



TE TIRA ĀRAI URUTĀ

**NZ ROYAL COMMISSION
COVID-19 LESSONS LEARNED**

COVID-19 by the Numbers

Te KOWHEORI-19 mā ngā tatauranga

**Phase
Two**

Te Tira Ārai Urutā | NZ Royal Commission COVID-19 Lessons Learned
February 2026

Disclaimer

The following relates to the results presented in sections 5.4 and 6.2.3.

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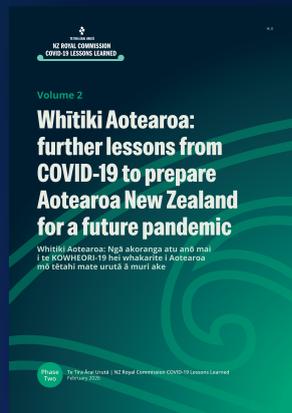
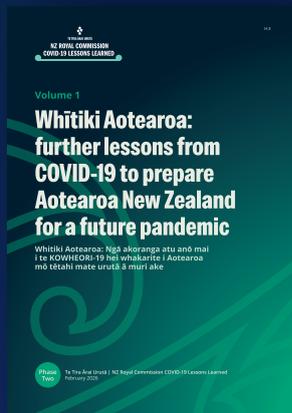
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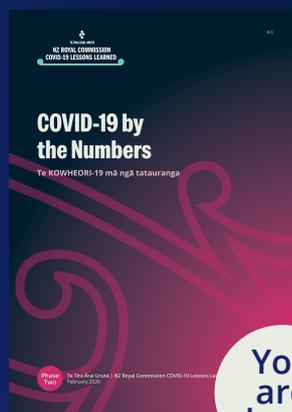
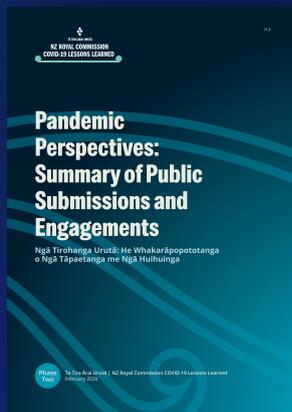
2026 – Phase Two

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Glossary |

Rārangi kupu

Term	Definition
administration	In New Zealand company law, administration is a temporary process used when a company is insolvent or likely to become insolvent. An administrator is appointed to take control of the company and attempt to maximise its chances of continuing in business or, if that is not possible, to achieve a better outcome for creditors than immediate liquidation.
Alert Level System	The sliding scale of public health and social measures used in Aotearoa New Zealand's COVID-19 response from March 2020 to November 2021. The sliding scale used 4 levels, called alert levels.
business operations survey	A nationally representative survey of New Zealand businesses with six or more employees, conducted by Stats NZ.
case rate	The number of known or reported disease cases divided by the relevant population.
co-morbidity	When a person has two or more illnesses or health conditions at the same time.
comparator countries	Seven countries chosen to compare New Zealand with throughout <i>COVID-19 by the Numbers</i> : Australia, the United Kingdom, the United States, China, Italy, Japan and Sweden (see section 3.3).
Consumers Price Index (CPI)	The Consumers Price Index measures the average change over time in the prices households pay for a basket of goods and services. Changes in the CPI are a key indicator of inflation.
coronavirus	A group of viruses that cause respiratory infections in humans, other mammals and birds. Coronaviruses can cause mild disease, such as a cold, or more serious disease such as SARS, MERS and COVID-19.
COVID-19	The disease caused by the coronavirus SARS-CoV-2. COVID-19 is also widely used to refer to the virus (such as 'COVID-19 transmission') and to the pandemic caused by the virus (for example, 'New Zealand's COVID-19 experience').
COVID-19 Response and Recovery Fund	A funding envelope established in Budget 2020 as a temporary fiscal management tool to support Aotearoa New Zealand's response to and recovery from COVID-19.
CPI	See 'Consumers Price Index'.

Delta	A variant of the COVID-19 virus that became the dominant form globally in the second half of 2021. Delta was more transmissible (easier to catch) and more virulent (causing more severe disease) than earlier variants.
District Health Boards (DHBs)	The 20 regional bodies that were responsible for provision of publicly funded health and disability services throughout Aotearoa New Zealand, including funding and provision of hospital-based services and funding and coordination of primary and community-based healthcare. On 1 July 2022, the district health board system was replaced by a single national agency responsible for funding and coordinating publicly funded healthcare – Health New Zealand Te Whatu Ora.
e-asTTle	An online assessment tool developed by New Zealand teachers to assess students’ achievement and progress in reading, mathematics and writing (see section 8.4.2).
economic shock	An economic shock is a sudden, unexpected event that significantly disrupts economic activity, such as spending, production, employment or prices.
ethnicity	In New Zealand official statistics, ethnicity is defined and used by Stats NZ as a measure of cultural affiliation, not biology, nationality or legal status. Ethnicity describes the ethnic group or groups that people identify with or feel they belong to. It reflects shared culture, ancestry, language, history or traditions, as self-identified by the person.
epidemic	An increase in the incidence of a disease that is higher than expected in the population in question.
excess mortality	Excess mortality is the number of deaths above what would normally be expected over a given period, based on historical patterns.
fiscal	Fiscal refers to government finances, especially public spending, taxation and borrowing, and the policies that determine how governments raise revenue and allocate resource.
GDP	See ‘Gross Domestic Product’.
General Social Survey (GSS)	The GSS is New Zealand’s main survey of social wellbeing and living conditions, collecting information on how people are doing across health, housing, income, education, safety, social connections and life satisfaction. It is conducted by Stats NZ, usually every two years, and is a key source for understanding social outcomes and inequalities.
genomic sequence	The genome, or genetic material, of an organism is made up of a unique DNA or RNA sequence. Each sequence is composed of chemical building blocks known as nucleotide bases.

Gross Domestic Product (GDP)	The total monetary value of all the goods and services produced in a country in a specific time period (often a year), regardless of who made them. A broad measure of the size of a country's economy.
gross fixed capital formation (GFCF)	GFCF is a measure of investment in long-lasting physical assets that are used in production for more than one year, such as buildings, infrastructure, machinery, equipment and intellectual property. GFCF captures how much an economy is adding to or replacing its productive capacity over a period. It is a core component of GDP.
Global Financial Crisis (GFC)	The GFC was a severe worldwide financial and economic downturn that began in 2007–2008, triggered by the collapse of the United States housing market and failures in the global banking system. It led to sharp falls in output and employment, major bank rescues, and lasting changes to financial regulation and macroeconomic policy in many countries.
host	In the context of an infectious disease, a host is a living organism that a pathogen infects and uses to survive, reproduce or spread.
Household Labour Force Survey (HLFS)	The HLFS is New Zealand's official quarterly survey of households that measures labour-market conditions, including employment, unemployment, labour force participation and hours worked. It is conducted by Stats NZ and is the primary source for headline indicators such as the unemployment rate and employment rate.
IDI	See 'Integrated Data Infrastructure'.
IMF	See 'International Monetary Fund'.
incidence	In the context of epidemiology, incidence refers to the number of new cases of a disease.
incubation period	Refers to the time between exposure to an infectious disease and the start of symptoms.
inflation	When the prices of a range of goods and services rise on average, reducing the buying power of money.
Inland Revenue (IRD) Te Tari Taake	The New Zealand public service agency responsible for collecting government revenue (most of which comes from tax).
Integrated Data Infrastructure (IDI)	A large research database managed by Stats NZ, which holds anonymised data about people and households. Data in the IDI comes from government agencies and covers life events such as education, income, migration and health.

International Monetary Fund (IMF)	The United Nations agency that furthers international monetary cooperation, encourages the expansion of trade and economic growth and discourages policies that would harm prosperity.
IRD	See 'Inland Revenue'.
liquidation	In New Zealand company law, liquidation is the process of winding up a company that can no longer pay its debts or has chosen to cease operating. A liquidator is appointed to sell the company's assets, distribute the proceeds to creditors in order of priority, and then dissolve the company.
lockdown	A mandatory stay-at-home order, a legal prohibition placing blanket restrictions on the population (apart from specified activities) for the purpose of limiting the spread of a disease. In Aotearoa New Zealand's COVID-19 response, the term 'lockdown' was used for situations where the population was under Alert Level 3 or 4 restrictions (see 'Alert Level System'). Some lockdowns applied nationally and others to specific regions.
longitudinal	In social science and economics research, longitudinal describes a study or dataset that follows the same individuals, households, firms or other units over time, collecting repeated observations to analyse changes, dynamics and causal relationships.
Longitudinal Business Database	A large database managed by Stats NZ which holds anonymised administrative and tax data about businesses. A component of the IDI.
macroeconomic	Relating to the field of study that examines economy-wide phenomena such as inflation, price levels, the rate of economic growth, national income, Gross Domestic Product, and changes in unemployment. Macroeconomics differs from microeconomics, which is more focused on the influences on, and choices made by, individuals and firms.
managed isolation and quarantine (MIQ)	The government-run system of quarantine and isolation facilities used to accommodate incoming travellers undergoing a period of mandatory isolation or quarantine before being able to enter Aotearoa New Zealand, and community cases who could not safely isolate at home.
mandates	See 'vaccine mandates'.
Ministry of Education Te Tāhuhu o te Mātauranga	The New Zealand public service agency responsible for education policy. It supports, funds, licenses and regulates schools, kura and early childhood education services.

