POLICY Quarterly

Research-informed public policy a case study of housing

How the change of government may affect the public service

At the time of writing (early November 2023), the precise shape of the new government in Aotearoa New Zealand remained uncertain. Nevertheless, it will undoubtedly be led by the National party and will require the support of ACT and New Zealand First (NZF).

Given the commitments of the parties forming and/or supporting the new government, there will be major implications for the public sector, especially the almost 40 departments, departmental agencies, and interdepartmental executive boards that comprise the 'public service'. This includes dedicated policy ministries like the Treasury and much larger delivery organizations like Corrections.

National's manifesto includes the following proposals:

1. a substantial cut in real terms in the overall funding of the public service, and corresponding staffing reductions;
2. a reduction of a third in the current $1.2 billion annual expenditure on consultants and contractors;
3. changes in the allocation of funds across various departments, with some of the public service savings being reallocated to Crown entities, especially for so-called 'frontline' staff, and less spending on 'back-office' staff;
4. less reliance on 'working groups, task forces and reviews to develop policy';
5. structural changes, such as establishing a National Infrastructure Agency (presumably incorporating the Infrastructure Commission) and abolishing the Māori Health Authority/Te Aka Whai Ora;
6. reintroducing performance-related renumeration for departmental chief executives and second-tier officials; and
7. reintroducing 'Better Public Service Targets', presumably similar to those adopted during the previous National-led government (i.e. specific measurable targets for the delivery of public services, with regular reporting of results).

Meanwhile, ACT proposes even larger public service cuts, with full-time equivalent staff numbers falling from just over 60,000 currently to 2017 levels (i.e. about 47,000). ACT also proposes indexing public service remuneration to price inflation, abolishing 'population' ministries (e.g. Te Puni Kōkiri and the Ministry for Pacific Peoples), eliminating several independent Crown entities (e.g. the Climate Change Commission and the Human Rights Commission), halving the size of the Ministry of Business, Innovation and Employment, substantially increasing expenditure on prisons and defence, and returning the Reserve Bank to its previous sole focus on minimizing price inflation.

NZF's manifesto exceeds 16,000 words and includes copious policy proposals. Many, if implemented, will affect public sector management (e.g. via the establishment of new departments and Crown entities, and changes to current policy frameworks).

Standing back from the particulars, several matters deserve comment. First, centre-right governments typically seek reductions in real levels of public expenditure and public service employment. But the cuts proposed by National, let alone ACT, are particularly large. They include reduced expenditure of approximately $600 million for government departments during the 2024-25 financial year and beyond. This constitutes a cut of about 10 percent of their combined operational budgets in 2023-24 of around $6 billion. With price inflation currently exceeding five percent, the reduction in real terms will be even greater. Departmental chief executives will have no choice but to cut staffing levels substantially, while also relying less on consultants and contractors.

Sharp staffing reductions pose numerous risks and downsides: wasted public money on redundancies; lost institutional memory and expertise; reduced morale among the remaining staff; and inevitable internal restructuring, with consequent disruption and productivity losses. Equally, recruitment into the public service, especially of recent graduates, will be constrained for several years, thus spurring the exit of able young people overseas.

Second, while managing a substantial downsizing, the public service will also be expected to implement the new government's extensive policy agenda. This includes multiple reforms (e.g. education, environment, health care, housing, infrastructure, social assistance, taxation, etc.), many requiring legislative changes. Accordingly, policy advisers and lawyers across the public service will be kept busy – often reversing or re-engineering the very policies they recently helped design and/or implement. Equally, there could be less reliance on departmental officials by ministers, with some outsourcing of 'advice' to those deemed sympathetic to the government's preferred policy 'solutions'.

Third, performance-related remuneration for senior public servants is problematic. For one thing, there is no compelling evidence that such arrangements improve performance. For another, they involve additional costs and potential risks (e.g. to the provision of 'free and frank advice'). Note that following the passage of the State Sector Act in 1988, chief executive performance agreements were introduced, as were 'at risk' elements in their remuneration packages. But after many attempts to design and implement such approaches, they were eventually abandoned.

Fourth, some of the new government's likely initiatives (e.g. harsher prison sentences and stricter eligibility for welfare benefits) will impact disproportionately on Māori. Other changes, like abolishing Te Aka Whai Ora, may be largely symbolic. Yet symbolism matters. Moreover, large ethnic inequalities remain; they cannot be wished away. Hopefully, the new government will tread carefully and continue to uphold the provisions and principles of Te Tiriti o Waitangi. Otherwise, the risks to race relations will be serious.

Finally, three critical appointments await the new government: a new Public Service Commissioner (PSC); a new head of the Department of Prime Minister and Cabinet; and a new head of the Ministry of Foreign Affairs and Trade.

The successor to the current Commissioner, Peter Hughes, is especially important. There are suggestions that the new government may favour someone from outside the public service. Any such appointee, however, may lack the necessary understanding of, and commitment to, a constitutional public service – one that is non-partisan, where the principle of merit trumps any suggestion of 'like-minded' patronage, where service to the government of the day is tempered by the need to provide free and frank (and potentially discomforting) advice, and where the principle of stewardship is respected (e.g. retaining the capacity and capability to serve future governments, whatever their philosophical disposition). Any gradual politicization of the upper ranks of the public service would constitute a fundamental – and highly undesirable – constitutional change. Let us hope that wise counsel prevails.

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Research-informed Public Policy
a case study of housing

Abstract

Coordinating the timing and relevance of research for public policy is difficult. Based on ongoing early collaborations between researchers and policy analysts, this case study documents innovative research-led public policy. He Kāinga Oranga, the Housing and Health Programme addresses the determinants of population health by improving substandard housing and was developed in consultation with local and central government, iwi and communities. We outline our research goals and processes and the range and impact of our outcomes, and draw conclusions about the value of long-term government-funded research investment that is focused on key policy issues, to improve the effectiveness and equity of public policy.

Keywords housing, health, public policy, research methods

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The relationship between research and policy is contentious. The British Wanless report stated that 'every opportunity to generate evidence from current policy and practice' should be taken to provide more robust evidence of practical interventions that might help governments formulate effective policies (Wanless, 2004). Public policy institutions need relevant, robust research evidence, with an equity focus and strong theoretical frameworks (Petticrew et al., 2004). Independent researchers are driven by their own strategic goals and timelines, but, when asked to identify types of evidence known to provide evidence for policy, highlighted: showing the existence of the problem; narrative accounts of the impacts of policies from the household perspective; controlled evaluations; natural policy experiments; and historical evidence (Whitehead et al., 2004). Policy and research approaches can be difficult to reconcile, but developing an early, common understanding, which makes them more congruent, is important.

Here, we focus on examples of how practical public policy to reduce inequalities can be developed, coordinated, implemented and evaluated. We review the explicitly Tiriti-informed research by He Kāinga Oranga, the Housing and Health Programme, focused on improving substandard housing. The programme has systematically generated robust evidence to inform improvements in health and inequalities (Howden-Chapman, Crane et al., 2023). Programme researchers come from various disciplines: public health, Māori health, medicine, economics, social science, physics and engineering.

We concentrated on existing rather than new housing, because in the foreseeable future people will largely be living in houses that exist now, so improving the quality of those houses has the most impact on population health.

An analysis of the New Zealand Time Use Survey showed that people's homes are the key population environmental exposure: 70% of our time is spent at home, while for younger and older people it is around 90% (Baker et al., 2007). Consequently, improving substandard housing became the focus of our studies. Reviews of the literature clearly showed that warm, dry homes are essential for health, but many New Zealand homes are cold and damp with inadequate heating, and consequently mouldy (Howden-Chapman, Saville-Smith et al., 2005), which is highly problematic, particularly for the young and old (Howden-Chapman, Signal and Crane, 1999). Exposure to these conditions can cause, or exacerbate, major health problems which require hospitalisation: respiratory conditions, such as asthma and chronic obstructive and pulmonary disease (COPD), and cardiovascular conditions, such as atrial fibrillation. Moreover, many serious viral diseases, such as Covid-19, are now known

to be airborne and crowded houses, common among low-income households (Statistics New Zealand, 2018), are a serious risk factor for close-contact infectious diseases (Tiatia et al., 2016) such as meningococcal disease (Baker et al., 2000) and rheumatic fever (Oliver et al., 2017).

Successive population censuses have shown that there are housing inequalities in quality and tenure, which in turn drive inequalities in health, and this became another central concern of our programme. The highest rates of homeownership were in the late 1980s or early 1990s, when about three-quarters of all people in households lived in an owned dwelling. Even then there were ethnic disparities, with nearly 80% of New Zealand European living in owned homes, but only about half of Māori or Pacific peoples. However, by the 2013 census, levels of homeownership had declined so that only about a quarter of Māori (28%) and a fifth of Pacific peoples (19%) were in owner-occupied dwellings, although over half of New Zealand European people (57%) were (Johnson, Howden-Chapman and Eaqub, 2018). These proportions were largely unchanged in the 2018 census, which also identified the poorer quality of private rental housing, which has become another major concern of the group (Statistics New Zealand, 2020).

Research methodology

Having identified that too much of New Zealand housing is substandard, we undertook a detailed programme of research to identify effective interventions which could plausibly be rolled out as public policies with the greatest benefit

to population health and safety while also reducing inequalities. To ensure that the evidence was as robust as possible, we carried out a sequence of randomised community trials (RCTs) – methodologically the gold standard for demonstrating causation.

We concentrated on existing rather than new housing, because in the foreseeable future people will largely be living in houses that exist now, so improving the quality of those houses has the most impact on population health. Along with researchers in other countries, such as England, we first focused on evaluating interventions that were targeting retrofitted insulation to reduce cold indoor temperatures (Hong, Oreszcyn and Ridley, 2006). We began working with the Building Research Association of New Zealand and the Energy Efficiency and Conservation Authority (EECA), a Crown agency established in 1989 after the 1973 and 1979 oil shocks to promote energy efficiency and conservation.

EECA has managed a succession of government-subsidised home energy efficiency programmes to retrofit insulation, which began with small projects in the late 1990s. EECA collaborates with community organisations including businesses, trusts and councils, and now Te Whatu Ora, that have also made financial contributions to the programme. By the early 2000s local community projects were installing mutually agreed interventions. From 2009 the Warm Up New Zealand programme was implemented nationally; the initial four-year programme had the intention of retrofitting insulation in the 188,500 houses estimated to be insufficiently insulated (EECA, 2011).

Collaboration and public policy dilemmas

Critically, although focusing on subsidies for energy efficiency, EECA agreed to support the programme's housing, insulation and health RCT study by accommodating the necessary random sequencing of the insulation within their retrofitting schedule (Howden-Chapman et al., 2007). This was despite discussion in the Department of the Prime Minister and Cabinet about possible public policy dilemmas. These dilemmas are where policy costs are largely borne by one agency,

but the benefits flow more widely to other outcomes for which several other agencies are responsible: for example, if the primary public benefit was expected to be improved health and education outcomes, the established view was that the intervention costs should also be borne by Vote: Health and Vote: Education, rather than by Vote: Energy alone. However, without research evidence on outcomes, it was not clear *a priori* how the funding costs should be divided.

We found that indoor temperatures in the intervention houses with retrofitted insulation were significantly higher than in the control houses, but below the recommended World Health Organization (WHO) indoor temperature then suggested, and since confirmed, of 18°C (World Health Organization, 1990, 2018). Nonetheless, there were self-reported health improvements and reductions in energy use (Chapman et al., 2009).

The public policy dilemma first identified in the insulation study, where health benefits outweighed energy savings, also occurred in the subsequent 2009 housing, heating and health RCT study (Howden-Chapman et al., 2008). The intervention, funded by EECA and Contact Energy, consisted of replacing old heaters with the choice of more energy efficient, safe and sustainable options – heat pumps, wood pellet burners or flued gas heaters. The old heaters were either ineffective plug-in electric heaters, or unflued gas heaters, a major environmental and health risk.

These studies showed that in existing houses, both retrofitted insulation and effective heating were necessary, but not sufficient, to maintain a healthy house at the WHO recommended temperature. Nevertheless, the results were promising: people felt warmer; condensation was reduced; there was less mould and fewer mouldy smells reported and dioxide levels halved (Gillespie-Bennett et al., 2008); levels of wheezing and coughing halved in children with asthma (Pierse et al., 2013); and average school absence reduced to two days (Free et al., 2010), with effects being more marked in low-income families (Howden-Chapman et al., 2009).

A subsequent quasi-experimental study of energy impacts was carried out in a larger sample of 12,000 houses from the 46,655

Warm Up New Zealand households that had received insulation, and in some cases heaters, between 2009 and 2010. Conducted with a number of electricity retailers, this study showed a statistically significant reduction in metered household energy consumption of almost 2% (Grimes et al., 2016). The results were also promising for energy efficiency, with the effects more marked in low-income families, but the cost of energy remained an ongoing barrier for households wanting to heat their homes adequately (Howden-Chapman et al., 2012).

Fuel poverty

In response, we piloted an intervention which could address fuel poverty by

modifying the UK winter fuel payment. The New Zealand intervention was a winter energy subsidy for older people with COPD, based on a calculation that a $500 subsidy together with the exhortation, 'Heat is your medicine!', would enable people to stay warmer during winter and would be politically feasible to implement (Viggers et al., 2013). The subsidy led to an increase in electricity use and the winter subsidy was adopted by the government as the winter energy payment for older people and people on benefits (Viggers et al., forthcoming).

The importance of addressing fuel poverty was reinforced by two qualitative studies, which attracted considerable media attention. The first was a survey of pre-pay meter users, which identified that these meters were more expensive than having an account, and that over half the

people (53%) whose meters were disconnected in the previous year were without electricity for up to 38 hours (O'Sullivan et al., 2016). The second study involved interviewing schoolchildren about their homes. Households with children were more likely to see so-called 'dragon breath' condensing inside and children reported that their school performance, as well as their physical and mental health, were adversely affected (O'Sullivan et al., 2017).

Reducing injuries

We have been less successful in influencing policy choices to reduce home injury risks, although the WHO highlighted

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this as a priority in its 2018 International Guidelines for Housing and Health. We strategically built up an evidence base on the importance of reducing home injuries (Keall et al., 2008), highlighted the social cost of these injuries (Keall et al., 2011) and formulated a programme of repairs to reduce structural home injury hazards (Keall et al., 2013). The programme then conducted two successful randomised community trials of home remediation, the housing injury prevention intervention (Keall et al., 2015) and the Māori housing injury prevention intervention (Keall et al., 2021). These trials showed that more than a quarter of all injuries from falls could be prevented by simple home modifications. Both trials were highly cost-beneficial, particularly for Māori with larger families.

Despite these positive outcomes, the home remediation designed to substantially

reduce risks for slips, trips and falls has not yet had any apparent impact on policies. Following our rental warrant of fitness pilot (Telfar-Barnard et al., 2017), the Healthy Homes Guarantee Act 2017 specifies minimum standards for insulation, heating and ventilation, but there is nothing about safety. The globally unique Accident Compensation Corporation (ACC) was purposely and primarily established to enact policies to prevent injuries and otherwise to cover medical and rehabilitation costs. However, despite clear communication of our trials' results (Bierre, Keall and Howden-Chapman, 2022), ACC has failed to negotiate the specification of features to reduce known

In 2011, the New Zealand Integrated Data Infrastructure (IDI) was set up by Statistics New Zealand, with strict ethical requirements, to enable public-good research using the population's census and survey data, as well as incorporating contact with both government agencies and non-government services – for example, health visits, pharmaceutical usage, housing tenure, social services, education etc. (Milne et al., 2019). The IDI is a more economical and comprehensive means of analysing longitudinal data to explore new policy issues, both before and after individuals receive a policy intervention, although it is very difficult to randomise the roll-out of a policy

insulation intervention significantly improved occupants' health and strongly support our previous research findings, which had relied in part on self-reported health. Because hospitalisation is a relatively rare event, sampling the whole population enabled us to determine that the intervention reduced hospital admissions by 9.26 per 1,000 people per year compared to a control group, and showed that there was a greater effect for specific cold-associated illnesses. Furthermore, the analysis of pharmaceutical data suggested that the intervention reduced the incidence of respiratory diseases and helped people to manage their symptoms.

Exploring broader outcomes with the IDI
Using data from the census, which is included in the IDI, has also enabled us to measure both homelessness and housing that lacks access to basic amenities, as well as estimating the overlap between the two important concepts. We have also been able to evaluate the effectiveness of two community-based programmes, Housing First and the Healthy Housing Initiative, both of which are supported by government agencies, as well as charities.

> Severe housing deprivation describes people living without housing, or in housing that lacks at least two of three basic requirements – privacy and control, security of tenure, and structural adequacy – due to an inability to access appropriate housing.

risks for household falls in the Residential Tenancies (Healthy Homes Standards) Regulations 2019.

Long-term outcomes and new IDI methodologies
Our randomised controlled trials, accompanied by cost–benefit analyses (Chapman, Preval and Howden-Chapman, 2017), were designed to highlight cost-effective interventions that could be rolled out to improve housing and health. With the exception of lack of public policy interest in injury reduction, publicised results from the trials were largely successful in promoting effective public policies. However, RCTs are very expensive and complicated to run and there is now another robust way that researchers can explore the effectiveness and equity of public policies.

intervention at a national level. The data is updated about four times a year and, as we now have access to the total New Zealand resident population, there is considerable statistical power to detect policy benefits.

An example of a longitudinal policy evaluation now possible using the IDI was the revisiting of the housing, insulation and health study. Rather than our initial RCT of 1,400 households, we had access to the records of the people in 204,405 households nationally who had received the ECEA Warm Up New Zealand insulation subsidy. We were able to follow them for three years before and after insulation was retrofitted, and with the larger sample size we were able to show enhanced health outcomes in terms of chronic respiratory diseases (Fyfe et al., 2022) and hospitalisations (Fyfe et al., 2020). These results showed that the home

Severe housing deprivation describes people living without housing, or in housing that lacks at least two of three basic requirements – privacy and control, security of tenure, and structural adequacy – due to an inability to access appropriate housing. Repeated analysis of census data has shown relatively stable rates of people living without shelter, in temporary accommodation, or sharing accommodation in a severely crowded dwelling (Amore, Viggers and Howden-Chapman, 2021). But new questions in the 2018 census allowed us to estimate the number of people suffering from both lack of income and inadequate housing lacking basic amenities, and this showed that most people experiencing severe housing deprivation had not been identified previously. The two most commonly lacking amenities across all tenures and housing types were drinkable tap water and electricity. Children and migrant communities were particularly exposed to these substandard conditions. Around two-thirds of people in dwellings lacking basic amenities were

not in low-income households and were therefore not considered severely housing deprived under the definition used, although they would have been living in unpleasant conditions (Viggers, Amore and Howden-Chapman, 2021). This data is now used for locality-based planning for public housing.

Housing First is a Canadian-initiated programme that sees secure housing as the first necessary step for people who are homeless, before other effective support can be provided. It was implemented in New Zealand by community groups before there was any government funding. Using the IDI, researchers at the programme have evaluated Housing First at two and five years (Ombler et al., forthcoming) and clearly demonstrated that people who have been housed under this programme have experienced increasing benefits. Consequently, Housing First is now part of the Ministry of Housing and Urban Development-led Homelessness Action Plan.

The community-led Healthy Housing Initiative is designed to prevent the reoccurrence of respiratory and infectious diseases in children whose families have low income by providing a package of interventions similar to the healthy homes standards. Whānau can self-refer to get help to get insulation, heating and minor repairs from community service providers, or can be referred from the health services. As part of a policy to eradicate rheumatic fever, the service is now fully funded by EECA warmer Kiwi homes grants for owner-occupiers. The Healthy Housing Initiative became nationwide in 2023. Comparing the health of the households before and three years after the home interventions showed large benefits (Pierse et al., 2022).

Discussion and conclusion

Our strategic research on housing and health and its population health impact has been extensive. Improving people's living conditions could substantially reduce total hospitalisation costs and potentially improve quality of life. In economic terms, a robust burden of disease study in 2021 found that damp and mouldy housing accounted for a substantial proportion of New Zealand's burden of disease. The direct public sector costs attributable to these housing conditions were approximately NZ$141 million annually. The costs to society from the 229 deaths annually attributable to adverse housing were around $1 billion (Riggs et al., 2021).

Deep long-term partnerships with both communities and government agencies are important enablers of research-informed policy. Partnerships with communities led to greater participant and retention rates in our randomised controlled trials, and are also vital to collecting high-quality, timely and consistent data in the IDI. Partnership with government agencies is helpful in designing policy-ready interventions and identifying champions to build awareness and understanding of the research. These partnerships can also have an impact on the thinking and policy preferences of elected members at various levels of government and can build cross-party coalitions to support policy initiatives.

The success in uptake of the insulation and heating was due in part to EECA's willingness to engage with the research to strengthen the outcomes from their programmes. Conversely, the failure to embrace proven falls prevention measures may be due to ACC seeing large-scale intervention programmes as beyond their remit.

In conclusion, we have identified a number of cost-effective housing interventions which can improve the health and wellbeing of occupants: retrofitted insulation and heating, and reducing injury risks. We have provided evidence for effective government policies and regulations which, if fully implemented, can reduce inequalities, both in New Zealand and internationally (Howden-Chapman, Crane et al., 2023; Preval et al., 2019).

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Todd Bridgman

We Shouldn't Be Surprised:
a management educator's perspective on allegations at
Immigration New Zealand

Abstract

The urgent independent review, launched in mid-August 2023, of the accredited employer work visa system by Immigration New Zealand followed accusations that staff concerns were ignored by managers, leading to exploitation of migrants. Based on my experience as a management educator, and my research into what we teach (and do not teach) students about management, I argue that we should not be surprised by the allegations, but we should be concerned.

Keywords management education, ethics, obedience, authority, Milgram

The management of Immigration New Zealand is under scrutiny following accusations that staff concerns about the administration of the accredited employer work visa (AEWV) were ignored by managers, leading to migrant exploitation.[1] In August 2023 it was reported that 115 Indian and Bangladeshi migrants who arrived in New Zealand through the AEWV scheme were crammed into six houses. They had paid up to $30,000 each to accredited employers on the promise of employment that had, in most cases, failed to materialise (Kilgallon, 2023a; Newshub, 2023). Immigration Minister Andrew Little ordered an urgent independent review by the Public Service Commission into whether the scheme was working as supposed after an internal whistleblower informed him that checks on employers were not being properly carried out (Dexter, 2023; Neilson, 2023).

In the media, unnamed Immigration New Zealand staff reported being told to ignore criminal convictions, including an employer with a criminal record involving sexual assault. Staff reported being overruled by senior managers when they tried to decline applications over concerns about migrant exploitation. In one incident, staff concocted an application and attached photos of household pets instead of supporting documents. It is alleged the application was approved. An immigration officer said staff would back down when pressured by managers to approve applications. Some staff left the organisation because the way the scheme was managed did not sit well with their conscience, while others were emotionally affected (Kilgallon, 2023b).

The review is expected to be completed by mid-December (Te Kawa Mataaho

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Public Service Commission, 2023a). Whatever the outcome, the call for the review illuminates important issues around the management of public sector organisations, and the pressures employees experience to follow instructions from managers when employees have concerns about aspects of the organisation's conduct.

My perspective on this is as a management educator. I have taught management to more than 7,000 students at Victoria University of Wellington Te Herenga Waka since 2006 across a range of programmes – undergraduate students doing a Bachelor of Commerce degree, postgraduate students in the Master of Business Administration and Master of Public Management programmes, and in management and leadership programmes for practitioners.

I conduct research into what students are taught when they study management at university. Managing is a practical activity, obviously, and much of the training and development of managerial skills takes place on the job, as people embark on and develop their careers. However, what students learn about management in their courses, including through their textbooks, is also important, because these books reflect taken-for-granted understandings about what good managing involves. Many students who complete management courses at university will become managers at some point in their careers. But in those courses they also learn about how they can expect to be managed, as employees. In effect, their management education performs a socialisation role for their future employers.

My particular interest, in this regard, is management textbooks. I have long been concerned about what students are taught about management (and what they are not taught) in best-selling management textbooks, many of which originate in the United States and are used around the world, including here in New Zealand. For the past 15 years I have been researching the origins of foundational theories of management, and how they are represented in these textbooks. The theories concern how to motivate and lead people, organise work, develop culture and transform organisations. They shape how we manage staff and are managed by our bosses.

Throughout childhood, adolescence and into adulthood, in the home, at school, at university and at work, we are encouraged to respect authority figures.

Management studies is a young field; it is not a long-established academic discipline like economics, psychology or philosophy. To gain academic credibility, management studies has created a history filled with famous names from other disciplines, such as Abraham Maslow, Adam Smith, Max Weber and Kurt Lewin. Their ideas are written about in management textbooks, they feature in workplace management and leadership development programmes, and they are reflected in popular books written for practitioners. While influential, these ideas often bear little resemblance to what their originators wrote. I argue that these myths of management serve us poorly, contributing to dysfunction and damage in our organisations (Bridgman and Cummings, 2021; Cummings et al., 2017).

I am also interested in ideas that are relevant to our experience at work yet do not get included in management textbooks, and that is the focus of this article. In the next section I outline one such exclusion: Stanley Milgram's famous experiments on obedience to authority conducted in the United States in the 1960s. I explore why Milgram's findings on the dangers of inappropriate obedience to authority are typically not taught to management students. The issues at Immigration New Zealand illustrate why Milgram should be included in the curriculum. I conclude by suggesting we can do a better job of teaching management, in ways that affirm the

university's mission to cultivate critical, independent thinkers who will serve their future employers well throughout their careers, along with being responsible citizens.

Stanley Milgram's obedience experiments
I learnt about Stanley Milgram's classic obedience experiments studying social psychology as an undergraduate. Participants in Milgram's experiments, conducted at Yale University in the 1960s, thought they were taking part in a study on the effects of punishment on learning. They were given the role of 'teacher' and ordered by a man in a white lab coat to administer electric shocks to a 'learner' strapped to a chair, beginning at 15 volts, and increasing after each incorrect answer to 450 volts. The studies were designed to see how far participants would go before refusing to obey. The results surprised Milgram, with 65% continuing all the way to 450 volts. How could such extreme levels of cruelty by otherwise decent people be explained? Milgram theorised it as obedience to authority. In the debrief at the conclusion of the experiment, participants said they were not responsible: 'The man in the white lab coat was to blame. I was just doing what I was told.' In his 1974 book *Obedience to Authority*, Milgram described participants as being in an 'agentic state' – when a person sees themself as no longer acting in accordance with their own desires, but 'as an agent for carrying out another person's wishes' (Milgram, 1974, p.132). This obedience to authority overrode their ethics, sympathy and moral conduct.

Social psychology was pioneered by a group of Jewish scholars, including Milgram, who all lost friends and family in the Holocaust. They wanted to understand the social conditions that enabled it to happen and what could be done to prevent it from happening again. The finding that a significant majority of people will administer a potentially lethal electric shock just because a person in authority asks them to provided an explanation for the atrocities committed by the Nazis.

The lesson from Milgram's experiments is that disobeying those in positions of authority over us is hard to do, and harder than most of us expect. We learn the importance of obedience to authority from birth. Throughout childhood, adolescence

and into adulthood, in the home, at school, at university and at work, we are encouraged to respect authority figures. We are told that when they ask us to do something, we should do it.

Obedience to authority undoubtedly has a functional side to it. Most organisations we work for (in the public, private and third sectors) are bureaucracies. There is a division of labour, formal authority resides in positions and there is a chain of command, represented in the organisational chart. Carrying out instructions given to us by our managers creates order and predictability and contributes to the smooth functioning of organisations.

It is also important to note that we generally get rewarded for obedience to authority, from treats given by our parents to us as children for good behaviour, to high grades at school and university for following our teachers' instructions, through to positive appraisals from our managers at work which can gain us promotion up the organisational ladder. Obedience to authority pays dividends.

However, obedience to authority can also have a dysfunctional aspect that has negative consequences for individuals and organisations. What if we are asked to do something by our manager that is not ethical, or that will be damaging for the organisation. Should we obey? Should we refuse, and risk being labelled a problem employee? If we do speak up, would it actually make a difference? Maybe we would be better to keep quiet, and start looking for somewhere better to work?

These are all rational thoughts because we know that not following orders given to us by managers, and sharing our concerns with others, is risky. Whistleblowers often speak out about injustice from a weak position of power; some are ignored, and others experience retaliation and public blacklisting (Kenny and Bushnell, 2020). This can create a 'chilling effect' that discourages others from speaking up (Devine and Maasarani, 2011).

An extreme example of these dynamics was the high-profile case involving the staggering deception staged by Elizabeth Holmes, chief of executive of health technology company Theranos. Holmes claimed to have developed a revolutionary blood testing technology using tiny volumes

> Milgram's experiments are regarded as the most famous social psychological research of all time …, and, as I have argued, are highly relevant to understanding behaviour at work.

of blood, an innovation inspired by her own fear of needles. By 2015 Holmes topped Forbes' list of richest self-made women, her wealth estimated at $4.5 billion. However, it subsequently emerged that the technology could not do what was claimed and that Holmes was involved in the cover-up. She and the company were charged with massive fraud and the company was forced to close. Holmes, recently jailed for 11 years, created a cult of personality at Theranos. It was a company where employees who believed in the fantasy were rewarded and those who raised concerns were ostracised. Thankfully, some within Theranos did speak up and the fraud was revealed, with the assistance of a *Wall Street Journal* reporter.

The lesson is that obedience to authority can be both beneficial and costly, to employees and organisations. There are times when the right response is to obey our managers, and there are times when the right response is to say 'no' and to share our concerns with others.

The ideological commitments of management *textbooks*

We are particularly susceptible to the dangers of excessive obedience to authority at work. But there is more to it than just authority relations, as Milgram discovered by modifying his experiment so that the 'teacher' had only to ask the questions, while another person, who was in on the deception, delivered the shock. In this

version, 92.5% of participants continued to the maximum voltage. The division of labour is a feature of most organisations we work in. The further those who make decisions are from the consequences of those decisions, the greater the risk of inappropriate, unethical behaviour.

Curiously, the management textbook I studied with as an undergraduate student was full of social psychologists like Abraham Maslow and Kurt Lewin, but it did not include Milgram. Why not? After all, Milgram's experiments are regarded as the most famous social psychological research of all time (Blass, 2004), and, as I have argued, are highly relevant to understanding behaviour at work.

Research I published earlier in 2023 with colleague Stephen Cummings (Bridgman and Cummings, 2023) compares the coverage of Milgram's experiments in psychology and management textbooks. Robert Baron has had a distinguished career in two fields: psychology and management. He led departments of psychology and management at Rensselaer Polytechnic Institute and has written best-selling textbooks in both fields: 14 editions of *Social Psychology* (starting with Baron, Byrne and Griffitt, 1974) and nine editions of a management textbook, *Behavior in Organizations*, starting in 1983. Baron's social psychology textbook devotes many pages to Milgram, as do other textbooks in the field. The message to students is that when authority is being used inappropriately, it is their duty to resist, to prevent the destructive effects of blind obedience. But this is difficult, especially at work because managers wield significant power over employees. A notable feature of the coverage is a personal anecdote shared by Baron from the eighth edition onwards which shows how meaningful the Milgram experiments were for him:

> I (Bob Baron) went to high school with Milgram's niece, and I can remember the shock with which students in my class reacted when she told us about her uncle's findings, several years before they were published. Yet I was dismayed again when as a college student, I read the actual report of this study. (Baron and Byrne, 1997, p.346)

The coverage of Milgram's experiments in the first edition of Baron's *Behaviour in Organizations* in 1984 was largely a copy and paste from his social psychology textbook, yet in the second edition Milgram was gone, and he was not mentioned in any subsequent edition; that is, despite Baron's personal connection with Milgram's niece, his dismay at the findings of the experiments, and their relevance to work organisations. I contacted Baron to ask why. He explained that reviewers of the first edition said that Milgram was 'off target' for management – that it didn't fit within the field of management – so he followed their and the publisher's advice and removed it.

This crystallised everything I had experienced as an undergraduate student and learnt from my research over the last 15 years into management textbooks. Stephen Robbins, author of my undergraduate management textbook and the world's best-selling author of management textbooks, gave a revealing interview where he was asked, 'do you see your textbooks as propaganda. Do you see them as ideology?' Here is his response:

> I see my books as supporting an ideology. But, of course, all textbooks sell an ideology. Organizational Behaviour books … for the most part, support a managerial perspective. This reflects the market – business schools. We need to genuflect to the Gods of productivity, efficiency, goals, etc. We reflect business school values. (Robbins, quoted in Cameron et al., 2003, p.714)

As an undergraduate student, I struggled with this. Before I went to university I trained and worked as a journalist. One of the reasons I became a journalist was that I loved the idea of the media as the fourth estate, holding those in authority to account. Here I was at university and had an authority, my course textbook, telling me what I should think. I did not believe a university education should be about socialising students into a particular worldview. As I discovered some years later, neither does the state. Section 268(2)(d)(i) of the New Zealand Education and Training Act 2020 lays out the distinctive characteristics of universities – what makes them different from other

providers in the tertiary sector. It states that the principal aim of universities is 'to develop intellectual independence': that is, to be exposed to a wide range of perspectives, to use these perspectives to generate different ways of understanding the world, to think critically about the strengths and limitations of all perspectives, and, ultimately, to form our own judgements. To get an education means to learn how to think, not be told *what* to think.

Section 268 also states that universities in New Zealand – and we are unique in the world for this – have a legislated requirement to 'accept a role as critic and conscience of society'. That means to do research and develop expertise, and to use our relative independence as an institution within society to hold those in power to account, in our teaching, and research, and participation in the public arena. It is a similar idea to the fourth estate role of the media that attracted me to journalism.

Conclusion

So, what has all this got to do with the allegations about the administration of the accredited employer work visa at Immigration New Zealand? From my management educator's perspective, we should not be surprised by the allegations. I say that without any knowledge of the organisation, or any particular expertise in

> We need to educate students on why it is important, as employees, to challenge authority, and why it is important, as managers, to encourage employees to question our commands.

managing public sector organisations. My conclusion is based on years of teaching management at university, and researching what management textbooks teach, and do not teach, students about management.

What is published in textbooks matters because they shape our understanding of what management is and they shape, therefore, our expectations of how we will be managed and how we will manage others. Academic fields have ideological commitments. Social psychology has an ideological commitment to self-determination and resistance to authority, which originated from the desire by Kurt Lewin, Solomon Asch, Serge Moscovici, Henry Tajfel, Milgram and other Jewish scholars to prevent another Holocaust. Milgram's experiments validate these commitments, but they do not fit with the ideological commitments of management studies. To put it bluntly, management textbooks want students to obey their bosses, not disobey them. Management textbooks say they want to teach students to think like a manager. But by excluding Milgram, I argue, they are really wanting to socialise students to be compliant employees.

I teach Milgram's experiments to all my students. But it is not enough to make students aware of the dangers of obedience to authority. We also need to teach them strategies for resisting authority, such as intelligent disobedience. Drawing on Milgram's studies, Chaleff (2015) argues that disobedience is 'intelligent' when it is in the interests of the leader (to stop them from acting unethically, for example) and the organisation. Chaleff draws on the analogy of guide dog training. The core value for guide dogs is keeping the human in its care safe. They are first socialised to obey rules and commands, but they are also taught the skills of intelligent disobedience. So, for instance, if a vision-impaired handler commands the dog to cross a busy street and doing so will put the handler in danger of being hit by oncoming traffic, the dog must disobey the command.

The idea is to balance the powerful forces of obedience, to create awareness of the need to resist unthinking obedience and to instil the values and practice of personal accountability. Chaleff says intelligent disobedience should not be seen as a threat to existing structures, but as a

protection against the misuses of authority in those structures. It protects both the individual and the organisation.

Our organisations need employees who are prepared to challenge people in authority. It is understandable that employees would want to leave organisations that require them to do things they feel are wrong or unethical. But while that might relieve employees' conscience, it most likely does not stop the inappropriate behaviour. Staying, and speaking up, is hard to do, so organisations must create cultures that encourage and reward this behaviour.

This is particularly important in New Zealand's public sector, which embodies a 'spirit of service' to the community, identified by the Public Service Act 2020 as the fundamental characteristic of the sector. The spirit of service includes opening our hearts to the needs of others and being motivated by something bigger than ourselves. The Act requires public service

leaders to preserve, protect and nurture the spirit of service within their organisations (Scott and Hughes, 2023).

The Public Service Commission lists speaking up as one of its model standards on integrity and conduct. The model standards outline the minimum expectations for public sector organisations to support staff who speak up on wrongdoing that could damage the integrity of the public sector. This includes taking concerns seriously when they are raised, and keeping those who raise concerns safe (Te Kawa Mataaho Public Service Commission, 2023b).

In due course a clearer picture will emerge of what happened at Immigration New Zealand. Based on what has been reported so far, there is evidence that employees felt pressured to obey instructions which they feared would result in migrants being exploited. While obviously concerning, it is reassuring to see some have spoken out about their

experiences, including in the media. It is also pleasing that the minister has requested an urgent independent review.

The Immigration New Zealand case prompted me to reflect on my own field of management studies, and what we teach (and do not teach) our students. We need to teach management differently than we have in the past and include Milgram's experiments in our textbooks. We need to educate students on why it is important, as employees, to challenge authority, and why it is important, as managers, to encourage employees to question our commands. By doing that, students will take that knowledge with them into their careers, both as employees and as managers. And, hopefully, we might see fewer controversies such as that surrounding Immigration New Zealand.

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1 This article draws heavily on the author's inaugural professorial lecture at Victoria University of Wellington Te Herenga Waka on 27 July 2023. The lecture can be accessed at: https://www.youtube.com/watch?v=vlAMcog3dYw.

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Jo Smith

Persistent Disadvantage
in Aotearoa New Zealand

Abstract

New data and research shed fresh light on our understanding of persistent disadvantage in Aotearoa New Zealand. They show that, while overall income poverty and material hardship has declined significantly over the past decade or so, a small proportion of the population continues to experience multiple, complex disadvantages over many years, and sometimes generations. There has been little meaningful policy action aimed specifically at assisting this cohort of people who are experiencing the greatest need. Fundamental changes are needed across a range of systems. Providing effective supports and investments, and removing structural barriers and inequities, would have significant intergenerational pay-offs.

Keywords persistent disadvantage, poverty, material hardship, Aotearoa New Zealand

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What is 'persistent disadvantage'?

Many people experience one or more forms of hardship or disadvantage at some point in their life. These experiences are often temporary, and many people can draw on other resources, including from their family, whānau or wider community, to support them through such times. For example, an individual may be unemployed for a period, but be supported by other family members, and be able to tap into professional networks to find another job. And those with personal savings can dip into these to fund unexpected expenses, such as car repairs or replacing broken appliances.

But some individuals and families experience multiple, complex, and often interrelated problems that are barriers to them realising their aspirations for a good life. The drivers of these problems are complex. They include systemic problems, such as the ongoing impacts of colonisation, institutional racism, ableism, patriarchy and other power structures in society. Systemic problems are often interconnected with personal experiences, such as family and sexual violence, chronic ill-health, addictions and loss of economic

Figure 1: Percentage of people in households with <50% 2007 median income

Before Housing Costs   After Housing Costs

Source: Ministry of Social Development analysis of Household Economic Survey data, presented in Hughes, 2022

Figure 2: Percentage of people in material hardship (two-yearly moving average)

MWI ≤ 12   MWI ≤ 6

Source: Ministry of Social Development analysis of Household Economic Survey data, presented in Hughes, 2022

concerted policy focus on helping those people who experience the greatest need.

Poverty and material hardship is declining
Income poverty
Commonly used measures of income poverty in New Zealand look at the proportion of the population whose annual equivalised household disposable income is less than a certain percentage of the median income (typically 50% or 60%). This relative measure of income poverty allows for real income growth over time.

The choice of household income rather than individual income reflects the assumption that there will be some sharing of income within households. Using disposable incomes takes into account the redistribution that occurs through the country's tax and transfer systems.

Figure 1 shows the proportion of people who live in households that have less than half of the 2007 median income. By this measure, income poverty fell from 9.1% in 2007 to 3.7% in 2021. When housing costs are taken into account, the figures are higher but follow a similar trend.

Using the median income for a fixed year (2007 in this case) means that as incomes rise, relative poverty rates will fall. An alternative approach uses the median income in each year, giving a moving poverty line. Measuring poverty in this way produces a less marked decline over the decade from 2008, because income growth lifted the median.

Material hardship
The proportion of people in material hardship has also been falling.

A measure of material hardship that is commonly used in New Zealand is provided by the Material Wellbeing Index (MWI). The MWI consists of a list of 24 items representing different aspects of material wellbeing. The items include essential living conditions, such as food, accommodation, clothing, heating and transport, and also the ability to meet unexpected expenses, such as appliance repairs. Counting how many of these items a household has or lacks gives a measure of wellbeing or level of hardship of the household. Using this measure, people in households with 12 or fewer of these items are considered to be in 'material hardship'

opportunities (Wilson and Fry, 2023; Fry, 2022).

Multidimensional disadvantage can persist over many years, and even generations. Complex and persistent disadvantage is devastating for individuals and their families, and costly for the wider community. The wider costs arise in many ways, including lower educational achievement, and hence lower productivity, personal incomes and tax revenues, as well as from direct costs to the health, social welfare and justice systems. Everyone loses out.

Aotearoa New Zealand currently lacks official definitions of both 'disadvantage' and 'persistent', and also lacks measures to track persistent disadvantage. This article focuses on the lack of adequate material

resources on the part of those who experience persistent and non-persistent disadvantage. 'Adequate' resources are enough to meet the basics of modern life and to allow a person to participate in society, such as housing that is good-quality, stable and affordable, food, clothing, heating and transport.

This article starts by surveying the trends in income poverty and material hardship. It looks at a variety of measures that are commonly used in New Zealand, including the government's official measures of child poverty. It then explores poverty and hardship that persists over many years, focusing on the group of people who experience multiple forms of persistent disadvantage. It argues for a

Table 1: Child poverty statistics 2013 and 2022

Measure	2013	2022
Primary measures		
Percentage of children living in households with low income: <50% median equivalised disposable household income before housing costs	15.6	12.0
Percentage of children living in households with low income: <50% median equivalised disposable household income after housing costs	26.9	15.4
Percentage of children living in households in material hardship	18.1	10.3
Selected supplementary measures		
Percentage of children living in households with low income: <60% median equivalised disposable household income before housing costs	23.6	20.7
Percentage of children living in households with low income: <60% median equivalised disposable household income after housing costs	29.3	28.5
Percentage of children living in households in severe material hardship	7.7	3.9
Percentage of children living in households with low income *and* in hardship (<60% median equivalised disposable household income after housing costs)	10.5	5.9

Source: Statistics New Zealand, 2022

(MWI ≤ 12), and those with six or fewer of the items are considered to be in 'severe material hardship' (MWI ≤ 6).

As shown in Figure 2, material hardship has been tracking downwards since a peak in 2011. In 2021, the proportion of people in material hardship according to the MWI ≤ 12 measure was 7%. The proportion of people in more severe hardship is smaller but has also been falling. In 2021, 2.4% of people had six or fewer of the items in the MWI measure.

Child poverty
The decline in overall poverty and material hardship has contributed to improvements across all of the government's official measures of child poverty. Using a measure of <60% of the median equivalised household disposable income after housing costs, the proportion of children living in poverty fell from 29.3% to 28.5% over 2013–22. This is quite a small drop as it uses a moving poverty line, which (as noted above) rises over time with income growth.

The proportion of children in material hardship during the same period dropped from 18.1% to 10.3% and the proportion in severe material hardship dropped from 7.7% to 3.9%. The proportion living in households experiencing both income poverty and material hardship dropped from 10.5% to 5.9% (see Table 1).

Employment growth has been a key driver of these improvements
Those improvements in poverty and hardship are significant. Key drivers include: the growth in employment, particularly due to the substantial rise in female participation in the labour force; rising real wages; and falling unemployment (Perry, 2019).

Various policy changes have been central in helping people at the bottom of the income distribution: for example, increases in the real value of income support for families, increases in the real value of core welfare benefits, and improvements to other social supports.

Longitudinal measures are needed to track persistent disadvantage
The measures described above use cross-sectional data, providing 'static', or point-in-time, estimates. They capture people who may only experience poverty for a short time: for example, students, or people temporarily unemployed. Many New Zealand studies have shown that a significant proportion of people experience a period of low income at some stage in their life, and that episodic low income (dipping in and out) is common. But to understand persistent disadvantage, we need longitudinal measures that track the same people over time, and across a range of measures of economic and social progress.

New Zealand lacks population-level longitudinal data. Statistics New Zealand used to run a longitudinal Survey of Family, Income and Employment (SoFIE). From 2002 to 2010, SoFIE followed a fixed panel (that is, the same people), tracking changes in their household economic wellbeing, including income levels, employment, benefit receipt, and participation in education and training. Over 18,000 individuals were surveyed in all eight years. In the time since SoFIE was discontinued, New Zealand has lacked an official population-level longitudinal study.

Statistics New Zealand will begin reporting on persistent poverty from 2027, using a new longitudinal survey, Living in Aotearoa. Unlike SoFIE, which maintained a fixed panel, Living in Aotearoa will use a rotating panel of respondents (people will rotate out after six years).

Important sources of relevant longitudinal data are New Zealand's three major birth cohort studies, which each track a group of people through their life course. The Dunedin Multidisciplinary Health and Development Study and the Christchurch Health and Development Study each follow a cohort of over 1,000 people born in the 1970s. While these studies provide rich evidence, the cohorts they track are not representative of the wider New Zealand population. The Growing Up in New Zealand study has been tracking a larger, more ethnically diverse and more recent cohort of children in Auckland and Waikato since 2009/10, when 6,000 pregnant women and their partners were recruited for the study.

Using this data, and also acknowledging their limitations, various studies have examined different aspects of the poverty picture.

