

Red flag

Halving our red meat consumption in favour of plant-based alternatives would be good for our health, our wallets and the planet, New Zealand research reveals.

by NIKI BEZZANT • illustration by ANTHONY ELLISON

Kiwis' love of meat began long before the day the *Dunedin* embarked for Britain in February 1882 full of frozen Oāmaru lamb and mutton. That journey kicked off an export wave of animal products and a love for roast dinners that's still going strong 140 years later.

On average, we New Zealanders eat our way through 34kg of beef, lamb and pork each year, a 2021 Australian study found. For many of us, the idea of going meat-free is not on the table.

It is possible, though, that we have now reached "peak meat" in Aotearoa. The study on global meat intakes found that on average, each New Zealander ate 75.2kg of meat (including chicken) in 2019, down from 86.2kg in 2000. We're one of only a handful of countries whose consumption is going down – although there's nuance within that: we're eating less beef and lamb but more chicken and pork.

Alongside this trend, there's been a growth in the range and variety of meat alternatives in our supermarkets and restaurants. But it's tricky to know if there's a corresponding increase in our intake of meat alternatives.

When I press University of Otago nutrition researcher Dr Andrew Reynolds to take an educated guess on this, he says he believes that alternative meats still make up a tiny portion of our overall protein intake.

"I guess if we took Australia as analogous to New Zealand, [alternative meats] do have a lot of marketing hype. However, the portion of the market taken up by plant-based meat alternatives is tiny still – about four or five grams a day when you average it out across all Australians.

"It will grow; don't get me wrong. But at the moment, that's still not big compared with flesh intakes."

Data from the Ministry of Health's Dietary Habits survey seems to back that up: it found that in 2020, just 7% of people said they never or infrequently ate meat. Half of respondents said they ate red meat three or more times a week, men more so than women.

Research by Reynolds and colleagues, published in the

Lancet Group's *eClinicalMedicine* journal in February, poses a fascinating question: what would happen if New Zealanders cut their red meat consumption by more than half?

The answer, apparently, is that it would have some significant benefits. According to his modelling, it would improve our health at a population level and reduce our greenhouse-gas emissions. It would also mean lower healthcare costs, more equity in health, and lower grocery bills.

The study looked at existing local data and modelled what would happen if New Zealanders replaced red and processed meat – or some of it – with various alternatives.

You don't have to give up red meat altogether to improve your health and the health of the planet.

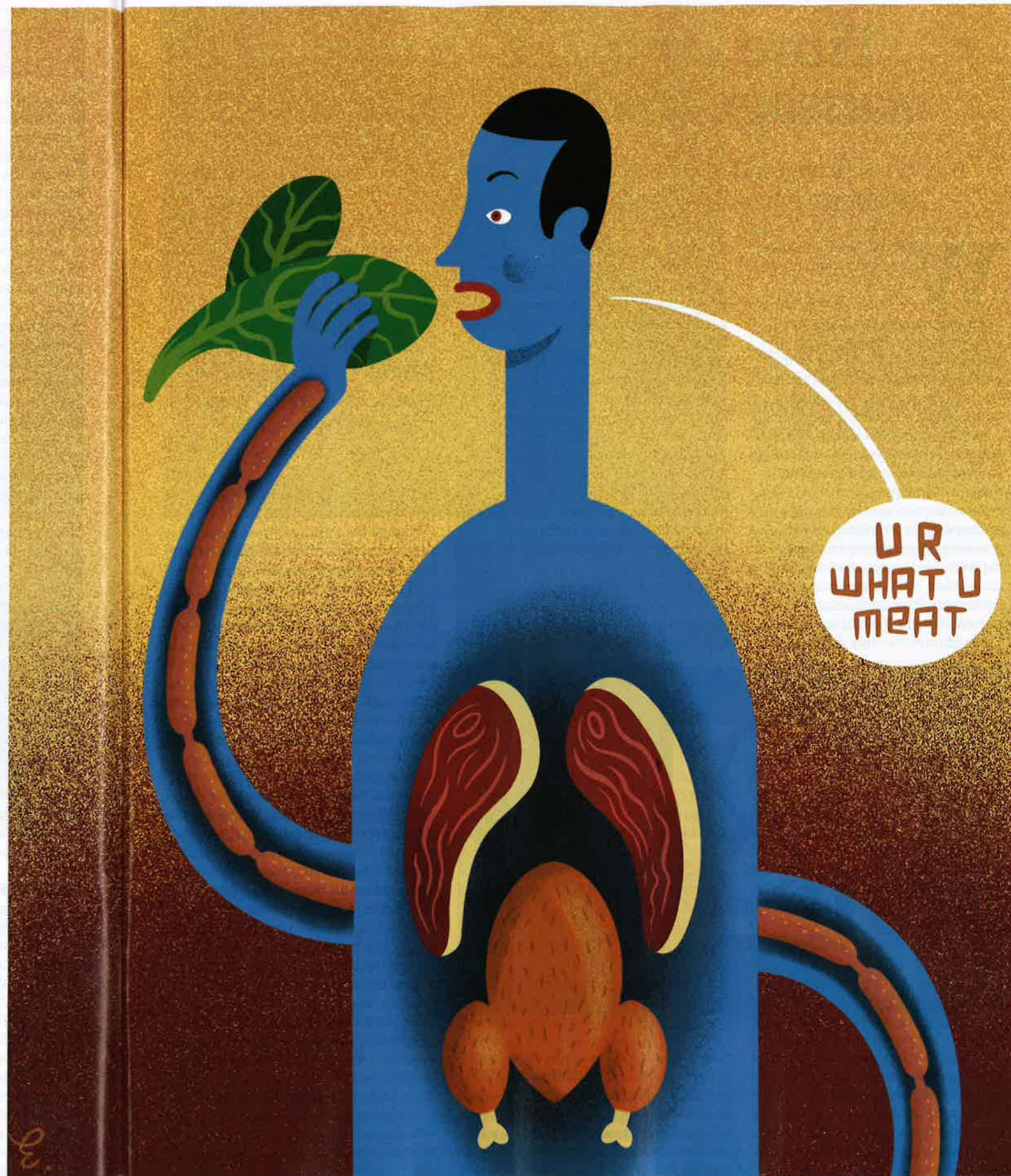
Reynolds and his team looked at five scenarios. The first three involved replacing our current meat intakes with minimally processed plant-based meat alternatives (things like tofu, tempeh, beans and lentils); ultra-processed plant-based meat alternatives (ones that look like meat such as faux mince); or cellular meat (meat grown in labs from animal cells). The other two scenarios were tweaks to our existing diets: following a diet in line with the EAT-Lancet Commission's recommendations or one based on the Heart Foundation's recommendations.