Ministry of Health Manatū Hauora	The New Zealand public service agency responsible for the health and disability system. Its functions include health policy, legislation, regulation and monitoring. Prior to July 2022 the Ministry of Health was also responsible for planning and allocating funding for national healthcare services through the 20 District Health Boards and public health services through the 12 regional public health units.
mortality	Mortality refers to deaths within a population and is commonly used to describe the frequency or rate of deaths over a specified period of time.
non-tradables	Non-tradable goods and services are those that do not face foreign competition, such as local services (for example, cafes and hairdressers) and goods with high transportation costs (for example, gravel). Prices for these goods and services are primarily determined by domestic supply and demand.
OECD	See 'Organisation for Economic Co-operation and Development'.
Omicron	A variant of the COVID-19 virus that was first detected in November 2021 and rapidly became the dominant form globally, including in Aotearoa New Zealand in early 2022. Omicron was highly transmissible (very easy to catch) compared with previous variants but was also less virulent (causing milder infection) than Delta.
Organisation for Economic Co-operation and Development (OECD)	An intergovernmental organisation founded in 1961 to advise governments on policies to promote better lives. New Zealand has been a member since 1973.
Pākehā	A New Zealander of European descent.
pandemic	An infectious disease epidemic (see above) occurring across multiple geographical regions and affecting a large number of people. A pandemic is usually caused by a new infectious agent (for example, a new form of a virus for which people do not have immunity) that transmits readily between people.
pathogen	An infectious organism, such as a virus, bacteria or parasite, that can produce a disease.
personal protective equipment	Equipment worn by a person to minimise risks to their health and safety. In the context of an infectious disease, it may refer to face masks or visors, protective clothing (such as plastic aprons or suits) and/or medical gloves.
PISA	See 'Programme for International Student Assessment'.

PPP	See 'purchasing power parity'.
prevalence	In the context of epidemiology, prevalence refers to the number of existing cases of a disease.
prioritised ethnicity	In New Zealand official statistics, prioritised ethnicity is a method used by Stats NZ to assign each person to a single ethnic group when analysis or reporting requires mutually exclusive categories. When a person identifies with more than one ethnicity, Stats NZ applies a fixed priority order – Māori first, then Pacific peoples, then Asian, then Middle Eastern/Latin American/African (MELAA), then European/Other – and assigns the person to the highest-priority group they reported.
Programme for International Student Assessment (PISA)	An OECD-led programme which tests the competency of 15-year-olds' application of reading, mathematics and science to real-life problems. See section 8.4.1.
Progressive Achievement Test (PAT)	PATs are standardised, multiple-choice assessments developed by the New Zealand Council for Educational Research (NZCER). PATs can be administered to students in Year 4 through Year 10. See section 8.4.3.
public health	The science and art of preventing disease, prolonging life and promoting health through organised efforts of society.
purchasing power parity (PPP)	PPP is a way of comparing data across countries by adjusting for differences in price levels. In practice, PPP converts currencies using the cost of a common basket of goods and services, rather than market exchange rates, to allow like-for-like comparisons of income, output or living standards across countries.
quantitative easing	Quantitative easing is when a central bank creates reserves to buy financial assets (usually government bonds) to push down longer-term interest rates. It is typically used when interest rates are near their lower limits.
Rapid Antigen Tests (RATs)	A technique used to detect COVID-19 infections by analysis of a nasal swab or saliva sample in a chemical solution. Tests could be self-administered and results available in 10–20 minutes.
receivership	In New Zealand company law, receivership is a process in which a receiver is appointed (typically by a secured creditor) because a company can no longer meet its financial obligations. The receiver takes control of some or all of the company's assets to recover the debt owed, rather than manage the company for the benefit of all creditors.
recession	A recession is an extended downturn in economic growth. The normal criterion used in New Zealand is two consecutive quarters of decline in real (inflation adjusted) GDP.

real	Adjusted for inflation over time, for example real GDP.
rolling average	A rolling average is a calculation to analyse data points by creating a series of averages of different selections of a full data set. It is a technique that smooths out short-term fluctuations in data and highlights longer-term trends by reducing noise from day-to-day variation.
SARS-CoV-2	The strain of coronavirus that causes COVID-19.
Severe Acute Respiratory Infections (SARI)	Respiratory infections of recent onset (within seven days) that include fever, cough or shortness of breath and require overnight hospitalisation.
shock	See 'economic shock'.
statistical significance	Statistical significance describes whether an observed result is unlikely to have occurred by chance alone, based on a predefined probability threshold (commonly 5%). If a result is statistically significant, it means the data provide evidence of a real association or effect, though it does not indicate how large or important that effect is.
Stats NZ Tatauranga Aotearoa	The New Zealand public service agency responsible for the collection of statistics related to the economy, population and society of Aotearoa New Zealand.
testing technologies	Processes and equipment for confirming whether an individual has been infected with a disease.
The Treasury Te Tai Ōhanga	The New Zealand public service agency responsible for providing economic and fiscal advice to the Government.
tradables	Tradable goods and services are those that can be imported (for example, petrol), exported (for example, butter), or are in direct competition with foreign goods in domestic or foreign markets (for example, wine). Prices of tradable goods and services are influenced by international markets, exchange rates, and global supply and demand.
vaccination	The administration of a vaccine as a means of protection against a disease.
vaccine	Medicines used to protect the body against viruses and other infectious agents through immunisation. A vaccine trains the human immune system to respond as it would if it had been exposed to the virus or disease.

vaccine mandate	<p>A law or policy that requires people to receive certain vaccines. In the COVID-19 pandemic, they encompassed:</p> <ul style="list-style-type: none"> ◦ occupational mandates (a requirement that an individual receive a COVID-19 vaccine to continue employment in a specified occupation) ◦ mandates imposed by vaccine passes (a requirement that an individual receive a COVID-19 vaccine in order to enter or continue employment in specified locations or to attend specified gatherings) ◦ the Vaccination Assessment Tool (developed so employers could introduce their own workplace vaccination policies through health and safety assessments).
vector	<p>In the context of an infectious disease, a vector is a living organism that transmits a pathogen from one host to another, usually without becoming ill itself.</p>
virus	<p>A tiny infectious agent that reproduces itself within the cells of the infected person, animal or 'host'.</p>
Wage Subsidy Scheme	<p>Financial assistance provided during the COVID-19 pandemic by the New Zealand Government to employers to enable them to continue to pay their staff when they were unable to perform their normal duties due to public health measures, such as lockdowns.</p>
Wellbeing Survey	<p>The Stats NZ Wellbeing Survey is an annual national household survey that measures people's quality of life and wellbeing in New Zealand, covering areas such as health, income, housing, social connections, safety and life satisfaction.</p>
World Health Organization (WHO)	<p>The United Nations agency that leads multilateral efforts to promote and protect health, including via coordination of global preparation and response to pandemics.</p>

1

Introduction | Kupu whakataki

COVID-19 by the Numbers is a compendium of publicly available statistics and commissioned research about what took place in New Zealand and internationally during the pandemic, and the consequences of both the pandemic and steps taken in response to it. The report locates this information in the context of the COVID-19 pandemic globally, other pandemics and diseases, and other events both local and global.

This report does not make findings about the 'key decisions' we have assessed in Part 2 of the Phase Two Main Report, or the impact of those decisions on New Zealanders. We cannot say, for example, what impact lockdowns had on education or healthcare, without acknowledging the inevitable disruption that would have occurred if lockdowns had not taken place. Rather this report pulls together what we do know about how the pandemic affected different parts of the population and about what changed in New Zealand during that time and afterwards.

We found this compendium useful in enriching our understanding of the pandemic and the period under review. Similarly, we believe this information will be useful for others to draw on now and in the future and have provided this report for that reason.

Some of the data we present takes us up to 2025. We acknowledge that while the pandemic has cast a shadow on many aspects of New Zealand life, the further in time we get from the pandemic, and as other events have unfolded, the weaker the attribution of outcomes to the pandemic and the response to it.

2

Pandemics | Ngā mate urutā

The COVID-19 pandemic was not the first to strike humanity. Once humans began living in close quarters and sharing resources, it became easier for infections to move through populations. As trade expanded, it not only spread goods and ideas but also created new opportunities for contact between humans and animals, accelerating the emergence of epidemics. Wars, migrations and pilgrimages were also important vectors for disease transmission.¹ Diseases like malaria, tuberculosis, leprosy, influenza, plague and smallpox began to spread more easily during these early periods of settled life. As cities grew and trade routes expanded, increasing contact with different populations of people, animals and ecosystems, pandemics became more common.

¹ Sheilagh Ogilvie, *Controlling Contagion – Epidemics and Institutions from the Black Death to Covid* (Princeton: Princeton University Press, 2025)

2.1 Major pandemics in history | Ngā mate urutā nui o mua

Table 1 details some major pandemics, what is known about where they emerged, the pathogen, likely vector and death toll.

During the outbreak of the Justinian Plague, the Byzantine historian Procopius of Caesarea traced the disease's origin (now known to be caused by the *Yersinia pestis* bacterium) to regions in China and northeast India.

He described how it travelled along land and sea trade routes to Egypt, eventually entering the Byzantine Empire through its Mediterranean ports.

Some historians argue that this pandemic may have undermined Justinian's ambitions to reunify the Eastern and Western Roman Empires and possibly marked the beginning of what would later be known as the Dark Ages.²

While disease and pandemics have persisted throughout history, scientific understanding and healthcare have greatly improved, particularly over the past century and a half. Whereas the 50 million deaths due to Spanish Flu represented approximately 1 in 40 (2.5%) of the world population, the more than seven million deaths from COVID-19 represent fewer than 1 in 1,000 (0.1%) (Figure 1).

