Polly Atatoa Carr, Jesse Whitehead,
Sughayshinie Samba Sibam and James Greenwell

Population Change, Environmental Change and the Future of Health in Aotearoa New Zealand

why prevention and equity matter more than ever

Abstract

For Aotearoa New Zealand's health system to be effective in the future, it must prepare for an ageing population, ethnic diversification, volatile migration patterns and environmental disruption. These demographic and environmental pressures interact directly to determine future health service needs, exposing the unsustainability of a purely reactive, treatment-focused health model. Meeting these future needs demands action beyond the health sector, driven by a focus on prevention and health equity, which in turn requires political and fiscal trade-offs. Meaningful action on the broader determinants of health and accountability to te Tiriti o Waitangi will not only advance health for the population and reduce health sector strain but will also optimise societal and economic outcomes and support a resilient next generation able to manage the expected and unexpected challenges of the future.

Keywords health equity, population change in Aotearoa New Zealand, environment and health, determinants of health, prevention activities to improve health outcomes

Polly Atatoa Carr is a public health medicine specialist in paediatrics at Te Whatu Ora Health New Zealand Waikato and associate professor of population health at Te Ngira, the Institute for Population Research at the University of Waikato. **Jesse Whitehead** is a senior research fellow at Te Ngira, the Institute for Population Research at the University of Waikato, and a health geographer and demographer. His expertise in rural health, health equity and geospatial methods have contributed to the development of the Geographic Classification for Health. **Sughayshinie Samba Sibam** is a senior research officer at Te Ngira, the Institute for Population Research at the University of Waikato, and an experienced quantitative researcher in environmental health and population health outcomes. **James Greenwell** is an epidemiologist at New South Wales Health, with career expertise in public policy, epidemiology and biostatistics. His previous roles in Aotearoa New Zealand include director of data and insights at the Ministry for Pacific Peoples and epidemiologist at the Ministry of Health.

Aotearoa New Zealand's health system remains caught in a cycle of chronic restructuring, workforce strain, and public debate over systemic access barriers, the 'post code lottery' of healthcare provision, unequal outcomes and poor performance (Hamblin & Plimmer, 2023; RNZ News, 2026). Policy responses typically focus on immediate pressures such as financial sustainability and waiting lists, as demonstrated by the current government directives. These focus on financial restraint alongside five performance targets: emergency department (ED) transit times, cancer treatment, childhood immunisation, first specialist assessment, and elective surgery waiting lists. Alongside these operational targets sits a stated priority to address five major non-communicable (or chronic) conditions: cancer, cardiovascular disease, respiratory disease, diabetes and poor mental health (Ministry of Health, 2024a). Although these chronic conditions drive the largest share of illness and premature mortality in Aotearoa New Zealand, the policy response remains predominantly focused on managing hospital patient flows. Treating health system performance primarily through hospital waiting lists, ED transit times and access to primary care for childhood immunisations risks mistaking the symptom for the cause. Decades of evidence confirms that policy settings prioritising short-term administrative targets over tackling the structural drivers of poor health will neither address the underlying prevalence of chronic disease, nor improve population wellbeing or health equity (Public Health Advisory Committee, 2025).

An effective and sustainable health system requires looking beyond immediate and future service demand. It requires an enhanced understanding of demographic shifts, health inequities and environmental challenges, which in turn depends on accurate and appropriate population data at a level of granularity and currency that enables this understanding.

In this article we first describe the health inequities experienced in Aotearoa New Zealand, and present the evidence for the key demographic and environmental influences shaping Aotearoa New Zealand's health outcomes. We argue that analysing structural changes through the lens of prevention and equity provides a useful framework for future health system planning. By viewing demographic and environmental changes through a lens of prevention, equity and the interconnection of health determinants, we highlight the urgency of the need to build a resilient and evidence-based health system.

Māori adults report more unmet primary care need than non-Māori adults, while one in five Pacific adults in the 2023/24 New Zealand Health Survey reported missing a visit with a general practitioner (GP) because of cost ....

Health equity in Aotearoa New Zealand

Health inequities are systemic, avoidable and unjust differences in health outcomes (Braveman & Gruskin, 2003). In Aotearoa New Zealand, inequities have persisted for Māori, Pacific peoples, those experiencing socio-economic disadvantage, and other communities exposed to systematic discrimination and structural failure (Robson & Harris, 2007; Talamaivao et al., 2020). Differential health outcomes are evident throughout the life course, including in early childhood and adolescence, which are critical periods for lifelong development, and are also sensitive to effective intervention (Morton et al., 2022; Theodore et al., 2023; Ministry of Health, 2024b, 2025a).

Māori and Pacific infants and children experience higher rates of respiratory infections, communicable diseases and preventable hospitalisations compared with non-Māori, non-Pacific children, with inequities also evident in mortality from severe respiratory and infectious diseases (Environmental Health Intelligence New Zealand, 2025a; Cure Kids, 2026). Māori youth have substantially worse mental health compared with non-Māori youth (Fleming et al., 2014) and young people experiencing poverty and socio-economic deprivation are also at greater risk of poor chronic disease and poor mental health outcomes (Denny et al., 2016). In adulthood, health outcomes for both infectious and non-infectious diseases are patterned most strongly by ethnicity (Loring, 2024). Māori experience higher rates of cancer, diabetes, cardiovascular disease and asthma (Ministry of Health, 2024b). Pacific peoples face a particularly high burden of obesity, gout and diabetes (Ministry of Health, 2025a). Ethnic inequities for Māori and Pacific are also evident in cancer mortality and survival (Harris et al., 2021; Teng et al., 2016). Compounding the burden of disease, Māori adults report more unmet primary care need than non-Māori adults, while one in five Pacific adults in the 2023/24 New Zealand Health Survey reported missing a visit with a general practitioner (GP) because of cost (Ministry of Health, 2024c). Consequently, significant ethnic life expectancy gaps remain (Health New Zealand Te Whatu Ora, 2024a). In 2022–24, Māori life expectancy was 7.6 years lower for males and 6.4 years lower for females than for European/other people; the corresponding Pacific gaps were 6.4 and 5.5 years respectively (Ministry of Health, 2026).

These inequitable health outcomes are structural and institutional, rather than the result of 'personal choices', 'individual misfortune' or 'cultural deficits'. They stem from differential access to power and privilege, disproportionate exposure to adverse determinants of health, and unequal access to timely, culturally safe and high-quality care (Cormack et al., 2020; Matheson et al., 2026; Public Health Advisory Committee, 2025). Failure to address persistent Māori health inequities and to give effect to Māori tino rangatiratanga in the health system is also a breach of te Tiriti o Waitangi (Waitangi Tribunal, 2023).

Leaving health inequities unaddressed also carries severe societal and fiscal costs. Using data from more than a decade ago,

health inequities between Māori and non-Māori adults have been estimated to cost over NZ$800 million per year (Reid et al., 2022). Health inequities between Māori and non-Māori children have been conservatively estimated to cost between $62 million and $200 million per year (Mills et al., 2012). While these costs are substantial, they are likely to be significant underestimates, as cost-of-illness approaches typically cannot fully capture effects of health inequity on whānau wellbeing, unpaid caregiving, accumulated disadvantage, or broader participation in social and economic life.

Demographic change

Action to address these persistent and costly health inequities is increasingly urgent in light of future changes to our population. Effective planning for future health service delivery in Aotearoa New Zealand requires understanding the key demographic changes we face. By 2050 the population will look fundamentally different. Over the next 25 years, an additional 1.2 million people are expected through continued but slowing population growth (falling below 1% per annum by 2033) and international migration. By 2058, deaths are expected to outnumber births, and international migration will become the only contributor to population growth at a national level (Statistics New Zealand, 2025a).