These last two don't eliminate red meat altogether, but they do cut it right back. In the case of EAT-Lancet – a report released in the *Lancet* in 2019 examining how to eat for both human and planetary health – the red meat component of the diet is around 100g a week (though poultry, eggs and seafood are allowed on top of that). The Heart Foundation recommends no more than 350g per week (cooked weight) of red meat.

In all the diets modelled, processed meats, including sausages and cured meats, are out.

GAINS ALL ROUND

All of the scenarios in Reynolds' research were deemed nutritionally adequate. (Though another subsequent paper published in the *Lancet* in March acknowledged that for some people, including women of reproductive age, the EAT-Lancet diet did not supply enough of some crucial nutrients:



Time for a sausage tax?

A levy on processed meats is one idea to improve health outcomes.

We've all heard of sugar taxes, but what about a sausage tax?

One aspect of Andrew Reynolds' research was to look at policies that might nudge people to cut their red meat intakes. He found that the Danes had introduced a saturated fat tax a few years back – making fattier mince, for example, more expensive. Though the tax was repealed after one year, research found it had resulted in some reductions in saturated fat intake in Denmark.

Reynolds can't see a meat tax getting very far with Kiwis, but a processed-meat tax might be more palatable. Because much of our processed meat, such as ham and salami, is imported, it would have less impact on local farmers. It might also encourage producers to reduce the salt and

nitrites in processed meats.

"Remember how we changed the salt in bread?" he says. "Over time, the Heart Foundation led this gradual restriction on salt ... No one actually tasted a difference, but it removed a crazy amount of salt from our food supply and it was good for people's blood pressure."

A more realistic start, he thinks, would be education messages around the dangers of eating processed meat.

He reels off other things policy-makers could do: "They could enact restrictions in public spaces – things like hospital vending machines or meals in hospitals; workplace initiatives; school food and canteens – these all sort of make sense."

"They could train health professionals to deliver healthy-eating advice." He smiles wryly. "That would be quite novel."



vitamin B12, calcium, iron, and zinc. The report suggested increasing animal foods, including meat, to address this). All the diets increased what scientists call Quality Adjusted Life Years (QALYs) – one QALY is one year lived in perfect health. The health gain for Māori was 1.6 to 2.3 times that of

non-Māori. The cost savings to the health system were between \$2530 and \$5096 per adult, and greenhouse gas emissions were reduced by 19-35%. Groceries cost less for every scenario except the one that included ultra-processed meat alternatives. And the best scenario overall was the one

involving legumes.

Reducing our red meat intake, according to this research, is therefore a win-win. What's good about the results is they show you don't have to give up red meat altogether to improve your health and the health of the planet, says Reynolds.

"This isn't [only about] moving towards a vegetarian diet. It's not knocking out all animal protein sources. It's really just targeting red and processed meat. Essentially, when you're replacing that with anything,

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you're obtaining a health benefit and an environmental benefit as well."