Table 1: Major pandemics in history

Pandemic	Timeline	Area of emergence	Pathogen	Vector/origin	Death toll
Athenian Plague	430–26 BCE	Ethiopia	Unknown	Unknown	Unknown
Antonine Plague	165–180	Iraq	Variola virus	Humans	5 million
Justinian Plague	541–543	Egypt	<i>Yersinia pestis</i> bacteria	Rodents' associated fleas	30–50 million
Black Death	1347–1351	Central Asia	<i>Yersinia pestis</i> bacteria	Rodents' associated fleas	200 million
The Seven Cholera Pandemics	1817–present	India	<i>Vibrio cholerae</i>	Contaminated water	40 million
Spanish Flu	1918–1919	USA	Influenza A (H1N1)	Likely bird origin	50 million
Asian Flu	1957–1958	China	Influenza A (H2N2)	Likely bird origin	>1 million

Continued on next page

² William Rosen, *Justinian's flea: plague, empire and the birth of Europe* (London: Jonathan Cape, 2007)

Table 1: Major pandemics in history (continued)

Pandemic	Timeline	Area of emergence	Pathogen	Vector/origin	Death toll
Hong Kong Flu	1968	China	Influenza A (H3N2)	Likely bird origin	1–4 million
HIV/AIDS	1981–present	Central Africa	HIV	Humans (from chimpanzees) ³	36 million
SARS	2002–2003	China	Severe acute respiratory syndrome coronavirus	Likely horseshoe bat origin, spread to humans via civet cats	774
Swine Flu	2009–2010	Mexico	Influenza A (H1N1)	Pig origin ⁴	148,000–249,000
Ebola	2014–2016	Central Africa	Ebola virus	Multiple (likely fruit bat origin) ⁵	11,000
COVID-19	2019–	China	SARS-CoV-2	Likely bat origin ⁶	7.1 million (see notes)

Source: Vanita Sampath and others, Vaccines and allergic reactions: The past, the current COVID-19 pandemic, and future perspectives, *Allergy*, Volume 76, Issue 6 (2021): 1640-1660, <https://doi.org/10.1111/all.14840> updated by Phase Two of the Royal Commission

Notes:

1. World Health Organization estimate of COVID-19 deaths as of 13 July 2025, <https://data.who.int/dashboards/covid19/deaths?n=0>
2. The World Health Organization analysis suggests that the number of COVID-19 deaths could be as high as 20 million, given the number of excess deaths experienced over the period. We discuss the concept of excess deaths in section 4.4.2.

3 Paul M Sharp and Beatrix H Hahn, 'Origins of HIV and the AIDS pandemic', *Cold Spring Harbor Perspectives in Medicine*. Sep;1(1):a006841 (2011), <https://perspectivesinmedicine.cshlp.org/content/1/1/a006841>

4 Novel Swine-Origin Influenza A (H1N1) Virus Investigation Team, 'Emergence of a Novel Swine-Origin Influenza A (H1N1) Virus in Humans', *New England Journal of Medicine*, Vol 360, No.25 (2009), 2605-15, <https://www.nejm.org/doi/pdf/10.1056/NEJMoa0903810>

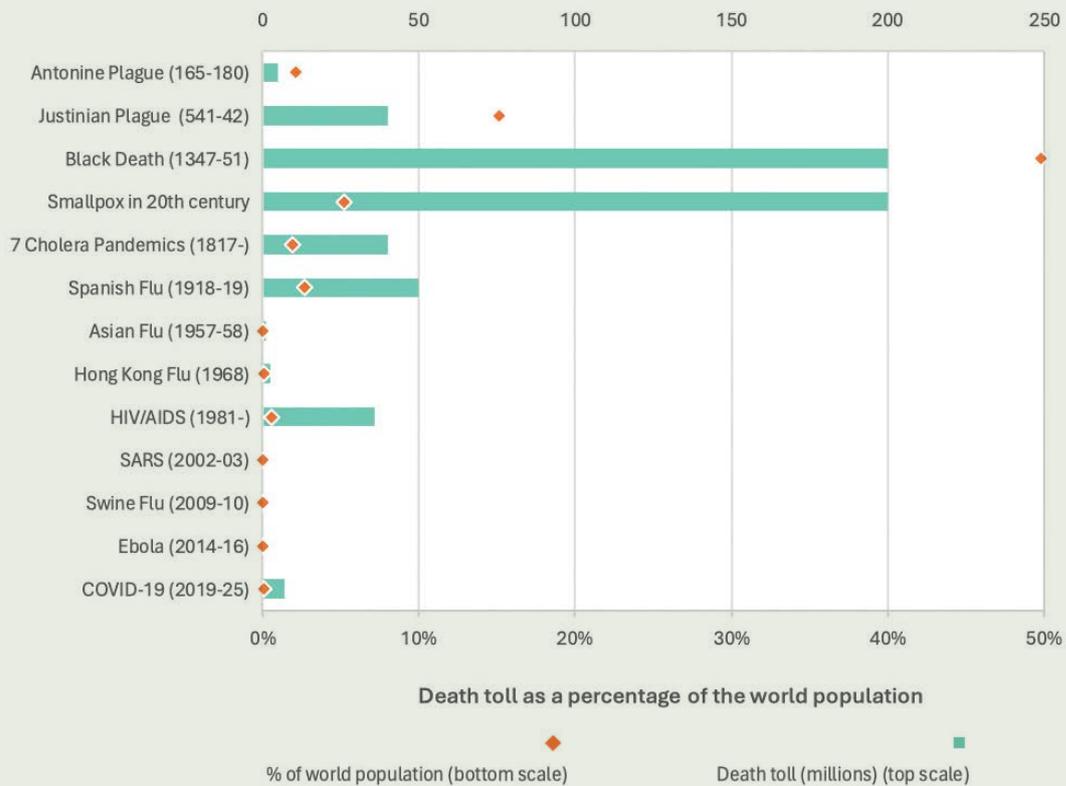
5 World Health Organization, 'Ebola disease' (24 April 2025), <https://www.who.int/news-room/fact-sheets/detail/ebola-disease>

6 World Health Organization, Scientific Advisory Group for the Origins of Novel Pathogens: independent assessment of the origins of SARS-CoV-2 (Paris: World Health Organization, 2025), <https://cdn.who.int/media/docs/default-source/documents/epp/sago/independent-assessment-of-the-origins-of-sars-cov-2-by-sago.pdf>

Figure 1: Death tolls from two millennia of pandemics

Death toll (millions) and as percentage of world population, selected pandemics, 165–2025

Interactive graphs are available here



Sources: Deaths: Shrinkath Sampath and others, 'Pandemics Throughout the History'. *Cureus*. Volume 13, Issue 9, e18136 (2021), <https://doi.org/10.7759/cureus.18136>
 Population: Our World in Data and Kees Klein Goldewijk and others, Anthropogenic land use estimates for the Holocene; HYDE 3.2, *Earth System Science Data*, Volume 9, Issue 2 (2017), 927–953. See Table 6 notes for COVID-19 data source.

2.2 Measuring infectiousness | Te ine whakapokenga

Scientists use a measure to describe the infectiousness of a disease called the basic reproduction number – also known as R_0 or ‘R naught.’ This number tells how many people, on average, each sick person will in turn infect, when all individuals are susceptible to infection. Figure 2 shows what this looks like for nine diseases. Measles is one of the most infectious diseases in humans, with a R_0 range of 12–18. This means a single infected person will infect, on average, 12 to 18 people.

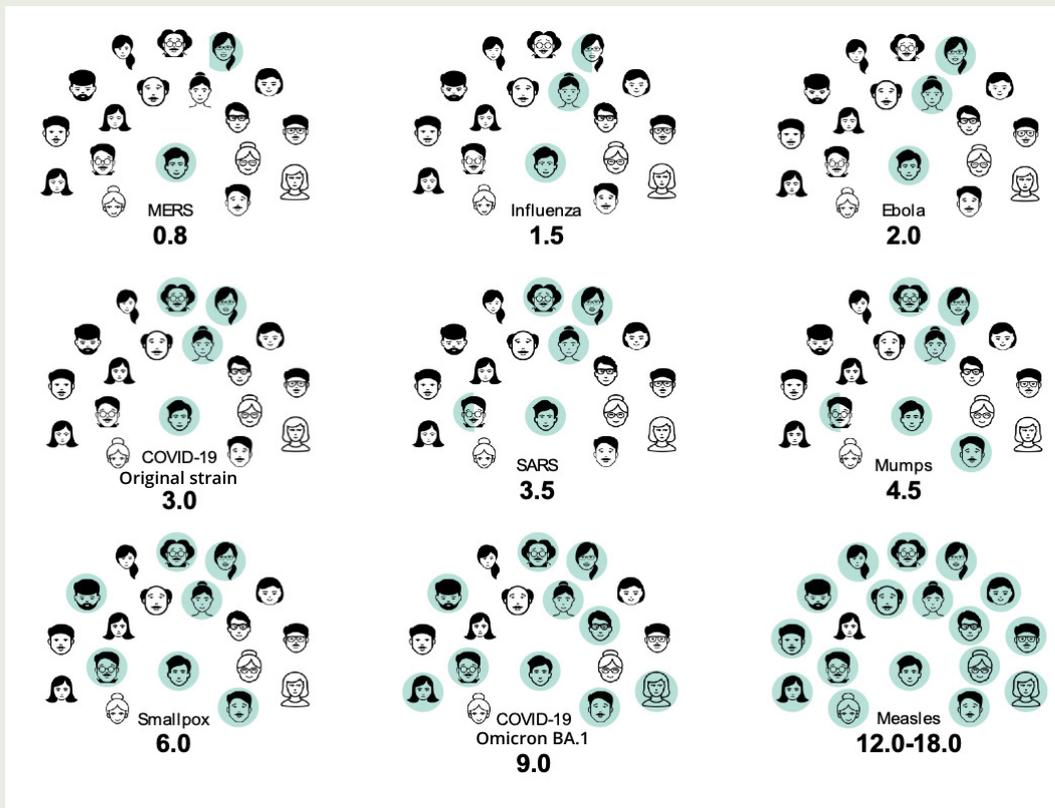
The actual or ‘effective’ reproduction number (denoted R_e or R_t) is typically smaller than R_0 . It is affected by other factors, such as the number of people an infected person comes into contact with, how susceptible other people are to the disease (for example, whether they have been vaccinated or have previously caught the disease and built up an immunity), their overall health, and any actions they have taken to protect themselves (such as wearing a mask). Public health measures such as lockdowns typically aim to lower the effective reproduction number.

While measles may be the most virulent disease listed in Figure 2, widespread vaccination efforts and herd immunity typically curb its spread.