Figure 3: Percentage of the 'peak working-age' population experiencing multiple disadvantage, 2016–21
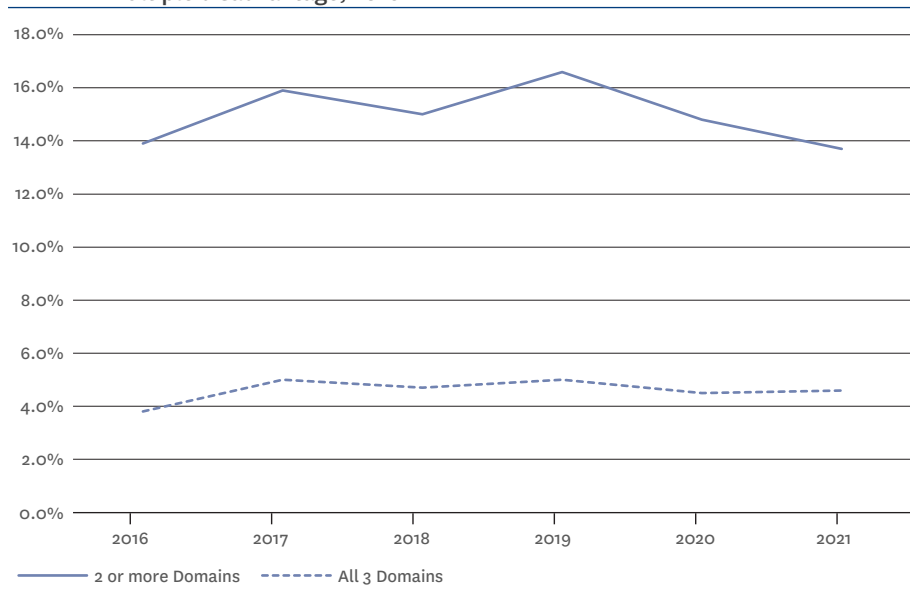
Source: Productivity Commission, 2023

Table 2: Percentage of the population experiencing measures of disadvantage in 2013 and 2018

Domain/type	Measure/domain	Working-age households			All individuals		
		2013 only	2018 only	Both years	2013 only	2018 only	Both years
Income poor	<60% HEDI	16.2	15.5	7.4	18.2	19.2	9.1
Deprived	No heating/fuels	3.3	4.0	1.0	3.2	3.9	0.9
	Overcrowded	15.0	9.9	5.5	13.3	9.0	4.7
	Deprived (1 or both measures)	17.0	12.6	6.9	15.3	11.7	6.1
Excluded	No job	6.4	5.4	2.6	6.5	4.9	2.3
	No qualifications	6.4	4.7	2.7	8.1	4.2	2.5
	No internet	11.1	6.6	3.4	12.8	8.1	4.8
	No motor vehicles	3.3	2.7	1.4	3.7	3.4	1.7
	Excluded (1 or more measures)	19.5	14.8	8.8	22.2	16.0	10.2

Source: Productivity Commission, 2023, p.40. Improvements between 2013 and 2018 shown in green, deterioration in red.

There is 'stickiness' at the rich and poor ends of the income distribution

There are different ways of measuring persistent poverty, and people's chances of moving up (and down) the income ladder – known as 'income mobility'. Mobility can be absolute (change in income level) or relative (change in income relative to the rest of the population: that is, shifting along the income distribution).

There is no 'right' way of measuring persistent poverty, and different countries use different measures. For example, the European Union and the United Kingdom use a measure of relative income poverty (below 60% of the median household disposable income) in three out of four years (Office for National Statistics, 2019).

In New Zealand, Carter and Gunasekara examined SoFIE data from 2002 to 2009. Using a measure for 'low income' of 60% of gross equivalised household income (before housing costs), they found that 50% of people experienced low income in one or more of the seven years, 20% for four or more years, and 6.3% of people in all of the seven survey years (Carter and Gunasekara, 2012, pp.13–15).

Carter and Gunasekara found substantial relative income mobility in the middle-income quintiles. In each year, around 50% of these people experienced a shift in income quintile; and two-thirds had moved either up or down after seven years. There was less mobility – or more 'stickiness' – in the upper and lower quintiles. For example, 45% of people in the lowest income quintile in the first year were still there seven years later (note that this does not mean they remained there for each of the seven years).

New studies, some using novel approaches, offer insights from more recent data. Creedy and Ta (2022) used linked data from the Household Labour Force Survey and the census in Statistics New Zealand's Integrated Data Infrastructure (IDI). They found that for income mobility across people's life course, New Zealand is roughly in the middle of OECD countries. As with earlier studies, they found less mobility at the top and bottom of the income distributions. Just under half of people in the lowest income decile remained in one of the lowest two deciles over the period 2013–19.

Creedy and Ta also examined low-income persistence. One in ten New Zealanders had persistently low incomes in both 2007 and 2013, and the same proportion had persistently low incomes in both 2013 and 2020. People who are not working or who are sole parents or without qualifications are more likely to have persistently low incomes. Gaining employment or educational qualifications improves people's chances of exiting low incomes.

The findings from those studies, and from other contemporary studies, suggest that the rates of income mobility, and of low-income persistence, are similar to those found in earlier research (Hughes, 2022, pp.35–7).

A small cohort of people experiences multiple and persistent disadvantage

A new study by Prickett et al. (2022), using data from the Growing Up in New Zealand study, found that 10% of New Zealand children experience multiple disadvantages (such as very low household incomes, material hardship and lack of stable housing) through most of their early

and middle childhood. A small percentage of children (2.7%) were found to be disadvantaged across multiple domains in every wave of the study. The study also found that twice as many children experienced downward mobility as experienced upward mobility, suggesting that 'climbing out of disadvantage is harder than falling into it' (Prickett et al., 2022, p.66).

Research by the New Zealand Productivity Commission for its *A Fair Chance for All* inquiry (Productivity Commission, 2023) looked at seven measures and three domains of disadvantage – being income poor, doing without, and being left out. A person was classified as 'disadvantaged' if they experienced one or more of the measures in any of those three domains.

The measure used for 'income poor' was <60% of the median equivalised disposable household income after housing costs. Two measures were used for 'doing without': living in a household that was overcrowded; and living in a household that lacked heating. Four measures were used for a person who is 'left out': living in a jobless household; living in a household with no high school (or other) qualifications; having no access to a motor vehicle; and having no internet access.

The Productivity Commission used cross-sectional (point-in-time) data from the Household Economic Survey to look at the trends in multiple disadvantage. It found that the overall rates of people experiencing disadvantage in two or more domains fell from 2019 to 2021, but that the rate for all three domains has remained fairly steady since 2017 (Figure 3).

Using census data, the commission looked at 'peak working-age' households (that is, where at least one adult is aged 25–64). It found that overall disadvantage declined between 2013 and 2018 (except for the heating measure) (Table 2).

Improvements between 2013 and 2018 shown in green, deterioration in red.

The commission also looked at persistent multiple disadvantage. 'Persistence' was defined as experiencing disadvantage in one or more domains in both 2013 and 2018. The results showed that 4.2% of people in working-age households experienced disadvantage in two or more domains in

Figure 4: Persistent disadvantage in 2013 and 2018
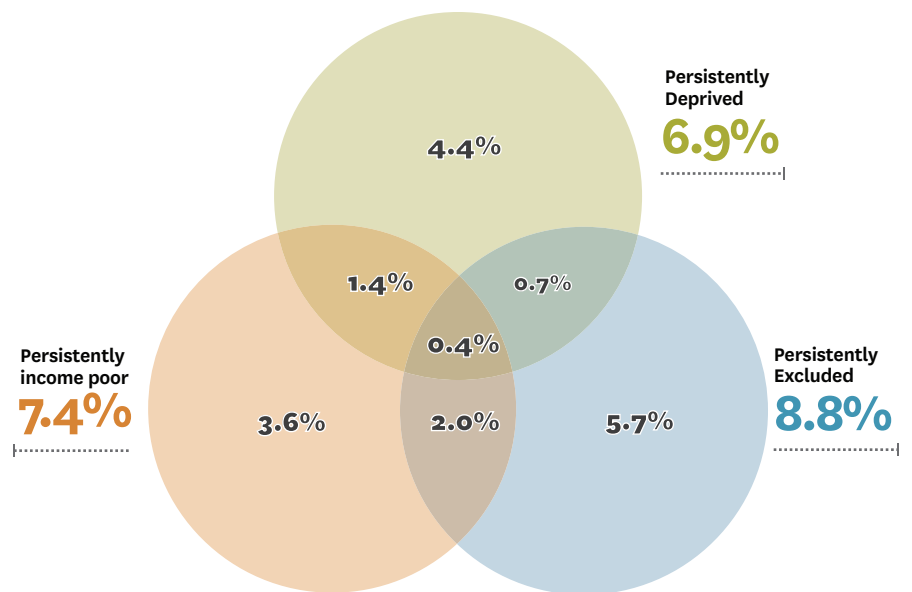
Source: Productivity Commission (2023)

both 2013 and 2018. Less than half a per cent (0.4%, or 15,500 people) experienced persistent disadvantage in all three domains (Figure 4).

These findings are consistent with the trends described above, which show that, while overall poverty and material hardship has declined significantly, a proportion of the population continues to experience multiple and persistent disadvantage. This differs from the common narrative in New Zealand that persistent disadvantage is widespread and growing. A shared understanding of these trends is an essential foundation for formulating policy responses that are both effective and enduring.

Fundamental system changes are needed
The lower overall rates of income poverty and material hardship since 2013 need to be acknowledged. However, these improvements have not benefited the proportion of the population that experiences multiple and persistent disadvantage. This implies that we need to do things differently to help people stuck in persistent disadvantage.

Numerous commissions, reports and studies over many years have advocated for fundamental changes. Recommendations have covered a range of systems, including tax, welfare, education, health, justice, state care of children, and labour market policy. For example, in 2019 the Welfare Expert

Advisory Group concluded that New Zealand's social security system is no longer fit for purpose. They found that the combination of tight targeting, sanctions and low levels of support means welfare supports are inadequate to meet people's basic needs. People's experiences of the system are also unsatisfactory and damaging, and contribute to toxic stress. The advisory group called for urgent and fundamental change; this included increasing income levels for people on benefits and in low-paid work, and also ensuring that income support continues to be adequate over time (Welfare Expert Advisory Group, 2019).

In the same year, the Tax Working Group highlighted the tax treatment of capital gains as out of step with other developed countries. They concluded that the general lack of taxation of capital gains makes the tax system less fair and benefits the wealthiest members of society. The group were unanimous that the taxation of capital gains should be extended, with the majority in favour of introducing a broad new approach (Tax Working Group, 2019).

Numerous reports have diagnosed problems with the supply, quality and price of housing, and stability of housing tenure. In 2023 the Human Rights Commission characterised the housing crisis as caused by 'decades of institutional neglect', including the failure to recognise or give effect to the basic human right to decent

housing (Human Rights Commission, 2023, p.12). The Human Rights Commission called for a human rights-based housing strategy, including improvements to the emergency housing system.

These are just a few examples. But despite clear calls for action over several decades, there has been little public policy focus on assisting the people experiencing the deepest and most entrenched disadvantage.

Systems changes are necessary but not sufficient

Systems changes that increase household resources and improve people's opportunities are necessary but not sufficient to assist those people who experience multiple and persistent disadvantages. This is because some people struggle to convert the resources they have into improved wellbeing. They may need additional support to develop the capabilities, and to address serious physical and mental health issues, in order to do so (Wilson and Fry, 2019).

Economist Amartya Sen recognised this in his capability approach, which focuses on the real opportunities people have to lead a life they have reason to value. In Sen's framework, people's ability to convert resources into real opportunities provides them with the freedom to achieve. When people face barriers that inhibit their capabilities, their genuine choices are curtailed (Sen, 1989).

Many studies and inquiries have concluded that families and whānau facing multiple, persistent disadvantages are likely to need multi-faceted support across a range of areas (such as income, housing, food, physical and mental health, addiction, and having a family member in prison). While this point is often made rhetorically, it is not being followed through. In addition to the range of system changes outlined above, tackling persistent disadvantage also requires a concerted and coordinated policy focus on people facing multiple disadvantages.

One way to achieve this is by devolving greater funding and decision making to organisations and initiatives based within local communities. Devolving the decision rights over dedicated budgets enables local

> Multiple and persistent disadvantage should be of concern to policymakers, as it has the greatest negative impacts on the people and their families who experience it.

frontline organisations, groups, and entities such as place-based initiatives to coordinate and assemble flexible, tailored, whānau-centred supports and initiatives. This was one of the major recommendations of the Productivity Commission's 2015 inquiry, *More Effective Social Services* (Productivity Commission, 2015).

Evaluations show that people receiving supports from place-based initiatives and other collaborative, locally-led initiatives generally view them very positively. Some proven successes, such as the Whāngaia Ngā Pā Harakeke family violence programme, and Te Ara Oranga, an integrated methamphetamine harm reduction pilot, are being scaled up and introduced in other locations (Fry, 2022).

Local initiatives such as place-based initiatives, that work with families experiencing persistent disadvantage, require stable, long-term (multi-year) funding. This is because it takes time to build the trusted relationships – both among providers and between providers and the people being supported – that are necessary for success. Long-term funding is also needed because some people and whānau may need ongoing support over many years. The benefits may not be evident over the short or medium term; in some instances, it may be the next generation that fully reaps the benefits.

The problems faced by people experiencing multiple and persistent disadvantages span the responsibilities of many government agencies. While concerted efforts have been made over many years to get better collaboration across agencies, cross-agency working and co-funding is difficult given the vertical accountabilities of the public management system. A new, dedicated Vote, along with a responsible minister, would help overcome these difficulties and demonstrate commitment to reducing persistent disadvantage.

Reducing persistent disadvantage would have significant intergenerational pay-offs

Multiple and persistent disadvantage should be of concern to policymakers, as it has the greatest negative impacts on the people and their families who experience it. Wider society also loses out in multiple ways when people face significant barriers to realising their aspirations for a good life. Providing effective supports and investments, and removing structural barriers and inequities, would have significant intergenerational pay-offs.

For example, a 2011 study estimated the costs of child poverty in New Zealand at $8 billion a year, equivalent to around 4.5% of GDP (Pearce, 2011). The Productivity Commission's 2015 inquiry reported that the 10,000 highest-cost clients of the social services system are each expected to generate lifetime budgetary costs of $500,000 or more, totalling $6.5 billion (Productivity Commission, 2015, p.3). That would be around $8.1 billion in today's dollars.

A recent study also found that Māori primary healthcare providers are systematically underfunded for meeting the well-established patterns of Māori health need, in the order of $1 billion a year. Rectifying this inequity could save the country $5 billion a year in health-related costs (Love et al., 2021).

The benefits of reducing persistent disadvantage therefore accrue to individuals and their whānau, as well as the wider community. And as cycles of intergenerational disadvantage are broken, these benefits would flow through and be amplified in future generations.

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Moira Wilson and Keith McLeod

How the Families Package

Increased Income and Created New Opportunities for Life-course Research

Abstract

The Aotearoa New Zealand government's 2018 Families Package increased financial assistance for families as part of a strategy to reduce child poverty, improve child and youth wellbeing, and provide parents with more choice around working and caring in their children's first three years of life. Mothers who had children born after implementation of the package qualified for substantially more financial assistance in the pre-natal period and in their children's first three years than previous cohorts. This article examines the size of the income gains. Using linked administrative data, we estimate that by the time children turned three, having a birth on or after 1 July 2018 increased financial assistance received by mothers by almost $6,800 on average when compared to pre-reform cohorts (a 5% increase in total income). For Māori mothers, the average increase was almost $9,600 (a 7% increase in total income). This natural experiment offers new opportunities for research on the causal effects of increased financial assistance in children's early years on life-course outcomes.

Keywords cash transfers, paid parental leave, child wellbeing, labour supply, baby bonus, family tax credit

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The 'Families Package' reform was the 2017 incoming government's first step towards improving child and youth wellbeing and meeting ten-year targets for reducing child poverty (Department of the Prime Minister and Cabinet, 2019; Royal Society Te Apārangi, 2021). More than half of families with children received extra income from the package (Ministry of Social Development, 2023a, 2023b). Among the changes were increases to maximum accommodation supplement rates and family tax credit payments, and the introduction of a new 'winter energy payment'. Entitlements for families with children aged under three were increased, with the aim of giving families with young children more choice in how they manage work and care responsibilities. This included an extension to the maximum weeks of paid parental leave and the introduction of a new 'Best Start' tax credit of up to $60 per week. The full amount of Best Start is available to all families who meet residency requirements in the first year of the child's life (during weeks the family is not in receipt of paid parental leave). In the child's second and third years, the amount payable is income tested. In 2018 abated payments could be received up to a family income of $93,858

(Graham and Arnesen, 2022).[1] The family tax credit, Best Start and paid parental leave are paid to the primary caregiver in the family. As a result, most of the increase in financial assistance was received by mothers.

Due to the nature and timing of the changes to entitlements, mothers with children born after implementation of the Families Package qualified for substantially more financial assistance in their child's early years than those with births prior to the reform. This was mainly because they could receive Best Start and extended paid parental leave while those with births prior to the reform could not. They could also benefit from other Families Package payment increases from an earlier point in their child's life (Box 1). Mothers in families with lower incomes qualified for larger increases because most Families Package payments are income tested (based on the individual income of sole parents, and joint income of partnered parents).

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Box 1 Potential pre- and post-natal income gains for families with births on or after 1 July 2018

Comparing families with children born before 1 April 2018 (when the accommodation supplement increases were introduced) and on or after 1 July 2018 (when the remaining Families Package changes were implemented), potential income gains from Best Start and paid parental leave in the first year post-birth were greatest for families receiving the maximum additional paid parental leave ($563.83 for an extra four weeks; $2,255 in total) who also received the new Best Start tax credit in the weeks they were not receiving paid parental leave ($60 for 30 weeks; $1,800 in total). They were smallest for families who received the new Best Start for a full year ($60 for 52 weeks; $3,120 in total) but would formerly have received a parental tax credit, which ended with the Families Package ($220 for ten weeks; $2,200

in total).[2] Total gains from Best Start over the three years post-birth were greatest for those families supported by a main benefit or on low incomes qualifying for the unabated amount of Best Start for the full three-year period ($3,120 per year; $9,360 in total).

Potential gains from earlier exposure to the other Families Package changes in the pre- and post-natal period were greatest for those who received an increase in the accommodation supplement on 1 April 2018, qualified for the family tax credit for older children from 1 July 2018, and received the winter energy payment from 1 July 2018. Those with later births had greater exposure to pre-natal gains, and to increased family tax credit for the newborn child after the newborn's birth.

Births before 1 April 2018	Births on or after 1 July 2018
no extended PPL	may get extended PPL
no BS unless due date after 1 July	get BS if meet residence requirements
may get PTC	noPTC
no increased AS pre-birth	may get increased AS pre·birth
no increased FTC pre-birth	may get increased FTC pre-birth
no WEP pre-birth	may get WEP pre-birth
may get increased AS post-birth (from 1 April)	may get increased AS post-birth (↑ exposure)
may get increased FTC post-birth (from 1 July)	may get increased FTC post-birth (↑ exposure)
may get WEP post-birth (from 1 July)	may get WEP post-birth (1↑ exposure)

1 April 2018	1July 2018
AS increased	PPL extended and FTC increased, WEP and BS introduced, PTC ended

Notes: PPL = paid parental leave; BS = Best Start; PTC = parental tax credit; AS = accommodation supplement; FTC = family tax credit; WEP = winter energy payment

In both the pre- and post-natal periods, income gains were influenced by whether families received, or would have received, temporary additional support. This is a third-tier payment to help people with regular essential living costs that cannot be met from their income or assets. Gains in income from Best Start, the family tax credit and accommodation supplement could be offset by reduced temporary additional support payments.

Whether a new application was required to receive the extra financial assistance varied. The extension of paid parental leave applied automatically to those who applied for the payment and

met qualifying criteria in any case. Parents were invited to apply for Best Start as they registered the birth of their child through a new 'SmartStart' online tool. Those already receiving a tier 1 benefit received the payment automatically if they qualified. The winter energy payment was only made available to those receiving a tier 1 benefit and was paid automatically to those who qualified. Existing recipients of the accommodation supplement and family tax credit received the increased payments automatically. Those who could newly qualify because of the changes were required to newly apply.

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This article's aim is to estimate the average gains in financial assistance and other income for mothers that occurred.[3] After controlling for small changes in the composition of birth cohorts, and using difference-in-differences techniques to control for usual differences in incomes depending on the time of year births occur, we estimate that compared with mothers with births prior to the Families Package, mothers in the first cohort with births after implementation gained $6,766 (in real $2018 terms) in additional financial assistance on average by the time their children turned three. This is equivalent to a 15.6% increase in total financial assistance and a 5.2% increase in total income. Māori mothers gained $9,555 on average, equivalent to a 12.3% increase in financial assistance and a 7.3% increase in total income.[4] There was no statistically significant change in total income from sources other than financial assistance, including income from employment. We discuss opportunities for new research that could explore the difference the increases in financial assistance made to the lives of children and parents, and to equality of outcomes.

Methods

Data sources

Data is sourced from Statistics New Zealand's Integrated Data Infrastructure (IDI).[5] The IDI is a large database containing linked individual-level microdata about people and households (Milne et al., 2019). Government administrative data in the collection includes birth registration, welfare benefit and tax data, and health and education data, all with national coverage of those who engage with services. Data is probabilistically linked and de-identified.[6]

Study population

The study population is comprised of mothers and children identified in birth registration data. We examine mothers and children where the birth of a child occurred:

- in the first three months from 1 July 2018 (post-reform, July–September births) – 1 July 2018 was the implementation date for Best Start, extended paid parental leave, the family

Earlier analysis showed that, in the main, it is mothers rather than the fathers or second parents listed on the birth certificate who receive Best Start and paid parental leave

tax credit increases and the winter energy payment;
- in the three months before 1 April 2018 (pre-reform, January–March births) – 1 April 2018 was the implementation date for the increase in the accommodation supplement.

To control for usual timing-of-birth differences, we examine equivalent cohorts in the years 2015–17. The population is restricted to mothers and children where the child spent at least two and a half of their first three years of life in Aotearoa New Zealand.

Sub-groups

Three sub-groups of mothers potentially affected in different ways are examined. These are mothers:

- supported by benefit in the month before the child was born (who would be among those gaining the most from Best Start as the payment is available to all families in the first year of the child's life, and income tested in the child's second and third years);
- eligible for paid parental leave and not supported by benefit in the month before the birth (who would gain the most from extended paid parental leave);[7]
- not eligible for paid parental leave and not supported by benefit in the month

before the birth (for whom gains from Best Start could be offset by the loss of the former parental tax credit).

To assess the degree to which incomes shifted in the direction of more equitable outcomes, results are presented for Māori mothers. We also present results for mothers in other ethnic groups (defined on a total response basis such that a mother can belong to multiple ethnic groups) and neighbourhood deprivation (based on NZDep (New Zealand Index of Deprivation) quintile) (Atkinson, Salmond and Crampton, 2019).

Outcome variables

The analysis focuses on mothers' incomes. Earlier analysis showed that, in the main, it is mothers rather than the fathers or second parents listed on the birth certificate who receive Best Start and paid parental leave (Wilson and McLeod, 2021).

We estimate impacts on mothers' real income (in 2018 dollars) by source in the six months prior to the birth and in each of the three years following the birth. High-level income sources examined are: (1) financial assistance, including transfers (first-, second- and third-tier benefits and Working for Families tax credits) and paid parental leave; and (2) all other income. Detailed sources of income examined include: wages and salaries; Best Start; paid parental leave; the parental tax credit; other Working for Families tax credit income; first-tier benefit income; the accommodation supplement; the winter energy payment; temporary additional support; other benefit income; and other income.

Data on Best Start and other Working for Families tax credit income paid by Inland Revenue and data sourced from individual tax returns completed after the end of the tax year have a particularly long lag-time. Data for the tax year ended 31 March 2022 (which captures some of the third year of life for children born after 1 April 2018) was largely complete but still accumulating at the time of writing, making estimates very slightly conservative.

We present difference-in-differences (DiD) estimates in $2018 terms, and as percentages of counterfactual financial assistance income and counterfactual total income. Counterfactual income is the predicted income in the absence of the

reform (i.e., observed income minus the estimated increase in income due to the birth falling after the introduction of the Families Package).

Difference-in-differences estimation

DiD estimates compare the pre/post reform income difference for the 2018 cohorts with the income difference for equivalent cohorts in 2015–17, with controls for compositional change. This follows the approach used in a study of the Australian 'Baby Bonus' payment by Deutscher and Breunig (2018). It takes account of ways in which family incomes could be systematically different for children born at different times in the year. There are, for example, timing-of-birth differences in behaviour, education and adult health (Boland et al., 2018; Ali and Menclova, 2018). For parental earnings and receipt of income support, we observe timing-of-birth effects too.

Formally, the difference-in-differences estimator of the impact of being in the first cohort to qualify for the Families Package changes from birth on outcome y is given in equation (1): (see equation (1) below) where I_y is the estimated impact on outcome y at a specified age, and $\bar{y}_{\geq jul2018}$ represents the average outcome for those with children born in a specified window after 1 July 2018.

In order to provide a valid estimate of the impact, our analysis is dependent on an assumption that the differences in pre-1 April cohort and post-1 July cohort outcomes would have been consistent across the 2015–18 period without the introduction of the Families Package changes. This is known as the common trends assumption.

This can be re-specified such that the impact I_y on outcome y is expressed as

regression parameter β_3 in equation (2): (see equation (2) below) where y_i represents outcome y for individual i in our analysis sample composed of families with children born in specified windows before and after 1 July each year, $z_{2018,i}$ is an indicator variable which is set to 1 if a child was born in 2018 and 0 otherwise, and $z_{>july,i}$ is an indicator variable which is set to 1 if a child was born on or after 1 July.

By estimating the impact in this way, we can add in control variables that account for compositional differences between the characteristics of families with children born in 2018 and those born in earlier years (X_{ij}): (see equation (3) below).

Control variables include ethnic composition (sourced from the Statistics New Zealand 'personal details table' estimates, which are derived from multiple collections in the IDI using a set of specific rules); regional council area (sourced from the Statistics New Zealand 'address notification table', which is derived from multiple sources, or from birth registration data if not available in the Statistics New Zealand-derived data); neighbourhood deprivation (NZDep quintiles); pre-birth income (based on Ministry of Social Development and Inland Revenue data); an indicator of whether at least one parent appears to meet the eligibility criteria for Working for Families tax credits; maternal age; employment history (months worked and income over different periods pre-birth based on Inland Revenue data); an indicator of whether two parents are recorded on the birth certificate; benefit history over different periods pre-birth based on Ministry of Social Development data; an indicator of estimated eligibility for paid parental leave; and the number of older siblings born to either parent (based

on any earlier children born to the mother identified in the maternity data, or to either parent identified on the birth certificate).[8]

As we have multiple comparison years, we can add further terms to our model to establish whether there is any evidence that the common trends assumption does not hold: (see equation (4) below). In this specification, β'_3 and β''_3 provide estimates of any divergence from the 2015 pre-1 April and post-1 July trend, in 2017 or 2016 respectively. If these parameters are statistically significant, it would suggest that the common trends assumption may not hold.

All models are estimated as linear models with heteroscedastic-robust standard errors clustered at the family level. Clustered errors help to account for auto-correlation between the outcomes for mother–child dyads with the same mother.

Robustness tests

The main challenge to the robustness of the DiD estimation is the possibility that the changes in financial assistance provided an incentive for a shift in the timing or recording of births, and that this altered the composition and comparability of pre- and post-reform cohorts in 2018 relative to previous years. There is evidence of post-natal payments having such effects in other countries (Momsen, 2021a). Analysis using multiple methods and datasets to examine this possibility indicates that, for the Families Package, any effect of this nature was very small (Wilson and McLeod, 2021).

To provide a valid estimate of impacts, the DiD analysis is also dependent on an assumption that the differences in pre- and post-reform incomes would have been consistent across the whole 2015–18 period without the Families Package. We test that

equation (1)

$$I_y = \left(\bar{y}_{\geq Jul2018} - \bar{y}_{\leq Apr2018}\right) - \left(\bar{y}_{\geq Jul2015-2017} - \bar{y}_{\leq Apr2015-2017}\right)$$

equation (2)

$$y_i = \beta_0 + \beta_1 z_{2018,i} + \beta_2 z_{>July,i} + \beta_3 z_{2018,i} \cdot z_{>July,i} + \varepsilon_i$$

equation (3)

$$y_i = \beta_0 + \beta_1 z_{2018,i} + \beta_2 z_{>July,i} + \beta_3 z_{2018,i} \cdot z_{>July,i} + \gamma_j X_{ij} + \varepsilon_i$$

equation (4)

$$y_i = \beta_0 + \beta_1 z_{2018,i} + \beta_2 z_{>July,i} + \beta_3 z_{2018,i} \cdot z_{>July,i} + \beta'_3 z_{2017,i} \cdot z_{>July,i} + \beta''_3 z_{2016,i} \cdot z_{>July,i} + \gamma_j X_{ij} + \varepsilon_i$$

Table 1: Socio-demographic characteristics of children born three months pre-1 April and post-1 July and their parents, 2018 and pooled control years

Births in 3 months either side of 1 July:	2018		Pooled 2015-2017	
	Pre-	Post-	Pre-	Post-
CHILD				
Ethnic groups				
European	65.2%	65.3%	66.2%	65.3%
Māori	29.6%	29.4%	29.0%	29.3%
Pacific	15.7%	15.4%	14.9%	14.8%
Asian	18.8%	19.2%	17.0%	17.5%
MELAA	2.1%	2.4%	1.9%	2.1%
Other	0.4%	0.4%	1.1%	1.1%
No siblings	41.1%	41.2%	39.7%	40.0%
At least one parent eligible for WFF tax credits	96.7%	96.7%	97.9%	97.7%
MOTHER/FIRST PARENT				
Age				
Under 25	18.9%	18.7%	20.8%	20.7%
25-29	27.7%	27.3%	27.4%	27.5%
30-34	32.0%	32.2%	30.5%	30.9%
35 and over	21.3%	21.8%	21.3%	21.0%
Ethnic groups				
European	62.4%	62.4%	64.3%	63.4%
Māori	23.7%	23.7%	23.8%	24.0%
Pacific	11.8%	11.3%	11.4%	11.4%
Asian	18.0%	18.4%	16.5%	17.0%
MELAA	1.9%	2.2%	2.0%	2.1%
Other	1.1%	1.3%	1.1%	1.3%
With earned income in the month prior to birth	55.4%	56.8%	52.8%	52.7%
Mean earned income prior to birth - 0-6 months	$16,423	$16,389	$13,779	$14,106
Mean total income prior to birth - 6 months to 1.5 years	$37,172	$37,394	$34,808	$35,114
Mean total income prior to birth - 1.5 to 4.5 years	$96,287	$96,265	$92,092	$92,037
Supported by benefit in the month before birth	20.9%	20.7%	22.2%	22.5%
Supported by benefit with partner in month before birth	3.0%	3.2%	3.5%	3.7%
FATHER/SECOND PARENT				
No father/second parent on birth registration	5.4%	5.0%	5.0%	5.1%
With earned income in the month prior to birth	79.5%	78.8%	78.7%	78.2%
Mean total income prior to birth - 6 months to 1.5 years	$59,899	$60,843	$56,070	$55,554
Mean total income prior to birth - 1.5 to 4.5 years	$144,792	$144,924	$135,733	$135,028
NEIGHBOURHOOD				
Deprivation quintile (NZDep2018)				
1 (least deprived)	13.1%	13.2%	13.4%	13.3%
2	15.9%	15.9%	16.1%	16.2%
3	18.7%	18.1%	18.8%	18.3%
4	20.8%	21.3%	20.9%	20.9%
5 (most deprived)	27.2%	26.8%	27.4%	27.7%
ANALYSIS SUB-GROUP (of mother/first parent)				
(1) in receipt of benefit in month prior to birth	20.9%	20.7%	22.2%	22.5%
(2) not in receipt of benefit and eligible for Paid Parental Leave	55.9%	56.7%	53.5%	53.3%
(3) not in receipt of benefit and not eligible for Paid Parental Leave	23.2%	22.6%	24.3%	24.1%
Total %	100.0%	100.0%	100.0%	100.0%
Total n	13,824	14,064	41,343	42,318

Note: Population counts are randomly rounded to base 3 to protect confidentiality. Percentages are based on randomly rounded counts

this common trends assumption is met within the model specification, and examine the composition of the income gains and the time profile of average incomes to assess whether other policies or events could explain the results.

Results

The study cohorts

A descriptive profile of the study cohorts (Table 1) shows that the composition of the pre-1 April and post-1 July study cohorts is very similar, with few statistically significant differences. In 2018, slightly over half of study cohort children had a mother estimated to be eligible for paid parental leave (and not receiving a main benefit in the month prior to birth). Around a quarter had a mother estimated to be not eligible for paid parental leave (and not receiving a main benefit in the month prior to birth). Around one in five had a mother supported by a main benefit in the month prior to birth.

Income differences for pre-1 April 2018 and post-1 July 2018 cohorts

Unadjusted pre/post comparisons in Figure 1 show income differences with time from birth for the pre-1 April 2018 and post-1 July 2018 cohorts. The largest differences in financial assistance occurred in the first year after the birth, reflecting the increases in income from paid parental leave and the Best Start tax credit. Differences in all other income were small in comparison.

Income gain estimates

Tables 2a and 2b present estimates of the average real income gain by high-level income source. The DiD estimate of the average gain in financial assistance from six months before the birth to the child's third birthday is $6,766 ($2018). The average gains were statistically significant for most sub-groups. They varied in size, reflecting the income-tested nature of many of the affected payments (Table 2a). Consistent with Figure 1, the average gain in financial assistance was largest in the first year after the birth. None of the DiD estimates of effects on other income were statistically significant (Table 2b).

The estimated financial assistance impacts largely reflect gains from Best Start and extended paid parental leave (Figure 2).

Figure 1: Unadjusted average monthly income by source and in total, real pre-tax income ($2018), 2018 births three months pre-1 April and post-1 July

Quarter — births 3 months pre-1 April   - - - births 3 months post-1 July
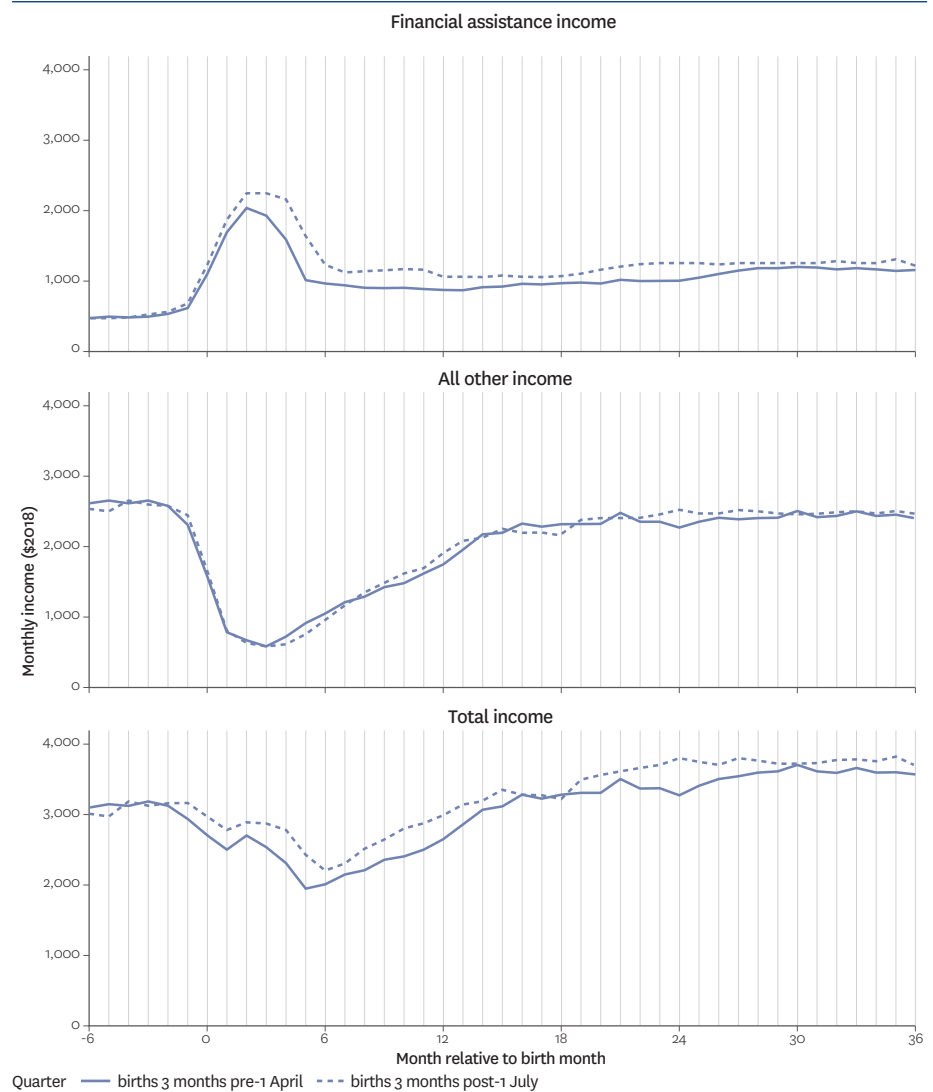
Removal of the former parental tax credit offset some of the income gain, as did reductions in temporary additional support. Income from Working for Families payments other than Best Start and the parental tax credit increased. Further investigation showed that, averaging across the first 30 months after the birth, the proportion of mothers receiving these payments increased by two percentage points. There was a larger than average increase in receipt among Asian mothers (around seven percentage points). Income from main benefits also increased. The estimated impact on total income has a wide confidence interval, reflecting the lack of certainty around the employment income estimate and the amount of variation in employment income.

Robustness and sensitivity tests

DiD results were robust to a range of sensitivity and robustness tests. For the main analysis period (six months pre-birth to 36 months post-birth), in virtually all cases the interaction terms testing for violation of the common trends assumption were non-significant. We also ran a series of models estimating post-1 July 2018 treatment effects using a range of maternal characteristics. Under the common trends assumption, we would expect differences in these characteristics within birth years to be similar, and our estimation should not uncover significant effects. The small number of significant results was consistent with these occurring by chance at both 1% and 5% significance levels.

A range of other sensitivity tests were conducted.

- We re-ran models estimating impacts on first-year income using 2019 as an additional control year. Results were almost identical to the first-year income results presented in this article.

Table 2a: Financial assistance gain impact estimates, real pre-tax income ($2018)

Population / Outcome period	Estimated impact	Std. Error	Impact as % of counterfactual financial assistance	Impact as % of counterfactual total income
Total	6,766**	444	15.6	5.2
6 months pre-birth	154**	52	3.7	0.7
First year post-birth	3,268**	130	22.4	11.5
Second year post-birth	2,330**	162	21.3	6.1
Third year post-birth	1,014**	185	7.4	2.3
Analytical groups				
(1) in receipt of benefit in month prior to birth	9,966**	1,266	9.0	8.0
(2) not in receipt of benefit and eligible for PPL	5,812**	474	22.8	3.6
(3) not in receipt of benefit and not eligible for PPL	5,864**	929	21.7	10.6
Ethnicity of first parent				
Māori	9,555**	1,160	12.3	7.3
Pacific ethnicity	8,826**	1,799	12.8	7.1
Non-Māori/Non-Pacific	5,252**	461	18.3	4.0
European	6,262**	551	15.4	4.6
Asian	5,841**	768	32.7	4.6
MELAA	5,986	3,137	17.6	5.9
Other ethnicity	1,122	3,740	2.8	0.8
New Zealand Deprivation Index				
Quintile 1 (least deprived)	6,480**	900	31.4	4.1
Quintile 2	4,514**	945	15.5	3.2
Quintile 3	6,825**	972	20.3	5.3
Quintile 4	6,204**	1,020	13.6	5.0
Quintile 5 (most deprived)	8,738**	1,067	12.5	7.3

Notes: (1) Estimated impacts compare the differences between July-September births and January-March births for 2018 with differences in outcomes for births in the same months from 2015 to 2017.
(2) * p<0.05, ** p<0.01.

Table 2b: Impact estimates for all other income, real pre-tax income ($2018)

Population / Outcome period	Estimated impact	Std. Error	Impact as % of counterfactual other income	Impact as % of counterfactual total income
Total	1,029	1,383	1.2	0.8
6 months pre-birth	54	184	0.3	0.3
First year post-birth	95	344	0.7	0.3
Second year post-birth	469	518	1.7	1.2
Third year post-birth	411	615	1.4	0.9
Analytical groups				
(1) in receipt of benefit in month prior to birth	-1,063	903	-7.2	-0.8
(2) not in receipt of benefit and eligible for PPL	1,359	2,289	1.0	0.8
(3) not in receipt of benefit and not eligible for PPL	2,051	2,024	7.8	3.5
Ethnicity of first parent				
Māori	2,054	2,883	4.0	1.5
Pacific ethnicity	2,688	2,537	5.1	2.1
Non-Māori/Non-Pacific	882	1,780	0.9	0.6
European	212	1,911	0.2	0.2
Asian	4,688	3,659	4.5	3.7
MELAA	8,978	7,543	15.2	9.1
Other ethnicity	19,296	10,806	24.8	16.1
New Zealand Deprivation Index				
Quintile 1 (least deprived)	5,164	6,124	3.9	3.2
Quintile 2	2,612	3,758	2.4	1.8
Quintile 3	-1,424	3,433	-1.5	-1.0
Quintile 4	-1,121	2,382	-1.4	-0.9
Quintile 5 (most deprived)	1,875	1,520	3.9	1.5

Notes: (1) Estimated impacts compare the differences between July-September births and January-March births for 2018 with differences in outcomes for births in the same months from 2015 to 2017.
(2) * p<0.05, ** p<0.01.

- Given the small size of estimated birth-shifting effects (Wilson and McLeod, 2021), we did not expect that the inclusion of July births would compromise the robustness of the study. Nevertheless, we tested the sensitivity of our results to the exclusion of this month's births. Results were almost identical to our main results.
- We tested whether results were sensitive to the inclusion of September births, which could be affected by announcement of the full details of the Families Package influencing conceptions, and again found no significant differences between the two sets of results.

Figure 2: Income gain impact estimates and 95% confidence intervals by income source, real pre-tax income ($2018)
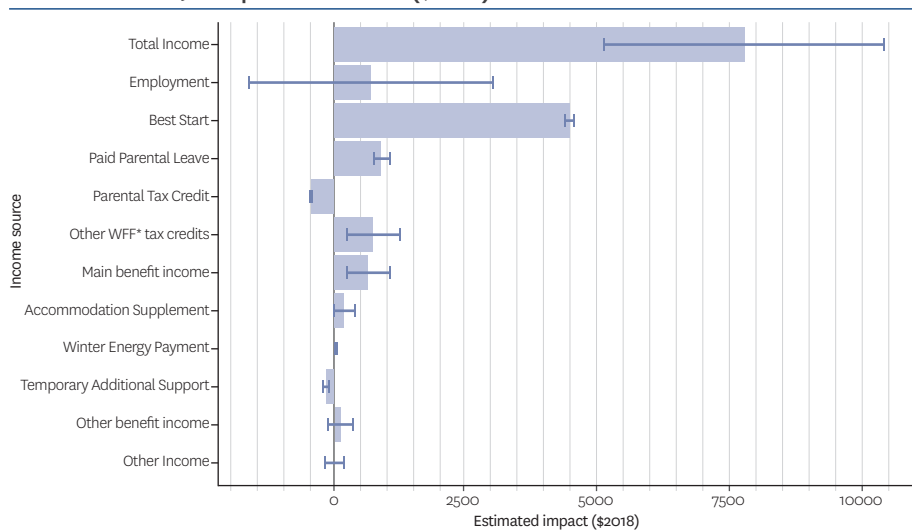
* WFF = Working for Families.

Discussion

Estimated income gains

This article follows the first cohort to qualify for the Families Package changes and examines mothers' income from six months prior to birth to the children's third birthdays. Using de-identified linked administrative data held in the IDI, we estimate that, compared to a cohort with births before implementation of the Families Package, being in the first cohort to qualify led to an increase in financial assistance received by mothers of $6,766 on average. This is equivalent to a 15.6% increase in total financial assistance and a 5.2% increase in total income.

The reform shifted incomes in the direction of more equitable outcomes for Māori. Māori mothers gained $9,555 on average, equivalent to a 12.3% increase in financial assistance and a 7.3% increase in total income. This was greater than the average gain for mothers in each of the other ethnic groups examined. The next largest average gains were for Pasifika mothers ($8,826, equivalent to a 12.8% increase in financial assistance and a 7.1% increase in total income). The average gain was smaller in dollar terms but largest as a percentage gain in financial assistance for Asian mothers ($5,841, equivalent to a 32.7% increase in financial assistance and 4.6% increase in total income). Average estimated counterfactual income for the post-reform cohort without the Families Package was 1.0% lower for Māori mothers than for non-Māori/non-Pasifika mothers, while with the Families Package it was 2.2%

higher. For Pasifika mothers the equivalent change was from 6.5% lower to 3.7% lower. Implications for gaps in family income (inclusive of partners' incomes) could not be explored.

Of all the sub-groups examined, mothers supported by benefit had the largest average dollar gains ($9,966, equivalent to a 9.0% increase in financial assistance and an 8.0% increase in total income). For those in the most deprived neighbourhoods, the gains averaged $8,738 and represented a 12.5% increase in financial assistance and a 7.3% increase in total income. For those in the least deprived neighbourhoods, they averaged $6,480 and represented a 31.4% increase in financial assistance and a 4.1% increase in total income.

Examination of the composition of the income gains and their timing relative to the birth date indicates that the Families Package changes in financial assistance, particularly in the first year of life, were the largest driver of income differences between the cohorts. However, other changes and events, such as the Covid-19 lockdowns and other policy reforms, may have contributed. The small gain in main benefit income, for example, will partly reflect exposure to the main benefit increases that occurred in 2020, 2021 and 2022 (Graham and Arnesen, 2022) from an earlier point in the life course for the cohort with births after the introduction of the Families Package reform.

Take-up of Working for Families tax credits other than Best Start increased. This

was also observed in other research: estimated take-up of the family tax credit and in-work tax credit by families with a child aged under two increased following the introduction of the Families Package, while take-up rates for those with children in other age groups showed no increase (McLeod and Wilson, 2022a). The increase in take-up found in the present study was particularly pronounced for Asian mothers. This is a group estimated to have had particularly low take-up in recent years (McLeod and Wilson, 2022a).

