NZIER INSIGHT
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Sitting down on the job

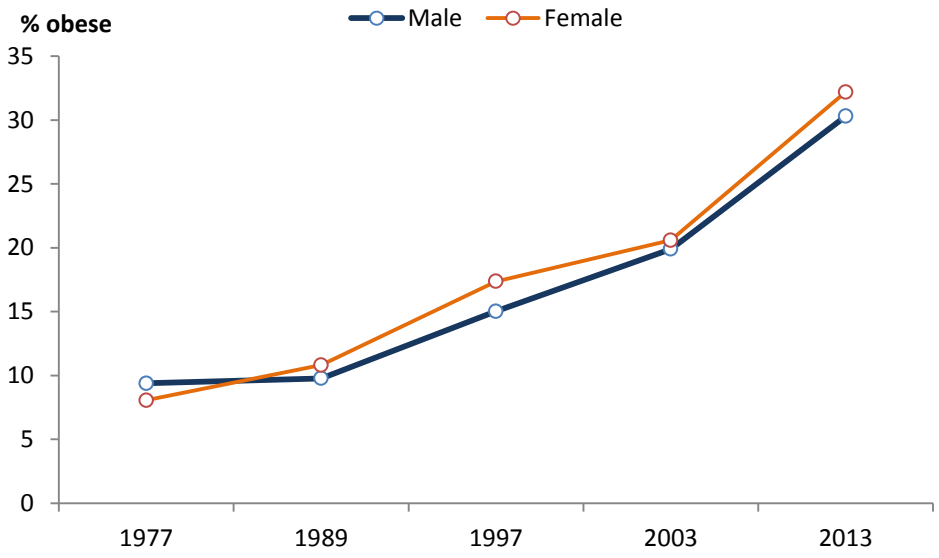
New Zealand is now one of the most obese countries in the world. The impact on our health comes with substantial economic costs. A range of factors are known to be important, with changes in diet being fingered as one of the culprits. Another less obvious factor is that the economic transformation from strenuous manual labour to cushy sedentary jobs has harmed us. Rethinking how we work must be part of the solution to reducing obesity.

We are big on obesity and getting bigger

Obesity is associated with a range of poor health outcomes, such as diabetes and cardiovascular disease, and the misery they cause. Worse, New Zealanders are getting fatter and fatter. We are now three times more likely to be obese than we were only a generation ago (see Figure 1).

Figure 1 Rising obesity: standing on the shoulders of our parents' generation?

Percentage of population obese (BMI greater than 30)



Source: Ministry of Health

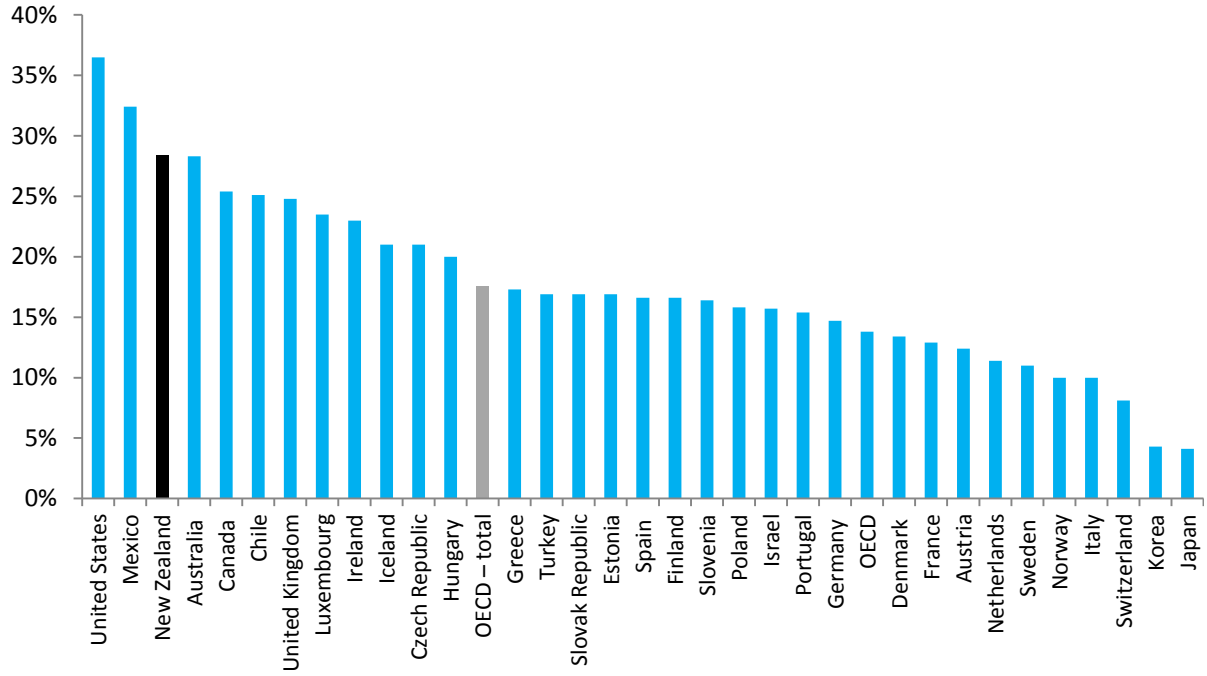
The current levels of obesity put New Zealand close to the top of the obesity charts. Only the United States and Mexico are more obese (see Figure 2).[1]

