-2021



To conclude: the growth in vaping in 2019 was responsible for the largest decline in smoking in the past decade. While vaping had been growing gradually prior to 2019 (and was thus responsible in a small way for the declines prior to 2019), Juul and British American Tobacco entered the market in 2018 with their Juul and Vuse products. These were significantly different products from what defined the vaping market at the time: most of the existing products were open-tank/refillable systems that operated on lower-concentration nicotine in free-base form. Juul and Vuse use a closed/pre-filled pod system containing high-concentration salt nicotine. The higher concentration devices operate at lower temperatures and involve a much-reduced volume of aerosol. These devices had a radical impact on the Canadian market.

As a final word, it should be noted that the Canadian population grows at an annual average rate of approximately $\frac{3}{4}$ of a percent. Accordingly, the decline on a per person basis is slightly larger than indicated in the graphics.

Prevalence rates

An alternative analysis of smoking and vaping comes from surveys. At present there are no official aggregate figures on e-cig sales in Canada. Total sales are inferred from sales at corner stores, gas stations and other retail outlets, combined with estimates of on-line and vape-shop sales inferred from surveys. The prevalence rates reported below are based upon past 30-day use: they include both daily users and occasional users. Prevalence rates do not

include 'experimenters' who may have engaged a few times with tobacco in the preceding year, but not the past 30 days.

Surveys provide information for different demographic groups and this is valuable in an era when concern is constantly raised about the use of ANDS by youth. The primary survey source for vaping and cigarette sales (in addition to other forms of tobacco consumption) is the Canadian Tobacco, Alcohol and Drug-use Survey (CTADS). Three waves of this are available for the years 2013, 2015 and 2017. The nicotine and tobacco components were separated from other substance components into a separate survey in 2019: the Canadian Tobacco and Nicotine Survey (CTNS). It contains a smaller sample size (between 8,000 and 9,000) than the CTADS (circa 20,000), and therefore does not produce a fine grid of data with tight confidence intervals. The second wave was conducted between December 2020 and January 2021; results are awaited. The CTADS was preceded by the annual Canadian Tobacco Use Surveys (CTUMS) between 1999 and 2012.

Official smoking rates for Canada, as published by Statistics Canada, are based upon the annual Canadian Community Health Survey (CCHS). This has a sample size of circa 60,000. It invariably yields higher use rates than the CTADs and CTNS. The CTNS contains a more detailed set of questions than the other surveys.

The data in table 1 are from publicly-available summary statistical tables for the CTUMS, CTADS and CTNS survey. Age categories are not fully consistent year-to-year in the published tables.

Youth surveys are also available, and they yield prevalence rates that can be compared with figures that emerge from the US Monitoring the Future surveys (the US and Canadian school surveys yield very similar trends in smoking and vaping)

Smoking prevalence has declined, and the percentage decline is greater than in the shipments data. The slightly lesser decline in shipments is partly attributable to a growing population. Declines vary by age group and the number of cigarettes smoked per smoker has seen little change. It is important not to overinterpret the trends: each data point comes from a sample and is therefore subject to a confidence interval that is frequently two points on either side of the central estimate.

TABLE 1: Smoking prevalence (past 30-day use) 2013 - 2019

	CURRENT	DAILY	OCCASIONAL	FORMER	NEVER	CIGS/DAY
2011 CTUMS						
All	17.3	13.7	3.6	25.4	57.3	14.4
15 - 19	11.8	6.0	5.8	2.4*	85.8	11.7
20 - 24	21.5	14.0	7.5	6.9	71.7	11.9
25+	17.4	14.4	3.0	29.3	53.3	14.7
55+	13.4	11.8	1.6	41.2	45.4	15.2
2012 CTADS						
All	14.6	10.9	3.8	25.9	59.5	13.9
15 - 19	10.7	5.1	5.6	1.2*	88.1	9.2
20 - 24	17.9	10.7	7.2	5.3	76.8	11.8
25+	14.6	11.4	3.3	30.0	55.3	14.3
55+	10.8	9.0	1.8	41.8	47.4	15.2
(45 - 54)	16.3	13.9	2.5*	28.3	55.3	14.6
2015 CTADS						
All	13.0	9.4	3.7	27.2	59.8	13.8
15 - 19	9.7	4.3*	5.4	-	88.8	11.6
20 - 24	18.5	10.2	8.2	7.3	74.2	11.8
25+	12.7	9.7	3.1	31.3	56.6	14.1
55+	10.6	8.9	1.7*	42.7	46.7	14.5
(45 - 54)	13.0	9.7	3.3*	29.2	57.7	15.2
2017 CTADS						
All	15.1	10.8	4.3	25.7	59.2	13.7
15 - 19	7.9	2.9	4.9	-	91.6	9.4
20 - 24	16.0	9.0	7.0	5.7	78.3	10.7
25+	15.5	11.6	4.0	29.6	54.9	13.9
55+	14.1	11.4	2.7	37.4	48.6	14.5