Population ageing

Increasing life expectancy and falling birth rates are contributing to rapid population ageing in Aotearoa New Zealand. Close to one quarter (24%) of the population is projected to be aged 65 years or more by 2051 (compared with 17% currently), and approximately 300,000 people (5% of the total population) are projected to be aged 85 years or more (ibid.). While this reflects continued increases in life expectancy, and in many cases living well for longer, there are important health implications of this population shift. Population ageing will increase the number of people living with disability and chronic conditions such as diabetes, cancer and poor mental health. This will intensify the demand for high-quality primary, community, specialist, aged care and mental health services, and create substantial workforce pressures (Aged Care Ministerial Advisory Group, 2026).

Age is a primary determinant of health need and health system utilisation varies substantially across the life course. The broad pattern is that young children and older adults use more health services. The 2023/24 New Zealand Health Survey found that three-quarters (75.6%) of adults and two-thirds (66.6%) of children had visited a GP in the previous twelve months (Jeffreys et al., 2024). The highest capitation payments for primary care are also provided for those under the age of 5 years and over the age of 65 years (Health New Zealand Te Whatu Ora, 2025). While utilisation is only one indicator of health need (and access barriers can also be patterned by age), this pattern is also reflected in the disproportionate health spend, particularly in tertiary healthcare, for the older population. Those aged 85 years or over (the fastest-growing demographic group) are most likely to experience multi-morbidity and frequent and extended inpatient hospitalisation, and have complex support needs from the health sector (Ministry of Health, 2025b). The Aged Care Ministerial Advisory Group (2026) has recently reported that structural reform is required to manage the escalating and future costs of aged care in the public sector.

Importantly, the implications of population ageing often mask within-population variation that carries major health equity implications. While the Māori and Pacific populations are also ageing, Māori and Pacific community members are much less likely than their non-Māori, non-Pacific counterparts to access community-based aged care, despite experiencing poorer health, disability and complex needs earlier in the life course (Hikaka et al., 2026). Access inequities are compounded by higher rates of material hardship, lower home ownership and housing instability, which also increase the levels of unmet need experienced by Māori and Pacific older people. Further, increased reliance on whānau caregiving, and aged care services that do not fit Māori or Pacific family requirements and aspirations, exacerbate the health inequities experienced (Ministry of Social Development, 2025). An aged-care health system organised around age-specific eligibility without Māori- and Pacific-led evidence and culturally safe models of care will fail to address the needs of the future Aotearoa New Zealand population.

An aged-care health system organised around age-specific eligibility without Māori- and Pacific-led evidence and culturally safe models of care will fail to address the needs of the future Aotearoa New Zealand population.

Responding to population ageing does not mean that health services for the elderly should come at the expense of children and young people. While a smaller proportion of the population will be aged 0–14 years in 2048, the absolute number of children in Aotearoa New Zealand will remain steady at just under 1 million (Statistics New Zealand, 2025a). Because children (particularly infants under the age of 5 years) also more frequently interact with the health system, child health services must continue while becoming far more effective at achieving equitable outcomes. This will require specific action to achieve maximal health and wellbeing for Māori and Pacific children, who will make up an increasing proportion of the youth population over the next 10–15 years. By the 2040s, approximately one third of children will identify as Māori, and one in five as Pacific (Statistics New Zealand,

2025b). Investing in maternity, child and youth services, and particularly those led by and for Māori and Pacific peoples, is therefore essential.

Population migration and geographic location

Domestic and international migration patterns in Aotearoa New Zealand are highly volatile, resulting from a range of influences, such as national-level immigration policy settings, housing affordability and employment opportunities. Residents of Aotearoa New Zealand are also residentially mobile (Morton et al., 2024; Marek et al., 2023) and the geographic distribution of our population is likely to shift significantly in the future. Long-term population growth is already increasingly concentrated in major metropolitan centres and specific northern regions such as Auckland, Waikato and the Bay of Plenty, as well as the Canterbury and Tasman regions, while rural districts face relative population loss (Statistics New Zealand, 2026).

As seen with population ageing, the overall picture typically hides important intra-population differences. For example, in 2024–25 Kirikiriroa Hamilton was the fastest growing territorial authority in the country, largely through international migration and births, while neighbouring Waipā grew the fifth fastest through internal migration. Rural Thames-Coromandel has experienced six consecutive years of natural decrease balanced by net migration to become an already 'super-aged' older community where nearly 34% of residents are 65 or older (ibid.).

Rural communities remain an important population group who often face intersecting challenges with respect to health outcomes (Davie et al., 2026). More than 900,000 people live rurally in Aotearoa New Zealand and these people tend to be older (19.5% aged 65 years or more), more likely to live in areas of high socio-economic deprivation, and more likely to identify as Māori (22%) compared with urban residents (Whitehead et al., 2024). The majority (73%) of Māori who live in the most remote locations of Aotearoa New Zealand experience the highest area-level socio-economic deprivation (Crengle et al., 2022). People living in rural areas are less likely to utilise public hospital services, and the centralisation of key health services such as cancer treatment has been described as increasing access barriers for those living rurally and in socio-economically deprived areas (Gurney et al. 2024). Such unmet healthcare needs and access barriers lead to poorer health outcomes for rural populations in comparison with their urban peers, including higher rates of mortality from a range of causes (Nixon et al., 2024; Whitehead et al., 2023). Improving healthcare accessibility is an identified priority for improving rural health in the recently published Rural Health Strategy (Ministry of Health, 2023b). However, as our population ages, and rural communities continue to age more rapidly than urban centres, distinct health services delivery challenges are exacerbated. Delivering care closer to home requires responsive regional networks rather than centralised models that ignore local context. Meeting the needs of both rapidly growing urban centres and dispersed rural populations will require flexible, community-embedded models of care. Anticipating these demographic movements is essential for health services to match shifting regional demands, rather than relying on static, centralised assumptions.

> While targeted services such as kaupapa Māori, Pacific-specific and other focused health initiatives are critical for advancing health outcomes and health equity, every part of the health system must be equipped to meet the needs and aspirations of an ethnically diverse population …