All parents were invited to apply for Best Start as they registered the birth of their child through the new SmartStart online tool. As part of this process, families gave consent for Inland Revenue to use the information they provided to determine their eligibility for other payments. This appears to have resulted in high take-up of Best Start.[9] It may have also increased awareness and receipt of other Working for Families tax credits among parents who would not otherwise have applied. Non-take-up due to lack of awareness or difficulties claiming limits the ability of financial assistance entitlements to achieve their aims (Welfare Expert Advisory Group, 2018; Momsen, 2021b). Our findings contribute to an evidence base showing that a portion of non-take-up can be addressed through system changes that more proactively invite and streamline initial applications and subsequent reapplications for those with potential eligibility (Ko and Moffitt, 2022).

One of the objectives of the Families Package was to give families more choice about how they manage work and care responsibilities in their child's first three years of life. Mothers eligible for paid parental leave had slightly more time with no earnings in their children's first year and less income from employment in the first six months as a result of the reform (Wilson and McLeod, 2021). Over a longer period from six months before the birth to three years after the birth, the present study indicates a not statistically significant increase in total other income (including wages and salaries) for mothers eligible for paid parental leave. Consistent with international evidence (Nandi et al., 2018), extending the duration of paid parental leave entitlement appears to have increased leave taking immediately following the birth, but this does not appear to have had negative employment or economic consequences over a longer period.

For mothers supported by benefit before the birth, there was a not statistically significant reduction in other income. This finding of no statistically detectable effect aligns with results from recent research internationally. A 2021 temporary expansion of the United States child tax credit provided additional income of up to US$3,600 per child. The largest income gains were experienced by low-income families. To date there is no evidence that this reduced the supply of labour (Curran, 2021). The US 'Baby's First Years' randomised study, in which 1,000 low-income mothers of infants born in 2018 and 2019 received monthly cash gift payments of either US$333 or US$20 for 40 months, shows no statistically detectable effects of the high-cash gift on maternal employment from the child's birth through to age three (Sauval et al., 2022). Similarly, a 2015 Canadian childcare and child payment reform that boosted incomes of low-income single mothers is estimated to have had no significant impact on their employment (Baker et al., 2021).

Limitations and strengths

IDI data is a new resource for building evidence about the impacts of policy reforms (Milne et al., 2019), but there is a need for greater transparency about its

A growing international evidence base shows that increasing families' financial resources improves cognitive, educational and other outcomes for children in the short and longer term

existence, use and limitations (Gulliver et al., 2018). IDI data-linking is generally probabilistic. Some errors and missed links are inevitable (Milne et al., 2019). The data used includes information collected or generated in the process of administering tax credits and benefits, and will be affected by any errors in measurement, reporting and recording that occur in those processes. Such errors are unlikely to greatly influence the findings from this study, however, as we would expect them to be fairly constant over time.

Limitations in what can be measured by the administrative data available in the IDI mean we were unable to examine impacts on family or household incomes or estimate income gains on an equivalised income basis. While family relationship data is collected for periods during which families engage with the benefit and Working for Families tax credit systems, it is not possible to identify family groups through time for the population of families overall.

Data limitations also make it necessary to impute the flow of tax credit income across the year. It is also not possible to identify when during the tax year income from self-employment was earned.[10] Towards the end of the study window, the Covid-19 wage subsidy made an important contribution to incomes. This was captured where it flowed through to employee wages and salaries. However, wage subsidy payments claimed by the self-employed as sole traders were not captured.

While it is possible to establish whether income gains from Families Package payments were partially offset by the loss of some other payments, data limitations mean it is not possible to explore the impact of debt repayments to government and private creditors on the in-hand income gains, or the degree to which additional income addressed income insufficiency for the cohorts examined. Recent example family analysis includes scenarios where income insufficiency remains despite the Families Package and other financial assistance increases (Graham and Garlick, 2022). Insights from qualitative studies suggest that for some families, increases in debt servicing, or continuing income insufficiency, may have limited the degree to which the 2018 Families Package reform flowed through to improved living standards, and to improvements in wellbeing (Momsen, 2021b).

Against these limitations, the data and analysis have several strengths. The IDI provided a longitudinal data source unaffected by errors that affect survey data (non-response bias, recall error, reporting bias and sampling error) and with national coverage. This allowed analysis focused on narrowly defined cohorts of newborns and their mothers, and sub-groups within these cohorts, in a way that would not be possible using other data.

Opportunities for new research

An increase in financial assistance like that experienced by families with births after the introduction of the Families Package could have a range of positive effects (Expert Advisory Group on Solutions to Child Poverty, 2012; Boston and Chapple, 2014; Royal Society Te Apārangi, 2021). A growing international evidence base

shows that increasing families' financial resources improves cognitive, educational and other outcomes for children in the short and longer term (Duncan, Morris and Rodrigues, 2011; Ministry of Social Development, 2018; Cooper and Stewart, 2020; Garfinkel et al., 2022; Troller-Renfree et al., 2022). Increased paid parental leave has the potential to improve maternal wellbeing and has been associated with improvements in infant health, reduced infant mortality, and improvements in women's economic outcomes and attachment to the workforce over the longer term (Heymann et al., 2017; Nandi et al., 2018). There is some evidence to suggest that increased income from tax and benefit reforms reduces child neglect and entry into out-of-home care, and can reduce child welfare reports of concern (Oranga Tamariki Evidence Centre, 2019; Garfinkel et al., 2022).

There are strong associations between low income, material hardship and poor child and maternal outcomes in this country (Dominick, 2018; Haines and Grimes, 2021; Morton et al., 2020; Davies, Webber and Timmins, 2022). However, analysis of the size of the causal effects of increasing income is limited, and there are no studies of the effects of increasing the adequacy of income support on the life-course health and wellbeing outcomes of Aotearoa New Zealand children (Ministry of Social Development, 2018).

In the Aotearoa New Zealand context, it is important to produce evidence that will help assess the degree to which there are equitable outcomes for Māori. Effect sizes from overseas studies cannot necessarily be generalised to our setting and populations, given differences in the history of colonisation and alienation of land and resources, and given differences in sociocultural context, income distribution and income support systems (ibid., 2018).

The natural experiment created by the Families Package offers an opportunity to build the evidence base. Because increasing family income has the potential to affect multiple outcomes, multiple studies can be contemplated. And because the existing evidence base suggests that the impact of a given increase in income is greater when family incomes are lower (Cooper and

> ... reforms will be needed to meet the government's ten-year targets for child poverty reduction, and to address high child poverty rates affecting Māori and Pasifika children, disabled children, and children living with disabled adults ...

Stewart, 2020), an increase in the equality of outcomes over the life course would be expected.

Using data in the IDI, there are near- and longer-term research opportunities.[11] In the near term, impacts of increased maternal income on infant mortality and perinatal outcomes of younger siblings could be examined. A relationship between income poverty and children's hospitalisations has proven difficult to establish using household panel and census data (Shackleton et al., 2021). This could be re-examined in the context of a natural experiment. Impacts on employment and earnings trajectories of parents, parenting penalties and gender pay gaps (Sin, Dasgupta and Pacheco, 2018) could also be explored. Mothers from low-income households and Māori and Pasifika mothers are more likely to report problems accessing affordable childcare (Sin, 2021). The impact

of additional financial assistance on gaps in early childhood education enrolment could be examined. In the longer term, studies could estimate impacts on children's schooling, educational attainment and transition to adulthood. It is in these domains that international evidence suggests the largest benefits will be felt.

Outside the IDI, school-based studies, and surveying and having conversations with families in the cohorts with births before and after the reform, could be ways of building understanding of causal pathways and impacts on direct measures of outcomes. Importantly, such studies would be able to include measures of development and child and whānau wellbeing grounded in a Māori world view, and that reflect what communities value (Kukutai, Sporle and Roskruge, 2017; Gaffney et al., 2021; Productivity Commission, 2023). Administrative data held outside the IDI (such as that held by Whānau Āwhina Plunket, the Ministry of Education or the New Zealand Council for Educational Research) could be used to look at measures of maternal mental health, and children's early developmental and educational milestones.

Child poverty rates fell after the Families Package was introduced, continuing a longer period of decline, and some disparities in child poverty rates narrowed (Perry, 2022). Further reforms will be needed to meet the government's ten-year targets for child poverty reduction, and to address high child poverty rates affecting Māori and Pasifika children, disabled children, and children living with disabled adults (Royal Society Te Apārangi, 2021). The Families Package offers an important opportunity for new research. At the same time, continued efforts to reduce child poverty do not need to wait for that research. The imperative is well established (Expert Advisory Group on Solutions to Child Poverty, 2012; Boston and Chapple, 2014; Royal Society Te Apārangi, 2021), and evidence that increasing financial assistance will have positive effects across many areas of life for children and parents is already clear. Where further research can be of help is in building understanding of the nature and scale of effects in our context, and of the difference made by a particular reform.

1 The Welfare Expert Advisory Group (2019) provides an overview of the income support system as it was at the time the Families Package was introduced.

2 Parental tax credit recipients were typically families where one partner worked full-time and the other had n earnings, or had hours of work and duration of employment that were not sufficient for them to qualify for paid parental leave. It had not been available to recipients of a main benefit or student allowance, and could not be received if a parent received paid parental leave.

3 Data limitations meant we were unable to examine impacts on family or household incomes or estimate income gains on an equivalised income basis.

4 These estimates are slightly different from those reported in Ministry of Social Development, 2023a and 2023b because they include more complete data on self-employment income and income from Working for Families tax credits in the third year.

5 Disclaimer: These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI), which is carefully managed by Statistics New Zealand. For more information about the IDI please visit https://www.stats.govt.nz/integrated-data/. The results are based in part on tax data supplied by Inland Revenue to Statistics New Zealand under the Tax Administration Act 1994 for statistical purposes. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements. The views, opinions, findings and recommendations expressed in this report are those of the authors. They do not necessarily reflect the views of the Ministry of Social Development, or people involved in the peer review process. Any errors or omissions are our own.

6 Only approved researchers can access the data, and access is via a secure environment. All outputs must be aggregated, confidentialised and checked by Statistics New Zealand before release. For more information about the IDI, see https://www.stats.govt.nz/integrated-data/integrated-data-infrastructure.

7 Eligibility for paid parental leave is estimated based on pre-birth earnings and self-employment income.

8 See Wilson and McLeod, 2021 for further information on the derivation of these variables.

9 McLeod and Wilson (2022b) estimate eligibility and take-up rates for children born in the first 15 months of Best Start – between July 2018 and December 2019. An estimated 96.5% of these children had a family that was eligible for Best Start (families of the remainder were estimated to be ineligible on residence grounds). Best Start was taken up for an estimated 96.9% of the children in the eligible families.

10 Imputing the flow of self-employment income across the tax year means that income earned in the latter part of the tax year is likely to be mis-assigned to the earlier part of the tax year, as mothers returning to the labour market are likely to earn more as their child ages. This does not affect estimates of increased financial assistance income.

11 One challenge for future research focused on the Families Package is that there was considerable variation across groups in eligibility for different payments, in offsetting reductions in other payments, and in take-up responses. Examining the impact of the reform on incomes for particular cohorts included in any future research may be useful. Code developed for this study is available to other researchers for this purpose.

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Laura Johnstone and Jarrod Gilbert

The Experiences of the Managed: case management in the Aotearoa New Zealand prison system

Abstract

In 2011, the Department of Corrections/Ara Poutama Aotearoa (Corrections) began a series of initiatives aimed at reducing reoffending, including introducing case management. In 2016 Corrections stated that case management had led to improvements in four areas: the assessment of prisoner needs; prisoner motivation to complete activities; scheduling of programmes; and levels of reintegration support. Using in-depth qualitative interviews of seven men formerly in prison in Aotearoa New Zealand, this study explores the perceptions that the formerly imprisoned have of case management, and examines the four improvements identified by Corrections. While based on a small and unique sample group, the study provides interesting indicative insights into case management in the prisons of Aotearoa New Zealand.

Keywords case management, prisoner management, prisons, prisoner rehabilitation, sentence planning

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The introduction of case management to Aotearoa New Zealand's prisons in 2011 was part of a broader move to an offender-centric correctional philosophy, with a specific focus on end-to-end management of people in prison throughout their sentence (Ryan and Jones, 2016; State Services Commission, Treasury and Department of the Prime Minister and Cabinet, 2012; Thorby, 2013).[1] Case management, broadly, is a complex interpersonal relationship between a person in prison and the professionals responsible for their care (White and Graham, 2010), comprising a range of roles, including sentence planning, course scheduling, managing disciplinary issues, supporting engagement with therapeutic and educational programmes, and assisting the individual with transition from prison to the community on release (Thorby, 2013). This shift in approach from sentence planning – arguably an early model of case management – was well informed by international research and best practice models (for instance, see Godley et al., 2000; Leutwyler, Hubbard and Zahnd, 2017; Porporino and Robert, 1982; Sullivan, McDonald and Thomson, 2016).

This study examines the statements of Corrections that the introduction of case management has led to improvements in the assessment of prisoner needs, prisoner motivation to complete activities, scheduling of programmes, and levels of reintegration support (see Ryan and Jones, 2016).

Overview of case management in prison settings

There is a general lack of coherence in the literature regarding what case management means in prison settings (Partridge, 2004; White and Graham, 2010). Some argue that 'case management should be viewed as the hub of offender rehabilitation' (Purvis, Ward and Willis, 2011, p.5), while others view the role as an intermediary between interventions such as educational and therapeutic programmes (Maguire and Raynor, 2017). White and Graham (2010) argue that case management refers to the complex relationship between a person in prison and the professionals responsible for their care, with the aim of reducing reoffending. As noted above, other literature similarly suggests that the role of prison case management involves risk assessment, sentence planning, managing disciplinary issues, engaging the individual with relevant therapeutic, educational and vocational support, and assisting them in the transition from prison to the community on release (Thorby, 2013). Overall, best practice suggests that the case management relationship is not just about scheduling courses and sentence planning; it is a complex interpersonal relationship that can affect motivation to change and recidivism (Maguire and Raynor, 2017).

Case managers usually come from a range of backgrounds (White and Graham, 2010), and are expected to have various competencies, including empathy and motivational skills (Maguire and Raynor, 2017). The skill level of the case manager matters to case management's success: research has found that individuals who are managed by more highly skilled staff are less likely to be reconvicted (Dowden and Andrews, 2004). Dowden and Andrews' meta-analysis of 273 studies of correctional practice analysed the importance of five dimensions of practice: effective use of authority; appropriate modelling and reinforcement; problem solving; effective use of community resources; and the quality of interpersonal relationships. They found that the latter four dimensions of practice are all positively associated with significant reductions in reoffending rates. Research also shows that case managers should be of the view that people in prison have the capacity for change (Smith and Schweitzer, 2012). Seeing and engaging with the individual as a person is of key importance and contributes to the quality of the relationship; it seems that case management relationships require personal connection to have impact (Davies, 2006).

Robinson (2005) argues that case management, despite its name, is a human process, not a management process. If done well, it can be a therapeutic relationship that benefits the individual immensely (Dowden and Andrews, 2004). Purvis, Ward and Willis (2011) studied case management in Australian prisons and found that there is a tendency to underestimate the impact that a strong case management relationship can have. One of the most important factors in this relationship is trust. The development of trusting personal relationships between case managers and people in prison is a notoriously difficult undertaking, but is possible (Sullivan, McDonald and Thomson, 2016).

Ideally, people in prison need a consistent relationship with one case manager and interactions should happen face to face (Maguire and Raynor, 2017). Prisons can tend to operate on a 'pass-the-parcel' system, where the person is passed between case managers (Robinson, 2005). Case management should ideally be a continuous process, starting early in the person's sentence and continuing after release. A holistic approach should be undertaken by the case manager, paying attention to mental health needs, attitudes, housing needs and employment opportunities (Maguire and Raynor, 2017).

Clearly, best practice case management is an intensive process, which requires adequate funding to work optimally. High prison populations and stretched resources make achieving effective case management difficult.

Emergence of case management in Aotearoa New Zealand's prisons
Sentence planning, rehabilitation programmes and cultural responsiveness

Despite the issues faced, there is an evidence base supporting the overall efficacy of case management (Sullivan, McDonald

> Case managers are supposed to act as agents of change, motivating people to find alternative ways of coping and behaving to meet their needs.

and Thomson, 2016), and thus it was introduced in Aotearoa New Zealand's prisons in 2011. Case managers replaced the role of sentence planners when the new system was introduced. In the previous system, sentence planners would meet with people upon entering prison and conduct a living needs assessment and a reintegrative needs assessment, and assess whether they were deemed at high risk of reoffending by way of a pre-disposing criminogenic needs assessment. The sentence planner would then use the information gathered to create 'a tailor-made programme that aims to upskill the inmate and halt the cycle of offending', which was reviewed on a six-monthly basis (Department of Corrections, 2004, p.10). In the new system, part of the case manager's role has involved taking over the scheduling and planning of rehabilitative programmes. Case managers now lead the rehabilitation of people in prison, and are present in every prison nationwide (Symonds and

Beales, 2014). They exist within a multi-disciplinary collaborative approach, which includes clinical psychologists, kaumātua, prospective employers, prison officers, and the whānau and friends of the person in prison, as well as the individual themselves (Thorby, 2013).

The role of the case manager is to develop an offender plan[2] in collaboration with the person sentenced or remanded in custody, and to provide them with support and advice (Community Law, 2015; Ryan and Jones, 2016). Case managers are supposed to act as agents of change, motivating people to find alternative ways of coping and behaving to meet their needs. They can achieve this in various ways, including motivational interviewing and

In regard to the scheduling of programmes on the offender plan, case managers are responsible for sending offender plans to schedulers, who place people onto waiting lists for programmes. One challenge to the successful completion of programmes is that people in prison may perceive them as a 'tick-the-box' exercise, taking part primarily to increase their chances of getting parole. In 2013 it was found that Corrections was facing challenges in the efficient scheduling of programmes (Office of the Auditor-General, 2013). In 2016, the Office of the Auditor-General completed a follow-up report which found that Corrections was still in need of further improvements to scheduling programmes and that it lacked

women with Māori services, and supporting them to engage in tikanga Māori programmes which helped them to build a sense of agency and positive self-identity. The study also found that the participants benefited from a case management approach that was collaborative between staff and the individual receiving case management, in order that they feel valued and listened to. For this to be a success, the relationship needed to be based in a mutual trust enabled by adequate contact time, and staff needed to be cognisant of the unique needs of women in prison. Overall, Bevan identified five key principles for working with women: recognising difference; practising collaborative planning; designing rehabilitation pathways that work for women; and supporting staff to work with women.

As in all research on criminal justice in Aotearoa New Zealand, there are unique implications for Māori. Around half of the prison population identifies as Māori, while Māori make up only 15% of the total population (Gluckman, 2018; Sullivan, McDonald and Thomson, 2016). Case management approaches that are 'one-size-fits-all' are ineffective for Māori populations, and planning needs to be tailored to the specific cultural needs of the individual.

The Office of the Auditor-General (2013) found that people leaving prison appreciated having their case manager, prison officer and probation officer working collectively to support reintegration.

modelling prosocial behaviours. Importantly, case managers must make an assessment of readiness for change, and target interventions appropriately (Thorby, 2013).

While prison programmes are arguably important, the reality is that they are not especially effective. In Aotearoa New Zealand, overall effect sizes in regard to expected rates of reimprisonment of all rehabilitative intervention programmes inside prisons lie between a modest 3% and 8% (Johnston, 2017). The Special Treatment Unit Rehabilitation Programme (STURP) targets high-risk violent males and is considered successful by Corrections, despite Corrections' own data showing that it only reduces reoffending by between 4% and 13% (ibid.). This leaves case managers in a position of scheduling people for programmes which may not be very effective in reducing reoffending, but may well have other, less tangible, positive impacts.

scheduling software. In 2021, the chair of the New Zealand Parole Board, Sir Ron Young, and the chief ombudsman, Peter Boshier, also raised serious concerns about the scheduling of programmes too late in people's sentences (Cook, 2021; Whitten, 2021).

There is scant literature on prison case management in Aotearoa New Zealand. However, Corrections has investigated the use of case management for women in prison (Bevan, 2017). Bevan investigated the views and experiences of 35 women in prison, ten case managers and 13 Corrections officers. They found that working in a culturally sensitive way is a vital element of case management. Sometimes, this looked like the case manager simply asking Māori women where they were from and building a relationship based on conversations about places that were sacred and grounding to them. It also included connecting Māori

Reintegration
The transitionary period when a person is released from prison and begins to reintegrate into the community is crucial to successful rehabilitation (Smith and Schweitzer, 2012). For the majority of people being released from prison, this is a high-risk period for reoffence and reimprisonment (Huebner and Berg, 2011). This transitionary period is usually where things fall apart, due to inadequate connections between case management services inside prisons and external services (Maguire and Raynor, 2017). These issues are exacerbated by the reality that case managers are preoccupied with getting the person through their sentence, as opposed to preparing them to cope with the realities of life after prison (ibid.).

To manage these concerns, researchers have found that reintegration should be a part of case management; case management should not abruptly end on release

(Ricciardelli, 2018; Taxman, 2004). Reintegration should be incorporated into sentence planning, in order to give people the best chance of successful resettlement in their communities (Pasma et al., 2023).

In Aotearoa New Zealand, case managers are responsible for supporting people in prison to transition into the community. The best approaches to this tend to use a collaborative inter-agency perspective (Sullivan, McDonald and Thomson, 2016), partnering with community groups, non-governmental organisations, iwi and state agencies. The Office of the Auditor-General (2013) found that people leaving prison appreciated having their case manager, prison officer and probation officer working collectively to support reintegration. In 2016 it was found that the system remained in need of further collaboration and alignment between agencies to improve reintegration efficacy (Office of the Auditor-General, 2016). Maguire and Raynor (2017) argue that a handover model, which sees the person handed from case manager to probation officer or other service, is not ideal because it disrupts the case management relationship. Instead, they argue that maintaining continuity should be paramount and that a case manager should remain engaged post-release.

Four improvement areas identified by Corrections
The Department of Corrections has stated that the introduction of case management has led to improvements in four areas:
• the assessment of prisoner needs;
• prisoner motivation to complete activities;
• scheduling of programmes; and
• levels of reintegration support (see Ryan and Jones, 2016).
This study examined these four areas of stated improvements, alongside overall perceptions and experiences of case management in Aotearoa New Zealand's prisons.

Methodology
The research topic was developed in 2021 in conjunction with the Salisbury Street Foundation, whose staff identified that case management was in need of

investigation through their day-to-day engagement with their residents and their extensive experience working with people released from prison. It was through the Foundation that the sample of participants was found. The Foundation is a residential therapeutic community centre for men on parole, located in Christchurch. It is a charitable trust that has existed since 1979, and supports formerly imprisoned men to reintegrate into the community (Hough, 2003).

Ethical approval for the study was granted by the University of Canterbury's Human Research Ethics Committee in October 2021. Prior to formally interviewing participants, the interviewer attended an

informal dinner at the Foundation, to get used to the environment and allow potential participants to become more comfortable with her being in their space. The interviewer then ran an information meeting in November 2021 to introduce the research topic and answer any general questions potential participants had. At this meeting, information sheets and consent forms were distributed, and in the following days participants interested in taking part in the research informed a liaison person at the Foundation, who arranged interview times. Due to a combination of time pressure and a relatively small overall pool of potential participants (around 20 men live at the Foundation at any given time), seven participants were recruited. They were interviewed during November and December 2021.

Data was collected through qualitative in-depth audio-recorded interviewing of between 25 minutes and an hour for each participant. All of the seven participants

were male adults aged between 18 and 48 at the time of entering prison for their most recent sentence, sometime between 1996 and 2015. Four identified as Māori, one as European Māori, one as Cook Island Māori and one as Pākehā. Their time served inside prison on their most recent sentence varied from between six and a half years to 25 years. All were released in 2021. Two participants had indeterminate sentences of life imprisonment and preventive detention respectively.[3] All of the participants had committed serious violent and/or sexual crimes, such is the demographic of the Foundation's residents.

The data was analysed manually

> Any changes to case management should address the lack of timely access to rehabilitation programmes simultaneously. Otherwise, changing case management is likely to be ineffective.

through the use of thematic analysis. Thematic analysis is a method of working with qualitative data in order to identify, analyse and then report on patterns (themes) (Braun and Clarke, 2006). Patterns were identified by reading and rereading of the interview transcripts. They were then coded and organised manually.

All participants were released directly from Christchurch Men's Prison to the Salisbury Street Foundation on parole. The participants had been imprisoned at various other locations during their sentences.

Results
The results are discussed below in five sections. First is an overview of the participants' experience of case management. This is followed by four sections which address the four areas of improvement identified by Corrections: the assessment of prisoner needs; prisoner

motivation to complete activities; the scheduling of programmes; and the level of reintegration support.

Overview of the experience of case management for participants

Participants' perceptions of case management changed across their sentences. Overall, participants viewed case management positively by the end of their sentence. This generally seemed to be because of the increased time spent with their case manager, which was compelled by preparation for Parole Board hearings as they came closer to their parole eligibility dates. However, this positive experience was not present throughout the duration of sentences, with participants reporting having mixed views at the start of their sentence.

> ## On the whole, participants reported feeling that they were told what their plan would be, that it was already written and that what they had to say about it was not relevant.

Two of the participants reported not being assigned a case manager until between a year and four years into their sentence. Another two participants said they saw their case manager less than once a month, and another two reported seeing their case manager one or two times a year. The final participant reported that his experience could not be put down to a specific frequency. Those who did see a case manager in the first year or so of being in prison reported varied input in terms of time, ranging from between five to ten minutes to an hour or more per meeting.

As participants settled into the middle of their sentences, their case management experience also became more settled. Participants reported seeing case managers more frequently, between one to two times a year, and three to four times a year. One participant, who had a case manager for the first part of his sentence, reported that he had no case manager for around three years during the middle of his sentence.

While it is not known if there was no case manager assigned during this time, clearly the relationship was scant enough that the participant could not recall it. Another participant had an irregular experience, seeing his case manager on an as-needed basis throughout, which worked well for him. Again, the length of time spent with a case manager per meeting during the intermediate part of each participant's sentence varied, between five to ten minutes and an hour, with three participants seeing their case manager for about half an hour at a time.

All but one participant expressed a positive view of the last period of case management on release, when they were engaging with their case manager more regularly. It appears from these participants' experiences that Corrections may have been weighting the intensity of case management towards the end of their sentences. This may seem logical, given that people need support when they go to Parole Board hearings and approach release. However, participants expressed that they needed intensive case management at other times also. This reflects other literature, which emphasises the importance of continually building a quality relationship (Davies, 2006; Purvis, Ward and Willis, 2011; Sullivan, McDonald and Thomson, 2016). Overwhelmingly, participants also reported waiting until alarmingly close to their parole eligibility dates to be put onto programmes, with some waiting years. This issue has been raised recently by the chief ombudsman and the chair of the New Zealand Parole Board (Cook, 2021; Whitten, 2021).

Examining Corrections' statement one: the assessment of prisoner needs

As noted above, Corrections has stated that case management led to improvements in the assessment of prisoner needs (Ryan and Jones, 2016). The insights from this study indicate that these participants were pleased with the assessment of their educational needs, but they felt that their cultural needs were not well provided for. For this demographic, it appears that further improvements are needed in the way that case managers handle early engagement with people entering prison who may not be ready to engage with comprehensive assessment at the start of their sentences, as is the current process.

Participants were asked about their experiences with comprehensive assessment interviews. This interview occurs once someone has been sentenced (Department of Corrections, n.d.-a), and is the first engagement they have with their case manager inside prison that is directly aimed at assessing their needs. Two participants did not remember having an interview, while the remaining five did. Corrections notes that the interview is supposed to be a process that is done *with* the individual, not *for* them. For those participants who did remember having an interview, they did not feel part of the process. On the whole, participants reported feeling that they were told what their plan would be, that it was already written and that what they had to say about it was not relevant. One participant reported not understanding the process. This participant was one of the first people in Aotearoa New Zealand to experience case management, as he was inside prison when it was introduced:

> Oh yup the Offender Plan, the assessment would take place. However I didn't understand fuck all of it ... he [the case manager] was trying to explain it the best way he could to me as well ... but reality is ... I didn't even succeed at school and now we're doing that ...

Some participants spoke of not feeling ready to address their criminogenic needs at the time of their interview. Participants expressed that they were still processing their sentencing, the nature of their offending, and the impact this all had on their lives, their victim or victims, and their

wider whānau and community. Some participants found it difficult to adjust to being in prison and did not feel that they were in the right headspace yet to engage with sentence planning. Participants expressed a sense that case managers were part of a system that was against them, not for them, and this added to their lack of engagement. One participant found his interview more difficult because he could not culturally engage with his case manager, and they struggled to communicate due to language differences.

Participants were also asked about how their cultural needs were assessed and met by their case manager. On the whole, the participants felt that assessment of and responsiveness to their cultural needs was lacking. Some felt that the assessment of cultural needs was not catered for by case management. This was complicated by issues outside the case manager's control, such as particular cultural programmes and resources not being available at all prisons. This seemed particularly prevalent in South Island prisons, with participants reporting being told they would need to transfer to a North Island prison to access cultural programmes. This would mean giving up visits with whānau, which they were understandably not prepared to do:

I wanted to develop the Cook Island side of me … They [the case manager] said 'yeah you can, but you have to go to Auckland to do it'. I said 'fuck off man, the rest of my family are right here.' … I didn't get that. I didn't get that cultural help.

In comparison to the difficult experiences participants had in regards to their cultural needs, it appeared that their educational needs were generally well assessed and met by their case managers. Participants reported successfully completing NCEA qualifications, tertiary courses and apprenticeships.

The residents of the foundation are men who have been convicted of serious violent and/or sexual offences, with generally high needs. As a result, the participants all have complex personal backgrounds and criminal histories, and are likely to be in need of more intensive support than other people released from

prison. Some participants perceived that their case managers did not adequately understand or respond to their needs. Case management is only one facet of an intricate system, and cannot be expected to resolve the wide array of issues presented by individuals in prison deemed at high risk.

The insights indicate that these participants, perhaps because of their complex needs and long sentences, may not have been ready to engage in assessment of their needs at the start of their sentences. There is a need for case managers to be aware of each person's readiness to engage and the reasons behind any lack of engagement, and to reassess this as they progress through their sentence. The

insights here also indicate that there may be room for improvement in the assessment of cultural needs, and that case managers could be hamstrung by the limited availability of cultural programmes.

Examining Corrections' statement two: prisoner motivation to complete activities
Participants were interviewed about the impact their case manager had on their level of motivation to complete activities on their offender plan. The insights gathered indicate that there may be room for improvement in terms of the impact case managers have on prisoner motivation to complete activities.

Most participants expressed unclear or negative feelings as to whether their case manager motivated them to complete activities, such as rehabilitative programmes. It should be noted that developing motivation can be a difficult task, and particularly so when it comes to

individuals with long histories of antisocial behaviour. One participant reported that, for him, it was less about motivation and more about the risk of losing his prison job if he did not complete activities. Having a job in prison provided him with a sense of stability that he did not want to lose:

Um not so much motivate, told you this is what you have to do and you either accepted that or you didn't … I've always had a job in prison and so they held that job over your head. If you didn't do the programme, you'll lose your job.

However, participants appreciated receiving positive feedback and affirmation

On the whole, case managers were seen as instrumental in participants getting into the programmes they needed in order to achieve rehabilitation and to get approved for parole.

from their case managers. It appears that simple verbal acknowledgements of one's attempts at making change were impactful. Verbal validation from case managers has the potential to be a strong factor in a prisoner's level of motivation. International literature supports the use of positive affirmation in motivating change (Smith and Schweitzer, 2012).

The insights indicate that there may be room for improvement in regards to motivating people in prison to complete activities on their plan. However, it should be made clear that these participants may be more difficult to motivate than other individuals in prison, and that these findings may not be generalisable in that sense. Most participants were either dubious or did not feel that their case manager motivated them. This small and unique participant group may well be more difficult to motivate than others, given their relatively complex needs. They may also

have higher levels of distrust of the prison system in general, which could affect their drive to complete activities. However, it appears that simple things, such as affirmation and praise, may be a good place for case managers to start.

Examining Corrections' statement three: the scheduling of programmes

The case management process involves identifying programmes and courses that meet a person's rehabilitative and reintegrative needs. Those programmes and courses are then scheduled for people

Parole Board hearing, even though he would not have been eligible to be paroled without finishing the programme.

The findings of this study echo the criticisms of others. As noted above, the issue of major delays in accessing programmes was openly criticised in 2021 by the chair of the New Zealand Parole Board, Ron Young, in a letter to the corrections minister (Cook, 2021). He said that issues with resourcing meant that people were waiting years for rehabilitation programmes, which was having a flow-on effect of delaying their release because they

International research has found that although it is commonplace for timing of access to programmes to lean towards the end of a person's sentence (based on the idea that the skills learnt will be used upon release), there may be disadvantages in this approach. Clarke, Simmonds and Wydall's UK study of 62 people in prison, 33 correctional staff and five people formerly in prison found that this model acted to disadvantage motivated individuals who were not at or near parole eligibility dates, and they recommended that access to courses begin at mid-sentence, in order that people get time to learn skills and then practice them prior to release (Clarke, Simmonds and Wydall, 2004). A more recent study of 18,940 people (Papp, Wooldredge and Pompoco, 2021) found that, for several programmes, more time between completing a programme and being released corresponded with a lesser likelihood of returning to prison.

> **Having programmes scheduled so late in a person's sentence appeared to have an impact not only on parole and rehabilitation, but also on individual behaviour during the sentence and their ability to engage effectively in programmes once they eventually came around.**

to complete during their sentences. This section explores the participants' experiences of the scheduling of programmes, and the impact it had on their time in prison and their rehabilitative process. The indicative findings are that the scheduling of programmes was an issue for these participants.

On the whole, case managers were seen as instrumental in participants getting into the programmes they needed in order to achieve rehabilitation and to get approved for parole. Participants felt that their long sentences meant that they were not put onto rehabilitation courses until they were close to their parole eligibility dates, or the end of their sentence. This could mean waiting years before starting any programmes. For instance, one participant reported waiting eight years until he got into his first rehabilitative programme. He reported that his start date for another programme was scheduled for after his

could not get parole without showing they had addressed their offending. Also in 2021, the chief ombudsman, Peter Boshier, mirrored Young's concerns in the media and said that people were getting access to programmes too late in their sentences to create meaningful impact, and that this issue had worsened due to the Covid-19 pandemic (Whitten, 2021). In 2023 the ombudsman released a report commenting on repeated findings of his own investigations, and those of former ombudsmen, which noted the lack of meaningful activities for people in prison, including inadequate access to rehabilitation and reintegration programmes (Boshier, 2023). Boshier's report then noted that there had been some improvements in this regard in the last few years (since the time of the interviews for this study), but he considered more changes were needed for people on remand in particular.

Having programmes scheduled so late in a person's sentence appeared to have an impact not only on parole and rehabilitation, but also on individual behaviour during the sentence and their ability to engage effectively in programmes once they eventually came around. One participant showed considerable insight into how the delay in accessing programmes contributed to a lack of progress, and in fact worsened his behaviour:

> If you're trying to change someone … my opinion is change it from the beginning. Don't wait … By the time I became eligible for these programmes it was too late. I'd clocked up charges … I didn't have tools to deal with what I, what I accumulated over the years was embedded in me. I had no tools … I couldn't comprehend what the programme was trying to teach me.

As noted, these insights reflect the recent criticisms levelled at Corrections by Boshier and Young, and they indicate that there may be an issue within the system in the resourcing of programmes. Some participants found themselves waiting years to access rehabilitation programmes, and for participants in prison with complex needs, this created issues in their

rehabilitative progress. However, criticisms of case managers in this regard are unfairly placed, as it seems this is a wider resourcing issue.

Examining Corrections' statement four: the level of reintegration support
Corrections has identified that well-planned reintegration is a crucial part of successfully rehabilitating prisoners and supporting them to live crime-free lives in the long term (Ryan and Jones, 2016). The findings of this study indicate that the current case management process may not be meeting the level of reintegration support that this participant group needs, particularly because case management does not formally extend beyond a person's custodial sentence. For this group of participants, particular focus was placed on their transition to the Salisbury Street Foundation, given that they were all paroled there. Having served long sentences for serious violent and/or sexual crimes, these participants may have more complex reintegration journeys than the average.

Part of the process of reintegration involves organising where someone will live after prison, and for all participants this process led to an increase in contact with their case manager. Case managers provided reintegration support by connecting participants with services in the community. This primarily meant facilitation of the participants' transition to living at the Foundation, but also included engagement with other organisations, such as addiction and cultural services. This is an important part of reintegration: individuals convicted of more serious offences who engage with community services on release are more likely than those who do not to desist from crime (Maguire and Raynor, 2017).

One participant had a very good reintegration experience that he felt was well facilitated by his case manager. This particular case manager was assigned to him for about two years, which he found helpful as he was approaching release. Three participants spoke of going on day or overnight visits to the Foundation prior to being paroled there. This seemed to be a helpful part of the transition. Participants also spoke of how essential it felt that case managers and Foundation staff collaborated during the process.

Some felt that they were primarily being supported to reintegrate by other prison staff. For instance, one participant reported that a Corrections officer took the opportunity of the Covid-19 pandemic (and therefore less management around the prison) to help him start transitioning out to the Foundation by moving him to a self-care unit. For another participant, staff from a programme he was on recommended the Foundation for him. These situations are evidence of multi-disciplinary management of people in

prison, the type of collaborative approach that Corrections actively promotes (Thorby, 2013). There were unique complications for participants who had moved from prisons around the country for the purpose of being paroled to the Foundation from Christchurch Men's Prison. Fragmentation and disconnection between case managers at different prisons made the process feel unnecessarily long and frustrating for some.

None of the participants had any level of formal or planned interaction with their case manager once they left prison. The growing relationship between prisoner and case manager seems to end abruptly at the time of release, and prisoners are left with no sense of conclusion to the relationship. Participants expressed that this felt like a painful and sudden end:

> As soon as you walk out those doors, they don't want to know you …

This abrupt end to the relationship was true even for the two participants on indeterminate sentences, who remain

under the management of Corrections for life. Most participants did express a desire to see their case manager outside prison, even if it were just in the form of a final debrief meeting to thank them for the contribution they had made to their lives. One participant suggested that it would be helpful for case managers to come to the regular progress meetings participants have at the Foundation. Another participant on an indeterminate sentence did see his case manager informally when she was visiting the Foundation. He found

> **Most participants did express a desire to see their case manager outside prison, even if it were just in the form of a final debrief meeting to thank them for the contribution they had made to their lives.**

this to be a healing experience, and that it brought a sense of finality to the warm relationship they shared:

> I seen her one day … and it was really great too because I was on the outside now so we could hug and all that kind of thing.

The reintegrative period, when a person is released from prison and begins to re-enter the community, is a crucial time. This immediate post-release period is when the person released is at high risk of reoffence and reimprisonment (Huebner and Berg, 2011). Findings indicate that people leaving prison may feel that the case management relationship ends abruptly, in a way that could damage their reintegration. For the most part, participants expressed wanting the case management relationship to extend beyond release, mirroring the international literature. This provides an opportunity for Corrections to reimagine where the end of 'end-to-end' case management should be.

Discussion

The introduction of case management in Aotearoa New Zealand's prisons in 2011 was a step forward in the management of people in prison and reflects international best practice. This study explored the perceptions of seven formerly incarcerated men, and presents indicative insights into their experiences of case management.

The findings of the international literature and this study indicate that case managers need to meet people where they are in their readiness to engage. Taking the time to develop a quality, trusting and

> ... not all individuals will be ready to engage in the assessment and sentence planning process straight away. This may be more so for those who have received a long sentence and may be struggling to comprehend their behaviour and the impacts it has had.

warm relationship is paramount (Dowden and Andrews, 2004; Maguire and Raynor, 2017; Purvis, Ward and Willis, 2011; Sullivan, McDonald and Thomson, 2016; White and Graham, 2010). Case managers should be aware that not all individuals will be ready to engage in the assessment and sentence planning process straight away. This may be more so for those who have received a long sentence and may be struggling to comprehend their behaviour and the impacts it has had. It appears from this study that the early focus, particularly for people convicted of more serious offences, may be better placed on building the relationship, rather than jumping headfirst into assessments.

Ideally, the case management relationship would be enduring, and Corrections would actively avoid frequent changes in a prisoner's case manager. When changes must be made, carefully transitioning people between case managers may lessen the damage of breaking continuity. International studies

similarly found that people do not like discussing their issues with a series of strangers, and that people in prison, like all of us, trust people as opposed to processes (Maguire and Raynor, 2017). The experiences detailed in this study suggest that effective case management is a human relationship, not a process. If done well, case management can be a therapeutic experience that benefits the person in prison immensely (Dowden and Andrews, 2004).

The international literature indicates that an offender-centric approach is the best way of managing people in prison (Maguire and Raynor, 2017). The current thinking in the UK reflects a shift towards collaboration between people in prison and staff, in a way that places the individual at the centre of their rehabilitation. The efficacy of this approach has already been acknowledged by Corrections and is a part of the system (Ryan and Jones, 2016). The indicative insights from these participants suggest that prisoners want to have input into their case management process. For instance, participants expressed that their input was not an integral part of the comprehensive assessment process, which is usually the first interaction between a case manager and the person entering prison. This assessment sets the sentence planning process in place, so is extremely important to the entire sentence. Prisoner buy-in to their sentence plan is important, and one way to get this is by truly including them in the assessment. Further incorporating the perspectives of the prisoner into a genuinely personalised

offender plan may be an effective way to increase their chances at rehabilitation.

When it comes to *not* meeting the needs of people in prison, this may cause people to lose trust in their case manager. For the participants in this study, these gaps were usually outside the control of case managers: for instance, where someone wants to do a Māori focus course that is not available in their prison. The 2019–24 Correction's strategy, *Hōkai Rangi*, expressly commits to delivering greater outcomes for Māori prisoners (Department of Corrections, 2019). Assuming proper implementation, we should see improvements in access to cultural programmes in years to come.

Both case managers and people in prison alike are affected by the availability of not only cultural programmes, but programmes generally. Corrections accepts that 68% of people in prison have not even started any rehabilitative programmes at their first parole eligibility date (Cook, 2021). This means that many individuals are not provided with the opportunity to address their rehabilitative needs in a way that the Parole Board recognises, and can end up in prison for longer than may be necessary. Any changes to case management should address the lack of timely access to rehabilitation programmes simultaneously. Otherwise, changing case management is likely to be ineffective. For people convicted of more serious offending, lack of access to rehabilitative programmes is likely damaging, though the extent of this is unknown. Notwithstanding a lack of resources, open and honest communication from a case manager in such situations may assist in protecting the trust in the relationship.

The level of reintegration support that case managers provide to people going to residential programmes, such as the Salisbury Street Foundation, was satisfactory for this participant group. This may well be different for people who are released back into the community with less intensive post-release support. Nonetheless, the sudden end to the relationship on release is likely damaging; the extent to which this is the case is worth investigating. This abrupt end followed the time when people in this study and their case managers generally had the strongest relationship.

The international literature affirms that being moved from prison to community organisations in a pass-the-parcel method of case management is less than ideal (Robinson, 2005). There may be opportunities here for Corrections to consider expanding case management beyond release, particularly for those who have served long sentences and may be in need of more extensive reintegrative support. Doing so would also recognise the need for services to be joined-up (Maguire and Raynor, 2017), and for case management to truly be 'end-to-end', as Corrections suggests is best practice (Ryan and Jones, 2016). If Corrections moves forward with a more extended handover process in future, the literature suggests handovers should be done with care and in the form of multiple meetings between the individual, the case manager and the relevant third party (Maguire and Raynor, 2017). This would be an improvement on the current model, which sees people being released 'out the gate' with no further interaction with their case manager.

Finally, it should be acknowledged that case management does not occur within a vacuum; it occurs within a complex system that has limited resources and overlapping, moving parts. However, while the prison system here is complex, it also has inbuilt benefits. Our small population means that we have a smaller-scale correctional system, with fewer prisons, and it operates through only one jurisdiction (Office of the Auditor-General, 2013). This gives Corrections the opportunity to make widespread improvements to case management in a controlled way. Changes could also be tested in one prison, improved, and then rolled out across the remaining prisons in a short period of time. This would give Corrections the opportunity to refine approaches and evaluate changes as they are made.

Limitations and future research areas
First, the sample group was small (seven participants), due to the short time frame in which the research process needed to be conducted (around nine months across 2021 and early 2022) and the relatively small potential participant group. However, there is scholarship supporting the importance of achieving depth over breadth in research and aiming for saturation of themes over numbers of participants (Baker and Edwards, 2012).

This research focused solely on the experiences of men released from prison, and there may well be differences in the case management of women and gender-diverse groups. The sample group in this study are all individuals with significant criminal histories who have served time for serious violent and/or sexual crimes. Their sentences were all relatively long, and they likely have more complex needs than other groups. It should be clearly noted that this is a very unique sample group who have been convicted of very specific types of offences. The findings from this study are not generalisable to the prison population, but instead provide indicative insights and exploration of these participants' experiences of case management.

The length of the sentences served meant the participants sometimes struggled to remember specific details about their experiences and/or the time frames in which they had occurred. In addition, it should be noted that there was a subjective element to reporting and analysing themes, which is often the case in qualitative work as data is interpreted through the researcher's particular lens (Braun and Clarke, 2006)

This research is based only on the experiences of those subject to imprisonment, and did not take into account the views of Corrections staff. There was no way to check the veracity of statements made by the participants (for instance, the claims made by some that they were not assigned a case manager for a period of years). Research incorporating the views of case managers, and other Corrections staff, would likely fill in some of the gaps and provide explanation for some of the issues raised.