Though the minimally processed meat alternatives showed the most benefit, Reynolds stresses they're not the only option.

"It's not like you have to replace meat with legumes. Yes, legumes showed the most benefit, but if you're not used to legumes, the other models also looked at mixes of eggs and poultry and other types of alternative proteins – they all combine different ratios of that stuff. All five scenarios showed quite a good benefit."

The research looked at different levels of uptake, too – assuming not everyone will eliminate 100% of their meat. The biggest health benefits seem to come from at least a 40% drop. "There's still benefit when going up to 100%. But really, this shows that even just doing meat-free Mondays could be effective. That first reduction in meat seems to have the biggest gains for health."

Reynolds reckons messages to cut meat intake solely for health reasons have been largely ignored for years. But he believes we're gradually grasping the big picture. He was impressed, for example, to discover during a recent visit to Otago's School of Public Health in Wellington that its catering guidelines were now vegetarian. "And it's because of environmental sustainability. It's not about health at all. That was a moment where I said, 'Whoa, that's a real change.'"

He is careful to point out that his study looked only at one measure of sustainability: greenhouse-gas emissions. It didn't look at factors such as water use and land use.



SEEING RED

Unsurprisingly, meat industry advocates are wary of such studies. Beef + Lamb New Zealand claims our farmers are among the most sustainable meat producers in the world "because our livestock is grass-fed and in many cases raised on land that can't be used for arable purposes", says its chief executive, Kit Arkwright. He cites a 2021 AgResearch study that placed the carbon footprint of New Zealand beef at the low end of published estimates globally.

"We have reduced our absolute emissions by 30% since 1990 and our farmers are offsetting a significant proportion of our remaining emissions through the trees on our farms," he says.

It should also be noted that switching out red and processed meat for alternatives isn't an automatic health win. The so-called ultra-processed plant-based foods – products that resemble meat but are not meat – don't always have a great nutritional profile.

The clue is in the name: ultra-processed. This also makes them more expensive, and in Reynolds' study, it was the one diet that was not only more expensive but was also the least healthy. One reason was its higher sodium content, which meant it didn't provide the benefit of reducing strokes.

Some fake meats have lower protein than their meaty equivalents, and some also have saturated fat added to improve their texture.

Off the menu: processed meats high in nitrites and saturated fat are linked to increased cancer and diabetes risk.

"And a lot of people are quite concerned they're not fortified with things like iron," says Reynolds.

Those with higher iron needs – such as pregnant women – who are eating unfortified ultra-processed alternatives are at risk of falling short if they're relying on these foods.

And the same goes for zinc, a mineral that's easy to get in a meat-containing diet.

Arkwright points out that protein quality is also important. Not all protein-containing foods offer the same level of bio-availability – in other words, our bodies have to work harder to use the protein they contain.

Arkwright notes research led by the University of Auckland which showed that protein in lean red meat is better used by the body than protein from an ultra-processed plant-based meat alternative.

Protein density is another thing to consider; there's more protein in a steak than there is in the equivalent weight of lentils.

NUTRIENT RISKS

Registered nutritionist Mindy Wigzell is supportive of people eating less red and processed meat, noting some of us are eating far too much. But there are some groups who could be at higher risk of nutritional issues

by cutting it out completely, she says. In a couple of the study's meat-free scenarios "you see a little drop in iron, but quite a significant drop in zinc", she says. "For certain groups, that could potentially be problematic ... for example, a lot of New Zealand men are not meeting the recommended daily intakes for zinc."

There's also a difference, she notes, between adequate intakes of nutrients and micronutrients and optimal or ideal intakes, which vary between age and gender groups.

Ultra-processed plant-based food was the one diet that was not only more expensive but also the least healthy.

Reynolds acknowledges these points. "At a population level, our protein intakes are massive compared with what we actually need. But once you start picking up specific subgroups of the population, that story can change."

Wigzell likes the idea of incorporating legumes into our diets more, whether or not we give up meat.

"Legumes are easily accessible, good for storage – we often get them dried or canned – and they're inexpensive."

For people who are hesitant about trying meat alternatives, she recommends "baby steps" – things like adding lentils to a mince dish, or a chickpea or tofu curry.

"It's being willing to experiment a bit more and see if you like it."

Wigzell acknowledges that meat is a nutritious food, but it's how we eat it and how much we eat that matters, she says.

"We know that [meat] intakes that are too high are not great for outcomes like colorectal cancer and CVD [cardiovascular disease]."

"I think a big thing we could be doing is choosing the leaner cuts, making sure we're not eating the visible fat or that we're choosing lower-fat mince, for example, and being conscious of what is a reasonable portion size. And really, one or two serves per week is ideal."

Processed meat is a bigger issue than red meat. "They're two quite different things. If we focus on less processed meat and more legumes and just having a bit of moderation in the middle with the red meat, that would go a long way." ■