Figure 2: The reproduction number (R_0) of communicable diseases

A measure of how many people each sick person will infect on average

Interactive graphs are available here

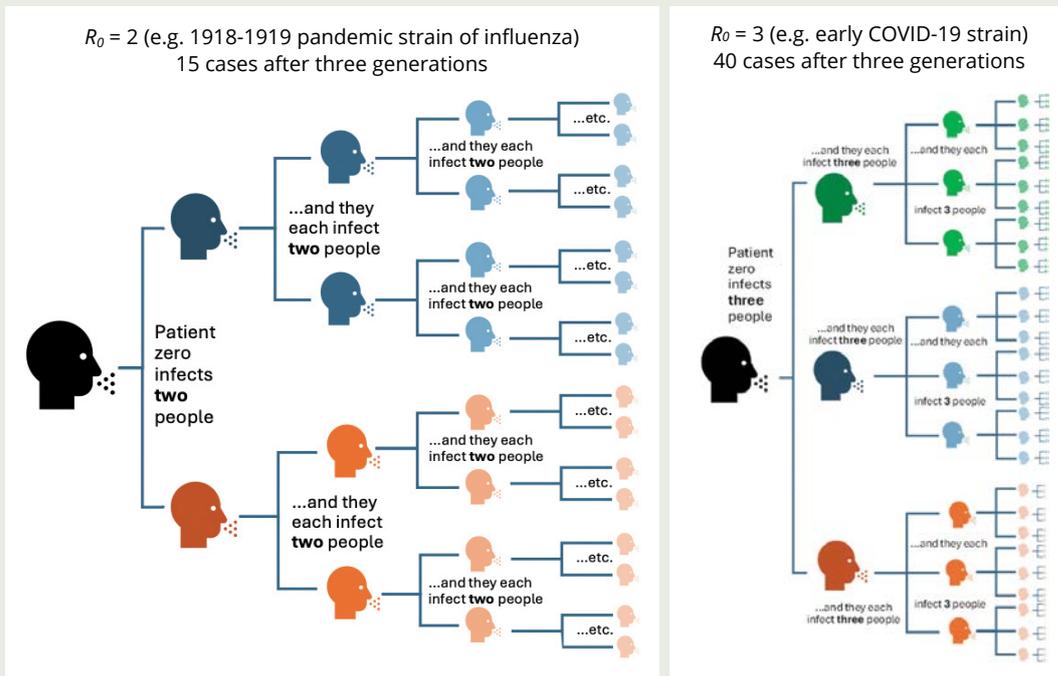


Source: Graphic by Harrison Schell, from Nicholas LePan 'Visualizing the History of Pandemics' (14 March 2020), <https://www.visualcapitalist.com/history-of-pandemics-deadliest/>

When the effective reproduction number of a disease drops below one, numbers of new infections will shrink. Should it climb above one, numbers of affected people can increase exponentially, as newly infected people become contagious and pass the infection on. If everyone has the same chance of becoming infected, diseases with an R_0 of two (such as Ebola or the influenza strain that caused the 1918–1919 pandemic) can create 15 cases after three generations of infection (Figure 3). It only takes an increase in R_0 from two to three (for example, the original strain of COVID-19) and this increases to 40 cases. In two more generations, cases will be around 60 (for $R_0 = 2$) and 360 (for $R_0 = 3$).

Figure 3: Impact of increases in the reproduction number on growth in cases

Interactive graphs are available here 



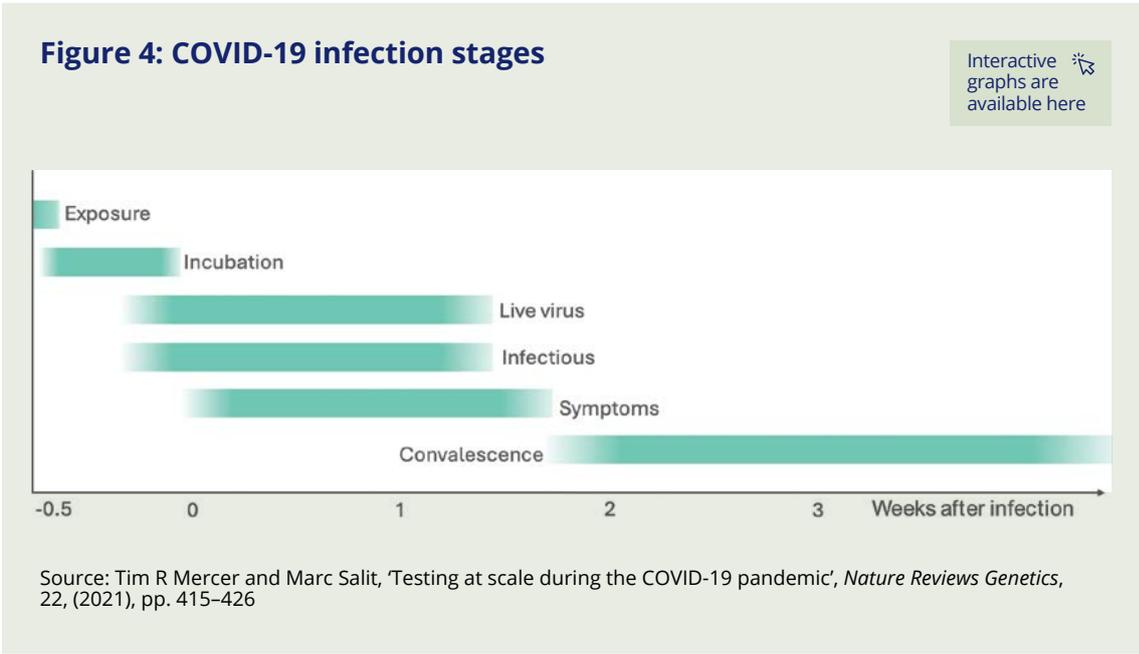
Source: Based on Joseph Eisenberg, ' R_0 : How scientists quantify the intensity of an outbreak like coronavirus and predict the pandemic's spread', The Conversation (updated 28 March 2020), <https://theconversation.com/r0-how-scientists-quantify-the-intensity-of-an-outbreak-like-coronavirus-and-predict-the-pandemics-spread-130777>

The combination of the effective reproduction number and the average time between infections determines the speed of disease spread.

2.3 The lifecycle of a viral infection | Te huringa o te mate huaketo

The lifecycle of viral infection in a person has several stages. The process begins once a person has been exposed to the disease pathogen and becomes infected (for example, SARS-CoV-2 as illustrated in Figure 4). Following this there is an incubation period, where the pathogen multiplies, but the host will not be aware they are infected. After incubation, the infected person enters the 'live virus' stage in which the virus is actively replicating in the body and the person is infectious.

There will be a few days between becoming infectious and symptoms beginning to emerge. If a person is infectious before they know they are sick, they may not know to take precautions against spreading the illness to others. This is particularly the case if the early symptoms are minor and easily overlooked.



3

The origins of COVID-19 | Te takenga mai o te KOWHEORI-19

3.1 COVID-19 first appeared in China | I puta tuatahi te KOWHEORI-19 ki Haina

The first recorded case of COVID-19 was in December 2019. It occurred in Wuhan, the capital of Hubei Province in central China. The subsequent outbreak occurred at a critical time of year, one that allowed the disease to spread widely.

Over the period of the Chinese New Year, China celebrates a spring festival, which sees the largest annual human migration. During the Chunyun (or 'Spring transport'), hundreds of millions of people make close to three billion trips to be with family.

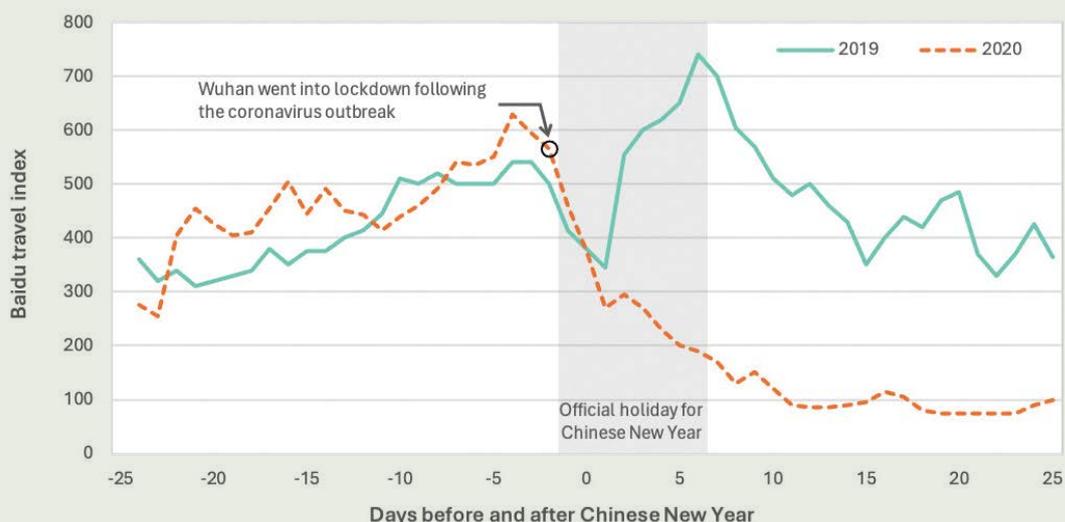
In 2020, the Chinese New Year period was between 25 January and 8 February. Migration was rising to its annual peak when Chinese authorities introduced policies on 23 January to minimise the spread of COVID-19. But before this, perhaps in anticipation of a travel ban, there was an *increase* in travel compared with the 2019 Chunyun. Average cross-city daily movements had increased, from 107.1 million to 125.8 million.⁷ Figure 5 shows the point at which Wuhan went into lockdown.

⁷ Suoyi Tan and others, 'Mobility in China, 2020: a tale of four phases', *National Science Review*, Volume 8, Issue 11 (November 2021), nwab148
Sune Lehmann, 'Chunyun versus lockdown', *National Science Review*, Volume 9, Issue 1 (January 2022), nwab178

Figure 5: Travel in China over the 2019 and 2020 Chinese New Year

Baidu travel index, 25 days before and after Chinese New Year

Interactive graphs are available here



Source: Baidu CNY migrant index, reported by World Economic Forum, '4 charts showing COVID-19's impact on Chinese New Year travel' (12 February 2021), <https://www.weforum.org/stories/2021/02/covid-19-china-chinese-new-year-travel/>

Note: Baidu travel index is based on GPS data from users of its mobile apps. Chinese New Year started on 5 February in 2019, and on 25 January in 2020.