Conclusion
This study provides some indicative insights from the examination of four areas that Corrections states have improved due to the introduction of case management to Aotearoa New Zealand's prison system in 2011: the assessment of prisoner needs; prisoner motivation to complete activities; scheduling of programmes; and levels of reintegration support (Ryan and Jones, 2016). While this study is based on a small and unique sample group of seven men who were formerly imprisoned, it provides interesting insights into case management in Aotearoa New Zealand prisons. It indicates that case management is a complex interpersonal relationship occurring within an even more complex correctional system, marred by complicated resourcing issues. In line with international studies, it indicates that case management is not just about managing people, but about relating to them as people and supporting their needs. Case managers are uniquely placed to act as agents of change in that relationship, particularly when the environment around them is adequately resourced. Fine-tuning case management is another piece of the complex puzzle of correctional

> Fine-tuning case management is another piece of the complex puzzle of correctional practice that may contribute to reducing reoffending; and, given that, such fine-tuning should not be done in isolation but in concert with other desirable changes.

practice that may contribute to reducing reoffending; and, given that, such fine-tuning should not be done in isolation but in concert with other desirable changes.

and rehabilitative activities to address the prisoner's criminogenic and wider needs (Office of the Auditor-General, 2013). The plan takes into account factors including offending needs, behavioural issues, education and work goals, health and housing needs, and victim-related concerns (Department of Corrections, n.d.-a).

3 The sentences of life imprisonment and preventive detention are a particular subset of sentencing options and are indeterminate sentences. This means that while these people have a minimum non-parole period in prison and will likely be released at some point, they can be recalled to prison at any time (Department of Corrections, n.d.-b).

Acknowledgements

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Michael Macaulay

Whistling in the Dark? Is the Protected Disclosures Act 2022 a form of placebo policy?

Abstract

This article examines the development of the Protected Disclosures Act 2022, and evaluates the changes that it has made to previous legislation. It argues that it provides relatively few substantive improvements in the legal protections for disclosers and that even these are clouded by ambiguity. The article outlines alternative suggestions that were made throughout the passage of the Act and explores the extent to which it might be read as a placebo policy. It closes by looking at similar patterns of punch-pulling in other recent integrity initiatives.

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The Protected Disclosures (Protection of Whistleblowers) Act 2022 (the Protected Disclosures Act) was enacted on 1 July 2022, after many years in legislative development. The Act promised to make improvements to its predecessor (the Protected Disclosures Act 2000) and was initially backed in part by a major research project into whistleblowing in Australia and New Zealand. In reality, however, the resulting legislative changes are arguably cosmetic at best, and negligible at worst. Yet there was ample time and discursive space to create a more robust set of protections. Many major recommendations of the research project were jettisoned before public consultation had commenced. The majority of submissions to the select committee, all of which called for greater change and legislative protections, were ignored. At the eleventh hour, amendments to the bill proposed by the Green Party's Jan Logie to solidify obligations to actively support people reporting misconduct were rejected by the Labour government on grounds that, as will be shown, are somewhat dubious.

This article charts the development and passage of the Protected Disclosures Act and suggests that, potentially, what Aotearoa New Zealand received was a placebo policy; one that has the appearance of doing something when effectively it does very little (McConnell, 2020). Furthermore,

it will argue that similar patterns are evident in the last ten years where governments of all stripes have introduced legislation pertaining to integrity matters in regard to electoral funding, anti-bribery legislation, lobbying registers and other matters.

It is necessary and proper to declare an interest here. The author was the New Zealand lead for the research project which helped shape the initial consultation paper; gave both written and verbal submissions at the select committee stage; and helped redraft the amendments that were, ultimately, unsuccessful. This is not an exercise in axe-grinding, however, and will simply present an historical case study which charts the development of a piece of legislation over roughly a five-year time frame. It draws on a range of documents and secondary sources, and where first-hand sources are used it will draw on field notes and other recorded artefacts. Value judgements are not completely omitted, but will be made explicit as and when they occur.

Placebo policies

McConnell's concept of placebo policies is a deliberate attempt to extend Edelman's classic work on symbolic politics, which charted the extent to which governments shape public opinion to progress, block or justify different policy initiatives. McConnell argues:

> a placebo policy is a policy produced partially or significantly 'for show', and hence policy-making is *driven in part* by the desire to demonstrate that government is 'doing something' to tackle a tough policy problem. (McConnell, 2019, p.252)

Placebos are more likely to be used to tackle policy issues that emerge in a crisis, or which have full media and public attention, or simply as a response to highly 'wicked' problems. Placebos are designed to give the *appearance* of action, which not only reassures the public that something is being done, but also negates the need for governments to provide genuine solutions. McConnell further argues that placebos are more likely to be found when there is a 'policy trap' (McConnell, 2020, p.960), in

which governments have limited resources to deal with an issue where they are under pressure, and proposes five criteria by which observers can identify what he labels 'placebo tendencies'. These are: (1) the public visibility of a problem; (2) the complexity of an issue; (3) the degree of urgency around the issue; (4) expectations for government actions; and (5) the capacity to address the perceived problem (ibid., p.962).

Enacting placebo policies provides numerous benefits for governments. Placebos can enhance reputation and create performative advantage, enabling governments to take credit for solutions that have an ameliorating effect rather than directly addressing the issue, and also allowing them to be seen to be leading on that issue. Placebos also enable governments to set the agenda in the direction they wish, which may help them to control the risk assessment of that issue for the future.

The article turns, then, to the Protected Disclosures Act and will investigate whether it displays placebo policy tendencies.

The Protected Disclosures Act 2022

The Protected Disclosures (Protection of Whistleblowers) Act 2022 came into force on 1 July 2022. It had undergone a long, Covid-affected gestation, and was grounded in significant research evidence. It has not received significant media attention, although that is perhaps not unexpected. As is often the case, this will surely change once a major whistleblowing issue occurs and the Act is put to the test.

The Protected Disclosures Act was authored and shepherded through the legislative process by the Public Service Commission, and in a recent article (Mabbett and Nicholls, 2022, p.20) the commission set out the main features of the Act (see Box 1). This article will not go through each specific item in detail, but will instead make a few initial observations here.

The majority of these changes are relatively minor. Under the previous legislation (the Protected Disclosures Act 2000) disclosers have always been able to contact an appropriate authority, for example, so while there is an improvement

it is an imprecise one. The Protected Disclosures Act 2022, section 13 now gives those who receive a disclosure 20 days to acknowledge and process it. How this will be monitored is unclear and it at best represents a quantitative rather than a qualitative change. Furthermore, the range of appropriate authorities has not been altered. A discloser loses all protections by going to the media (traditional or digital), a state of affairs that is unaltered from the previous legislation.

By far the most significant change is the enhanced range of protections that public sector organisations need to have in place. Previously, the legislation was quite vague about internal processes, specifying only that:

(1) Every public sector organisation must have in operation appropriate internal procedures for receiving and dealing with information about serious wrongdoing in or by that organisation.

(2) The internal procedures must –
  (a) comply with the principles of natural justice; and
  (b) identify the persons in the organisation to whom a disclosure may be made; and
  (c) include reference to the effect of sections 8 to 10.

(3) Information about the existence of the internal procedures, and adequate information on how to use the procedures, must be published widely in the organisation and must be republished at regular intervals. (Protected Disclosures Act 2000, s.11)

Section 29 of the new Act elaborates on the new protections and specifies what particular processes must be in place, including:

• guidance on what a receiver should do (in accordance with section 13);
• protection of confidentiality of the discloser (in accordance with section 17);
• protection against employee retaliation (in accordance with section 21);
• protection against other forms of victimisation (in accordance with section 22);
• explanation that the receiver of a disclosure can pass it along to an appropriate authority (in accordance with section 16).

> ... one key rationale for the new legislation was to offer more clarity to disclosers who wished to come forward: 'disclosers were unclear about how to make a disclosure internally'

These changes are positive steps forward, but ambiguities remain. The obligations above are placed solely on public sector organisations; they do not apply to private or not-for-profit organisations, even though the Protected Disclosures Act is cross-sectoral in other respects. They are also all reactive, outlining what needs to happen in cases of a disclosure being made. More proactive processes and protections were identified by research evidence, and subsequently put forward in the suggested amendments. But these have been omitted and excluded.

Some of the rationale for change is rather cloudy. For example, one key rationale for the new legislation was to offer more clarity to disclosers who wished to come forward: 'disclosers were unclear about how to make a disclosure internally' (Mabbett and Nicholls, 2022, p.20). As can be seen above, however, section 11(2)(b) of the Protected Disclosures Act 2000 already made it a legal obligation for organisations to make clear the person to whom a disclosure could be made. If an agency had not informed employees who they could make a disclosure to, they were

already breaking the law. The 2022 Act does not alter that in any shape, way or form: having a clear pathway to disclosure was always central in existing legislation. The rationale offered underlines that if a person was unclear about how to make a disclosure internally, then they were in a workplace that was already in breach of the existing law.

Section 13 of Protected Disclosures Act 2022 outlines guidance on what should happen on receipt of a disclosure. As outlined a few paragraphs above, a person receiving a disclosure must, within 20 days: (a) acknowledge the report; (b) consider whether it warrants investigation; (c) check with the discloser to see if it has been made elsewhere (and with what outcome); (d) deal with the matter; and (e) inform the discloser what has happened. These steps are to be followed even if the 20-day time frame is unsustainable.

Crucially, however, none of this guidance is legally binding. Section 13 of Act clearly states:

> (3) This section is guidance only. It does not confer a legal right ... or impose a legal obligation on any person that is enforceable in a court of law.[1]

In other words, there is no legal obligation to commit to the processes outlined in the law. The extent to which this non-binding guidance will be enacted is difficult to assess.

Even at face value, then, there are concerns about the Protected Disclosures Act. Most of its new protections are small extensions of rights and obligations in previous legislation. Some of its new components only apply to certain sectors, whereas the legislation supposedly has universal coverage across all sectors. In considering, however, whether or not this means that Protected Disclosures Act is a policy placebo, a little more investigation is required.

Was there a policy trap? The genesis of the Protected Disclosures Act 2022

The Protected Disclosures Act 2022 began as a public consultation document issued by the Public Service Commission in 2018. Following this a bill was introduced in June 2020, and there was a subsequent two-year passage through Parliament (see Figure 1).

Figure 1: Timeline of the passage of the Protected Disclosures Act 2022[2]

In	1	SC	2	CH	3	RA
Bill Introduced 24/06/20	First Reading 30/06/20	Select Committee 29/03/21	Second Reading 09/11/21	Committee of Whole House 08/03/22	Third Reading 10/05/22	Royal Assent 13/05/22
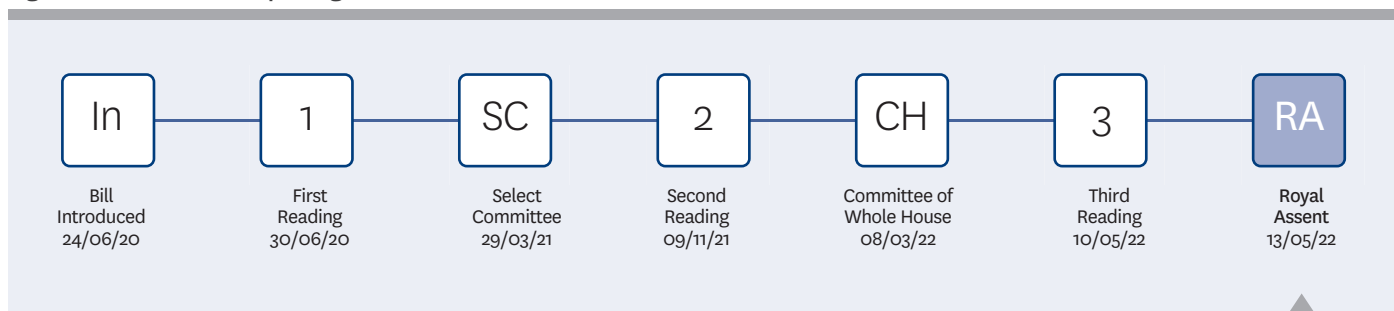
Preceding the initial public consultation were a number of key drivers, both reactive and proactive. Uppermost in the public's view was the case of Joanne Harrison, who was appointed general manager organisational development at the Ministry of Transport in 2013. Between 2013 and 2016, Harrison defrauded the ministry of hundreds of thousands of dollars. Following her arrest and conviction in 2017 it was discovered that Harrison was a serial fraudster and had used many aliases in numerous jurisdictions over the years. What complicated the case in the Ministry of Transport is that a number of people had come forward to express their concerns about Harrison's behaviour. Each of these people subsequently was made redundant in a ministry restructuring. An ensuing investigation found that the loss of employment was not linked to the restructuring, but nonetheless the disclosers received an undisclosed sum in compensation following the report.

The Harrison case highlighted the paucity of procedures surrounding key recruitment processes in the New Zealand public service, as well as the ambiguities in making a report of misconduct. The Public Service Commission took this seriously and issued new 'Speaking Up' standards, which have more recently been updated in the document 'Acting in the spirit of service: speaking up' (Public Service Commission, 2022), and there is no doubt these were a welcome and constructive development, but they only applied to the public sector, and, obviously, did not have the same status as legal protection.

All of which indicates that there are grounds for thinking that the circumstances surrounding the creation of Protected Disclosures Act corresponded to one of McConnell's policy traps, albeit perhaps a moderate rather than a strong one.

What is also interesting, and perhaps less widely known, is that throughout 2015–18 the Public Service Commission and New Zealand ombudsman were both official partners in the largest research project ever undertaken into whistleblowing. The research, titled Whistling While They Work 2, was led by Griffith University in Queensland and was the first of its kind to look across sectors (i.e., public, private and not-for-profit), including central and local government, and conduct its research across both Australia and New Zealand. Most importantly, it was designed and conducted with 23 organisations across both jurisdictions, and its intent was to create meaningful change, including legislative improvements. Conducted in different stages, its final survey reached nearly 18,000 respondents.

In short, the project provided the Public Service Commission with probably the broadest and deepest evidence base for reforms on whistleblowing that has, to date, ever been established. Phase one of the project, assessed the strength of current disclosure practices and policies and found that Aotearoa lagged behind its Australian counterparts:

> New Zealand public agencies reported processes that on average were weaker (at 5.51) than recorded for all Australian public sector jurisdictions other than Northern Territory agencies and Tasmanian local governments. (Brown and Lawrence, 2017, p.16)

More importantly, there was plenty of evidence to show what really works in organisations: organisations that conducted full risk assessments on misconduct reports were shown to create more constructive outcomes for both disclosers and the organisations themselves. The research project ultimately made 29 specific recommendations, across five different areas (three of which were geared towards internal reforms, the final two directed towards policymakers). These included, perhaps inevitably, a recommendation for legislative reform.

Government responses

From the outset it was clear that the Protected Disclosures Act was not going to place much stock in the research in which its own agencies had partnered. This could be seen symbolically as well: during the passage of the bill the Public Service Commission website had one brief reference to the project, which was immediately removed following the Act's assent. Whereas the research proposed the introduction of new independent agencies to oversee protected disclosures (although there was no recommendation as to exactly what their status would be in each jurisdiction), this was not given as an option for discussion during consultation. Likewise, the research found that bullying and harassment are by far the most prevalent forms of misconduct (witnessed, experienced and reported) in the workplace. This is not a new finding, of course, and only reinforces decades of research that has found the same problem. Yet bullying and harassment were not part of the remit for 'serious wrongdoing' as defined in Protected Disclosures Act. Numerous submissions to select committee hearings fought for these behaviours to be covered, all to no avail. Bullying and harassment remain in the realm of employment law. Select committee hearings were quite brief, held online over a couple of days, and led to no significant amendments or changes, despite many individuals and organisations expressing concerns about

the bill's lack of ambition, especially in the narrowness of the definition of serious wrongdoing.

Perhaps the most significant attempt to amend the bill was a last-minute supplementary order paper authored by Jan Logie, who was a member of the select committee, which had already put forward its recommendations. The supplementary order paper was co-written by the author of this article and the Public Service Association and drew heavily on the findings of the original research.[3] It sought to enhance clauses on non-retaliation to also include a more proactive obligation for organisations to actively support disclosers. This obligation would go beyond the guidance in section 13 and elsewhere and sought to establish proper risk assessments to be conducted, and for an independent support person to be made available. Such provisions have been shown to work and provide positive outcomes in numerous organisations across Australasia.

The amendment was rejected by the then minister for the public service, Chris Hipkins:

In terms of the issues that Jan Logie raised, one of the things that I found – as we went through the policy development for this bill – to be one of the more challenging things is: considering how the bill might be applied in the case of quite small entities compared to large Government departments. We often think about protected disclosures in the form of, you know, big Government entities with lots of resources and lots of ability to do things, and if someone makes a disclosure, yep, it's no problem to provide extra support. But we also have to consider that this legislation includes some quite small NGOs, for example, where they're not necessarily going to always be able to do the sorts of things that the member has outlined. (Hipkins, 2022b)

The argument here is an old one and one we will see again very soon, that such a provision would burden the little person and the small organisation. But this did not need to be the case at all. As has been shown, certain aspects of the Protected

> In the last ten years or so, whenever governments of any stripe have sought to enact legislative and policy change to improve public and political integrity, they have inevitably shied away from meaningful reforms.

Disclosures Act only apply to public sector organisations. There was no reason why an obligation to actively support could not have been similarly applied. Or, perhaps, a clause specifying that the obligation would be applied to an organisation of a certain size. As it stands, however, there is still no legal requirement for any agency to actively support anybody coming forward, a situation that one would have hoped the new legislation would address.

The most important piece of evidence that the Protected Disclosures Act 2022 is potentially a policy placebo, however, comes from the same debate, in which Hipkins explicitly admitted that the Act is not at all thorough:

If we rewind back to when this particular process started, we could have taken the attitude of saying 'Let's do everything. Let's do it all thoroughly', but it would have taken longer … Our capacity to do all of that work all at

once is not unlimited. We do have to make some trade-offs and choices and I did – you know, I'll be completely frank – make the decision and make the choice that we should try and progress some of the things that might make the Act more accessible and more usable and more used more quickly and then, of course, continue the work on some of those bigger and more complex challenges. (Hipkins, 2022a)

Obviously, all legislation requires trade-offs and compromises. But, in Hipkins' words, if we rewind back we see that the government had the fullest possible evidence base; indeed, the government was in a position of absolute privilege in terms of available research and ready-made suggestions for improvement. So, one of the choices was to reject that evidence. Throughout the passage of legislation there were further repeated calls for a more serious and rigorous set of protections. So another choice was to not listen to those either. And the final choice was to enact a piece of legislation that the legislators' themselves acknowledged was underpowered.

Is Protected Disclosures Act 2022 a policy placebo?

Using the criteria identified at the outset, it is fair to suggest that, if not an outright placebo, the Protected Disclosures Act exhibits significant placebo tendencies.

Protected disclosures had high visibility following the high-profile nature of the Harrison case and the knock-on effects of the inquiry. Complexity, yes; it is certainly a complex set of issues which one piece of legislation cannot fully resolve. Misconduct is an issue of organisational culture and leadership, as well as individual psychology and ethical standpoints. And, to be fair, nobody has suggested that the Protected Disclosures Act can do all of this. Yet it is fair to say that the changes that have been touted are very weak and, in some cases, are not even legally binding.

The urgency to act was not high, and indeed it took several years, but, crucially, the government argued the opposite. As Chris Hipkins' own words show, he believed there was a pressing need to act and therefore rush through a law that he

acknowledged was not particularly rigorous. The expectations for government actions were demonstrably higher than were met by the new legislation, as evidenced in select committee submissions. And again, to look back at the final parliamentary discussions quoted in this article, the government argued that it had such a limited capacity to act that essentially the Protected Disclosures Act is a maximin version of what might have been. I suggest that these claims exhibit strong placebo tendencies as defined by McConnell. The rush to action masks a reality of long gestation. The suggestion of limited capacity and a best-we-can-do attitude belies the depth and rigour of the government's own evidence base.

Taken on its own terms, the outcomes from this legislative process are disappointing. While some commentators would doubtless just put it down to the restrictions of realpolitik, there is clearly an argument that the Protected Disclosures Act 2022 is essentially a placebo, and by the government's own admission. Taken alongside other recent developments in integrity and anti-corruption measures, however, disappointment turns to genuine concern. Even if we ignore the concept of a policy placebo for a moment, there is an apparent historical pattern evident here. In the last ten years or so, whenever governments of any stripe have sought to enact legislative and policy change to improve public and political integrity, they have inevitably shied away from meaningful reforms.

Perhaps the most obvious example was in the amendments to legislation around bribery and corruption in 2015, which sought to bring New Zealand in line with its obligations under the United Nations Convention Against Corruption (UNCAC) and finally ratify the treaty. The amendments, however, still enabled bribery to be legal under certain circumstances. Even now it is permitted to bribe an overseas official (Crimes Act, s.105C(2E) (3)) through facilitation payments, which are expressly forbidden under UNCAC. The rationale is that it is wiser to take a more ground-up approach and try to encourage the eradication of such payments (Ministry of Justice, 2016). Nobody would suggest that this is a sensible approach, but in essence it meant changes

> Anti-bribery legislation still enables bribery; in designating every citizen a potential lobbyist, actual commercial lobbyists remain off the transparency grid, and loopholes for anonymous party donations abound.

to the law were enacted ostensibly to ratify UNCAC while actively working against UNCAC's conventions. This is almost a definition of a policy placebo (Macaulay and Gregory, 2016).

Concerns around political party funding are too numerous and too ingrained to be dealt with properly here. It is important to note, however, that a raft of commentators have fully documented the sheer number of loopholes that successive attempts at regulating party financing have maintained, and sometimes created. As Marriot and Rashbrooke argue in their magisterial report: 'It is as if the country had constructed an elaborate defensive wall, but left open a back door through which money could enter relatively unencumbered' (Marriot and Rashbrooke, 2022, p.8).

The Lobbying Disclosure Bill provides another example, if not of placebo policies, then certainly of political rug-pulling. After initially gaining cross-party support and passing its first reading, the bill was rejected by the Government

Administration Committee and was not recommended to continue. Two main reasons were cited for this. The first was the belief that New Zealand does not have the same problems with lobbying as exist worldwide. The debate during the first reading often brought up New Zealand's ranking in Transparency International's Corruption Perceptions Index and used this to argue that while examining the role of lobbyists was a useful and important task, New Zealand did not have a problem of corruption. Second, and eerily close to Hipkins' rationale for the Protected Disclosures Act, it was argued that mandating lobbyists to be registered would discourage ordinary citizens from talking to their MP. Submissions on the bill, including from unions and businesses, spoke about the 'chilling effect' legislation might have if 'ordinary citizens' were caught up and labelled as 'lobbyists' (Gluck and Macaulay, 2017). Interestingly, of course, there was never any need to label all citizens as potential lobbyists. The register simply needed to address the issues of commercial lobbyists, but the prior argument stuck and the Bill collapsed. Yet again, in supposedly trying to protect the little person, the major players all got plenty of space in which to remain hidden.

Conclusion

Let me stress that while this article clearly expresses disappointment in Protected Disclosures Act, it does not wish to denigrate the people who worked on it, all of whom doubtless did so with the best intentions possible. But, to quote an old saying, one should never critique a person's intentions, but one can critique their judgement. The evidence presented here shows that in the case of the Protected Disclosures Act 2022, judgements have gone beyond the art of compromise. The findings of the government's own research were ignored, if not outright rejected; the time frame for legislative change was demonstrably much longer than was suggested in parliamentary debate; and the arguments against the requested amendments were specious. Perhaps more importantly, the government fully admitted that the Act was not what it should be.

Successive politicians, and many commentators, continue to trumpet the high trust, high integrity status of Aotearoa New Zealand, and of course there are very positive developments as well that can be identified. The Office of the Auditor-General, for example, has recently published its public integrity strategy (Office of the Auditor-General, 2022) and work is already underway to help improve and extend that work. More generally, trust in the public service remains high, which is something to be cheered.

The evidence shows, however, that in terms of broader judgement New Zealand governments of all stripes have consistently followed a similar pattern when it comes to issues of integrity. Anti-bribery legislation still enables bribery; in designating every citizen a potential lobbyist, actual commercial lobbyists remain off the transparency grid, and loopholes for anonymous party donations abound. The question is not only why, because it is important to note that this has been the case no matter what government has been in place, but also how does it affect what we really think of ourselves? To speculate on the first question may, alas, end up in a rabbit hole of conspiracy thinking. The second question has perhaps a clearer answer. All the cases above may help us feel better because things are ostensibly being done, despite doing very little. Which is, of course, the very definition of a placebo. And ultimately, placebos do not actually cure any genuine ills.

1 With exceptions to the entitlements under sections 14, 32, and 33.
2 https://www.parliament.nz/en/pb/bills-and-laws/bills-proposed-laws/document/BILL_99238/protected-disclosures-protection-of-whistleblowers-bill.
3 https://www.legislation.govt.nz/bill/government/2020/0294/latest/versions.aspx.

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2023 SIR FRANK HOLMES MEMORIAL LECTURE IN POLICY STUDIES

INDIGENOUS FRAMINGS AND COLONIAL COSMOLOGIES: MEN AND WOMEN, FORESTS, AND TE TIRITI O WAITANGI

Dame Anne Salmond

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CAPITAL THINKING. GLOBALLY MINDED.
MAI I TE IHO KI TE PAE

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Funding Primary Care
for Better Outcomes

Abstract

This article reviews a recent report advocating transformational change in the funding and recruitment of staff for Aotearoa New Zealand's primary care services, including taking a social investment approach to the funding of primary care. The article develops these arguments and discusses new accountability frameworks for primary care delivery, including financial incentives for improving treatment of chronic conditions and collaborative approaches to community-led initiatives to promote preventive healthcare, drawing on a wide range of literature, including mātauranga Māori.

Keywords social investment, financial incentives, preventive primary care

A recent report from the New Zealand Initiative (Gorman and Horn, 2023) makes some wide-ranging comments about how to improve the performance of primary care with respect to managing and reducing the burden of chronic disease on both patients and their carers and our general practitioners. It rightly advocates a once-in-a-generation paradigm shift in how we recruit and support general practitioners, who are on the front line of diagnosis, treatment and referral of patients in our national health system. This is indeed part of the story of how we might develop responsive healthcare services to achieve better health outcomes for New Zealanders, but there are many factors which need to be considered as we evaluate this situation.

The report identifies funding frameworks for primary care as key to improved performance by primary care practitioners and makes many claims about the efficacy of our current primary care funding system. In particular, it critiques capitation as non-accountable, while acknowledging that a component of capitation is necessary in the funding framework for general practice. The dilemma of how to best fund general practice is as old as our health system, and nearly derailed the introduction of that system in 1938 when general practitioners throughout New Zealand successfully rebelled against the Labour government's goal of making their services free at point of care to all New Zealanders. The New Zealand Initiative report proposes some alternatives to the current mix of fee for service, subsidies and capitation payments, which are well founded. The report also recommends taking a social investment approach to funding of healthcare and this holds much promise.

Aotearoa New Zealand is a world leader in the application of a form of social investment in a wide range of social and public policy areas. The New Zealand Initiative rightly identifies the Accident Compensation Corporation (ACC) as the progenitor of this approach in the management of the treatment and rehabilitation of accidentally injured New Zealanders, which has a framework for calculation and management of forward liability for every claim as its funding

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model. Expanded for use in a number of government departments, including child welfare and welfare benefit management, the social investment approach is now supported by a dedicated Social Wellbeing Agency, which manages the integrated data infrastructure necessary for the analysis of statistics and the targeting of investments which underpin such an approach. Boston and Gill (2017) chart the evolution of the social investment approach in Aotearoa New Zealand as it successfully navigated a change of government and resolved some disquiet about its approaches and use of data to solve public policy problems.

Goijaerts, van der Zwan and Bussemaker (2023) consider the impact of social investment approaches in preventive

extended to include health prevention programmes, especially for children. The flow function could be strengthened with the understanding that health is an essential life-course transition, determining when people potentially exit and re-enter the labour market. The buffer function is crucial in a health perspective on the social investment framework, since social protection in itself is an investment in a healthy population and should thus no longer be understood exclusively as 'old' social spending. (Goijaerts, van der Zwan and Bussemaker, 2023, p.841)

If we look at this issue through the lens of a particular condition, diabetes, which

the process of implementing the current health reforms, the general practice profession has claimed to be under-consulted, despite the centrality of community- and home-based services to the new business model for health delivery. It is vital for this key group of stakeholders to be actively engaged in the development of new initiatives to support general practice and to encourage greater confidence in the general practice community about a well-funded future for their profession.

Part of the problem relates to the structural arrangements for relationships between the state and the general practice community. To present an alternative scenario, the relationship between the state and the general practice community in England is very close: there are annual negotiations on behalf of all general practitioners, conducted by their union, the British Medical Association, with the government setting wide-ranging funding parameters covering pay and incentives for particular quality outcomes, staffing type and remuneration, equipment and premises provision, and pensions. In Aotearoa New Zealand there is no single union for general practitioners, and thus no framework for the development of a unified and trust-based relationship such as exists in England. The current contract for general practice services in England is based on multi-year funding at a generous level, and includes an imaginative set of strategies to offset general practitioner staffing shortages through the recruitment of pharmacists, physiotherapists, practitioners to support take-up of social and lifestyle programmes, and paramedics to offer services in place of general practitioners wherever possible.

> In short, Aotearoa New Zealand has many elements of a nuanced response to the funding and delivery of general practitioner services already in place and which can be leveraged to target chronic conditions and the communities they ravage through the use of established public policy approaches.

healthcare and are unequivocal in their championing of the utilisation of social epidemiology in support of the goals of the welfare state to maintain a healthy and productive workforce, advocating that we study health not as an outcome of the healthcare sector but of the welfare state as a whole. They argue that the social investment framework facilitates these endeavours and see health not just as an outcome of specific policies, but rather as input for a sustainable welfare state:

By integrating health into the social investment framework, we have shown how the stock, flow and buffer functions could be understood, when including health. The stock function could be

presents a great burden of disease in Aotearoa New Zealand not only to the patient and their whānau, but to the healthcare sector and our economy, then we can see that in other similar jurisdictions, the funding of general practitioners affects the way that these chronic conditions are managed. Key to this is the development of 'a more constructive relationship with general practitioners [which seeks] to resolve the problem of access' (Smith, 2021).

Unfortunately, Aotearoa New Zealand lacks a collaborative relationship between health policymakers and the general practice profession. This reflects a history of mutual disengagement and suspicion dating back to the genesis of our national health system and the struggle over how to pay doctors. In

Taking a social investment approach to management of chronic conditions within primary care services immediately animates the business case for unlocking the extra spending necessary to fulfil some of the conditions said to be necessary for a rejuvenated general practice sector in Aotearoa New Zealand – expenditure to train more doctors, improved working conditions to retain existing doctors, nurses, and other allied health professionals who are engaged in the delivery of preventive healthcare and other services, reduction or elimination of co-payments paid by most patients to attend

general practice consultations, and investment in new forms of data-based and digital aids to healthcare delivery.

Critical to the implementation of such an approach would be the development of a shared vision and long-term strategic plan to address the current workforce, access and funding challenges. In England this was resolved with the decision to implement a five-year funding framework, supplanting annual funding allocations. This resulted in the development, jointly between the general practice profession and NHS England, of a Five Year Forward View (NHS England, 2014). The mix of funding certainty and clear negotiated targets for general practice performance appealed to politicians and the profession alike, and has provided a well-defined road map for annual contract negotiations for the last eight years.

If such a process were to be followed in Aotearoa New Zealand, some of this new funding could be subject to meeting new accountability targets. As a result of the close working relationship between the state and general practitioners in England, the two parties have been able to negotiate targets for best practice treatment of chronic conditions such as diabetes, and reward general practitioner compliance with these standards through payment of financial incentives to the practice. The English Quality and Outcomes Framework for incentivising best practice care has been in place since 2004, and was recently subject to a comprehensive review which engaged general practitioners in deciding its future. Its value was upheld and it continues to reward preventive care and quality management of chronic conditions (NHS England, 2018). New Zealand introduced a smaller scheme in 2007, with less constructive discussions with general practitioners about its design, but abandoned it in 2017 (Smith, 2018). There is an opportunity to reconsider whether such initiatives could focus attention and effort on the management of the debilitating conditions which consume so much of general practitioners' time.

A key element in meeting the challenge of chronic health conditions is their disproportionate incidence in communities of poorer citizens with reduced access to and confidence in mainstream healthcare services. Bridging this delivery gap is crucial to improved preventive healthcare. A major task for Te Aka Whai Ora (the Māori Health Authority), for instance, is to explore the commissioning of culturally appropriate and accessible services for such Māori communities. In this regard, Durie sets out a framework for the delivery of public health services which is grounded in mātauranga Māori (Durie, 1999) and which enlists Māori community leaders in the design and promotion of preventive healthcare strategies in their own local areas. Collaboration with initiatives such as Whānau Ora would be a key element of such an approach. This service, implemented in 2010, is designed by Māori to assist Māori to navigate through complex mainstream services, achieving goals set by the whole whānau together with their ill member rather than health professionals (Smith et al., 2019). In this regard, it would be an appropriate role for the localities within the new health system to facilitate such service development. By building relationships between communities with particular needs and their leaders, the primary care providers delivering services in those regions, and national funders of these services, new programmes which reflect local needs, resources and the aspirations of each community can be implemented.

In short, Aotearoa New Zealand has many elements of a nuanced response to the funding and delivery of general practitioner services already in place and which can be leveraged to target chronic conditions and the communities they ravage through the use of established public policy approaches. Such a response requires a mix of funding mechanisms, including capitation, fee for service, and, it can be argued, incentives for best practice which, if funded on a social investment model and negotiated carefully between the general practice profession and Te Whatu Ora (Health New Zealand), might transform the lives of both patients and providers within primary care.

The New Zealand Initiative is to be commended on its timely, wide-ranging and critical analysis of a pressing health policy issue and has set the scene for a credible debate between the general practice profession and its funders. Much depends upon the forging of a new and collaborative relationship between the profession and its funders. Only then will it be possible to design and implement new modes of funding and delivery which can secure the widespread buy-in of general practitioners, other health professionals, patients and their whānau.

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Edith Bretherton, Regine Morgenstern
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Managing Active Fault Surface Rupture Risk
through Land Use Planning: barriers and opportunities

Abstract

This article reflects on the management of active fault surface rupture hazard after the Canterbury and Kaikōura earthquakes. To understand mitigation barriers, interviews were conducted with planners and natural hazard risk specialists in selected districts with active faults, but without land use provisions. The interviews revealed issues with the interpretation and implementation of the Ministry for the Environment's Active Fault Guidelines, *Planning for Development of Land on or Close to Active Faults: a guideline to assist resource management planners in New Zealand*. The purpose and intended use of the New Zealand Active Faults Database (NZAFD) is also explored.

Keywords land use planning, active fault, surface rupture, natural hazard, guidance

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In recent years, Aotearoa New Zealand has been rocked, literally and figuratively, by large earthquakes near Christchurch and Kaikōura. Lives were lost, property and infrastructure were damaged, and the physical environment was substantially altered. Over a decade later, recovery from these events continues. In the aftermath, the Resource Management Act 1991 (RMA) was amended, elevating natural hazards to a 'matter of national importance' requiring 'the management of significant risks from natural hazards' (s6(h)). Resource management has been further refined through the Natural and Built Environment Act 2023, requiring as a 'system outcome' that the 'risks arising from natural hazards and the effects of climate change are reduced' (s6(4)).

This article explores the New Zealand Active Faults Database (NZAFD), a database of active faults compiled and hosted by GNS Science, and barriers to its use in land use planning. The principal issues identified are:

Figure 1: The Natural Hazards Statutory Framework from the draft GNS Science Landslide Guidelines
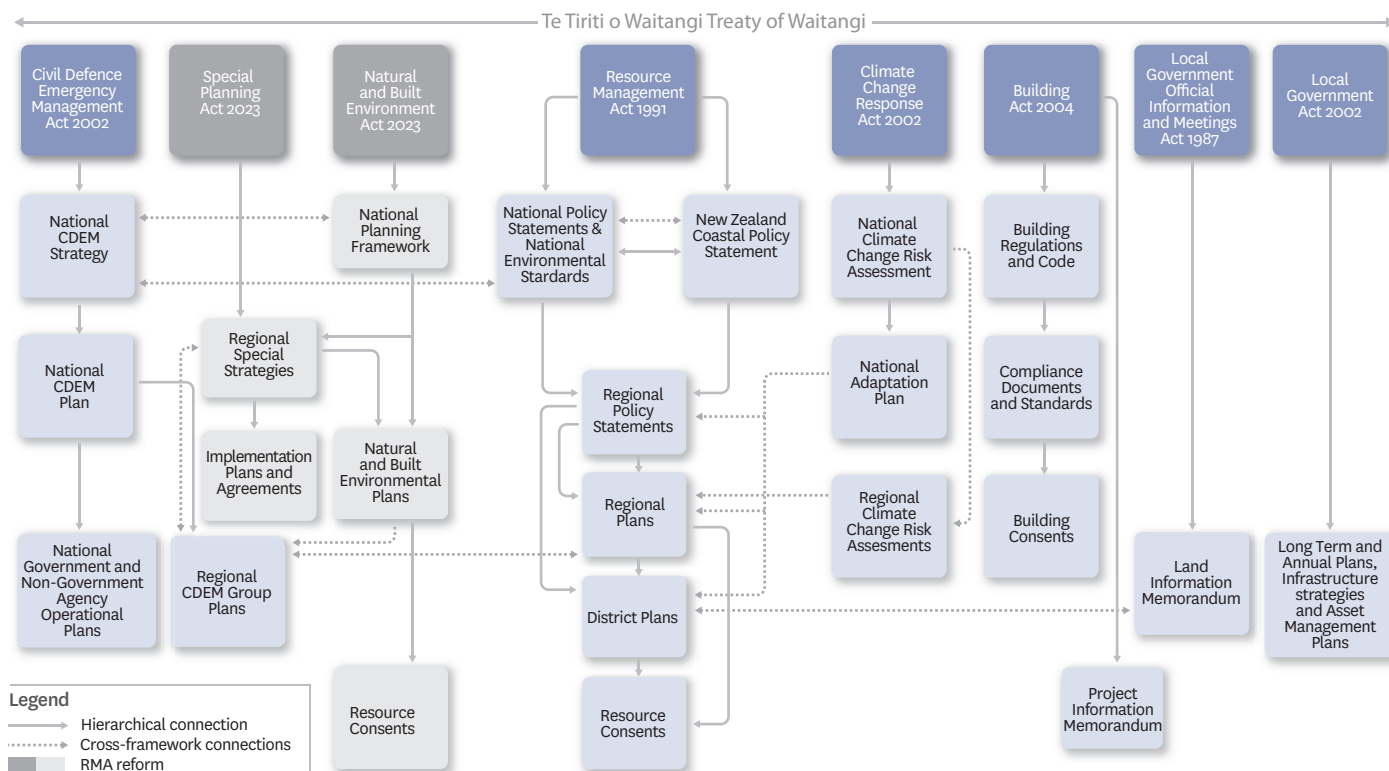
Notes: · The Natural Hazards Insurance Act 2023 has not yet been incorporated into this diagram.
· Planning documents recognised by an iwi authority, non-statutory guidance and hazard management strategies are also used by Councils when preparing Resource Management plans.
· The Local Government Official Information and Meeting Act was updated in 2023 to include further direction on LIM details and information sharing.

Source: GNS Science (n.d.)

- the usability of the spatial scale of the publicly available data;
- identification of priority areas; and
- incorporation of non-GNS Science data.

Issues with the Ministry for the Environment's 2003 Active Fault Guidelines (MAFG) were also identified alongside initial interpretation of the NZAFD for plan development. These are:

- the use, appropriateness and alignment of average recurrence intervals and the way in which these are managed for active faults relative to other natural hazards;
- the level of uncertainty for some fault complexity classes and its potential impact on the resource consent activity status: these are both barriers to the effective use of the MAFG for many authorities interviewed;
- that the guidelines are now two decades old and arguably no longer current, as they no longer reflect planning practice; and
- that the Natural and Built Environment Act, the Spatial Planning Act and the draft National Policy Statement for

Natural Hazard Decisions further outdate the guidelines.

Legislative context

The legislative context of natural hazards has previously been explored in articles including Glavovic, Saunders and Becker (2010), Saunders et al. (2007, 2015), Saunders and Beban (2012) and Saunders and Kilvington (2016) and is shown in Figure 1. The MAFG do not have statutory weight but are a tool in natural hazard risk management (alongside other hazard management strategies). The authors of the guidelines state:

We hope that using these guidelines will help to avoid or mitigate the risks associated with building on or close to active faults. Different planning approaches are appropriate in different areas – councils can establish appropriate policies and criteria which are more or less restrictive than those represented here if necessary. (Kerr et al., 2003, p.1)

The MAFG set out a risk-based approach to managing risk to life, property

and environment, as well as post-event recovery. They do not direct councils to use the NZAFD, but it is used in many regions.

Active faults as natural hazards

Most earthquakes are generated when one side of a geological fault moves relative to the other,[1] in response to a build-up of stress and/or strain. When earthquakes are large enough (generally $M_w > 6.5$) and have an epicentre close to the earth's surface (i.e., within 15 km) this can cause a natural hazard known as surface fault rupture. This co-seismic tearing of the ground surface can result in a hazard to life safety through the impact on the natural and built environment.

Understanding of where surface ruptures have occurred in the past has improved with the increased quality and availability of aerial imagery and light detection and ranging (LiDAR) data, as well as physical fault processes. Locations are captured and compiled at a national scale in the NZAFD by GNS Science. This database contains geospatial data (points, lines, polygons) and tables that describe the location and characteristics of known

Figure 2: A comparison between the high-resolution (NZAFD-HighRes) and regional-scale (NZAFD-AF250) versions of the NZAFD highlighting the difference in mapping detail, scale and appropriate use of each

	NZAFD-HighRes	NZAFD-AF250
Mapping Scale	Ranges from 1:500 – 1:250,000 (generally ≤1:10,000)	1:250,000
Projection (datum)	NZ Map Grid (NZGD1949)	NZ Transverse Mercator (NZGD2000)
Appropriate use	Research, land use planning at 1:5000-10,000	Regional scale portrayal at 1:250,000
Access	Students via licence, WMS (selected areas), Councils	GNS NZAFD website, WMS, QMAP active faults
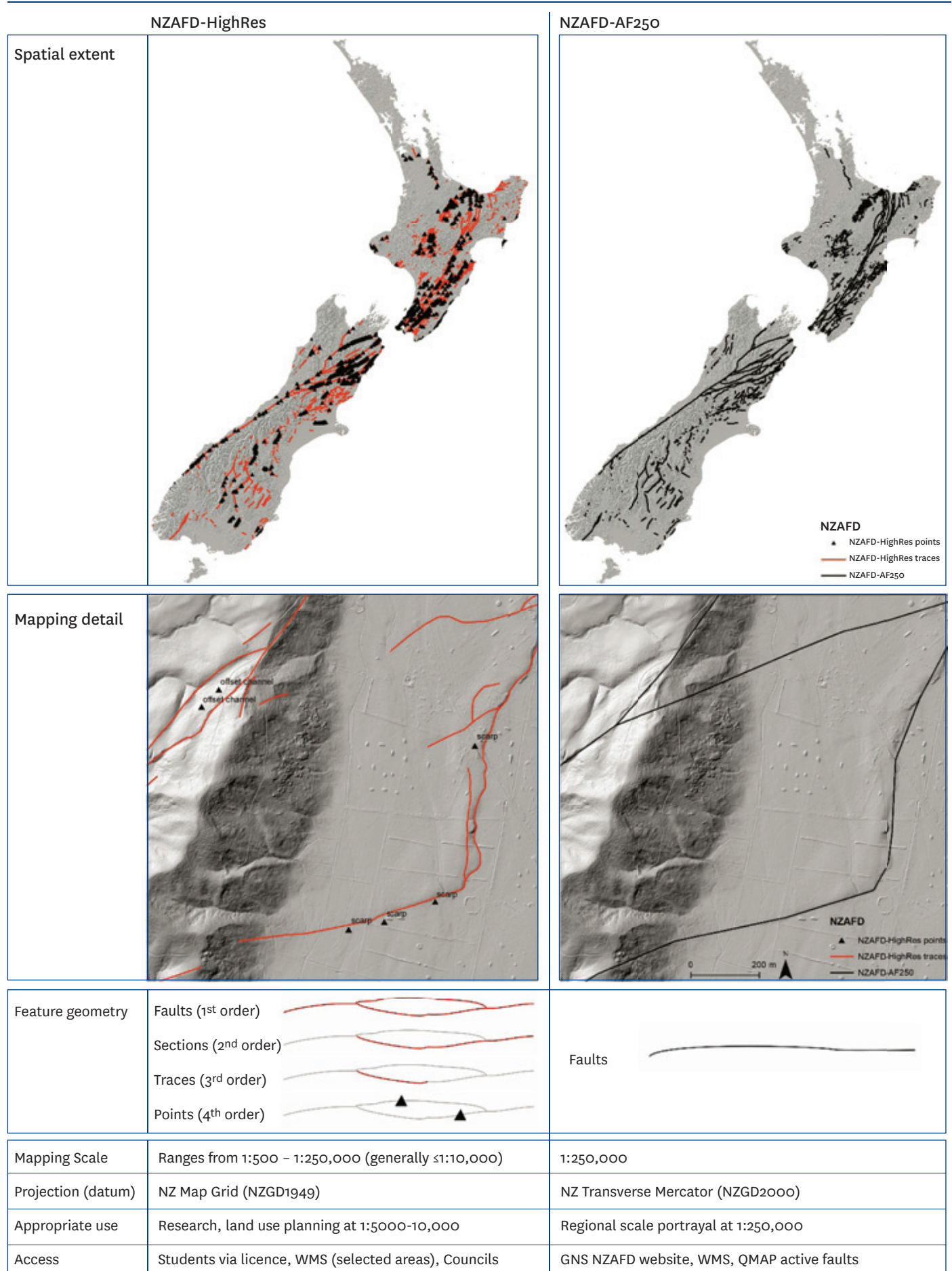
Note: WMS is web map service; QMAP is the national, quarter million (1:250,000 scale) digital geological mapping project   Source: GNS Science, 2023

terrestrial faults which show evidence of surface rupture and/or deformation in the last 125,000 years.[2] Such spatial active fault data is necessary for generating fault avoidance zones (from the MAFG) and fault awareness areas (Barrell, Jack and Gadsby, 2015). These databases are explored in more detail in Figure 2.