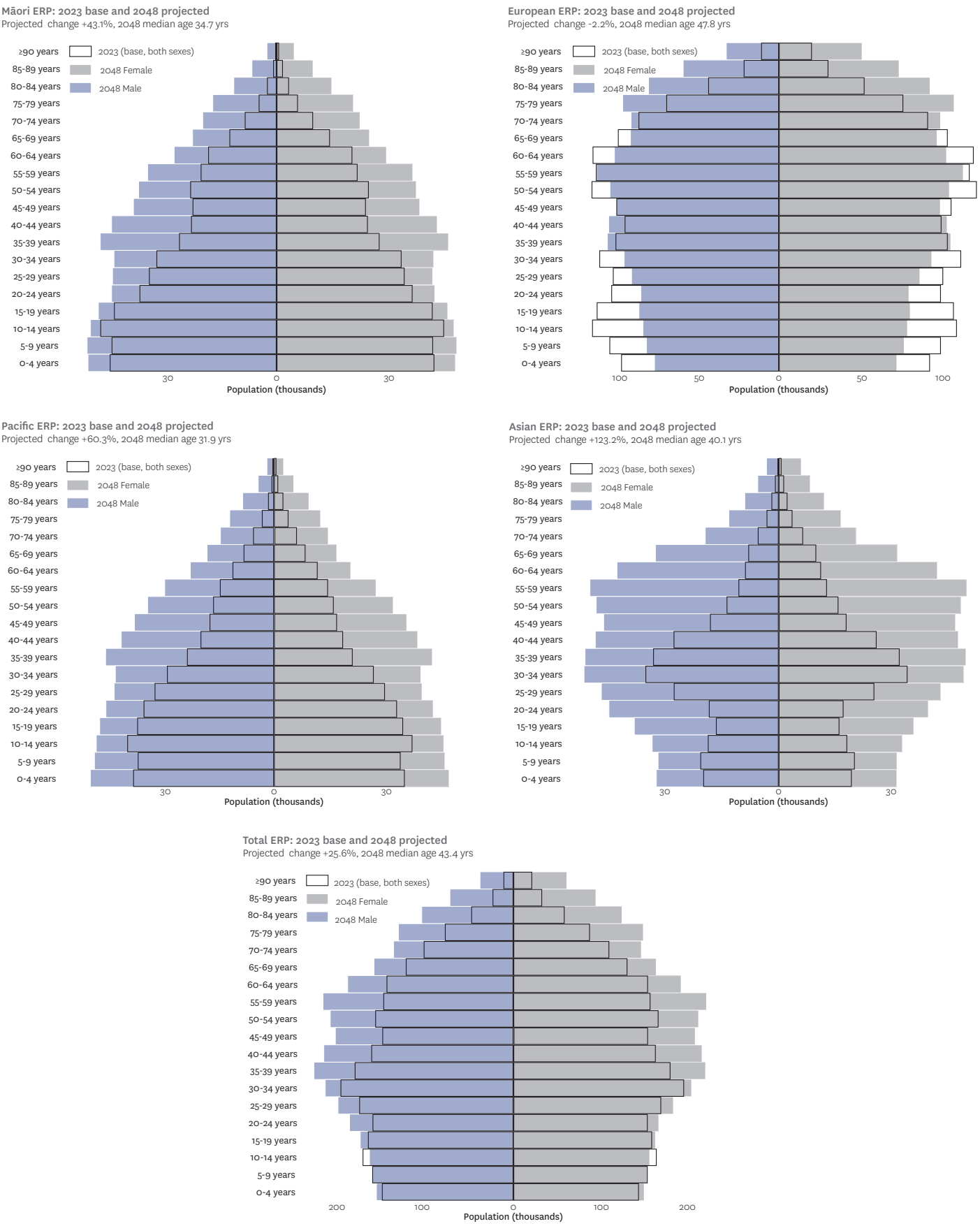
Increasing ethnic diversity

The youthful age structure of the Māori and Pacific populations will see an increasing representation of these communities in the future. All broad ethnic groups other than 'European' are projected to grow as a result of higher natural increases (more births than deaths) and/or more migrant arrivals compared with departures. Projections estimate that by 2048 the Māori population will have increased to 1.20–1.41 million (from 0.91 million in 2023), the Pacific population to 0.66–0.83 million (from 0.46 million), and the Asian population from 0.97 million in 2023 to between 1.99 and 2.36 million. The 'European or other' population is projected to reduce from 3.49 million in 2023 to 3.25–3.59 million by 2048 (Statistics New Zealand, 2025b).

Figure 1 presents the current (2023) and projected (to 2048) population pyramids of the four broad ethnic groups – Māori, European, Pacific, Asian – and the total Aotearoa New Zealand population. This demonstrates both the projected population size and projected age structure over time. For Māori, Pacific and Asian populations, most age groups are projected to increase over time, while the European population is projected to decline. For each broad ethnic group, the greatest proportional growth occurs in the oldest age bands; however, the Māori, Pacific and Asian populations retain a younger overall age structure in comparison with the European population.

Highlighting these specific ethnic shifts is important for maximising health service effectiveness and equity, particularly because ethnicity is a stronger marker of health need than other commonly used sociodemographic characteristics, such as age, sex, rurality or area-level deprivation

Figure 1: Population pyramids for Māori, European, Pacific and Asian ethnic groups and the total Aotearoa New Zealand population, 2023 (base) and 2048 (projected)



Outlined bars show the 2023 base estimated resident population; filled bars show the 2048 projection (50th percentile), with males in blue (left) and females in grey (right). Note that each panel is plotted on its own horizontal scale to represent the age structure of each group; panel widths are therefore not comparable across groups and absolute population sizes need to be read from the axis. Ethnic groups are total response, so individuals identifying with more than one group are counted in each.

Source: Stats NZ, National ethnic population projections, by age and sex, 2023(base)-2048 (50th percentile / median scenario)

(Loring et al., 2024). The over-representation of Māori and Pacific communities across all indicators of poor health status is clear. However, disaggregation of data for the broad ethnic groups is critical to understand sub-population differences in health outcomes and to most appropriately design and deliver services. For example, the health status of the Asian population in Aotearoa New Zealand is usually reported as relatively high compared with that of other broad ethnic groups across a range of health indicators. However, this overall reporting obscures significant health burden for communities within the Asian category (Wu et al., 2024). The Indian population is projected to increase from 0.34 million in 2023 to between 0.68 and 0.88 million (approximately 12% of the total Aotearoa New Zealand population) in 2048 (Statistics New Zealand, 2025b). Indian communities in Aotearoa New Zealand have very high rates of non-communicable disease such as cardiovascular disease, cerebrovascular disease and type 2 diabetes mellitus (Selak et al., 2025). This disease burden has important implications for the most appropriate and effective chronic disease prevention strategies, health promotion activities, and the provision of quality care for these communities to reduce the future burden on individuals, families and the health system (Ministry of Health, 2026a).

Ultimately, ethnic-specific understanding is a prerequisite for the delivery of culturally safe and appropriate care. While targeted services such as kaupapa Māori, Pacific-specific and other focused health initiatives are critical for advancing health outcomes and health equity, every part of the health system must be equipped to meet the needs and aspirations of an ethnically diverse population (Ministry of Health 2024b, 2025a; Wu et al., 2024). This requires a workforce that reflects the population, as well as one that can critically examine its own biases and structural positions to advance health equity (Curtis et al., 2019). Further, the youthful age structure of current and future non-European populations, and particularly Māori and Pacific, requires cross-sectoral attention. These children and young people provide the potential demographic dividend to sustain the future workforce and economy (Jackson, 2011). Realising this opportunity will require sustained investment not just in health, but also in education, housing, social support and employment.

Safeguarding Aotearoa New Zealand's future requires governance frameworks that account for the shared determinants of human, animal and environmental wellbeing.

Environmental change

Investments must also be made in the context of escalating climate-related hazards and degradation of the environmental conditions that sustain health, shape health service demand and influence health equity (Public Health Advisory Committee, 2025). Climate-related health risks are rising globally and within Aotearoa New Zealand (Lenihan-Ikin et al., 2025; Royal Society Te Apārangi, 2017; World Health Organization, n.d). Extreme temperatures, storms, flooding and coastal inundation will intensify over coming decades, compounding existing pressures such as declining ecosystem health, water contamination and biodiversity loss (Romanello et al., 2025).

The health consequences of this environmental degradation are already apparent, ranging from loss of life and injury to infectious diseases and mental health impacts (Lenihan-Ikin et al., 2025). As environmental risks increase, displacement and disrupted access to services will compound environmental impacts on wellbeing and health equity (Health New Zealand Te Whatu Ora, 2026). Failures in transport, communication systems, secure housing, education and employment infrastructure will place heavy burdens on already stretched communities (Pincham et al., 2024, 2025; Whitehead et al., 2026).