On 23 January, lockdown measures were implemented in Wuhan, with all public transport, including buses, railways, flights and ferry services suspended. Travel plummeted after the travel ban came into place. However, about five million people had already left Wuhan.⁸ Of these, about a third had travelled to locations outside of Hubei province.

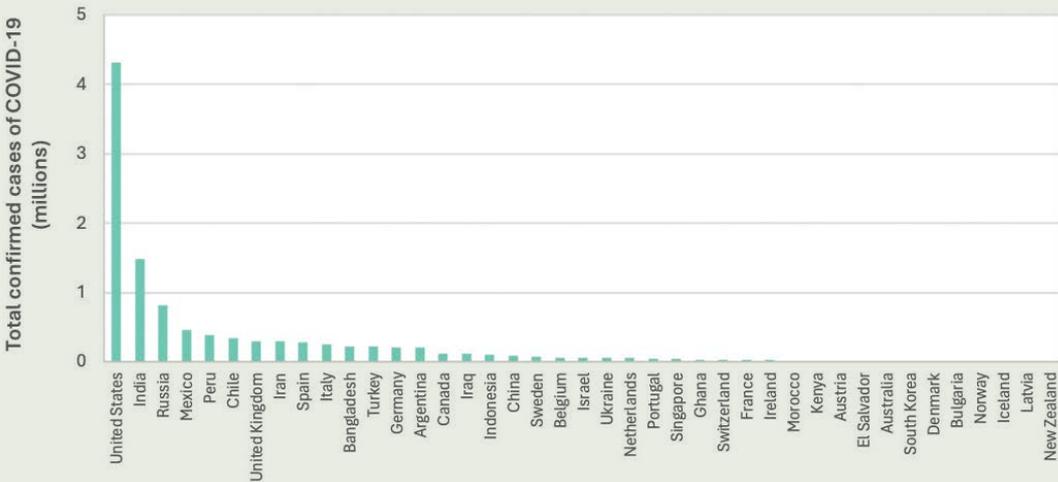
8 Simiao Chen and others, 'COVID-19 control in China during mass population movements at New Year', *The Lancet*, Volume 395, Issue 10226 (2020)

3.2 COVID-19 spread quickly across the world | Ka horapa tere te KOWHEORI-19 ki te ao whānui

A world where international travel is common is one where viruses can spread quickly, particularly if many of the early symptoms look like the common flu or cold, or infected people are asymptomatic. Within six months there were outbreaks in many other countries (Figure 6). Initially, these outbreaks tended to be small and localised. This changed when the virus began to spread in the United States and northern Italy. This signalled the beginning of the next stage of what was to become the COVID-19 pandemic.

Figure 6: Total confirmed COVID-19 cases to 28 July 2020

Interactive graphs are available here 



Source: Our World in Data, based on data from World Health Organization
 Note: Due to limited testing and asymptomatic cases, the number of confirmed cases is lower than the true number of infections.

3.3 Comparator countries | Ngā whenua whakataurite

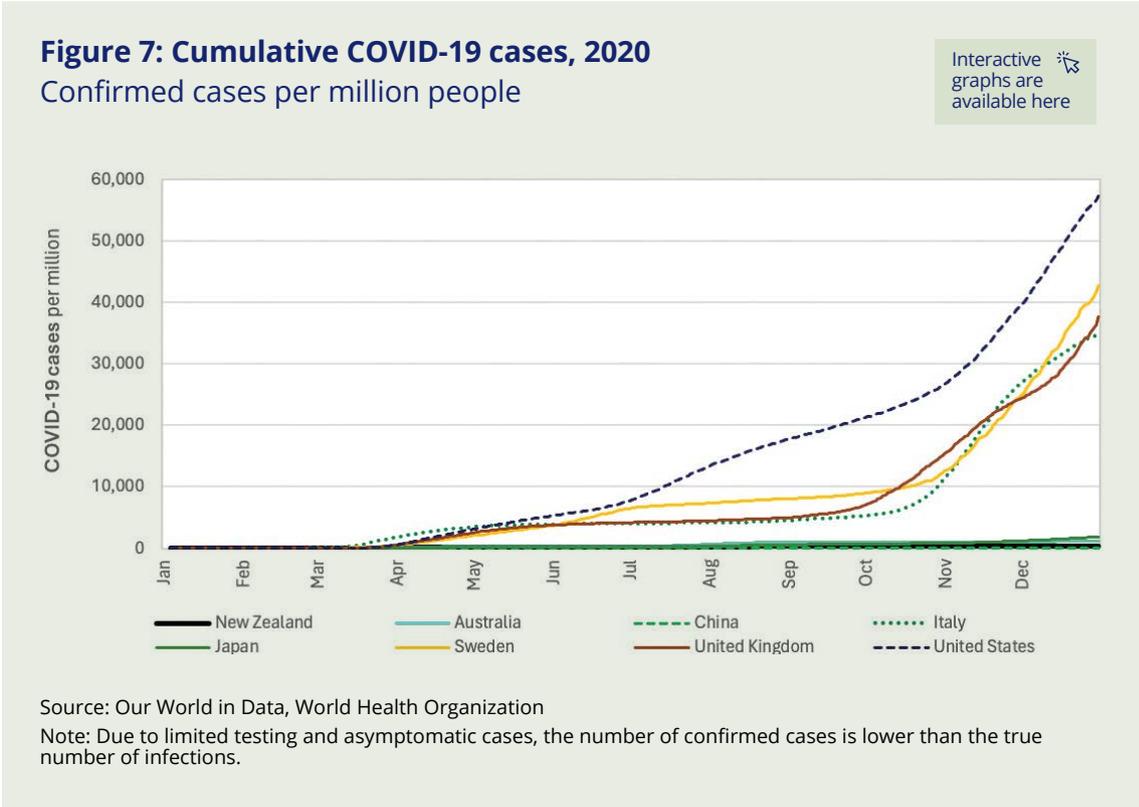
We have chosen seven countries to compare New Zealand with throughout *COVID-19 by the Numbers*. These include our nearest neighbour, Australia, along with the two other large English-speaking democracies – the United Kingdom and the United States. China was chosen because it is where the first cases were recorded, and Italy because it was one of the first high-income countries to experience major pandemic conditions. Few will forget the scenes on television and websites of overcrowded hospitals with overworked health workers in Lombardy. We included Japan because it is another high-income island economy. Our final comparison country is Sweden, which we have chosen because of its unique, and to many controversial, approach to the pandemic.

There are gaps in the data we use for cross-country comparisons. In some figures we have substituted nearby or otherwise similar countries or jurisdictions; for example, Denmark for Sweden and Hong Kong for China.

In figures that draw on OECD data we have typically included all OECD economies for which there was data. When we present such data, we compare New Zealand against the OECD average rather than the average of the comparator group of countries.

3.4 Some countries avoided major outbreaks in 2020 | I karo ētahi whenua i ngā putanga nui o te mate i te tau 2020

Figure 7 shows cumulative confirmed COVID-19 cases per million people, over time, for New Zealand and comparator countries. The numbers are reported as a rate that is relative to the size of a country's population, to allow comparisons between countries of different sizes.



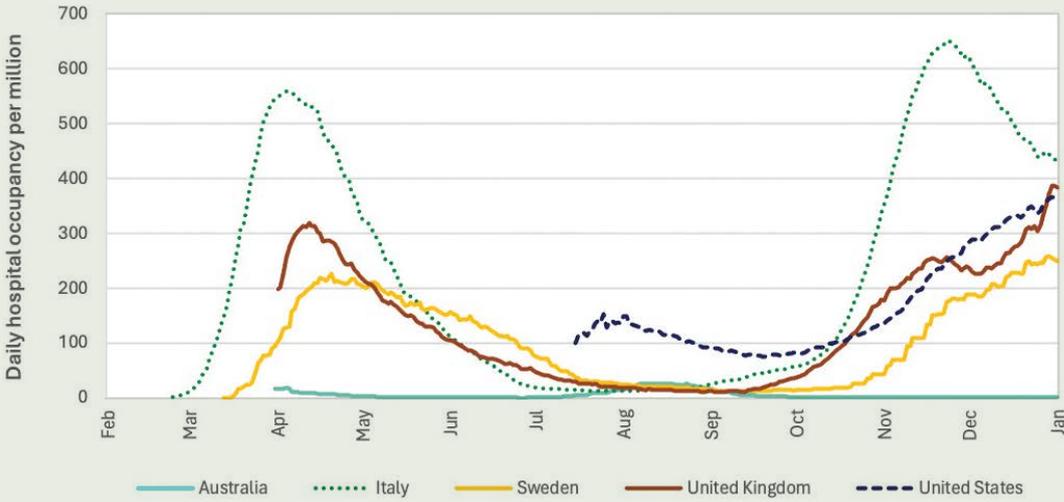
As Figure 7 shows, cases in the United States began to increase rapidly towards the end of July 2020. Total reported COVID-19 cases grew from fewer than 10,000 per million people (that is, less than 1%) in June to almost 60,000 (6%) in December. After their initial growth, numbers in Italy, Sweden and the United Kingdom plateaued for five to six months, until they too began to increase. Australia, New Zealand and Japan benefited from their geographic isolation as islands and from public health measures, and did not see similar case rates.

3.5 As COVID-19 spread, hospitals came under strain | I te horapa o te KOWHEORI-19, ka poke ngā hōhipera

As the virus spread, hospitals came under strain due to an influx of the worst-affected people (Figure 8). Sweden, the United Kingdom and Italy saw peaks of 200 to 650 hospital patients with COVID-19 per million people. This was a warning for countries that had not yet experienced such outbreaks, like New Zealand and Australia.