- NZAFD-AF250 is publicly available, designed for regional portrayal and simplified to a consistent scale of 1:250,000 (i.e., 1 cm on the map is equivalent to 250,000 cms on the ground).[3] It is not intended for land use planning purposes.
- NZAFD-HighRes ranges from 1:500 to 1:250,000 scale. Much of it is suitable for land use planning purposes; however, the entire dataset is not publicly available through the GNS Science Web Map Service (WMS).[4]

Despite ongoing efforts to reduce surface fault rupture risks in Aotearoa New Zealand, challenges exist which inhibit the data being useful or used as intended. While exploring the challenges in active fault hazard management, this article also clarifies the purpose and intended use of the data and addresses misconceptions in relation to it, where possible.

Methodology

A comparison was made between the NZAFD and proposed/operative district plans[5] to identify which districts have active faults but do not currently have land use provisions (see Figure 3). Councils without land use provisions were then approached to participate in an interview, with human ethics approval granted by GNS Science. Due to ongoing recovery from ex-tropical cyclones Gabrielle and Hale and previous flood events, only one North Island council participated. Five South Island councils participated. Participants included planners and natural hazard risk specialists. To allow council officers to speak freely, the points raised in these interviews have been organised thematically and have not been attributed to a specific individual or territorial authority.

The purpose of the interview was to understand: their knowledge of the NZAFD; how it, fault awareness areas and fault avoidance zones can be used; and the MAFG and any barriers or challenges they face in implementing a management approach for reducing the risk from surface rupture hazards.

Issues with the New Zealand Active Faults Database

All of the officers interviewed were aware of the NZAFD. The 1:250,000 mapping scale of the publicly available NZAFD-AF250 was mentioned by all interviewees as a barrier to use. The MAFG outline that the appropriate scale for land use planning is ≤1:10,000. At a scale greater than that it is not defensible to restrict development. Much of the NZAFD-HighRes is of appropriate scale for planning. However, due to a lack of long-term funding for the NZAFD, there is sometimes a considerable time lag between the completion of a detailed fault mapping study and entering it into the NZAFD-HighRes. As a result, publicly available NZAFD-HighRes data is generally only available upon request, but it comes with disclaimers as the data quality and currency cannot be guaranteed, or it is only available in selected areas where the data has been reviewed and updated, which can be viewed on the GNS Science or council web map portals.

Figure 3: Map of Aotearoa New Zealand showing districts with and without active faults, and with and without land use

NORTH ISLAND

Waikato
Proposed Thames – Coromandel District Plan (Appeals)
Proposed Waikato District Plan (Appeals)
Matamata-Piako District Plan (Operative 2015)
Hamilton City District (Operative 2022)
Waipa District Plan (Operative 2016)
Otorohanga District Plan (Operative 2014)
Proposed Waitomo District Plan (Hearings)
South Waikato District Plan (Operative 2021)
Taupo District Plan (Proposed Plan Change 41 2022)

Taranaki
New Plymouth District Plan (Hearings 2022)
Stratford District Plan (Operative 2014)
South Taranaki District {lan (Operative 2015)

Manawatu-Whanganui
Ruapehu District Plan (2013)
Whanganui District Plan (2023)
Rangitikei District Plan (2016)
Manawatu District Plan (2022)
Palmerston North City (2021)
Horowhenua District Plan (2018)
Tararua District Plan (2019)

Wellington
Kapiti Coast (Operative 2021)
Porirua District Plan (Proposed 2020)
Uper Hutt City (Operative 2004)
Hutt City (Operative 2022)
Wellington City (Proposed 2022)
Draft Combined Wairarapa, Carterton and Masterton District Plan (2022)

Northland
Far North District (Proposed Hastings)
Whangarei (Operative in Part)
Kiapara (Operative 2013)

Auckland
Unitary Plan (Operative 2016)

Bay of Plenty
Western Bay of Plenty District Plan (Operative 2013)
Kawerau District Plan (Operative May 2013)
Whakatane District Plan (Operative 2017)
Opotiki District Plan (Operative 2021)
Rotorua Lakes District Plan (Operative 2016)

Gisborne
Tairawhiti Plan (Operative 2020)

Hawkes Bay
Wairoa (Operative 2005)
Hastings (Operative in part 2020)
Napier City (Operative 2011)
Central Hawkes Bay District Plan (Proposed)

SOUTH ISLAND

Nelson
Nelson Resource Management Plan (Operative 2004)
Tasman
Tasman Resource Management Environment (Operative 2008)
Marlborough
Proposed Marlborough Environment Plan (Appeals)
West Coast
Te Tai o Poutini Plan (Combined District Plan Proposed July 2022)
Otago
Proposed Quenstown Lakes District Plan (Appeals 2023)
Central Otago District Plan 2008
Proposed Dunedin City District Plan (Appeals 2023)
Clutha Plan 1998

Canterbury
Kaikoura District Plan (Decisions 2022)
Hurunui District Plan (Operative 2014)
Proposed Waimakariri District Plan (Prosposed 2022)
Christchurch City District Plan
Proposed Selwyn District Plan (Hearings 2022)
Ashburton District Plan (Operative 2014)
Timaru District Plan (Proposed 2022)
Mackenzie District Plan (Operative 2023)
Waimate District Plan (Operative 2014)
Waitaki District Plan (Operative 2010)

Southland
Southland District Plan 2020
Gore District Plan Operative 2008
Invercargill City District Plan 2019

Active faults present
Yes
No

Land use plan provisions present
Yes
No

The interviewees commented consistently that the ≤1:10,000-scale mapping recommended in the MAFG is not an appropriate scale to be used in rural areas. In the Canterbury region a separate guideline was developed for regional-scale (1:250,000) fault information (Barrell, Jack and Gadsby, 2015), which uses fault awareness areas. This was in recognition that the cost to map at ≤1:10,000 scale (i.e., generating fault avoidance zones) for a large region with many largely unpopulated and mountainous areas was unjustifiable, and, at the time, high-resolution basemaps that would facilitate such detailed mapping (e.g., LiDAR data) were sparse in rural areas and expensive to collect. A multi-year, nationwide project is underway to improve LiDAR coverage across Aotearoa New Zealand. Data is being released following LINZ and regional council quality assurance processes. These high-resolution basemaps will remove this barrier and make district-wide accurate fault mapping much easier.

A participant commented that while there is the opportunity to use LiDAR data to improve fault location accuracy, they felt strongly that LiDAR mapping only is not sufficient. GNS Science and this participant have both stressed that ground truthing and obtaining paleoseismic data are still required when certainty in fault location and characteristics is needed. For example, a geophysical survey or a paleoseismic trench can be very useful to demonstrate and refine the location of a fault and to obtain information about the magnitude, frequency and likelihood of ground-surface rupturing earthquakes. These techniques can also be used to better define the fault deformation zone (zone of likely future surface rupture) and to potentially reduce the fault avoidance zone width. One participant commented that when this ground truthing is needed, it is unclear as to the depth to which surface faults are to be trenched. Typically, as this hazard is specific to the surface rupture, it is not necessary or practical to dig more than a few metres at strategically placed trench sites – this varies between and along faults depending on characteristics such as the type and age of the near-surface sediments, width and complexity of the fault, and local geomorphology.

> All respondents commented that they would share data gathered through their own research and consent processes, but that there is currently no pathway to do so for councils that have not commissioned GNS Science to update their data, or for incorporation of new data.

Activity is not always demonstrable: for example, if the near-surface sediments are unsuitable (e.g., too thick or coarse) to clearly see fault offsets, expert judgement is often required based on available data. As a general rule, faults with a clearer surface expression (e.g., a distinct scarp) are generally more active or have ruptured more recently, so will be easier to identify in a trench. Surface expression is also an important criterion for whether active faults are included in the NZAFD or not. For example, if a fault is concealed beneath sediments along much of its length, it will not be included as it cannot be mapped, although short gaps between sections that can be mapped will be included in the NZAFD. Blind or buried active faults – such as the north-eastern end of the Awanui Fault that ruptured in the 1931 Napier earthquake or the Port Hills Fault that

ruptured in the 2011 Christchurch earthquake – are faults that do not yet reach the ground surface/have not ruptured the ground surface in the past and therefore have no surface expression. The NZAFD currently does not include these features, and their hazard cannot be defined using traditional trenching techniques or even LiDAR.

For one territorial authority the NZAFD would only be used when there was nothing else available. This authority has gathered its own data through research projects and through resource consent requirements. In urban areas and some specific rural areas their own gathered data is more accurate than what is available through the NZAFD. Other regions have also gathered their own data over years through multiple sources, sometimes including data through GNS Science contracts, but also incorporating data provided through resource consent processes. While the NZAFD is a national database, there is nothing to compel a territorial authority to use it. Moreover, a regional council compiling a database for use by the territorial authorities gives effect in part to section 30(1)(c)(iv)[6] of the RMA. One territorial authority spans a regional boundary, and it uses meshed data, partially NZAFD and partially the regional council database.

There is a willingness to share data gathered by territorial authorities and regional councils with GNS Science and for this to be incorporated into the NZAFD. All respondents commented that they would share data gathered through their own research and consent processes, but that there is currently no pathway to do so for councils that have not commissioned GNS Science to update their data, or for incorporation of new data. A potential future development that would be valued by councils is the ability to incorporate their own data into the NZAFD. This could occur if there was capability and capacity within the council to input this data. If this is not possible, then councils will have to maintain and continue to use their own; however, using two different databases is not an efficient use of resources. Some territorial authorities commented that if this became possible in the future, a condition of doing this would be that they

expected to use NZAFD-HighRes without incurring a cost. It also was unclear to participants what the database maintenance frequency is, including being notified of updates. These ideas are aligned with GNS Science's aspirations for the database.

The cartography and connectivity of the NZAFD web map was also discussed, including whether there is the opportunity for the NZAFD to use the same cartography as standard geotechnical cartography, such as dotted and dashed lines where faults are inferred or concealed. This is something that could be explored in the future. The addition of linking reports relating to specific faults through the database would also be very useful. This is already possible for selected faults in NZAFD-HighRes,[7] but not in NZAFD-AF250 because this mapping is simplified and the scale is unsuitable for planning purposes. This allows users to understand the methodology used, limitations and recommendations for use.

The use of 'priority areas' was also discussed, as these are used in some GNS Science reports accompanying updated data. The setting of these priorities was queried, and whether these are areas identified by GNS Science as gaps in the database, or whether they are areas with current/future development pressure, is not clear. The use of priority areas is study specific. For some, the priority areas were defined by the council as areas of planned development. For others, the priority areas were defined by GNS Science in consultation with the council as areas where detailed examination is to be undertaken (e.g., near towns), compared with less time spent on the wider (rural) areas. There have been recent examples where active faults have been newly recognised in or near rural townships, which has only now been made possible with widespread LiDAR acquisition and studies focused specifically on active fault mapping. This is illustrated by one participant who commented that their research focuses on better understanding the location of specific faults close to a large primary industry employer, as its ongoing function is critical to the district's economic wellbeing. The participant identified that further trenching to understand the location and likely fault rupture

Earthquake science and risk-based management of natural hazards have evolved since the MAFG were first created, and after two decades of their use some aspects no longer align with current practice.

characteristics is necessary to improve certainty and apply a hazard buffer area. There might not be active fault data currently held in that area, so the process may inadvertently exclude this area if they are not involved in selecting the priority areas. Two authorities commented that it was critical that prioritisation was undertaken robustly to ensure targeted mapping and effective use of the data.

One respondent commented that surface fault rupture is a difficult concept to grasp, unless its effects have been seen on the ground during recent times, such as in the Kaikōura area after the 2016 earthquake. This raises an inherent contradiction: it is easier to accurately locate a fault immediately after its rupture, but, although this is true, the identification of the fault, and application of plan provisions to reduce the risks arising from surface rupture, will be much more effective before the event happens. Some of the faults with long average recurrence intervals[8] are difficult to accurately locate due to their more subtle nature in the

landscape (e.g., due to younger erosional/depositional processes or anthropogenic modification) and are therefore more easily dismissed as being irrelevant at human timescales, but they could still present a substantial risk because time since the last surface-rupturing earthquake is not considered in the current MAFG. For example, the average recurrence interval of the Greendale Fault near Darfield has been assessed as being ca 10,000–20,000 years (Van Dissen et al., 2015), and yet it ruptured in 2010. This has been raised in the report *Active Fault Guidelines v2.0: proof of concept* (Gunnell, Jones and Beban, 2022), which tested whether assigning a probability to any surface rupture had the potential to better convey the risk arising from fault rupture hazards.

Issues with the Alpine Fault Guidelines
The respondents commented that recurrence interval classes (Table 1) seemed arbitrary rather than a rigorous estimate of likelihood within the average recurrence window. The linking of recurrence intervals with building importance categories and assigning a resource consent activity status based on that means that there needs to be a reason for them, but why those classes are used is not clear. None of the councils interviewed that are intending to put forward provisions were going to include faults with 20,000–125,000-year recurrence intervals (RI Class VI). The recurrence intervals used in the MAFG also raised a broader query in relation to the variety of recurrence intervals used in management of other natural hazards: for example, guidelines on flooding and sea level rise have far shorter intervals than geohazards (typically 100 years, but these will reduce with climate change). The average recurrence intervals are also not easily relatable to the minimum 50-year building life in the Building Act. The emerging use of the percentage chance that a fault may rupture in a year, rather than using a recurrence interval, may address this implementation gap. For example, the AF8 programme[9] notes a 75% probability of an Alpine Fault rupture occurring within 50 years, and a four out of five chance that it will be greater than a magnitude 8 earthquake. Gunnell, Jones and Beban (2022) explored this concept

Table 1. Current classification of active fault parameters used in the MAFG

Fault recurrence interval (RI) classes	Less than or equal to 2000 years (RI Class I)
	Between 2,000 and 3,500 years (RI Class II)
	Between 3,500 and 5,000 years (RI Class III)
	Between 5,000 and 10,000 years (RI Class IV)
	Between 10,000 and 20,000 years (RI Class V)
	Between 20,000 and 125,000 years (RI Class VI)
Fault complexity classes	Well defined
	Distributed
	Uncertain

There are five building importance categories which the MAFG suggest are then overlaid with the above parameters.

within the Wellington region, with a 100-year conditional probability of rupture determined for the Wellington Fault of 11%, 4.9% for the Ōhariu Fault and 3% for the Wairarapa Fault. There are challenges with this approach, though, as this type of information is only available for a few faults with a large amount of paleoseismic data, and care needs to be taken not to create a perverse outcome whereby once a fault has ruptured, the probability becomes so low that the planning framework may allow or potentially permit building across the fault.

Concern with the level of uncertainty in the parameters used in the MAFG was a repetitive theme from the respondents. One region does not use them due to technical concerns with the underlying data. Specifically, the variety of recurrence intervals and the uncertainty in fault complexity (Table 1) are such that they are not confident of the magnitude and likelihood of the hazard, and how they can convey that to the public in terms of risk. Being able to convey the information to those without technical expertise is needed to change this. Another district does not consider the NZAFD data to be robust enough, and so discretionary resource consent is the most restrictive required by them. They state that the data is simply not strong enough to be able to defend a non-complying or prohibited activity status for resource consent. To reduce uncertainty in this district, subdivision consent triggers the need for geotechnical investigation, which in turn can be used to refine the fault location information. This 'user-pays' model also ensures that the ratepayer does not have to fund the investigation. Another participant said the fault complexity parameter will influence the provisions

they put forward in terms of objectives, policies and subdivision rules pertaining to active faults. This includes discretionary rules for critical facilities such as emergency services and utilities, and for infrastructure such as landfills. They say rules to manage residential activities will not be included due to the fault complexity parameter resulting in a high degree of uncertainty for the data in that area. For them, the NZAFD will only be used as an informative tool.

Without site-specific investigations, uncertainty around fault parameters can sometimes be difficult to reduce at the district scale. One territorial authority has chosen to completely remove their fault avoidance provisions in their proposed district plan. The reasons for this are several. The council feels that as there is so much deposited material over the fault traces, there is such a degree of uncertainty about the precise location that using land use provisions is not effective or efficient. Due to the degree of uncertainty, they determined that buffers either side of possible traces are inappropriately restrictive for them, as this is likely to include 'good' ground due to the large spatial uncertainty. The council has instead focused on RMA subdivision provisions requiring geotechnical investigation in all rural areas as well as earthquake strengthening building controls in all areas, which address a lot of the issues that fault avoidance was trying to manage. Through this council's implementation experience, they explained, it is very apparent that network infrastructure providers avoid the riskiest areas, often undertaking their own hazard and risk investigations, as it is not in their interests to invest in such places. Therefore, the council considered it

unnecessary to put in place highly restrictive rules for network providers. It is noted that many utility providers are also requiring authorities opening designations as a planning pathway to resource consent.

Earthquake science and risk-based management of natural hazards have evolved since the MAFG were first created, and after two decades of their use some aspects no longer align with current practice. For example, it was commented that the guidelines treat all potential ruptures as likely having the same magnitude. It is perhaps not well understood that only magnitude 6.5 and higher earthquakes are likely to result in a surface rupture, so smaller magnitude ruptures are inherently not included. However, faults within the NZAFD are likely to rupture at a range of magnitude 6.5 and greater, and the rupture damage (displacement) will be larger for higher magnitude earthquakes. Understanding potential displacement and being able to evaluate that against the type of development on a fault would allow for a more refined risk-based approach incorporating consequence (exposure and vulnerability). For example, a region may have significant infrastructure such as an airport or hospital proximate to a fault with a 6.5 forecast rupture magnitude (tens of centimetres of displacement) and a long recurrence interval (e.g., 10,000 years). This region might also be crossed by another fault with a short recurrence interval (e.g., <2,000 years) and a forecast magnitude 7.5+ rupture (many metres of displacement) with little or no development proximate to it aside from individual dwellings in rural areas. The fault with the infrastructure is of much greater concern and carries much greater risk than the one with the forecast higher magnitude rupture.

A territorial authority commented that fault avoidance zones and fault awareness areas are only used in the remote rural areas of their region, where little or no development occurs. It suggests that these provisions are not considered appropriate for urban areas, or for rural areas where activities may occur, including infrastructure provision. One reason for this is that the MAFG do not recognise infrastructure innovation in building materials, including simple things like

flexible joins in water pipes. The MAFG may unintentionally be restricting development where it could be accommodated with these kinds of tools.

In another region it was suggested that the fault avoidance zones do not work as tools outside urban areas because (it was believed) they were designed to only manage risk in urban areas. Also, that they are not suitable for critical response facilities, nor for critical infrastructure. While the participant did not expand upon this point, the lead author's own experience in developing district plan provisions is drawn upon to understand this issue. Critical response facilities need to be accessible and functional for all types of natural hazard events for response and recovery. Many parts of Aotearoa New Zealand are subject to more than one type of natural hazard. By avoiding locating these facilities close to active faults to reduce the risk of them not being available or risk to life within them, they may inadvertently not be accessible for other and more frequent types of responses, such as as a flood evacuation centre. Critical infrastructure – for example, electricity generation – may, if following the MAFG, be a non-complying activity. It is assumed that the restriction was included in the MAFG to ensure that electricity provision was possible post-event. However, the level of restriction may make it very challenging for a community to function pre-event. For example, a run-of-the-river hydrological electricity generation plant on a river may be sited on one side of a fault, with the community using it on the other side of the fault. The facilities then cross the potential fault zone and would likely be displaced and fail in a future rupture. However, there may be contingency in place for that community to run on generators, or to switch to another part of the grid. This highlights the need to consider the potential for multi-hazard risk analysis or guidance, rather than considering each hazard and its effects on risk in isolation.

One region expressed concern that the MAFG do not address cascading hazards from earthquake fault rupture. The guidelines are only attempting to address surface rupture hazards, not ground shaking or cascading hazards such as

> The [Active Fault] guidelines are only attempting to address surface rupture hazards, not ground shaking or cascading hazards such as liquefaction, subsidence, uplift, earthquake-triggered landslides, seiche or tsunami.

liquefaction, subsidence, uplift, earthquake-triggered landslides, seiche or tsunami. There are separate guidelines for the management of liquefaction and tsunami. As noted earlier, there is no active trace of the blind Port Hills Fault in Ōtautahi Christchurch in the NZAFD, where the loss of life is still in recent memory and the damage is still being repaired. Blind fault ruptures are not included in the NZAFD nor MAFG, and users must look elsewhere for information, such as the National Seismic Hazard Model (https://nshm.gns. cri.nz/; Gerstenberger et al., 2022). An alternative approach was put forward by one participant, that focusing provisions on the maximum credible event and the effects, severity, and outcome being sought may be a more effective way of avoiding the risk from rupture. Other provisions outside the MAFG are needed that address and reduce these wider hazards. For example, an offshore fault rupture could potentially create significant onshore effects that are not covered by the MAFG. One authority is seeking funding to undertake mapping

of the offshore extension of their onshore faults as they attempt to address this risk.

A point raised by many of the participants is the need for acceptance of RMA plan rules. A critical component of any plan is its implementation. If plan users do not accept the need for restrictions, then developing and implementing plan provisions will be extremely challenging.

The difficulties with applying the MAFG when there are breaks in the observable surface fault trace were also raised. Where the trace cannot be located due to, for example, sediment deposition since the last event, such as an alluvial fan, there are two options – either not applying provisions, or applying a wider buffer to account for the uncertainty. Neither of these are considered appropriate by this participant. Concern was also raised by the participant that the MAFG currently do not account for the style of faulting. In recent years fault avoidance zones generated by GNS Science recognise observations from historical earthquakes that the zone of deformation on the hanging wall (uplifted) side of reverse faults is wider. A wider buffer is therefore applied on the hanging wall side than on the footwall side of such faults.

Lastly, it was raised that, as more faults are discovered, could or should more fault avoidance zones and fault awareness areas be applied. This could lead to large parts of territories being covered with restrictive provisions. The participant suggested that this may not be the most efficient or effective way of managing fault rupture risk and that instead relying on the earthquake strengthening Building Act regulations may be a more appropriate method in places. Future revisions of the MAFG should consider all the tools to manage risks from surface fault rupture efficiently and appropriately.

As we learn more from natural hazard events, the need to plan more effectively to maximise our resilience is ever more critical. The current resource management reforms refocus this again and require Crown research institutes to 'support Regional Planning Committees' (Spatial Planning Act 2023, s67(1)(b)). This may provide an opportunity to improve the way we manage and communicate the risk from active fault surface rupture.

1 Faults can have either horizontal (strike-slip) or vertical (dip-slip) displacement across them, or a combination of the two (oblique).

2 The exceptions to this definition are: (1) the inclusion of offshore faults that ruptured during the 2016 Kaikōura earthquake; and (2) the definition of activity is restricted to only include the last 25,000 years for the rapidly evolving Taupō Rift in the central North Island (Langridge et al., 2016).

3 NZAFD-AF250 is designed to integrate with QMAP's 1:250,000 scale active fault layer (GNS Science, 2023) and is well-known around the country. It was published by Langridge et al. (2016) and is available to be queried, viewed and downloaded in a variety of formats from the GNS Science NZAFD web map at https://data.gns.cri.nz/af/. Metadata can be found on the GNS Science dataset catalogue at

https://doi.org/10.21420/R1QN-BM52.

4 Currently, selected high-resolution traces are available to be viewed via a GIS-based WMS, on the GNS Science ArcGIS server, which is republished as new data is entered. The REST service for the database is available here: https://gis.gns.cri.nz/server/rest/services/NZAFD/ActiveFaultsDatabase/MapServer. Councils also hold a copy of the NZAFD-HighRes data for their region if they have commissioned an active fault mapping study.

5 If a territorial authority has a proposed and an operative district plan, only the proposed plan was reviewed and included in Figure 3.

6 The regional council function to control the use of land for the purpose of the avoidance or mitigation of natural hazards.

7 Some councils are already tapping into the GNS Science WMS and directly displaying publicly available NZAFD-HighRes data – including links to the GNS Science reports which are downloadable – on their hazard web map portals (e.g., https://gis.hbrc.govt.nz/hazards/). For the WMS, the GIS is only available to be viewed at this stage; however, a copy of both the report and GIS can be downloaded or requested from councils, where public and available.

8 The average time between ground surface-rupturing earthquakes. These are used in the MAFG, as shown in Table 1.

9 The AF8 (Alpine Fault magnitude 8) programme combines scientific modelling, community engagement and response planning to build resilience to a large future Alpine Fault earthquake.

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Sam Mulopulos

An Artificial Intelligence Agenda for New Zealand
lessons from the United States

Abstract

With recent advances in artificial intelligence (AI), policymakers are looking for tools to promote the associated benefits, as well as mitigate the attendant risks. Thanks to extensive experimentation by international partners, New Zealand is positioned to parse the lessons of those international policies and more quickly adapt those that are successful to its own context. This article identifies several key AI policies pursued by the United States that may be relevant in a New Zealand context and discusses broad lessons from the US experience to help inform successful AI policymaking in New Zealand. It also emphasises the unique bipartisan nature of AI policymaking in the United States to date, and the benefits of a consensus-building approach to AI policy.

Keywords artificial intelligence, ChatGPT, United States, international cooperation, data, public sector, risk management

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It is practically axiomatic that artificial intelligence (AI) will be one of history's most transformative technologies. With the launch of ChatGPT, and the proliferation of large language models (LLMs), widespread interest in AI has been piqued like never before. Yet, while AI stands to offer incredible benefits to society, it also poses unique and unprecedented risks. How can society wring those benefits – such as improved medical diagnosis – while simultaneously mitigating the risks, like algorithmic bias? This is the key question facing policymakers. Answering it in the rapidly changing current environment requires policymakers to be cognisant of the uses, and as well as the limitations, of existing tools.

Reducing the costs and maximising the benefits of AI systems is, at its core, a technological feat achieved through consistent and iterative research, testing and innovation. Around that 'core' exists public policy, which complements those

activities in two ways. First, AI policy should promote a social, economic and political context in which these technological feats are achieved easily and consistently, and then, when achieved, faithfully implemented. Second, policy should set legal constraints to mitigate harmful AI practices.

Since 2018, the United States has endeavored to complement AI innovation by enacting a multitude of AI-related policies (Institute for Human-Centered Artificial Intelligence, 2022, p.271). This includes a substantive government commission on AI, administrative guidance to industry, and new laws on topics like the regulation of the government's use of AI and the democratisation of access to AI

AI Caucus passed more than a dozen AI-related bills into law (Vincent, 2021).

In a recent nod to that success, members of Parliament in New Zealand formed the first cross-party AI caucus to bring multi-party perspectives to bear on AI policy. Led by Judith Collins, the cross-party AI caucus intends to serve as a forum to educate lawmakers about AI-related issues and promote similar cross-party collaboration in the policy process (Griffin, 2023). As New Zealand's lawmakers consider how to answer the key question posed by the proliferation of AI systems, the success and variety of AI-related policy initiatives in the United States may serve as a guide or source of inspiration for policymakers in Aotearoa.

n.d.; University of Otago, n.d.–b).

However, New Zealand's approach to AI is not without challenges. One of these challenges is access to talent. Managing the benefits with the risks of AI requires innovation, which itself requires a pool of talented and creative AI scientists. However, recent research found that of 22,000 AI experts worldwide, only 85 are in New Zealand (Gagne, 2018).

Another challenge is a lack of uptake: according to the most recent available data, from 2018, only 36% of New Zealand firms said their boards were thinking about AI (AI Forum New Zealand, 2018, p.79). Because of New Zealand's small scale, delayed deployment of AI where there is a strong business case risks a chicken-and-egg spiral. Attenuated deployment results in even less data, and of a poorer quality to boot. This means AI systems will fail to live up to their useful potential. When deciding to invest in new technology – whether systems produced domestically or purchased from abroad – businesses will steer clear if, as a result of the issues mentioned above, they find AI systems unhelpful; in that case the economy overall might not achieve the efficiency and productivity gains AI offers. Both of these challenges are examples of problems that public policy can help solve by investing in training and education for new talent and setting the contours of the market in a way which promotes responsible acquisition and deployment of AI systems.

> As New Zealand's lawmakers consider how to answer the key question posed by the proliferation of AI systems, the success and variety of AI-related policy initiatives in the United States may serve as a guide or source of inspiration for policymakers in Aotearoa.

research tools. The development and adoption of these policies have effectively positioned the United States to tackle the AI moment.

Key to this success was a concerted effort in the US Congress to develop AI policy in a bipartisan way. Both the US Senate and US House of Representatives have bipartisan AI caucuses, which were created to convene legislators of both parties to educate policymakers about AI, and to collaboratively create and pass new AI laws. By bringing together various perspectives, the AI caucuses have challenged notions of legislative lethargy and built a high degree of consensus within the legislative branch around AI policy. The results of this emphasis on bipartisan consensus building are evident: in its first three years, from 2019 to 2022, the Senate

AI policy in New Zealand

As a general matter, New Zealand stands to punch significantly above its weight when it comes to AI. Between 2016 and 2021, New Zealand led the world with the greatest growth in AI-related hiring (Institute for Human-Centered Artificial Intelligence, 2022, p.143). Granted, that growth starts from a low baseline, but it is explosive and exciting, nonetheless. In 2017, New Zealand was ranked ninth (of 35) OECD countries for 'government AI readiness' (AI Forum New Zealand, 2019). This is even more impressive given that New Zealand did not release an AI strategy until 2021 (Ponti, 2021). Today, the University of Waikato, Auckland University of Technology and the University of Otago all have their own AI research centres (Hope, 2021; Auckland University of Technology,

In response to New Zealand's AI challenges, Boyd and Wilson (2017) argue that New Zealand should tackle AI issues by: researching the risk and impact of AI; informing and engaging the public; producing clear recommendations; and taking a global lead. In some of these areas there has been action. The AI Forum has led efforts to inform, educate and research. The New Zealand Institute of Directors produced a survey of emerging AI challenges (Institute of Directors and Chapman Tripp, 2016). And the New Zealand Law Foundation has funded a three-year project at the University of Otago, 'Artificial Intelligence and Law in New Zealand', to study the impacts of AI on employment and the administration of criminal justice (University of Otago, n.d.–a). But efforts to develop specific and

granular recommendations appear scant. Doing so requires that 'existing policy … be analysed, international policy co-opted as appropriate, and new policy … developed' (Boyd and Wilson, 2017, p.14). This article responds to that specific charge by enumerating some key successes of US AI policy and offers lessons for New Zealand. However, it is important to note that there are significant differences between the United States and New Zealand, especially in terms of the size and extent of available resources. In sharing the US AI policy experience, and suggesting lessons for New Zealand, this article recognises those differences. It suggests that New Zealand may be better positioned to adapt US AI policy to its own ends, rather than adopt it wholesale.

AI policy in the United States

The United States has proposed, enacted or implemented a cornucopia of AI laws and policies over the past several years. What follows are six policies which are attempts to answer, in their own ways, the question posed in the introduction about finding the good, and mitigating the bad, with respect to AI.

AI Risk Management Framework

In 2023, the National Institute for Standards and Technology (NIST) – since 1901 the United States' federal standards and measurement entity – released the AI Risk Management Framework (RMF). The culmination of a lengthy, iterative and multi-stakeholder process, the RMF is a well-respected document which organisations can adopt to manage the risks involved in using AI systems (Kruger and Lee, 2023). While voluntary, the beauty of the RMF is that it is 'rights-preserving, non-sector specific, and use-case agnostic' (National Institute of Standards and Technology, 2023). The RMF achieves this by offering a model for recognising AI risks, and articulating the attributes of trustworthy AI (e.g., safe; secure and resilient; explainable and interpretable; privacy-enhanced; and fair, with harmful bias managed) (ibid.).

Alongside this work, the RMF provides procedures for organisations to operationalise the conceptual model. This includes testing, evaluation, verification and validation processes. The RMF is now the third in a series of similar tools released by NIST, and if history is any guide, the RMF will find widespread adoption, even outside the United States. NIST's Cybersecurity Framework and their Privacy Framework have been adopted by state and federal agencies, US firms, and, in a testament to the quality consensus they enjoy, foreign entities like the Bank of England, Siemens and Nippon Telephone & Telegraph (Kerry, 2023).

National Security Commission on Artificial Intelligence

Where the RMF is a culmination of the first wave of US AI policymaking, the origins of this policymaking lie back in 2018, when the US Congress passed legislation to establish a new independent commission 'to consider the methods and means necessary to advance the development of artificial intelligence, machine learning, and associated technologies to comprehensively address the national security and defense needs of the United States' (National Security Commission on Artificial Intelligence, n.d.). Chaired by former Google chairman Eric Schmidt and former deputy secretary of defense Robert Work, the National Security Commission on Artificial Intelligence (NSCAI) was a uniquely successful government commission. Despite being a temporary commission, in its few years of operation the NSCAI produced a number of exceptionally granular reports proposing dozens of new policies related to the AI aspects of national security and US strategic competitiveness.

Although at its core focused on national security, the NSCAI was not shy about branching out into other AI-related topics. Its work laid significant groundwork for how policymakers think about the opportunities and challenges raised by the use of AI, especially the ways in which policymakers can best align AI with the values of open societies. Because the commission's proposals were detailed enough to specify not just what the policy ought to be, but *how* it would work in an administrative sense, it was easy for Congress to take many of the NSCAI's proposals and swiftly turn them into law. The NSCAI is a testament to the success of short-term, hyper-detailed and government-backed efforts to convene

> By democratising access … tools beyond large technology firms and the national labs, more researchers will be able to contribute to the innovations which will improve the quality of AI systems and reduce their associated risks

experts to propose solutions to specific emerging technology problems.

National Artificial Intelligence Research Resource

A good example of the NSCAI's lasting success is the creation of the National Artificial Intelligence Research Resource (NAIRR). Originally proposed by the NSCAI, and championed by the Senate AI Caucus, the first step to create the NAIRR was signed into law on New Year's Day 2021. The NAIRR is envisioned as a cyberinfrastructure of AI research tools available to AI scientists across the United States (National Artificial Intelligence Research Resource Task Force, n.d.). This new cyberinfrastructure will include shared access to computational resources, test beds, quality data sets, and other tools researchers need to pursue AI innovations. By democratising access to these tools

beyond large technology firms and the national labs, more researchers will be able to contribute to the innovations which will improve the quality of AI systems and reduce their associated risks (Office of Congresswoman Anna Eshoo, 2022).

Pursuant to the underlying law, the National Science Foundation (NSF) and the White House Office of Science and Technology Policy convened a task force of experts from government, industry and academia to develop a detailed roadmap for creating the NAIRR. This roadmap involves parsing the ways in which

developing trustworthy AI (National Artificial Intelligence Initiative Office, n.d.).

This includes harnessing trustworthy AI research efforts across government into a cohesive whole. For example, the Initiative prioritises the work being done pursuant to a five-year, $360 million investment in 18 new national AI research institutes across the United States (National Science Foundation, 2023). It also includes the research funded by the NSF's Program on Fairness in AI, which partners with industry to support interdisciplinary work on AI transparency, explainability and

best adopt safe and trustworthy AI. This includes recommendations for ways agencies can remove barriers to the adoption of trustworthy AI, and best practices for addressing any bias or algorithmic unfairness (Schatz, 2019). To promote accountability, the Act requires agencies to respond with their own public plans detailing how the agency will comply with the guidance and the law (ibid.). Because technical AI expertise can vary greatly across government agencies, the law establishes an AI Center of Excellence within government to act as a kind of 'help desk' for agencies as they deploy and manage AI systems (Senate Homeland Security and Governmental Affairs Committee, 2020).

Unfortunately, implementation of the Act has been uneven across government. The Center of Excellence has been stood up, and some agencies have taken serious steps to use AI responsibly to deliver services to citizens. But, at present, OMB has not issued the required guidance to all agencies, creating a patchwork of AI usage across the US government (Senate Homeland Security and Governmental Affairs Committee, 2022). However, this unevenness can be expected to be smoothed when OMB eventually issues the required guidance.

> ## The [Artificial Intelligence Training for the Acquisition Workforce Act in 2022] requires US procurement officers to be trained in the capabilities and risks associated with AI.

government can create the NAIRR administratively, and where additional legal authorities and funding are needed from Congress (National Artificial Intelligence Research Resource Task Force, 2023). Congress is now considering these findings with an eye to establishment of the NAIRR.

The National Artificial Intelligence Initiative

In the same legislation which charted a path towards the NAIRR, Congress also established another AI Caucus priority, the National Artificial Intelligence Initiative. The law codifies, and expands upon, the American AI Initiative first launched by President Donald Trump in 2019, a clear indication that the United States has treated AI as a presidential priority across administrations of different parties (Parker, 2020). Seeking to put the federal AI research house in order, the National Initiative organises the AI research and development (R&D) enterprise in the United States to be coordinated, strategic, and focused on building talent and

accountability (National Science Foundation, 2021). The law also established a new National Artificial Intelligence Initiative Office in the White House to serve the 'technical, programmatic, and administrative' needs of the Initiative, as well as new advisory committees to formally incorporate stakeholder engagement (Harris, 2021).

AI in Government Act

Alongside the focus on AI research and innovation, the United States has also begun to explore AI regulation. Enacted in 2021 as a Senate AI Caucus initiative, the AI in Government Act sets standards for the federal government's own use of AI. A case of leading by example, the AI in Government Act signals to companies and countries that the United States is serious about creating sensible rules for AI systems in order to reap their benefits and reduce their risks.

The law requires the White House, through the Office of Management and Budget (OMB), to issue each agency strategic guidance for how the agency can

Artificial Intelligence Training for the Acquisition Workforce Act

Since human talent is critical to ensure the responsible use of AI systems, Congress passed the Artificial Intelligence Training for the Acquisition Workforce Act in 2022. The law requires US procurement officers to be trained in the capabilities and risks associated with AI. Since the US government is a major purchaser of AI systems, procurement officials must know what to look for when making a purchase. The training required includes analysis of the benefits and risks of AI, the science behind the technology, and how AI can be made safe and trustworthy (Senate Homeland Security and Governmental Affairs Committee, 2021).

Without this workforce training, agencies may come to rely heavily on government contractors to make decisions about AI acquisition and use. This reliance risks atrophying an agency's in-house

expertise and may render the agency overly dependent on outside knowledge to make procurement decisions (ibid.). Relatedly, the United States has passed other laws to promote training and development of the AI workforce, mostly in a military and national security context (Heinrich, 2020). The Artificial Intelligence Training for the Acquisition Workforce Act stands out for its efforts to ensure AI expertise across governmental agencies.

Informing an AI agenda for New Zealand
With this survey of US AI policy accomplishments in hand, what lessons can be extracted to inform a New Zealand AI agenda? Of course, the two countries are different and not every policy adopted by the United States would be relevant or appropriate. The United States' significantly larger fiscal resources and expansive civil service mean it will be difficult, and in some cases inappropriate, for New Zealand to merely *adopt* US policies. Rather, New Zealand is better positioned to *adapt* US policies for its own context, drawing broad inspiration and thinking from abroad for its own AI efforts instead of rote application. For example, the non-regulatory NIST AI Risk Management Framework may be more appropriate for adoption given that firms outside the United States already comply with other NIST frameworks because of their quality. On the other hand, New Zealand may be better positioned to adapt the United States' work on AI training for the acquisition workforce for its own ends, recognising the differences in size and methods of each country's procurement systems.

However, there are still general themes which are relevant for New Zealand. These are the importance of accurate statutory definitions, the need for public sector leadership on AI, and the use of expert commissions to drive substantive change.

The need for accurate definitions
A good definition is critical to the success of any legislation. A broad definition over-includes categories of objects or behaviours which policymakers do not intend to cover, just as a narrow definition is under-inclusive. With technology, the challenge is even more difficult. Given the slow-

moving nature of government, law and policy always risk falling behind the pace of technological development. Definitions of terms like 'artificial intelligence', 'artificial intelligence system', 'deepfake', 'technical standards' and 'explainability' all must be precise enough to cover the technological concept as it exists but be flexible enough to cover some degree of future change.

Given the effort US policymakers have put into developing robust, realistic and accurate definitions, policymakers in New Zealand can utilise their work when developing law and policy of their own.

> As policymakers design private sector regulatory frameworks for artificial intelligence, they can build confidence in, and experiment with, rules by applying those rules to the public sector first.

This is not to say that New Zealand must wholesale import every AI-related definition written by the United States, but that these definitions serve as a well-vetted source of inspiration. Moreover, since AI has been deployed in a multitude of ways and means in the United States, policymakers can be sure that these definitions cover the gamut of use cases and technological specifications. Drawing inspiration from existing definitions also ensures that policymakers do not need to constantly reinvent the wheel when it comes to the basic building blocks of lawmaking.

The importance of public sector AI leadership
The public sector stands to be uniquely effective at accelerating the deployment of responsible AI. Most fundamentally, it is easier for the government to regulate itself than it is to craft regulation – with its plethora of use cases and stakeholders – for private industry. Moreover, trust in AI – as with any technology – is best built when the government can be a leader in

its safe use. Imagine if the government set regulations for the private use of aircraft but did not hold itself to the same standard for its own use of aeroplanes? As policymakers design private sector regulatory frameworks for artificial intelligence, they can build confidence in, and experiment with, rules by applying those rules to the public sector first. This is the key lesson of the AI in Government Act, which has set rules for the government's use of AI well before questions of private sector regulation were on the table. Now that private sector regulation is a topic of public debate, policymakers benefit from the regulatory test drive offered by the law.

Another example of the public sector's AI leadership potential is its ability to guide adoption of the technology for high-value use cases. This is not to say that private industry cannot also play this role; rather, that the public sector should be bold enough to assume that it (especially when working *with* industry) can also do innovative things with respect to technology. The public sector is ripe with use cases where AI can greatly improve the delivery of services to citizens. Deploying responsible AI to solve those problems offers dual benefit too – greater societal trust in an emerging technology application and in the public sector itself. One high-value use case is in the healthcare sector in New Zealand, where the public sector can leverage its data to improve the speed and quality of care (Callaghan Innovation, n.d.).

By setting standard rules, R&D priorities and talent training across government, the United States has provided the tools to incentivise agency leadership

to take the initiative when it comes to public sector use of AI. The New Zealand system might benefit from a similar approach, albeit scaled appropriately to the New Zealand context. A New Zealand approach might even go beyond this to specify the high-value AI projects deserving of time, funds and institutional resources. Nothing breeds success like success; enumerating and focusing attention on the deployment of AI systems in these high-value public sector use cases will only make it easier to accelerate the adoption of responsible AI across government, and the economy.

is that New Zealand's technology R&D efforts would benefit from a 'centrally coordinated framework to encourage open, collaborative AI research' (AI Forum New Zealand, 2018, p.40). Given the recentness of US efforts to do the same via the National Artificial Intelligence Initiative, New Zealand policymakers may be keen to see what elements of this are translatable to New Zealand's smaller scale while still retaining value.

The value of expert commissions

Given the volume of NSCAI recommendations which have been

the commission's work a sprint, policymakers were more inclined to respond quickly to its recommendations, rather than let them languish in a long queue of other proposed bills.

Like the United States with the NSCAI, and even NIST, New Zealand has already empowered existing actors to study AI problems. The Productivity Commission has done serious work on the public's perception of automation, finding that New Zealanders earning less than $50,000 per annum had more negative views towards automation – seeing it as a threat to jobs – than those earning over $50,000 (Heatley, 2020). The Productivity Commission has also investigated the labour market impacts of new technologies like AI (Productivity Commission, 2020). And the AI Forum has released a swathe of recommendations, though its report on the matter may now be dated given recent advancements in AI technology (AI Forum New Zealand, 2019).

One AI Forum recommendation is for the establishment of an AI ethics and society working group. Policymakers seeking to focus expertise to concretely solve AI problems in New Zealand may want to create such a working group. Giving it a short duration, like the remit of the NSCAI, may increase the impact of the working group. This would ensure that such efforts augment, rather than supersede, existing independent investigation and policy development efforts, such as those of the Productivity Commission and the AI Forum. It is also worth noting that four years ago – the AI Forum recommendations were released in 2019 – is ancient history in AI terms. Recommendations can quickly grow stale, or not fit for purpose, in the presently fast-changing environment. This suggests that policymakers should balance a short duration working group with the need for dynamism. Rather than letting recommendations become dated as snapshots in time, regularising limited duration working groups every few years may be one way to keep ideas fresh and relevant while also ensuring that those new ideas are taken seriously and implemented.

> Australia, the European Union, Japan, Singapore and the United Kingdom have all been active with respect to AI policy, and research into their experiences would further hone what policies and initiatives might be most valuable for a New Zealand AI agenda.

Lastly, increased R&D investments are another example of public sector AI leadership. Like the National Artificial Intelligence Initiative and the NAIRR, public investments in R&D both promote continued improvement of AI systems and support the local talent essential for AI's success. Already Callaghan Innovation's technology incubator programme helps domestic tech startups access up to $1 million in funding with an eye to developing New Zealand tech talent (Callaghan Innovation, 2021). Increasing the amount of financing or expanding the number of startups that can participate may be one way to leverage public funding for domestic AI talent training and retention. Further research should be conducted to understand the effectiveness of the incubator programme, and similar initiatives, as well as the role they play in developing and retaining domestic tech talent. One reform, as the AI Forum notes,

enacted as law or administratively adopted as policy, the use of an independent, expert commission to drive substantive AI policy development has been a hallmark of the United States' AI policy success. Expert commissions make up for the shortfalls of in-house public sector AI expertise and can ensure a variety of stakeholder viewpoints. The NSCAI, for example, comprised commissioners from government, industry and academia, and a staff of experienced civil servants. The commission's recommendations were also exceptionally detailed, making it easy to convert them into law and policy.

Importantly, the NSCAI was also time limited. Rather than establishing an indefinite new bureaucracy, Congress wanted a commission to investigate AI challenges over the near-term from 2018 to 2021 (National Security Commission on Artificial Intelligence, n.d.). The short duration had a tangible benefit. By making

Conclusion

By their nature, law and policy move more slowly than the pace of technological

change. But for small, advanced economies, like New Zealand, this lag can be an advantage. As other countries have rushed with responses to the AI moment, New Zealand can benefit from their experimentation by adopting the policies that work and discarding the approaches that have been less successful.