Intersecting environmental and climate pressures demonstrate that human health cannot be understood in isolation from ecological integrity (World Health Organization, 2026). With approximately 60% of emerging human infectious diseases originating as zoonoses, and extreme weather events heightening the risk of waterborne illness through infrastructure and catchment contamination (Esposito et al., 2023), treating human health separately from ecological disruption introduces a critical policy vulnerability. Safeguarding Aotearoa New Zealand's future requires governance frameworks that account for the shared determinants of human, animal and environmental wellbeing. Consequently, building a climate-resilient health system requires proactive planning for surges in environmental and zoonotic disease risks, rather than waiting for acute system overloads.

Intersection between demographic and environmental influences

Beyond introducing new health challenges, climate change will have an impact on core demographic processes and exacerbate existing health inequities. Climate pressures and environmental exposures like heat stress and air pollution can directly impair reproductive health and pregnancy outcomes (Casey et al., 2019; Segal et al., 2022). Environmental changes also drive both internal and international migration patterns, with important geographic and contextual variation observed (Hoffmann et al., 2020). Climate pressures and the impact of climate change on Pacific people, islands, atolls and economies are already resulting in increasing inward migration to

Aotearoa New Zealand from neighbouring Pacific nations, placing additional demands on local Pacific communities (Ghosh & Orchiston, 2021). Sea level rise, erosion and flooding are also having an impact within Aotearoa New Zealand, with coastal, riverine and low-lying regions increasingly becoming uninhabitable. One response to this scenario is community-negotiated relocation prior to impact to avoid exposure to harm and to minimise the consequences after disaster strikes (Lawrence et al., 2020). However, displacement has differential impacts on populations that are unable to relocate, and the health impacts of climate change and the strategies to respond to climate change effects are not evenly shared.

Environmental degradation has specific implications for Māori due to disruption of whakapapa (ancestral) relationships to land, waterways and resources, compounding the harm of dispossession through colonisation (Jones et al., 2014; Jones, 2019). Infants, older adults, and people with chronic illnesses or disabilities face heightened access barriers during extreme weather and infrastructure failures (Environmental Health Intelligence New Zealand, 2025b). Similarly, low-income households and those in insecure housing are less likely to have the resources to adapt to environmental changes quickly (Mason et al., 2021; Li et al., 2025). As already described, these characteristics are also more likely for Māori and Pacific communities in Aotearoa New Zealand and therefore climate-related harm significantly risks widening existing health inequities.

Prioritising prevention strategies and maximising equity

Population change, environmental change and the intersection between them have significant implications for health outcomes and future health system requirements. Workforce and service capacity planning are important components of the response, including anticipating the workforce needed to meet changing demand for primary care and aged care, and acknowledging the influence of demographic and climate change (Health New Zealand, 2024b). However, planning a sustainable future health system requires more than projecting individual treatment requirements and expanding capacity to meet them. It also requires consideration of whether Aotearoa New Zealand can create conditions that enable lifelong health equity.

Creating these conditions requires a focus on prevention activities (population-based and targeted or community-specific, within and outside the health sector) and building a healthy and resilient population. Pro-equitable prevention activities must start with the broader determinants of health, because these are the conditions that create and distribute health risks.

Non-health sector action on the determinants of health

The greatest opportunity to advance health outcomes and health equity lies in the social, economic, cultural, commercial and environmental determinants of health that sit outside the health sector. The evidence is strong that these determinants translate into measurable health outcomes. They include: adequate incomes, secure employment and income support across the life course; access to affordable, warm, dry, uncrowded and climate-resilient housing; high-quality early-childhood education and schooling; food security; urban design that includes safety, walkability, public transport, and access to green and blue space; social cohesion; cultural identity and connection; a strong regulatory environment, particularly to support action on the commercial determinants of health, such as the marketing and availability of tobacco, alcohol and unhealthy food; and action on greenhouse gas emissions (as described in international programmes of work such as the Commission on the Social Determinants of Health (2008) and as recently reviewed for the Aotearoa New Zealand context by the Public Health Advisory Committee (Public Health Advisory Committee, 2025).

Social determinants shape exposure to illness, health behaviours or 'lifestyle choices' and the ability to access timely healthcare. They are also interconnected and support circular development of resources within a population and across generations. For example, income is directly related to food security, the ability to invest in education and training, access to transport, safe and secure housing, and the ability to buffer against the stress of acute financial hardship. Good health is also critical for escaping socio-economic disadvantage.

Unequal distribution of these determinants of health is also responsible for the inequitable health outcomes currently experienced in Aotearoa New Zealand, and the likelihood that these inequities will increase as population and environmental conditions change.

Unequal distribution of these determinants of health is also responsible for the inequitable health outcomes currently experienced in Aotearoa New Zealand, and the likelihood that these inequities will increase as population and environmental conditions change. In turn, this unequal distribution is associated with the ongoing effects of colonisation, institutional practices and systemic and structural racism, and the perpetuation of vicious cycles of socio-economic disadvantage (Ahuriri-Driscoll et al., 2022; Braveman, 2022; Reid et al., 2019; Talamaivao et al., 2020). Our laws, policies, funding arrangements, service models and

decision-making processes do not consistently recognise nor support Māori governance and self-determination, equitable access to resources, or culturally safe service delivery.

Therefore, pro-equity prevention must include structural anti-racism: Māori authority and decision-making, equitable and sustained resourcing of kaupapa Māori, Māori-led and Pacific-led services, improvement of culturally safe practice, routine monitoring of outcomes by ethnicity and deprivation, redistribution of resources, and accountability for reducing inequities (Harris et al., 2022; Came et al., 2018). Taking these actions and enabling equitable access to the determinants of health is necessary for creating a healthy and resilient population that can withstand the future impact of demographic and environmental changes. These actions are also consistent with Aotearoa New Zealand's obligations under te Tiriti o Waitangi and the rights of Indigenous peoples, including Māori rights to tino rangatiratanga, participation in decisions affecting hauora, freedom from discrimination and equitable health outcomes (Came et al., 2024; United Nations, 2007; Waitangi Tribunal, 2023).

Health sector action towards prevention and health equity

Action on the determinants outside health must be matched by a health sector that is itself preventative, equitable and climate resilient. This includes through appropriate design, delivery and governance.

The current legislative framework for health in Aotearoa New Zealand, particularly the Healthy Futures (Pae Ora) Act 2022, requires the development and delivery of a range of strategies relevant for health promotion and prevention activities. These include the New Zealand Health Strategy, population-specific frameworks (such as Pacific health, mental health, rural health and disability strategies), attention to te Tiriti o Waitangi, and the (re) establishment of the Public Health Advisory Committee. In the Act, prevention and equity are stated purposes of the health system. However, recent changes to this legislation in response to shifts in political priorities have not aligned with this direction. These changes include adding a core focus on timely access to quality care, required implementation of action towards the six specific health targets, increases in the sector's focus on infrastructure, and the disestablishment of Te Aka Whai Ora (the Māori Health Authority). This latter move was evaluated and strongly criticised by the Waitangi Tribunal for the loss of Indigenous health governance and misalignment with Crown obligations (Waitangi Tribunal, 2024). These amendments signal a move away from Māori decision-making, prevention-focused resource allocation and accountability to equity. While the reference to prevention in the legislation is retained, the reality is a system that is continuously under-funded (Tenbensel and Lorgelly, 2025) and that prioritises treatment, short-term targets and individual behaviour over the broader determinants of health. This focus enhances the vulnerabilities of the health sector in the face of population ageing, increasing ethnic diversity and environmental change.