Figure 8: COVID-19 hospital occupancy, 2020
Daily hospital occupancy by COVID-19 patients, per million people

Interactive graphs are available here



Source: Official data collated and processed by Our World in Data (2024)

4

COVID-19 arrives in New Zealand | Ka ū mai te KOWHEORI-19 ki Aotearoa

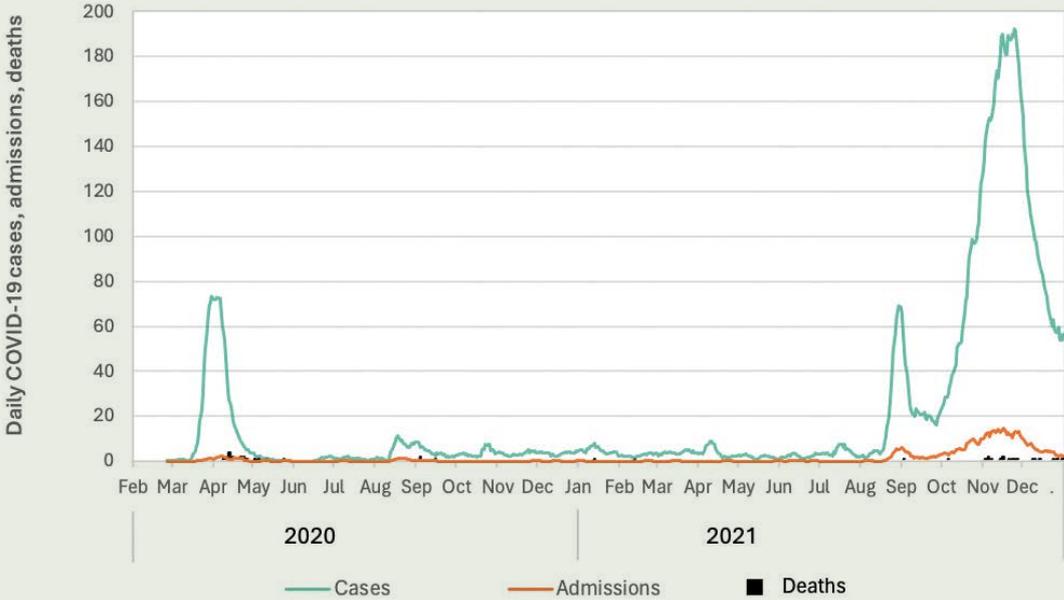
4.1 New Zealand’s experience in 2020 was different to many other countries | He rerekē te wheako o Aotearoa i te tau 2020 i tō ētahi atu whenua

New Zealand’s experience of COVID-19 in 2020 was very different to most other countries (Figure 9). New Zealand daily COVID-19 cases averaged over any seven-day period were fewer than 80 during 2020, and fewer than 200 during 2021.

We do not have equivalent data for New Zealand on hospital occupancy rates to those in Figure 8, but we do have hospital admissions (orange line in Figure 9). These were generally below two people per day during 2020, climbing to around 10 at the November 2021 peak.

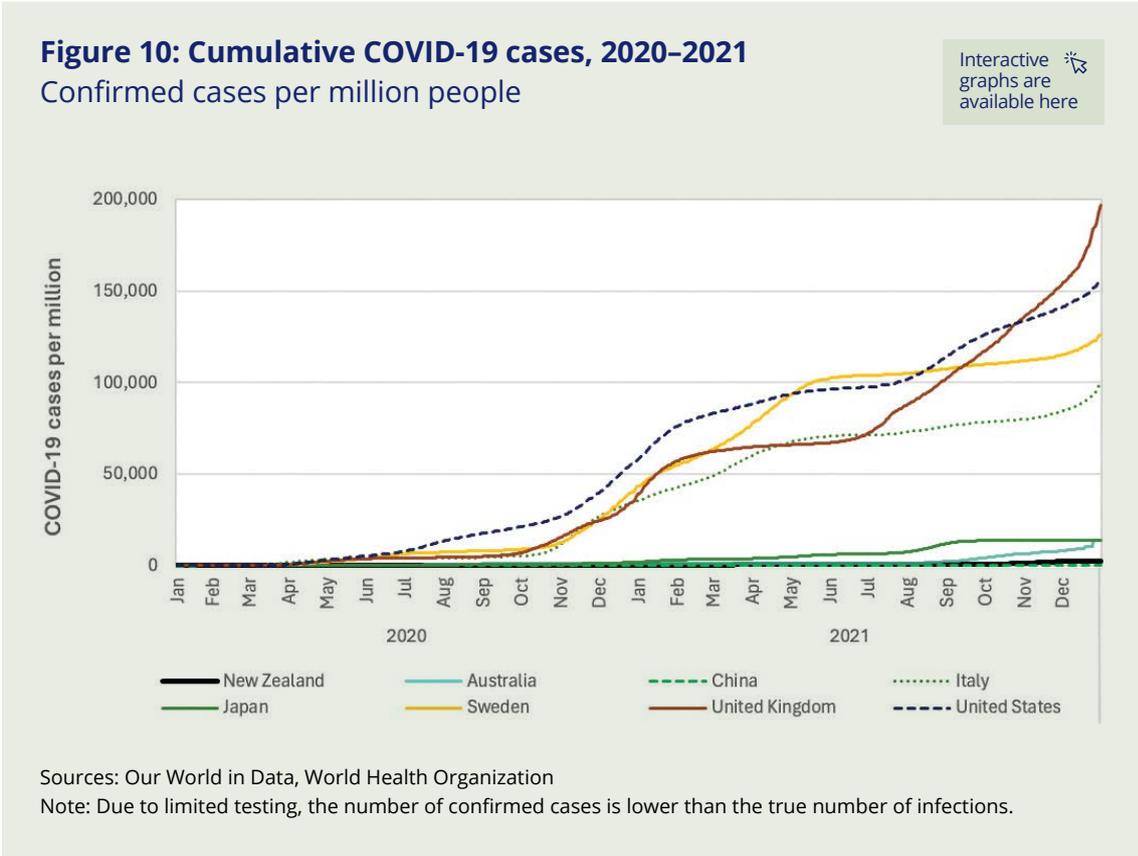
Figure 9: COVID-19 in New Zealand in 2020 and 2021
 Reported COVID-19 cases, hospital admissions and deaths, per million people, 7-day average

Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights
 Note: Figure shows hospital admissions, not occupancy.

Even during the outbreak at the end of 2021, rates of infection were still well below those of other countries (Figure 10). By mid-2021, 100,000 out of every million people, or 10% of the population, had caught COVID-19 in countries like Sweden, Italy, the United Kingdom and the United States. At the same time, Japan, Australia and New Zealand barely register on the chart.



A pattern that can be seen in Figure 10 is that of initial growth in cases, followed by a plateau with few new cases (the flat parts of the curves in the Figure). This pattern was a result of both measures taken by government and changes of behaviour of people, as well as the evolution of the virus itself.

The ability of the virus to mutate was clearly seen with the arrival and spread of the Delta variant. Delta was two to three times more transmissible than the original COVID-19 strain, with an R_0 of five to eight. It was first identified in India in October 2020 and drove a substantial outbreak in that country between March and June 2021. Delta was first detected in New Zealand in August 2021.

4.2 The rise of the variants: Delta and Omicron | Te putanga ake o ngā rerekētanga: Delta me Omicron

Like other coronaviruses, the virus that caused the COVID-19 pandemic (SARS-CoV-2) evolved rapidly, with significant changes occurring over timescales of months to years. Evolution in viruses is driven by the rate at which mutations are generated and spread through host populations. Their ability to spread will depend on differences in infectiousness, and in the timing, nature and intensity of symptoms (such as coughing) that help spread the virus to others.

Most mutations do not provide any evolutionary advantages and soon disappear. Those that have the potential to pose an increased risk to public health are characterised as ‘variants of concern’ by the World Health Organization.⁹

We can identify which variants are prevalent in the population through the use of gene sequencing. In New Zealand, this is done by the New Zealand Institute for Public Health and Forensic Science (formerly Institute of Environmental Science and Research). Figure 11 shows the prevalence of SARS-CoV-2 variants from August 2021 through to February 2024.

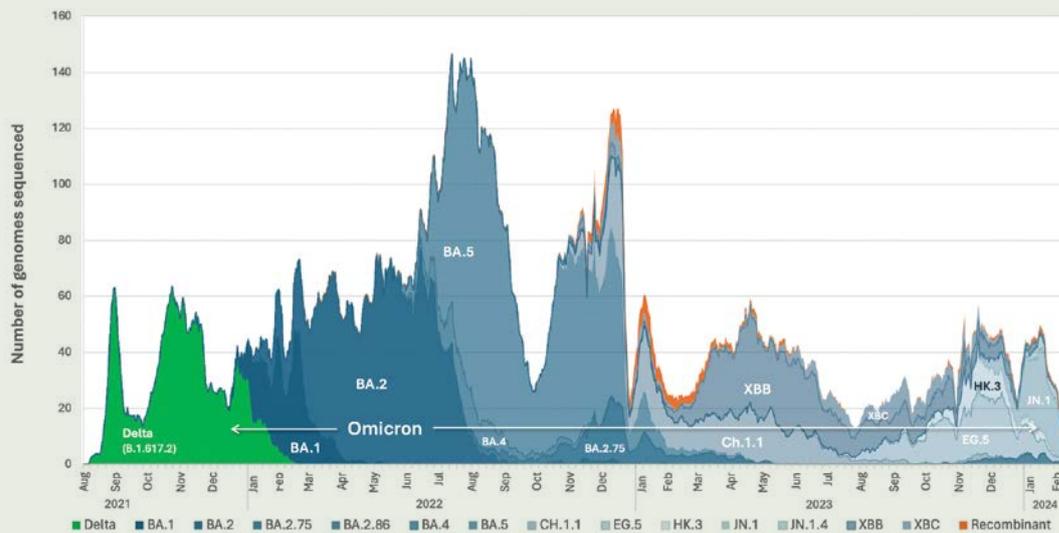
At any point in time there is usually one variant that dominates the test samples. The green area from August 2021 is the Delta variant (also denoted ‘B.1.617.2’). At the beginning of 2022, a new set of variants, collectively called ‘Omicron’, emerged. First the BA.1 and then the BA.2 variant became the most prevalent in the population.