Ultimately, the challenges facing Washington and Wellington are not all that different. How the United States has responded so far – whether it be coordinated R&D efforts, government leadership on new AI rules, or in-house talent development – stands to offer lessons, inspiration and guidance for policymakers in New Zealand. By enumerating some of the most significant US responses, and identifying common attributes of successful AI policymaking, this article hopes to be a resource for New Zealand policymakers interested in creative and comparative approaches to AI.

But the United States is only a single open society. Scholars and practitioners should conduct additional research into the experiences of other open societies to pull out similar lessons from their AI work. Australia, the European Union, Japan, Singapore and the United Kingdom have all been active with respect to AI policy, and research into their experiences would further hone what policies and initiatives might be most valuable for a New Zealand AI agenda.

Given that the artificial intelligence field is fast-moving, and the technology stands to bring tremendous change, there is an urgency for national governments to respond in ways which are thoughtful and action oriented. By learning from the experiences and efforts of international partners, policymakers can ingest myriad ideas and adapt them for their own purposes. This avoids wasting resources by reinventing the wheel of AI policy, while also helping them find policies that are good enough for the present moment without having to spend years, perhaps fruitlessly, designing the perfect policy on their own.

If perhaps a latecomer to the AI moment, New Zealand has an exciting AI trajectory, especially given the multi-party attention that legislators have begun to give to the issue. As a result, New Zealand is well positioned to cherry-pick the AI policies from around the world to design responses which are most effective for its size and particular situation. And just like in the United States, maintaining a consensus-building posture with respect to AI will be key for New Zealand to successfully tackle the AI moment. By looking at one open society – the United States – and what its AI policy experience might offer New Zealand, this article intends to act as a catalyst for that effort.

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Radical Uncertainty and Artificial Intelligence
policy issues for Aotearoa New Zealand

Abstract

This article explores the intricacies of policymaking in the 21st century, with a focus on Aotearoa New Zealand's approach to artificial intelligence (AI). The analysis underscores the challenges presented by risk, uncertainty, and especially radical (fundamental) uncertainty, which complicates the formulation of robust AI policies. Using Aotearoa New Zealand as a case study, the article delves into the multifaceted policy challenges AI presents, emphasising the need for adaptive policymaking, stakeholder engagement, a precautionary approach and ethical considerations. In short, a balanced interplay of evidence, values and power in the policymaking process is required.

Keywords adaptive policymaking, risk, radical uncertainty, artificial intelligence (AI), ethics, Aotearoa New Zealand

The task of policymaking is ever more complex, not least in the fast-evolving field of artificial intelligence (AI). Aotearoa New Zealand, like many other countries, is trying to navigate the tricky waters of managing and regulating AI (Barredo Arrieta et al., 2020). This is made even more challenging by the concepts of risk, uncertainty and radical (fundamental) uncertainty, which are critical to understanding and managing the complexities of modern policymaking (Kay and King, 2020).

AI has the potential to transform many aspects of our lives, from healthcare to transportation and agriculture. However, it also raises important ethical, social and economic questions, such as the impact of automation on jobs, the potential for bias in algorithmic decisions, and the misuse of AI for harmful purposes (Barredo Arrieta et al., 2020). To address these issues, policymakers need to take a thoughtful and comprehensive approach that considers all the different dimensions of risk, uncertainty and radical (fundamental) uncertainty.

Policymaking in the 21st century

In the 21st century, policymaking has become an increasingly complex task due to rapid technological advancements, global interconnectedness, and the dynamic nature of socio-economic challenges. The traditional approach to policymaking,

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which often involves linear thinking and a focus on isolated issues, is no longer sufficient to address the multifaceted challenges of today's world (Head, 2016).

One of the key concepts that complicate policymaking is risk, which is traditionally defined as a situation where the probabilities of different outcomes are known or can be estimated (Knight, 1921). Policymakers often use quantitative methods, such as cost–benefit analysis, to assess the potential impacts of different policy options and make decisions based on the balance between potential gains and losses (Fischhoff et al., 1993).

Uncertainty, on the other hand, refers to situations where the probabilities of different outcomes are unknown or cannot be estimated accurately (Knight, 1921). This can occur due to a lack of information, conflicting evidence, or the unpredictable nature of certain events (Gluckman, 2014). Policymakers often struggle to make decisions under conditions of uncertainty because traditional decision-making tools, such as cost–benefit analysis, may not be applicable or reliable (Cairney and Kwiatkowski, 2017).

Radical (fundamental) uncertainty refers to situations where the possible outcomes and their probabilities are not only unknown, but also unknowable (Kay and King, 2020). This type of uncertainty often arises in complex systems, where the interactions between different components are non-linear and can lead to emergent properties that are difficult to predict (Stirling, 2010). Policymaking under conditions of radical uncertainty requires a different approach, such as adaptive management, which involves continuously monitoring the effects of policies and adjusting them as new information becomes available (Dewulf and Biesbroek, 2018).

The concepts of risk, uncertainty and radical uncertainty necessitate different approaches to decision making, thereby complicating the policymaking process. Managing risk typically involves the use of quantitative methods and scenario planning (Aven and Renn, 2009), while addressing uncertainty requires a more qualitative approach, relying on expert judgement (Aven, 2016) and robust decision-making strategies that can adapt

> ... the policy challenges associated with AI in Aotearoa New Zealand are multifaceted and necessitate a comprehensive and coordinated approach involving various stakeholders, including government, industry, academia and civil society.

to changing circumstances (Hallegatte, 2009). Radical uncertainty, on the other hand, necessitates a more flexible and adaptive approach, recognising the impossibility of predicting the future with any degree of certainty (Beckert, 2013).

In short, the concepts of risk, uncertainty and radical (fundamental) uncertainty each introduce a layer of complexity to the policymaking process. Policymakers need to be aware of these concepts and adopt appropriate decision-making strategies to address the challenges of the 21st century.

The policy challenges of AI for Aotearoa New Zealand
In Aotearoa New Zealand, the deployment and development of AI present a myriad of policy challenges that are crucial to address for harnessing its full potential. AI is a transformative technology with the capability to revolutionise various sectors, including healthcare, agriculture, transportation and public services. It can foster economic growth, enhance the

efficiency and effectiveness of services, and provide solutions to complex challenges faced by the country (AI Forum of New Zealand, 2018). However, the rise of AI also poses significant policy challenges that need to be meticulously addressed to maximise its benefits while minimising its associated risks.

One of the paramount policy challenges is ensuring that the development and deployment of AI are in alignment with the values and priorities of citizens. This includes adhering to the principles of the Treaty of Waitangi, the foundational document of the country, and the principles of partnership, participation, and protection it embodies. Furthermore, it involves addressing ethical concerns related to privacy, fairness, transparency, and accountability. There are also growing concerns about the potential impact of AI on employment, social inequality, and the competitiveness of local businesses (Productivity Commission, 2020).

Another significant policy challenge pertains to the development of the requisite infrastructure, skills and capabilities essential for reaping the benefits of AI. This encompasses investments in research and development, education and training, and digital infrastructure. Additionally, there is a need for a regulatory framework that facilitates innovation while safeguarding the public interest (New Zealand Government, 2020).

Overall, therefore, the policy challenges associated with AI in Aotearoa New Zealand are multifaceted and necessitate a comprehensive and coordinated approach involving various stakeholders, including government, industry, academia and civil society.

Analysing the most significant challenge: radical uncertainty
The policy challenges associated with AI in Aotearoa New Zealand can be analysed through the lens of risk, uncertainty and radical (fundamental) uncertainty. However, of these three, radical uncertainty is arguably the most significant challenge.

As noted, radical uncertainty refers to situations where the possible outcomes and their probabilities are unknown or unknowable. In the case of AI, this pertains to the unforeseeable consequences and

impacts of the technology, which are not only difficult to predict, but also challenging to quantify. For example, the advent of AI brings about ethical dilemmas, such as algorithmic bias and decision making by machines, the full implications of which are yet to be understood (ibid.).

While risk and uncertainty are also important considerations, they are not as significant as radical uncertainty in this context. As noted, risk refers to situations where the possible outcomes and their associated probabilities are known, and thus can be managed through quantitative methods and scenario planning (Kaplan and Garrick, 1981). Uncertainty, on the other hand, refers to situations where the possible outcomes are known, but their probabilities are not, requiring a more qualitative approach relying on expert judgement (Knight, 1921). However, both risk and uncertainty assume a level of knowledge about the possible outcomes, which is not the case with AI, as its impacts are fundamentally uncertain and unpredictable.

However, radical (fundamental) uncertainty poses a more significant challenge because it is not possible to predict the future developments in AI with any certainty. The rapid pace of technological advances, the emergence of new forms of AI, and the potential for unforeseen social and economic impacts make it extremely difficult for policymakers to envisage all possible scenarios and plan accordingly (Kay and King, 2020). For example, the development of general artificial intelligence (AGI), which refers to machines that can perform any intellectual task that a human can do, is a topic of ongoing debate and speculation among experts. While some believe that AGI is still many years away, others argue that it could be developed much sooner (Russell, Dewey and Tegmark, 2015). The timeline and implications of AGI are highly uncertain, and this creates significant challenges for policymakers in Aotearoa New Zealand and around the world.

Furthermore, the global nature of AI development means that Aotearoa New Zealand is not operating in a vacuum. Decisions made by other countries, international organisations, and private sector actors can all have an impact on the AI landscape in Aotearoa New Zealand. This adds another layer of complexity and uncertainty to the policymaking process.

> The case of AI in Aotearoa New Zealand serves as a pertinent example of how radical uncertainty presents significant challenges in formulating policies that are robust, fair, and widely accepted by all stakeholders.

Therefore, while risk and uncertainty certainly play a role in the policymaking process for AI, they are not as significant as radical uncertainty, which necessitates a more flexible and adaptive approach. This involves recognising the impossibility of predicting the future with any degree of certainty and developing robust decision-making strategies that can adapt to changing circumstances (Taleb, 2007).

Addressing the policy challenge

Given the challenge of radical (fundamental) uncertainty in the context of AI in Aotearoa New Zealand, policymakers need to adopt a more flexible and adaptive approach in their policy methods and practices.

Adaptive policymaking

This approach acknowledges the uncertainty of the future and the unpredictability of the impacts of AI. It involves creating policies that are flexible and can be easily adapted as circumstances change or as more information becomes available. This may involve implementing pilot programmes, conducting regular reviews of policies, and being open to making necessary adjustments (Boston, 2016).

Stakeholder engagement

Including a wide range of stakeholders in the policymaking process can help ensure that different perspectives and potential impacts are considered. This includes not only industry experts, but also representatives from the public, academia and civil society organisations (New Zealand Government, 2020).

Precautionary approach

Given the potential for unforeseen and potentially harmful impacts of AI, a precautionary approach should be adopted. This involves taking preventative action in the face of uncertainty, and not waiting until there is complete evidence of harm before taking action (Stirling, 2007).

Ethical considerations

The development and implementation of AI raise numerous ethical concerns, such as privacy, bias, and decision making by machines. Policymakers should actively consider these ethical implications and develop policies that promote ethical practices and safeguard the interests of all stakeholders (Floridi et al., 2018).

Robust decision making

This involves developing strategies that perform well under a wide range of possible futures, rather than trying to predict a single, most likely future (Lempert, 2019). It may involve scenario planning, where different possible future scenarios are developed, and strategies are developed for each.

In addressing these challenges, the role of evidence, values and power must be considered. While evidence-based policymaking is crucial, it must be acknowledged that under conditions of radical uncertainty, there will always be a limit to the evidence available. Therefore, decision making will also need to be guided by values, such as fairness, transparency and the protection of human rights. Additionally, the power dynamics between

different stakeholders must be considered, to ensure that the interests of all parties are fairly represented, and that no single group has undue influence over the policymaking process (Head, 2010).

Conclusion

The process of policymaking in the 21st century is increasingly complicated by the concepts of risk, uncertainty and radical (fundamental) uncertainty. These factors necessitate different approaches to decision making and make the policy landscape particularly challenging. The case of AI in Aotearoa New Zealand serves as a pertinent example of how radical uncertainty presents significant challenges in formulating policies that are robust, fair, and widely accepted by all stakeholders. To address these challenges, policymakers must adopt a multifaceted approach that involves adaptive policymaking, stakeholder engagement, a precautionary approach, ethical considerations, and robust decision making. Moreover, they must also consider the role of evidence, values, and power in the decision-making process to ensure that the interests of all parties are fairly represented and that no single group has undue influence over the policymaking process. Ultimately, by adopting such an approach and considering the interplay of evidence, values and power, policymakers can formulate policies that are better suited to the complex and uncertain landscape of the 21st century.

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Maria Amoamo and Katharina Ruckstuhl

Reforming the Research and Science System for Māori Innovation
practice theory for policy implementation

Abstract

Te Ara Paerangi proposes multi-year reforms to New Zealand's research, science and innovation system to 'make a greater impact on New Zealand's productivity and wellbeing'. One objective is to 'embed Te Tiriti' and 'advance Māori aspirations in the RSI system'. What does this mean in practice? Using a three-element practice theory framework, we assess the Science for Technological Innovation National Science Challenge's approach to advancing Māori-led or -partnered science and innovation. Our analysis suggests that such frameworks provide a useful lens for assessing how policy can move to practical implementation, particularly to advance Māori innovation aspirations.

Keywords practice theory, Vision Mātauranga, research, science and innovation, interface research, policy interventions

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The largest rethink of New Zealand's research, science and innovation system in 30 years is underway (Morton, 2022). The white paper *Te Ara Paerangi: future pathways* proposes a multi-year programme to 'make a greater impact on New Zealand's productivity and wellbeing' (Ministry of Business, Innovation and Employment, 2022, p.36). *Te Ara Paerangi* sets out the government's direction for reform of the system with four objectives which will tackle long-standing issues. One of these is the objective to 'embed Te Tiriti' and expand the existing Vision Mātauranga policy, which aims to 'unlock the innovation potential of Māori knowledge, resources and people' for the benefit of both Māori and New Zealand (Ministry of Research, Science and Technology, 2007, p.4). However, what does 'embedding Te Tiriti' actually mean? We argue that at a fundamental level it means something both aspirational, and also very practical: aspirational, because Māori partnering in or leading research,

science and innovation delivery has the potential to create beneficial impacts in a way that more generic approaches do not; practical, because experience of the almost 20 years of the Vision Mātauranga policy shows that barriers to Māori participation in and benefit from science and technology still exist. This is particularly the case in terms of research and development and innovation, with expert reactions to the white paper voicing concern about 'how' implementation of Te Ara Paerangi's policy goals would occur (Science Media Centre, 2022).

This article situates itself in the 'how', reflecting on the Vision Mātauranga policy, its practice as exercised through one National Science Challenge – Science for

arrangement nexuses' (Schatzki, 2002). By this we mean the need for systems of funding delivery and the infrastructural and relational 'configurations' that will sustain the performance and range of social practices, including those that are conducive to Māori engagement in and benefit from the research, science and innovation system. Such configurations work because a set of three practice elements, in this case materials, meaning and competence, are linked together and transformed through the process of doing (Shove, Pantzar, and Watson, 2012, p.12). We use this three-element framework of analysis to provide insights from practice theory that have potential to enhance the Te Ara Paerangi reform pathway, including

growth' (Science for Technological Innovation, n.d.) and includes a Vision Mātauranga theme, with specific Vision Mātauranga projects and researchers. We analyse SfTI activities using the three-element practice framework, which we suggest may have useful application for shaping Te Ara Paerangi's policy settings. We then offer two policy considerations that pay attention to different influences that support or are active barriers to embedding te Tiriti and expanding the Vision Mātauranga policy in the research, science and innovation system.

New Zealand's research, science and innovation system

Unravelling the practice 'architecture' (Spotswood, 2018) that supports New Zealand's research, science and innovation system in its current state is a first step in understanding how to change it for the future. New Zealand's current Research, Science and Innovation Strategy aims to guide priority setting and government investment in research, science and innovation across both the public and private sectors. This ranges from investigator-led research such as research supported by the Marsden Fund and centres of excellence, the mission-led research of the National Science Challenges, supports for business research and development like Callaghan Innovation, to user-led and applied research in the public service. Under the current strategy, New Zealand 'will be a global innovation hub, a world-class generator of new ideas for a productive, sustainable, and inclusive future', with processes that rely on 'fluid connections between the components of the system' (Ministry of Business, Innovation and Employment, 2019, pp.6, [i]). The strategy also has an 'extended Vision Mātauranga' principle to ensure that the research, science and innovation system is open to the best Māori thinkers, researchers and resources and protects mātauranga Māori (ibid., p.37).

The need for a revised approach to the Vision Mātauranga policy has been highlighted in the Te Ara Paerangi proposal. Māori submissions on the green paper for Te Ara Paerangi observed that the Vision Mātauranga policy was fragmented, siloed, competitive, and hindered by funding

> Māori submissions on the green paper for Te Ara Paerangi observed that the Vision Mātauranga policy was fragmented, siloed, competitive, and hindered by funding structures that failed to foster Māori researcher capability …

Technological Innovation (SfTI) – and Te Ara Paerangi's reform objectives, including the Tiriti goal. We argue that Science for Technological Innovation's goal 'to unite mātauranga Māori and western science to explore new and exciting opportunities to build a vibrant and prosperous technology-driven economy' (Science for Technological Innovation, n.d.) has provided an evidence-based practical pathway to achievement of that goal. The benefits of this approach, for both Māori and the science and innovation community, are only now being brought to fruition. However, the pathway, and our analysis of this through a practice theory lens, have broader application, including for policymakers.

Our underlying thesis is that the Te Ara Paerangi objective of making a greater impact on New Zealand's productivity and wellbeing will require 'nets of practice-

to 'advance Māori aspirations in the RSI system'.

We proceed as follows. First, we outline New Zealand's research, science and innovation system, the Te Ara Paerangi proposal and Vision Mātauranga policy. We then draw on the 'science knowledge' debate and distinctions and tensions between Western science and mātauranga Māori to highlight SfTI's approach to 'interface' research that realises the value and role of using dual knowledge and practice systems. We then present practice theory as a lens for policy implementation to embed Vision Mātauranga practice, and our case study as an example of practice change. As the largest National Science Challenge, Science for Technological Innovation aims to 'enhance the capacity of Aotearoa-New Zealand to use physical sciences and engineering for economic

Table 1: Te Ara Paerangi vision, objectives and policy framework

Te Ara Paerangi Future Pathways Vision
A research, science and innovation system that supports wellbeing for all current and future New Zealanders, a high-wage, low-emission economy, and a thriving, protected environment through excellent and impactful research, science and innovation

Reform objectives and policy directions

1 Creating new futures	2 Embedding Te Tiriti	3 Valuing our people	4 Building system agility
1.1 Establish national research priorities	2.1 Advancing Māori aspirations in the RSI system	3.1 Attract, develop, and retain talented people	4.1 Clarify roles and responsibilities
1.2 Accelerate innovation, diversify, and scale up impact	2.2 Investing in mātauranga Māori, Māori knowledge	3.2 Supporting diversity at all levels	4.2 Co-ordinating investment in future-oriented infrastructure
1.3 Grow global connectivity	2.3 Crown to lead by example	3.3 Empowering Pacific Peoples	4.3 Designing resilient and adaptable public research organisations
			4.4 Funding mechanisms that support system goals

Implementation Approach

· Phase 1 (2023) Introduce RSI workforce policy package; Release RSI Te Tiriti Statement
· Phase 2 (2024) Establish new National Research Priorities and funding mechanisms
· Phase 3 (from 2024) Undertake institutional reform where required to achieve the vision of TAP

structures that failed to foster Māori researcher capability (Te Pūtahitanga, 2022). There is a view that the existing system has not sufficiently valued mātauranga Māori, and consequently Māori have not been equal partners, leaders or beneficiaries of science innovation. A recent review by Mead et al. (2022) suggested that there needs to be greater coordination to guide government agencies' interactions with mātauranga Māori through connecting, collaborating and co-creating with Māori. Moreover, as kaitiaki of mātauranga, there needs to be greater provision for Māori to take the lead in determining how and when mātauranga is used in research, science and innovation.

In respect of these criticisms and recommendations, Te Ara Paerangi sets out to replace the current research, science and innovation system with a new framework (Table 1), with objective 2 – Embedding Te Tiriti (Figure 1) – responding to some of the concerns of Māori and others.

While the 2007 Vision Mātauranga policy has created some positive shifts, its level of impact has been less than intended (Rauika Māngai, 2020), in part due to insufficient funding for Māori-driven and focused research (Ministry of Business, Innovation and Employment, 2023). Te Ara Paerangi presents an opportunity for a more integrated policy approach, with the various components – the macro (government), the meso (research institutions) and the micro (individual scientists) – aligning around the broad objectives, including giving effect to te Tiriti and mātauranga Māori. There are challenges and tensions in such integration, many of which have their origins in the debate as to what constitutes science knowledge. The benefit of drawing from both Western science knowledge and mātauranga Māori, described by Durie (2004) as 'interface research', suggests a way through the debate and highlights the value of both knowledge systems. We examine some of the facets that constrain and support interface research before presenting our case study.

The science knowledge debate: valuing mātauranga Māori within Aotearoa New Zealand's research, science and innovation system

Contests about the validities of the two systems distract from explorations of the interface, and the subsequent

Figure 1: Te Ara Paerangi: embedding te Tiriti design – strategic shift proposal

Source: adapted from Ministry of Business, Innovation and Employment, 2022

opportunities for creating new knowledge that reflects the dual persuasions. (Durie, 2004, p.2)

The Western science knowledge and mātauranga Māori debate has been conducted across academic, social and political platforms. For example, the New Zealand Association of Scientists council has emphasised the importance of the mātauranga Māori/science relationship for the New Zealand science community (New Zealand Association of Scientists, 2022): the authors suggest that both science and

obscure the actual practice of applying different bodies of knowledge to addressing real-world problems. Debates about indigenous knowledge as science are not new, in New Zealand or globally (Broadhead and Howard, 2021; Gorelick, 2014; Whyte, Brewer and Johnson, 2015). Whatever position is taken, this does not necessarily stop relationships forming or action being taken. As Stewart (2023) argues, the debate is more than simply academic jostling: the idea of 'Māori science' has real-world application, whether to address climate change adaptation,

As Durie (2004) states, contestation over validity distracts from opportunities to create new knowledge and practice at the interface and becomes entangled with deliberate philosophical attacks on Māori knowledge. Such distraction serves a very narrow and limiting conception of scientific 'truth' (Stewart, 2023). In their submission on the Te Ara Paerangi green paper, Māori submitters argued for changes to institutional mechanisms, processes, behaviours and power structures. Such change requires respect for Māori knowledge across multiple domains and the creation of a dialogic space for enquiry and equity.

To summarise: how will the research, science and innovation system orchestrate its initiatives to enable productive dialogic spaces for interaction with Māori; and what changes to institutional mechanisms, processes and behaviours are required? We now look to practice theory and our case study to identify enablers and barriers to implementing the Vision Mātauranga policy in the current research, science and innovation system, and discuss practice theory as a theoretical and practical step towards achieving Te Ara Paerangi's policy outcomes for Māori.

> … contestation over validity distracts from opportunities to create new knowledge and practice at the interface and becomes entangled with deliberate philosophical attacks on Māori knowledge.

society benefit when systemic biases, such as lack of research workforce diversity or narrow views of what is considered 'science', are addressed. The latter point highlights the epistemological differences between notions of Western and indigenous science.

This difference was brought to the fore in debates over proposed changes to the New Zealand school curriculum to promote mātauranga Māori as a valid body of knowledge (Clements et al., 2021). Discussion juxtaposed the scientific 'value' of mātauranga Māori against the universalism of Western science. While the question of 'what is science' is an infinitely complex one, for many Māori the debate re-emphasised an ongoing colonial mentality full of 'inaccurate and racist tropes' (Leask, 2023), with an unwillingness to share decision making about science priorities and privileging a limited, Western-dominated view of science (New Zealand Association of Scientists, 2022).

This example illustrates how decontextualised philosophical debates can

manage ecosystems (Fisher et al., 2022) or address geomorphology and natural hazards (Evans, 2020).

Globally, such real-world applications are tackling complex sustainability problems, such as environmental management to reduce disaster risk in forest ecosystems (United Nations, 2015). Similarly, in New Zealand, mātauranga Māori is being used as tactical 'watchfulness' in relation to forest biodiversity, likewise contributing to more effective disaster reduction strategies (Lambert and Mark-Shadbolt, 2021). Geospatial tools like Takiwā digitise and visualise mātauranga Māori alongside science data to support environmental outcomes (Hudson et al., 2020). Mātauranga Māori has also been incorporated into marine monitoring, mapping and management frameworks, contributing to New Zealand's knowledge of the impacts of change on local ecosystems and communities (Paul-Burke et al., 2020). Such examples shift the locus of decision making to a shared problem-solving model.

Practice theory as a framework for policy implementation

Theories of practice are seen as a potential approach to explain and then implement systemic and cultural change (Nicolini, 2012; Spaargaren, 2011). Briefly, theories of practice take a wide view of the 'landscapes' in which practices do and do not take hold (Hui, Schatzki and Shove, 2016), and therefore policymakers' capacity to actively configure or intervene in this terrain. Social practices, such as Māori engaging in a research, science and innovation system, involve shared understandings of how 'things are done' (Schatzki, 2002). Therefore, practice theory is a way to understand how behaviours emerge from the way society is organised.

Practices are discrete 'entities', made up of 'elements', which are performed routinely, collectively and repeatedly (Spotswood, 2018). The 'elements' of social practices are materials, meaning and competence (Figure 2). Materials include 'things' such as technologies, tangible physical entities, and

the stuff of which objects are made. Meanings encompass symbolic meaning, ideas, aspirations and expectations. Competence includes skills, knowledge and technique. It is the combination of elements and their changing configurations over time that are important (Shove, Pantzar and Watson, 2012). Linkages among elements are central to understanding how practices are maintained or changed. This is because changing practice requires breaking or challenging the links among interrelated elements.

The focus on the elements of practice and their changing configurations over time orients attention away from individual actors and their behaviours and dispositions (ibid.). This understanding emphasises that practice elements exist before and after individuals or organisations integrate them into a particular set of activities or routines. As stated, practice theory shows us how behaviours emerge from the way society is organised, with specific interest in societal patterns (Spotswood, 2018), including temporal patterns, like experiences of

Figure 2: Elements of a practice
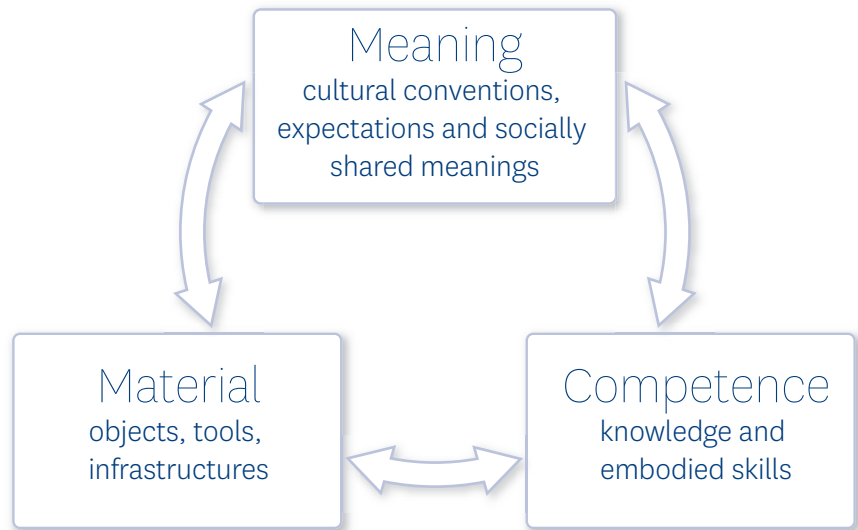
Adapted from Shove, Pantzar and Watson, 2012

colonisation or racism. The proposition here is that forms of competence and the meaning of participation evolve as practices are reproduced time and again, and as they are adopted by new or different 'carriers' – whether individual, group or organisation (ibid.). Analysis of which competing or complementary practices

prevail opens a route to understanding and then addressing the complex sociocultural context which locks us into certain patterns of behaviour, including the way we conceive of and organise systems of science and innovation.

As such, practice theory as an approach to framing a change problem has potential

Figure 3: Relationships between the three practice capacities – current and future trajectory
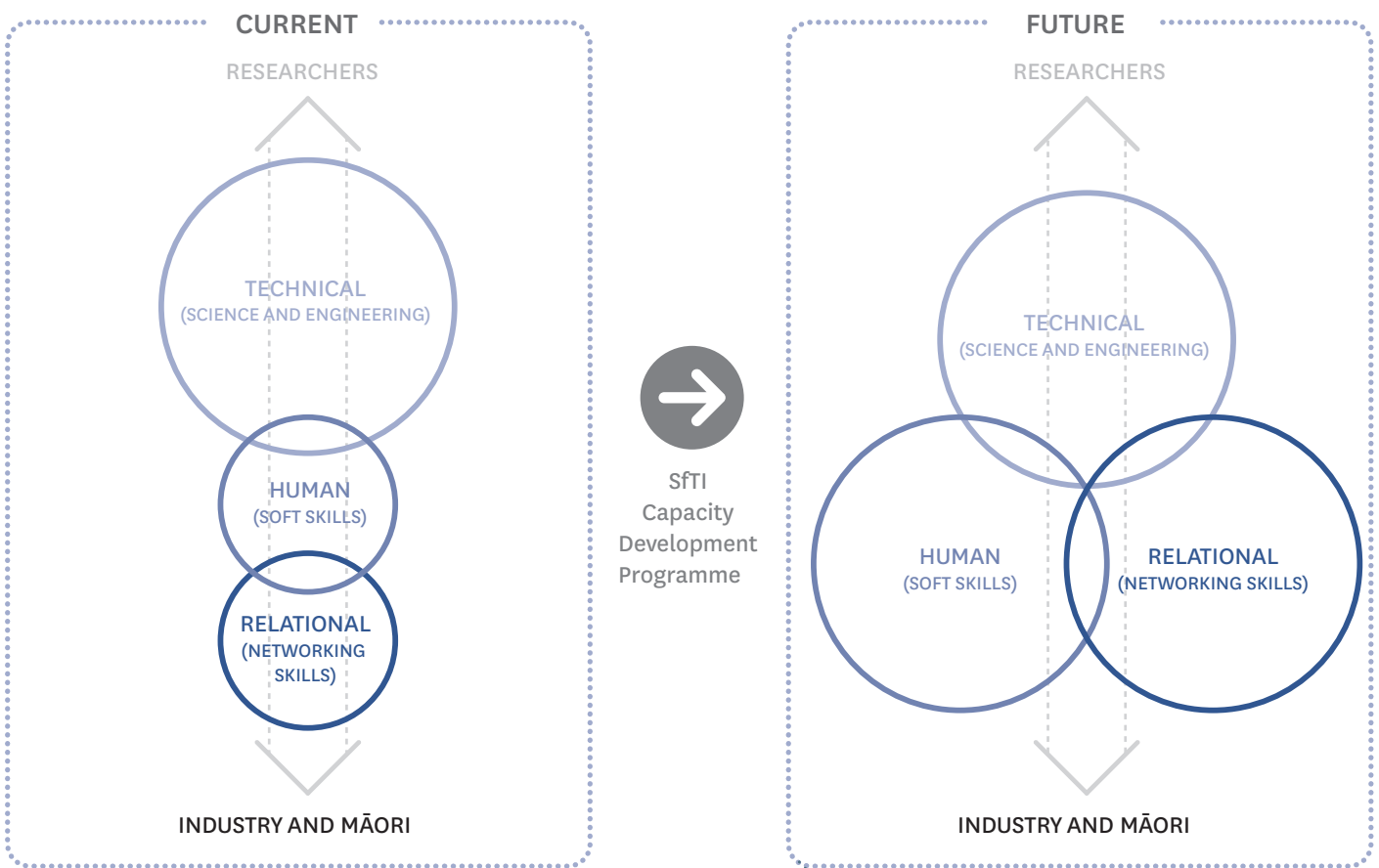
Source: Science for Technological Innovation, 2022a

Table 2. SfTI Practice Elements

Practices	Elements embodied in SfTI practices
Mission lab design	SfTI has redesigned how science teams are brought together through mission lab design. In the upstream stage of innovation, mission labs are designed to counter ill-preparedness to work within an industry of Māori framework (*competence*). This approach was based on the observation that scientists' strong ties to their pre-existing networks would not necessarily lead to crossing disciplinary or organisational boundaries towards innovation. The mission lab process occurs prior to science input, with industry and Māori defining the research they want to see. Thus, projects are co-designed (*competence*) with industry and Māori to generate collaborative paths to impact. Mission labs assembled 'best teams' formed outside established science team networks, including Māori people and concepts (*mātauranga*) as part of research design (*meaning*). This means greater diversity of views, experience, and willingness to move outside science-focused metrics of 'best'.
Māori locations as sites of innovation	Science teams absorbing Māori approaches to science requires not just engaging intellectually with a Māori world view (*meaning*), but also experiencing it through mātauranga embodied in things or places material to Māori. Moving 'out of the lab' allowed SfTI researchers to better canvass needs and community values, generate practical scientific insights more rapidly, enhance trust, and shift mindsets to understand and welcome different world views. Embedding research in places of significance to Māori (e.g., marae, natural environment) enabled better understanding of Māori contexts and practices. Particular geographic localities with their culturally situated conditions and interconnectedness have thus influenced how projects are undertaken.
Innovation Intermediaries: Kāhui Māori	SfTI's Kāhui Māori acted as innovation intermediaries (*competence*) and to ensure that te ao Māori innovation pathways (*meaning*) are embedded appropriately. Drawn from Māori business, community and academia, the kāhui provided advice and guidance and developed new processes and tangible materials to accelerate research and development and innovation to Māori and science communities. For example, one material output was a small booklet which included traditional Māori songs, invocations and protocols, to encourage a shared sense of meaning and purpose across all researchers. Another was an assessment protocol that rigorously interfaced Māori resources, knowledge and talent and high-quality science at project initiation. In some cases such projects have gone on to commercialisation pathways, while others are being applied more directly with Māori communities.
Redesigned competencies through Capacity Development programme	SfTI's Capacity Development programme aimed to build competency and engagement with Māori through attendance at events (*materials*), science leadership programmes, and entrepreneurial development (*competence*). For many researchers, attendance at hui has brought critical reflection on the purpose of research (*meaning*), changing assumptions about Māori needs (*meaning*), and influencing how grant applications are written (*competence*) to incorporate new methodologies like wānanga (*materials*). For Māori researchers, participating in leadership or commercialisation programmes developed new competence able to be applied to innovation projects with Māori communities and increasing Māori capacity in research and development.

utility for policymakers, with relevance for understanding processes in areas of complexity such as economics, environmental politics, or complex global problems (Shove, 2017). A New Zealand example of where practice theory can be applied to investigate and encourage energy transitions is Stephenson's 'cultures framework' (Stephenson, 2023). It uses cultural ensembles and patterns of associated motivators, activities and material as a diagnostic to respond to the crises of climate change and sustainability. As an analytical approach it offers advice to policymakers and researchers on the use of the framework.

Both the cultures framework and Shove, Pantzar and Watson's three-elements framework have practical relevance for policy intervention and identifying the types of influences that either enable or constrain a policy like Vision Mātauranga in research, science and innovation systems. We now turn to our case study analysis.

Case study: Science for Technological Innovation as Vision Mātauranga policy implementation practice

Science for Technological Innovation is one of New Zealand's National Science Challenges, with a mission 'to enhance the capacity of New Zealand to use physical and engineering sciences for economic growth and prosperity' (Science for Technological Innovation, 2022b, p.7). Areas of research have included sensors, robotics and automation; data science and digital technologies; and materials, manufacturing technology and design. SfTI's Building New Zealand's Innovation Capacity programme is a longitudinal programme researching the enablers and barriers of collaborative, mission-led, 'blue skies' science, with a particular focus on how the research, science and innovation system responds to Māori in the context of high-tech innovation (Science for Technological Innovation, 2020, 2022b). To achieve its mission, SfTI developed approaches to enable scientists to collaborate and engage with industry and Māori, conceptualised as a set of three intersecting capacities: technical science, human competencies and attributes like entrepreneurialism, and relational networks (Figure 3).

Table 3: RSI system shifts to embed VM policy as integrated science practice

From	To	Barrier	Priorities	Element
A closed, competitive system	A collaborative system with networked open innovation (OI)	Funding incentives IP laws and practices Policy settings Contracting arrangements	· Invest in innovation intermediaries (e.g., Kāhui Māori)	Materials/Competency
			· Provide policy and resourcing to encourage or mandate engagement	Materials
			· Build long-term, authentic high-trust connections among Māori, industry and scientists through structured collaboration methodologies	Meaning
			· Standardise Māori IP contracting clauses, including Māori data protection	Materials
Western science only	Western science and mātauranga Māori	World views about 'what science is – and isn't'	· Dedicated funding for Māori science research priorities	Materials
			· Increase scientists' understanding of te ao Māori and cultural competency	Competency
			· Mentor Māori researchers into research and development/innovation roles – particularly early-career researchers (whanaungatanga approach)	Competency/meaning
Technical science only	Technical and entrepreneurial / cultural skills	Individual and institutional incentives	· Improve role clarity (including connections) · Address Māori innovation incentives · Invest in professional support and development for scientists to develop entrepreneurial and cultural capabilities	Competency/meaning Meaning/materials Materials / Competency

This model necessitated the development of new and modified configurations of routines and particular types of materials and tools, with individuals needing to draw on specific meanings and understandings to perform these new practices and routines (Science for Technological Innovation, 2020). Table 2 identifies some of these routines, materials, tools and meanings as they pertain to Māori.

Science for Technological Innovation's Vision Mātauranga policy implementation evolved over time as it was actualised through specific materials, meanings and competencies, and as its practice was adopted by new carriers – researchers, partners, administrators, students, businesses. While individuals came and went over the period of our research, diverse elements associated with how the Vision Mātauranga policy was practised continued to circulate within and among many different practices and practitioners beyond SfTI. Accordingly, rather than focusing on the 'frontlines of behaviour change' – whether at the individual or organisational level – a practice theory lens places the practice configuration at the centre of analysis (Hampton and Adams, 2018).

Our case study sample of findings shows how analysing competing or complementary practices can effect certain patterns of research, science and innovation behaviour, and as such is an exemplar that might inform implementation of Te Ara Paerangi objectives.

Considerations for Te Ara Paerangi policy directions

Standard policy interventions generally seek to alter one 'element', such as funding mechanisms for targeted Māori projects, or Māori-led and community-led programmes. Showing how all three of Shove, Pantzar and Watson's elements are interconnected draws policymakers' attention to how a change in any one of these elements can affect other elements. This has clear implications for policy design and intermediary activities like investment in capability. While the Vision Mātauranga policy, and likewise Te Ara Paerangi's Tiriti objective, can be viewed as a material tool, made visible via websites, or downloaded as a pdf, in its research and development innovation intent it is only one part of one element. Table 3 illustrates potential shifts in the research,

science and innovation system that, from our case study, align to practice elements to accelerate Māori science, technology and innovation.

We suggest that to design and enable the scale of research, science and innovation interventions, particularly in the high-tech area that is the focus of Science for Technological Innovation's activity, practice theory has much to offer. Shove, Pantzar and Watson's three-way framework offered a useful insight into the constellations of SfTI's practices that 'worked'. Cultural stasis and cultural change are often the result of inter-element dynamics being either supportive of the status quo and therefore resistant to change, or weak and easily disturbed. Change is not solely a matter of choice of individuals or organisations; it is a result of the different infrastructures, skills and shared ideas that inform what makes something 'the norm'. It will require new constellations of practice that build knowledge of te ao Māori; develop new capabilities in government and research entities, along with more substantial roles for Māori in research, science and innovation policies and structures; and target material shifts,

including funding. Such a process includes Te Ara Paerangi's proposed policy to create research, science and innovation frameworks that recognise, value and fund Māori governance, world views, priorities and management approaches.

Returning to Stephenson's cultures framework, policy intervention is viewed as 'a purposeful change to an external influence', whether existing policies and laws, institutions, technologies, shared beliefs or ideologies. As part of policy design, it is important to identify how these influences support or constrain practice change. Some may be apparent from the outset, while others may be obscure. The latter can be elucidated through deeper engagement with actors, such as organisations like the Ministry of Business, Innovation and Employment, businesses, or iwi and hapū. Therefore, we suggest that in relation to Te Ara Paerangi's objectives, rather than the behaviour of the individual or organisation as the unit of analysis, there needs to be a shift towards an emphasis on practice. In turn, this will (1) require an analysis of external influences that are already supporting policy outcomes like Te Ara Paerangi's Tiriti objective, and that

should be sustained; and those (2) that are barriers that should be removed. Potentially this may involve dismantling or revising existing misaligned policies as opposed to creating new ones.

Incorporating practice theory in policy requires focusing on those elements necessary to truly embed te Tiriti into the research, science and innovation system. Attaching or detaching various elements in an ongoing, routinised way has potential to transform the terrain.

Conclusion

As we argue in our introduction, we view Te Ara Paerangi's Tiriti objective as an aspiration to achieve impact from science-based innovation for Māori specifically, and, in line with the almost 20 years of Vision Mātauranga policy, for New Zealand more broadly. Creating practices that position Māori as partners in and leaders of research and development delivery has accelerated innovation impact in a way that previous approaches have not. Hence, we support Te Ara Paerangi's aim to build Māori research capacity and capability, and embed Māori aspirations through a planned strategic shift from the current to

a future state that is more reflective of and responsive to te Tiriti o Waitangi.

Our analysis indicates that Science for Technological Innovation's focus on integrating components of practice can create real gains in science-based innovation, pointing towards how to achieve Te Ara Paerangi's objective of greater impact on New Zealand's productivity and wellbeing. This has been especially true for the Māori researchers, partners, leaders and communities who have been involved in SfTI's research and development projects and capacity development programmes. However, such benefits could only be derived once a host of materials, meanings and competencies had been developed, reformulated or cast aside to create new constellations of practice. Practice theory can, therefore, provide a guiding policy framework that pays attention to the various elements that require routine, collective and repeated performance to create the transformations Te Ara Paerangi envisions, including the transformations to embed and accelerate Māori innovation.

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Sara Walton and Trudie Walters

The Practice of Science for Technological Innovation
learnings and implications for Te Ara Paerangi

Abstract

An effective science system needs to provide expertise and knowledge to respond to societal issues in Aotearoa New Zealand. In 2022 the government released the white paper *Te Ara Paerangi: future pathways* to outline a vision for a future science system. This research explores how mission-led science has operated through the National Science Challenges, using Science for Technological Innovation as a case study. In the context of Te Ara Paerangi, the research examines the elements of Science for Technological Innovation's practice and offers implications for future mission-oriented science programmes that will be relevant to government policymakers, universities, Crown Research Institutes and science leaders.

Keywords mission-oriented science, Te Ara Paerangi, National Science Challenge, Science for Technological Innovation, social practice theory

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The white paper *Te Ara Paerangi: future pathways* (Ministry of Business, Innovation and Employment, 2022) outlines the government's direction for the future of the research, science and innovation system in Aotearoa New Zealand. There are numerous goals associated with these future pathways, and some of these future directions continue with current models – for example, there are still going to be mission-oriented science programmes. As such, aligning current and past ways of operating with how the future will look is essential. Acknowledging the whakapapa of where we have come from, the kaupapa of what it all means, and then how it works moving forward is essential as these ambitious goals are operationalised. There have been many learnings from the current programmes that it makes sense to capture and develop in these future pathways.

In this article we focus on mission-oriented science practices, and on one National Science Challenge, Science for

Figure 1: Research, science and innovation strategy

By 2027, New Zealand will be a global innovation hub, a world-class generator of new ideas for a productive, sustainable and inclusive future.

Guiding Principles
Excellence - Connections - Impact

1. MAKING NEW ZEALAND A MAGNET FOR TALENT
Develop a large scale talent initiative to grow, attract, and retain the best researchers, entrepreneurs, investors, and visionary thinkers.

Ensure diverse talent can thrive and grow in our research and innovation system.

2. CONNECTING RESEARCH AND INNOVATION
Develop a global best practice research commercialisation system, with a growing network of technology incubators, and a regulatory systems approach to publicly-funded IP.

Connect New Zealand with global research leaders working at the knowledge frontier. Integrate with overseas RSI systems for mutual benefit on global challenges, such as climate change, and opportunities to share research infrastructure.

3. START-UP^SCALE-UP
Scale up our research and innovation capabilities in key focus areas at the global frontier.

Develop a flexible and graduated system of support that enables start-up firms to fast-track their growth and achieve scale.

Establish innovation missions to address public good opportunities, such as kaitiakitanga of our biological heritage, and health system delivery.

4. TOWARDS AN EXTENDED VISION MĀTAURANGA
Ensure the RSI system is open to the best Maori thinkers and researchers.

Ensure the innovation system is open to the energy and ideas of our Māori entrepreneurs. Resource and protect Mātauranga Māori.

Create an environment where Māori entities and businesses invest with confidence in research and innovation.

5. BUILDING FIRM FOUNDATIONS
Create a progressive investment programme to enhance the contribution of main RSI funds to government health, social, environmental and economic objectives. Focus on sustainable increases to the R&D Tax Incentive, the Endeavour Fund, the Marsden Fund and the Health Research Council.

Ensure our structures, funding, and policies encourage our public research organisations to form a coordinated, dynamic network of research across the horizons of research and innovation.

Ensure our research infrastructure is placed on a sustainable footing. We will focus on e-research, databases and collections, and international scale infrastructure collaborations.

Source: Ministry of Business, Innovation and Employment, 2019, p.3

Technological Innovation (SfTI), to ask: what are the key learnings from the practice of Science for Technological Innovation that are relevant for Te Ara Paerangi, the future of the science system in Aotearoa New Zealand? In order to address this question, we begin by asking, what is the practice of SfTI? We then examine what aspects of the practice of SfTI are relevant and useful for the future science system in Aotearoa.

Background
Research, science and innovation is considered to be the building block of a 'modern economy' (Ministry of Business, Innovation and Employment, 2019). Made up of several different parts, institutions and actors, the proposed research, science and innovation system for Aotearoa New Zealand is depicted in Figure 1.

