THE HEALTH OF THE STATE

JENESA JERAM

THE
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INITIATIVE

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The New Zealand Initiative is an independent public policy think tank supported by chief executives of major New Zealand businesses. We believe in evidence-based policy and are committed to developing policies that work for all New Zealanders.

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FOREWORD

As consumers, we make dozens of decisions each day. We decide which newspapers to read, which radio stations to listen to and which TV programmes to watch. We select the styles and brands of our clothing and shoes. More importantly, we make choices on who to marry, where to live and how to spend our leisure time, our hobbies, activities and holidays.

Such freedom of choice is the cornerstone of a free society. It is having these daily choices that makes us free people.

The general assumption in a free society is that everyone should be free to live their lives according to their own preferences (as long as they do not harm anyone else).

Our legal system was built around this general principle. Thus the law defines property rights which make it possible to establish who has control over what. Freedom of contract then allows for voluntary exchange of these property rights. Meanwhile, Caveat Emptor is a reminder that everyone has to bear the consequences of their own actions.

The role of the state in this classical set-up is a limited one. Through the courts system, it mainly acts as a referee, ensuring that rules are followed and rights are respected. However it also provides infrastructure assets the market is not well-placed to provide, and a safety net for those in need.

What government does not usually determine is the outcome of the game. It does not prescribe what individuals should do. Nor does it aim to protect people from themselves.

Of course, we have observed some erosion of these principles. Freedom of contract has been curtailed in many different ways, for example in labour market regulations or through licensing requirements.

However, until recently the assumption still remained that in principle, at least, consumers should be free to choose for themselves. This general principle now seems under threat by increasing attempts to regulate lifestyle choices.

Of course, such interventions are not entirely new. We have long had so-called "sin taxes" on alcohol and tobacco in many countries. Apart from raising revenue for the government, their purpose was to change behaviour and make people consume less of these products.

Such paternalism has always been at odds with the ideals of a free society but at least they had been contained to just a few product categories. What we are seeing nowadays goes much beyond this old-fashioned paternalism. Whether it is salt, fat or sugar: There is hardly any food ingredient around which there are no discussions about potential regulations, taxes, or even bans.

In her report, Jenesa Jeram uses an economic toolkit to analyse the rationales behind such proposals. Her overall conclusion is that many of these initiatives are failing on their own terms. In other words, they are doing more harm than good. They are not producing the social, health and economic effects they are meant to achieve.

This finding is worrying in itself. But it is the wider, more philosophical implications of the rise of paternalistic regulations that should concern all of us. Each of these interventions change the nature of our society: From a society of free people to a society in which free choice is only permitted with the consent of the state. From a state where everything is allowed that is not forbidden to one where everything is forbidden unless it is allowed.

Each new regulation, harmless as it may seem, is a step on a slippery slope. One can easily imagine new areas in which our freedoms that we take for granted can be gradually taken away. What today mainly affects food and beverages could soon be something applying to cars, clothing and leisure activities.

The right to choose freely is precious. But it is worth nothing if we do not also have the right to make bad choices – or simply choices that others disagree with.

As Gandhi famously put it, "Freedom is not worth having if it does not connote freedom to err. It passes my comprehension how human beings, be they ever so experienced and able, can delight in depriving other human beings of that precious right."

This report may seem to be about individual cases of bad or questionable regulations. In fact, it is about a much more fundamental question: In what kind of society do we want to live?

I applaud Jenesa Jeram's contribution to this important debate.

Dr Oliver Hartwich

EXECUTIVE DIRECTOR
THE NEW ZEALAND INITIATIVE

INTRODUCTION

War is the health of the state.

These words, attributed to essayist Randolph Silliman Bourne, describe how the government's reach and influence over individuals thrives during times of war.

In many ways, the 'public health' movement is New Zealand's own war. In a bid to make the country happier, healthier and wealthier, successive governments have waged a war against all that supposedly threatens our wellbeing. Greater regulation is the weapon of choice, as policymakers wage wars on binge drinking, tuckshop junk food, smoking in public and private spaces, illicit drugs, legal highs – the list goes on.

In short, our report considers this 'war on sin' – the ever-expanding lifestyle regulation – a means by which governments and policymakers can thrive and remain relevant. It is not hard to call to mind examples of this war in progress.[1]

There are rules regulating the advertising and promotion of alcohol, limits to where you can light up a cigarette, taxes to pay on products policymakers deem harmful, and public education campaigns to establish socially acceptable behaviour. Some of the ways our lifestyle choices are regulated are obvious, and much of the public may even agree that such regulation is necessary. Other ways in which policymakers seek to change our behaviour are more subtle, and the implications for individual liberty may not be overt. Finally, there are some policies in place with laudable goals, but may not be achieving what they purport to.

This report is not only concerned about the policies we have now but also the ones being proposed by lobby groups, academics and political parties. There has been a shift towards greater regulation overseas, and these examples are often cited by advocates calling for similar policies in New Zealand.

Some regulations are justifiable. Even if you do everything within your power to keep yourself and your family safe and healthy, others are not so responsible. For example, consider the life-avowed teetotaller who gets into a car accident caused by a drunk driver. These are the kinds of externalities that government policy has traditionally sought to address. No matter how careful you are, others may not make the best decisions.

But even if you are not directly harmed by others, there are still fiscal externalities to consider. You may not normally care about the choices of others, except when you are then expected to pay for their irresponsibility. The publicly funded health system – a jewel in the crown of the modern welfare state – means that taxpayers pay for the decisions of others.

And then some even worry about the 'externalities' people may impose on themselves – known as internalities – that cause people to make decisions they later regret.

So the common attitude goes, as long as the public health system pays for the choices of the responsible, irresponsible and naïve alike, does it not make sense to regulate those choices to minimise costs to the state?

Well, not always. And this report explains why. It is not just that public health regulations pose a serious challenge to freedom and personal liberty, though this in itself should make a free society uncomfortable. This report also shows that many of these regulations may not change personal

1 Here are just a few examples: Katarina Filipe, "War declared on binge drinking," *The Timaru Herald* (1 October 2010); Jazial Crossley, "Stevia the latest weapon in war on 'poison' sugar," *The Dominion Post* (23 October 2012); "The war against alcohol has begun," *Northland Age* (28 August 2014); Lisa Knight, "War on smoking 'needs cash'," *Manawatu Standard* (5 December 2014); Editorial, "Time to renew the war on smoking," *The Dominion Post* (22 April 2015); Charlotte Edwardes, "Jamie Oliver's war on sugar," *Daily Mail* (30 August 2015).

behaviour or save the public health system money. By considering evidence overseas, as well as scrutinising the reliability of the studies that support these policies, this report concludes that some public health policies do not achieve their stated goals.

In purely net fiscal terms, some 'ill-advised' activities may even save taxpayers money. For example, obese people are statistically underrepresented in crime statistics, and people who die early cost less to the state in superannuation and end-of-life care. Now, illness and early mortality are tragic for a multitude of reasons, but from a fiscal perspective, these regulations are not always about minimising costs to the public health system.

But if some public health policies are not based on sound evidence, may not protect us from the irresponsible actions of others, or save money, then the attacks on personal freedom and liberty cannot be justified even on economic grounds.

TAKING LIBERTY AS THE STARTING POINT

This report unashamedly takes liberty as the starting point for analysing regulation. While there may be a case for government regulation to protect people from the harm caused by others, there is little grounds for protecting people from decisions they freely choose. These paternalistic regulations need scrutiny.

Of course these days, liberty can be a dirty word, or at least a political one. Even using the term paternalism to describe lifestyle regulations can put off some readers. One man's paternalism is another man's compassion, after all. But it is an appropriate way of describing such interventions.

Paternalism is a word derived from the Latin word 'pater,' or father, and treats those subjected to it as just that: vulnerable, naïve or irresponsible children. Paternalistic regulations, therefore, assume an altruistic government that knows better, and can make better decisions about your life than you can. The thinking goes, individuals are so deeply flawed in their decision-making they often choose things that go against their best interests.[2]

In matters of public health, policies treat equally those who have voluntarily taken risks and suffered health consequences, and those who have contracted illness through no fault of their own. Public health advocates worry as much about contagious disease as voluntarily assumed risk. Paternalistic governance considers both, not on ethical grounds but on what results in the greatest mortality and disease.[3] The World Health Organisation (WHO) encompasses this thinking with its incredibly broad definition of 'public health' as:

> … all organized measures (whether public or private) to prevent disease, promote health, and prolong life among the population as a whole. Its activities aim to provide conditions in which people can be healthy and focus on entire populations, not on individual patients or diseases.[4]

The WHO's reaction to the Ebola outbreak is just one example of this attitude. In the midst of the Ebola epidemic of 2014, Director-General Margaret Chan was slammed for attending WHO's Framework Convention on Tobacco Control in Moscow, which she justified by saying: "Ebola is important, but there are other important issues, like tobacco control."[5] If international efforts were solely dedicated to what has cost more lives and resulted in greater illness and disease to date, Chan would be fully reasonable in her choice. Smoking has resulted in more illness and death than Ebola. But is it right – or ethical – to place so little importance on individual choice and voluntary risk taking? This report argues there needs to be a distinction made between policies that protect

2 A twist on this is that individuals know what is best for themselves but lack the capacity to achieve it. See the "Internalities" section in this report.

3 Eric Crampton, "For Your Own Good?" *Werewolf* (3 November 2014).

4 World Health Organisation, "Public Health," Website.

5 Patrick Goodenough, "WHO chief: Ebola is important, but so is tobacco-control," *CNS News* (14 October 2014).

us from others and policies that protect us from ourselves.

A defence of liberty, or a scepticism of paternalism, does not require humans to be fully rational and make the best choices for themselves all the time. That would be too optimistic. Rather, it is an assertion that on average people make the best decisions they can, given what they know and what they want for themselves. People generally know what they want, and know how to get it. Government, on the other hand, assumes what people want, prescribes ways to do it, and assumes people will act in such predictable ways that policies can be designed to achieve these goals.

What makes the creeping paternalism in New Zealand[6] health policy even more worrying is it does not treat activities equally. Lacking a clear framework for when behaviour needs to be regulated, policies are left to the personal discretion of decision-makers. Health policies may be introduced with the best intentions, and in our best interests, but there is no framework for deciding what that best interest is. There are, after all, activities that carry known risks and are cheap to regulate, such as banning mountain biking or sky diving. There are also risky or unhealthy activities that a lot of people participate in like rugby, or never exercising. So why focus on some activities such as smoking, binge drinking, eating fatty foods – and not others?

Not only are too many of these targeted activities concentrated among lower socioeconomic groups, but regulations universally applied are often justified on the grounds that public health policies will ameliorate poverty and benefit the poor the most.[7] After all, it is implicitly and explicitly assumed[8] that the poor are most prone to cognitive fallibilities that stop them from making responsible choices.

But sceptics rightfully question such condescension, which basically determines how much liberty a person is able to exercise based on their income. Anaesthetist and lecturer in public health Dr Michael Keane says many of his colleagues offer solutions which are not based on sound science and provoke public anger towards those partaking in risky activities (getting drunk, smoking, gambling) and who are overrepresented in lower socioeconomic groups.[9] Writing for *The Economist*, commentator Will Wilkinson is even more cutting about New York Mayor Michael Bloomberg's (failed) proposal to ban the sale of sodas larger than 16 ounces:

> At any rate, we yuppie pinot-drinkers know how to look after ourselves. In contrast, the wretched classless hordes, many of them being of dubious heritage, lack the refinement of taste necessary to make autonomy unobjectionable. Those who abuse their liberty, filling the sidewalks of our great cities with repulsive shuffling blimps, can't expect to keep it, can they?[10]

Even though it is the poorer people's apparent vulnerability and poor judgment that is often used as a reason to justify public health policy, it is everyone's liberty that is at stake. While this report largely focuses on whether current and possible policies will achieve what they mean to achieve, it still takes freedom as the starting point – freedom in its traditional sense that remains as important today as it has since John Stuart Mill in 1859:

> The only freedom which deserves the name is that of pursuing our own good in our own way,

6 Not to mention internationally, where New Zealand public health researchers are a driving force.

7 The Child Poverty Action Group recognises a number of 'social hazards' that contribute to child poverty. See Child Poverty Action Group (CPAG), "Submission: Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori,"(Auckland: CPAG, 2010).

8 Anandi Mani, Sendhil Mullainathan, Eldar Shafir and Jiaying Zhao, "Poverty Impedes Cognitive Function," *Science* 341:6149 (2013), 976–980.

9 Michael Keane, "Ideology, Not Science," *Institute of Public Affairs* (December 2011). This is an extended version of an article that originally appeared in the Medical Journal of Australia.

10 Will Wilkinson, "Bloomberg's Paternalism: Civilising Thirst," *The Economist* (4 June 2012).

so long as we do not attempt to deprive others of theirs, or impede their efforts to obtain it. Each is the proper guardian of his own health, whether bodily, or mental or spiritual. Mankind are greater gainers by suffering each other to live as seems good to themselves, than by compelling each to live as seems good to the rest.[11]

By taking freedom as our starting point, we are not arguing that it is the only thing that matters, or that there is no lifestyle regulation that can be justified on welfare-enhancing grounds. What we are calling for is greater recognition of what is at stake when paternalistic policies are advocated, especially those 'for the good' of others.

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11 John Stuart Mill, *On Liberty* (1859).

ONE
HOW DID WE GET HERE? THE ABUSE OF ECONOMIC LANGUAGE

IT'S ALL ECONOMICS, ISN'T IT?

Economics gives a good baseline for interpreting multiple competing interests at the same time. It provides the framework for assessing the costs and benefits of an activity, how to accommodate different people's preferences, and how all this fits into a public policy framework.

You would be hard pressed to find an economist worth his or her PhD who doesn't believe economics should play an important part in public health policy. And when public health advocates talk about the hundreds of millions in social costs that risky activities involve, they're invoking economics. Yet there are certainly some economists who would be affronted by the way economic language is used – or misused – today.

Today, we see many public policies introduced using economic language, but not necessarily economic understanding. Public health policies are often introduced under the guise that regulation is needed to address a market failure: any situation where resources are not allocated efficiently.

This chapter looks at the two most common forms of market failure used to justify government intervention: a) negative externalities, where people's behaviour imposes costs on others and the state, and b) internalities, where people suffer distortions in behaviour and decision-making so their decisions are not perfectly rational. However, as will be argued in this chapter, not all externalities/internalities are a market failure, and not all market failures require government response.

Even if there is a market failure, we still need some assessment that government intervention can make things better. After all, there are many occasions where government 'fixes' a market failure (or what is seen to be a market failure), only to make things worse. A market failure could even be caused by government to start with.

Finally, this chapter questions the assumption that in a world of trade-offs and opportunity costs, everyone would choose to adopt their government's narrow definition of health and wellbeing.

In all of this, it is worth bearing in mind that 'market failure' has a clearly defined technical meaning in economics. It is where the optimal allocation of resources is not attained. It does not mean the market has just failed to deliver what some people want to see.

MINIMISING COSTS TO THE PUBLIC HEALTH SYSTEM

If you get sick or injured from some risky activity, it is not just you who suffers the consequences. New Zealand's taxpayer funded health and welfare system means the consequences of individual risk-taking are not borne by that individual alone but by the state and, hence, all taxpayers. Because the state funds these services, it inevitably has an interest in minimising the costs of socially unacceptable (or highly disregarded) activities. If the state was really paternalistic, it might even try its hand at manipulating public opinion on what is publicly acceptable.

You may not have signed up for this public health system, but that doesn't stop regulations ensuring you do not impose unnecessary costs to the system you never chose to be part of.

While health policies may be intended to protect people from making poor choices, to say as much sounds condescending. It sounds much less threatening to argue that policymakers are protecting others from negative externalities. It can also turn an innate scepticism about interfering in others' lives into indignation about the costs others impose. Rather than policymakers having to put forward an argument convincing people to give up their liberty, it becomes more palatable to argue people's actions are limiting the liberty of others.[12]

A negative externality is defined as any individual's private action that imposes costs on another individual who is not party to the transaction. It is a pretty broad definition, but the 'party to the transaction' clause matters. For instance, imagine innocently walking down the street and getting punched in the face by a drunk stranger. That is an externality. Now imagine two boxers in a ring. One punching the other is not a negative externality because of the private agreement the two boxers are bound by when they entered the ring. However, not all externalities represent a market failure, and the mere existence of a market failure is not enough to justify government action.[13]

Confused? That is probably understandable, given some introductory economics courses let students walk away with the impression that all market failures require government intervention. That should only be true if government can improve things. But given the unintended consequences of government action,[14] as well as the limitations to government knowledge and reach, there remains only a relatively narrow category for whether government could and should intervene.

But first, a note on externalities.

EXTERNALITIES: WHAT THEY ARE, AND WHAT THEY ARE NOT

It is hard to think of any activity that does not impose an external cost or benefit on someone else. Even being unpleasant to look at imposes a cost on people who are forced to interact with the person or be in their presence. But there are few economists who would lose sleep because of all the ugly people in the world.[15] Rather, economists are mainly concerned with externalities that result in an inefficient allocation of goods.

Fiscal externalities will be what normally springs to mind when thinking about public health and welfare: the actions of others affect government

12 Cost of Illness studies (and the way they are reported in the media) are a good example of claims on the costs of obesity, alcohol and smoking in New Zealand. See, Peter Clough and Killian Destremau, "The Wider Economic and Social Costs of Obesity: A Discussion of the Non-Health Impacts of Obesity in New Zealand" (Wellington: New Zealand Institute of Economic Research, 2015); Adrian Slack, Ganesh Nana, Michael Webster, Fiona Stokes and Jiani Wu, "Costs of Harmful Alcohol and Other Drug Use" (Wellington: BERL, 2009). A figure of $1.3 billion–1.6 billion per annum from the Ministry of Health on the social cost of smoking was cited constantly by the media in 2010, and is sometimes still used today. However, that figure has since been retracted. See Ministry of Health website which states "this analysis is work in progress and methodological issues are currently being addressed." Ministry of Health, "Excise on Tobacco: Proposed Changes" (Wellington: Government of New Zealand, 2010).

13 James M. Buchanan and Wm. Craig Stubblebine, "Externality," *Economica* 29:116 (1962), 371–384.

14 "The law of unintended consequences, often cited but rarely defined, is that actions of people – and especially of government – always have effects that are unanticipated or unintended. Economists and other social scientists have heeded its power for centuries; for just as long, politicians and popular opinion have largely ignored it." Rob Norton, "The Law of Unintended Consequences," *The Concise Encyclopedia of Economics*.

15 Although they certainly may study the existence or rationality of a 'beauty premium' (the financial benefits of being beautiful) – and ugly penalties. See Daniel S. Hamermesh and Jeff E. Biddle, "Beauty and the Labor Market," NBER Working Paper No. 4518 (1993).

savings and expenditure. While the lifestyle choices of others would normally be of business to nobody but the individual involved, this becomes a different matter when taxpayers must bear the fiscal costs of risks they did not personally take.

But at a policy level, fiscal externalities only have efficiency consequences to the extent they can change behaviour. For instance, if treatment for alcoholism were a fully subsidised service available from the public health system, and if it then causes more people to take up harmful drinking than if the subsidy were not available – this would count as a fiscal externality of real efficiency consequence. What counts is when people take undue risks they would not have if they were expected to bear the full costs of their actions.

Fiscal externalities that require government correction are much narrower than simply any cost to the state. There is a distinction between externalities that affect who pays how much (they affect peoples' budgets but not real outcomes) and externalities that distort choices.[16] It is the latter group of externalities that economists care about as they affect the optimal allocation of resources.

If government simply wanted to minimise avoidable costs, why not allow people to opt out of the public system (while getting a tax cut)? The state could just refuse to pay for certain procedures that carry a known risk, and the public could then decide whether to pay taxes and receive benefits from that particular system.[17] That way, the public would not have to pay for the irresponsible choices of others, and those who enjoy risky activities could continue with them. The point here is not to recommend such a system, but to demonstrate there are choices available if minimising fiscal costs were the only priority.

Alternatively, there are some who justify excise/consumption taxes because they raise revenue for health programmes. Such a tax would be inefficient, but it doesn't necessarily distort people's choices and behaviour. Consider the claim that a 20% tax on fizzy drinks could save lives and generate millions in revenue to go towards health programmes.[18] But if the tax were designed to decrease consumption, then the millions in revenue show that people are unwilling to change. If the tax saved a significant number of lives, then the revenue would be relatively small as people adopt healthier habits. But perplexingly, another explanation could be that even if people do not change their behaviour (they choose to be unhealthy), they will still contribute to health programmes that promote healthy behaviour. While this situation is clearly inefficient, it is not a fiscal externality (of efficiency consequence) unless it distorts people's behaviour.

The other kind of externality that will normally spring to mind when thinking about public health is the harm caused to others. For example, drink drivers, smokers who litter, or people who destroy

16 These are known as pecuniary and technological externalities. For a fuller discussion on the different types of externalities, an excellent starting point is James M. Buchanan and Wm. Craig Stubblebine, "Externality," op. cit. and Edgar K. Browning, "The Myth of Fiscal Externalities," *Public Finance Review* 27:1 (1999), 3–18, 16.

17 Of course, some individuals may lack the knowledge or education to understand the true harms of a risky activity, and corporations may have an incentive to mask those risks. There is room here for some light regulation to communicate risks, where these risks have been established (for example, warning labels on cigarette packets that smoking kills). However, any regulation mandating the communication of risks and harms would need to be proven, and reasonable, given basic search theory (see the section "A danger to ourselves" in this report.

18 Cliona Ni Mhurchu, Helen Eyles, Murat Genc and Tony Blakely, "Twenty Percent Tax on Fizzy Drinks Could Save Lives and Generate Millions in Revenue for Health Programmes in New Zealand," *The New Zealand Medical Journal* 127:1389 (February 2014), 92–95.

private property while drunk. These externalities are real – and worth acting on. Fortunately, harming others and their property is generally illegal.

Then, of course, there are the externalities that are not really externalities. These include activities that occur within a private contractual nexus in privately owned spaces. For instance, smoking inside bars or restaurants. While some people may find second-hand smoke unpleasant, it occurs within a private arrangement between the restaurant or bar owner and the people who freely enter the establishment. Now, the relationship between the workers and employers within these establishments may provoke different justifications for government regulation; however, even these relationships occur with a private contractual nexus. Bars, restaurants and hotel owners generally have an incentive to meet their customers' needs regarding smoke-free spaces. If the customers find the atmosphere uncomfortable, the owners would certainly lose business. Voluntarily banning smoking could just make good business sense.

Of course, not all lifestyle regulations are necessarily imposed to correct externalities, even if negative externalities do exist. For instance, the Treasury's Regulatory Impact Statement on increasing tobacco excise states:

> On the narrow *fiscal* grounds of covering the costs smokers impose on government, further increases in tobacco excise may not be justified. At over $1.3 billion per year, tobacco excise revenues may already exceed the *direct* health system costs of smoking. When the broader fiscal impacts of smoking are considered (e.g. shorter life expectancy reducing smokers' superannuation and aged care costs), smokers are probably already "paying their way" in narrowly fiscal terms.[19] [emphasis in original]

This may be a surprise to those who believe the current excise regime is justifiable because smokers impose large costs on the health system. In reality, the Treasury statement above suggests smokers are paying above and beyond a normal Pigouvian tax.

Pigouvian taxes are taxes that address negative externalities set at a level such that the tax on the next cigarette, or next drink, is equal to the cost the next cigarette or drink will impose on others as a negative externality. In other words, the tax is set at a level that will correct the externality at the correct marginal rate, but not in large excess of that. Marginality matters because no tax can be truly Pigouvian when applying a linear tax (say, an excise tax on alcohol) or when the effects are non-linear (moderate drinking has health benefits, while excessive drinking can result in health costs).[20] The tax can never be perfectly proportional to the social harm caused: light or moderate drinkers will pay too much in excise tax, while hazardous drinkers will pay too little.