9 World Health Organization, ‘Tracking SARS-CoV-2 variants’ (last updated 5 December 2025), <https://www.who.int/activities/tracking-SARS-CoV-2-variants>

Figure 11: Prevalence of SARS-CoV-2 variants in New Zealand

7-day rolling average for the number of genomes sequenced from a given variant, August 2021 to February 2024

Interactive graphs are available here

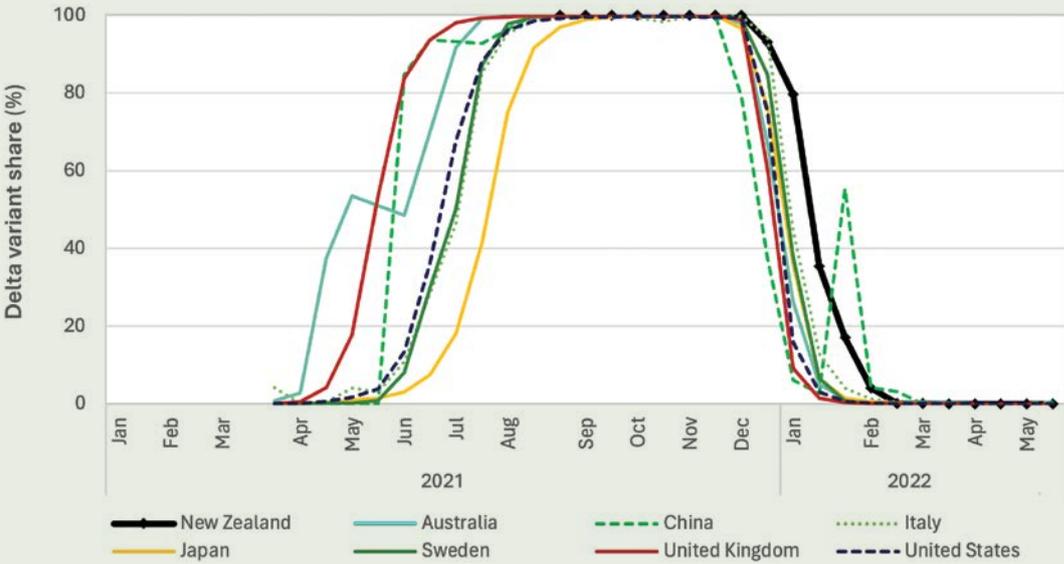


Source: New Zealand Institute for Public Health and Forensic Science (formerly Institute of Environmental Science and Research), 'Prevalence of SARS-CoV-2 Variants of Concern in Aotearoa New Zealand', <https://github.com/ESR-NZ/nz-sars-cov2-variants>

In Figure 12, we can see that the Delta variant started becoming the major variant in Australia, the United Kingdom and China earlier than it did in the United States, Sweden, Italy and Japan. In each country, Delta surged to become the dominant strain. The Delta share began to fall in these countries between December 2021 and February 2022 (with a short-lived resurgence in China in February), as early Omicron variants emerged.

Figure 12: Share of Delta variant in SARS-CoV-2 sequences
 Percentage of Delta variant in all analysed SARS-CoV-2 sequences in the preceding two weeks, April 2021 to June 2022

Interactive graphs are available here



Source: Our World in Data, using data from GISAID, via [CoVariants.org](https://covariants.org)

Notes:

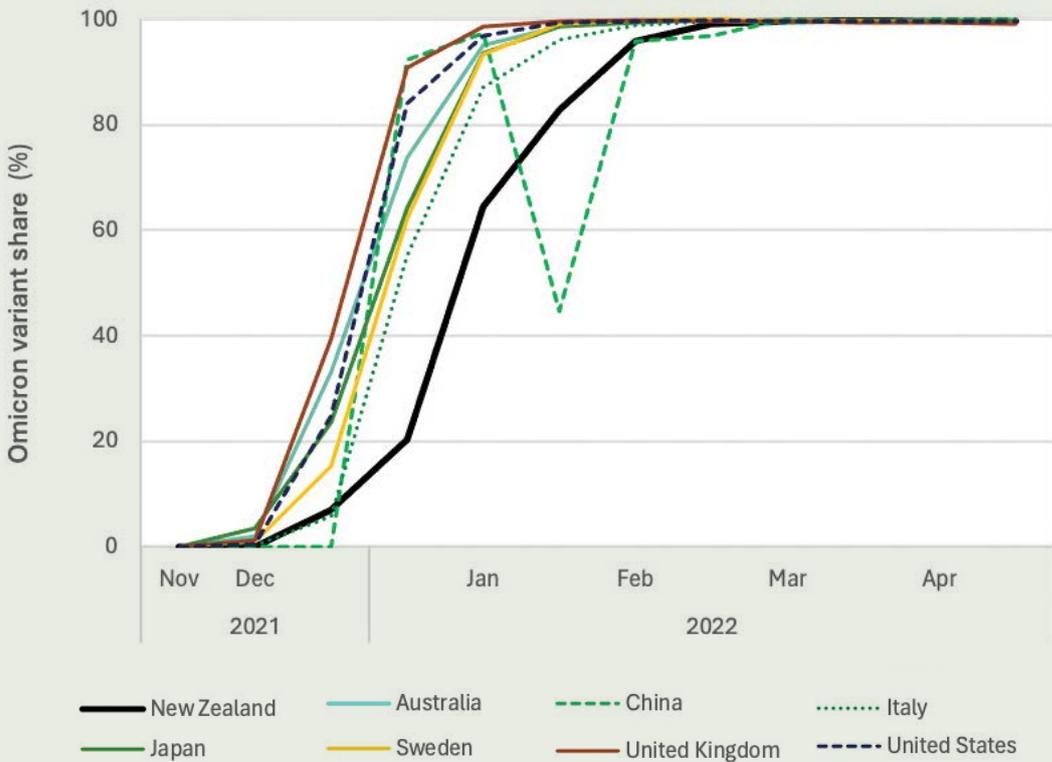
- Shares may not reflect the complete breakdown of cases, since only a fraction of all cases are sequenced. Recently discovered or actively monitored variants may be over-represented, as suspected cases of these variants are likely to be sequenced preferentially or faster than other cases.
- The uneven spacing of months along the X axis reflects that the data frequency is two-weekly, so some months have two datapoints whereas others have three.

Omicron quickly took over as the prevalent variant in all the countries in our comparison group (Figure 13). It reached a 50% share of the strains in circulation in New Zealand in mid-January 2022.

Figure 13: Share of Omicron variant in SARS-CoV-2 sequences

Percentage of Omicron variant in all analysed SARS-CoV-2 sequences in the preceding two weeks, November 2021 to April 2022

Interactive graphs are available here



Source: Our World in Data, using data from GISAID, via [CoVariants.org](https://covariants.org)

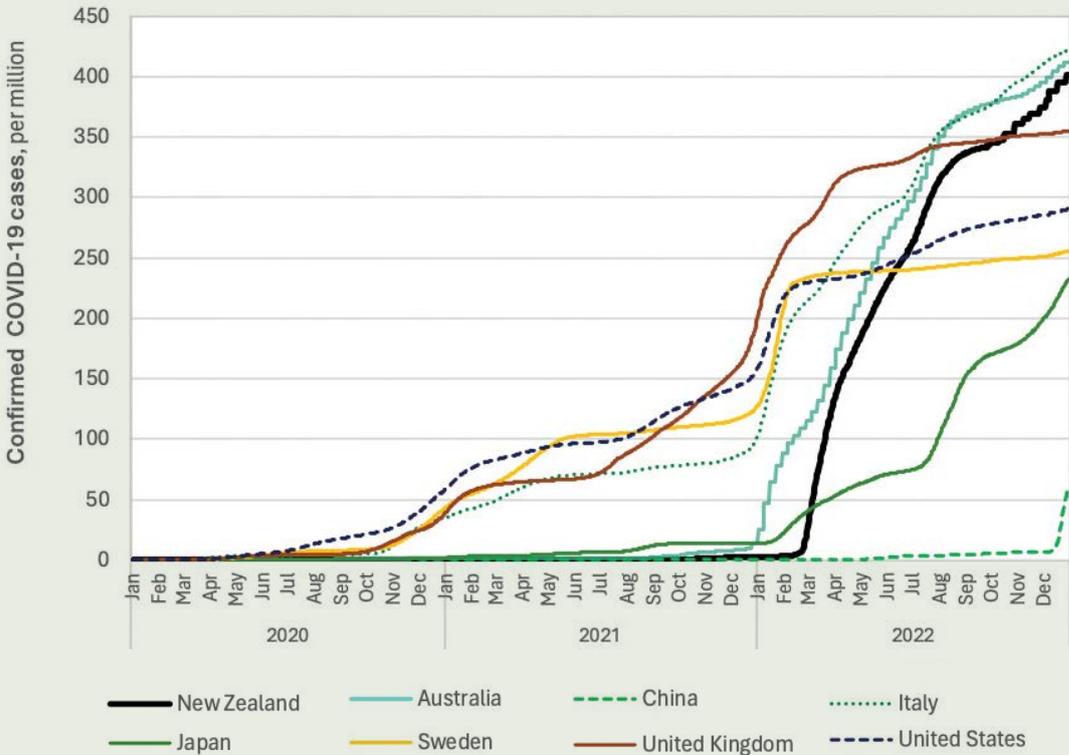
Notes:

1. This share may not reflect the complete breakdown of cases, since only a fraction of all cases are sequenced. Recently discovered or actively monitored variants may be over-represented, as suspected cases of these variants are likely to be sequenced preferentially or faster than other cases.
2. The uneven spacing of months along the X axis reflects that the data frequency is two-weekly, so some months have two datapoints whereas others have three.

In 2022, the highly infectious Omicron variant arrived in New Zealand and spread quickly. Cumulative confirmed cases of COVID-19 jumped from two to 100 per million in the two weeks between 17th and 31st of March 2022 (Figure 14). Island countries in Figure 14 avoided major outbreaks until the start of 2022.