The white paper *Te Ara Paerangi: future pathways* envisages an 'RSI system that supports wellbeing for all current and future New Zealanders, a high-wage low emissions economy, and a thriving, protected environment through excellent and impactful research, science and innovation' (Ministry of Business, Innovation and Employment, 2022, p.7).

The white paper signals large-scale change that is called 'transformational', and is organised into areas of:
- connections between researchers, industry and other end-users;
- delivering impact for Māori and Pasifika people;
- attracting international investment and overseas investment;
- a better resourced system;
- attracting a skilled workforce (key to greater productivity and living standards).

These are all relevant and useful visioning statements for a proposed national research, science and innovation system. Part of the infrastructure and funding proposed in this new system are mission-oriented science programmes that are generally understood to have the objective of establishing a high-income, environmentally sustainable economy. These are part of the innovation infrastructure and funding opportunities for science in Aotearoa and sit alongside traditional, more diffusion-oriented platforms. Over the past nine years there have been 11 such mission-oriented science programmes, in the form of the National Science Challenges.

National Science Challenge system in Aotearoa New Zealand
Since 2014 National Science Challenges have operated in the research, science and innovation system to produce mission-oriented science that is for the benefit of society. They were designed to 'bring together the country's top scientists to work collaboratively across disciplines, institutions and borders to achieve their objectives' (Ministry of Business, Innovation and Employment, n.d.). The topics or missions chosen include healthier lives, sustainable seas, high-value nutrition, biological heritage and building resilience to nature's challenges. The total funding pool allocated across the National Science Challenges was $680 million over ten years. Each challenge was overseen by the Ministry of Business, Innovation and Employment but hosted by a specific university, Crown research institute or other entity, and was required to create a governance board and structure.

The National Science Challenges were guided by five high-level principles:
- mission-led;
- science quality;
- best team collaboration;

- stakeholder engagement and public participation;
- Māori involvement and mātauranga.

They were designed to disrupt the business-as-usual approach within Aotearoa New Zealand's science system. They did this through a few mechanisms, including by having a longer funding period than often provided for science platforms, which enabled the challenges to invest in more science and develop longer term partnerships from the start of the research. They also achieve this by having explicit engagement with the Vision Mātauranga policy, which created a conscious weaving of indigenous and mainstream science traditions (Ministry of Research, Science and Technology, 2007). Furthermore, the challenges needed to address the most important issues for Aotearoa New Zealand and deliver excellent science with an excellent team resulting in mutual benefits being more than the sum of parts – called 'additionality'.

Science for Technological Innovation has the aim to 'enhance the capacity of New Zealand to use physical sciences and engineering for economic growth' (Science for Technological Innovation, 2018, p.2). SfTI involves approximately 285 researchers across 36 organisations, with ten larger, 'spearhead' projects and 32 smaller seed projects. Here we report on research exploring the practice of SfTI to explore one example of how mission-led science has operated in Aotearoa New Zealand, and to develop learnings for future mission-oriented programmes in the research, science and innovation system.

Mission-oriented science programmes

Mission-oriented programmes create academic research agendas that are responsive to societal demands. They aim to encourage the development of capabilities crucial to addressing complex 'grand challenges', such as climate change, global food security and demographics (Ulnicane, 2016). Two key assumptions underlie mission-oriented thinking. The first is that major concerns may be addressed through creative processes rather than, for example, changes in consumer habits or significant regulatory and legal actions (Mazzucato, 2018). The second accepts that academic creativity is a

> To understand mission-oriented practice, and as Te Ara Paerangi moves to the next level, it is useful to understand the practices of current mission-oriented science operating in Aotearoa New Zealand – in this case, by focusing on Science for Technological Innovation.

significant lever for triggering larger social innovation processes.

Mission-oriented innovation policy is often contrasted with other innovation policies, such as diffusion-oriented policies (Brown, 2021, p.743) that opt for a more 'experimental, interactive and relational approach', or even more traditional technology-oriented mission approaches which have a focus just on the technology without including any of the societal impacts and effects (Wanzenböck et al., 2020).

Mission-oriented innovation is not new, but has recently been popularised in innovation and science systems by Mariana Mazzucato, positioning it as a new way to frame 'how we might do capitalism "differently"' (Mazzucato, 2021). According to Mazzucato, a mission-oriented approach refers to governing policies that employ big science to meet big problems. She adapted the notion of a mission from reflections on the Apollo space mission and uses that

metaphor to think about missions for current societal challenges (ibid.). As in the mission to the moon, the public sector sets the mission, integrates the efforts and gives stakeholders directions. In such an approach, the government occupies the driving seat and works closely with several sectors to solve hundreds of individual problems.

There are a number of concerns regarding science programmes based on mission-oriented innovation policies. These include concerns about their lack of clarity and specificity (Janssen et al., 2021), especially considering that some of the original mission programmes that set the agenda for missions are not relevant models for current challenges (Foray et al., 2012). Other concerns are that mission-oriented science can have the potential to have adverse effects on innovation and societal challenges because the research agendas could be shaped by vested interests (Janssen et al., 2021). Finally, Brown (2021) also notes the opaque nature of mission-oriented policy, which further highlights the need for careful design of practices in the implementation of mission-oriented policies to ensure their success.

Mission-oriented thinking as described above has been used to shape the National Science Challenges in the Aotearoa New Zealand science system. The 11 challenges were developed by asking the public what they saw as the key challenges that scientists need to be working on for societal benefit. Called the 'Great New Zealand Science Project', the call was for ideas and then submissions on the chosen challenges. The aim was for the challenges to 'tackle the biggest science-based issues and opportunities facing New Zealand' (Ministry of Business, Innovation and Employment, n.d.). The outcomes of the challenges needed to be of benefit to Aoteraoa New Zealand through their scale and scope, delivering impact and engaging the public and appropriate end-users (Ministry of Business, Innovation and Employment, 2013).

Summing up

Te Ara Paerangi: future pathways has outlined potential structural changes for a future research, science and innovation system. However, to bring about

transformation, moving beyond structural changes will be necessary to embed change. We suggest that transformation must also be at the level of operation or practice. To understand mission-oriented practice, and as Te Ara Paerangi moves to the next level, it is useful to understand the practices of current mission-oriented science operating in Aotearoa New Zealand – in this case, by focusing on Science for Technological Innovation.

Research methods

To explore how mission-led science is practised in the National Science Challenges, a qualitative mixed-method approach was taken using SfTI as a case study. Data was collected via participant observation (at workshops and leadership team meetings), semi-structured interviews (with one past and five current members of the leadership team) and secondary sources (such as website information and annual reports), which allowed triangulation of the data. This triangulation of data, where all three forms of data were compared and contrasted, helped ensure the credibility and dependability of the findings (Lincoln, Lynman and Guba, 2011; Krefting, 1991).

A qualitative case study approach was chosen primarily because it enables aspects that Strauss and Corbin have identified as inherent within qualitative research, such as:

> needing to get out into the field to discover what is really going on … complexity and variability of the phenomena and of human action … the understanding that meaning is defined and redefined through interaction … and an awareness of the inter-relationships among conditions (structures), action (process), and consequences. (Strauss and Corbin, 1998, p.10)

Talking to and observing people enables such data to be generated which can speak to the practices involved in SfTI.

The first phase of the research involved observations of one of the larger (spearhead) project teams. This project, Building New Zealand's Innovation Capacity (BNZIC), largely employed social scientists to 'evaluat[e] how Science for

> Participant observation is a method whereby the researcher is involved in the field of study, rather than an outsider talking to someone or having someone reflect on their experience through a survey.

Technological Innovation (SfTI) researchers and external stakeholders collaborate on projects with the resulting insights capable of boosting innovation performance' (National Science Challenges, n.d.). These BNZIC team has approximately 12 researchers, who attend quarterly meetings. Each meeting was observed over a two-year period and notes were taken from the meetings that constitute the observational data for this study.

Participant observation is a method whereby the researcher is involved in the field of study, rather than an outsider talking to someone or having someone reflect on their experience through a survey. Indeed, the researcher becomes the research instrument and as such is placed in the social milieu or social situation of study and immersed in that environment (Brannan and Oultram, 2012). It is a method commonly used by social scientists to understand how people see the world (Silverman, 2006), and in this case it was able to generate key insights from the start. The first author was known to the group and had

an intimate understanding of both the National Science Challenges and SfTI; this 'insider' status meant that they had to negotiate the dual roles of being a team member and studying the team at the same time. Being a member of the BNZIC team meant that acceptance into the group and understanding group norms were not key concerns. It did, however, mean that this author was very close to the research, and interpretation of the data might then become more of an issue than access and understanding. We found that triangulating the participant observation data with interviews and secondary data, along with the critical outsider perspective of the second author, who had no involvement with (and minimal knowledge of) the National Science Challenges, enabled a triple check on the findings (Lofland et al., 2006).

The BNZIC team met quarterly via Zoom video call for two hours and twice a year had two-day face-to-face meetings for updates, discussing findings and deciding on future directions. A selection of the approximately 12 researchers in the BNZIC team would attend each meeting, and the observations included every researcher at some point over the two years. Every meeting was observed over that time. While participating in these meetings, the first author took notes, focusing on two key facets: the outcomes of the meeting, and how the SfTI process was operating.

These notes became extensive over time and, as she reflected on them, she began to identify recurring patterns and organised them into key areas. She found that social practice theory was a very useful tool for framing notes and capturing what was being discussed in the meetings. After approximately a year of observations, the social practice theory framework was presented to the BNZIC team, along with the data analysis to date. The team supported the findings and the use of the framework as a useful theoretical tool to make sense of the practice of SfTI as a mission-oriented science programme. After this, observations of the meetings were continued until the point of data saturation was reached (Guest, Bunce and Johnson, 2006); this occurred after two years of observations.

The authors carried out the interviews in a face-to-face format, either in person or

Table 1: SfTI interview subjects

SfTI position/role
Director
Past chair of the SfTI board
Theme leader x3
Deputy director x2

via Zoom, and interviews averaged around 60 minutes. They were digitally recorded with permission and transcribed using Otter software. The transcripts were subsequently checked against the recordings by the second author and errors corrected. Ethical approval was obtained for the study and consultation with Ngāi Tahu conducted through the Māori Development Office at the university level before potential participants were contacted by email, at which point an information sheet and a consent form were provided. Interviews were conducted with all six members of the SfTI leadership team across a range of roles/levels (Table 1), some of whom had been involved since its inception. The leadership team were the ones making the key decisions regarding the operations and practice of the challenge and, as such, it made sense to interview them all for this study on the practice of mission-oriented science.

Using a semi-structured interview approach, questions were asked to gain as much participant voice and understanding as possible. The interviews began with an open question asking participants for their story of SfTI. Using a narrative approach enabled participants to tell their own story at the level of detail they were comfortable with (Kvale, 1996); it also allowed flexibility for the participant to mention aspects that were important and had meaning to them while also enabling probing from the interviewer (King, Horrocks and Brooks, 2018). The rest of the interview questions were focused on the three elements of practice theory – understanding the infrastructure, the skills and competencies, and the meanings and values of the SfTI science challenge. The questions were designed to identify what, from the participant's perspective, were the key elements they see operating in the challenge.

Finally, secondary data was collected to ensure that all potential relevant sources of information were covered. The SfTI annual

> ... leadership team consciously sought to create a science programme that meets its mission through practices that cut across science disciplines and mātauranga Māori, enabling people to work together across iwi, industry, community and researcher roles.

reports, 2016–20 to the Ministry of Business, Innovation and Employment were made available to the research team. These reports followed a template developed by the ministry, with set headings and maximum word counts per section, in order to standardise reporting across all National Science Challenges. The documents were used as a way to validate information generated from the interviews and observations.

Analysis – social practice theory

Social practice theory was used as the analytical framework to make sense of the data set. By its inherent nature, practice is a social activity (Reckwitz, 2002), encompassing collective agreements on 'how things are done'. Practice theory examines human activities that contribute to the organisation, creation and alteration of social existence (Schatzki, 2001, p.10). According to Reckwitz, a practice is a habitualised form of conduct comprising

multiple interconnected elements. These elements encompass tangible objects, cognitive processes, knowledge and comprehension, practical skills and emotional states (Reckwitz, 2002, p.249). While individuals enact practices, these are inherently social actions, thus embodying both individual agency and the contextual framework within which they operate.[1]

There are many different ways in which we could make sense of the way SfTI operates. We could have adopted a strategic management approach and focused on the structures and strategic competencies, or a more behavioural approach that would highlight the behaviour of the scientists involved in the SfTI challenge. Instead, we have drawn on social practice theory to place the focus on practice, an approach that combines the material, human and discursive to understand how practices form established routines and create the ways in which things get done. Social practice theory is often used in energy studies to make sense of the ways in which people consume energy through normalised everyday practices. It is drawn on in energy studies to show how policy can shape the way in which practices are formed, particularly as policy can often provide the infrastructure of the practice itself (Hampton and Adams, 2018).

A framework developed by Shove and Pantzar (2005) to analyse the practice of Nordic walking was utilised. This framework recognises practices as compositions of concepts (meanings, symbols), skills and competencies (skills, procedures) and materials (infrastructure, technology, materials and processes) that combine to form a social practice through regular and repetitive activity. Practices constitute the recurring habits individuals engage in; they signify patterns and sequences of daily existence (Watson, 2012). Viewing practices as routine activities within a mission-oriented science programme offers a useful approach to make sense of how they operate.

Findings

We found that Science for Technological Innovation, to meet the requirements of a mission-oriented science programme, adopted a 'deliberately different' practice. Its leadership team consciously sought to

create a science programme that meets its mission through practices that cut across science disciplines and mātauranga Māori, enabling people to work together across iwi, industry, community and researcher roles. They also acknowledged that capacity development would be needed to develop the skills across the SfTI team to support the goals of the programme. Across the practices developed as part of SfTI there seems to be recognition that changing science programmes does not just happen organically, but requires making conscious decisions to be 'deliberately different'.

In analysing SfTI as 'deliberately different', we identified the following key elements:

- an inter- or multidisciplinary approach to research and knowledge, including mātauranga Māori;
- resourcing, supporting and facilitating relationship development across teams;
- funding capacity development (beyond the researchers' technical skills);
- funding 'mission labs' to bring various people together, which meant working across sectors, knowledges (e.g., indigenous and Western) and disciplines on key issues;
- having an ethos of cutting-edge and risk taking;
- working with 'open' people who are willing to engage in something deliberately different.

Drawing on social practice theory, the following model illustrates the practice of SfTI as a combination of material 'stuff', skills and competencies, and meanings. Together these three elements constitute the practice of the SfTI programme.

Key learnings

There are a number of successful practices embedded in the SfTI programme that can be taken as key learnings for mission-oriented science in the Te Ara Paerangi programme. We outline the main ones here.

Providing appropriate infrastructure for 'stretchy' and 'sticky' science

SfTI defined both early on and these were important goalposts for scientific endeavour. 'Sticky' science is described by SfTI as research that is relevant for New Zealand, while the stretchy is about

Figure 2: The Deliberately Different Social Practice of The SfTI Science Challenge
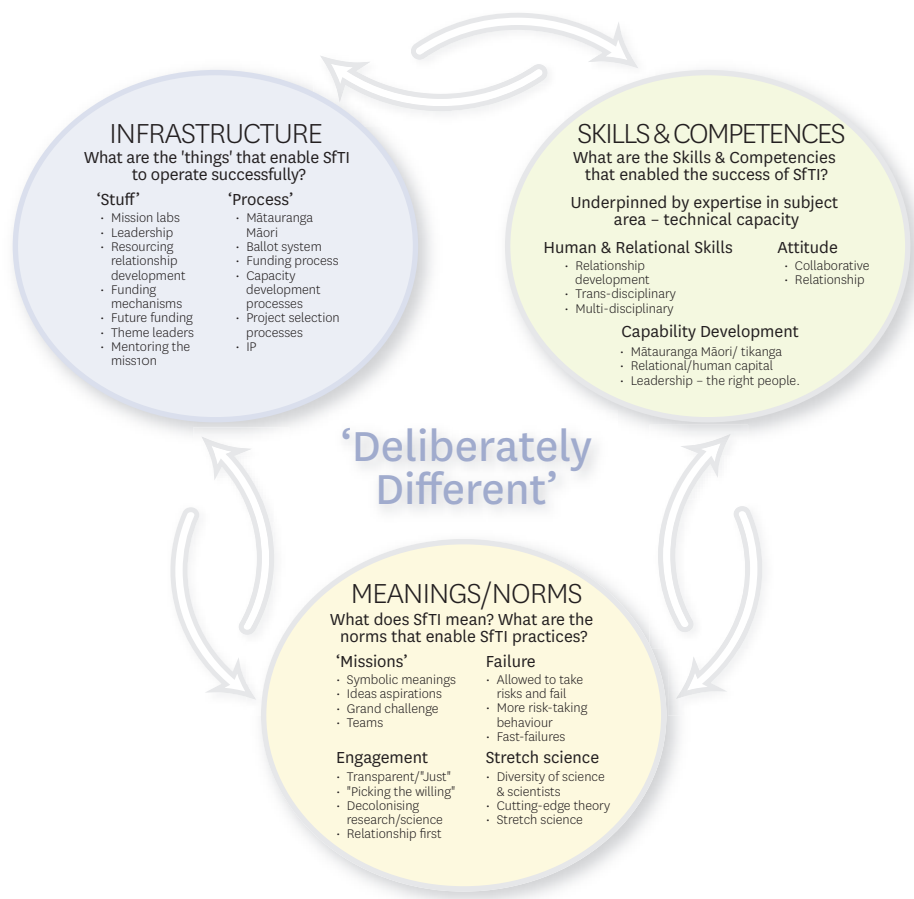
encouraging researchers to look five to ten years into the future and to target novel technologies, rather than something that is already being developed, either here or overseas (Science for Technological Innovation, 2018). As such, science ideas need to be generated initially from a bi-cultural co-development framing, including a mix of industry, Treaty partners, stakeholders and scientists. A collaborative approach is needed to identify the science that is required for the challenges Aotearoa New Zealand faces, and this needs to be continuously evolving and adequately resourced as part of the science system.

Te Ara Paerangi policy direction 1.2 is to 'accelerate innovation, diversify and scale up impact'. The aim is for 'seamless mobilisation of knowledge between research organisations, research partners, next-users and end-users' (Ministry of Business, Innovation and Employment, 2022, p.39). This policy direction assumes stretchy and sticky science. Therefore, it will need the development of successful collaborations that cross disciplinary boundaries, research institutions, iwi,

industry and end-users in order for there to be transformation of the research, science and innovation system. The white paper mentions building on initiatives already underway and we would agree that there are National Science Challenge system learnings on how best to bring together various interests to develop new and novel collaborations.

One of the key SfTI transformative practices to be deliberately different and mission-led are the mission labs. These provide an example of how relationships were successfully developed at the start of the project, with the appropriate funding. Mission labs were created to bring people together to develop further projects under the SfTI umbrella. One participant described the mission labs as being 'about forming one best team with capability from across the country', the aim being for people to bring their capability to 'mission design workshops', rather than individually coming up with their best idea for a project. The workshops aimed to get partners and stakeholders of a particular issue identified as important to work together to both

identify the issues and solutions and form a research team.[2] During the workshops, a writer was provided to help develop a proposal, so it 'wasn't about "go away write a proposal and we'll fund it", it was actually a collaborative venture'. Another participant described the labs as a

> very open brainstorming process, that identifies those high-level mission areas – intelligent oceans, hazardous farming, you know, what things do we think are going to be important. And then we keep those people involved. So, as we start to frame up our mission, we test that with those people, and we form industry advisory groups that are for SfTI as well as for the projects.

Implications for future mission-oriented science

Crucial relationships in the science system often need infrastructure and support to be successful. Drawing on the practice of SfTI, we suggest that processes to develop 'seamless mobilisation of knowledge' in the science system need to be resourced and facilitated professionally to effectively create the type of relationships needed to be successful. Processes like mission labs show different ways of creating science projects that can successfully provide effective science in Aotearoa New Zealand.

Skills and competencies: people are at the heart of any mission-led science programme

As such, relationships in the science ecosystem need to be created, supported and valued, and the skills and competencies of people need to be developed to meet the needs of the science system.

The reforms to the science system outlined in the white paper will, it states, 'establish and grow connections between research, industry and other end-users to help take research through to impact' (Ministry of Business, Innovation and Employment, 2022, p.7). The proposed reforms also rely on the skills and competencies of those involved in the science system to be able to meet the needs of this future transformed system. If Te Ara Paerangi is to create a new science system for Aotearoa New Zealand, there needs to be an acknowledgement that new practices

The mission-oriented science that is part of Te Ara Paerangi seems set to continue, with the aim of addressing the needs and challenges of Aotearoa New Zealand through scientific knowledge.

will need to emerge, and that these practices will need new skills and competencies from the actors in the system.

In addition, to increase the mobility of the research, science and innovation workforce (policy direction 1.2), capacity development will be essential. Furthermore, policy direction 3.1 outlines what will be done to attract, develop and retain talented people, but seems to rely on new fellowship schemes, broadening careers, addressing contracts and establishing expectations. Adding capacity development to understanding the attraction, development and retention of people would also be essential.

The practice of SfTI being deliberately different was also founded on skills and competencies to enable a different science practice. As one of the participants mentioned, 'we're not just interested in funding science, we're also interested in the person'. This comment was in relation to the perception that human and relational capital, as well as technical skills, are important when working in multidisciplinary science teams for mission-oriented research. The participants in the research recognised that for the

challenge to be successful there needed to be capacity development programmes to learn and develop these skills and competencies. These capacity development opportunities were strongly encouraged for all researchers involved in SfTI. The programme was managed by a SfTI team member and opportunities were developed specifically for SfTi researchers.[3]

As such, while recognising the technical excellence of its people, the practice of SfTI involved capacity training and mentoring being offered to all team members to develop leadership skills, relational capital and, thus, impactful scientists.

Implications for future mission-oriented science

All projects or programmes in the research, science and innovation system involve some elements of capacity development for all people involved. This will depend on the practice being developed in the programmes. Based on the experience of SfTI, people involved in mission-oriented science programmes should be offered capacity development to build human and relational capacity alongside their technical expertise.

Meanings and norms: the opportunity to take risks should be part of the norms across the mission-oriented science programmes

To foster innovation in such programmes, it is important that risks are taken in both the organisation of the research and the research itself. If we are asking for a transformation to the research, science and innovation system, then the teams need to know that they may be different, and therefore test different ways of doing things to be innovative. The element of risk is largely missed in the white paper, yet it would seem to be essential to developing mission-oriented science.

It was noted by the participants in this research that being able to experiment with the practice of the challenge – the different ways of developing projects, and particularly research teams – is important to the practice of being deliberately different. Like the business world's 'fail fast' and pivoting, SfTI learnt to change and adapt, which enabled it to take risks and undergo experiments with the running of

the programme as part of creating the 'deliberately different' practice needed to meet the mission.

Current research funding approval is often largely around minimising risk, which is done through understanding science excellence and team track record. To transform the current system as suggested there is a need to find ways to understand and build in risk, including in the way in which funding is allocated. The notion of 'risk' needs to be part of the culture or set of meanings in the mission-oriented science system. Creating norms and understandings whereby people are comfortable with taking risks is important. Having leadership that can understand the parameters involved in enabling risk will also be necessary. In addition, infrastructure and systems to deal with the evaluation of risk in science, and particularly funding, will be essential. This will not happen without deliberate practices to enable a level of risk needed to transform mission-oriented science systems.

Implications for future mission-oriented science
We suggest that guidelines and parameters are developed to enable actors in the mission-oriented research, science and innovation system to embrace, evaluate and manage appropriate risk in projects.

Being deliberately different: the leadership of research priorities or challenges needs to be carefully considered
We would advocate for a partnership approach, drawing on mātauranga Māori and multiple knowledge sets. The leadership team should also incorporate the diversity of knowledge, disciplines and impact appropriate for each challenge.

We see that this is being incorporated in Te Ara Paerangi. We recommend reading BNZIC work in this area (see, for example, Building New Zealand's Innovation Capacity, 2022): this research shows the increasing value placed on mātauranga Māori in the research, science and innovation system over the past nine years of the National Science Challenges.

Implications for future mission-oriented science
Partnership and rangatiratanga underpin all research, science and innovation system practices to honour te Tiriti o Waitangi; see research produced by BNZIC focusing on mātauranga Māori and science for technological innovation.

Conclusion
This article is based on an analysis of the social practice of the Science for Technological Innovation National Science Challenge, undertaken by a small group of researchers within the challenge itself. The research has specifically focused on the question, what are the key learnings from the practice of SfTI that are relevant for Te Ara Paerangi, the future of the science system in Aotearoa New Zealand? It advocates for the four key learnings identified here to be recognised and adopted as part of the next stage of developing Te Ara Paerangi. It is hoped that future research will explore more of the learnings – both successful and not so successful – to broaden this somewhat limited research article.

The mission-oriented science that is part of Te Ara Paerangi seems set to continue, with the aim of addressing the needs and challenges of Aotearoa New Zealand through scientific knowledge. Therefore, successful aspects of the current mission-oriented projects should be considered in the future of this type of science funding. The past ten years of science challenges have involved steep learning in the development of what might be 'new' science practices in Aotearoa. We argue, therefore, for the next stages of Te Ara Paerangi to learn from the past ten years – to understand what has worked, the barriers to successful implementation, the fails, and, importantly, the notion of mission-oriented science in the context of Aotearoa New Zealand.

While we have focused on Te Ara Paerangi and the practices of Science for Technological Innovation, we suggest that these learnings can be incorporated into many science practices in Aotearoa New Zealand to enable impactful science to meet the many 'grand challenges' that an increasingly complex and interconnected global world presents for our society.

1   The theoretical framework of social practice, as advocated by Shove and collaborators (e.g., Shove and Pantzar, 2005; Shove, Watson and Spurling, 2015; Shove and Walker, 2010), extensively draws from Giddens' structuration theory (1984), as well as the ideas presented by Bourdieu and Wacquant (1992a, 1992b) to formulate the concept of a practice.

2   For more information on mission labs at SfTI, see https://www.sftichallenge.govt.nz/about-us/documents-and-reports/.

3   For more information and examples, see https://www.sftichallenge.govt.nz/for-researchers/professional-development/.

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Richard Hamblin and Geoff Plimmer

Instability in New Zealand's Public Sector

Abstract

This article assesses the level of organisational instability in New Zealand's public sector, measured by changes in structure, leadership and mission. Based on the methodology employed, it finds that there is a high level of organisational instability, characterised by frequent restructuring, rapid changes of organisational mission, and frequent leadership change, resulting in less-than-optimal CEO tenures. The article explores the reasons for the high level of change, and whether there might be better strategies for responding to an increasingly turbulent public sector environment.

Keywords organisational restructuring, managerialism, organisational instability, public sector, hyper-innovation

For at least 40 years New Zealand has frequently restructured its public sector agencies (Donadelli and Lodge, 2019; Norman and Gill, 2011; Yui and Gregory, 2018; Pollitt, 2009), a phenomenon sometimes referred to as 'hyper-innovation' (Moran, 2003). In the 1990s, hyper-innovation was closely associated with New Public Management and ideas such as purchaser/provider splits, separate micro-agencies and the growth of quasi-governmental agencies (Dunleavy et al., 2006; Yui and Gregory, 2018). Yet three decades on from New Public Management's high-water mark, this level of change continues apace. Since the turn of the century there has been a tendency for restructurings to be a response to previous disaggregation efforts, attempting to fix fragmentation and silo-isation in the name of 'joined-up government' (Yui and Gregory, 2018).

Frequent change predates New Public Management, though, and New Zealand has historically made changes to its public service more frequently than other English-speaking countries (Donadelli and Lodge, 2019). Rates of change are estimated to be two to three times more than in comparable jurisdictions during the late 20th century (Yui and Gregory, 2018; Davis et al., 1999), and point to some uniquely New Zealand features at work. Suggested features include small and heavily interconnected political and academic communities, a centralised and majoritarian system of government able to make administrative changes without legislative constraints (Donadelli and Lodge, 2019), a long-standing, ingrained culture of restructuring (Yui and Gregory, 2018; Norman and Gill, 2011) and career advancement incentives for executives. Internationally, commercial consultancies and political factors have also been suggested as drivers of change (Seabrooke and Sending, 2022; Ylönen and Kuusela, 2019).

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Clearly not all change is bad. Often, particularly after a long period of stability, a public system may no longer be appropriate for the challenges raised by a turbulent environment. Some changes, even controversial ones, may prove correct and necessary in the long run. However, all change comes with costs and risks as well as opportunities, so how much change is too much? Have the levels of change seen within the New Zealand public service reached these levels? If so, what might the consequences be?

What are the downsides of change?

The concept of hyper-innovation, or rapid and continuous change in public

those they manage. It also protects them from the consequences of failure, as they will have moved on by the time this becomes apparent. It encourages a prioritising of 'managing up' over the basics of role modelling and developing staff (Franken and Plimmer, 2019). Pollitt (2007) suggests that for an ambitious young manager to show lifetime loyalty to their employer would be considered a 'perversion'.

Paradoxically, hyper-innovation in the form of repeated structural and other changes harms the ability to implement real innovation – the ability to adapt to changing circumstances. Repeated change produces 'threat rigidity', whereby

units (people, teams) can be easily shuffled on a board. Wariness of restructuring assumes that organisations work though informal social processes, of close and loose ties; that much work is done (or not done) informally and out of sight; that relationships matter; and that formal processes are just the tip of the iceberg of organisational life and productivity (Mintzberg and Westley, 1992). This article supports the latter, well-established position. The question being asked is whether repeated restructuring is harming both formal and informal processes; and is dosing the public sector with restructuring just treating the symptoms of previous restructurings?

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Types of change

Although change can occur in many forms – in branding, customer needs and tactics – this study is concerned with changes within the organisation that are likely to affect day-to-day decision making and performance. First, it looks at leadership, specifically changes in the CEOs, because of their power over organisational success. Second, it examines change in mission. Finally, it focuses on structural reform, as it changes both what and how work is done.

services, is well established. Key to this concept is that rapid change is both a cause and consequence of poor performance. Moran argues that constant administrative reform is associated with policy fiascos and that this drives a vicious circle whereby 'fiasco is both a reflection of hyper-innovation and a force driving the state to even greater frenzies of hyper-innovation' (Moran, 2003, p.156). Donadelli and Lodge find that 'New Zealand could be argued to be caught up in its own policy frenzy of hyper-innovation in which actors "overcorrect" … in view of perceived shortcomings and failures of existing arrangements' (Donadelli and Lodge, 2019, p.47).

Other effects than just over-correcting apply. One effect is on leadership, where sector expertise is difficult to accrue, and risky for employees. Repeated shifts by public servants between employers and sectors limits the development of subject matter expertise, and credibility with

threatening situations increase a tendency to reserve decision making to a small set of central leaders, reducing freedom to innovate at a local level. Other negative consequences of threat rigidity include retrenchment to the most well-ingrained behaviours, reduced flows of information, and reduced collaboration (Staw, Sandelands and Dutton, 1981). In combination these behaviours inhibit the ability to effect change in response to dynamic environments. This is ironic, as restructuring is often a response to dynamic environments, responding to a belief that existing structures are no longer 'fit for purpose'. Constant repeated change does not allow employees to recuperate (Wynen, Verhoest and Kleizen, 2017).

A belief in repeated restructuring assumes that organisations only operate through easily changed formal hierarchies and groupings; that skill and knowledge are tangible and devoid of context so can be easily switched; and that productive

Leadership change

Some change in leadership and mission is inevitable and appropriate. The classic concept of CEO life cycle is that CEO performance follows an inverted curvilinear relationship between time in office and organisational performance: 'response to mandate', 'experimentation', 'selection of an enduring theme', 'convergence' and 'dysfunction', with performance declining after about six years as CEOs stick too closely to dated paradigms and information, and lose motivation (Hambrick and Fukutomi, 1991). Studies since then have supported the continued broad relevance of this model, albeit with variations across context. The case for continuity of CEO tenure has remained: 'Although in the first two years short-tenured CEOs outperform their longer tenured counterparts, in the long run CEOs, who are given more time to develop their paradigms and gain legitimacy, have a

more positive influence on performance', with performance often peaking in year seven or so (Wulf et al., 2010, p.23). Frequent and repetitive changes in CEO destabilise organisations and can harm performance of organisations (Simsek, 2007; Geys et al., 2020). This evidence is recognised in the New Zealand public sector's common policy, in theory, of CEO contracts of five years with the option to extend for another three. Furthermore, CEO change is associated with internal restructuring, which is also associated with threat rigidity and its negative consequences (Darouichi et al., 2021; Miller, 1993).

Mission change

Changing environments and political requirements mean that some changes in priorities are both necessary and desirable. Regularly changing half an organisation's stated priories year on year, however, allows almost no time for projects to be properly established before being disbanded. Frequent changes in mission can harm delivery as workstreams are abandoned before coming to fruition, and before they have been properly evaluated. Frequent changes also reduce the capacity to adapt to uncertain environments, as this capacity is used to address the change in mission. Public servants suffer too. In a study of the Australian public service, change in mission, along with other types of change, was associated with reduced support for innovative work behaviour (Wynen et al., 2020).

Frequent priority changes may work fine for private sector work, such as deploying new consumer brands, but they seem poorly suited to the complexity of government work. Public services work in areas where markets have failed. They have intense legal constraints, strong externalities, are often monopolies, are sometimes coercive, and outcomes are often hard or impossible to measure. Managing this complexity requires both focus and accountability. Frequent shifts in priorities does not allow time for either, but does allow organisations to get away with poor performance, until there is a crisis.

Mission changes can also beget other changes, such as budgetary and personnel changes. Restructuring, in which some

work teams are disbanded and new ones established, is a well-used lever for change as well.

Organisational restructuring

A substantial literature points to negative consequences of frequent restructuring, including poor employee outcomes, mediocre management and mediocre sector performance (Franken and Plimmer, 2019). It undermines managers' sense of strategic discretion, which in turn makes them risk averse under the threat of further structural reforms (Kleizen, Verhoest and Wynen, 2018). Constant restructuring prevents organisations from accruing

resources, such as a good reputation and identity, strong internal culture, close network ties, specialised knowledge and expertise, and the fruits of long-term relationships and investments (Seo and Hill, 2005; McMurray, 2010; Pollitt, 2007). Repeated structural reform threatens the cultural unity of organisations (Marks and Mirvis, 1997), leading to risks of conflict, and weakened processes, systems and capabilities – features of New Zealand's public service environment (Plimmer et al., 2017).

Restructuring has possibly the greatest effect on employee experience, which in turn has an impact on other stakeholders. Studies have found that frequent change has a range of employee costs, which include loss of morale, loss of networks, reduced job satisfaction, reduced trust, and increased rates of turnover and absenteeism. All of these contribute to a loss of organisational memory and knowledge, and harm performance (de Vries, 2013; Grunberg et al., 2008; McMurray, 2010;

Pollitt, 2007). It also harms the culture for innovation (Wynen, Verhoest and Kleizen, 2017).

Methodology

This article reports change in leadership, mission and organisation (i.e., restructuring) in the New Zealand public sector, calculated as part of a wider study concerning instability, leadership and performance, for a group of 16 ministries and departments and 20 district health boards (DHBs) for the ten years 2007–16. Appendix 1 lists these organisations.

The analysis does not include the many internal restructurings, such as directorate

> Studies have found that frequent change has a range of employee costs, which include loss of morale, loss of networks, reduced job satisfaction, reduced trust, and increased rates of turnover and absenteeism.

or team creation and dissolution that likely occurred. This limits the following analysis, and possibly understates the level of change.

Data and definitions
Leadership change

This is measured by CEO turnover and tenure, calculated with reference to annual reports, accountability documents signed-off by organisational CEOs.
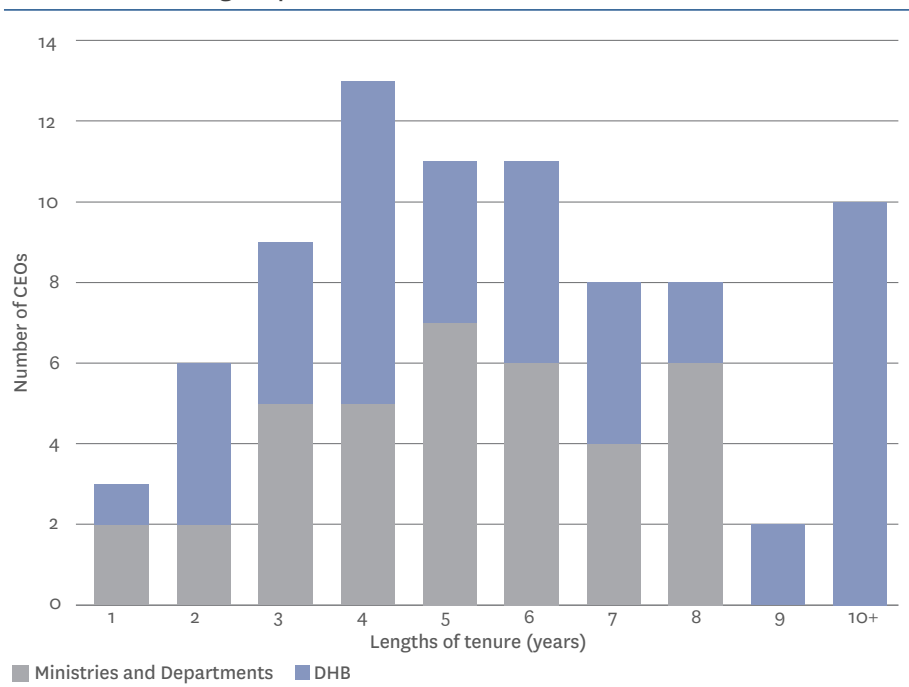
Mission change

This is measured by the number of years when more than half of an organisation's stated priorities changed. For DHBs this was derived from a generic letter of expectation for each year from 2006–16 retrieved via DHB annual plans. For ministries and departments, statements of intent – four-yearly strategic plans – set out priorities (albeit described in different ways by different entities and over time). Statements of intent were available annually for ministries and departments between

Table 1: Restructuring events categorised by expected impact

Major impact (value = 3)	Moderate impact (value = 2)	Minor impact (value = 1)
Restructuring where the organisation absorbs parts or tasks from another organisation	Restructuring the organisation to undertake new tasks not previously undertaken	Change of name
Restructuring where the organisation relinquishes parts or tasks of the organisation		Establishment and disestablishment of agencies with related functions to the organisation without a direct restructuring effect on the organisation
Full merger of organisations		

Source: based on Wynen, Verhoest and Kleizen, 2017

Figure 2: CEO tenure (excluding interim and acting CEOs), all organisations, CEOs in office during the period 2007–16

Ministries and Departments   DHB

Figure 1: Calculation of the restructuring history index

$$\sum \left(\frac{Strength\ of\ event}{2016 - year\ of\ event} \right)^2$$

- substantial restructurings, such as carve-outs of specific functions, with a transfer of these to an existing agency, or a newly created one;
- establishment and disestablishment of agencies with related functions to the organisation (e.g., creation of Crown agents to advance a particular agenda also held by the core public service agent).

This last category is important when considering the experience of agencies. Understanding the public sector as an eco-system (Strokosch and Osborne, 2020) suggests that the stability of any given organisation will be affected by changes in related organisations. For example, the creation of four stand-alone health agencies following the Horn report (Ministerial Review Group, 2009) affected all DHBs by requiring the creation of new networks, new ways of collaborating and new lines of accountability.

To provide a measure of comparison we adapted Wynen, Verhoest and Kleizen's (2017) index to the New Zealand context. The index brings together three related qualities of change – severity (i.e., the significance of the change), frequency (i.e., how many changes occurred within a given period), and recency (i.e., how recently those changes occurred) – in order to determine the likely effect of the combination of changes on an organisation. To calculate this, changes over time are categorised and weighted (with merger at the high end and name change at the low), divided by the number of years since the change was made, summed and squared. In practical terms this approach prioritises regular, smaller changes over a single large change.[1]

This study provides a methodology and benchmark that can inform discussion about the level and frequency of change seen in New Zealand. To adapt this indicator in the present study, a classification of major to minor change was

2006 and 2014, but from this date their production was made less frequent. Where no statement of intent is published in a year, priorities are deemed to be unchanged.

Comparing these documents year on year required some judgement to be applied to determine whether priorities had truly changed:

- an entirely new issue or complete removal of an issue was counted as a change in mission;
- where an issue continues but the policy emphasis is distinct (e.g., the degree of enthusiasm about exploiting the commercial opportunities of conservation implicit in a priority), this was also counted as a change of priority;
- simple tweaks in language were not counted as a change.

This allows identification of the number of year-on-year changes in priority (i.e., six priorities replaced with six different ones is 12 changes – six stop, six start). This is relevant to stability as a high number of changes will require a change in leadership focus, organisational arrangements and employee activities, and will likely create new training and education needs.

Organisation restructuring
Using the Public Service Commission database of changes, and supplementing this with data from organisational annual reports, three overarching types of organisational change are derived:
- full mergers (with accompanying disestablishments);

developed, based on Wynen, Verhoest and Kleizen's original categorisation. Flemish legal status changes, included in the original index, were excluded. Adaptation to New Zealand circumstances also included a changed time frame from Wynen's original study, inclusion of full mergers as a major impact, and inclusion of subsidiaries and other organisations with a related function as a minor impact (see Table 1 and aggregated as per Figure 1).

To allow relative comparisons, Wynen, Verhoest and Kleizen divided the index for each organisation by the mean index across all organisations.

Results

Results are reported for the three types of change: leadership, mission, and structural stability.

Leadership change

Figure 2 shows the number of CEOs who had different lengths of tenure among both ministries and departments and DHBs. While the graph shows data for those CEOs who were in office between 2007 and 2016, length of tenure includes the total time in office, including time outside the studied period. Results show that the full eight years that the New Zealand system is designed for was only rarely achieved (six out of the 37 CEOs who had permanent employment in the 16 ministries and departments studied). Just over 60% of tenures reached the five-year norm. Short tenures do not denote failure in the role: in both DHBs and ministries and departments, departure to another job was not uncommon. Among DHBs there are numerous examples of much longer tenures of more than ten years. This reflects the fact that several CEOs during this period were public health doctors, and greater recognition of the expertise required to run hospital services.

Mission change

Findings show that over the ten-year period, every organisation had half or more of their priorities (expressed in statements of intent or letters of expectation) change year-on-year at least once. DHBs as a group had it occur in five years of the ten under review (see Figure 3). Government changed

Figure 3: Frequency of organisations changing half of their annual priorities year-on-year, 2007–16
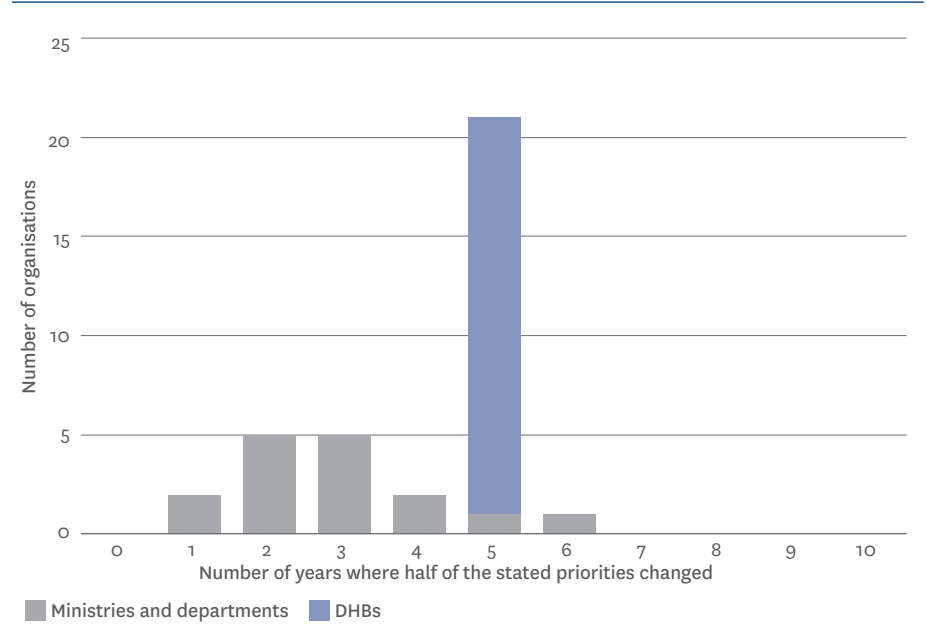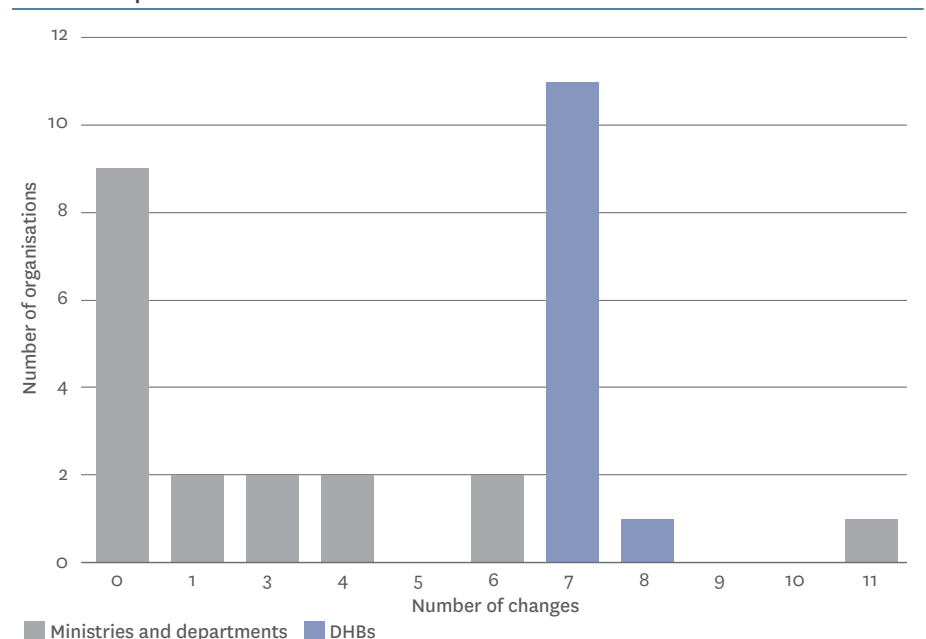

Figure 4: Frequency of restructuring-related changes by sample organisation experience

only once over this period, suggesting that this frequency of change cannot be ascribed to legitimate outworkings of the democratic process. This very high level of change happened just as frequently when the same government, and even the same minister, was in control.