So, in a nutshell:

- Not all market failures require government intervention; in fact, some externalities are caused by government intervention to start with.
- In public health, fiscal externalities are only a market failure to the extent that people's behaviour is significantly different from how they would act without the system. So, if a person acts under a public system exactly as they would under a private insurance system, the problem is not one of market failure but how much redistribution from the healthy (or risk averse) to the unhealthy (risk takers) society is willing to tolerate.
- Excise taxes are almost never truly Pigouvian because the negative outcomes of an activity are non-linear.

19 Ruth Isaac, "Regulatory Impact Statement: Increase in Tobacco Excise and Equivalent Duties" (Wellington: New Zealand Treasury, 2012), 5.

20 For a more detailed discussion on how to apply an optimal Pigouvian tax, see Felicity Barker, "Consumption Externalities and the Role of Government: The Case of Alcohol," Working Paper 02/25 (Wellington: New Zealand Treasury, 2002).

Table 1: Types of externalities

Action	Is it really an externality? What kind of externality is it?	If there is an externality, should government intervene to correct it?
Smoking inside a bar	No. Customers who voluntarily frequent bars and other private establishments enter into a private contractual arrangement between patron and owner. Owners could even set up non-smoking bars to attract non-smokers if there is demand for it.	
Smoking in a public park	Yes. Where property rights are not clearly defined, such externalities can be imposed.	Potentially. Governments would need to weigh the harm avoided by banning smoking in public places with the benefits smokers enjoy from smoking. There could be a small benefit to a large number of non-smokers, or a large harm to a small number of smokers.
Obese people imposing costs on the public health system	Potentially a fiscal externality if the obese impose high net costs on the public system.	Assess whether the existence of a public health system has exacerbated the problem, that is, whether obesity outcomes are caused by the health system itself. Are people undertaking risk they would not take if they had to pay for their own health costs? Assess also net costs: could the obese save the system money if they die earlier (therefore costing less in superannuation and end-of-life care)? If fiscal costs are all that matter, and if the obese can save the system money by dying early, then using this logic, an equally feasible solution would be to fatten everyone up.[21]
Suffering from a hangover or regret after excessive drinking	Often argued to be imposing an internality on oneself.	Not likely. Government would need to decide which 'self' is the rational self, it would need to have the power to change behaviour, and it would have to assume what different individuals want and need.

INTERNALITIES: THE DEATH OF *HOMO ECONOMICUS*

People can impose externalities on others, but they can also arguably impose externalities on different versions of themselves. These are internalities, and they potentially stop people from making rational decisions in their own self-interest. The drunk self could impose externalities on the sober self, or the present self can impose externalities on the future self.

Internalities are a branch of a new wave of behavioural economics, which marries insights from economics and psychology. Its main tenet is the rejection of *Homo economicus*, or the rational man, where flaws in our rationality stop us from making optimal choices for ourselves. To correct these flaws (or cognitive biases, as they are known in the literature), some regulation is needed to nudge people towards good choices.[21] Poor choices in this case are "technical accidents" in the thinking process.[22] Yet, as Ricardo Rebonato argues, "The problem of striking a balance between the two selves, in a nutshell, is solved by the libertarian paternalists by pretending that the conflict does not exist."[23] The rational self is of most importance for libertarian paternalists, but they do not acknowledge individual preferences for what constitutes a rational self.

Again, there is a potential abuse of economic language here, where flaws in decision-making are considered a market failure – and require government intervention.

The cognitive limitations and psychological biases that lead people to make choices that cause themselves harm have been the subject of much recent economic literature.[24] Internalities reflect "the fear that even people of sound mind might not act in their long-term self-interest in certain predictable situations."[25] Even people with the best intentions may not able to carry out their desired course of action because of problems with self-control.

If all this is worrisome, there may be an even more urgent need to act for those deemed not of 'sound mind' and lack the education or ability to make sound decisions. There is some debate over whether being in poverty causes such mental stress that it harms peoples' cognitive ability[26] to make responsible decisions, and whether it is society's most vulnerable who suffer the greatest from harmful products.[27] Of course, for those willing to make assumptions about others' cognitive limitations, there really is no clear limit to what ought to be regulated for others' own wellbeing.

Externalities, in the new behavioural economics sense, then means something quite different from the normal understanding of the term.

21 Or at least in the libertarian paternalist version of behavioural economics.

22 Term used in Riccardo Rebonato, "A Critical Assessment of Libertarian Paternalism," *Journal of Consumer Policy* 37:3 (September 2014), 357–396, 394.

23 Ibid., 363.

24 Richard Thaler and Cass Sunstein were among the first to study this area, and are still regularly cited on the subject. Also, see the debate between Glen Whitman and Richard Thaler in *Cato Unbound* for an opposing view. Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New Haven, Connecticut: Yale University Press, 2008); Glen Whitman, Richard Thaler, Jonathan Klick and Shane Frederick, "Slippery Slopes and the New Paternalism," *Cato Unbound* (Washington, DC: Cato Institute, April 2010).

25 Colin Camerer, Samuel Issacharoff, George Loewenstein, Ted O'Donoghue and Matthew Rabin, "Regulation for Conservatives: Behavioral Economics and the Case for 'Asymmetric Paternalism'," *University of Pennsylvania Law Review* 151:3 (2003), 1211– 1254, 1213.

26 Anandi Mani, et al., "Poverty Impedes Cognitive Function," op. cit.

27 However, for those who believe there exist cognitive limitations associated with poverty, it could logically follow (at least from a behavioural economics perspective) that welfare payments actually make the poor worse off. For example, Bryan Caplan and Scott Beaulier find that if welfare payments amplify poor people's judgmental biases and self-control problems, government assistance may actually make these people worse off. See Bryan Caplan and Scott Beaulier, "Behavioral Economics and Perverse Effects of the Welfare State," *Kyklos* 60:4 (2007), 485–507.

A DANGER TO OURSELVES

Another reason given for more paternalistic policies is the belief that some people have limited (bounded) self-control, which means they may not be able to make the choices they would prefer to make. An example would be an alcoholic who wishes to quit drinking but is torn between a first-order desire to drink and the second-order desire to quit. While people may not be able to master their cravings, no matter how damaging, they can demand regulations to reduce the availability of products that cause them harm.[28] In this case, the drunk self can impose an internality on the rational sober self.

But this, of course, assumes government is in some way better at performing this task than alternatives such as private, opt-in organisations like Alcoholics Anonymous. It also places no real limits on when the government should and should not intervene. People lack self-control in many areas, not just health. Some philosophers even argue that overcoming such temptations is what it means to be a virtuous human being. But surely such fallibilities in and of themselves are not enough to justify state intervention.

Time inconsistency is another reason used to justify policy where a decision made for the future is no longer best when that time arrives. Hyperbolic discounting is the most common example of time inconsistency. It refers to people's tendency to put exceptional value on the present. They choose smaller rewards in the short term over greater rewards in the long term. In public health terms, this can mean an addicted smoker may consistently choose the short-term satisfaction of another cigarette over the long-term benefits of health and budget improvements (if they say every day they will quit tomorrow, they are being time inconsistent).[29] Hyperbolic discounting is treated as an internality people impose on their future selves.[30] Whether this truly is a fallibility will be discussed in the 'Health and wellbeing above all else' section.

Another way of looking at time inconsistency is through the lens of ex-ante and ex-post decisions. For those who need to brush up on their Latin, ex-ante occurs before an event, and ex-post occurs after an event. A person may be perfectly qualified and capable of making a rational ex-ante decision, but still experience ex-post regret. That doesn't mean a market failure has occurred. Regret or other negative outcomes do not justify government intervention. As Eric Crampton, Matt Burgess and Brad Taylor point out, "The correct test of failure in consumer decision making is to identify the behaviours consumers undertake that would not occur but for imperfections in rationality or information, and but for the presence of externalities."[31] While a rational person may not be likely to agree to negative outcomes for the sake of it, they may agree to a certain level of risk that negative outcomes may occur but are willing to take on that risk because of expected benefits.

Lack of perfect information is also a concept used to justify health policy. It is argued that because consumers are not fully aware of the danger or harm of the product they consume, they underestimate the risks and thus consume

28 Jon Elster, *Ulysses Unbound* (Cambridge: Cambridge University Press, 2000).

29 For a more in-depth discussion on the different forms of time inconsistent behaviour, and whether there exists a case for policy intervention, see Harold Winter, *Trade-offs: An Introduction to Economic Reasoning and Social Issues*, second edition (Chicago: University of Chicago Press, 2013).

30 There is, however, some contention over whether hyperbolic discounting evident in laboratory experiments is actually borne out in the real world. See Steffen Andersen, Glenn W. Harrison, Morten I. Lau and E. Elisabet Rutström, "Eliciting Risk and Time Preferences," *Econometrica* 76:3 (May 2008), 583–618.

31 Eric Crampton, Matt Burgess and Brad Taylor, "The Cost of Cost Studies," Working Paper No. 29 (Christchurch: University of Canterbury, 2011), 4.

more than they would in a world of perfect information.[32] The uninformed/naïve self imposes an internality on an imagined fully-informed self. Asymmetric information is also harmful, where one party knows more than the other – perhaps about the risks of their product or its addictive properties. A lack of knowledge about potential risks may mean some people consume more than they would (then again, if people overestimate risk, they may in fact be consuming too little). Because people are making decisions without knowing the full risks, potential consequences, or costs of their decisions, government intervention is needed to ensure people do receive all the information they need to make informed decisions.

This theory is credible only if people change their behaviour when they are given more information. If smokers continue to smoke, even when their packet of cigarettes is covered in skull and bones warnings that smoking kills, policymakers cannot conclude that the decision to smoke is due to a lack of information.

Further – and even more saliently – lack of perfect information characterises all markets. However, the economics of search theory explains how people deal with imperfect information in markets, including markets for health-affecting products. Search theory describes the optimal balance between the value of finding alternatives for a product/service/resource, and the costs of searching to find them. There are costs to obtaining information, and people differ in how much they value that information as opposed to the other opportunity costs they face. Consider calls in 2010 for better nutritional labelling that meets customer needs.[33] These calls were based on a qualitative study of 15 parents.[34] Yet, the actual study revealed that rather than rely on nutritional labels, parents "preferred to rely on recommendations from friends and family, the media, or on their own prior knowledge" and "even respondents who stated that good nutrition was very important … rarely read information printed on product packaging."[35] If customers are failing to make use of the product information already available at their fingertips, it could be because they have other means of gaining that information, if it is important to them.

The short story? When consumers want information, they typically seek it out and get it.

And what about children? Do children require special policy treatment, or are the same arguments that apply to adults equally apply to children? Is it ever a child's fault for being obese? The WHO argues that "children are the unwitting actors who became obese as a result of entrapment by contextual factors operating within society and by their developmental history influencing both their biology and behaviour. Thus, the argument that the State need not act because obesity may be the result of individual lifestyle choices cannot apply to childhood obesity."[36] In this case, the internality is potentially major. Children lack the knowledge and self-discipline of fully grown, rational adults. They are not in a sound-minded position to make decisions on whether the pleasure they enjoy now is worth the harm they may cause to their future bodies. Now, the first port of call for paternalistic policies, in this sense, is pater or mater (mother or father). However, if the parents should fail, there may be a case for government to take on that responsibility. But again, just because a market failure exists, it does not necessarily follow that government policy is the best mechanism to correct it.

Finally, some cite the addictive nature of risky consumer goods to justify more regulation. Producers of products that contain sugar, or sugar itself, are the subject of exposé documentaries

32 Harold Winter, *Trade-offs: An Introduction to Economic Reasoning and Social Issues*, op. cit., 68.

33 Susan Pepperell, "Food labelling too complicated," *Sunday Star Times* (6 June 2010).

34 Ninya Maubach, Janet Hoek and Tim McCreanor, "An Exploration of Parents' Food Purchasing Behaviours," *Appetite* 53:3 (December 2009), 297–302. The small sample size is enough to raise concerns about extrapolating results of this study.

35 Ibid., 299.

36 World Health Organisation, "Interim Report of the Commission on Ending Childhood Obesity" (Geneva: WHO, 2015), 10.

as the newest and purportedly most insidious (because they are so widely trusted) drug pushers in town.[37]

As Rob Lyons and Christopher Snowdon argue: "If Big Food companies are really a cabal of drug pushers, they are not very good at getting customers addicted … Personal tastes are just too varied to allow many new blockbuster food products to emerge, yet the myth of corporate eggheads concocting ingenious, neuron-tantalising products would suggest otherwise."[38] Addiction, in its narrowest sense, is a debilitating disease, and should not be applied lightly to the consumption of anything enjoyable. After all, would anyone truly consider muesli bar addiction the same as drug addiction? Actually, yes. In fact the University of Otago's Professor Doug Sellman has said exactly that: "Like people with methamphetamine, you don't get the shaking, but it's the craving, feeling deprived and really needing it … It's like they need those particular foods as if their lives depended on it. But they don't; they've got their wires crossed … The thing with an addiction is whatever self-control you had at the beginning is eroded by the forming of the addiction."[39]

HEALTH AND WELLBEING ABOVE ALL ELSE

When government intervenes paternalistically, there is an assumption that health and wellbeing matter more than personal choice and decision-making. Even if society (the whole of society, not just the voting majority) were to agree this is how interests should be prioritised – and that is a huge leap – it also assumes government is best placed to define good health and how to achieve it.

First though, let's take a step back and look at whether people truly are making choices at odds with their personal health and wellbeing. After all, while health can be clearly defined, wellbeing is a much broader concept, though one worthy of equal attention. Wellbeing encompasses mental health and happiness, which may or may not correspond with physical health alone.

On this note, it is important to consider stated versus revealed preferences. If the justification for paternalistic policy is to "make people better off as judged by themselves," then economist Jonathan Klick questions whether we should believe people's actions or words.[40] It is easy for people to say they wish to be thinner, to be healthier, to drink less, or to quit smoking. However, if they have options to follow through with their desires at a reasonably low cost (download a weightloss app, enter a government-subsidised quit smoking programme, etc.), one has to question how committed these people really are to change. As they say, talk is cheap. If people are not willing to take reasonable measures to help themselves, could it be because they do not really wish to change?[41]

The rate of time preference (discount factor) is also a subjective factor that universal government policies are not able to adjust for[42] – whether people prefer to live for today or tomorrow. People differ in how much they value current wellbeing over future wellbeing, and also in recognising whether they are being time consistent and inconsistent. As Harold Winter puts it, "Patience is

37 For a New Zealand context, see Nigel Latta, "Is Sugar the New Fat?" *TVNZ* (2014). Also see Damon Gameau, That Sugar Film (2014).

38 Rob Lyons and Christopher Snowdon, "Sweet Truth: Is There a Market Failure in Sugar?" Discussion Paper 62 (London: Institute of Economic Affairs, 2015).

39 Sam Boyer, "Obese need help to kick the addiction," *The Dominion Post* (20 September 2012).

40 Jonathan Klick, "Revealing Revealed Preferences," *Cato Unbound* (Washington, DC: Cato Institute, 19 April 2010), 42.

41 A possible exception could be those suffering from mental health issues. In these cases, the individual may not be in the best position to seek out and receive the help they need – and ultimately would want if they were in a rational state of mind. However, in these cases, the people closest to these patients (friends, family, medical professionals) are in a better position to judge what this person would truly want for themselves than the government.

42 Harold Winter, *The Economics of Excess: Addiction, Indulgence and Social Policy* (Stanford: Stanford University Press, 2011).

a preference, not a virtue."[43] There is no convincing reason why all people should be compelled to value their future selves over their present selves, nor that government is better placed than you are to make that decision.

A narrow definition of 'good health' ignores the benefits people may enjoy from activities deemed harmful. Good cost-benefit analysis considers the costs of an activity and also the benefits accrued. A major benefit often overlooked is a person's overall enjoyment of an activity. Government interventions have no way of accounting for the general happiness caused by actions such as smoking, enjoying a glass of wine, or eating a birthday cake. But if wellbeing in its entirety matters, then these factors cannot be ignored. As Winter argues, "Any voluntary action necessarily involves gains from trade,"[44] and people would not part with their money unless they gain some perceived benefit. The very fact that such markets exist signals people get some enjoyment out of the product.

Besides, how do we measure rationality? As John Cawley notes, "Irrationality is in the eye of the beholder. One does not judge whether an individual is rational based on his weight or whether one agrees with his choices, but by whether the individual is capable of acting in his own interest (in economics jargon, maximizing his utility)."[45] Wilfully choosing to run a marathon may seem irrational to some: who would choose to put their body through such pain? Spending US$223,000 on a Hermès Birkin bag[46] (a really fancy handbag) may seem crazy to some, but who is anyone to judge another person's utility? People maximise their utility in different ways, from the more socially worthy[47] acts like sports and exercise, to the less socially commendable like excessive spending on luxury items or devouring a cheesecake.

While both traditional and non-traditional economists would agree human decision-making can be fallible, there is an underlying assumption in some of the literature that regulators are not subject to the same fallibilities. Policymakers not only suffer from the same flaws in decision-making that affect all people, but they are also subject to their own special interests. There is even an incentive to those in the public sector to protect the influence and budgets of their own department or ministry. Either intentionally or inadvertently, there is likely to be a special interest in promoting policies that increase their reach.[48] In a study of leading behavioural economics research, economist Niclas Berggren found that 95.5% of studies advocating paternalistic policies based on normal people's failures in information or rationality did not analyse the cognitive abilities (or fallibilities) of policymakers.[49] Berggren concluded that an analysis of policymakers' cognitive capabilities would be a useful addition to the literature on behavioural economics.

If government is simultaneously in charge of defining what public health and wellbeing should entail, as well as how it should be achieved, there can be little flexibility in approach. If policies are entirely opt-in, then there is a risk policies won't maximise their potential effect. But if policies are universal, then people are compelled to live according to the whims of the government at the time.

43 Ibid., 153.

44 Harold Winter, *Trade-offs: An Introduction to Economic Reasoning and Social Issues*, op. cit., 66.

45 John Cawley, *The Oxford Handbook of the Social Science of Obesity* (Oxford: Oxford University Press, 2011), 132.

46 People do this. See Colleen Kane, "Why a $223,000 Hermes Birkin bag might actually be a good investment," *Fortune* Magazine (23 June 2015).

47 Social worthiness as judged by popular opinion. This report makes no conclusions on whether eating cheesecake is less socially commendable than exercising.

48 Ted Gayer and W. Kip Viscusi, "Behavioral Public Choice: The Behavioural Paradox of Government Policy," *Harvard Journal of Law & Public Policy* 38:3 (2015).

49 Niclas Berggren, "Time for Behavioural Political Economy? An Analysis of Articles in Behavioural Economics," *The Review of Austrian Economics* 25:3 (2011), 199–221.

This can very easily lead to slippery slopes and sloppy societies. Glen Whitman argues regulating one thing, like banning smoking on planes, makes it the reasonable middle-ground.[50] Once banning smoking on planes quickly becomes publicly accepted, this paves the way for even more regulation, like banning smoking in bars and restaurants. Once that becomes the middle ground, it is not that hard to imagine a city-wide smoking ban is the logical next step.[51] Paternalistic governments could also create sloppy societies, as there is no real need or incentive for taking responsibility for one's decisions. Things are only risky if government says it is risky; if it is legal, it must be safe. People then rely on government to be guided on health decisions, and government gets blamed if it gets things wrong.

And so the list goes on. Once one regulation is accepted, it becomes easy to push through more. For example, if alcohol advertising is banned from prime time television to avoid exposure to children, should it not be banned from movies seen mostly by children? But then, many children attend movies with adult themes (like *The Hunger Games*), so it would logically follow that alcohol advertising in these movies should be banned. Actors children admire often drink alcohol in movies, and even make drinking seem cool and desirable. Perhaps drinking in movies should be banned too (and so on, and so on).

ECONOMICS SHOULDN'T BE ABUSED, BUT IT'S NOT THE ONLY THING THAT MATTERS

As this chapter has shown, not all economic concepts are correctly used, and not all correctly used economic concepts necessarily require government intervention. Market failure and externalities cover a broad ground, and not all interventions are equally worth pursuing. Some deciding factors include whether the costs are proportional to the benefits of an intervention, whether it was the public system that caused problems in the first place, whether the intervention is important enough to citizens that they would be willing to pay to change the outcome, and how willing the public are to change their behaviour.

Understanding true public intentions and sentiment is hard enough. Predicting how the public will change their behaviour under more regulations is even harder. If there is indeed a case for government intervention based on market failure, the next step is to design good evidence-based policy.

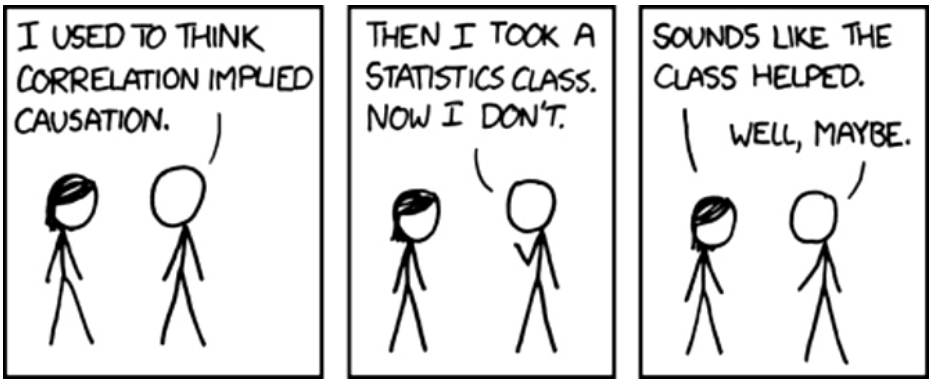
As the next chapter shows, many of the studies relied on for public health policy miss the mark.

THE NEW ZEALAND INITIATIVE

50 Pundits sometimes refer to this as the Overton window, which is the range (or window) of policies or ideas the public are willing to accept. At any given time, not all ideas can be politically viable, so policymakers safely operate within that window of acceptability. Slippery slopes extend or move that window.

51 Glen Whitman, "The Rise of the New Paternalism," *Cato Unbound* (Washington, DC: Cato Institute, April 2010).

TWO
WHEN TO BELIEVE A HEALTH STUDY



Source: "Correlation," https://xkcd.com

In the previous chapter, we learned that the economic grounds for government intervention are clearly quite narrow when economic concepts are used correctly. However, even if a market failure or externality has been established, policy intervention must be based on sound evidence. Almost every new health and lifestyle regulation will be backed by research and evidence. Good, robust policy must be supported by equally robust studies. Yet there are a lot of public health studies that are far from rigorous. This chapter examines some of the common mistakes found in health studies, and what readers should look out for when assessing the reliability of a study.

CHECKLIST FOR A RELIABLE STUDY

Even if studies are not being actively considered by policymakers, they can inspire voter demand for more intrusive interventions. A poorly executed study can exaggerate the costs of an activity to the public and the public purse. It could also misconstrue the nature of the problem and how best to address it.

Before reporting on such studies, researchers and journalists should check for what the study says it was going to do, how it went about doing it, and whether the results actually reveal what the authors or press releases say they reveal.

If you have ever read headlines along the lines of "Binge drinking costs taxpayers billions of dollars a year," chances are the figure came from a Cost of Illness (CoI) study. These studies are crucial in policymaking and shaping public attitudes towards issues. A CoI study that exaggerates costs or includes factors that most people would not consider reasonable can be highly deceptive yet influential.[52]

The methodology sections of empirical and observational studies must also be scrutinised for credibility. In fact, it is often the first place a researcher should look. For those not trained in the profession, Table 2 is a checklist of things that an economist might look at to determine the reliability of a study. It is a brief – but by no means exhaustive – list of things that generally indicate whether to believe a study or not. At least, they are things a researcher should keep an eye out for to understand how a study was executed.