TABLE 1: Smoking prevalence (past 30-day use) 2013 - 2019						
	CURRENT	DAILY	OCCASIONAL	FORMER	NEVER	CIGS/DAY
2019 CTNS						
All	11.9	8.6	3.3	24.5	63.7	
15 - 19	5.1	-	2.9*	-	93.4	
20 - 24	13.3	5.6	7.7	5.2	81.5	
25+	12.5	9.5	3.0	28.2	59.3	
25 - 44	13.3	8.6	4.6	17.1	69.7	
45+	12.0	10.0	2.0	35.1	52.9	

Table 2 contains estimates of vaping rates. The data come from the same sources as table 1. Estimates are not available before 2015. This table contains a harm index, which is the sum of the prevalence rate for any tobacco product and ten percent of the e-cigarette prevalence rate. Public Health England (2015) has stated that e-cigarettes are 95% less harmful than combustible cigarettes; hence using a 10% value gives a conservative estimate of the total harm associated with nicotine product use.

This table highlights the role of ANDS, particularly across age groups. The decline in combustible tobacco consumption among those aged 25 and over has been negligible. This demographic has also a low rate of e-cigarette adoption. In contrast, the decline in tobacco use and the harm reduction index for those under 25 has been large. The harm index declined by 45% between 2015 and 2019, and this was attributable to the replacement of combustibles by e-cigarettes. Those aged 20 – 24 saw a decline in the harm index of 24%. Partial findings have already been made available by Statistics Canada for the 20 – 24 group in 2020 (The Daily, 2021) which point to an even greater decline. Smoking prevalence rates among this group fell by 40% between 2019 and 2020.

No significant decline has taken place among the cohorts accounting for the lion's share of all smoking – those aged 25 and above. These cohorts maintain steady smoking rates and low rates of adoption of reduced-risk products.

TABLE 2: E-cigarette and other tobacco use prevalence rates

	CIGARETTES	ANY TOB PRODUCT	E-CIGARETTE	HARM INDEX
2015 CTADS				
All	13.2	15.5	3.2	15.8
15 - 19	9.8	13.1	6.3	13.7
20 - 24	18.9	23.8	6.3	24.4
25 - 44	15.3	17.8	3.4	18.1
45+	11.4	13.0	2.1*	13.2
2017 CTADS				
All	15.3	17.8	2.9	18.1
15 - 19	6.6	9.2	6.3	9.8
20 - 24	15.6	20.6	6.0	21.2
25 - 44	18.7	22.4	3.2	22.7
45+	14.2	15.6	1.7	15.8
2019 CTNS				
All	11.9	14.0	4.7	14.5
15 - 19	5.1	7.4	15.1	7.6
20 - 24	13.3	18.3	15.2	18.5
25 - 44	13.2	16.0	5.0	16.5
45+	12.0	13.4	1.6	13.6
2020 CTNS				
All				
15 - 19				
20 - 24				
25 - 44				
45+				

Prevalence is defined as any use in preceding 30 days. The harm index is a combination of the prevalence rate for any tobacco product plus 10% of the prevalence rate for e-cigarettes. This is a slight overestimate of the real harm index because some individuals are dual users.

Prevalence is defined as any use in preceding 30 days. The harm index is a combination of the prevalence rate for any tobacco product plus 10% of the prevalence rate for e-cigarettes. This is a slight overestimate of the real harm index because some individuals are dual users.

These tables combined indicate why shipments have fallen relatively slowly. The cohorts aged 25 and above account for most of Canada's population and these cohorts have reduced their cigarette prevalence hardly at all between 2015 and 2019 and maintained constant the number of cigarettes smoked per day.

Youth and specific groups

Youth

The vaping public-policy debate in Canada has been framed almost exclusively in terms of youth use. The media has labelled this as an epidemic. To evaluate this claim, nicotine use among US and Canadian high-school students are presented in table 3. The US data are from the Monitoring the Future surveys, the Canadian data from the Ontario Student Drug Use Surveys.⁴⁴

Daily smoking rates among high-school students in the nineties in both Canada and the US were in the neighborhood of 25%. Daily prevalence declined steadily until the mid 2000-teens. At this point the overwhelming view of policy analysts was that further declines of the same magnitude as experienced in the preceding two decades would be difficult to achieve: the lower the prevalence the more difficult it would become to maintain the same rate of decline. But instead of slowing, the rate of decline accelerated in both the US and Canada. As of 2020, the daily smoking rate in high schools is best described as being 'a percent or two'.