Organisational restructuring

Restructurings are not evenly distributed. About half of the central agencies experienced none at all, while, at the other extreme, two agencies reported six in a roughly eight-year period, and one

organisation experienced 11 (see Figure 4). Because of regular disaggregation and aggregation of related health agencies, DHBs experienced regular restructurings – a minimum of seven in the ten-year period.

Organisations with the most restructurings are those with large service delivery elements, such as health (e.g., Horn report agencies established and then disestablished), education, or those created through merger in the period: the Ministry of Business, Innovation and Employment and the Ministry for Primary Industries.

Figure 5: In how many years did each agency experience a change, 2007–16
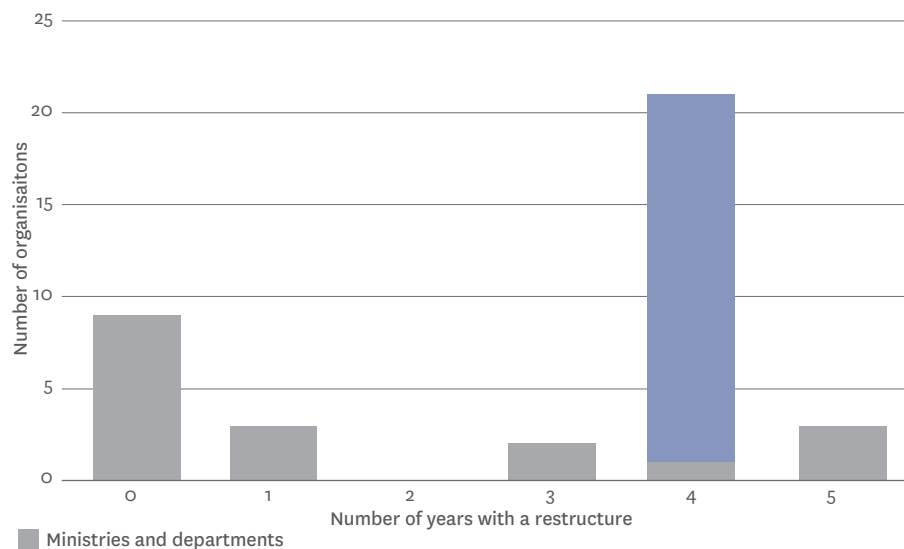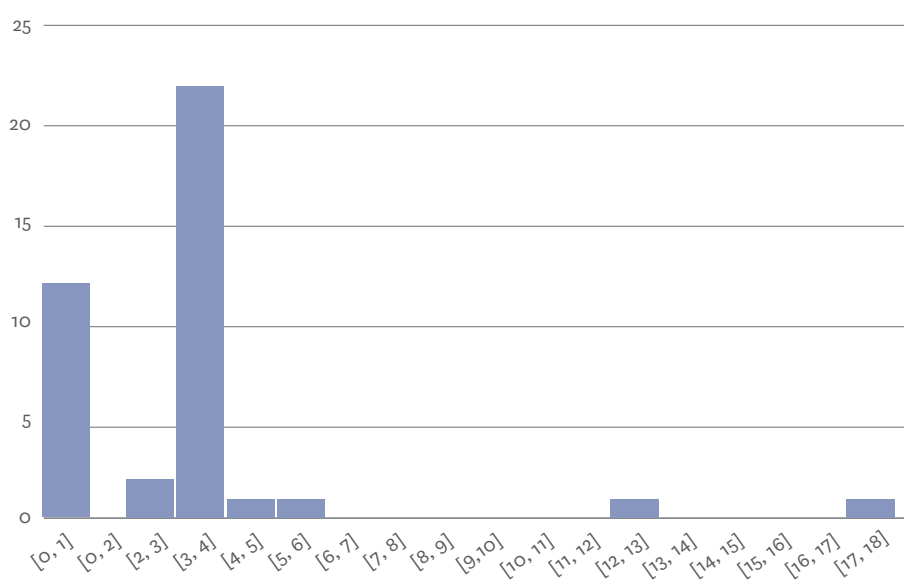

Figure 6: Historical restructuring index in 2016, ministries and departments and DHBs

Scores calculated using Wynen, Verhoest and Kleizen's methodology of summing restructurings, divided by years since they occurred, then squared.

Figure 7: How often did changes (leadership change, change of half the priorities, or at least one relevant restructuring) occur, by organisation, 2007–16
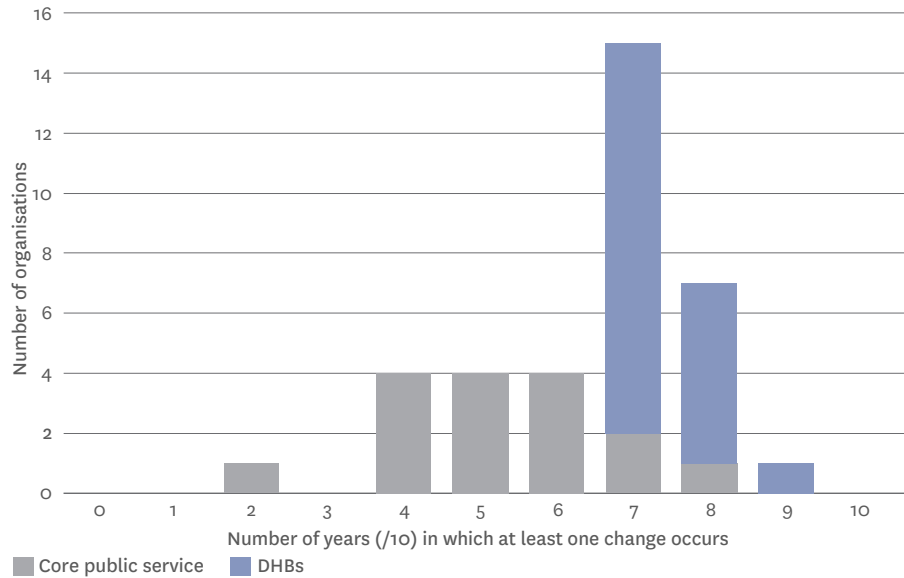
Some organisations experience many restructurings, and also experience restructuring very regularly, year after year. Figure 5 indicates the regularity of restructurings, and thus the likelihood of threat rigidity.

Figure 5 shows the number of years in which organisations experienced changes. All DHBs experienced changes in four out of ten years, although in most cases these were restricted to restructurings of relevant external organisations (such as the creation and dissolution of Health Benefits Limited and the National Health Board). While this creates the need to build new working relationships, and may reduce efficient cross-boundary working while these are established, it is probably less likely to create threat rigidity because for many the nature of work remains unchanged. However, among ministries and departments, changes were more commonly substantial – e.g., transfer of functions between agencies, carve-outs of specific functions, and even full mergers. Six of the 16 ministries and departments experienced such changes in at least three of the ten years. These can be more fully explored using the historical restructuring index (Wynen, Verhoest and Kleizen, 2017), which combines the severity, frequency and recency of change.

Figure 6 shows the index for all organisations in 2016. Twelve organisations have scores of less than one, indicating either no changes or changes that took place well before the end of the period. All DHBs had indices of between 3 and 4, accounting for the spike at this point in the distribution. The two outliers are the Ministry of Business, Innovation and Employment with a score of 12.5 (largely reflecting the effect of its creation through merger, and the Ministry of Health, reflecting the regular disaggregation and reaggregation of functions throughout the period. For highly affected organisations, scores predominantly come from the removal and/or reabsorption of functions.

Overall

In aggregate, change was notably frequent, with 31 out of 36 organisations having had a leadership change, a year-on-year change of half their priorities, and/or a relevant restructuring in five or more years over the

period studied (see Figure 7). This suggests that the experience of many New Zealand public sector organisations is of high and repeating levels of change, despite the identified risks of repetitive change over a relatively short period.

Post hoc analysis

One possible explanation for high levels of change is that this is a response to political change and the electoral cycle. We therefore tested for this by comparing levels of change by year across several electoral cycles.

Figure 8 shows the number of each type of change by year; this allows comparison with when political changes, which might be thought likely to drive change, took place. The only change of government in this period took place in 2008. While there was an increase in change from then until 2011, most noticeably in organisational design, changes from 2012 until 2016 remained high. There is no clear relationship between levels of change and the general election cycle. Of the three election years in this period, 2011 has the highest number of changes, but 2008 and 2014 the lowest.

Discussion and conclusion

Some change and instability is inevitable, and some is beneficial. Some changes, even controversial ones, may prove desirable and necessary in the long run. But how much is too much? A system where every year a quarter of organisations change their CEO, where over half the organisations change half their priorities five years out of ten, and where most organisations are regularly restructured is hard to describe as stable. And it is hard to argue that such instability is beneficial, given what we know of the negative effects of instability from elsewhere. We analysed changes through three lenses: leadership, mission and restructuring. Each is discussed below.

Leadership changes are frequent and few CEOs achieve the ideal of seven to eight years in the job (Wulf et al., 2010) under the New Zealand government's five plus three years policy. The fact that leaders shuffle between positions indicates that failure is not the reason for change. The movement between leadership of very different organisations with very different

Figure 8: Occurrence of at least one restructuring, leadership change or change of half the priorities, 2007–16
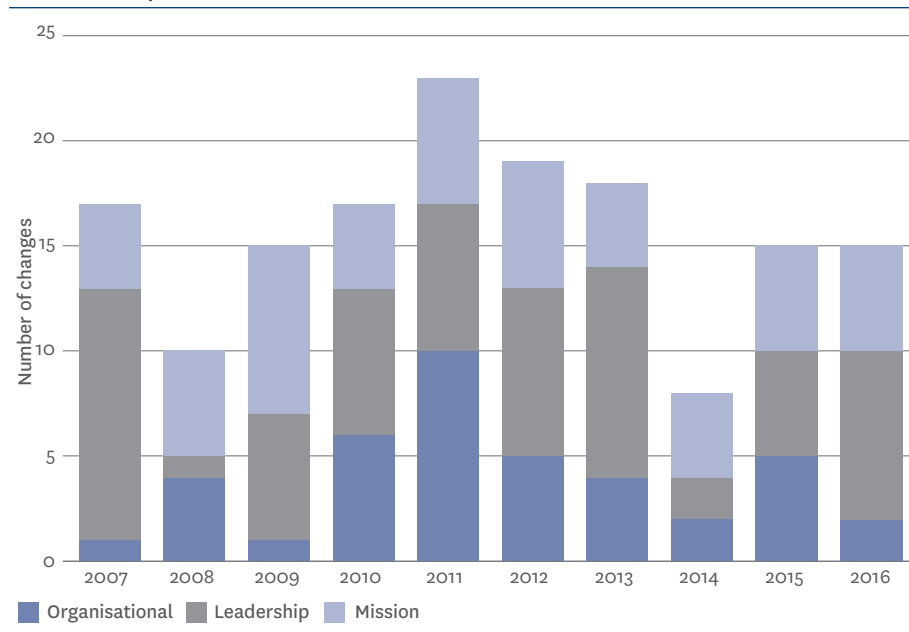
purposes among the ministries and departments points to the creation of a generalist leadership cadre within the New Zealand public service. Prioritising this above subject matter expertise is a deliberate policy explicitly advocated for in Public Service Commission thinking (Hughes, 2019), but it comes with costs and has its discontents (Chapple, 2019). Leadership skills are seen as generic, and technical and sector skills as unimportant. The lack of regard for technical expertise is contrary to the findings of widespread leadership studies since the 1950s (Day et al., 2014; Kahn and Katz, 1952; Peterson and Van Fleet, 2004). This lack of expertise increases the risk of public leaders prioritising unthinking delivery of the agenda of the day over other values, such as a spirit of public service and stewardship.

We also looked at the frequency of changes in formally stated priorities, finding that they changed frequently, despite the long-term nature and difficulty of the problems that governments face. This level of change raises the question of how much planning documents such as statements of intent really reflect what government departments do. If formal priorities are so ephemeral, do they actually mean anything? One interpretation is that stated priorities are a bureaucratic exercise detached from the real meat of the organisation's agenda, which remains broadly unchanged. Rapid changes in

stated priorities may therefore be an exercise in 'paper instability', where apparent priority changes do not correspond to reality. If this was the case, however, large amounts of bureaucratic energy and resource would have been expended in exercises that are largely irrelevant to an organisation's true mission.

Finally, we assessed restructuring, finding, as have other studies, that rates are higher than for international comparators (Donadelli and Lodge, 2019; Yui and Gregory, 2018). The original study of Flemish agencies that we based our index on made clear that increases in the index (i.e., more severe, recent and frequent changes) were associated with a reduction in innovative capacity, an essential capability for dealing with dynamic environments. In the Flemish study the mean observed index was 1.14, compared with a mean of 2.93 in New Zealand, suggesting greater instability in New Zealand. Comparisons, however, need to be made cautiously. The Flemish study did not include changes to related organisations as we have (on the grounds that they are highly interdependent and subsidiary to DHBs); and we have not included other types of change, such as changes in precise legal structure according to local legislation, because such changes are not relevant to New Zealand. That said, this finding would be in line with earlier studies which have

found New Zealand to restructure more frequently than other jurisdictions.

A possibly naïve response to all this instability would run something as follows: we make constant changes because we suspect that how we are set up, or what we are doing, isn't right; but this just begs the question of why, when all our previous changes didn't work, we should expect this next one to. One response, articulated in different ways, is a counsel of despair: we change constantly not because we expect it to work, but because we don't know what else to do. Whether this is a consequence of managerialism (Chapple, 2019) or 'consultocracy' (i.e., over-reliance on

broader. Creation and rotation of a generalist managerial cadre reflects the creation of a managerial culture consistent with New Public Management's call to 'let managers manage', while the use of constantly changing accountability documents like statements of intent reflects New Public Management's enthusiasm for accountability and incentivisation (Dunleavy et al., 2006).

Many of the assumptions about how public systems should be managed that flow from New Public Management are so entrenched in New Zealand's public sector culture that attempts to do things differently can be met with straightforward

(Bevan and Hamblin, 2009), which misled the public.

To these perverse consequences, we can add one more. While the enthusiasm for restructuring and regular change may reflect a desire to pursue flexibility in response to increasingly turbulent environments, it likely has had the entirely perverse effect of making it more difficult to do so. A recent study of the Norwegian system (Trondal, 2023) has highlighted that *stable* structures can create the adaptive capacity needed to address turbulence. Perhaps counter-intuitively, stability creates the space for flexibility, while the apparently flexible 'hyper-innovation' overwhelms it. Thus, the instability in the New Zealand public sector described in this article may make it *more* difficult for public agencies to respond with the needed flexibility to turbulent environments.

To understand this counter-intuitive conclusion requires us to reflect on how instability affects leaders and their leadership. A volatile and turbulent environment requires innovation, utilising situation-specific knowledge and expertise. The intent of each of the instability types reviewed above is to support this: structures designed for 'the old world' need rethinking; missions need to change to reflect environmental and political changes; leaders with relevant experience need to be in place. Yet collectively they may act as distraction – focusing leadership attention onto the changes proposed to deal with turbulence (organising the restructuring, planning new programmes, and holding onto their jobs) – rather than the turbulence itself, and how this affects services to the public.

An alternative way of conceptualising the problem of providing strong public services in a volatile environment is to state that public services must preserve their primary function, while dealing with multiple simultaneous stressors. This requires the capability of handling the tensions between efficient delivery and adaptability in the face of uncertainty. Evidence from around the world, in both the public and private sectors, is that the right type of leadership is necessary to achieve this. In particular, high levels of trust and support between leaders and those they lead are critical (Gibson and

> An alternative way of conceptualising the problem of providing strong public services in a volatile environment is to state that public services must preserve their primary function, while dealing with multiple simultaneous stressors.

external consultants for the functions of government) (Ylonen and Kuusela, 2019), the emergent result is of restructuring becoming a 'substitute for action' (Norman and Gill, 2011, p.1).

Appealing though this may be as an explanation, a slightly less cynical position would recognise two other causes: the long-term effects of the still prevalent New Public Management paradigm, and the increasing volatility and turbulence of the public sector (Ansell, Sørensen and Torfing, 2023).

All domains of instability reported here can be seen as outworkings of New Public Management. As Yui and Gregory (2018) identify, early disaggregation and 'agencification' of public sector agencies followed New Public Management strictures concerning decentralisation, and was followed with later reversals of this in the name of 'joined-up government', responding to the inevitable limitations of disaggregation. However, the influence is

hostility (Tenbensel, Silwal and Walton, 2021, p.1054). This is unfortunate, as New Public Management, whatever its successes, is recognised as having a range of perverse outcomes at variance with its stated aims; even 'policy disasters' (Dunleavy et al., 2006, p.468). Decentralisation, which aimed at reducing hierarchy and bringing services closer to people, had the effect of centralising power at a national policy and commissioning level, effectively making the locus of power even further disconnected from the provision of services (Courpasson, 2000). Similarly, performance management, which was designed to increase efficiency and transparency, had the perverse effects of increasing bureaucracy through the creation of a measurement and audit infrastructure (Butterfield, Edwards and Woodall, 2005) which added overhead costs to delivery; and encouraging gaming, a mixture of measure falsification and 'hitting the target and missing the point'

Birkinshaw, 2004). Managerialist approaches that play down the importance of specialist knowledge and disrupt networks in the name of flexibility tend to damage both trust and support, making this crucial capability of balancing delivery and adaptability harder to acquire. This damage to trust and support also has the effect of reducing the very 'spirit of service' that the Public Service Act 2020 explicitly recognises as the public service's fundamental purpose, and which leaders are charged with preserving in their employees (Scott and Hughes, 2023). It would be tragic to lose the potential benefits of such a far-sighted piece of policy.

Since at least the 1980s the default position of the New Zealand public sector has been change, in structure, certainly, but also in leadership and mission. In an increasingly volatile environment, standing still long enough to build the capabilities needed for adaptation, while maintaining delivery of services the public rely upon, might just be a better strategy. A limitation of our study is that we exclude internal restructurings, thus understating the extent of instability.

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1   For example, a small change every other year over a five-year period would give a higher index at the end of the period than one large change made a year prior to the end of the period.

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Appendix 1: Organisations included in the study

Ministries and Departments

Ministry of Social Development

Ministry of Education

Ministry of Business, Innovation and Employment
(and antecedent ministries)

Inland Revenue

Department of Corrections

Department of Conservation

Ministry of Agriculture and Forestry
(and antecedent ministries)

Ministry of Fisheries

Ministry for Primary Industries

Ministry of Justice

Land Information New Zealand

Ministry of Health

Department of Internal Affairs

New Zealand Customs Service

Education Review Office

Ministry for the Environment

Ministry of Transport

Ministry of Defence

District Health Boards

Auckland District Health Board

Bay of Plenty District Health Board

Canterbury District Health Board

Capital and Coast District Health Board

Counties Manukau District Health Board

Hawke's Bay District Health Board

Hutt Valley District Health Board

Lakes District Health Board

MidCentral District Health Board

Nelson Marlborough District Health Board

Northland District Health Board

Southern District Health Board (and antecedent DHBs)

South Canterbury District Health Board

Tairāwhiti District Health

Taranaki District Health Board

Waikato District Health Board

Wairarapa District Health Board

Waitematā District Health Board

West Coast District Health Board

Whanganui District Health Board

2023 SIR FRANK HOLMES MEMORIAL LECTURE IN POLICY STUDIES

INDIGENOUS FRAMINGS AND COLONIAL COSMOLOGIES: MEN AND WOMEN, FORESTS, AND TE TIRITI O WAITANGI

Dame Anne Salmond

This lecture will discuss clashes and resonances between Indigenous framings and colonial cosmologies since early times in New Zealand, exploring three main topics: relations between men and women, between people and forests, and among Queen Victoria, the rangatira, hapū, Indigenous persons, and the settlers in Te Tiriti o Waitangi.

WHEN   Tuesday 5 December 2023
6–7 pm lecture (doors open at 5.45 pm)
7–8 pm refreshments

WHERE   Lecture Theatre 1 (GBLT1), Government Buildings,
Pipitea Campus, 55 Lambton Quay, Wellington

RSVP   Email sog-info@vuw.ac.nz
by Thursday 30 November 2023

VICTORIA UNIVERSITY OF **WELLINGTON**
TE HERENGA WAKA

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MAI I TE IHO KI TE PAE

Commentary: climate policy in Aotearoa New Zealand – a backwards flip?

Robert I. McLachlan

In 1975, Chris Nobbs, a young New Zealander trained in chemistry and economics and working at the Environment Directorate of the OECD in Paris, wrote a paper titled 'The economics of stock pollutants: the example of cadmium'. Together with David Pearce, later an eminent environmental economist, he noted that 'pollution taxes will not secure the optimal level of pollution ... since such taxes are relevant only for flow pollutant situations' (Nobbs and Pearce, 1975).

It was not until a generation later that it became widely accepted that carbon dioxide itself is a stock pollutant and that only 'net zero' CO_2 emissions will halt CO_2-induced global warming (Fankhauser et al., 2022). This has led to nearly 100 states and 1,000 large companies establishing net zero goals (Hale et al., 2022). One such is New Zealand's Climate Change Response (Zero Carbon) Amendment Act 2019, which requires the government to set and meet carbon budgets to reach net zero long-lived greenhouse gas emissions by, and beyond, 2050.

But questions about how to achieve this, and how to resolve the problem pointed out by Chris Nobbs – that pollution taxes struggle with stock pollutants – remain. David Hall and I examined the evidence in *Policy Quarterly* last year, explaining why 'emissions pricing can't do it alone'. Complementary measures are needed to overcome non-price barriers and trigger the required system transformations (Hall and McLachlan, 2022). Complementary measures build public

support for climate action, while high carbon prices erode it. And the inflationary effect of high carbon prices was indeed a factor in the Labour government's decision in December 2022 not to follow the advice of the Climate Change Commission on Emissions Trading Scheme (ETS) settings, a decision overturned in July 2023 on judicial review.

However, precisely the opposite dynamic played out in the 2023 general election. The National Party repeatedly criticised individual climate policies such as the clean car discount and the Government Investment in Decarbonising Industry (GIDI) Fund. Transport spokesperson Simeon Brown described the clean car discount as 'tens of millions being paid to millionaires to buy Teslas while ute owners have been penalised with taxes despite not having alternatives' (Brown, 2023); Christopher Luxon described the GIDI Fund as 'corporate welfare'. Arguments against its preference to rely on the ETS as the main tool to lower emissions were ignored.

Thus, the 2023 general election and the remaining challenges for New Zealand's response to climate change provide yet another illustration of the intrinsic difficulty of climate change, due to its combination of uncertain and/or irreversible fast- and slow-onset impacts, its global nature, and controversy over the required solutions – all of which require transformative action sustained over many decades (Boston, 2021). It was just these aspects that the commitment devices built into the Climate Change Response (Zero Carbon) Amendment Act were intended to address. Given the election results, there will now be a change of tack, and it is to be hoped that the checks and balances already in place will be strong enough to keep the country on track.

It may never be possible to definitively attribute policy impacts, as the whole economic and social system evolves slowly in response to pressures from all quarters. For example, New Zealand's emissions from energy have shown a remarkably rapid fall over the past three years (see Figure 1). Annual emissions are now at their lowest point since 1999 and are down 15% since 2019. This is faster progress even than that embodied in the Climate Change Commission's 'demonstration path', which includes a reduction of 27% by 2030. Government policies played a part: the ETS price rose from $40 in mid-2021 to $85 in early 2023; the clean car discount triggered a rapid rise in the sale of electric and other low-emission vehicles, cutting emissions by several hundred thousand tonnes of CO_2 a year; GIDI allocated $196 million, leading to 456,000 tonnes of CO_2 annual

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abatements. But we also had the Covid-19 pandemic, with ongoing impacts like working from home; high petrol prices; a gas shortage; and high rainfall, leading to more hydroelectricity production. Full emissions data for 2023, allocating emissions to sectors, will not be available until April 2025 (McLachlan, 2023).

Perhaps more important than any specifics is the national mood, creating an ever-wider awareness of the need to reduce emissions. The mood is affected by government policy, signalling and determination, but also by prices, global trends and climate impacts. After unprecedented flooding in the north and east of the North Island in January and February 2023, public opinion shifted strongly in favour of more urgent action on climate change; but by October that concern had faded (1 News, 2023; Manhire, 2023).

Here I look at seven open aspects of climate change policy and how they might be affected by the National Party's announced policies. All of these will enter into consideration for the second (2026–30) Emissions Reduction Plan, on which the Climate Change Commission will advise by the end of 2023. (I will ignore possible impacts of the coalition negotiations, whose outcome is unknown at the time of writing.)

The Emissions Trading Scheme

The previous government launched a review of the ETS, intended to select an approach that would prioritise gross emissions reductions while still incentivising removals. Submissions have been received but not yet published. The National Party's plan to use the ETS as its primary tool to meet the carbon budgets, while also restricting whole-farm conversions to plantation forestry, and closing them to foreign owners entirely, will test the scheme. Currently, the cost-containment reserve triggers (the effective price ceilings) are set at $184 and $230 for 2024, significantly above the current price of $69.50. However, the ETS settings can be reviewed, and other factors, such as the stockpile of units, affect its ability to influence emissions. A key political issue is the extent to which a National-led government will be willing to allow the carbon price to increase, given its impact

Figure 1: New Zealand greenhouse gas emissions from 1990: annual gross emissions of long-lived gases and quarterly emissions from energy
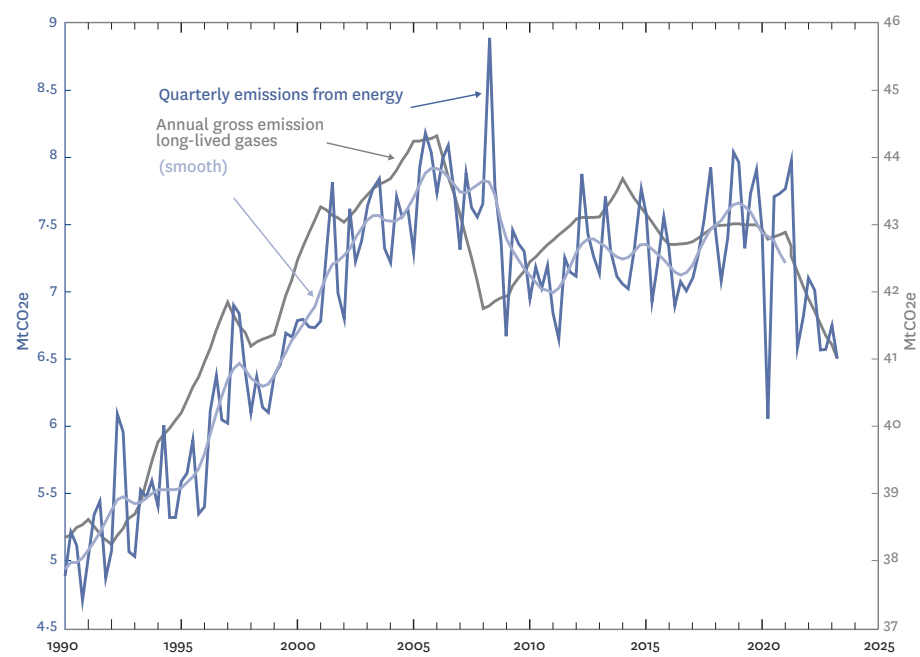
The left axis shows quarterly emissions from energy to June 2023 (Ministry of Business, Innovation and Employment); the right axis shows annual gross emissions of all long-lived gases, as reported to the UNFCCC by the Ministry for the Environment. Under the Climate Change Commission's demonstration path, gross long-lived gas emissions are 32 MtCO2e in 2030. Image: Robert McLachlan

on the cost of living.

The Energy Strategy

As part of the first Emissions Reduction Plan, the Labour government began an extensive inquiry into long-term energy policy. This was primarily intended to guide the transition to a low-emission economy, with possible targets such as a 50% renewable share of final energy use by 2035, up from 30% today. However, it includes many other components, such as the gas transition strategy, the hydrogen roadmap, the overall operation of the electricity system, and a proposed ban on new fossil baseload electricity. The new National-led government plans to repeal the ban on new offshore oil and gas drilling and to double renewable energy production by easing consenting requirements for generation and transmission. While these will influence the Energy Strategy, much work already underway (e.g., on frameworks for offshore wind and for hydrogen) will likely continue.

But consenting requirements are not the major roadblock in renewable energy: that would be economics. To reach the final investment decision on a large project requires assurance that demand for electricity will be there and that prices will support it. The pace of electrification of the

economy, especially of transport, industry and buildings, is therefore crucial. We have hardly started on this journey: total electricity consumption has not changed since 2010. Despite New Zealand's first large solar farms now being under construction, the Electricity Authority is forecasting that supply will be tight for each of the next three winters, which would mean higher prices and higher emissions (Electricity Authority, 2023). Longer term, the pledge to stop work on the Lake Onslow pumped hydro energy storage scheme leaves the NZ Battery Project with just one remaining option, the 'portfolio approach', able to advance. The NZ Battery Project was established in 2020 to manage or mitigate dry-year risk in the electricity system by providing at least 5,000 GWh of energy storage while also lowering emissions and wholesale electricity prices. Arguably, this brief did not go far enough: future energy scenarios involve staggering amounts of intermittent wind and solar energy, which impacts on energy storage requirements on time scales ranging from hours to years (Ferris and Philpott, 2023). Long-term planning and a consistent strategic direction, to be developed in the Energy Strategy, are essential.

The National Party is planning to cut government spending on electrification,

Figure 2: Emissions of light vehicles entering the fleet, and market share of new electric passenger vehicles
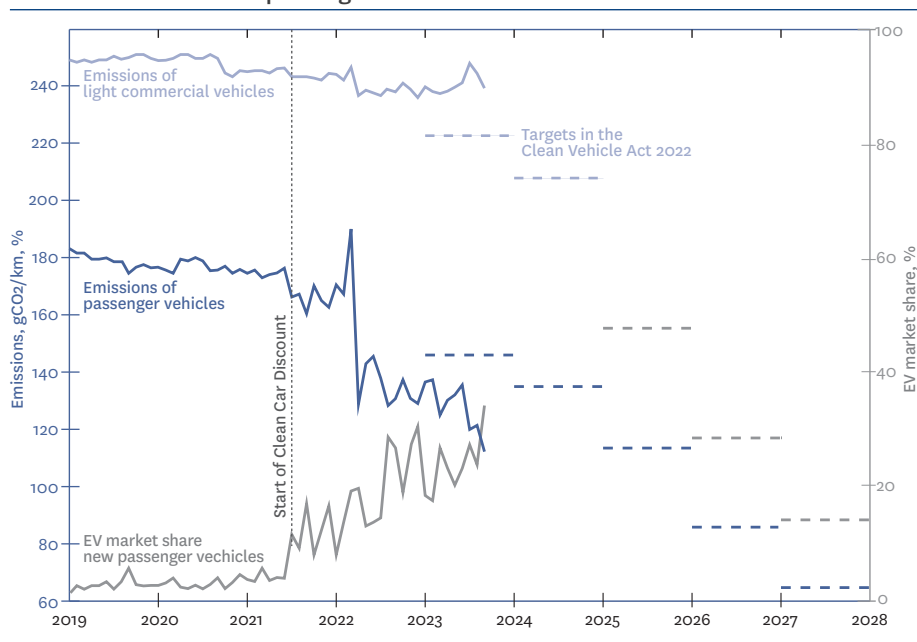
Data: Ministry of Transport

including the Climate Emergency Response Fund ($7 billion) and some of GIDI ($1 billion). However, the effect of this is hard to predict. Some of this spending is already committed, such as that allocated to New Zealand Steel and Fonterra, or will likely remain, such as our international climate finance commitments, agricultural greenhouse gas research funding, climate change adaptation, and implementation of congestion charging. Nevertheless, to the extent that there is less funding available, emissions reductions are likely to be slower than otherwise.

Transport
Globally, the policy consensus on transport is clear. A report for the Global Stocktake of the Paris Agreement, summarising work of the IPCC, stated that:

Phasing out internal combustion engines and using electric vehicles offer the greatest mitigation potential in the sector. In addition, demand-side interventions, such as shifting transport modes (e.g., to walking and using public transport), will be essential in the context of rethinking mobility. (UNFCCC, 2023)

While the current Emissions Reduction Plan does include many of these elements, the NZ Upgrade Programme, involving many large new motorways, promised to

undermine it due to induced demand for driving, allocation of resources to road transport, furthering support for car dependency, and bedding in a hegemony for more roads at any cost. The timing, just a few weeks before the first Covid lockdown, could not have been worse, as climate transport advocates were left wondering how we might actually have 'built back better' in another world. Meanwhile, many initiatives (driving reduction, mass transit, cycleway construction, road space reallocation, speed limit reductions) have been delayed or remain stalled in public administration.

As noted above, the clean car discount became a particular focus of the election campaign, virtually the subject of a culture war, despite it being a market-based mechanism subject to extensive testing overseas. There are also concerns for the clean car standard, a system of progressively upgraded fuel efficiency standards for newly registered vehicles, which the National Party has said will be amended in consultation with industry. (See Figure 2.) While the electrification of the fleet is inevitable given time, the transition must happen fast enough to meet our overall emissions budgets. So far, no analysis of the impact this might have on the total climate package has been done.

Instead, the National Party will spend $247 million to install 10,000 EV chargers nationwide by 2030, in a scheme to be

designed analogously to the ultra-fast broadband roll-out. Currently, New Zealand has a similar number of fast (50 kW+) chargers per electric vehicle as jurisdictions like California and Norway, a roll-out that has been well managed and co-funded by the Low Emission Transport Fund and industry. This is an important element of electrification; the combined effect with the changing EV market and the introduction of road user charges for electric vehicles in March 2024 is hard to predict. Overall, it seems unlikely that the roadblocks that are preventing the system transformation that is needed will be addressed in the next term of government.

Agriculture
In 2003, National Party MP Shane Ardern (cousin of Jacinda Ardern, at that time a young research assistant to Helen Clark) famously drove a tractor up the front steps of Parliament Buildings in the original 'fart tax' protest. The subsequent 20 years have featured continuous research, debate and delay, but no actual decrease in agricultural emissions. He Waka Eke Noa, launched in 2019 by Jacinda Ardern as a joint government, iwi and industry project, was reckoned dead in the water by the time it reported in late 2022, as whatever consensus there had been between the parties fell apart (Johnston, 2023). Perhaps the most significant achievement in this time was the introduction of fertiliser limits in most areas from July 2021, which over time may result in lower emissions of nitrous oxides. A convergence on farm-level reporting and mitigation has also emerged.

National Party policy is to end the 'effective ban' on genetic engineering, easing the route to trials and use of GM crops, feeds, livestock and methane inhibitors; delay emissions pricing to 2030; and review methane targets 'for consistency with no additional warming from agriculture' (National Party, 2023). This last item is a reference to an idea that has taken root in farming circles, receiving a rebuff recently from the parliamentary commissioner for the environment, Simon Upton; ruminant methane is an issue that just won't die (Gibson, 2023). Note that although New Zealand uses a split gas approach in some respects, with different

targets for long-lived and short-lived greenhouse gases, the five-yearly carbon budgets and the nationally determined contribution both refer to total emissions of all gases. Underperforming on methane means making up the difference elsewhere – namely, a faster reduction of long-lived gas emissions.

Adaptation

A record number of 17 weather-related states of emergency have been declared in New Zealand in 2023; the norm used to be one or two per year (see Figure 3). Weather-related insurance payouts averaged $123 million per year from 2002 to 2018 (in 2023 dollars), climbing to $615 million in 2019–22; the total for 2023 is $3,914 million at the time of writing. While 2023 has been exceptional by any measure, it gives an indication of what may be an average year in 10 or 15 years' time.
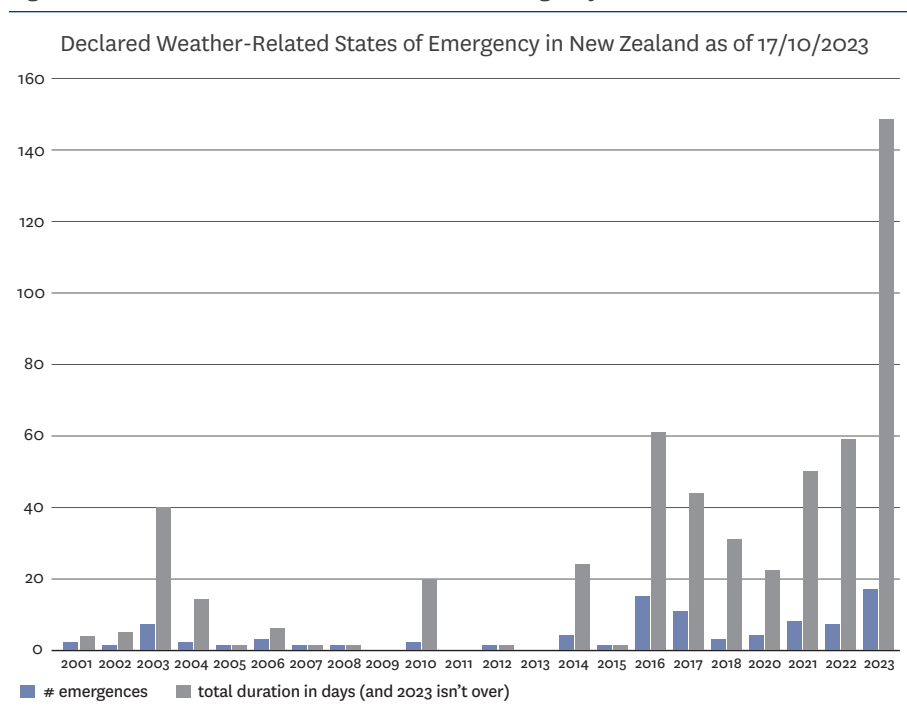
A Climate Adaptation Bill was to have been introduced to Parliament in 2023 before the election, potentially drawing on advice from the Expert Working Group on Managed Retreat (2023). This would have been part of the wider reform of the Resource Management Act, but it was delayed. Now questions of adaptation, financing and the management of risk will pass to the new government, and the recent resource management reforms reversed pending the development of a new approach.

Equitable transition

The low-emissions transition will entail major social shifts, and climate justice and public support require that it should not increase social inequality. Jobs in some emissions-intensive areas will shrink, and others will grow; some changes will affect urban and rural areas differently; household costs will change. New industries and technologies will emerge that will lead to social change. For these reasons, work on an equitable transition was considered an important part of the first Emissions Reduction Plan. Despite extensive work, the strategy is not yet ready.

Already, equity has been a significant part of the climate debate; I described above how it is a factor in views of the clean car discount. East Coast communities have been badly affected by storms, infrastructure damage and forestry slash. But all policies

Figure 3: Declared Weather-Related States of Emergency since 2002

Declared Weather-Related States of Emergency in New Zealand as of 17/10/2023

Legend: # emergences ; total duration in days (and 2023 isn't over)

Source: Civil Defence National Emergency Management Agency

have some impact on equity; a very high carbon price would increase the price of petrol, which is regressive on poorer households, while '[w]ith fewer resources, lower income households will have lower ability to change behaviour or invest to reduce their exposure to emissions prices' (Ministry for the Environment, 2019, p.66). As Shaw et al. write,

> Our current transport system is not only unhealthy but inequitable. Parts of the population are excluded from the benefits that transport brings (e.g. access to employment, to healthcare and to whānau connections), suffer disproportionately from the adverse health consequences of the transport system and/or are placed under significant financial strain to pay for essential travel to work, school etc. (Shaw et al., 2023)

The nationally determined contribution

In 2021, the then climate change minister, James Shaw, headed to COP26 in Glasgow with a new pledge, to halve net emissions between 2005 and 2030. This nationally determined contribution (NDC) targets net emissions totalling 571 MtCO$_2$e from 2021 to 2030. The domestic emissions budgets add up to 670 MtCO$_2$e, leaving a gap of 99 MtCO$_2$e even if the domestic
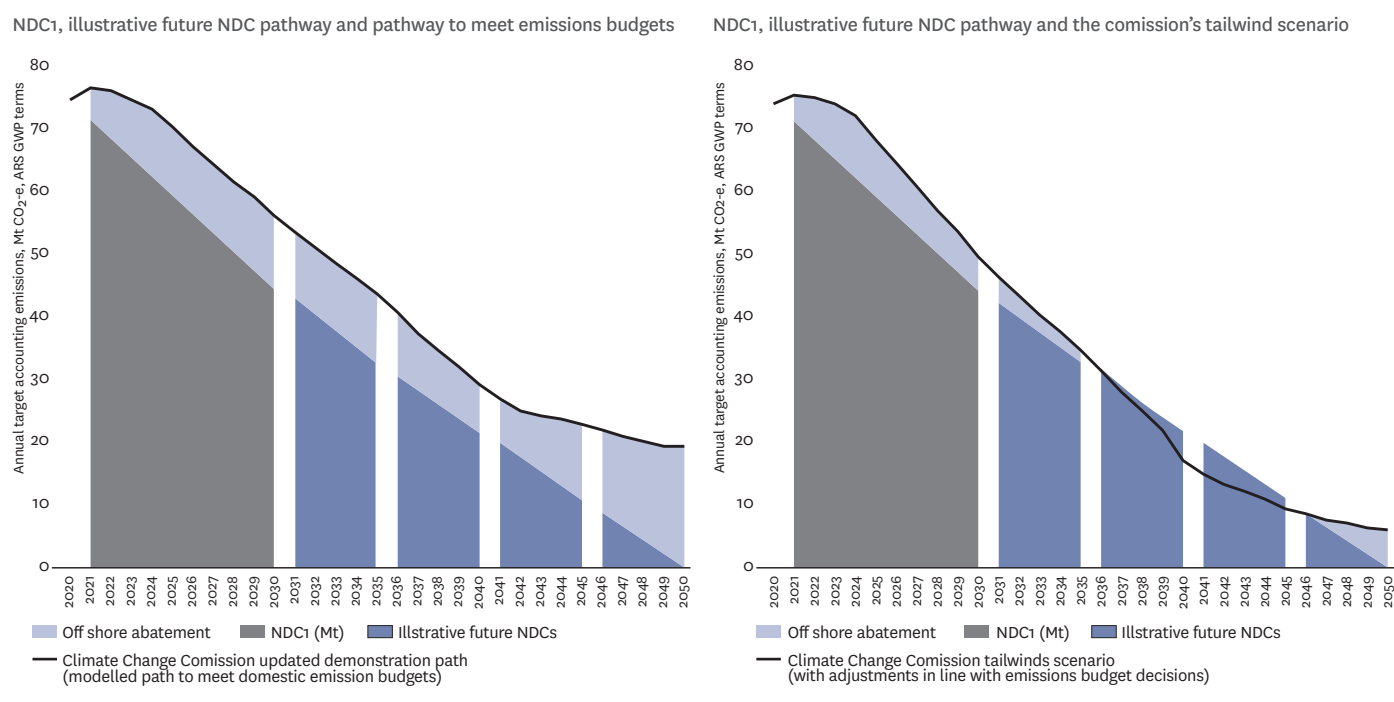
carbon budgets are achieved (see Figure 4.) The projected gap can only be met by faster domestic action and/or by international mitigation, the latter estimated to cost anywhere from $3 billion (using a price relevant to developing economies) to $24 billion (using a price relevant to advanced economies) (Treasury, 2023). In July 2023, Cabinet agreed to an 'adaptive' approach, in particular exploring the possibility of faster domestic emissions reductions (Ministry for the Environment, 2023).

Meanwhile, the Global Stocktake process under the Paris Agreement is underway. For the 'well below 2ºC' target, global greenhouse gas emissions must fall 21% between 2019 and 2030; for '1.5ºC', they must fall 43%. Current NDCs add up to between –8% and +3% (UNFCCC, 2023). Therefore, it seems likely that the UNFCCC will call for increased ambition from all parties under the 'ratchet' mechanism. Just before the election, James Shaw asked the Climate Change Commission to advise on New Zealand's second NDC, out to 2035.

Afterword

The parliamentary commissioner for the environment has reviewed the process by which the first Emissions Reduction Plan was prepared (Parliamentary Commissioner for the Environment, 2023).

Figure 4: Two possible pathways that meet the current NDC (dark grey) and possible future NDCs (dark blue), the pathway on the right requiring more domestic action and less international abatement (Ministry for the Environment, 2023)

NDC1, illustrative future NDC pathway and pathway to meet emissions budgets

NDC1, illustrative future NDC pathway and the comission's tailwind scenario

- Off shore abatement
- NDC1 (Mt)
- Illstrative future NDCs
- Climate Change Comission updated demonstration path (modelled path to meet domestic emission budgets)

- Off shore abatement
- NDC1 (Mt)
- Illstrative future NDCs
- Climate Change Comission tailwinds scenario (with adjustments in line with emissions budget decisions)

Source: Ministry for the Environment, 2023

He found that the scale and breadth of the Emissions Reduction Plan put great strain on government resources, particularly during the pandemic, and required an unusual degree of cross-portfolio cooperation. Key high-level questions should have been resolved earlier, including the significance of distributional impacts, who should pay, and the balances between pricing and complementary measures, gross and net emissions, domestic and international effort, and near-term and long-term impacts. Ultimately, officials were able to produce a plan that could plausibly meet the first emissions budget, as in fact it is proving to do. Now there will be a change of direction. Inevitably, in a democracy, plans developed and explored in great detail can be scrapped as a result of an election, without any corresponding analysis of the impact. It was also inevitable that the structures and processes set up by the Climate Change Response (Zero Carbon) Amendment Act would be tested repeatedly over time. With climate change, humanity is running into a limit. We are finding limits to be uncomfortable, to be something new and baffling, the full implications of which are still, even now, only starting to percolate through and around us. We have tried to do things, found them to be harder than we first thought, been repeatedly disillusioned, learned, made partial progress, and tried again. Prediction is difficult (especially about the future), but it is safe to say that this cycle will be with us for a long time to come.

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