The full range of outcomes – such as how many people are morbidly obese, and how many people are merely overweight – will matter for the precise health, social, and economic impacts. But the clear message from the data in Figures 1 and 2 is that New Zealand needs to do much more on obesity than we have in the past.

[1] There are a number of non-OECD nations who have higher rates of obesity. These include a number of Pacific Island countries and territories.

Figure 2 New Zealand is one of the most obese nations in the OECD

Obese people as a percentage of population, data sourced from 2011



Source: OECD

It's ugly and it's complex

In understanding the causes of obesity, many variables are at play. Genes are important, though the effect is likely to be small. Factors to consider include prenatal and early life influences. Poor diets; watching too much television; using computers and smart phones; too little physical activity; not enough sleep; and the type of food eaten all may have an impact, to varying degrees.

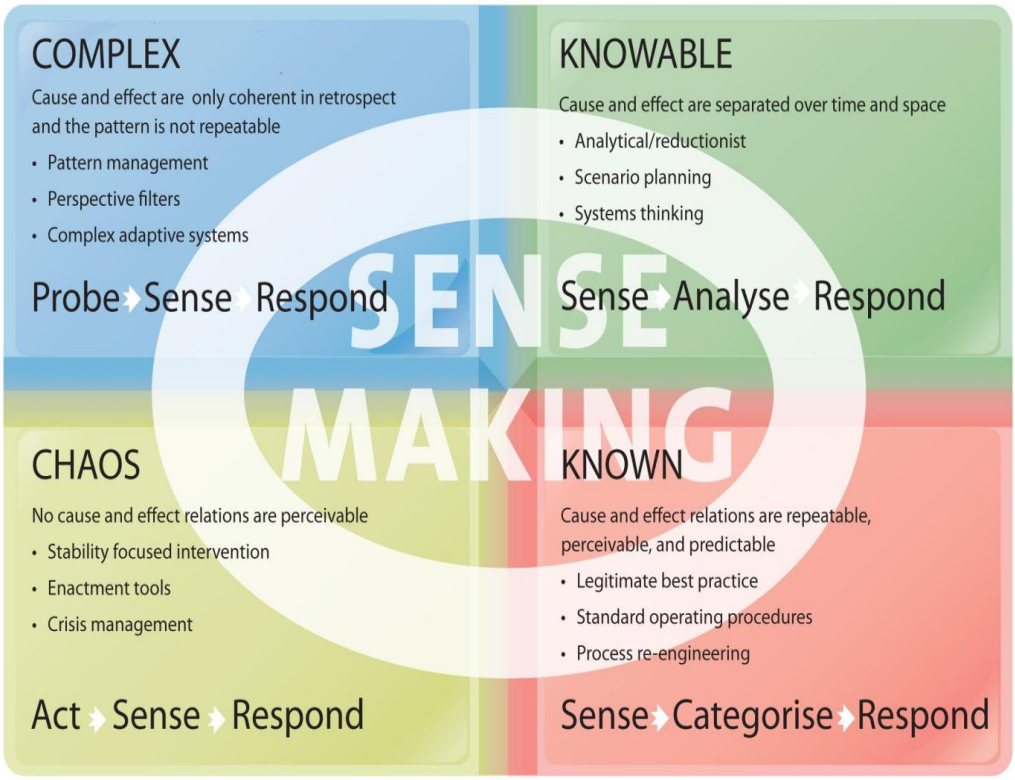
In short, obesity presents a complex problem for policy makers. It belongs to a category of problem known as wicked problems, where solutions are elusive and the law of unintended consequences will kick in to compound matters.