The rates presented in table 3 overstate the 'high-school' smoking rate substantially because the peak in high school rates is attained in grade 12. For example, the grade 11 daily rate in Ontario in 2019 was 2.5% and the grade 10 rate 1.1%.

44. These surveys also provide information on alcohol use, cannabis use and use rates for a variety of other drugs.

The Canadian Student Tobacco Alcohol and Drug Use Surveys indicate a comparably large decline in smoking between the surveys of 2016-17 and 2018-19.

TABLE 3: High school smoking prevalence rates 1995 – 2020 US and Canada				
	US GRADE 12		CANADA (ONTARIO) GRADE 11 OR 12	
	Past 30 Days	Daily	Past Year	Daily
1995	33.5	21.6	41.7	29.8
1997	36.5	24.6	43.4	32.2
1999	34.6	23.1	38.6	30.9
2001	29.5	19.0	36.3	29.3
2003	24.4	15.8	30.2	22.3
2005	23.2	13.6	22.9	15.1
2007	21.6	12.3	19.2	8.6
2009	20.1	11.2	19.8	8.3
2011	18.7	10.3	14.4	5.9
2012	17.1	9.3		
2013	16.3	8.5	15.4	6.3
2014	13.6	6.7		
2015	11.4	5.5	15.3	6.0
2016	10.5	4.8		
2017	9.7	4.2	15.2	5.5
2018	7.6	3.6		
2019	5.7	2.4	10.8	3.6
2020	7.5	3.1		

Canada (Ontario) grade 11 for 1995 and 1997, grade 12 from 1999 onward.

Source: Monitoring the Future and Ontario Student Drug Use Survey.

Current federal policy

As of late June 2021, the federal government has proposed to limit the concentration of nicotine in vaping products; has proposed an excise levy of vaping products and has proposed to limit flavors other than mint, menthol and tobacco in vaping products. In this section I consider each of these policies.

Nicotine concentration limits

As of July 2021, the nicotine concentration in e-liquid will be limited to a maximum of 20 milligrams per milliliter. This regulation has been motivated by a concern on the part of Health Canada that youth vaping has been driven by the availability of high concentration e-liquids and flavors. The concentration limit will be similar to the limit in the European Union, which was introduced in 2014. At that time a group of internationally recognized scientists wrote to the European Union directorate outlining why in their opinion the limit would be counterproductive in the longer term (Etter et al, 2014)

Approximately 2/3 of the Canadian illiquid market will be impacted by the new limit. Virtually all gas and convenience store sales are of products in the 50 milligram plus range, because sales are dominated by Juul and Vuse. An industry source informed me that more than half of vape shop and online sales are in the form of products where the concentration is above 20 milligrams per milliliter. This implies that 2/3 of the market will be impacted by this regulation.