Against this legislative and policy context, comprehensive primary care provides a critical test of whether prevention and equity are being realised in practice, rather than simply remaining stated purposes of the health system. Comprehensive, equity-oriented primary care is an important foundation to buffer against the impact of future population change. However, recent evidence suggests that primary care in Aotearoa New Zealand is not consistently meeting these indicators of success due to barriers of cost, appointment availability, enrolment challenges and workforce capacity constraints. These barriers are not felt equally, with Māori, Pacific peoples, disabled people, those living rurally and people living in the most deprived areas more likely to face lower primary care access, and have lower enrolment and vaccination uptake, compared with more advantaged groups, despite greater health need (Jeffreys et al., 2024; Liepins et al., 2024; Ministry of Health, 2024d; Pledger et al., 2023; Sheridan et al., 2023; Whitehead et al., 2022). Funding and capacity constraints also result in the need to prioritise attempts to manage acute presentations over comprehensive preventative activities such as proactive outreach, risk assessment, screening follow-up, whānau support and holistic long-term care, including by Māori and Pacific providers, who are often also managing multiple short-duration contracts, which can further undermine continuity and sustainability (Irurzun-Lopez et al., 2025, Ryan et al., 2025; Sheridan et al., 2023). The Waitangi Tribunal has also found that the Crown has breached te Tiriti o Waitangi by failing to design and administer primary healthcare in a way that actively addresses persistent Māori inequities or protects tino rangatiratanga in health (Waitangi Tribunal, 2023).

A future population requiring care across ageing, multi-morbidity and climate-related risk will need the health sector to embed te Tiriti o Waitangi obligations in governance, commissioning and resource allocation; routinely monitor service access, treatment, experience and outcomes by ethnicity, deprivation and other equity indicators; remove financial, geographic and administrative barriers; and strengthen kaupapa Māori and other community-led services. Health systems will also need climate-resilient facilities and services, heat-health surveillance and warning systems, and continuity plans for people with complex or ongoing care needs (Ministry of Health, 2024d; Public Health Advisory Committee, 2025; Sheridan et al.,

A future population requiring care across ageing, multi-morbidity and climate-related risk will need the health sector to embed te Tiriti o Waitangi obligations in governance ...

2023). These actions must be developed and implemented in ways that uphold te Tiriti obligations and equitable access to care for Māori (Waitangi Tribunal, 2023). Cultural safety, anti-racism and equity accountability should be treated as core dimensions of clinical quality and safety, with performance assessed through patient and whānau experience, equitable access and outcomes, and demonstrable action on institutional racism (Curtis et al., 2019; Medical Council of New Zealand, 2019; Talamaivao et al., 2020).

Conclusion

Planning a sustainable future health system to meet the needs of the next generation in Aotearoa New Zealand cannot focus solely on increasing treatment and workforce capacity according to current patterns of illness and demand. Population ageing, ethnic diversification, migration, rural and urban change, and environmental disruption will alter both the distribution of health need and the conditions in which care is delivered. These changes intersect, and will not affect all communities equally. Māori, Pacific peoples, rural communities, those living in socio-economic disadvantage and those in climate-vulnerable environments will experience greater exposure to health risks and more barriers to prevention and care.

Prevention must become the key principle of health system planning and delivery, beginning with action on the determinants outside the health sector. Secure incomes, healthy housing, education, food security, safe environments, social connection, culturally connected communities and effective regulation of commercial health risks will prevent future illness and buffer the negative impact of key demographic and environmental changes. This must be supported by a comprehensive, equitable and climate-resilient health service. Climate adaptation itself should be treated as public health prevention (Ministry of Health, 2024d; Pourzand et al., 2023).

Priorities of prevention and the broader determinants of health are not new considerations. They are visible in longstanding efforts by policymakers, public health practitioners, researchers and leaders to orient the health system towards longer-term outcomes and health equity. Examples of such efforts include: the Primary Health Care Strategy; Smokefree Aotearoa; the Healthy Eating Healthy Action approach; attempts to embed health in all policies, and health impact assessments within routine decision-making across government; and explicit reference to wider determinants of health in key policies such as the New Zealand Health Strategy 2023. Efforts to consider health outcomes and equity have also been made in non-health sector policies, such as the Kāinga Ora – Homes and Communities Act 2019, which includes operating principles and goals of providing healthy rental housing and supporting public rental tenants' wellbeing.

This policy and strategic work deserves recognition, but protecting and implementing prevention-specific, cross-sectoral and pro-equity strategies remains a challenge, and many of these described policies and approaches have been removed, reduced, repealed or reversed before their intended benefits have been realised. Often this reversal occurs as a result of political pressure, and/or the fiscal requirements to embed longer-term preventative measures in an underfunded system that must also focus on increasing demand for treatment services. A sustainable future health system therefore requires not only effective policy design, but political commitment (including cross-party), resourcing and accountability that can be maintained across electoral cycles for the long term. Decisions to prioritise prevention strategies therefore also require difficult fiscal and political trade-offs to manage re-allocation of resources away from often costly innovative treatments.

The success of our prevention strategies should be measured not through operational targets such as waiting times or tertiary hospital procedures but by the achievement of less avoidable illness, injury and mortality, improved wellbeing, earlier intervention, reduced access barriers, the provision of quality care and the elimination of inequities. Achieving these goals will require taking evidence-informed action, and monitoring progress using high-quality numerator and denominator population data that is trusted, appropriately governed and able to be disaggregated by, with and for relevant communities.

> Ultimately, embedding equity is necessary to sustain the health system, to manage fiscal constraints, and also to meet obligations under te Tiriti o Waitangi and Indigenous rights frameworks.

Ultimately, embedding equity is necessary to sustain the health system, to manage fiscal constraints, and also to meet obligations under te Tiriti o Waitangi and Indigenous rights frameworks. A future-focused system must embed Māori authority in governance, resource allocation, commissioning, data sovereignty and service design, while ensuring that Pacific, ethnic, disabled, rural, migrant and other communities have access to resources, power and decision-making, and can shape the services that affect their health. We must avoid carrying current avoidable inequities forward to add to the burden of the future.

Acknowledgements

We would like to thank Robert Didham for his expert review of this article.

References

Aged Care Ministerial Advisory Group (2026). *A place to grow old: Securing the future of aged care*. https://www.health.govt.nz/publications/a-place-to-grow-old-securing-the-future-of-aged-care

Ahuriri-Driscoll, A., Williams, M., & Vakalalabure-Wragg, U. (2022). *Evolution of racism and anti-racism: Lessons for the Aotearoa New Zealand health system (stage one literature review)*. Ministry of Health

Braveman, P. (2022). Defining health equity. *Journal of the National Medical Association*, 114(6), 593–600. https://doi.org/10.1016/j.jnma.2022.08.004

Braveman, P., & Gruskin, S. (2003). Defining equity in health. *Journal of Epidemiology & Community Health*, 5(4), 254–258. https://doi.org/10.1136/jech.57.4.254

Came, H., Doole, C., McKenna, B., & McCreanor, T. (2018). Institutional racism in public health contracting: Findings of a nationwide survey from New Zealand. *Social Science & Medicine*, 199, 132–139. https://doi.org/10.1016/j.socscimed.2017.06.002

Came, H., Pillay, M., Aspin, C., & McCreanor, T. (2024). Honourable kāwanatanga: A prerequisite for constitutional transformation. *International Journal of Qualitative Studies on Health and Well-Being*, 19(1), Article 2409281. https://doi.org/10.1080/17482631.2024.2409281

Casey, G., Shayegh, S., Moreno-Cruz, J., Bunzl, M., Galor, O., & Caldeira, K. (2019). The impact of climate change on fertility. *Environmental Research Letters*, 14(5), 054007.