52 Klaus Mäkelä does a good summary of the common misleading assumptions in cost-of-alcohol studies, many of which can be applied to CoI studies in other areas. Klaus Mäkelä, "Cost-of-Alcohol Studies as a Research Programme," *Nordic Studies on Alcohol and Drugs* 29:4 (August 2012), 321–343.

Table 2: Checklist to examine the reliability of a study

What to look out for	Why it matters	Example
Is the study a randomised control trial?	Yes? Then congratulations, this is the gold standard of public health research. Participants are randomly assigned into two groups. One group receives the intervention, and the other is designated as a control group. The only expected difference between the two groups is the outcome variable.	To test the effectiveness of a smoking cessation programme, two *randomly selected* groups of smokers participate, where one group is put on a new programme of smoking cessation, and the other group on the standard programme. If there are confounding variables, they will affect both groups.
Does the study establish causality?	In other words, did one thing really cause the other? Sometimes, studies won't even claim they've established causality, yet press releases and media coverage tend to conflate correlation with causation anyway. It pays to check the actual study.	A study finds that youth drinking causes poor school performance. Before accepting the conclusion, check whether the study concludes causality, or simply finds a correlation or association. It could be that the kind of youths who drink a lot would never have been at the top of the class, even if alcohol did not play a role.
What could be some of the remaining confounding variables?	Confounding variables are omitted variables (variables that have been left out of the study) that correlate with the variables being observed. While studies can adjust for confounders, any remaining confounders that could explain the results also need to be considered.	If studying the effects of soda consumption on obesity, other confounding variables could be other dietary habits or lack of exercise. The kind of people who have high soda consumption may also share other confounding variables that explain their obesity.
If trying to establish causality, what method is used?	Natural experiments are one of the most reliable methods of establishing causality.[53] Natural experiments occur when the population being studied are exposed to factors outside the control of the investigators, and of the subjects, that affect the behaviour in question.	If studying the relationship between pokie machine density and crime, a natural experiment would be to see whether the borders of pokie licensing boards shift for a reason not related to the outcomes variable. The researcher could then observe whether changes in the new pokie densities are related to changes in crime rates.
	Instrumental variable techniques can be a reliable method for establishing causality – though they are difficult to get right. They use exogenous indicators (indicators other than the variables directly studied) to demonstrate a relationship between variables.	Consider a study using data on prison overcrowding (which can force early release) to see whether changes in prison populations have a causal effect on crime.[54] Data on prison overcrowding is the exogenous indicator (the instrumental variable) used to overcome the problem that prisoner populations and crime rates often change simultaneously (which in turn makes it difficult to establish causality).

53 Though even in natural experiments confounding variables still affect results.

54 Steven D. Levitt, "The Effect of Prison Population Size on Crime Rates: Evidence from Prison Overcrowding Litigation," *The Quarterly Journal of Economics* 111:2 (1996), 319–351.

What to look out for	Why it matters	Example
If trying to establish causality, what method is used? *(cont.)*	Regression discontinuity design is reliable for making causal inferences. It establishes the causal effects of an intervention by assigning a threshold, and then looking at results above or below that threshold. The method is used because those close to the threshold (either above or below) are more likely to share similar relevant characteristics.	If testing the effectiveness of a new programme or technique (the intervention), you would compare students who only just passed an exam to those who only just failed. Passing the exam is the relevant threshold, and those students directly above or below the threshold line would likely share similar characteristics.
	Panel fixed-effects studies compare the same population group over time. Panel fixed-effects methods are less reliable for establishing causality, as the method cannot adjust for unobservable changes within the population studied.	A collection of census studies that collected data for the same meshblock (a defined area) could yield important insights into the change in outcomes for that meshblock over time. For instance, researchers could test the effect of an increase in liquor store density on the population. Researchers should be cautious of results, though, if there were important but unobservable within-meshblock changes that could affect results. For example, the liquor store owner may set up shop in an area because they believe it will become popular with students. If drinking rates subsequently rise, it may be due to time varying selection.
Is the direction of causality right?	Look out for reverse causation, where a relationship with variables exists but the direction of causality may not be right.	If it is claimed that drug use correlates with mental illness (implying causation), check for the direction of causation. It could equally be feasible that those who use drugs may have suffered from mental illness before the fact, or are using drugs as a form of self-medication.
Are the results practically significant?	If a study says it has found a statistically significant relationship between two variables, it means there is a degree of certainty that the observed results are not simply due to chance. But for the study to be practically significant, check the size of the effect.	In a study of 50 people, researchers found that those who cut bacon out of their diet reduced their risk of bowel cancer by 5%. To test the practical significance of the study, test the absolute magnitude of the effect: How great a risk is bowel cancer in the first place?
Comparing with a counterfactual	To establish a causal relationship between an activity and its cost, the activity needs to be compared with a counterfactual. A meaningful cost would be compared to a state of the world where the activity did not exist.	In 2010, the Ministry of Health estimated that smokers cost the public health system $1.9 billion. However, further investigation via an *Official Information Act* request by Eric Crampton revealed that the cost does not reflect any counterfactual state of the world. Then Associate Minister of Health Tariana Turia noted on 12 October 2010: "While giving a good indication of what the current costs are of treating the health damage caused by smoking, this figure has never been portrayed as a measure of what might be saved if compared to a world where smoking had been eradicated."[55]

55 Eric Crampton, "Ministry's figures need analysis," *The Press* (5 November 2010). Crampton points out that it doesn't even give a good indication of the current costs of treating the health damage of smoking. Also see Eric Crampton, "Excess excess [sic] costs of smoking," *Offsetting Behaviour* blog (16 June 2010).

What to look out for	Why it matters	Example
Comparing with a counterfactual: claims about productivity	Many CoI studies include the costs of worker absenteeism or losses in productivity due to illness. However, a failure to compare these results with a counterfactual means individual-specific characteristics are not taken into account. Similar arguments apply to the cost of alcohol/drug-related crimes.	A CoI study may count a hungover employee as a social cost. This assumes that employees who call in to work sick from a hangover or do not perform well at work because they are hungover would have otherwise performed better on both counts. The important counterfactual is the employee's work ethic under normal (not influenced by alcohol) circumstances.
Comparing with a counterfactual: establishing excess risk or harm	If a claim is being made about the excess risk or harm of an activity, it is important that the counterfactual the activity is compared to is indeed the most likely to occur in reality. In many cases, harmful or risky activities may be a substitute for other harmful or risky activities.	Consider the headline in a *Daily Mail* article, "E-cigarette users are 'significantly more likely' to be problem drinkers: Devices encourage excess alcohol consumption, study claims."[56] The first question a discerning reader will ask is compared to whom are e-cigarette users more likely to be problem drinkers? Compared to cigarette smokers? Or compared to non-smokers? The study uses the counter-factual of non-smokers, but many e-cigarette users see them as a substitute for combustible cigarettes.[57] To measure any excess drinking, it is more useful to compare results to a world in which e-cigarettes never existed. Is it really plausible that if e-cigarettes never existed, the same consumers would quit cold turkey or would not be smoking combustible cigarettes?
Are costs wholly attributable to the activity studied?	CoI studies may include medical costs in their calculation. Medical costs wholly attributable to the illness (such as drinking) are justifiable. However, many CoI studies also include partially attributable costs, which means the cost was not fully caused by the illness.	The UK Office for National Statistics takes a 'broad measure' approach to recording hospital admissions, which includes people admitted to hospital suffering fully and partly attributable conditions. They even record hospital admissions based on secondary diagnoses, where the primary reason for admission was not alcohol related (for example, being admitted because of the flu, but subsequently receiving an alcohol-related diagnosis).[58]
Does the study cover a sufficient time period?	Surveys focusing on short timeframes could fail to take into account long-term consumption habits and corresponding behavioural adjustments, where behaviour adjusts in the long term.	Suppose you wanted to test the effect by asking obese people how often, and how much soda they had consumed in the last six months. Such a short timeframe would not encompass whether the person may be avoiding sugar-sweetened beverages (SSBs) because of medical advice or as part of a weightloss strategy; the person may have consumed large amounts of SSBs at different periods of their life; or the person may have avoided soda because of medical advice but had substituted consumption to equally – or even more – harmful products.

56 Madlen Davies for MailOnline, "E-cigarette users are 'significantly more likely' to be problem drinkers: Devices encourage excess alcohol consumption, study claims," *The Daily Mail* (29 October 2015).

57 Alexandra R. Hershberger, Kenny A. Karyadi, J. Davis VanderVeen and Melissa A. Cyders, "Combined Expectancies of Alcohol and E-cigarette Use Relate to Higher Alcohol Use," *Addictive Behaviors* 52 (2016), 13–21.

58 Public Health England, "Alcohol-Related Admissions: Summary of Responses to the Consultation and Future Plans" (London: 2013).

What to look out for	Why it matters	Example
In CoI studies, private costs are not social costs or fiscal costs	Not all of the costs of an activity will be relevant when trying to assess the fiscal cost-effectiveness of a policy or intervention. There are private costs borne by the individual, which should rarely justify policy action. Then there are externalities (social costs) borne by the public that could justify intervention. In addition, there are costs borne by the state (the public health system, corrections, justice, etc.).	A typical private cost would be being hungover or experiencing regret. A social cost could be physically abusing an innocent bystander while drunk. A fiscal cost could be requiring hospital treatment or police intervention. The cost of lost earnings due to premature mortality, premature retirement, or absenteeism are also private costs, not social costs. Employers and employees are bound by a private contract, and therefore represent a private relationship.[59]
CoI studies are not net welfare studies	Many CoI studies only count costs, while ignoring the benefits of an activity. While this is justifiable as CoI studies may not purport to count benefits, the results become misleading if they are used to assess an activity's overall contribution to welfare. As a summation of all costs and no benefits, CoI studies do not represent the net effect of an activity to an individual's or society's wellbeing.	Collins and Lapsley's 2008 CoI study estimated the net costs of alcohol abuse on Australians (as distinct from Australian taxpayers).[60] Crampton, et al. note that Collins and Lapsley assume "abusive consumption provide[s] no offsetting benefit to the consumer" and do not take into account private consumption benefits.[61] While addictive or binge behaviour is likely to bear costs and risks, benefits would still have to be derived (perhaps the first one or two drinks were enjoyable, the tenth not so much) for the activity to become addictive in the first place.
CoI studies do not calculate net costs to the public system	This is similar to the above point. While some CoI studies do not purport to include benefits, if this is the case, conclusions cannot be drawn about the overall cost to taxpayers. While illnesses may incur costs, they may also save the public system money over a lifetime.	While smoking-related illnesses may incur costs to the public system, smoking may also lead to early death. While tragic, on a fiscal basis this saves the public system money on pensions and prolonged end-of-life care. Similarly, evidence suggests obese people are less likely to commit crimes or be arrested than their healthier counterparts.[62]
Will the intervention be cost-effective?	If a study is calling for a policy reaction or intervention, then describing the nature of the problem (for example, do bar closing times cause greater crime costs?)[63] is only half the story. In order to justify policy intervention or regulation, there ought to be an assessment of whether the policy will be cost-effective.	Even if it is established that later bar closing times increase the costs of crime, if policy intervention costs exceed the costs of crime, then the policy is not likely to be cost-effective. Calls for policy action will often occur in the discussion part of the report, even if the rest of the study does not provide sufficient evidence to justify the intervention.

59 For a light-hearted take on this, see Colby Cosh. He argues that when it comes to calculating costs to the economy, or the social costs of lost productivity, "Human imperfections defy accounting. Why count the costs of illness, and not the costs of have a low IQ, or just being bone lazy?" Colby Cosh, "The Cost of Lazy Health Reporting," *Macleans Online* (21 October 2013).

60 David J. Collins and Helen M. Lapsley, "The Costs of Tobacco, Alcohol and Illicit Drug Abuse to Australian Society in 2004/05" (Canberra: Commonwealth of Australia, 2008).

61 Eric Crampton, Matt Burgess and Brad Taylor, "The Cost of Cost Studies," op. cit., 15.

62 Peter Clough and Killian Destremau, "The Wider Economic and Social Costs of Obesity," op. cit.

63 For a natural experiment on this, see David K. Humphreys, Manuel P. Eisner and Douglas J. Wiebe, "Evaluating the Impact of Flexible Alcohol Trading Hours on Violence: An Interrupted Time Series Analysis," *PLoS One* 8:2 (2013).

WHAT ELSE COULD POSSIBLY GO WRONG? AN EXEMPLAR

When reading a health study, scrutinising the methodology helps reveal any innate flaws. Despite its questionable methods and conclusions, Robert Lustig's study (described below) generally received positive, unquestioning media coverage in reputable outlets such as *Time* magazine,[64] The *New York Time*s,[65] and *The Wall Street Journal*.[66] The lead author, Lustig, is one of the most vocal opponents of sugar internationally, likening it to toxic substances such as alcohol, tobacco and cocaine.[67] He also featured prominently in the New Zealand-produced documentary on the dangers of sugar by Nigel Latta.[68]

A recent report co-authored by Lustig claims that sugar is inherently a metabolically harmful substance, and small reductions in sugar intake rapidly improve health (lower blood pressure, increased glucose tolerance, and lower levels of insulin circulating in the blood) without restricting calories.[69] "Up until now, there have been a lot of correlation studies linking sugar and metabolic syndrome … This is causation."[70]

There are a number of things to watch out for in such experiment designs and conclusions.

First, it is important to use a control group to compare the results of an observational study. Instead, Lustig relied on the self-reported data on a child's calorie intake, and then replaced the normal diet with a low-sugar diet with the same amount of calories as the child had reported (replacing sugary foods with starchy foods such as pizza, hot dogs and burritos). But only a control group would be able to verify the reliability of the children's self-reported calorie intake. If the purpose of the experiment is to test the effects of sugar, then surely it would be more useful to have a control group with an unchanged sugar intake, to compare with the low sugar intake group.[71]

Because the study did not use a control group, an additional weakness is that it does not adequately adjust for confounding variables related to diets, habits and lifestyle. There are a number of confounding variables where certain lifestyle variables tend to cluster. For example, "Kids who eat more sugar have so many other differences compared to kids who eat less sugar, making it impossible to know if sugar is the culprit."[72] In Lustig's study, another confounding factor is the age at which children attained puberty (8–18 years).[73]

Finally, self-reporting data can be unreliable, as people can unknowingly under- or over-estimate their consumption, and may even do so intentionally if their actions carry a social stigma (such as an obese person continuing to eat unhealthily). This is only a weakness when the self-reported data cannot be substantiated by comparing with a control group.

64 Alice Park, "Sugar is definitely toxic, a new study says," *Time* Magazine (27 October 2015).

65 Anahad O'Connor, "Cutting sugar improves children's health in just 10 days," *The New York Times Online* (27 October 2015).

66 Betsy McKay and Mike Esterl, "Study links sugar to conditions that lead to diabetes, heart disease in children," *The Wall Street Journal Online* (27 October 2015).

67 Robert Lustig, *Fat Chance: Beating the Odds Against Sugar, Processed Food, Obesity, and Disease* (Hudson Street Press, 2013).

68 Nigel Latta, "Is Sugar the New Fat?" op. cit.

69 Robert Lustig, et al., "Isocaloric Fructose Restriction and Metabolic Improvement in Children with Obesity and Metabolic Syndrome," *Obesity* 24:2 (2016), 453–460.

70 Alice Park, "Sugar is definitely toxic, a new study says," op. cit.

71 Christopher Snowdon, "The Latest 'Science' on Sugar is so Flawed it Tells Us Nothing Whatsoever," *Spectator UK* (27 October 2015).

72 Rebecca Goldin, "Glaring Flaws in Sugar Toxicity Study," www.stats.org (27 October 2015).

73 Ibid.

IN OTHER WORDS, READ THE REPORT

Our recommendation: read the report. Don't rely on media reports, or even the press releases promoting the study. Press releases – even ones from universities – are not often written by the researchers themselves, and are designed for maximum impact, not maximum accuracy.[74] And when you read the report, don't just read the abstract and then skip straight to the discussion and conclusion. Sometimes the conclusions may be written to sound strong, even if the evidence and results gathered are spurious. It is the methodology section that really matters. The discussion sections can also be misleading, where strong calls are made for policy action, even if the policy itself was not what the study was investigating or backed by the results.

But the very fact that you, dear reader, are reading this already suggests you belong to the small minority of people who read beyond the executive summary of reports. So apologies for pointing out the importance of what you are already doing. We wish there were more people like you.

The next three chapters (on food taxes, e-cigarettes, and alcohol marketing) apply some of the tips and tricks of this section to policy problems salient in New Zealand today. While the following chapters are by no means an exhaustive review of the literature available on the topics, the intention is to provide some examples of things to look out for. Often, studies repeat the methodological mistakes of others, while more reliable studies can get overshadowed. Further, based on the evidence (or lack thereof), these chapters demonstrate how the policies advocated for (food taxes and alcohol marketing bans) or against (e-cigarettes) affect freedom.

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74 A note to journalists: those who do their homework could be handsomely rewarded (or at least, avoid real embarrassment). Take for example a German study which found that chocolate can help you lose weight. The researchers purposely conducted an unreliable study to expose how poor public health studies get disseminated in the media. Their strategy worked, even if it did make them unpopular. See Maria Godoy, "Why a Journalist Scammed the Media into Spreading Bad Chocolate Science," NPR *The Salt* (28 May 2015).

THREE
WILL FOOD TAXES WORK?

GROWING CALLS TO TAX UNHEALTHY FOODS

As taxes on soda, sugar and fat are considered around the world, it was only a matter of time before New Zealand joined the bandwagon. In 2014, the Treasury explored "options for regulatory responses to the growing obesity problem,"[75] and in 2015, the WHO looked into "using price policies to promote healthier diets."[76]

This chapter considers food taxes as a general concept, as some of the lessons gained from sugar, sugar-sweetened beverages (SSBs) and fat taxes overseas (mainly Mexico and Denmark, respectively) can be applied across all potentially taxable unhealthy foods. Nevertheless, this report also acknowledges there are differences in the nature and application of different food taxes. For example, fat taxes are more comprehensive and complex than SSB taxes. This report also only considers food taxes as a mechanism for improving health rather than (primarily) as a revenue-raising tool, although other jurisdictions have implemented food taxes for that purpose.

Obesity is a growing problem in New Zealand, and a growing policy problem at that. According to the Ministry of Health, almost one in three adults are obese, and almost one in ten children are obese.[77] New Zealand's obesity rate ranks near the top in the world. Diseases associated with obesity such as diabetes, heart disease and strokes are argued to be a key reason for government intervention.

The Treasury has described obesity in New Zealand as stemming from an obesogenic environment that facilitates and promotes weight gain.[78] The Ministry of Health supports this description:

> Although some people are more genetically susceptible to weight gain than others, the rapid increase in the prevalence of obesity in recent years has occurred too quickly to be explained by genetic changes and *most experts believe it is due to living in an increasingly "obesogenic" environment* – one that promotes over-consumption of food and drinks and limits opportunities for physical activity.[79] [emphasis added]

While the Ministry of Health recognises that both diet and lack of exercise can cause obesity, public calls for intervention into diets have been much louder than the calls for promoting more exercise and more active lifestyles.

75 The Treasury, "Options for Regulatory Responses to the Growing Obesity Problem" (Wellington: Government of New Zealand, 16 December 2014).

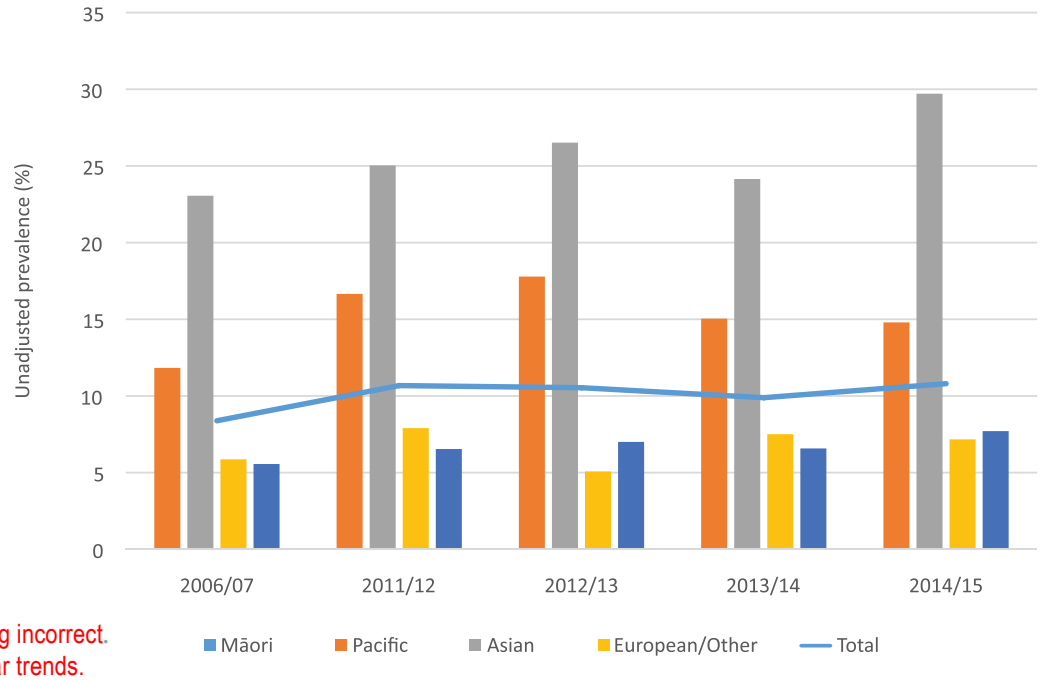
76 World Health Organisation Europe, "Using Price Policies to Promote Healthier Diets" (Copenhagen: WHO, 2015).

77 Ministry of Health, "Obesity," Website.

78 The Treasury, "Options for Regulatory Responses to the Growing Obesity Problem," op. cit. No evidence is given for that claim.

79 Ministry of Health, "Obesity," op. cit.

Chart 1: Child obesity in New Zealand (2007–15)

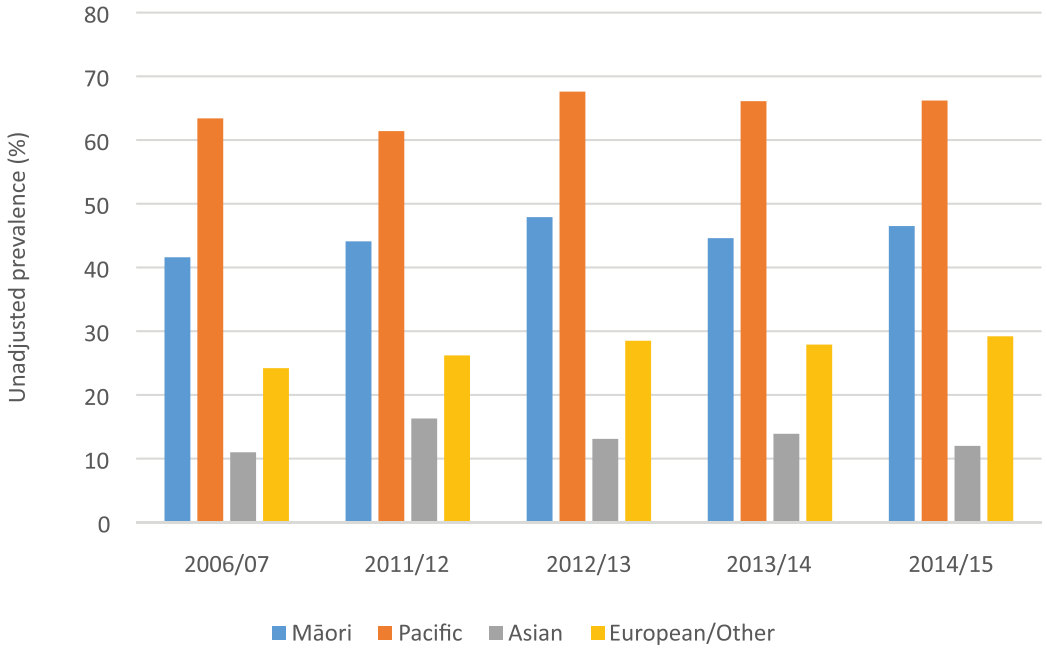


Note: Graph colouring incorrect.
See chart 2 for similar trends.

Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. Child is defined as 2–14 years, and obesity is defined as BMI equivalent to an adult BMI of 30 (or greater). For a full explanation of methodology used, see the Ministry of Health website.

Chart 2: Obesity by ethnicity in New Zealand (2007–15)



Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. Includes adults 15 years and over. Obesity is defined as a measured BMI of 30+, or equivalent, for <18 years. For a full explanation of methodology used, see the Ministry of Health website.

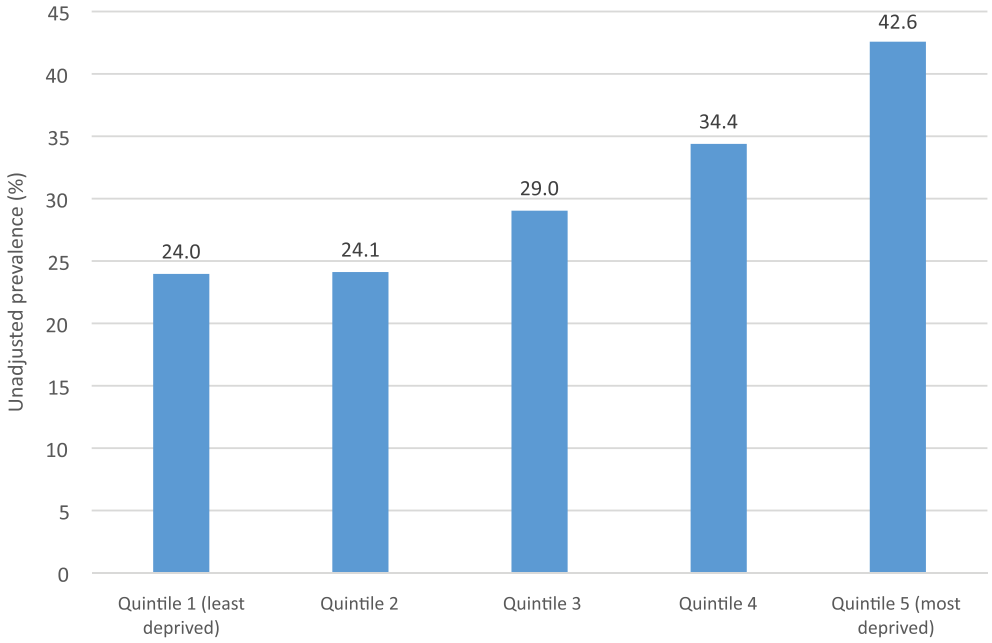
While many health regulations would affect adults and children alike, they are often advocated on the basis of child obesity. However, as Chart 1 shows, even among children, obesity rates are inconsistent across ethnic groups. While some of this difference may be explained by socioeconomic status, there may be other factors at play.

Much has been made of the correlation between low income or material hardship and obesity. Yet most health-related regulations regarding obesity are aimed at the general population. Disentangling causes of obesity related to deprivation, and causes related to ethnicity, remains an important step towards better targeting of policy.[80]

Despite the uptake or consideration of food taxes or subsidies in some countries, the evidence that they actually work remains mixed at best. Many studies investigate the effect of a tax on consumption, but not the tax's effect on obesity or obesity related diseases. Food taxes are simply a means to an end, where it is believed changing behaviour and consumption patterns will in turn reduce obesity.

This chapter looks at the reliability of evidence used to justify these taxes to conclude whether the intervention will help those it claims to help. This chapter also explores some of the implications of food taxes on freedom and liberty.

Chart 3: Obesity by neighbourhood deprivation level (2015)



Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. Includes adults 15 years and over. Obesity is defined as a measured BMI of 30+, or equivalent, for <18 years. For a full explanation of methodology used, see the Ministry of Health website.

80 A study looking at ethnic risk factors for obesity, as distinct from socio-demographic factors, confirms the need for continued research and appropriately targeted policy in this area. See Laura D. Howe, et al., "Ethnic Differences in Risk Factors for Obesity in New Zealand Infants," *Journal of Epidemiol Community Health* (March 2015), 1–7.

HOW RELIABLE IS THE EVIDENCE SO FAR?

New Zealand is lucky that it does not have to be a pioneer in food taxes. There are many international examples to learn from, and there is no excuse for launching head first into a policy without checking for how it has worked overseas first.

A basic assumption behind food taxes is that because taxes increase the price of a good, demand for that good will go down. Note that demand refers to the quantity of the good purchased, not the dollar amount spent on that good (expenditure). The argument follows that the poor (who are overrepresented in obesity statistics) could benefit most from these policies due to their price sensitivity (inability to pay high prices). In real life, responses are not that simple. The effect on behaviour will be influenced by whether the good being taxed can be substituted with other goods; who bears the burden of the tax (whether the tax is absorbed by producers or passed on to consumers); and whether there is potential for downshifting in quality and price within the taxed group.

New Zealand food price elasticities

The estimates used to predict the demand elasticity for unhealthy foods in New Zealand are prone to some common errors. The price elasticity of demand measures the change in the quantity of a good purchased when there is a change in price. If people have highly elastic demand, their demand will change dramatically in response to a change in price (a massive decrease in demand for a tiny increase in price, and vice versa). If demand is completely inelastic, their demand will not change no matter what is happening with the price. The price elasticity of demand explains where people fit on this spectrum of extremes.

A 2013 New Zealand study, "Food Prices and Consumer Demand: Differences Across Income Levels and Ethnic Groups," used information about people's expenditure patterns to determine their price sensitivity, or elasticity of demand.[81] The study used data sets from Statistics New Zealand's Household Economic Surveys (how much people spend) and the Food Price Index (how much food costs and how prices change). The study concluded: "The greater sensitivity of low-income households and Māori to price changes suggests the beneficial effects of such policies on health would be greatest for these groups."[82] However, the study faced a number of limitations.

First, an analysis of household expenditure based on how much people spend on different categories of food does not give a reliable estimate of quantity consumed (where it is expenditure that determined overall demand for a good). So it does not tell us how much of a particular item people are eating, just how much they spend on it. While a food price index was used as a price matching tool, its categories are too broad to adjust for within group variation. The study's broad categories meant that:

> … all milk, yoghurt and eggs were combined in one category, and all carbonated beverages in another. This made it impossible to assess the effects of price changes on close substitutes for many key foods e.g. full-fat versus reduced fat milk, or sugar-sweetened beverages versus sugar-free varieties.[83]

It is also notoriously difficult to predict price elasticities to account for quality and quantity when you only have data on consumer spending. John Gibson and Bonggeun Kim[84] say this is a flaw in Cliona Ni Mhurchu, et al.'s paper, "Effects of Health-Related Food Taxes and Subsidies on Mortality from Diet-Related Disease in New Zealand: An Econometric-Epidemiologic Modelling

81 Cliona Ni Mhurchu, et al., "Food Prices and Consumer Demand: Differences Across Income Levels and Ethnic Groups," *PLoS One* 8:10 (2013).

82 Ibid.

83 Ibid.

84 John Gibson and Bonggeun Kim, "Biases from Uncontrolled Quality When Unit Values are Used to Estimate Demand Elasticities Give Grounds for Caution on Fat and Sugar Taxes," PowerPoint presentation to the Department of Economics, Monash University (2015).

Study."[85] The study used Household Economic Survey estimates to predict price elasticities of different food groups (SSBs, fatty foods, and salty foods). Unlike other studies, Ni Mhurchu, et al.'s model accounted for substitution to other food groups, but not for within-group substitution, that is, it did not consider people switching within one food group category (for example, SSBs) or between brands and products (for example, from juice to soda or from Coca Cola to a budget brand).

Ni Mhurchu, et al.'s conclusions are based on how much consumer spending changes in a given food category. Again, using SSBs as an example, products can vary widely on price (dollars per litre) and quality (calories per litre). A simple examination of how consumer spending changes in the face of taxes or subsidies does not capture calorie intake, or how consumers adjust for quality and quantity.[86] In fact, there may even be perverse consequences if consumers spend less, but substitute to lower quality, unhealthier foods within the group.

LESSON: To get reliable information on consumers' response to a change in price, household expenditure surveys must be detailed enough to capture substitution within the group of products.

Ignoring/misunderstanding the substitution effect

The effect of excise taxes, or taxes to curb behaviour, depend on the number of available substitutes. But what is then defined as a viable substitute is also important in this analysis. Some human behaviour is predictable and obvious – making substitutes easy to identify – while other nuances may be harder to grasp.

For example, most consider the consumption of junk food as a purely health and nutrition issue. However, as the statistics in this chapter have shown, there is a poverty aspect too. While richer families may be able to afford 'treats' or rewards for themselves or their children (books, toys and other material goods), poorer families are much more limited. For some, junk food could be seen as a substitute for those material treats – something that brings them or their children temporary happiness when they cannot afford much else.

To predict whether people will switch to substitutes, factors such as the comparative price of the products, their availability, and consumer preferences need to be considered. However, few studies have recognised consumers could treat other sugary foods as viable substitutes. When people crave an SSB or choose to consume one, it may not be to quench their thirst but their sugar cravings.

An SSB tax may simply cause a shift from consuming a sweetened beverage to a sweetened food. Even a broad sugar tax does not solve this problem as people could shift to fatty foods or 'treat' foods instead – unhealthy but tasty and easy-to-consume foods. Defining substitutes involves considering the range of reasons why a person chooses to consume a product.

It could also be that a person consumes SSBs because of the lack of availability of clean and affordable drinking water (while this is not likely to be a problem in New Zealand, it is important when considering overseas evidence). If so, it would be more efficient and effective for government to extend access to clean, drinkable water rather than limiting access to SSBs.[87] Another way

85 Cliona Ni Mhurchu, et al., "Effects of Health-Related Food Taxes and Subsidies on Mortality from Diet-Related Disease in New Zealand: An Econometric-Epidemiologic Modelling Study," *PLoS One* (2015).

86 John Gibson and Bonggeun Kim, "Biases from Uncontrolled Quality," op. cit.

87 This was the case in Mexico, and is something to consider in other international studies. New Zealand's Ministry of Health also understands that at the same time the SSB tax was implemented, the Mexican government initiated a programme to improve water infrastructure, with the intention of guaranteeing 100% access to safe drinking water by 2018. See Ministry of Health, "Mexican Sugar Tax: Evidence of Impact," Advice to Minister of Health Jonathan Coleman (Wellington: Government of New Zealand, 2015); Fox News, "Mexico to invest $31.9 bn in water infrastructure through 2018," *Fox News Latino* (27 June 2014).

substitution may work is by people thinking that if they consume less of one unhealthy good, they are free to consume more of another. If their buttery croissants face a tax, they may switch to crisps. Their overall calorie intake may not decrease, and may in fact increase. This is understandable if the person never even intended on switching to a more healthy diet, and was merely reacting to price.

In-group substitution matters too, where consumers may simply downshift to cheaper or lower quality products within the same category. If the price of a good goes up, and there are not many viable substitutes for it, then people may buy cheaper brands of the same product. This could even be more unhealthy as the product may be of lower quality, for example, lean versus fattier but cheaper cuts of meat.[88] Most studies that focus on the demand elasticities of products ignore this factor.[89] This is because they are often derived from household expenditure surveys, which can capture absolute amounts spent on a product but not the volume consumed (see above).

The most recent and arguably one of the more reputable advocates of a sugar tax has been the WHO. In fact, the WHO's Interim Report of the Commission on Ending Childhood Obesity (2015) has been cited as influential in the Ministry of Health's policy package on obesity that year, and includes input from Peter Gluckman, the Prime Minister's chief science advisor.[90] Though a number of recommendations from the interim report were adopted, many health advocates were disappointed that a sugar tax was not one of the recommendations taken up.

The interim WHO report, which relies heavily on a meta-study by Lisa M. Powell, et al.[91] and a WHO Europe paper,[92] found that "the evidence for fiscal measures having desirable effects is emerging from observational data from countries that have recently adopted such measures."[93] While hardly a resounding call for taxes, the WHO's claims are still worth exploring. The WHO Europe paper concludes that many soft drink taxes around the world and in the United States are set at levels too low to significantly influence consumer purchasing, and are only a revenue-raising mechanism.[94]

Neither the WHO Europe paper nor Powell, et al. seriously considers the effects of substitution.

While the WHO Europe paper considers the substitution from SSBs to more healthy beverages (like tap water or milk), it overlooks the effects of substitution to other sugary foods. In other words, if people switched from soda to candy bars, it would not be observed in the study. Powell, et al. also found that while there is evidence of price responsiveness to changes in SSB prices, there is less evidence of SSB prices influencing weight and obesity.

Another problem is the papers on evidence on price effects on consumption included in Powell, et al.'s meta-study[95] do not sort for studies that

88 John Gibson and Bonggeun Kim, "Biases from Uncontrolled Quality," op. cit.

89 Ibid.

90 Stacey Kirk and Ben Heather, "Government targets overweight mums, toddlers, to combat childhood obesity," stuff.co.nz (19 October 2015).

91 Lisa M. Powell, Jamie F. Chriqui, Tamkeen Khan, Roy Wada and Frank J. Chaloupka, "Assessing the Potential Effectiveness of Food and Beverage Taxes and Subsidies for Improving Public Health: A Systematic Review of Prices, Demand and Body Weight Outcomes," *Obesity Review* 14:2 (2013), 110–128.

92 World Health Organisation Europe, "Using Price Policies to Promote Healthier Diets," op. cit., 7.

93 World Health Organisation, "Interim Report of the Commission on Ending Childhood Obesity," op. cit., 11.

94 Note that at what magnitude of tax would produce non-linear or threshold effects has not been convincingly proven. Jason M. Fletcher, et al. find that even large soda taxes fail to produce non-linearities. Jason M. Fletcher, David E. Frisvold and Nathan Tefft, "Non-Linear Effects of Soda Taxes on Consumption and Weight Outcomes," *Health Economics* 24:5 (2014), 566–582.

95 Lisa M. Powell, et al. "Assessing the Potential Effectiveness of Food and Beverage Taxes and Subsidies for Improving Public Health," op. cit.

include and exclude the effects of substitution. Treating these papers as equally reliable in their conclusions is problematic.

LESSON: Meta-studies like Powell, et al. can be attractive because they purport to give conclusions about the state of the literature as a whole. However, if substitution is adjusted for in some studies and not others, then more reliable studies can be mixed with less reliable studies without proper weighting. It is also important to consider whether the evidence in turn supports policy recommendations. For example, a tax that reduces consumption must also be proven to reduce obesity. If a higher tax has been advocated because its current level is too small to see real effects, then the higher tax too needs to be tested.

Problems with sample size/sample selection

Another study, this one involving children and soda taxes also suffers sampling problems by excluding all children who were obese at baseline.[96] The exclusion is problematic if the aim was to measure the effect of soda consumption on weight. The results only capture those who transitioned into obesity during the course of the study, but not those who transitioned out – which just so happened to be nearly the same amount. Reviewing the study, Jonathan Klick and Eric A. Helland argue: "Presumably it is just as interesting to analyse whether sugar-sweetened beverage consumption is associated with the transition out of obesity [or] see if those children who were no longer obese were also the children who reduced their consumption of sugar-sweetened beverages."[97] By limiting the sample this way, it is difficult to draw definite conclusions as there is no counterfactual to compare results with.

A meta-study by Vasanti S. Malik et al. finds there are problems with the variability in results from cross-sectional studies due to differences in sample size and follow-up periods.[98] Cross-sectional studies also suffer from the problem of only measuring weight at one point in time, rather than changes over a period. This may make weight and behavioural responses misleading. For example, an obese person may report low sugar intake, but the behaviour may have been a recent change, perhaps due to a new weightloss programme. Such a record of results would tell nothing of whether sugar had contributed to the weight the person is today, nor whether a weightloss programme involving low sugar intake really is successful.

Other diet and lifestyle factors must also be taken into account. For instance, those who drink a lot of SSBs may be less likely to exercise, or may have an unhealthy diet overall. Evidence suggests that certain "unhealthy lifestyle behaviours tend to cluster."[99] Vasanti S. Malik et al. recognised that "confounding of the association between the intake of sugar-sweetened beverages and weight is difficult to assess in studies conducted in children and adolescents, because their lifestyle patterns are still being developed."[100] While recognising that the cross-sectional studies included were prone to confounding, the meta-study is confident in concluding that "the weight of epidemiologic and experimental evidence indicates that a greater consumption of SSBs is associated with weight

96 David S. Ludiwg, Karen E. Peterson and Steven L. Gortmaker, "Relation Between Consumption of Sugar-Sweetened Drinks and Childhood Obesity: A Prospective, Observational Analysis," *Lancet* 357:9255 (2001), 505–508.

97 Jonathan Klick and Eric A. Helland, "Slim Odds: Empirical Studies Provide Little Evidence that Soda Taxes Would Shrink Americans' Waistlines," *Regulation* (Spring 2011), 22.

98 Vasanti S. Malik, Matthias B. Schulze and Frank B. Hu, "Intake of Sugar-Sweetened Beverages and Weight Gain: A Systematic Review," *American Journal of Clinical Nutrition* 84:2 (2006), 274–288.

99 Ibid., 283.

100 Ibid.

gain and obesity."[101] Conclusions about children are further complicated as age does not always reflect their developmental stage or stage of puberty.

Confounding variables could work the other way, too. Suppose the All Blacks drank a lot of Powerade (a heavily sugar-sweetened beverage) after exercise. The players are, of course, in peak physical condition. However, would it be wise to conclude that SSBs will give everyone the body of a world-class rugby player? On the other hand, it is not unheard of for normal people to drink SSBs after exercise. A representative sample would need to include a range of dietary habits and levels of physical activity.

LESSON: Comparing results with a counterfactual is important, especially if a study's aim is to measure effects on obesity. Including longer follow-up periods (longitudinal studies) helps observe long-term behavioural effects.

Using price as a proxy

Mexico's SSB tax (introduced in 2014) has yet to prove effective in lowering obesity. But the preliminary results are still being used in New Zealand to argue the tax's effectiveness and replicated here.

Simply measuring price changes as a proxy for consumer demand is also not enough. For instance, Jeffrey Grogger studied the effectiveness of the Mexico tax by the price change of SSBs as well as "the prices of potential substitutes that are not subject to the tax, such as diet sodas, bottled water, pure fruit juice, and milk."[102] The study controlled for economy-wide effects by measuring the change in the price of untaxed goods (any economic effects are assumed to affect both goods). Though Grogger acknowledges: "Ideally, one would like to analyze how the soda tax affects weight …" he is confident that "Absent such direct evidence, the results here provide reason to think that the tax may ultimately lead to weight loss."[103] What those reasons might be were not elaborated on. However, as discussed above, this ignores the possibilities of substitution either between groups of unhealthy foods, or within the group of SSBs.

The evidence base as a whole is flawed

Ian Shemilt, et al. conducted an analysis of empirical research of 880 eligible studies on the use of economic instruments to promote dietary and physical activity behaviour change.[104]

> The relative lack of direct evidence for the effects of economic instruments on physical activity is striking … the dearth of experimental studies and inconsistency in findings between studies of the same types of interventions in terms of the specific outcomes they have assessed are key limitations of this cumulative evidence base … This suggests a need for caution in developing policy based on limited evidence and overly simple assumptions about how people will respond to changes in prices and income … it is likely that people's responses to, say, a tobacco control tax are relatively predictable, whereas their responses to, say, a tax-stimulated increase in the prices of specific foods, relative to the vast array of alternative foods available, are less predictable and more complex in their relationships to health behaviours and corollary outcomes.[105]

Shemilt, et al. argue that a) the imbalance between the economic research on physical activity and the economic research on diet is striking, with much more attention paid to diet; b) there are major limitations to the evidence base due to a lack of experimental studies and an inconsistency in

101 Ibid.

102 Jeffrey Grogger, "Soda Taxes and the Prices of Sodas and Other Drinks: Evidence from Mexico," NBER Working Paper No. 21197 (2015), 2–3.

103 Ibid., 20.

104 Ian Shemilt, et al., "Economic Instruments for Population Diet and Physical Activity Behaviour Change: A Systematic Scoping Review," *PLoS One* 8:9 (2013).

105 Ibid., 7.

findings; and c) it is difficult to predict how people will act under the policy.

So what would a good study look like?

In the pool of literature on soda taxes, a stand-out study is by Jason M. Fletcher, et al. using real world data. It employs panel data methods to look at 21 different states (where different states had different tax rates) in the United States from 1989 to 2006. The panel data method means the researchers could study baseline differences across states and adjust for differences across states (some states had a higher baseline obesity rate than others) and over time.[106]

Fletcher, et al. also considered total caloric intake, and found that soda consumption makes up only a small component. This adjustment for the confounding variable of 'other caloric intake' addresses the substitution problems present in other studies. Fletcher, et al. found that after substituting to other non-taxed beverages, "on average, [the effect was] more than offset by increased caloric consumption from other beverages."[107] So an SSB tax may reduce consumption but not obesity rates, and could even make things worse. This is a real strength of the study, as it does not rely only on how much soda a person drinks (before, after or during the tax) and their resultant weight.

Sometimes, not even statistically significant results are enough. For instance, a second study by Fletcher, et al. found that "a one percent increase in the soda tax leads to a five percent reduction in calories consumed from sodas among young people aged 3–18." While this result is statistically significant, Fletcher, et al. call the reduction "modest" because sodas are only a small part of the average person's total caloric intake.[108] In other words, taxation may affect soda consumption, but it still may not have any effect on overall obesity rates if caloric intake remains roughly the same.

The latest from Mexico

The most recent (at time of writing) study on the impact of Mexico's SSB tax was published in the *British Medical Journal*.[109] The study uses Nielsen Mexico Consumer Panel Services reported data[110], rather than economic modelling.

The study found a 6% reduction in the average monthly volume of taxed beverages purchased in 2014 (the taxed period) compared with expected purchases if there had been no tax. The relative difference reached a peak of nearly a 12% decline by December 2014. The poorest household showed the greatest change in consumption, averaging a decline of –9.1%, and reaching a peak of –17.4% by December 2014. To put these decreases in perspective though, note the largest decrease was among poorer households – the equivalent of one sugar cube per person, per day. Tom Sanders, emeritus professor of nutrition and dietetics at King's College London, describes it as "a drop in the caloric ocean."[111]

The study, however, should not be relied on unreservedly. The observed year, 2014, was

106 Jason M. Fletcher, David E. Frisvold and Nathan Tefft, "Can Soft Drink Taxes Reduce Population Weight?" *Contemporary Economic Policy* 28:1 (2010), 23–35.

107 Jonathan Klick and Eric A. Helland, "Slim Odds," op. cit., 21.

108 Jason M. Fletcher, David E. Frisvold and Nathan Tefft, "The Effects of Soft Drink Taxation on Soft Drink Consumption and Weight for Children and Adolescents," *Journal of Public Economics* 94:11–12 (2010), 967–974.

109 M. Arantxa Colchero, Barry M. Popkin, Juan A. Rivera and Shu Wen Ng, "Beverage Purchases from Stores in Mexico Under the Excise Tax on Sugar Sweetened Beverages: Observational Study," *British Medical Journal* 352 (2016).

110 Data was collected through "diaries, product packaging from special bins provided for this study (scanned by the enumerators), and receipts, and to carry out pantry surveys. Bar code information provided all other data. Thus, the self-reported data was somewhat corroborated. Note that some have said this evidence constitutes 'actual sales data,' which it does not. See methodology section, Ibid.