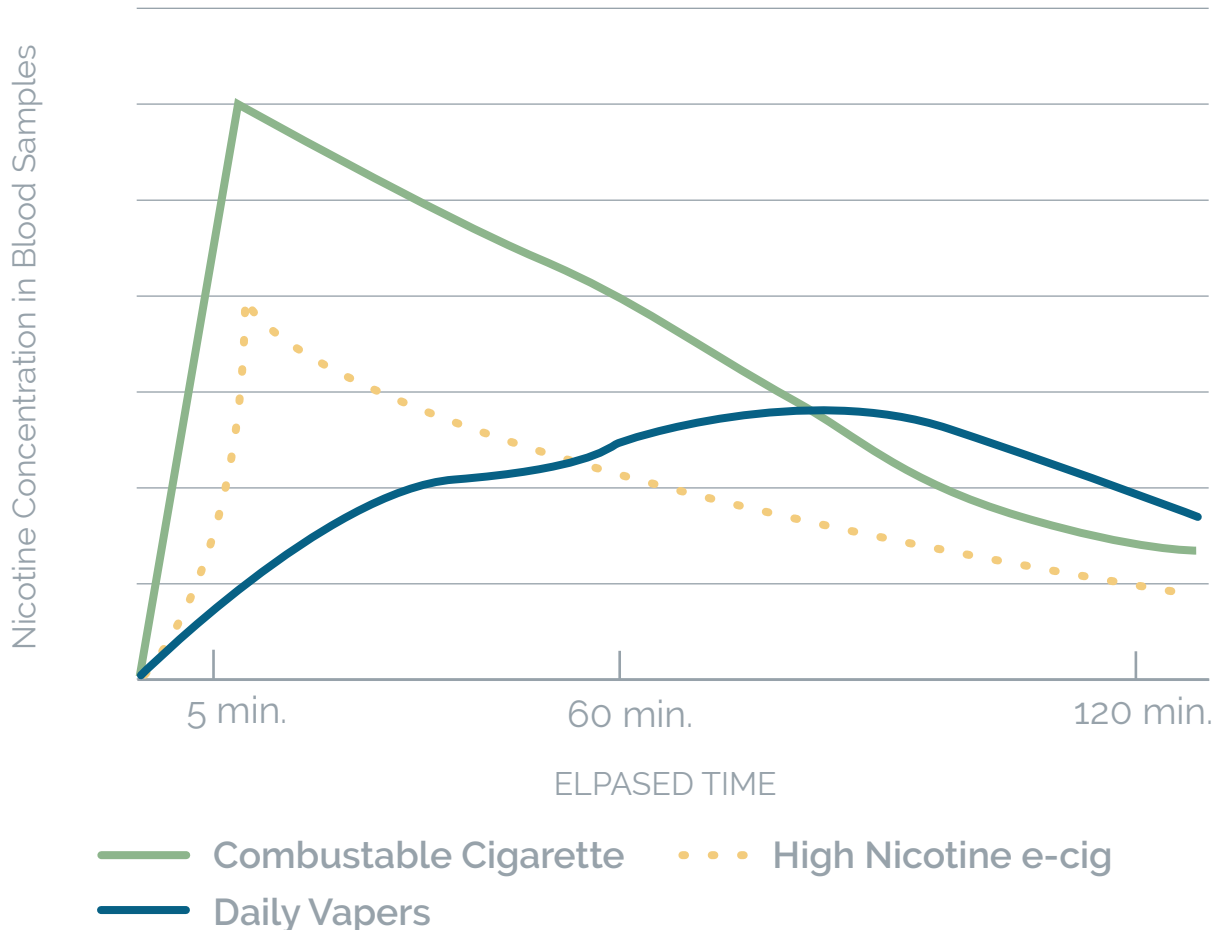
The new regulation is equivalent to a heavy tax on products with concentration levels above 20 milligrams per milliliter. If the average concentration of illiquid above 20 milligrams is 40 milligrams, then the new limit is equivalent broadly to a 100% tax on e-liquid above 20 milligrams, because vapers will be obliged to purchase twice the quantity of e-liquid in order to consume the same amount of nicotine. But in contrast to a normal sales tax, this de facto 100% tax levy will yield no tax revenue; it represents a loss to the consumer without any corresponding gain to the government in the form of tax revenue.

The new regulation will induce changes in vaping behaviors. In order to ingest the same amount of nicotine as prior to the regulation it will be necessary to approximately double the quantity of illiquid vaped. The scientific literature indicates is that vaping larger volumes of liquid is more risky than vaping smaller volumes of liquid, although vaping more or less liquid

remains at least an order of magnitude less risky than smoking combustible cigarettes (Talih et al 2019, Kosminder et al 2020, Son et al, April 2020 and May 2020, Farsalinos and Gillman, 2017).

The attraction of high concentration e-cigarettes for smokers who are contemplating quitting is illustrated in Figure 1. Numerous experiments indicate that the pharmacokinetic properties of high concentration devices mimic the pharmacokinetics of a combustible cigarette. Each mode of ingesting nicotine enables the user to attain a high concentration in the bloodstream very quickly after engaging with their delivery system. With a reduced permitted nicotine concentration, the attraction of an e-cigarette for smokers is reduced because the nicotine delivery pattern no longer resembles the pattern when using a combustible cigarette.

FIGURE 2: The Pharmacokinetics of Nicotine Delivery



Health Canada's belief that youth will be less likely to use e-cigarettes and become less dependent upon nicotine, post regulation, supposes that lower nicotine levels will not induce dependence and also that youth will be less likely to experiment. The first part of this proposition is not supported by the large literature on very low nicotine cigarettes (VLNCs) and light cigarettes. The literature on VLNCs assumes that nicotine would be reduced to a tiny fraction of normal levels ~ 3%, not 50%; and we have decades of experience on the nicotine intake of smokers who consume light cigarettes – cigarettes that are lower in actual nicotine content, but that yield approximately the same amount of nicotine to the user on account of their ventilation properties.

For the regulation to deter youth use it must also be the case that the desire to use e-cigarettes will actually decline rather than increase. It is not evident why Health Canada believes that, when it announces that a 20 mg/ml limit will be less addictive, youth would not be more inclined rather than less to experiment (“if it's not addictive why not try it?”). Bucknell et al (2019) indicate that if potential users view a product as less unhealthy they are more inclined to use it.