Commission on Social Determinants of Health. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health: Final report of the Commission on Social Determinants of Health*. World Health Organization.

Cormack, D., Harris, R., & Stanley, J. (2020). Acknowledging and acting on racism in the health sector in Aotearoa New Zealand. *New Zealand Medical Journal*, 133(1521), 7–14. https://nzmj.org.nz/media/pages/journal/vol-133-no-1521/acknowledging-and-acting-on-racism-in-the-health-sector-in-aotearoa-new-zealand/82e681c7d9-1696476103/acknowledging-and-acting-on-racism-in-the-health-sector-in-aotearoa-new-zealand-open-access.pdf

Crengle, S., Davie, G., Whitehead, J., de Graaf, B., Lawrenson, R., & Nixon, G. (2022). Mortality outcomes and inequities experienced by rural Māori in Aotearoa New Zealand. *Lancet Regional Health – Western Pacific*, 28, Article 100570. https://doi.org/10.1016/j.lanwpc.2022.100570

Cure Kids (2026). *State of Child Health in Aotearoa New Zealand 2026*. Cure Kids. https://www.curekids.org.nz/our-research/state-of-child-health

Curtis, E., Jones, R., Tipene-Leach, D., Walker, C., Loring, B., Paine, S. J. & Reid, P. (2019). Why cultural safety rather than cultural competency is required to achieve health equity: A literature review and recommended definition. *International Journal for Equity in Health*, 18(1), https://doi.org/10.1186/s12939-019-1082-3

Davie, G., Whitehead, J., Crengle, S., Crampton, P., Atkinson, J., de Graaf, B., Blattner, K., & Nixon, G. (2026). Rurality, socio-economic deprivation and ethnicity: their intersection and impact on mortality in Aotearoa New Zealand. *Australian Journal of Rural Health*, http://dx.doi.org/10.1111/ajr.70146

Denny, S., Lewycka, S., Utter, J., Fleming, T., Peiris-John, R., Sheridan, J., Rossen, F., Wynd, D., Teevale, T., Bullen, P., & Clark, Terryann. (2016). The association between socioeconomic deprivation and secondary school students' health: Findings from a latent class analysis of a national adolescent health survey. *International Journal for Equity in Health*, 15(1), 109. https://doi.org/10.1186/s12939-016-0398-5

Environmental Health Intelligence New Zealand. (2025a). *Lower respiratory tract infection hospitalisations* (0–4 years). https://www.ehinz.ac.nz/assets/Surveillance-reports/Released_2025/LRTI-hospitalisations-09-2025.pdf

Environmental Health Intelligence New Zealand. (2025b). *Social Vulnerability Index (SVI) 2023 surveillance report*. Massey University. https://ehinz.ac.nz/assets/Surveillance-reports/Released_2025/SVI2023-surveillance-report-June2025.pdf

Esposito, M. M., Turku, S., Lehrfield, L., & Shoman, A. (2023). The impact of human activities on zoonotic infection transmissions. *Animals*, 13(10), 1646. https://doi.org/10.3390/ani13101646

Fleming, T. M., Clark, T., Denny, S., Bullen, P., Crengle, S., & Peiris-John, R. (2014). Stability and change in the mental health of New Zealand secondary school students 2007–2012: Results from the national adolescent health surveys. *Australian and New Zealand Journal of Psychiatry*, 48(5), 472–480. https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/1753-6405.12839

Ghosh, R. C., & Orchiston, C. (2021). *Climate-induced migration in the Pacific: The role of New Zealand*. New Zealand Association of Impact Assessment. https://www.nzaia.org.nz/ghoshandorchiston.html

Gurney, J., Davies, A., Stanley, J., Whitehead, J., Cameron, L., Costello, S., Dawkins, P., & Koea, J. (2024). Equity of access to pathological diagnosis and bronchoscopy for lung cancer in Aotearoa New Zealand. *New Zealand Medical Journal*, 137(1605).

Hamblin, R., & Plimmer, G. (2023). Instability in New Zealand's Public Sector. *Policy Quarterly*, 19(4), 95–105.

Harris, R. B., Robson, B., Curtis, E., et al. (2021). Ethnic differences in mortality and hospital admission rates between Māori, Pacific, and European New Zealanders with type 2 diabetes between 1994 and 2018: A retrospective, population-based, longitudinal cohort study. *Lancet Global Health*, 9(2), e183–e192. https://doi.org/10.1016/S2214-109X(20)30412-5

Harris, R., Paine, S.-J., Atkinson, J., Robson, B., Broughton, J., et al. (2022). We still don't count: The under-counting and under-representation of Māori in health and disability sector data. *New Zealand Medical Journal*, 135(1567), 54–78. https://doi.org/10.26635/6965.5849

Health New Zealand Te Whatu Ora. (2024a). *Life expectancy in Aotearoa New Zealand: An analysis of socioeconomic, geographic, sex and ethnic variation from 2001 to 2022*. Health New Zealand | Te Whatu Ora. https://www.healthnz.govt.nz/publications/life-expectancy-in-aotearoa-new-zealand-an-analysis-of-socioeconomic-geographic-sex-and-ethnic-variation-from-2001-to-2022-technical-report

Health New Zealand Te Whatu Ora. (2024b). *Health workforce plan 2024*. https://www.healthnz.govt.nz/publications/health-workforce-plan-2024

Health New Zealand Te Whatu Ora. (2025). *PHO services agreement*. https://static.info.content.health.nz/docs/health-pros/topics/primary-care/pho-services-agreements/PHO-Services-Agreement-V7-2025.pdf

Health New Zealand Te Whatu Ora. (2026). *Climate change and environmental health*. https://www.healthnz.govt.nz/health-professionals/guidance-standards/topic/environmental-health/climate-change-and-environmental-health

Hikaka, J. F., August, T., Duque, M., & Kerse, N. (2026). Planning for Māori futures: A scoping review of experiences, priorities and opportunities for culturally informed and appropriate aged care design. *Australasian Journal on Ageing*, 45(2), https://doi.org/10.1111/ajag.70147

Hoffmann, R., Dimitrova, A., Muttarak, R. et al. (2020). A meta-analysis of country-level studies on environmental change and migration. *Nature Climate Change*, 10, 904–912 https://doi.org/10.1038/s41558-020-0898-6

Irurzun-Lopez, M., Jeffreys, M., & Cumming, J. (2025) Protecting primary healthcare funding in Aotearoa New Zealand: A cross-sectional analysis of funding data 2009–2023. *Journal of Primary Health Care*, 17, 108–114. https://doi.org/10.1071/HC24155

Jackson, N. O. (2011). *Maori and the [potential] demographic dividend* (NIDEA Working Paper No 2). University of Waikato & National Institute of Demographic and Economic Analysis. https://researchcommons.waikato.ac.nz/server/api/core/bitstreams/obefc540-6eaf-418e-9a3c-91a16aa23fa0/content

Jeffreys, M., Ellison-Loschmann, L., Irurzun-Lopez, M., Cumming, J., & McKenzie, F. (2024). Financial barriers to primary health care in Aotearoa New Zealand. *Family Practice*, 41(6), 995–1001. https://doi.org/10.1093/fampra/cmad096

Jones, R. (2019). Climate change and Indigenous health promotion. *Global Health Promotion*, 26(3, Suppl.), 73–81. https://doi.org/10.1177/1757975919829713

Jones, R., Bennett, H., Keating, G., & Blaiklock, A. (2014). Climate change and the right to health for Māori in Aotearoa/New Zealand. *Health and Human Rights Journal*, 16(1), 54–68. https://researchspace.auckland.ac.nz/server/api/core/bitstreams/b3e09a9e-4b88-48c1-8594-d04a8ff58703/content

Lawrence, J., Boston, J., Bell, R., Olufson, S., Kool, R., Hardcastle, M., & Stroombergen, A. (2020). Implementing pre-emptive managed retreat: Constraints and novel insights. *Current Climate Change Reports*, 6(3), 66–80. https://doi.org/10.1007/s40641-020-00161-z

Lenihan-Ikin, I., Tinn, C. S., Atuire, C., Bull, S., Wright, S. R., & Ariana, P. (2025). Climate change impacts on health in Aotearoa New Zealand: a scoping review. *New Zealand Medical Journal*, 138(1623), 53–72.