But complex doesn't mean insoluble. One way of thinking about policy responses, developed by Kurtz and Snowdon (2003), is set out in Figure 3. Policy can be separated into stability and know-ability of the cause and effect of the problem. On the right-hand side are the knowable and known problems. Known problems are straightforward, and their impacts are stable and predictable. Knowable problems can be expert driven and managed through systems for service delivery based on a measurement approach.

The problems on the left-hand side are a different kettle of fish. Cause and effect are not knowable in advance, and the relationships are not stable or predictable. Complexity and chaos rule. Complexity is more likely to require a tailored decentralised approach where tacit knowledge and partnerships are more effective.

Chaotic problems, where even after the event it is difficult or impossible to determine cause and effect, are even more intractable. To the extent that they can be addressed, decentralised approaches and tacit knowledge may sometimes mitigate the worst aspects of the issue at hand.

Figure 3 Types of policy problems



Source: Gill et al (2010) p. 26, based on Kurtz and Snowden (2003)

Obesity has some elements of the left-hand side characteristics (complexity and chaos) of Figure 4. Therefore, the aim of the policy approach is to migrate the issues from the complex and chaotic side of the diagram and attempt to make it more tractable in the calmer waters of the knowable and known.

Of course, this is more easily said than done, since there is no simple fix to the obesity problem – and technology has done us no favours. In fact, it looks like one of the compounding factors.

Technology has made the problem worse

Although many factors contribute to obesity, the World Health Organisation (WHO) boils it down to just two critical factors:[2]

1. an increase in consumption in energy-dense foods that are also high in fat
2. a decrease in physical activity due to sedentary lifestyles.

Home economists aside, economists might be expected to know little about the first factor – the higher consumption of energy-dense foods. But some economists put down changing food preparation technologies as crucial to making it easier to find and consume those high kilojoule foods. For example, David Cutler et al (2003) suggest that industrial processing has transformed the consumption of potatoes from homely (and home-made) boiled or mashed to mass-produced, high-fat fries.

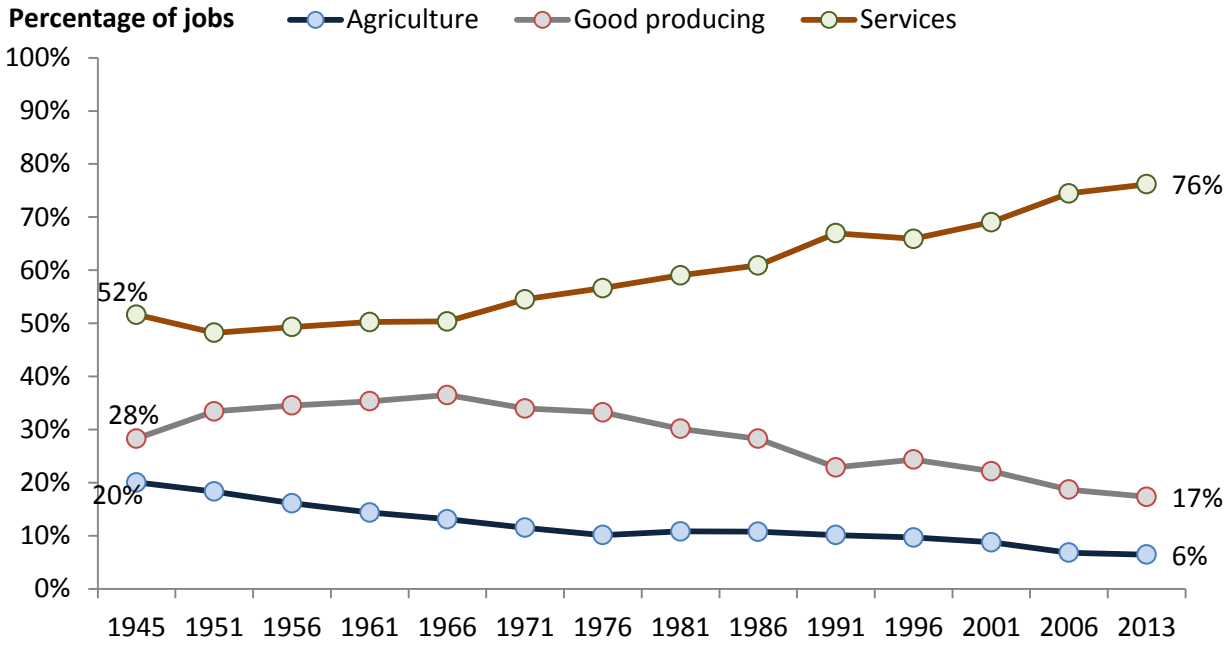
Rather than tackle the many different drivers of changing kilojoule consumption, we focus on how technology has changed physical inactivity at work. Technology change over the past 50 years has enabled New Zealand's labour force to switch from agriculture and manufacturing towards services (see Figure 4). Most service jobs

[2] See World Health Organisation Fact Sheet on Obesity (2015).

are sedentary, which means that we have to use our leisure hours to get active, since our jobs and the way we work prevent us from moving.