The prime research basis for HC's regulation lies in the Quoros report (2020). This report interviewed 103 youth, of whom 36 were regular vapers aged 16-19. When the youth were asked what they believed the best things about vaping were, the highest frequency response was the “buzz” or “hit”.

At the same time, the regular vapers generally believed that they did not view vaping as a gateway to smoking, and that they would be smoking if they were not vaping (page 38). These responses, even though based upon small samples, are consistent with daily smoking rates reported for high-school students of less than 2%.

The justification for the regulation is given in a cost-benefit study analyzed by Irvine (2021).

The concentration regulation will have a major impact on the marketplace. In addition to representing a major cost increase for 2/3 of the market (without any additional tax revenue), it is likely that the producers of low-watt, high concentration devices (Juul, Vuse and others) will redesign their products in order to yield a higher intensity experience from vaping a 20 mg concentration rather than a 40 or a 55 mg concentration. We can expect changes in battery power (volts), changes in the wick so that more e-liquid can be held in the heating chamber, and a changed resistance in the coil.

The illegal market for cigarettes is strong in Canada, and there is thus good reason to believe that restrictions of this nature will incentivize an illegal market in vaping products in addition. Furthermore, some vapers will begin to buy ingredients themselves and assemble their own

liquid. This is a much less safe environment than one where liquid is mixed professionally. Nicotine can burn and be toxic when consumed even in small amounts. When the concentration regulation is combined with new taxes and a ban on most flavors there is every reason to believe that the vaping market will go the route of the cigarette market, where about 20% of the market is illegal (O' Riordan, 2021).

Taxation

Vaping products in Canada are currently subject to a low overall federal tax rate, because there is no federal excise levy. An excise tax is being planned by the federal Department of Finance (federal budget, April 2021). In contrast, HNB and snus products are subject to federal excise levies that reflect the rates on loose-leaf tobacco.⁴⁵

Tobacco taxation is a joint federal-provincial tax jurisdiction. The combined excise and sales tax impositions on combustible products at the provincial level average about twice the federal impositions. The current federal excise levy on a cigarette stick is 14.5 cents and several provinces levy an additional rate of 30 cents per stick.

Vaping products are subject to combined provincial and federal sales taxes, and some provinces (British Columbia and Nova Scotia as examples) have imposed their own vape taxes, either in the form of a higher sales tax rate or in the form of a specific levy per unit.

A risk-based approach to excise levies, implies that AND products should be subject to an excise levy that is a relatively small fraction of the levy on combustible products.

While vaping products dominate the ANDS market in Canada, HNB products dominate in Japan, Russia and several other economies (Barclays June 23, 2021) while snus products dominate the ANDS market in Sweden, Norway and Iceland. The three products contain potentially harmful compound levels that are similar, and that are at least one order of magnitude lower than combustible cigarettes.

Thus, a risk-based approach to excise levies dictates that the gap between combustibles and ANDS should be large and the gap between the components of the AND group should be small.

45. I use the word snus in its generic form, that is to denote the consumption of nicotine from pouches that is ingested through the buccal membrane.

This principle is not embodied in current rates. Snus products are subject to higher levies than combustible products, while HNB products are subject to lower levels than combustibles, but still higher than their risk implies. This is illustrated in two fact sheets published by the Physicians for a Smoke Free Canada (PSFC, 2020a and 2020b), and contained in tables 4 and 5 here.

The peculiarities of the system are attributable to a minimum tax per 50 grams of tobacco, or less. Accordingly, the sale of these products in small packs disadvantages the consumer. Given the weight of tobacco in a typical can of snus pouches, the effective rate per pouch generally exceeds the rate per stick of combustible tobacco, even though it carries the lowest risk of the three low-risk ANDS.

Each tobacco plug that is consumed via a HNB device weighs about 0.32 of one gram. In order to minimize the excise levy per plug, producers should supply plugs in 160-unit packs ($160 \times 0.32 = 50$). Buyers do not always wish to purchase 160 and so packs of 50 are a popular size.