Li, A., Toll, M., Chapman, R., Howden-Chapman, P., Hernández, D., Samuelson, H., et al. (2025). Housing at the intersection of health and climate change. *Lancet Public Health*, 10(10), e865–e873.

Liepins, T., Davie, G., Miller, R., Whitehead, J., de Graaf, B., Clay, L., Crengle, S., & Nixon, G. (2024). Rural-urban variation in Covid-19 vaccination uptake in Aotearoa New Zealand: Examining the national rollout. *Epidemiology and Infection*, 152, e7, 1–8. https://doi.org/10.1017/S0950268823001978

Loring, B., Reid, P., Curtis, E., McLeod, M., Harris, R., & Jones, R. (2024). Ethnicity is an evidence-based marker of need (and targeting services is good medical practice). *New Zealand Medical Journal*, 137(1603), 9–13.

Marek, L., Hills, S., Wiki, J., Campbell, M., & Hobbs, M. (2023). Towards a better understanding of residential mobility and the environments in which adults reside: A nationwide geospatial study from Aotearoa New Zealand. *Habitat International*, 133, 102762. https://doi.org/10.1016/j.habitatint.2023.102762

Mason, K., Lindberg, K., Haenfling, C., Schori, A., Marsters, H., Read, D., & Borman, B. (2021). Social vulnerability indicators for flooding in Aotearoa New Zealand. *International Journal of Environmental Research and Public Health*, 18(8), 3952. https://doi.org/10.3390/ijerph18083952

Matheson, A., Reidy, J., & Ellison-Loschmann, L. (2026). Putting communities at the centre for a more effective and equitable health system in Aotearoa New Zealand. *New Zealand Medical Journal*, 139(1628). https://doi.org/10.26635/6965.7118

Medical Council of New Zealand. (2019). *Cultural safety*. https://www.mcnz.org.nz/our-standards/current-standards/cultural-safety/

Mills, C., Reid, P., & Vaithianathan, R. (2012). The cost of child health inequalities in Aotearoa New Zealand: a preliminary scoping study. *BMC Public Health*, 12, https://doi.org/10.1186/1471-2458-12-384

Ministry of Health. (2023a). *Annual data explorer 2022/23: New Zealand Health Survey* [Data file]. https://minhealthnz.shinyapps.io/nz-health-survey-2022-23-annual-data-explorer/

Ministry of Health. (2023b). *Rural Health Strategy*. Ministry of Health. https://www.health.govt.nz/system/files/2023-07/rural-health-strategy-oct23-v2.pdf

Ministry of Health. (2023c). *New Zealand Health Strategy*. Ministry of Health

Ministry of Health. (2024a). *Cabinet material: Confirming the five health targets* [Information release]. https://www.health.govt.nz/information-releases/cabinet-material-confirming-the-five-health-targets

Ministry of Health. (2024b). *Tatau kahukura: Māori health chart book 2024* (4th ed.). https://www.health.govt.nz/publications/tatau-kahukura-maori-health-chart-book-2024

Ministry of Health. (2024c). *Annual update of key results 2023/24: New Zealand Health Survey*. https://www.health.govt.nz/publications/annual-update-of-key-results-202324-new-zealand-health-survey

Ministry of Health (2024d). *Health National Adaptation Plan 2024–2027*. https://www.health.govt.nz/publications/health-national-adaptation-plan-2024-2027

Ministry of Health (2025a). *Tupu ola moui: Pacific health chart book series 2025* https://www.health.govt.nz/publications/tupu-ola-moui-volume-4-health-system-part-one

Ministry of Health (2025b). *Developing a work programme to improve health outcomes for older people*. https://www.health.govt.nz/system/files/2025-10/11-07-2025-Briefing-Developing-a-work-programme-to-improve-health-outcomes-for-older-people-H2025068358.pdf

Ministry of Health. (2026). *Health and independence report 2025: Te pūrongo mō te hauora me te tū motuhake 2025*. https://www.health.govt.nz/system/files/2026-08/health-and-independence-report-2025.pdf

Ministry of Social Development. (2025). *Meeting the future needs of older Pacific New Zealanders*. https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/long-term-insights-briefings/meeting-the-future-needs-of-older-pacific-new-zealanders.pdf

Morton, S., Atatoa Carr, P. E., Grant, C. C., Berry, S. D., Bandara, D. K., Mohal, J., Tricker, P. J., Ivory, V. C., Kingi, T. R., Liang, R., Perese, L. M., Peterson, E., Pryor, J. E., Robinson, S. M., Waldie, K. E., Wall, C. R., & the Growing Up in New Zealand team. (2022). Mind the gap – unequal from the start: Evidence from the Growing Up in New Zealand study. *New Zealand Journal of Social Sciences Online*, 17(2), 216–236. https://doi.org/10.1080/1177083X.2022.2058026

Morton, S., Atatoa Carr, P., Berry, S., Grant, C., Bandara, D., Mohal, J., & Tricker, P. (2024). *Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Residential mobility report 1: Moving house in the first 1000 days*

Nixon, G., Davie, G., Whitehead, J., Miller, R., de Graaf, B., Liepins, T., Lawrenson, R., & Crengle, S. (2024). Rural-urban variation in the utilisation of publicly funded healthcare services: an age-stratified population-level observational study. *New Zealand Medical Journa*l, 137(1590), 33–47.

Pincham, M., Quinsey, S., Blake, M., & Whitehead, J. (2024). Examining climate change impacts on health service access in Aotearoa New Zealand: An experimental proof-of-concept. *New Zealand Medical Journal*, 137(1607), 103.

Pincham, M., Quinsey, S., Blake, M., & Whitehead, J. (2025). Developing a 'live' map of spatial access to health services in Aotearoa New Zealand. *New Zealand Medical Journal*, 138(1614), 128.

Pledger, M., Mohan, N., Silwal, P., & Irurzun-Lopez, M. (2023). The enrolment gap and the Covid-19 pandemic: An exploration of routinely collected primary care enrolment data from 2016 to 2023 in Aotearoa New Zealand. *Journal of Primary Health Care*, 15(4), 316–323.

Pourzand, F., Bolton, A., Salter, C., Hales, S., & Woodward, A. (2023). Health and climate change: Adaptation policy in Aotearoa New Zealand. *Lancet Regional Health – Western Pacific*, 40, 100954. doi:10.1016/j.lanwpc.2023.100954

Public Health Advisory Committee. (2025). *Determining our future: Social, cultural, economic and commercial determinants of wellbeing in Aotearoa New Zealand: Actions to improve health and wellbeing*. Ministry of Health.

Reid, P., Cormack, D., & Paine, S. J. (2019). Colonial histories, racism and health: The experience of Māori and Indigenous peoples. *Public Health*, 172, 119–124.