111 Tom Sanders, "Mexico's sugary-drink tax was all fizz for very little pop," *New Scientist* (7 January 2016).

also the first year the tax was introduced. Once people adjust to the tax, habits and behaviour may change, as could the increase of tax evasive measures. The study also did not measure substitution to unhealthy foods outside of beverages. The authors acknowledged that causality cannot be established as the model could only adjust for pre-existing trends, not new ones such as "economic changes, health campaigns about sugar sweetened beverages, and antiobesity [sic] programs."[112]

BOX 1: METHODOLOGICAL MATTERS

Eric Crampton points to even greater concerns about the methodology of the report, "Beverage Purchases from Stores in Mexico Under the Excise Tax on Sugar Sweetened Beverages: Observational Study," in particular, the application of the difference-in-difference method:

"The study uses Nielsen household panel data to track households' purchases of beverages affected by the peso-per-litre soda tax, and of unsweetened beverages not subject to the tax. While it claims to use a difference-in-difference method, which can be suitable for discerning causal effects, the method used seems rather different to standard econometric uses of the technique.

Difference-in-difference methods are a great way of separating time trends from the effects of policy. One group, unaffected by the policy, acts as control. Since everyone in this case was affected by the tax, consumption of some other good that predictably tracks soda consumption could be used to guess what soda consumption would have been in the absence of the tax. For example, if household purchases of sunblock varied predictably with purchases of soda, post-tax purchases of sunblock could be used to forecast soda consumption but for the tax.

Instead, this study seems to have looked at changes in soda consumption before and after the tax, as well as changes in consumption of untaxed products before and after the tax, controlling for household characteristics like socioeconomic status, age and gender.

Using pre-tax trends to forecast post-tax consumption requires much stronger controls for other things that might have affected consumption – especially over a short post-tax time period. These controls would have been less critical under more traditional difference-in-difference approaches that used a control group. And the study did not control for things like weather that affect soda consumption. A soda may taste better on hot days.

But even taking the results at face value, the study finds that average consumption dropped by the equivalent of seven 600mL bottles of soda per year. That the effects were concentrated among the poorest households was also not surprising. The peso-per-litre tax sounds low, but the daily minimum salary reported in the study was 59.30 pesos per day. The excise on a litre of sugar-sweetened beverage was equivalent to 1.7% of a poor person's daily salary. To put that into New Zealand context, 1.7% of daily earnings at the minimum wage would be $2. It would be surprising if a $2/litre tax on sugary beverages did not reduce consumption. Consumption by poorer people dropped by 35 mL per day.

To summarise, a per-litre excise tax on soda equivalent to 1.7% of a poor worker's daily earnings in Mexico reduced those poor workers' soda consumption by a bit less than two 600mL bottles per month. The study does not tell us how many poor households simply bought a bag of sugar to make sweet low-tax lemonade at home."

Eric Crampton, Head of Research, The New Zealand Initiative

112 M. Arantxa Colchero, et al., "Beverage Purchases from Stores in Mexico," op. cit.

THE EFFECT OF TAX ON FREEDOM AND LIBERTY

The costs of administration

The limitation of health studies is that they can give guidance on whether a policy may be successful in achieving its purported purposes, but they cannot guide limited government expenditure.

This is exactly the thinking of the New Zealand Treasury, or was as of December 2014. The Treasury "... is open to question how far healthcare expenditure is driven by objective demand and unit cost growth. Addressing one source of morbidity, while improving health outcomes, may therefore displace rather than reduce demand."[113] In this, the Treasury recognises that focusing resources on one area, or reducing one source of morbidity, may not reduce demand for total healthcare resources – it simply shifts that demand. An example would be reducing the risk of disease and early morbidity for smokers. While interventions may reduce demand for healthcare services due to smoking-related illness, they cannot reduce demand for other end-of-life health services that will occur at a later time.

The Treasury also noted that while improvements to population health may contribute to improvements to productivity and economic growth,[114] these will need to be traded off with deadweight economic costs associated with the taxes needed to fund the public health system. This is a particular concern for advanced health systems, which may face diminishing marginal returns for dollars spent.[115] There are administrative costs of taxation, where a dollar spent through the public healthcare system reflects less than a dollar spent on actual services after administrative costs.[116]

And note, different market conditions may result in different rates of pass-through of the tax to consumers. Some businesses may be able to absorb the cost (or some of the cost) of the tax, so that consumers do not notice a significant price change. For many junk food items, 'super sizes' or 'family sizes' are often cheaper. Larger volume containers are often cheaper per millilitre than smaller containers (for example, a two litre bottle of soda is cheaper per millilitre than a can). A tax could incentivise producers to exaggerate these differences even more by using different pass-through rates for different items based on profitability and loss leaders. Retailers too can target certain items as loss leaders. If those items happen to be non-perishable, then savvy shoppers could simply stock up on the goods when prices are low.

While an SSB tax may not be effective because it is not targeted (it does not include other sugary or fatty foods), comprehensive sugar or fat taxes will face problems with administration. The taxable content in imported foods would need to be monitored, calculated and recalculated as formulations change. This is no small undertaking, given the amount of imported products in supermarkets, let alone niche food stores. If the burden is too high, surely companies would simply cease exporting to New Zealand, or businesses will stop importing those products.

Food taxes impose a costly and complex burden not only on taxpayers but also on businesses. For example, Denmark faced a number of administrative problems in applying its fat tax.[117] There have been reports that "an average-sized industrial bakery producing Danish pastries

113 The Treasury, "Options for Regulatory Responses to the Growing Obesity Problem," op. cit., 6.

114 "May" is the operative word. This claim requires further evidence.

115 Ibid.

116 John Creedy, "The Excess Burden of Taxation and Why it (Approximately) Quadruples When the Tax Rate Doubles," Working Paper 03/29 (Wellington: New Zealand Treasury, 2003).

117 Valentin Petkantchin, "Nutrition Taxes: The Costs of Denmark's 'Fat Tax'," *GLOBAL Oils & Fats Business Magazine* 10:2 (2013).

had to spend 57,000 euros, with administrative management of the fat tax requiring a full person-day of work per month, a considerable administrative burden for a company of that size." And that "on the wholesale and retail side, a survey by the Danish Chamber of Commerce among its members found that the fat tax's administrative costs may have hit 200 million kroner (nearly 27 million euros)."[118]

While food taxes are likely to affect the weekly household grocery shopping, they also affect hospitality industries, artisanal food stores, and the local coffee shop. Small business owners and large firms alike have to bear the costs of the tax directly, the costs of tax administration, and the costs of lower consumer demand. This imposes an extra burden for vendors whose menus or goods change often, such as bakeries and restaurants. For these outlets, there is a large administrative burden of calculating the variable changes in the taxable ingredients of their products. It also would inevitably result in costs of tax compliance and incentives for tax evasion. Such consequences would be symptomatic of especially poor targeting for businesses not frequented by the unhealthy people the policy originally targeted.

The redistributive effects

The main redistributive effect of food taxes is not that money is redistributed from the rich to the poor, like other aspects of the welfare state. Rather, it is from the healthy to the unhealthy. After all, rich people can be obese too, and they too would draw on public resources if they suffered from obesity-related diseases. Likewise, poorer people are not all unhealthy or obese, yet they would also have to pay the tax. While some would be quick to point out the poor are overrepresented in obesity statistics, health inequalities and income inequalities are still not completely synonymous.

While this already happens in any public or private insurance system, the healthy must now pay twice by paying more for their own groceries, birthday cakes, or fancy cheese, too. Even if the revenue from food taxes were to be ring-fenced only for health purposes, this redistribution would still occur, and again, it is not simply a redistribution from rich to poor.

Would it be fair for those who eat responsibly throughout the week to be punished in the pocket when they purchase their Friday night fish and chips? Or if a working single mother with minimal income had to pay more to feed her children? In an ideal world, the mother would switch to healthier, untaxed foods. However, not everyone lives in an ideal world, and families sometimes have limited time to prepare meals or capacity to deal with the stresses of everyday life.

What is worse, food taxes are inherently regressive. Advocates of food taxes have tried to argue that while these taxes disproportionately affect the poor, this does not mean they are regressive. They argue that the disproportionate costs faced by those on lower incomes are offset by savings incurred due to improved health. Chris Snowdon argues that such arguments amount to sophistry:

> Campaigners claim that the poor will benefit disproportionately from a tax in health terms because, being poor, they are more price sensitive and will reduce their consumption by a greater proportion than the rich. This is sophistry. "Regressive" has a clear meaning in the dictionary. It means taking a proportionally greater amount of money from those on lower incomes. It has nothing to do with health.[119]

It is already well-known that a greater portion of those classified as obese come from lower socioeconomic groups.[120] While obesity is caused by a mix of diet and lifestyle factors, it is poorer people who spend a greater portion of their incomes on would-be taxed foods.

118 Ibid.

119 Christopher Snowdon, "Taxing Sugary Drinks Invariably Hurts the Poor," *Institute of Economic Affairs* Blog (1 December 2015).

120 The Ministry of Health's latest survey found that "adults living in the most deprived areas were 1.7 times as likely to be obese as adults living in the least deprived areas." See Ministry of Health, "Obesity Data and Stats," Website (2015).

As the statistics in New Zealand show, there is a correlation between obesity and socioeconomic status. But if the problem is that of low income, or material hardship, then raising the price of junk food seems like a very indirect way of addressing obesity. If poor people simply cannot afford healthy food, why not focus policy on raising their incomes to ensure they can? If policymakers fear the money may not be spent on healthier food, then the problem is not of money (or lack thereof) alone.

If food taxes will not even reduce future costs to the health system, the only real redistribution that will occur is from taxpayers to government coffers.

Do people even want to change?

Unless food taxes are simply there to raise revenue, the effectiveness food taxes is determined not by whether the taxes will reduce consumption, but whether they will reduce obesity, the risk of obesity, and other obesity-related illnesses. While commentators in New Zealand have been quick to laude the success of Mexico's SSB tax, it is still too early to conclude its effect on public health,[121] or whether a decrease in SSB consumption was due to the tax.[122]

There is little rationale behind targeting the intervention at already healthy people, who are predicted to remain healthy, and not at those who need it most.

But who needs food taxes the most?

If the aim is to push people towards healthier alternatives, attention needs to be paid to people's awareness and preferences for healthy foods, the comparative cost and availability of healthy foods, and knowledge and time available for preparing healthy meals. If the people targeted are either not aware of or have no interest in healthy alternatives, the tax is not likely to reduce consumption. Rather, people are likely to simply see the higher prices and switch to cheaper (and less healthy) goods or brands in the same category. If you have always eaten potato chips, and suddenly there is a price increase in potato chips, would you be more likely to switch to carrot sticks or a cheaper brand of chips? The answer will in part be influenced by prior knowledge of healthy and unhealthy snacks, the time available to prepare the carrot sticks, and the relative price of carrots to chips.

When people continue to consume unhealthy foods even when facing higher prices, is it because they are unaware of healthier alternatives and how to prepare them, or do they know but not care?[123]

Food taxes are often framed as enabling people (the unhealthy) to make the choices they want to make but cannot afford, or lack the self-control, to do on their own.

Economist Angus Deaton gives some insight into why economists and nutritionists can often disagree on how best to maximise an individual's welfare.[124] He describes the conflict between the two approaches, where nutritionists advocate optimising health while economists advocate optimising overall welfare. Deaton argues these distinctions are sharpest when looking at price changes and sensitivity to price. For example, consider an individual's price sensitivity towards vegetables:

121 An article in *The Economist* has been a popular use of evidence for some commentators. Yet even *The Economist* notes, "But in one crucial respect, the evidence is wanting. The taxes have not been in place long enough to assess their impact, if any, on public health." *The Economist*, "Stopping slurping: Taxes on fizzy drinks seem to work as intended," *The Economist* Magazine (26 November 2015).

122 As the authors freely admit in M. Arantxa Colchero, et al., "Beverage Purchases from Stores in Mexico," op. cit.

123 A study by John Cawley, et al. looked at whether a 10% relative price difference between healthy and unhealthy foods incentivised the purchase of healthy foods. It found that low-income households responded to the subsidy (where healthy foods were subsidised more) by purchasing more of both nutritious and less nutritious foods. John Cawley, Andrew S. Hanks, David R. Just and Brian Wansink, "Incentivizing Nutritious Diets: A Field Experiment of Relative Price Changes and How They Are Framed," NBER Working Paper No. 21929 (January 2016).

124 Angus Deaton, *The Analysis of Household Surveys: A Microeconometric Approach to Developmental Policy* (Washington, DC: The World Bank, 1997).

> … economists tend to think that individuals with high substitution elasticities are in a good position to deal with price fluctuations, since they are well equipped both to avoid the consequences of price increases and to take advantage of price decreases. By contrast, nutritionists see high substitution elasticities as a cause for concern, at least among the poor, since nutritional status is thereby threatened by price increases.[125]

While Deaton does not recommend one approach is superior to the other, he does point out that "If our goal is to provide these services to the poor even when their behavior suggests that they do not value them, then that fact should be explicitly recognized and its implications … taken into account."[126]

All health, no wellbeing

Of course, the reasons for intervention should not just be measured by its improvements in physical health. After all, as the saying goes, would you rather be fat and happy or skinny and miserable? Kale just doesn't have the same restorative effect as a bowl of ice cream after a hard day at work. If you are poor, would you rather live a long life with an expected low level of income and wealth, or live a happier albeit shorter life, eating what you want? Food taxes make that choice for you, even if you are healthy.

The problem is not just people noting that their condition is undesirable, they also have to be willing to do something about it. Even if a desire is expressed, it cannot be taken seriously unless that person is willing to face opportunity costs and trade-offs. Otherwise, it's like wanting to run a marathon without wanting to train for it.

Would such a tax make people happy? Would the present 'self' be thankful for such a tax? How about the future 'self' and the completely rational 'self' (whoever that is)? Only individuals can make these decisions. Now, that is not to say those who do want to improve their condition should not be given the help to do so – especially if there is the potential to save taxpayer money. However, universal food taxes do not offer such flexibility between preferences.

It's almost the ultimate insult: You might not think you're fat or need to change but the government sure does.

THE NEW ZEALAND INITIATIVE

125 Ibid., 207.

126 Ibid. 210.

FOUR
REDUCING HARM WITH E-CIGARETTES

SMOKE-FREE BY 2025?

To assess the effectiveness of the Key government's tobacco cessation programme introduced in 2010, it is useful to know the purported objectives of the policy. In March 2011, the National Government committed to the goal of having a smokefree New Zealand by 2025. In practice, this means having a smoking prevalence rate of less than 5% across all populations, rather than a blanket ban on smoking.[127]

In 2012, the Treasury looked at even greater increases in tobacco excise, and found that a higher tobacco tax would:

- responsibly manage the government's finances to achieve its fiscal strategy goals; and
- achieve the government's goal of making effectively New Zealand smoke-free by 2025; while
- minimising negative economic and social impacts from a tobacco excise increase.[128]

The same Treasury document noted that while the revenue collected is likely to be above and beyond internalising the fiscal externalities, "Social policy arguments for tobacco excise rest on judgements about the extent to which the government should seek to discourage an addictive, destructive and harmful habit (especially amongst young people and relatively disadvantaged communities) to improve the health and wellbeing of all New Zealanders and to address inequalities in health and economic outcomes." The document acknowledges that the effect on current smokers may be limited, as "even aggressive increases in tobacco excise tax rates are unlikely to be sufficient on their own to achieve the smokefree goal in this timeframe."[129] However, the main aim is to deter new smokers.

Acknowledging that many smokers are drawn from lower socioeconomic groups, the Treasury recommends that pre-signalled tax increases be complemented with education and support programmes to give smokers the time and opportunity to adjust to the financial change.[130] The more aggressive use of excise tax as a policy tool began on 28 April 2010, which was the first increase above the Consumer Price Index in about a decade (excise taxes were previously indexed to inflation). Since then, the excise tax for cigarettes has increased by 10% annually.

As well as taxes, the Ministry of Health has outlined a suite of other smoking cessation initiatives, including "health education campaigns, a ban on smoking in public indoor spaces, restricting tobacco displays and tightening controls on tobacco retail sale, and prohibiting almost all forms of tobacco promotion and advertising (except via tobacco packaging, and several minor exceptions)."[131]

While the Key government has introduced a range of measures (greater support for those wanting to quit, public health campaigns, greater availability

127 Health Promotion Agency, "Smokefree 2025," Website.

128 Ruth Isaac, "Regulatory Impact Statement: Increase in Tobacco Excise and Equivalent Duties," op. cit., 2.

129 Ibid., 5.

130 Ibid.

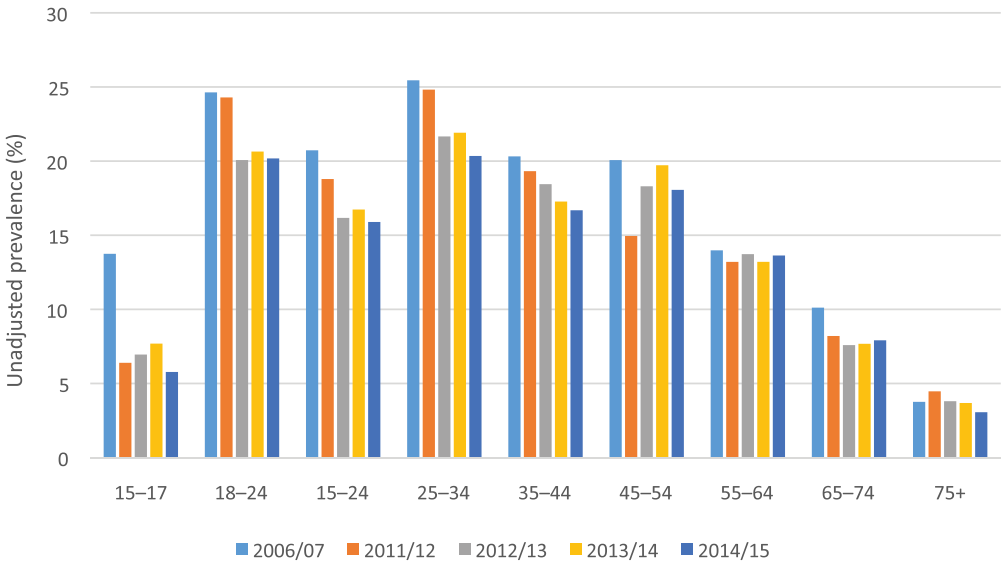
131 Ministry of Health, "Regulatory Impact Statement: Plain Packaging of Tobacco Products" (Wellington: Government of New Zealand, 2012), 2.

of Nicotine Replacement Therapy products), tobacco taxation remains the most aggressive mechanism in the policymaker's toolbox. Yet as the next section shows, the general decline in smoking rates has not been consistent across populations.

Rates for total smokers

Smoking prevalence is declining across all ethnic groups, levels of deprivation, genders, and most ages. Yet the rates for current smokers show smoking is still mainly concentrated in certain groups.

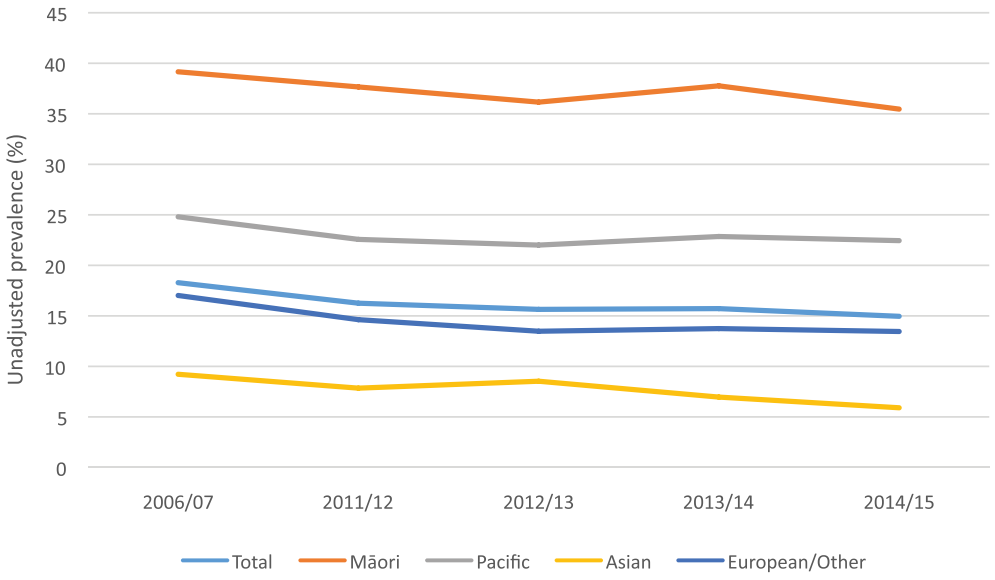
Chart 4: Daily smokers by age group (2007–15)



Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. For a full explanation of methodology used, see the Ministry of Health website.

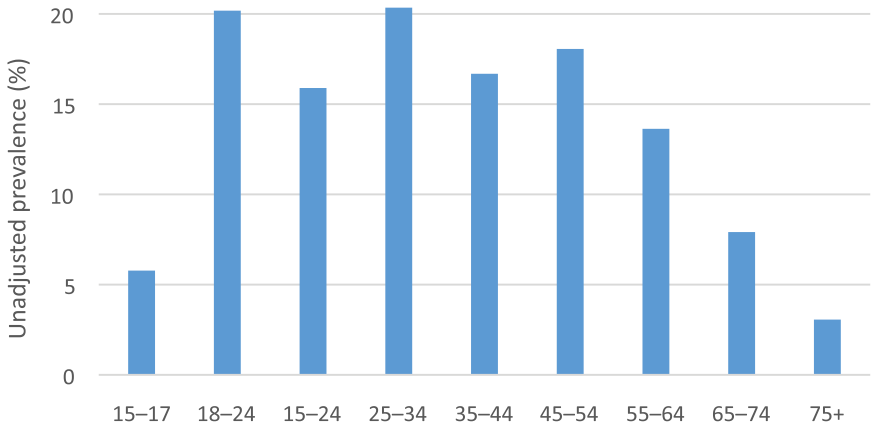
Chart 5: Daily smokers by ethnicity (2007–15)



Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. For a full explanation of methodology used, see the Ministry of Health website.

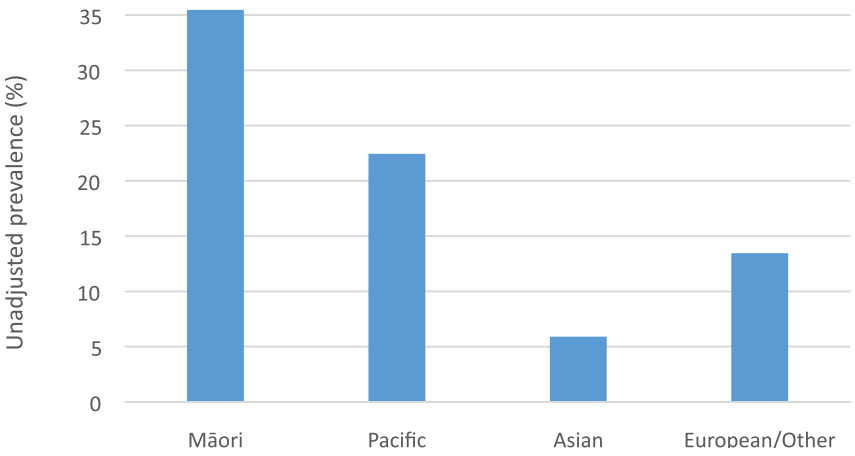
Chart 6: Daily smokers by age group (2015)



Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. For a full explanation of methodology used, see the Ministry of Health website.