TABLE 4: Specific Tax Rates in \$ on Snus and other Modern Oral Products

Province	Federal specific per 50 grams	Provincial specific per gram	Tax/pouch in a 20-unit tin	Tax/pouch in a 50-unit tin
BC	7.763	0.395	0.783	0.55
AB	7.763	0.4125	0.801	0.568
SK	7.763	0.27	0.658	0.425
MN	7.763	0.29	0.678	0.445
ON	7.763	0.18475	0.573	0.34
QC	7.763	0.2292	0.617	0.384
NB	7.763	0.2552	0.643	0.410
NS	7.763	0.1852	0.573	0.340
PEI	7.763	0.2752	0.663	0.43
NL	7.763	0.40	0.788	0.555
NWT	7.763	0.272	0.660	0.427
NU	7.763	0.30	0.688	0.455
YT	7.763	0.30	0.688	0.455

Note: Each pouch is assumed to weigh one gram.

Source: Physicians for a Smoke-Free Canada (2020a), Factsheet "Canadian taxes on oral tobacco"

TABLE 5: Specific taxes on heat sticks by size of pack \$

Province	SPECIFIC TAXES PER 160-STICK PACK			SPECIFIC TAXES PER 50-STICK PACK		
	Federal specific tax per 50 grams	Provincial specific tax/gram × 160	Total specific tax per stick	Federal specific tax per 50 grams	Provincial specific/gram tax × 50	Total specific tax per stick
BC	7.763	47.2	0.343519	7.763	14.75	0.45026
AB	7.763	20.21	0.174831	7.763	6.39	0.28306
SK	7.763	13.23	0.131206	7.763	4.19	0.23906
MB	7.763	14.21	0.137331	7.763	4.5	0.24526
ON	7.763	9.05	0.105081	7.763	2.86	0.21246
QC	7.763	11.23	0.118706	7.763	3.55	0.22626
NB	7.763	12.5	0.126644	7.763	3.96	0.23446
NS	7.763	19.6	0.171019	7.763	6.2	0.27926
PEI	7.763	10.54	0.114394	7.763	3.33	0.22186
NL	7.763	19.6	0.171019	7.763	6.2	0.27926
NWT	7.763	13.33	0.131831	7.763	4.22	0.23966
NU	7.763	14.7	0.140394	7.763	4.65	0.24826
YT	7.763	14.7	0.140394	7.763	4.65	0.24826

Source: Physicians for a Smoke-Free Canada (2020), Factsheet "Canadian taxes on heated tobacco"

The federal excise proposal is to levy a rate of \$1 per 10 ml of liquid, or less, regardless of the nicotine strength of the liquid.

While this may initially appear to be a low rate, there are three reasons why this may not be so. First, this is a federal rate and if provinces react by choosing their own specific rate that is twice as high as the federal rate (as with combustible products) then the ultimate levy may be \$3 rather than \$1.

Second, the \$1 levy targets high-concentration prefilled pods in a discriminatory manner: all containers, even pods such as those produced for Juul and Vuse delivery systems that contain 0.7 ml or 1.9 ml respectively, are to be taxed as if they contain 10 ml.

Third, individuals who vape a low concentration liquid will pay a multiple of the rate levied on a vaper who chooses a higher concentration. For example, a vaper consuming 5 ml of a 6 mg

concentration would pay 3.33 times the amount paid by a vaper who consumes 1.5 ml of a 20 mg concentration.

The discriminatory treatment of the high-concentration Juul and Vuse products is consistent with Health Canada's new regulations on concentration. The maximum permitted concentration for the domestic market is to be reduced from 66 mg/ml to 20 mg/ml. This rule is aimed at reducing youth use of vaping products, though it will reduce the willingness or ability of committed smokers to transition to a product that carries a vastly reduced risk relative to combustible cigarettes. As indicated above, it resembles a 100% tax rate on higher-concentration liquids.

The rule will incentivize the adoption of disposables, some of which have up to 8 ml in their tank/pod.

To summarize: the future of vaping taxation contains a great deal of uncertainty. If Canada's federal government and the provinces do not cooperate to formulate specific taxes that reflect risk, then public health may decline. A battle for revenue sharing between the two levels of government would involve higher consumer prices relative to combustibles than desired, and it is vital to maintain a wide price margin that favors the less risky ANDS market.

Flavor bans

In June 2021 Health Canada proposed regulations that would limit flavors in electronic cigarettes (Government of Canada, 2021). The flavor ban has three principal components: first the marketing of flavor would be strictly limited; second, a very wide range of flavor constituents would be prohibited; third, even with the restrictions on the use of flavoring compounds, e-liquid would not be permitted to display a sensory perception of flavor.

The only permitted flavors would be mint, menthol and tobacco.

Certain flavors are already banned under Canada's tobacco and vaping Act: candy and others that would be appealing to youth.