Figure 4 Services jobs now make up a larger chunk of the workforce

Workforce by industry



Source: Statistics New Zealand Census 2013

Agricultural and manufacturing labour is often considered hard physical work. Workers in these industries usually burn more energy. However, with technological advances even work in these industries does not require as much energy as they used to. Table 1 shows provides an approximate comparison of the average energy expended over and above resting energy expenditure, expressed in terms of METs (Metabolic Equivalents).[3]

Having relatively more services workers means that our workforce burns less energy on the job – and therefore on average. Assuming there is no corresponding change in what we eat, burning fewer kilojoules will increase our weight. Figure 4 shows that for New Zealand, the changing industry composition of the workforce has added 3-4 kilos to our weight since 1956.

[3] METs is a convenient way of expressing energy burnt and intensity of activities in a way that is comparable across individuals with different weight.

Table 1 Manufacturing and agriculture are hard work, services are not

Median energy intensity of different industries each day

Industry	METs	Work intensity
Agriculture, Forestry, Fishing	3.0	Moderate
Goods-Producing		
Mining	3.8	Moderate
Construction	4.0	Moderate
Manufacturing	3.0	Moderate
Services	2.0	Light

Source: Church (2011)

Working differently to design policy responses

Obesity has been a major health focus of all governments over the past twenty years. Many programmes have done good work in an attempt to alleviate what seems to be the inexorable advance of health costs associated with obesity.

Is it time to rethink (or even just tinker slightly) with the way the government is approaching the issue? Applying the Snowden approach shown in Figure 3 may be a way to wrestle some pieces of the puzzle into the tractable and knowable quadrant, where we know that a wide variety of interventions are in play, but we are still unsure about which interventions are most effective.

Could the first step in a systematic approach be to narrow down and identify the interventions or portfolio of interventions that may be effective and how decentralised the approaches have to be to have some impact?

In that case, policy requires more of the investment approach that New Zealand policy makers are using in social policy. The attributes of a policy-driven solution require elements of centralisation and decentralisation in a package of proposals that come at reducing obesity in different ways.

This suggests:

- working with obese people to understand their lived reality and how it might be changed
- co-designing approaches dealing with different sub-populations needs
- having rigorous review and monitoring approaches in place so we can learn about what works when with whom.

To make the investment approach work, we will need a consistent dataset that illustrates the issues involved and points to possible problems and how they might be alleviated. New Zealand's population is not homogeneous, and obesity is more prevalent in people of Pacific Island descent, so we will need data on our various sub-populations, rather than relying on the evidence from elsewhere.

The longitudinal dataset being developed on New Zealand's sub-populations through the 'Growing up in New Zealand' research programme would provide the rich evidence base we need. 'Growing up in New Zealand' is a longitudinal study tracking 7,000 children from birth to 21 years. The researchers are collecting information not only about a child's health and well-being, but also their family life, education, psychological development, and the wider factors that may help us crack open the obesity problem, such as culture and identity, and even the neighbourhood in which each child grows up. The researchers aim to understand how the complex interplay of genetics and environment influence the outcome of each child's life, so the first data was collected before the children were born.

But data on its own will not be enough to wrestle the ugly problem of obesity to the ground. We must also develop methodologies and tools that can use parameters (based on New Zealand data) to rank the possible interventions or portfolios of interventions over the life course, such as a microsim or a similar tool. With such

finely grained information and tools, we will be able to develop effective strategies that are targeted to the needs of our various sub-populations – and start to arrest and change the obesity trajectory.

What is clear is that there is no silver bullet to address obesity like a fat tax on sugar. What we know from reducing the road toll is that you need a well-designed package of mutually reinforcing policy levers that combine the three E's – engineering, enforcement and education. Similarly, dealing with an 'ugly' problem like obesity will require learning the way forward by experimenting and fine tuning more complex packages of policy levers.

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