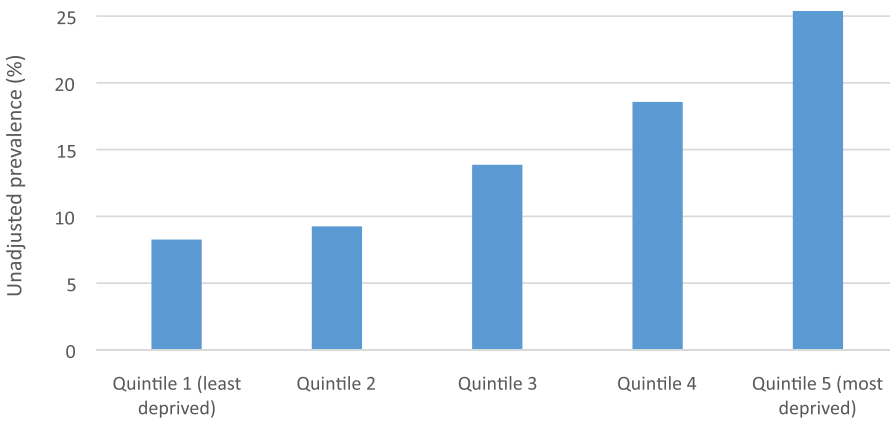
Chart 7: Daily smokers by ethnic group (2015)



Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. For a full explanation of methodology used, see the Ministry of Health website.

Chart 8: Daily smokers by deprivation level (2015)



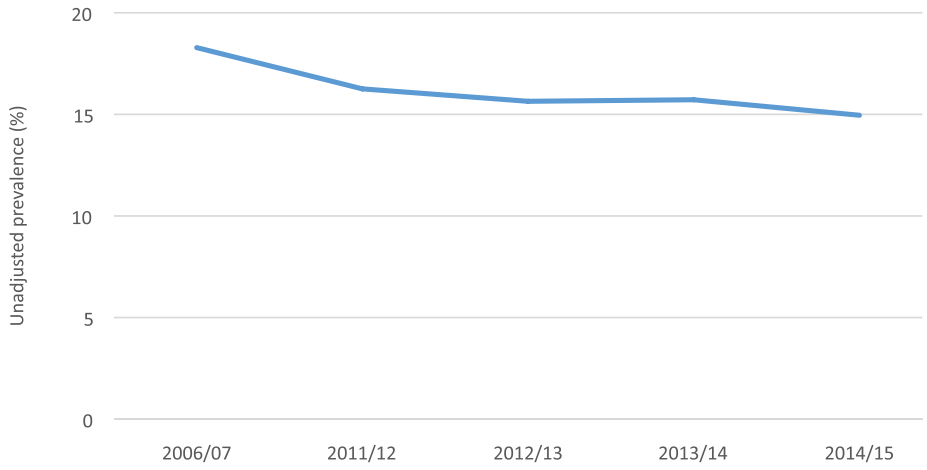
Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. For a full explanation of methodology used, see the Ministry of Health website.

According to the adjusted rate ratios provided by the Ministry of Health, in 2015, Māori were 2.81 times more likely to be daily smokers than non-Māori, and that the most deprived (the poorest) were 3.38 times more likely to be daily smokers than the least deprived.[132]

In Chart 9, note that the years 2008–10 are missing, and that the new excise tax regime was introduced in April 2010. Given there is often an adjustment period following a price rise, it is most notable that after 2011, the rate has only decreased by 1.3%. Meanwhile, the government revenue collected from tobacco excise has increased by 24% from 2011 to 2015.[133]

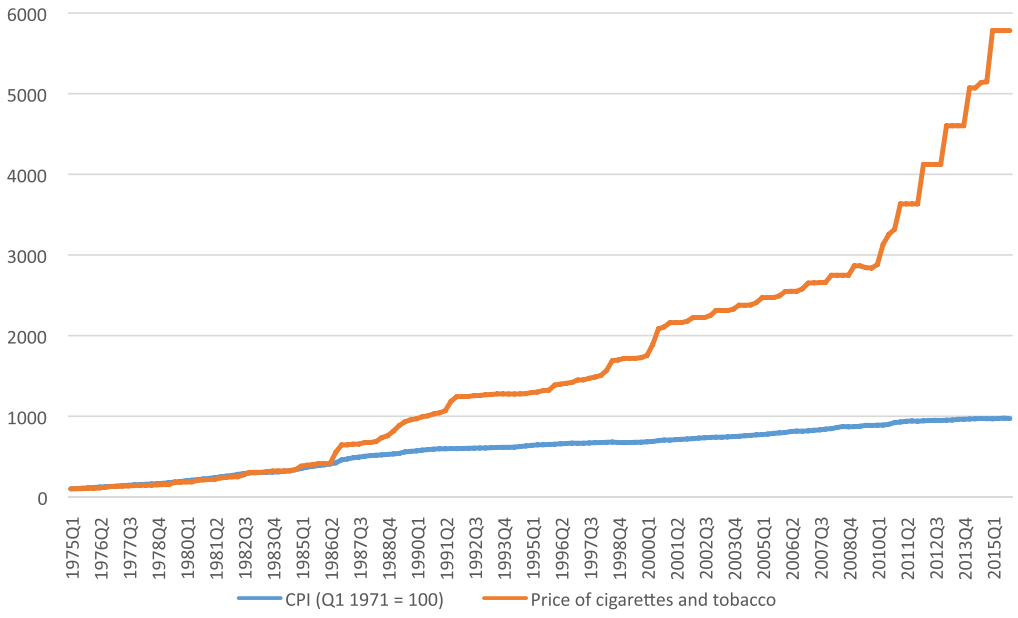
Chart 9: Total daily smokers (2007–15)



Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. For a full explanation of methodology used, see the Ministry of Health website.

Chart 10: Real cigarette and tobacco prices relative to all groups CPI (1975–2015)

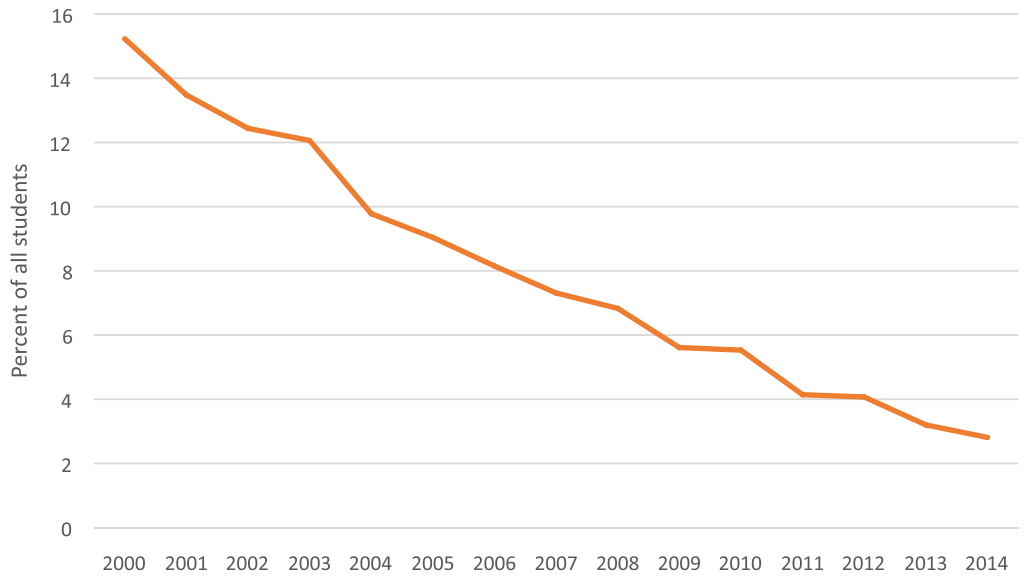


Source: Statistics New Zealand, "CPI Level 2 Subgroups for New Zealand (Qrtly-Mar/Jun/Sep/Dec)" and "CPI All Groups for New Zealand (Qrtly – Mar/Jun/Sep/Dec)," Infoshare (2016).

132 Ministry of Health, "New Zealand Health Survey 2014/15" (Wellington: Government of New Zealand, 2016).

133 The Treasury, "Financial Statements 2011 and 2015" (Wellington: Government of New Zealand, 2015). Based on $1,144 million in 2011, and $1,507 million in 2015.

Chart 11: Daily smoking rates for year 10 students (2000–15)



Source: ASH (Action on Smoking and Health), "Year 10 Snapshot Survey 2014 Factsheet 1" (2014).[136]

How responsive are smokers and would-be smokers to price?

There are two ways the tobacco excise tax can be deemed successful, given the government's goal: a decrease in current smokers (so, smokers quitting) and a decrease in smoking uptake (so, people never start to smoke regularly).

Regardless of whether the 2025 goal is virtuous or achievable, even the public health experts recognise that "Modelling-level evidence suggests that despite the favourable trends in declining tobacco consumption in NZ, the current business-as-usual approach (even with 10% annual tax increases) is very unlikely to be strong enough to meet the 2025 goal."[135]

If it is poor people who are least likely to quit smoking, then the aggressive excise regime will directly affect their limited budgets. A typical smoker spends $7.09 a day in tobacco tax (or $49.63 a week). For a minimum-wage earner, working 40 hours a week, that equates to a loss of nearly a third of their wage increase to tobacco tax over the last five years.[136]

In 2007, Des O'Dea estimated the effect of a 50% real price increase on tobacco purchases (Chart 12). While the findings are now dated, even before the Key government's increased excise regime was introduced in 2010, the study estimated the effects of a real rise in tobacco prices and the effects on the poorest deciles. To give an idea of actual increases, whereas a packet of cigarettes cost around $8.50 in 2000,[137] it now costs more than $20 in 2016. While there are no doubt household savings to be made by quitting, there are disproportionate costs for those who do not.

134 ASH surveys around 30,000 year 10 students (14-15-year-olds) every year.

135 Nick Wilson, et al., "Taxing Tobacco in NZ: What We Know and What Could Be Next," *Sciblogs* (27 October 2015).

136 Calculations by David Seymour, "Free Thoughts: Tobacco Tax," act.org.nz (8 January 2016). Uses figures based on the $345 per 1,000 cigarette rate introduced on 29 April 2010 and 11.2 cigarettes per day, and the $669 per 1,000 cigarette rate introduced on 1 January 2016 and 10.6 cigarettes per day.

137 Matthew Allen and Murray Laugesen, "Tobacco Tax – The New Zealand Experience" (Wellington: Ministry of Health, no year).

Chart 12: Effect of a 50% real price rise on tobacco purchases using 2003/04 HES DATA

Assumed price and prevalence elasticities of -0.50 and -0.20
Spending data doubled to correct for assumed 100 percent under-reporting of purchases.

Disposable household income deciles	Tobacco purchasing households	Average pre-tax spend	Quitting households	Savings per quitting household	Number non-quitting households	Increase in spend per non-quitting household
1	41,100	$2,385	4,110	$2,981	36,990	$928
2	22,500	$2,766	2,250	$3,458	20,250	$1,076
3	28,100	$3,128	2,810	$3,910	25,290	$1,217
4	42,900	$2,739	4,290	$3,424	38,610	$1,065
5	44,700	$3,122	4,470	$3,902	40,230	$1,214
6	47,700	$4,609	4,770	$5,761	42,930	$1,792
7	49,500	$3,206	4,950	$4,008	44,550	$1,247
8	53,500	$3,818	5,350	$4,772	48,150	$1,485
9	42,400	$4,306	4,240	$5,383	38,160	$1,675
10	31,200	$4,404	3,120	$5,505	28,080	$1,713
Total	403,700	$3,489	40,360	$4,361	363,240	$1,358

Source: Des O'Dea, "Report on Tobacco Taxation in New Zealand," Volume 1 Main Report (The Smokefree Coalition and ASH New Zealand, 2007).

Kevin Callison and Robert Kaestner provide evidence of the actual effect of cigarette taxes on consumption. The researchers selected 22 US states that had the largest tax increases between 1995 and 2007. They compared these "treatment" states (states that had implemented heavy taxes on cigarettes) with non-treatment states. The researchers found: "While smoking has declined as a result of the tax, our recent study shows that the 'core' of smokers that remains after the multiple recent tax increases is less responsive to price increases than commonly assumed. As a result, the public health argument to justify additional cigarette taxes is less valid today."[138] They argue that while tax increases had reduced consumption in the past, this recent research reveals the "core" population that are not responsive to price increases, even though the tax rates are much higher than what past research has based its findings on.

While some argue this only proves the excise taxation regime must be more aggressive, it also shows that some subgroups of smokers may not actually *want* to quit, or have access to effective support if they do want to quit. Even in an environment of rising prices, a culture of smoking de-normalisation, and free or heavily subsidised cessation methods, there are many smokers who continue the habit. But with the introduction and increasing innovations in e-cigarettes, is enforced cessation the only option for a healthier, safer and happier life?

138 Kevin Callison and Robert Kaestner, "Cigarette Taxes and Smoking: Will Higher Taxes Yield a Public Benefit?" *Regulation* (Winter 2014–2015), 42–46, 46.

IS THERE A BETTER WAY? E-CIGARETTES AND OTHER HARM MINIMISATION PRODUCTS

Electronic cigarettes (e-cigarettes) are electronic devices that produce a vapour users inhale like a normal cigarette. They are fueled by heating an e-liquid that may or may not contain nicotine, and do not rely on combustion. Their main attraction is they offer a satisfactory alternative to smoking, with fewer toxins (and at a lower concentration) than combustible cigarettes.[139] They are mainly marketed as an alternative to smoking, and may be known more broadly as a form of Electronic Nicotine Delivery Device. There are also a range of non-combustible tobacco products, which are a newer development, and not yet available widely. These products involve tobacco heated to a point where some volatile molecules are released to provide flavour and nicotine, but not to a point of combustion where other, more harmful molecules could be released.

The current arguments for and against e-cigarettes are diverse, yet the one that has influenced legislation the most to date is the lack of long-term evidence of safety. As a reasonably new product to the market, the evidence is not yet conclusive about its effectiveness in smoking cessation or reduction.[140]

The Ministry of Health's official advice on e-cigarettes is that because they are not an approved NRT (Nicotine Replacement Therapy) product, the Ministry cannot recommend its use as an aid to quit smoking.[141] The Ministry also notes the lack of evidence of the impacts of long-term use.

The legislation around e-cigarettes is currently very particular. Nicotine is treated under the *Medicines Act 1981* and the *Smoke-free Environments Act 1990*, which is why nicotine-based e-liquids cannot be legally sold in New Zealand. It is also illegal to make therapeutic health claims if the product has not been approved for therapeutic use. The legislation is seen to apply to e-cigarettes because the therapeutic health claim of being an effective cessation tool has yet to be fully substantiated. Using e-cigarettes in smokefree places is not prohibited the same way tobacco smoking is, but individual businesses may make their own rules regarding usage. Nevertheless, "the Ministry encourages people to avoid using e-cigarettes in areas where smoking is not permitted," though the reason for this is not elaborated.[142]

There is legislation on prohibiting the sale of products that look like tobacco products to people under the age of 18, which e-cigarettes falls under the category of. Finally, the *Smoke-free Environments Act 1990* "prohibits the sale of tobacco products for other oral use (other than smoking)". The Ministry has interpreted this legislation to apply to the sale of nicotine-containing e-cigarettes (where nicotine is derived from tobacco).[143]

People can, however, import nicotine-containing products for their personal use, but cannot supply or sell to anyone else. So even if consumers would prefer to purchase nicotine-containing products domestically, perhaps because there are local brands they know and trust, they are unable to do so. It also may be harder for people to enforce their rights under the *Consumer Guarantees Act 1993* when importing goods.

The state of play in New Zealand, therefore, is that the domestic sale of nicotine-containing e-cigarettes cannot be formally permitted by the

139 In a synthesis of recent national and international evidence (798 potentially relevant articles were identified) Public Health England found that using e-cigarettes is around 95% safer than smoking. While the exact percentage may be contentious, it is a dominant theme in the literature that e-cigarettes release less toxins than combustible cigarettes. See Ann McNeill, et al., "E-cigarettes: An Evidence Update" (London: Public Health England, 2015).

140 Ministry of Health, "Advice on the Use of E-cigarettes," Website (Wellington: Government of New Zealand, 10 September 2015).

141 Ibid.

142 Ibid.

143 Ibid.

Ministry of Health until their therapeutic properties are established. While this may be the Ministry's position, the final section of this chapter shows that there remain a range of options for regulation that do not rely on proving therapeutic properties. The following sections scrutinise some of the current evidence and studies. While it is not an exhaustive survey of the literature, the critiques are worth noting when examining other similar studies.

Will e-cigarettes encourage more people to take up smoking (the gateway effect)?

Advocacy groups such as the New Zealand Cancer Society raise concerns that e-cigarettes undermine conscious efforts to 'de-normalise' smoking, and that their attractiveness to young people may be a gateway to tobacco smoking or nicotine addiction.[144]

Evidence for this requires establishing causality between regularly using e-cigarettes and switching to regularly smoking cigarettes. The studies that gather data of e-cigarette usage and its gateway effect, though, are not consistent. For example, some treat current or regular e-cigarette usage and 'ever usage' as equal.[145] However, the gateway argument, that e-cigarette use among youths will lead to cigarette use, often misses the character traits of those who are likely to try both. Youths in particular are prone to experimentation without becoming regular users. As a relatively new technology, there may also be a natural curiosity to see how the product feels and tastes, without ever enjoying its effects.

It could be – and is rather conceivable – that youths who are willing to try e-cigarettes are also those who would have ended up smoking cigarettes anyway. Establishing causality therefore requires measuring against a counterfactual: Would these teenagers be regular smokers anyway?

The report "Association of Electronic Cigarette Use with Initiation of Combustible Tobacco Product Smoking in Early Adolescence" failed to establish causality or even whether the population studied was engaging in regular behaviour.[146] Rather, it measured 'ever-used' (as opposed to daily, monthly or regular use), and therefore captured those who were simply experimenting, as well as those who became regular vapers.

The study could be just as meaningless if it had found that teenagers who skip class have bad attitudes towards school, or that teenagers who go to parties tend to drink more alcohol than those who do not. The point is, the study has only established that teenagers share common risk factors (they are likely to engage in the same risky behaviour). While causality in the absence of a counterfactual is difficult to establish, the study could have come closer to delivering something meaningful if it had examined the temporal relationships these youths had with e-cigarettes.

The failure to establish causality is problematic, as a Public Health England study describes:

> … some have argued that the effect could be causal the effect could be causal if the use of one drug, biochemically or pharmacologically, sensitises the brains of users to the rewarding effects of other drugs making the dependent use of these other drugs more likely. However, there are many plausible competing hypotheses for such a progression including i) shared networks and opportunities to purchase the drugs; and ii) individual characteristics such as genetic predispositions or shared problematic environment.[147]

144 Cancer Society, "Position Statement on Electronic Cigarettes" (Auckland: Cancer Society of New Zealand, 2011).

145 Ann McNeill, et al., "E-cigarettes: An Evidence Update," op. cit., 26.

146 Adam M. Leventhal, et al., "Association of Electronic Cigarette Use With Initiation of Combustible Tobacco Product Smoking in Early Adolescence," *The Journal of the American Medical Association* 314:7 (2015), 700–707. The researchers never claim to establish causality, but subsequent media reports have.

147 Ann McNeill, et al., "E-cigarettes: An Evidence Update," op. cit., 37, citing Eric R. Kandel and Denise B. Kandel, "A Molecular Basis for Nicotine as a Gateway Drug," *New England Journal of Medicine* 371:10 (2014), 932–943; Wayne D. Hall and Michael Lynskey, "Is Cannabis a Gateway Drug? Testing Hypotheses About the Relationship Between Cannabis Use and the Use of Other Illicit Drugs," *Drug and Alcohol Review* 24:1 (2005), 39–48.

Will e-cigarettes help people quit?

On the question of effectiveness in quitting, some critics have pointed to the dual use of e-cigarettes with cigarettes, where people have not given up smoking completely.

One of the most vocal and comprehensive critics of e-cigarettes in Australasia is Professor Simon Chapman of the University of Sydney.[148] He argues there is likely to be "a slowing in overall quit attempts as many dual-using vaping smokers keep smoking at reduced rates, in the erroneous belief that they are reducing harm."[149] In fact, Chapman cites a study that shows 80–90% of vapers are dual users. Unfortunately, that study does not include any methodology to explain how the researchers arrived at the number.[150] If a methodology were available, questions to consider would be: Is the survey based on regular use or 'ever use'? What is the distribution between e-cigarette use and cigarette use? Has cigarette use declined over time for dual users? Time periods matter too, as those who have only just started using e-cigarettes may use cigarettes more as they have only just started their quitting journey. Reduced cigarette use over time (leading to a reduction in harm) matters more than instances of dual use.

Another study claims e-cigarettes users are not more likely to quit smoking than non e-cigarette users.[151] Moreover, those who used NRT daily (a more traditional method of smoking cessation), are 1.67 times more likely to quit smoking than smokers who did not use NRT. Critics argue that e-cigarette use detracts those who genuinely want to quit from proven methods of smoking cessation such as NRT.[152]

But this study cannot reliably and substantively conclude that e-cigarettes do not help people quit smoking. First, not all participants were using e-cigarettes with the intention of quitting but for 'any reason,' including dual use. It is hardly be surprising, then, that it was not successful as a cessation tool for all participants. While most smokers take up NRT only if they are serious about quitting, many smokers may shift to e-cigarettes to reduce their daily cigarette consumption (dual use).

Second, the same study showed that compared to smokers who had never used e-cigarettes, those smokers who took up daily e-cigarette use were more than twice as likely to halve their daily cigarette consumption. The authors note that because their study included smokers who used e-cigarettes for any reason, it should not be used as evidence of e-cigarettes' effectiveness as a quit-smoking aid, which makes it odd that it's being cited as evidence of e-cigarettes' failure to encourage quitting.

There may be some inconsistency in statistics for dual users and ex-smokers, in contrast to the consistency of statistics on population prevalence and never smokers. It is possible that due to the nature of smoking cessation, people may drift in and out of these two categories, and the differences in the balance of quantities of either product consumed.[153] Yet figures are more consistent, and very low, for never-smokers who use e-cigarettes (0.2%).[154]

As a concluding note, it is too early to tell whether e-cigarette use is an effective tool for quitting smoking completely. Dual use remains common, but as the next section discusses, what should really be of concern is whether e-cigarettes reduce overall harm.

148 This report uses examples from Simon Chapman's work as representative of many of the arguments used by e-cigarette critics. Many of these studies have also grabbed headlines, and so are equally influential in the public and academic sphere. Simon Chapman, "*Spotless Leopards? Decoding Hype on E-cigarettes*," The Conversation (21 October 2015).

149 Ibid.

150 Robert West, Emma Beard and Jamie Brown, "Trends in Electronic Cigarette Use in England," PowerPoint presentation (Smoking in England, 2015), as cited by Simon Chapman, "*Spotless Leopards?*" op. cit.

151 Leonie S. Brose, et al., "Is the Use of Electronic Cigarettes While Smoking Associated with Smoking Cessation Attempts, Cessation and Reduced Cigarette Consumption? A Survey with a 1-year Follow-up," *Addiction* 110:7 (2015), 1160–1168.

152 An equally important study would be to test the effectiveness of e-cigarettes for smoking cessation or reduction among those who have already tried NRT and found it ineffective.

153 Ibid.

154 Ann McNeill, et al., "E-cigarettes: An Evidence Update," op. cit., 27.

Do e-cigarettes reduce overall harm?

Chapman also tries to explain why e-cigarettes are not as safe as they seem. His "final blow", or closing argument, is:

> … there is large-scale research on this and it is not good news for the "cutting down obviously reduces risk" dogma. Four cohort studies published since 2006 have reported on whether reducing smoking, as opposed to stopping smoking altogether, confers any mortality benefit.[155]

His point? E-cigarettes may not save lives, or reduce overall risk of illness and disease, because reducing smoking (as opposed to quitting altogether) cannot 'reverse engineer' the cumulative risks of smoking.[156] "Vapers who keep on smoking – which is most of them – are fooling themselves if they think they are seriously reducing risk," he argues.[157] Because Chapman's previous arguments (unconvincingly) establish that most e-cigarette users are dual users, he maintains that e-cigarettes ought to be banned because they may discourage full cessation – which he believes is the only safe option.