The motivating force behind the proposed flavor ban is the appeal of flavors to youth. HC notes that fruit flavors are heavily preferred by youth, and even though fruit is strongly the most preferred adult flavor, youth prefers fruit by a larger margin. When asked what their primary vaping motivations were in a HC-commissioned survey, youth responded: for the nicotine (24%), to reduce stress (35%), curiosity (39%), for the flavors (40%), for fun (50%). HC

does not report having asked the surveyed youth if they would vape if the existing array of flavors were unavailable. Not having explored that option means that the impact of a reduction in flavors remains uncertain for youth.

As in the case of its nicotine concentration ban, HC has weighted youth use more heavily than adult use. A large literature addresses the role of flavors in both quitting smoking and initiating vaping. This is summarized in both the HC flavor Regulations and in numerous journal articles. A recent contribution by several authors known for their opposition to smoking (Li et al 2021) concludes, from a survey of 886 concurrent users of vapes and cigarettes in 2016, that a higher percentage were likely to have quit smoking by 2018 if they were using fruit rather than tobacco flavored vapes.

The critical uncertainty is that we do not know to what degree the annual transition rate from smoking to vaping would decline if fruit flavors were unavailable.

Given society's goal of reducing smoking to an absolute minimum, the heterogeneity principle states that we should recognize differences among smokers: effective quitting mechanisms differ across smokers. Quit options should be available that appeal not just to a majority of smokers. For example, if e-cigarettes are used by more intending quitters than nicotine replacement therapy, or they yield higher quit success rates, this is not an argument for banning NRT just because it has a lower success rate or a lower utilization rate. Even if a small percentage of smokers prefers a generally less successful or popular quit-attempt mechanism, it is socially valuable that such mechanisms be on the menu of available options.

HC's data indicate that just 12% of adult vapers use tobacco flavored products and 17% use mint and menthol (Regulations page 8). This means that HC intends to block access to the normally-used flavor of 71% of adult vapers. This is justified with the rationale that youth use fruit more than adults (page 8):

"Another extensive review of recent literature published in 2019 also found the majority of youth and young adults who vape use non-tobacco-flavored e-cigarettes, while older adults and people who smoke may use flavoured e-cigarettes at lower rates than youth and people who do not smoke."

Cutting adult vapers off from 71% of the product type they consume will likely have significant consequences, though it is difficult to predict if fruit-preferring adult vapers will (a) switch to menthol/mint/tobacco flavors, (b) switch back to smoking, (c) switch to the illegal market or (d) quit nicotine consumption.

Health Canada proposes that "There is substantial evidence that e-cigarette use increases the risk of ever using combustible tobacco cigarettes among youth and young adults" (page 4).

This statement must be interpreted with caution. It appears to imply causality - that a higher vaping rate leads to, or causes, a higher smoking rate. But available recent evidence for Canada implies the opposite: the adoption of vaping by those of any age has decreased combustible use, even though vaping may precede smoking temporally.

While vaping frequently precedes smoking this does not imply causation. Youth and young adults who smoke are generally high-risk individuals. Before the arrival of e-cigarettes in Canada the teen smoking rate greatly exceeded what it is today. Some youth take up smoking without having first vaped, others smoke after having vaped.

What is important to recognize is that those who smoke having first vaped are primarily the high-risk individuals who would likely have smoked initially in the absence of a vaping option. Their 'progression' to smoking is therefore not causative. Second there are vapers who might have smoked in the absence of a vaping option but chose not to smoke because vaping is less unhealthy (these individuals might be thought of as medium-risk individuals). And there are some vapers who would most likely not have smoked in the absence of a vaping option.

This typology is developed in Bucknell et al (2019a, 2019b). It illustrates that temporal order is not an indicator of causation. However, public health advocates frequently make the incorrect inference.

It is critical to recognize the health consequences of vaping versus smoking. If vaping is one tenth as unhealthy as smoking, then for every single additional individual who smokes public health is equalized by having ten individuals quit vaping. In practice: if a flavor ban induces even a single youth to smoke rather than vape, that policy must reduce vaping by ten individuals in order for public health to be equalized.

Statistics Canada has produced strong evidence that vaping is an off-ramp for smokers. The 2020 CTNS reports that smoking among those aged 20-24 has dropped precipitously: between 2019 and 2020 the prevalence rate dropped by 40%. This major decline is exactly the opposite of what should be happening if vaping were an on-ramp to smoking.

On the adult front, public health demands a vigorous campaign aimed at inducing smokers to quit smoking or to switch to less risky products. That only 12% of those aged 25 and above use a tobacco flavored e-cigarette and that 88% use a different flavor may surprise many scientists. The data indicate that smokers need 'something different' when they switch away from combustibles. One perspective is that tobacco flavor is quite bitter, but the smoke that

accompanies that flavor moderates, or 'rounds', the bitter flavor. Hence, in the absence of an agent in vaping that plays the rounding role when a tobacco flavor is on offer, most smokers who successfully transition to vaping require something else – flavor.⁴⁶

A better strategy than reducing the attractiveness of lower-risk alternatives to smoking would be to mount a 'switch to ANDS' campaign of the type recently adopted in New Zealand.