Reid, P., Paine, S. J., Te Ao, B., Willing, E. J., Wyeth, E., Vaithianathan, R., & Loring, B. (2022). Estimating the economic costs of Indigenous health inequities in New Zealand: a retrospective cohort analysis. *BMJ Open*, 12(10), https://doi.org/10.1136/bmjopen-2022-065430

RNZ News. (2026, September 24). *Post code lottery still alive and well in health sector, latest figures show*. https://www.rnz.co.nz/news/health/1529599/post-code-lottery-still-alive-and-well-in-health-sector-latest-figures-show

Robson, B., & Harris, R. (Eds.). (2007). *Hauora: Māori standards of health IV. A study of the years 2000–2005*. Te Rōpū Rangahau Hauora a Eru Pōmare.

Romanello, M., Walawender, M., Hsu, S.-C., Moskeland, A., Palmeiro-Silva, Y., Scamman, D., Smallcombe, J. W., Abdullah, S., Ades, M., Al-Maruf, A., Ameli, N., et al. (2025). The 2025 report of the Lancet countdown on health and climate change: Climate change action offers a lifeline. *Lancet*, 406(10521), 2804–2857. https://doi.org/10.1016/S0140-6736(25)01919-1

Royal Society Te Apārangi. (2017). *Human health impacts of climate change for New Zealand: Evidence summary*. https://www.royalsociety.org.nz/assets/documents/Report-Human-Health-Impacts-of-Climate-Change-for-New-Zealand-Oct-2017.pdf

Ryan, D., Kitione, L., Kimiora, H., Sonder, G., & Cumming, J. (2025). Enhancing Pacific health services: The growth and innovation of Pacific providers in Aotearoa. *Journal of Primary Health Care*, 17(4), 303–10. https://doi.org/10.1071/HC25051

Segal, T. R., & Giudice, L. C. (2022). Systematic review of climate change effects on reproductive health. *Fertility and sterility*, 118(2), 215–223.

Selak, V., Paynter, J., Hanchard, S., Brewer, K. M., Taueetia-Su'a, T., Mehta, S., Ameratunga, S., Harwood, M., & Grey, C. (2025). CVD risk assessment by ethnicity in Aotearoa New Zealand: A national observational study. *BMC Global and Public Health*, 3(1), https://doi.org/10.1186/s44263-025-00212-3

Sheridan, N., Jansen, R. M., Harwood, M., Love, T., Kenealy, T., & Primary Care Models Study Group. (2024). Hauora Māori: Māori health: A right to equal outcomes in primary care. *International Journal for Equity in Health*, 23, Article 42. doi:10.1186/s12939-023-02071-6

Sheridan, N., Love, T., Kenealy, T., Atmore, C., Crampton, P., Dowell, A., Gauld, R., McBain, L., Stokes, T., & Stubbe, M. (2023). Is there equity of patient health outcomes across models of general practice in Aotearoa New Zealand? A national cross-sectional study. *International Journal for Equity in Health*, 22, 79. https://doi.org/10.1186/s12939-023-01893-8

Statistics New Zealand. (2025a). *National population projections: 2024(base)–2078*. https://www.stats.govt.nz/information-releases/national-population-projections-2024base2078/

Statistics New Zealand. (2025b). *National ethnic population projections: 2023(base)–2048*. https://www.stats.govt.nz/information-releases/national-ethnic-population-projections-2023base-2048/

Statistics New Zealand. (2026). *Subnational population component changes and median age (RC, TALB), at 30 June 2018–25* (2025 boundaries) [Data set]. https://explore.data.stats.govt.nz/

Talamaivao, N., Harris, R., Cormack, D., Paine, S.-J., & King, P. (2020). Racism and health in Aotearoa New Zealand: A systematic review of quantitative studies. *New Zealand Medical Journal*, 133(1521), 55–68. https://pubmed.ncbi.nlm.nih.gov/32994637/

Tenbensel, T. & Lorgelly, P. (2025) *New Zealand's health financing and expenditure: A comparative and historical review – 2000–2023*, Association of Salaried Medical Specialists. https://asms.org.nz/wp-content/uploads/2025/09/New-Zealands-Health-Financing-and-Expenditure-FINAL.pdf

Teng, A. M., Atkinson, J., Disney, G., Wilson, N., Sarfati, D., & Blakely, T. (2016). Ethnic inequalities in cancer incidence and mortality: Census-linked cohort studies with 94 million person-years of follow-up. *BMC Cancer*, 16, Article 755. https://doi.org/10.1186/s12885-016-2781-4

Teng, A., McLeod, M., & Crengle, S. (2026). Is ethnicity an independent predictor of health need? Linked cohort logistic regression analysis to predict amenable mortality. *New Zealand Medical Journal*, 139(1628), 22–33.

Theodore, R. F., Ratima, M., Edwards, R. et al. (2023). Indigenous adolescent health in Aotearoa New Zealand: Trends, policy and advancing equity for rangatahi Māori, 2001–2019. *Lancet Regional Health – Western Pacific*, 28, 100554. https://doi.org/10.1016/j.lanwpc.2022.100554

United Nations. (2007). *United Nations Declaration on the Rights of Indigenous Peoples* (Resolution adopted by the General Assembly, A/RES/61/295). https://www.un.org/en/genocideprevention/documents/atrocity-crimes/Doc.18_declaration%20rights%20indigenous%20peoples.pdf

Waitangi Tribunal. (2023). *Hauora: Report on stage one of the Health Services and Outcomes Kaupapa Inquiry* (Wai 2575). https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_195476216/Hauora%202023%20W.pdf

Waitangi Tribunal. (2024). *Hautupua: Te Aka Whai Ora (Māori Health Authority) priority report, part 1* (Wai 2575). https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_223039188/Hautupua%20PP%20W.pdf

Whitehead, J., Atatoa Carr, P., Scott, N., & Lawrenson, R. (2022). Structural disadvantage for priority populations: the spatial inequity of Covid-19 vaccination services in Aotearoa. *New Zealand Medical Journal*, 135(1551), 54–67.

Whitehead, J., Atkinson, J., Davie, G., de Graaf, B., Eggleton, K., Crengle, S., Miller, R., Blattner, K., Crampton, P., & Nixon, G. (2024). Comparison of the sociodemographic composition of rural and urban Aotearoa New Zealand: Insights from applying the geographic classification for health to Census 2018. *New Zealand Population Review*, 49, 27–69.

Whitehead, J., Davie, G., de Graaf, Crengle, S., Lawrenson, R., Miller, R., Nixon, G. (2023). Unmasking hidden disparities: a comparative observational study examining the impact of different rurality classifications for health research in Aotearoa New Zealand. *BMJ Open*, 13(4), http://dx.doi.org/10.1136/bmjopen-2022-067927

Whitehead, J., Pincham, M., Quinsey, S., & Blake, M. (2026). Developing a 'live' map of spatial access to health services in Aotearoa New Zealand. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 48, 89–94.

World Health Organization. (n.d.). *Climate change* [Fact sheet].
https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

World Health Organization. (2026). *One health* [Fact sheet]. https://www.who.int/news-room/fact-sheets/detail/one-health

Wu Z., Wong, S. F., & Scragg, R. (2024). *Asian health in Aotearoa: Findings from the New Zealand Health Survey 2002–2021.* Asian Network Incorporated. https://d2057z2iq79qyw.cloudfront.net/uploads/1/page/asian-health-in-aotearoa-august-2024/Asian_Health_in_Aotearoa_Updated_compressed.pdf