But one of the papers Chapman cites was not so conclusive. Carole Hart, et al.[158] examines two different studies (a Collaborative study and a Renfrew/Paisley study) and finds the results inconclusive.[159] In the Collaborative Study, "Heavy smokers who reduced their smoking intensity had a significantly lower mortality rate than either smokers who maintained their cigarette consumption or, surprisingly, light smokers who reduced their consumption."[160] The Renfrew/Paisley study showed no effect (supporting Chapman's argument). The Hart, et al. paper finds the results are therefore inconclusive.

When results are inconclusive, it is useful to look at a meta-study such as the 2007 meta-study (involving 31 publications).[161] This meta-study on the health benefits of reduced tobacco consumption found that based on the (limited) evidence, substantial reductions in smoking reduces several cardiovascular risk factors and respiratory symptoms. Smoking reduction also resulted in a 25% reduction in biomarkers and the incidence of lung cancer. The magnitude of these effects was small, but this does not mean the dual use of e-cigarettes cannot do some good.

The meta-study noted one reason health benefits from reducing smoking may not be detected is compensatory smoking,[162] where smokers who cut back on the quantity of cigarettes they smoke compensate by drawing harder on their cigarettes to draw out more nicotine and, in turn, more harmful toxins. Even if they smoke fewer cigarettes, they do more harm per cigarette smoked.

But if smokers were to switch to e-cigarettes, even as dual users, that same behaviour may

155 Simon Chapman, "*Spotless Leopards?*" op. cit.

156 Chapman cites Yun-Mi Song, Joohon Sung and Hong-Jun Cho, "Reduction and Cessation of Cigarette Smoking and Risk of Cancer: A Cohort Study of Korean Men," *Journal of Clinical Oncology* 28:31 (2008), 5101–5106; Carole Hart, Laurence Gruer and Linda Bauld, "Does Smoking Reduction in Midlife Reduce Mortality Risk? Results of 2 Long-Term Prospective Cohort Studies of Men and Women in Scotland," *American Journal of Epidemiology* 178:5 (2013), 770–779; Aage Tverdal and Kjell Bjartveit, "Health Consequences of Reduced Daily Cigarette Consumption," *Tobacco Control* 15:6 (2006).

157 Simon Chapman, "*Spotless Leopards*?" op. cit.

158 Carole Hart, Laurence Gruer and Linda Bauld, "Does Smoking Reduction in Midlife Reduce Mortality Risk?" op. cit.

159 The two studies were a Collaborative Study and a Renfrew/Paisley Study: "The Collaborative Study included 1,524 men and women aged 40–65 years in a working population who were screened twice, in 1970–1973 and 1977. The Renfrew/Paisley Study included 3,730 men and women aged 45–64 years in a general population who were screened twice, in 1972–1976 and 1977–1979. Both groups were followed up through 2010." Ibid.

160 Ibid.

161 Charlotta Pisinger and Nina S. Godtfredsen, "Is There a Health Benefit of Reduced Tobacco Consumption? A Systematic Review," *Nicotine & Tobacco Research* 9:6 (2006), 631–646.

162 John R. Hughes and Matthew J. Carpenter, "The Feasibility of Smoking Reduction: An Update," *Addiction* 100:8 (2005), 1074–1089.

not be replicated. E-cigarette users could satisfy their nicotine cravings through vaping, so they do not need to participate in the more harmful compensatory smoking.

Second, the criterion for successful smoking reduction was not consistent. The duration of reduction matters to ensure heavy smokers do not return to their baseline consumption. The definition of heavy smokers was also inconsistent, ranging from 15 to 50 cigarettes per day. Smoking behaviour and relapse behaviour may not be the same, but e-cigarette use should discourage such relapses.

Finally, while anti-vaping campaigners worry that smoking reduction might prevent smokers from actually quitting (and enjoying the greater health benefits), a qualitative review of the literature argues that is not the case. None of 19 studies on whether smoking reduction increases future cessation and decreases disease risk found smoking reduction harms future cessation. Encouragingly, 16 of those 19 studies found that reduction may even promote future cessation.[163]

Box 2 presents a good example of what can go wrong in such studies.

BOX 2: LIMITATIONS OF OBSERVATIONAL STUDIES

In her critiques of the report "E-cigarettes and Smoking Cessation in Real-World and Clinical Settings: A Systematic Review and Meta-Analysis" by Sara Kalkhoran and Stanton A. Glantz (Lancet Respiratory Medicine, January 2016), Linda Bauld, Professor of Health Policy, University of Stirling; Deputy Director, UK Centre for Tobacco and Alcohol Studies; and Chair in Behavioural Research for Cancer Prevention, Cancer Research UK, says:

"Some of the observational studies included in the review, in particular, suffer from a range of limitations that don't allow us to reliably assess whether e-cigarettes help smokers quit.

For example, these studies: don't properly assess whether participants have used e-cigarettes enough to make a difference for smoking cessation (such as including measures of "ever" rather than "regular" use); may be biased in how participants in the studies were selected (i.e. not representative of e-cigarette users in the population): and, perhaps most importantly, have confounding factors including that smokers in the studies are these who have tried to quit many times in the past and may therefore be more likely to try the remaining new product (e-cigarettes), or that they gave up using these devices early in the conduct of the study but were still included in the final results with the assumption that e-cigarettes didn't "work" for them whereas there could be multiple reasons why they stopped using the devices.

Some of the more recent studies included in the review do point to the types of measures that should be used to assess e-cigarettes for smoking cessation. These categorise the type of device (as e-cigarettes are many products not one product), look carefully at when and for how long e-cigarettes were used, and ask whether participants were using them to stop smoking or for other reasons. These more carefully conducted studies shed light on how e-cigarettes could help smokers stop – for example if they contain sufficient nicotine, are used often and for long enough, and are more advanced ("tank") devices than earlier "ciga-like" e-cigarettes. However, the current review does not separate out these studies or draw these distinctions but treats the body of evidence as a consistent and comparable set of studies when in fact it is not."

Source: "Expert reaction to meta-analysis looking at e-cigarette use and smoking cessation," Science Media Centre (14 January 2016).

163 John R. Hughes and Matthew J. Carpenter, "Does Smoking Reduction Increase Future Cessation and Decrease Disease Risk? A Qualitative Review," *Nicotine & Tobacco Research* 8:6 (2005).

Are e-cigarettes safe?

Claims about their overall safety are hard to determine because of the wide variability of content in e-cigarettes and the quality of their manufacture. But reassuringly, there is no (quality) evidence to date that e-cigarettes are as dangerous, or more dangerous than smoking, or that there are significant health risks. To date, the near universal agreement is that e-cigarettes are safe.[164]

So what should people make of studies that do claim significant health risks? For example, the claim some brands of e-liquid have cancer-causing agents like formaldehyde in levels similar to – or even exceeding – those of cigarettes.[165] On this particular issue, the levels of formaldehyde measured in e-cigarettes to date have not been measured in a way that would apply to humans. The dangerous levels of formaldehyde detected were only present in high voltage rates. It is not likely many humans would consume the vapour at these high voltages, as it would be unpleasant to feel and taste (also known as dry puffs).[166] At these levels, the harsh taste is likely to be off-putting to the point of being unbearable, even for inexperienced users. "The EC was puffed by the puffing machine at a higher power and longer puff duration than vapers normally use. It is therefore possible that the e-liquid was overheated to the extent that it was releasing novel thermal degradation chemicals."[167] Studies performed in a laboratory do not always reflect real life or imitate human behaviour.

Another example is the latest health-scare risk of "popcorn lung" disease. While the evidence is far from conclusive, it has been acknowledged that some – not all – flavoured e-liquids contain a chemical called diacetyl. The chemical is best known as a flavouring in microwave popcorn, and while it is deemed to be safe ingested, there is evidence diacetyl can cause permanent lung damage when inhaled at high enough concentrations.[168] Despite it being known that some e-liquids contain diacetyl, it is still not known just how risky it is when ingested through vaping, and what damage it could or could not cause. Yet it is highly likely the risks have been overstated. Conventional cigarettes too contain diacetyl, and in much higher quantities.[169] In fact, the e-liquid with the highest level of diacetyl exposure tested 85 times lower than cigarettes with the highest level. And to date, while smoking has been related to many diseases, popcorn lung is not one of them.

Studies concluding that the evidence pool is too weak are used as a sign that e-cigarettes are a failure. However, if e-cigarettes were unanimously found to be dangerous, the studies would explicitly say that. Instead, as one meta-study has surmised, the more neutral conclusion is that "due to the many methodological problems, the relatively few and often small studies, the inconsistencies and contradictions in results and the lack of long-term results, no firm conclusions can be drawn on the safety of EC [e-cigarettes]."[170] Nevertheless, sensible regulation can establish controls for quality and safety, which will be discussed in the next section.

164 There are studies released almost weekly on the subject, but this was the case at the time of writing.

165 The most influential report on this was R. Paul Jensen, et al., "Hidden Formaldehyde in E-Cigarette Aerosols," Letter to the Editor of the *New England Journal of Medicine* 372 (22 January 2015), 392–394. A collection of criticism of the report and responses to criticism can be found in Emily Willingham, "Researchers call for retraction of NEJM paper showing dangers of e-cigarettes," *Retraction Watch* (11 September 2015).

166 Konstantinos E. Farsalinos, Vassilis Voudris and Konstantinos Poulas, "E-cigarettes Generate High Levels of Aldehydes only in 'Dry Puff' Conditions," Addiction 110:8 (2015), 1352–1356.

167 Ann McNeill, et al., "E-cigarettes: An Evidence Update," op. cit., 77.

168 Julia Belluz, "Some e-cigarettes contain chemicals that cause 'popcorn lung'," *Vox* (9 December 2015).

169 Kazutoshi Fujioka and Takayuki Shibamoto, "Determination of Toxic Carbonyl Compounds in Cigarette Smoke," *Environmental Toxicology* 21:1 (2006), 47–54; Jennifer S. Pierce, Anders Abelmann, Lauren J. Spicer, Rebecca E. Adams and Brent L. Finley, "Diacetyl and 2,3-Pentanedione Exposures Associated with Cigarette Smoking: Implications for Risk Assessment of Food and Flavoring Workers," *Critical Reviews in Toxicology* 44:5 (2013), 420–435.

170 Charlotta Pisingera and Martin Døssingb, "A Systematic Review of Health Effects of Electronic Cigarettes," *Preventive Medicine* 69 (2014), 248–260.

This section is only a tiny reflection of the studies released on the topic. E-cigarettes remain an evolving pool of literature, though one currently fraught with methodological issues.

WHY BAN A PRODUCT THAT REDUCES (NET) HARM?

The continued smoking rates for the people who can least afford the excise increases on tobacco suggest raising the price is unlikely to change behaviour. Even if high enough rate taxes could change behaviour, is it desirable to take away the decision to smoke from the individual?

But aside from the issue over whether an individual should have the right to choose potentially harmful activities when they are aware of the risks, there is even less justification for the current government's stance that an individual cannot even choose to minimise that risk.

While e-cigarettes are not risk-free, there is overwhelming evidence to suggest they are less risky than smoking. Questions of whether they normalise smoking or help with eventual smoking cessation may be important concerns for the Key government's goals of New Zealand eventually being smoke-free, but they are not necessarily goals that all New Zealanders share.

For those who enjoy smoking and wish to continue, access to a satisfying alternative to smoking ought to override government aspirations to change people's desires. Moreover, any measurements of risk and harm must be measured against the counterfactual: smoking. E-cigarettes are predominantly used by smokers,[171] either to reduce their tobacco smoking or as a cessation tool. However, if the policy goal is to discourage the least healthy behaviours, then e-cigarette regulation should reflect the decreased risk. The issue of how to regulate e-cigarettes has as much to do with the liberty to participate in activities that bring pleasure, as the ability to consume a less harmful product.

In the interests of reducing tobacco harm reduction, even Derek Yach, former head of the WHO's Tobacco Free Initiative, has said, "It is time to end the war on e-cigarettes and view them as the smoking cessation aid that they are," and that "The regulatory framework matters. But what has historically mattered even more is the advocacy of physicians. Because of that, it is also important to educate physicians about the difference between the health effects of nicotine and tar."[172]

If a product delivers enjoyment, poses little physical harm to others, and minimises risk to the user, then the case for banning the product from the market seems thin. E-cigarettes are already available in New Zealand shops, just not the ones containing nicotine or nicotine e-liquid — in other words, the ones that could prove most promising for those wanting to quit or reduce smoking. What makes the legislation in New Zealand even more perplexing is that it is currently legal to purchase and consume nicotine-containing e-cigarettes, but only if they are imported. This puts both domestic consumers and retailers at a disadvantage.

The current legislation does not necessarily lead to overall risk reduction. There is another way: lift the current legislation and lightly regulate e-cigarettes to meet any basic safety measures that aren't already covered under the *Consumer Guarantees Act 1993*. As mentioned earlier in the chapter, there is currently a lot of variability in e-cigarette quality and ingredients. Products on the market that have proof of safety ought to be somehow distinguishable from products that have not been proven, or have a higher level of risk.

A recent article in the *New Zealand Medical Journal* suggests some regulatory options (note the parentheticals below are Wilson et al.'s, and are not the thoughts of this author):

1. a full free market (an option we doubt is desirable for multiple reasons);
2. controlled increased access through: (a)

171 Around 0.2% of users are never-smokers. Ann McNeill, et al., "E-cigarettes: An Evidence Update," op. cit., 27.

172 Derek Yach, "Why an anti-smoking crusader would embrace e-cigarettes," *Global Health Now* (25 August 2015).

pharmacy only, (b) pharmacy only plus sales by prescription/to licensed vapers; (c) additional controls through non-profit supply/distribution (eg, public hospital pharmacies);

3. increased restrictions compared with current (eg, adopting a complete ban on self-imports and use).[173]

But one option missing in this list is a middle ground between a completely unregulated market and treatment as a pharmaceutical product (like NRTs). Rather than having to overcome the extreme burden of proof required for pharmaceutical products, why not treat e-cigarettes as a recreational product. Light regulation could involve age restrictions on purchases, notification of ingredients, and warning labels noting nicotine is an addictive substance.

The view of Associate Professor Marewa Glover from Massey University's Research Centre for Maori Health & Development is not to treat vaping as a public health issue, but to apply regulation to e-cigarettes as you would any other consumer good.

> Like many other products, electronic cigarettes and e-liquids are already covered by existing consumer laws. Because of the huge cost involved in assessing, consulting, lobbying and debating new regulations or laws, I oppose the call for regulation of electronic cigarettes, e-liquids and vaping … I do not think it is even necessary to legislate for "safety and product quality". Existing consumer protection laws should be sufficient.[174]

There are many puzzling contradictions in the current system, the most glaring one being that combustible cigarettes – which have been proven to be harmful – remain available for sale on New Zealand shelves, while e-cigarettes – a smoke-free alternative, or a cessation tool – are restricted by the Ministry of Health. There is discrimination against domestic retailers, who cannot sell the product, and foreign retailers, who can export to New Zealanders for individual use. The quest for the perfect regulatory regime may do more harm than good by restricting the market for current smokers who would be willing, but unsure how, to make the shift to e-cigarettes.

BOX 3: THE WHO AND TOBACCO HARM REDUCTION

In a statement addressed to Margaret Chan (Director-General of WHO), a number of international specialists in nicotine science and public health policy have urged the WHO to consider a number of principles that "should underpin the public health approach to tobacco harm reduction" (26 May 2014). These are sensible policies and include (but not limited to):

- "Tobacco harm reduction policies should be evidence-based and proportionate to risk, and give due weight to the significant reductions in risk that are achieved when a smoker switches to a low risk nicotine product.
- On a precautionary basis, regulators should avoid support for measures that could have the perverse effect of prolonging cigarette consumption.
- Targets and indicators for reduction of tobacco consumption should be aligned with the ultimate goal of reducing disease and premature death, not nicotine use per se, and therefore focus primarily on reducing smoking.
- Tobacco harm reduction is strongly consistent with good public health policy and practice and it would be unethical and harmful to inhibit the option to switch to tobacco harm reduction products.
- The tax regime for nicotine products should reflect risk and be organised to create incentives for users to switch from smoking to low risk harm reduction products.
- WHO and national governments should take a dispassionate view of scientific arguments, and not accept or promote flawed media or activist misinterpretations of data."

173 Nick Wilson, et al., "Potential New Regulatory Options for E-cigarettes in New Zealand," *New Zealand Medical Journal* 128:1425 (2015), 88–96.

174 Factasia, "E-cigs 'don't need regulation', says harm-reduction expert," Blog (11 February 2016).

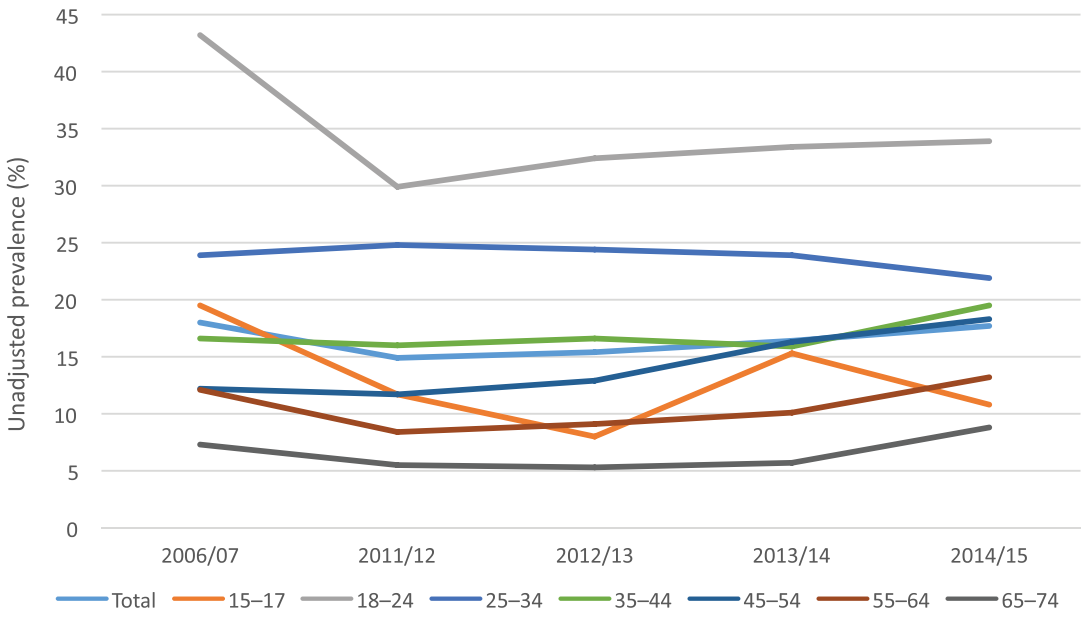
FIVE
ALCOHOL MARKETING AND YOUTH DRINKING

DOES NEW ZEALAND HAVE A DRINKING PROBLEM?

Many of the calls about hazardous drinking are aimed at youth binge drinking based on the perception that young people are particularly impressionable.[175] This stereotype, however, is not borne out in the statistics. The hazardous drinking rates by age fluctuate quite significantly. There is talk of a drinking 'culture,' where dangerous drinking is common and normalised. But does such a culture exist? If so, is it really marketing that perpetuates the drinking culture?

Discussions about the 'drinking culture' are based on short-term trends and statistics that are partly affected by natural fluctuations. Nevertheless, youths aged 18–24 represent the largest portion of hazardous drinkers by age in each year recorded. While it is easy to call today's drinking culture a crisis, longer term trends of alcohol consumption indicate otherwise (Chart 14).

Chart 13: Hazardous drinking by age group (2007–15)

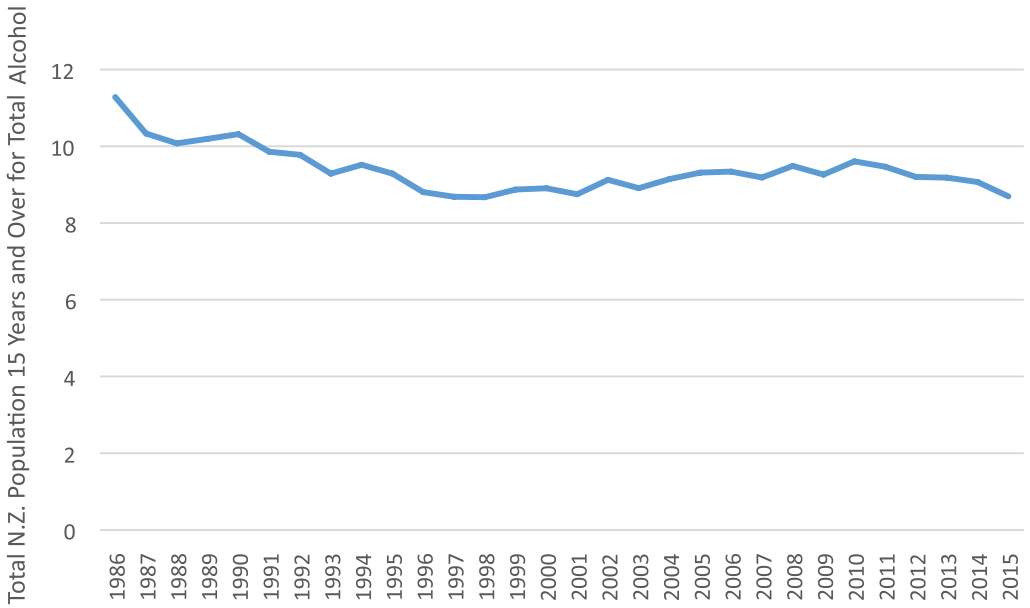


Source: Ministry of Health, "New Zealand Health Survey 2014/15" (2016).

Note: At 95% confidence interval. Hazardous drinkers were assessed using the WHO's 10-question Alcohol Use Disorders Identification Test. Hazardous drinkers were defined as those scoring 8 or above. For a full explanation of methodology used, see the Ministry of Health website.

175 This was the view of the Ministerial Forum on Alcohol Advertising and Sponsorship, as a summation of submissions received. It stated "Early in our discussions it became increasingly clear that the exposure of minors ... would be a key issue." Ministerial Forum on Alcohol Advertising and Sponsorship, "Recommendations on Alcohol Advertising and Sponsorship" (Wellington: Ministry of Health, 2014).

Chart 14: Litres of alcohol per head of population (1986–2015)



Source: Statistics New Zealand, "Litres of Alcohol Per Head of Population – By Alcohol Type (Annual-Dec)," Infoshare (2016), http://www.stats.govt.nz.

INCREASING CALLS FOR ADVERTISING RESTRICTIONS

Alcohol marketing (to encompass advertising and sponsorship) remains a concern for those wanting to decrease hazardous drinking through policy. These concerns have been captured in a 2010 Law Commission Report[176] and a 2014 Ministerial Forum.[177] A focus is often put on youths and adolescents, as the most 'problematic' drinking group, and arguably the most susceptible to marketing. Of recent concern has been the influence of internet marketing and social media networks, where marketing is not always explicit but takes the form of identity-driven paid content.

Changing attitudes about what is normal and socially acceptable behaviour has been the focus of alcohol public health campaigns in a way that is not directly comparable to obesity or smoking. Public health campaigns on smoking tend to focus on the message that there is no safe level of smoking, and cessation is the only recommended action. Obesity public health messages focus on individual wellbeing and rarely on social approbation. Alcohol public health campaigns focus on responsible decision-making rather than sobriety for all.[178]

The Ministerial Forum on Alcohol Advertising and Sponsorship recognised a number of common threads in the arguments presented. According to the "Analysis of Submissions to the Ministerial Forum on Alcohol Advertising and Sponsorship," "Those supporting further restrictions … did so by noting some or all of the following:

- Their concern over the nature and amount of ongoing alcohol-related harm.