On the supply side of the equation, Canada needs to worry about what will happen to a strong domestic industry where a large percentage of the product is domestically produced (Euro-monitor, 2020). Canada has a well-recognized history of illicit tobacco and banning flavors would be an invitation for a significant part of the sector to go underground.

Second-hand smoke versus second-hand aerosol. HC sees vaping leading to smoking and therefore more second-hand smoke. But as indicated above, vaping is an off-ramp from smoking and thus second-hand smoke (SHS) will decline with vaping rather than increase. The question then is whether second-hand aerosol presents a similar level of health risk as SHS, since SHA will displace SHS.

The toxin content of second-hand aerosol (SHA) is approximately 1% of combusted smoke: the Canadian Centre for Occupational Health and Safety indicates that SHS from cigarettes is 15% exhaled smoke and 85% side stream smoke – smoke emanating from a lit cigarette while not being inhaled. Since no aerosol escapes from a vaping device not in use, and since the toxin content from exhaled aerosol contains less than 5% of the toxins of a combustible cigarette, then the toxin content of SHA is approximately 1% (≈ 5% of 15%) of what is contained in combustible cigarettes.

46. This has been explained to me by more than one former smoker turned vaper.

Conclusions

Canada has one of the lower smoking rates in the developed world. From the nineteen fifties, when more than one half of the adult population smoked, to today the combined actions of Health Canada, the taxation authorities and public health organizations that have regulated smoking in various ways, have resulted in a dramatically evolved culture towards the use of cigarettes and other combustible tobacco products. Public authorities are to be congratulated for that achievement.

The progress among youth has been most pronounced. Youth daily smoking rates are no more than one or two percent. Hence smoking initiation is at an all-time low, and if low initiation rates persist into the future then the smoking epidemic will be eliminated, albeit over too long a time period. It would have been difficult to find even a single public health official in Canada a decade ago who would have dared to suggest that youth smoking could teeter on the verge of extinction by the year 2021.

These smoking levels have been accompanied by a strong growth in the adoption of e-cigarettes, and the public health authorities have become fearful that youth may develop an excessive dependence upon nicotine and perhaps transition to smoking.

But there is no evidence to support the likelihood of this, despite repeated claims by both Health Canada and countless public health activists that 'vaping leads to smoking'. Vaping and smoking are common liabilities. The cognitive paradox in HC's regulations on both nicotine concentration and flavors is that HC repeatedly claims that vaping can lead to smoking (and ergo health deterioration) while at the same time stating very clearly that smoking rates have plummeted by the greatest percent in history since 2018. Statistics Canada reports that, among 20-24 year-olds, smoking declined by 40% between 2019 and 2020. It would be difficult to find stronger evidence than this that vaping is an exit ramp for smoking not an on-ramp.

The consequence of our unwillingness or inability to process this reality is that the potential benefits that would accrue from a campaign squarely aimed at middle-aged dependent smokers are being lost. This group is given very little weight in HC's cost-benefit analysis, because the analysis discounts the future so heavily, and it is only down the road (possibly far down the road) that many lives could be saved through the adoption of reduced-risk nicotine products.

Tobacco and nicotine policy, the world over, has been influenced by the deceitful practices of the tobacco industry in the late twentieth century. An insightful policy direction by a group of renowned anti-tobacco researchers (Palmer et al 2021) proposes that tobacco (and even nicotine) cessation efforts should adopt all of the available tools at society's disposal, including snus, HTPs and e-cigarettes, in conjunction with, rather than in opposition to, pharmaceutical-based approaches such as NRT, drugs and psychotherapy. These are complementary rather than competing approaches, even though they are produced by 'big tobacco' and 'big pharma'. This approach has also been promoted by the UK All-Parliamentary Group (2021).

Nicotine is a substance that should be avoided where possible, particularly among youth. But given that society now has the means to largely (though not completely) detach the most pernicious effects of tobacco from the consumption of nicotine, society should treat nicotine as it treats alcohol. Canada should treat vaping much as Sweden treats nicotine pouches: nicotine use for some individuals could become an accepted drug, and the 40,000 premature tobacco-related deaths experienced in Canada each year could be reduced to a trickle. This will require an evolution in philosophy and strategy on the part of Canada's policy makers.

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