176 New Zealand Law Commission, "Alcohol in Our Lives: Curbing the Harm: A Report on the Review of the Regulatory Framework for the Sale and Supply of Liquor," Report 114 (Wellington: NZLC, 2010).

177 Ministerial Forum on Alcohol Advertising and Sponsorship, "Recommendations on Alcohol Advertising and Sponsorship," op. cit.

178 Some of the most prominent public health campaigns are run by the Health Promotion Agency, such as the "Yeah, Nah" campaign that "gives New Zealanders the social permission and language to be able to ease up on the drink." See "Campaigns," alcohol.org.nz/.

BOX 4: LAW COMMISSION RECOMMENDATIONS

Law Commission recommended in 2010 that from 2016, it would be an offence to:

- "In the course of carrying on a business, encourage the consumption of an excessive amount of alcohol, whether on licensed premises or at any other place;
- Promote or advertise alcohol in a manner that has special appeal to people under the age of 20;
- Promote or advertise alcohol, except in store or on premises, in a manner that leads the public to believe the price is 25% or more below the price at which the alcohol is ordinarily sold;
- Promote alcohol that is free; or
- Offer any goods or services on the condition that alcohol is purchased."

The subsequent response in the Cabinet Paper by the Minister of Justice was: "I consider it is premature at this time to make far-reaching changes to the existing advertising regime and propose instead that officials continue to monitor the national and overseas research on the impacts of exposure to advertising on consumption. Should the evidence support it, restrictions on advertising and sponsorship could be considered at a future date."

Source: Ministry of Justice, "Cabinet Paper: Alcohol Law Reform" (23 August 2010).

- Evidence linking alcohol advertising and sponsorship to increased alcohol use and abuse.
- Their view that the self-regulation currently in place was ineffective.
- Rejection of the claim that marketing is focused on brand awareness not market growth.
- Reference to tobacco harm and control initiatives."[179]

Not all of these critiques are equally evidence-based. Simply pointing to the nature and extent of alcohol-related harm does nothing to establish causality for alcohol marketing. Views on industry self-regulation also have little objective value, as there will be differing perceptions and expectations of what self-regulation ought to achieve, and what feasibly could or should be achieved.

The arguments of more interest from an evidence-based perspective are whether there is evidence linking alcohol marketing to increased harm, whether marketing really does lead to market growth (rather than simply brand differentiation), and whether alcohol and tobacco truly are analogous.

IS ALCOHOL MARKETING A CAUSE OR CORRELATE? ESTABLISHING CAUSALITY

It should not be too surprising when a correlation is observed between exposure to brand marketing and subsequent consumption by a viewer of that brand. It is simply a sign of good marketing. For emerging markets, advertisers would naturally focus their efforts on areas or markets where they would expect consumption to increase. But even if the increase in sales was wholly due to advertising, proof of that in and of itself is not enough to justify government intervention. It is not an increase of sales in that brand that ought to matter for policy, or even an increase in total consumption, but an increase in hazardous drinking.

Similarly, consider evidence of alcohol intake and evidence of young people being able to recall alcohol advertising or brands, or of young people engaging with alcohol marketing campaigns. While it could very well be true that such marketing

179 Allen and Clarke, "Analysis of Submissions to the Ministerial Forum on Alcohol Advertising and Sponsorship," Final report (Wellington: Ministry of Health, 2014), 20.

exposure affects consumption, many studies do not establish the direction of causality. It could very well be that those who drink, or are likely to drink, are also more likely to recall or engage with alcohol marketing.[180]

Yet often, these relationships between successful marketing and consumption are used to justify the restrictions of alcohol marketing. For example, some of the reasons given for greater regulation by the Ministerial Forum on Alcohol Advertising & Sponsorship include observations from studies that show the link between positive responses to advertising messages, frequent exposure to messages, and increased consumption or earlier initiation.

But is marketing really likely to increase youth hazardous drinking?

The evidence is far from convincing. The Ministerial Forum considers the "frequent exposure to alcohol advertising increases the likelihood of early initiation of drinking alcohol" as a "headline finding from some of the more recent studies that influenced our recommendations."[181] The sections below critique some of the studies the Ministerial Forum has cited, as well as some that ought to have been weighted with more consideration.

Online marketing

One of the studies considered by the Ministerial Forum was a European study looking at the impact of alcohol marketing exposure on youth alcohol expectancies and drinking.[182] It found that "higher exposure to online alcohol marketing exposure was found to increase the odds of alcohol expectancies as well as drinking in the last 30 days."[183] Now, there is a difference here between alcohol expectancy and actually drinking. An alcohol expectancy is the theory that if people have positive association towards an action, they are more likely to participate in it in the future (people who think positively about alcohol are more likely to drink alcohol). This is different from measuring real consumption.

There are several problems with the method of this study. First, the study relies on a self-reported measure of marketing exposure, including recalling promotional emails, looking at websites for alcohol brands or drinking, downloading a screensaver containing an alcohol logo or brand name, and noticing an internet page that contained alcohol advertisements. All of these were combined into one factor. But is actively looking at an alcohol website, or downloading an alcohol-related screensaver, really on par with passively coming across an alcohol website while looking at a different page? Is it really such a surprise that those who are more likely to go on an alcohol website are also more likely to drink? Even passively coming across an alcohol advertisement while on an unrelated website is not completely accidental or random. Websites use cookies so the advertising on the page appeal to the past internet activity of the user. These personality-based factors make it difficult to establish the direction of causality.

There is also a strong recall bias (which the paper does note, to its credit) where those who drink are also more likely to recall alcohol advertising.

180 For a New Zealand example, see En-Yi Lin, Sally Caswell, Ru Quan You and Taisia Huckle, "Engagement with alcohol marketing and early brand allegiance in relation to early years of drinking," *Addiction Research & Theory* 20:4 (2012), 329–338.

181 Ministerial Forum on Alcohol Advertising and Sponsorship, "Recommendations on Alcohol Advertising and Sponsorship," op. cit. This is based on findings from Avalon de Bruijn, et al., "Report on the Impact of European Alcohol Marketing Exposure on Youth Alcohol Expectancies and Youth Drinking" (Alcohol Measures for Public Health Research Alliance, 2012); Jerry L. Grenard, Clyde W. Dent and Alan W. Stacy, "Exposure to Alcohol Advertisements and Teenage Alcohol-Related Problems," *Paediatrics* 131:2 (2013), 369–379.

182 Avalon de De Bruijn, et al., "Report on the Impact of European Alcohol Marketing Exposure on Youth Alcohol Expectancies and Youth Drinking," op. cit.

183 New Zealand Law Commission, "Alcohol in Our Lives: Curbing the Harm: A Report on the Review of the Regulatory Framework for the Sale and Supply of Liquor," Report 114 (Wellington: NZLC, 2010).

Odds ratios and statistical significance

Odds ratios and statistical significance also need to be considered. For example, one study by Sandra C. Jones and Christopher A. Magee on exposure to alcohol advertising and consumption among young Australians argued that "exposure to alcohol advertisements among Australian adolescents is strongly associated with drinking patterns."[184] But after adjusting for a small number of covariates (such as age, gender, mother drink, father drink, country of birth, and religion), a large majority of relationships are not statistically significant, even at the 5% level. This suggests other confounding variables could explain the variation in results. As Crampton pointed out in his submission to the Alcohol Advertising Forum, out of the 120 statistical associations tested in the study, only 23 suggested significant effects of advertising, and out of those, four even suggested that advertising could protect *against* alcohol use.[185] Worse, when researchers test for effects over 120 different ways of analysing the data, conventional tests for statistical significance fail.[186] The results need to be adjusted for multiple testing – a step not done in this study. Here, the strong conclusions and calls for action by Jones and Magee that "these findings suggest the need to address the high levels of young people's exposure to alcohol advertising" is not backed by results.

When in doubt, consult a meta-study

One of the most comprehensive studies on the subject was a meta-analysis of 12 studies by Jon P. Nelson in 2011. The study looked at alcohol marketing, adolescent drinking, and publication bias in longitudinal studies. Of particular interest is the way it accounts for publication bias, omitted variable bias, and lack of genuine effect.

Publication bias occurs when "... published studies comprise a biased sample of all studies that have been conducted or contain other systematic biases ..."[187] It includes the propensity to only publish statistically significant results or results with a large magnitude rather than insignificant or contradictory results.

Omitted variable bias occurs if important factors (variables) are left out of the model, so that the model does not accurately estimate the effects of the studied variable. An example Nelson finds in the literature is in the differences in drinking measures and the emphasis on different forms of alcohol marketing.[188] For example, one study may look at alcohol-branded merchandise and its effects on drinking onset,[189] while another may examine alcohol portrayal in movies[190] – neither study acknowledges there are other forms of alcohol marketing.

Nelson also recognises that many studies on the effects of alcohol marketing and adolescent drinking lack statistical significance, concluding that the empirical results are mixed and inconclusive.[191] Out of 63 estimates, only 33%

184 Sandra C. Jones and Christopher A. Magee, "Exposure to Alcohol Advertising and Alcohol Consumption Among Australian Adolescents," *Alcohol and Alcoholism* 46:5 (2011), 630–637.

185 Eric Crampton, "Submission to the Ministerial Forum on Alcohol Advertising and Sponsorship" (2014).

186 Yoav Benjamini and Daniel Yekutieli, "The control of the false discovery rate in multiple testing under dependency," *Annals of Statistics 29:4 (2001), 1165-1188.*

187 Jon P. Nelson, "Alcohol Marketing, Adolescent Drinking and Publication Bias in Longitudinal Studies: A Critical Survey Using Meta-Analysis," *Journal of Economic Surveys* 25:2 (2011), 191–232, 193.

188 Ibid., 195.

189 Auden C. McClure, Sonya Dal Cin, Jennifer Gibson and James D. Sargent, "Ownership of Alcohol-Branded Merchandise and Initiation of Teen Drinking," *American Journal of Preventative Medicine* 30:4 (2006), 277–283, cited in Jon P. Nelson, "Alcohol Marketing, Adolescent Drinking and Publication Bias in Longitudinal Studies," op. cit.

190 James D. Sargent, Thomas A. Wills, Mike Stoolmiller, Jennifer J. Gibson and Frederick X. Gibbons, "Alcohol Use in Motion Pictures and its Relation with Early-Onset Teen Drinking," *Journal of Studies on Alcohol* 67:1 (2006), 54–65, 67, cited in Jon P. Nelson, "Alcohol Marketing, Adolescent Drinking and Publication Bias in Longitudinal Studies," op. cit.

191 Jon P. Nelson, "Alcohol Marketing, Adolescent Drinking and Publication Bias in Longitudinal Studies," op. cit., 224.

yielded statistically significant results. In some cases, the results varied across studies of same covariates, with some yielding statistically significant results and others finding insignificant or negative relationships.[192]

The Cochrane review comes to similar conclusions about the effectiveness of banning or restricting alcohol advertising to reduce consumption. The review concludes that the studies reviewed are weak due to problems with methodology, and the results inaccurate. While the review does not rule out the possibility advertising restrictions or bans may work, the evidence so far is much less convincing than campaigners portray it to be.[193]

A meta-study by Anna Bryden and Bayard Roberts et al. also notes the general low quality of evidence. Bryden and Roberts, et al. looked at seven studies looking at the influence of alcohol advertising and protective messages, but found "around half of the advertising studies had been rated as 'weak' in the quality assessment, making it difficult to come to any firm conclusions."[194] Further, most studies of the studies they looked at only tested the effect on drinking, but not necessarily heavy drinking.

IT'S NOT THE DRINKING, IT'S HOW WE'RE DRINKING – ISN'T IT?

This report considers alcohol marketing, though the lessons could also be applied to marketing of other 'risky' (if used incorrectly or irresponsibly) products. The main message in this section is to challenge whether it is the product that is the problem or the people.

New Zealand's drinking culture is either a source of fond memories for some, or a source of shame for others. It is widespread (though caricatured in places like Castle Street in Dunedin or the streets of Courtenay Place after midnight). This chapter has focused on youth drinking because of the disproportionately high rates compared with the rest of the population.

This report recognises that most calls for policy action do not encourage full prohibition because a significant proportion of the population manage to drink responsibly, and even improve their health due to the health benefits of moderate drinking.[195]

There are surely private costs to such drinking – feelings of regret, hangovers, embarrassment, etc. However, these costs do not necessarily represent an 'internality' that the drunk, irrational self imposes on the sober self. The problem with establishing 'internalities' is that there are many youths who intentionally get themselves in states they will regret later. It is like choosing to go snowboarding, then complaining of sore muscles the next morning. If you make certain choices, consequences come with the territory.

What is of concern, though, is the extent to which such actions affect others: the externalities. While externalities can be imposed in a number of ways (see Chapter 1), it is the harm to others such as violence and destruction of property that policy ought to curtail. As previous chapters have discussed, some of this harm occurs under a private contract, such as productivity costs to an employer. We consider these private costs. But there are undeniably true social costs to drinking, too.

Both the costs of alcohol and crime could be minimised if they were first better internalised. In other words, if you break it, you pay. Those who

192 Ibid.

193 Nandi Siegfried, et al., "Does Banning or Restricting Advertising for Alcohol Result in Less Drinking of Alcohol?" (London: Cochrane, 2014.).

194 Anna Bryden, Bayard Roberts, Martin McKee and Mark Petticrew, "A Systematic Review of the Influence on Alcohol Use of Community Level Availability and Marketing of Alcohol," *Health & Place* 18:2 (2012), 349–357, 355.

195 Augusto Di Castelnuovo, et al., "Alcohol Dosing and Total Mortality in Men and Women: An Updated Meta-Analysis of 34 Prospective Studies," *Archives of Internal Medicine* 166:22 (2006), 2437–2445; Eric B. Rimm and Caroline Moats, "Alcohol and Coronary Heart Disease: Drinking Patterns and Mediators of Effect," *Annals of Epidemiology* 17:5 Supplement (2007), S3–S7.

willingly undertake risky activities, and suffer costly consequences, should face the costs.

After all, current policy is quite contradictory. On the one hand, New Zealanders are told that our drinking is problematic, unhealthy and downright embarrassing internationally. On the other hand, law enforcement authorities do not consistently treat this behaviour as undesirable enough for the offender to be punished.[196] Disorderly conduct that occurs after drinking alcohol[197] is simultaneously treated as socially unacceptable, but not the individual's fault.

Laws already exist to prohibit disorderly conduct. The problem is ensuring the laws are enforced consistently and often. Sceptics would point out that this would likely be a costly and burdensome use of police resources. But that raises the question of why such legislation exists in the first place: to prevent people from causing harm to others. Legislation should be targeted at those causing actual harm, and should be enforced to discourage future crime. If people do not fear the consequences of their actions because they do not see the law consistently being enforced, then the law has no effect. On the flipside, if the law is only enforced among certain communities or neighbourhoods, the public are likely to interpret such actions as discrimination rather than punishment for their own criminal actions.

Consider a Wellington supermarket's recent threat of liquor license loss. Wellington Police have complained about the supermarket's inability or unwillingness to deter crime occurring in its carpark after hours (11 pm).[198] The supermarket owners deny the allegation, claiming they are doing "everything possible to stamp it out." The supermarket's carpark, located close to the central nightclub district (and shopping and business districts) was used by youth for after hours drinking, and has been the location of several violent incidents. However, are the police's objections to the supermarket's sale of liquor justified? There is no causal evidence to suggest that those drinking in the carpark after hours purchased alcohol from that supermarket, nor that they might stop if the supermarket stopped selling alcohol. The supermarket cannot change its convenient location, which makes it an attractive drinking spot, but surely the police have the power to signal that this location is not safe for those wanting to avoid law enforcement.

So how do we prevent externalities, or real harm caused to others? A first step might be to decouple drinking culture from the drinking.

In a study of youth drinking habits, anthropologist Anne Fox characterised Australian and New Zealand youth drinking habits[199] as one where there are "strict rules, laws and prohibitions regarding age, sale and service of alcohol," yet one where there is "a belief in the 'disinhibiting', or transformational power of alcohol."[200] Fox argues that there is no causal relationship between alcohol and violent or anti-social behaviour, and that to address the problem, New Zealanders (and Australians) need to stop believing they have no

196 Fines for 'being drunk in public' has already received widespread support from the New Zealand Law Commission ("Being drunk in public should be an offence again – Sir Geoffrey," *New Zealand Herald* (19 August 2009)); bar owners (Lane Nichols, "Bar owners call for public drunkenness laws," *The Dominion Post* (26 May 2012)*; police (*Briar Marbeck, "Further alcohol restrictions needed – police," *3 News* (19 December 2013)); and even drinkers (Anna Leask, "Drinking laws: New hope for relief from boozers," *New Zealand Herald* (19 December 2013)).

197 This report does not claim that drinking and disorderly conduct are causally related.

198 Michael Forbes, "New World supermarket revealed to be the heart of Wellington's 'crime corridor'," stuff.co.nz (30 October 2015).

199 Anne Fox, "Understanding Behaviour in the Australian and New Zealand Night-time Economies: An Anthropological Study" (Sydney: Lion, 2015). This study was initiative and sponsored by Lion. While some may question the academic independence of the study, "To some degree, the media's tendency to rely on the insights of academic types was also at play in the issue regarding Lion's research piece." Damien Venuto, "Can we trust research funded by brands?" *StopPress* (19 January 2016).

200 Anne Fox, "Understanding Behaviour in the Australian and New Zealand Night-time Economies," op. cit.

control over their anti-social behaviour when drunk.

Her final recommendations are based on the observation that unless culture is addressed, other regulations will only tinker at the margins. Fox offers several recommendations to influence cultural change, which include (but are not limited to):

1. Debunking the myth that you cannot be held responsible for the things you do while drunk. Instead, "return the responsibility for conduct to the individual. We must take away excuses."[201]
2. The consequences of drinking must be "real and believable," and there needs to be realistic expectations of the public's assessment of risk and reward. These include expectations of social stigma, fines and penalties if they misbehave. These needs to be weighed against the perceived benefits – or pleasure – gained from drinking. Policymakers emphasising only the risk, and not acknowledging the real or perceived benefits of drinking, are not likely to significantly influence culture.[202]
3. Change the perceptions of what is socially acceptable while drunk. Antisocial or illegal behaviour otherwise may continue if it is sanctioned within certain social groups.[203]

As the Fox paper argues, there is no consistent 'drinking culture' across nations, thus no reason to believe the simple ingestion of alcohol is to blame for externalities such as violence and destruction of property. Other factors must be at play. It is equally important to keep in mind that anti-social incidents remain a tiny proportion of total drinking experiences. By simply focusing on alcohol intake, rather than underlying reasons why a minority of individuals behave poorly, policymakers miss the opportunity to target resources to that which can change behaviour.

While this report has repeatedly defended the individual's right to make their own decisions about their health, even if they know it causes harm, this liberty does not extend to actions that cause harm to others. Taking personal responsibility for actions performed while drunk requires a mix of better mechanisms to enforce current laws and wider cultural change.

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201 Ibid., 96.

202 Ibid.

203 Ibid.

CONCLUSION

There are generally three separate but equally important questions when implementing government interventions of any kind, let alone interventions that seriously limit individual freedom and liberty.

The first concerns the implication for people's freedom. This report argues that paternalistic policies should be scrutinised – with a clearer distinction made between policies that stop people causing harm to others, and policies to stop people causing harm to themselves. Not only does government have limited knowledge of people's true wants and needs, but even if it were privy to that information, government is rarely in the best position to bring these into effect for people. Physical health is important, but so is wellbeing and happiness. While physical health can be measured in obesity rates, smoking-related illnesses, or by the number of alcohol-induced hospital admissions on any given Friday or Saturday night, mental wellbeing and happiness is much more difficult to assess from person to person. We are increasingly seeing policies aimed at 'our' best interests, or worse, policies aimed at those that advocates believe will benefit those (the poor) who lack the capabilities and self-control the rest of us have. Humans may be flawed, decision-making may be flawed, but most people most of the time manage to make the decisions that they consider the best fit for themselves.

The second question is whether the problem is of an economic nature. That is not to say non-economic problems do not matter, but that economic language is often misused and abused. There is virtually no action a person living in society can do that does not affect other people. However, not all of these flow-on effects are externalities, and not all externalities require government intervention. The newer behavioural economics literature of recent years is even less convincing about when a government should intervene. Externalities that people impose on themselves – internalities – are difficult to recognise and define accurately. For example, what are the preferences of a rational person, and who gets to decide? 'Market failure' is a technical term with a very specific meaning in economics. Yet it is often used to describe any situation where the market fails to deliver what some observers want it to deliver. Using economic language to describe non-economic problems or situations of a moral or ethical nature may appeal to certain audiences, but those in the policy domain should know better.

Finally, the third question to ask when a government intervention or policy is proposed is whether the evidence the stacks up. Does the evidence convincingly prove that the policy will deliver what it says it will deliver? In this assessment, a number of things could go wrong. The strength of the economic model may not be sufficient, so people may not behave like the way economic models predict. Economic models are only as accurate as the assumptions put into it, and even then human behaviour is so variable the policy or intervention may not be able to affect the behaviour of those who need it most. There are also confounding variables to consider, a range of methodological techniques to scrutinise, and a real contemplation needed of what private costs, social costs and fiscal costs matter. Above all, this report urges journalists, academics and policymakers to read methodologies carefully. Do not just rely on press releases or the abstracts and conclusions of reports – let alone the subsequent media framing of said reports.

This report considers three proposed government interventions or current policies: proposed fat taxes, current e-cigarette legislation, and whether expanding alcohol marketing regulations are likely to have the desired effect. This report points out some of the flaws of the current evidence pool. While it is by no means an extensive examination, it does illustrate some of the most common errors found in public health studies of this type. Again,

these examples should provide journalists, academics and policymakers with guidance on how to interpret studies in the future and particular things they should be alerted to.

As well as being based on poor evidence, this report finds that the case studies described have important implications for individual freedom and liberty. And so this report ends as it began, with John Stuart Mill on liberty. It is not just the scope of government intervention that must be challenged, but the idea that people can and should impose their personal tastes, preferences, and likes and dislikes on others. Mill warned of the tyranny of social opinion even absent regulations:

> Protection, therefore, against the tyranny of the magistrate is not enough: there needs protection also against the tyranny of the prevailing opinion and feeling; against the tendency of society to impose, by other means than civil penalties, its own ideas and practices as rules of conduct on those who dissent from them; to fetter the development, and, if possible, prevent the formation, of any individuality not in harmony with its ways, and compel all characters to fashion themselves upon the model of its own.[204]

What has changed since Mill's time is that social opinion on how we should live our lives has now shaped policy. This 'war on sin,' though, is only as strong as the army that is willing to fight it. No matter how compelling the cause seems at the time, we do not need an extended metaphor to conclude that wars do not always turn out as intended.

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204 John Stuart Mill, *On Liberty*, op. cit.

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There is an old saying that war is the health of the state. That is, war makes the state strong as the government's reach and influence thrives during times of crisis.

New Zealand and much of the developed world is in a different sort of war. The 'war on drugs', 'war on smoking', and 'war on junk food' are just a few examples of the militant stance the state has taken to ensure the public is healthy.

This report is about lifestyle regulation and the growing reach of the state into what should be personal decisions. The report argues that such regulations challenge the nature of a free society. Further, the report finds that some of the regulations that exist, or are advocated for, are not based on sound science. That means they are unlikely to achieve the positive health outcomes they were designed to achieve.

Regulations regarding food taxes, e-cigarettes and alcohol advertising are used as case studies to illustrate some of the methodological flaws and strengths of the scientific studies used to support such policies.

While the report focuses on these three case studies, the implications for freedom are much broader. If lifestyle regulations are not based on sound evidence and may not achieve the health outcomes they are supposed to, then what limits are there to introducing policies that disregard individual choice and freedom?

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