Figure 14: Cumulative COVID-19 cases, 2020–2022
Confirmed cases per million people

Interactive graphs are available here

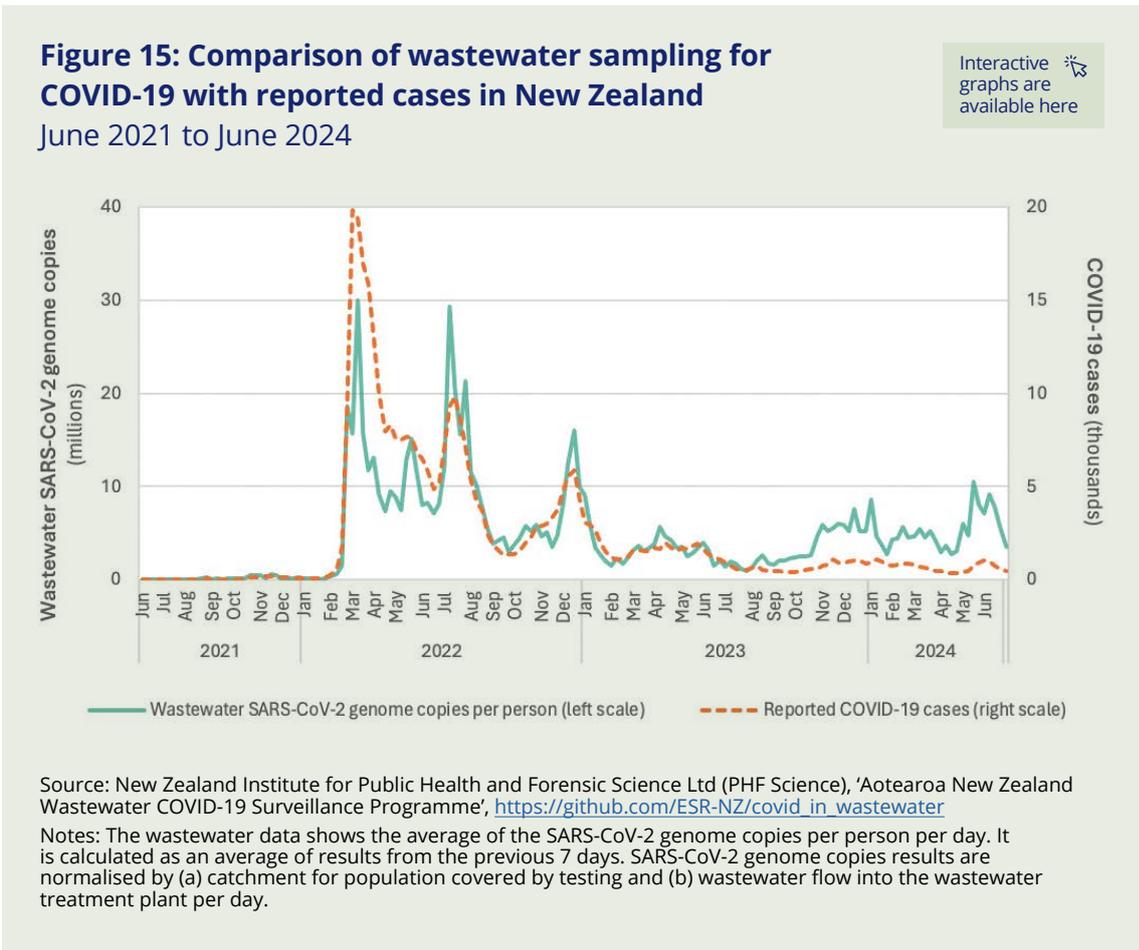


Source: Our World in Data, World Health Organization, https://ourworldindata.org/explorers/covid?time=2020-03-01..2023-01-01&country=USA~GBR~CHN~AUS~NZL~SWE~ITA&pickerSort=desc&pickerMetric=new_cases_smoothed_per_million&Metric=Confirmed+cases&Interval=Cumulative&Relative+to+population=true

Note: Due to limited testing, the number of confirmed cases is lower than the true number of infections.

When looking at these numbers, it is important to be aware that the number of confirmed cases will be lower than the actual number, as not all people are tested, and not all test results are reported. This is particularly the case when testing moved out of the medical environment, as was the case when Rapid Antigen Tests (RATs) became widely available.

An alternative way to estimate the prevalence of a pathogen in the population is to undertake wastewater sampling. Sampling wastewater as it flows into a treatment plant provides a way to test for the presence of traces of the virus in the population served by the plant, without the need for testing individual people. We compare the results of wastewater testing in the New Zealand population with the confirmed cases reported for individuals in Figure 15.



The two lines in Figure 15 show very similar patterns until mid-2023. As rates of test reporting declined, wastewater sampling continued – showing a higher prevalence of COVID-19 in the population than reported cases from mid-2023.

4.3 Hospitalisation | Whakaurunga hōhipera

As multiple variants of COVID-19 swept across the world, health systems had to contend with large spikes in the numbers of people admitted to hospital. There is limited internationally comparable data on hospitalisation. Our main source of data is the Our World in Data collection, which does not include data for New Zealand and some of our comparator countries on this measure. Figure 16 shows the weekly new hospital admissions for COVID-19 for Denmark, Italy, the United Kingdom and the United States for the periods where data are available. (Figure 17 shows similar, but not exactly comparable, data for New Zealand from the Ministry of Health.)

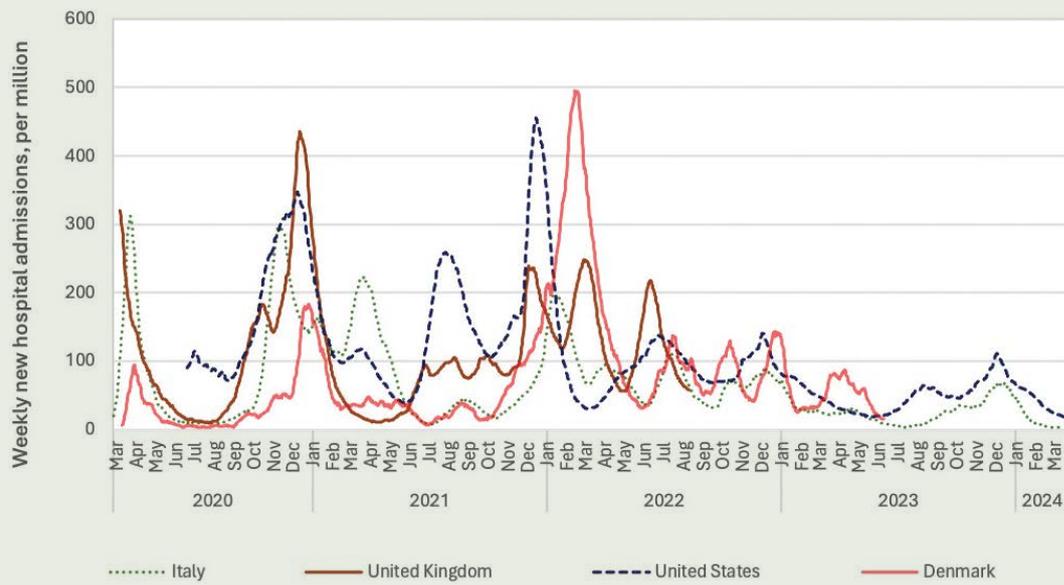
For the countries in Figure 16, hospitalisation for COVID-19 peaked at similar times in 2020. Hospitalisations were highest in the United Kingdom, which peaked at over 400 new admissions per week per million people, followed by the United States, at around 350 admissions.

From 2021, the patterns were quite different. For example, there was a peak in hospitalisation in Italy in March 2021 and one in the United States in August 2021 that the other countries largely avoided. The United States and Denmark saw their largest surges of hospital admissions in early 2022, with numbers almost hitting 500 new admissions per week per million people.

Figure 16: Hospital admissions for COVID-19

Weekly new admissions per million people, Italy, United States, United Kingdom and Denmark, March 2020 to March 2024

Interactive graphs are available here



Source: Official data collected by Our World in Data (last updated 13 August 2024), <https://ourworldindata.org/grapher/weekly-hospital-admissions-covid-per-million?country=GBR~USA~ITA~DNK>

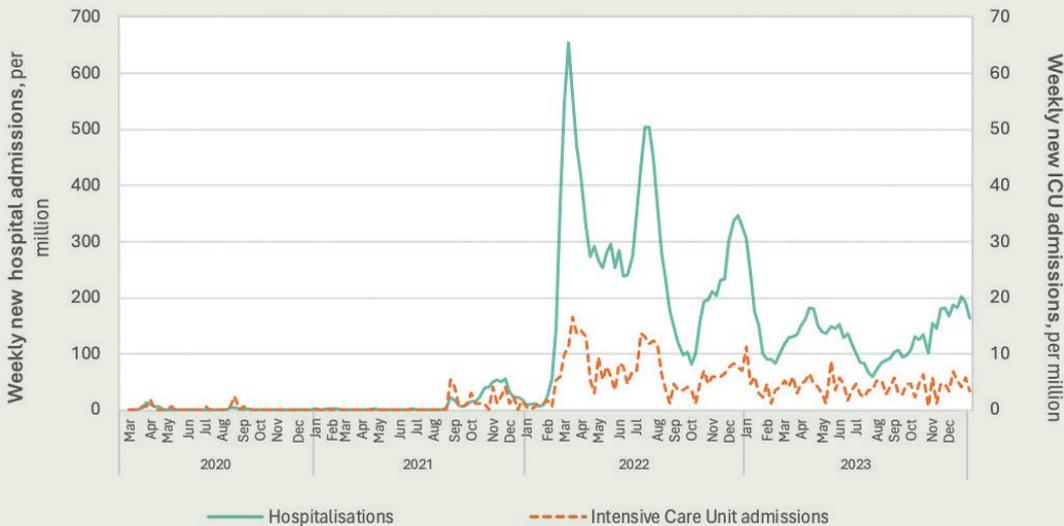
Note: Weekly admissions refer to the total number of new admissions over the previous week.

The green line in Figure 17 shows hospitalisation rates for COVID-19 for New Zealand. New Zealand experienced very few hospital admissions during 2020 and 2021. This changed dramatically in 2022, when hospital admissions hit a peak of over 600 per million. This peak was of a similar order to that experienced by Denmark and the United States around the same time (Figure 16).

Figure 17: Hospital and intensive care unit admissions for COVID-19 in New Zealand

Interactive graphs are available here

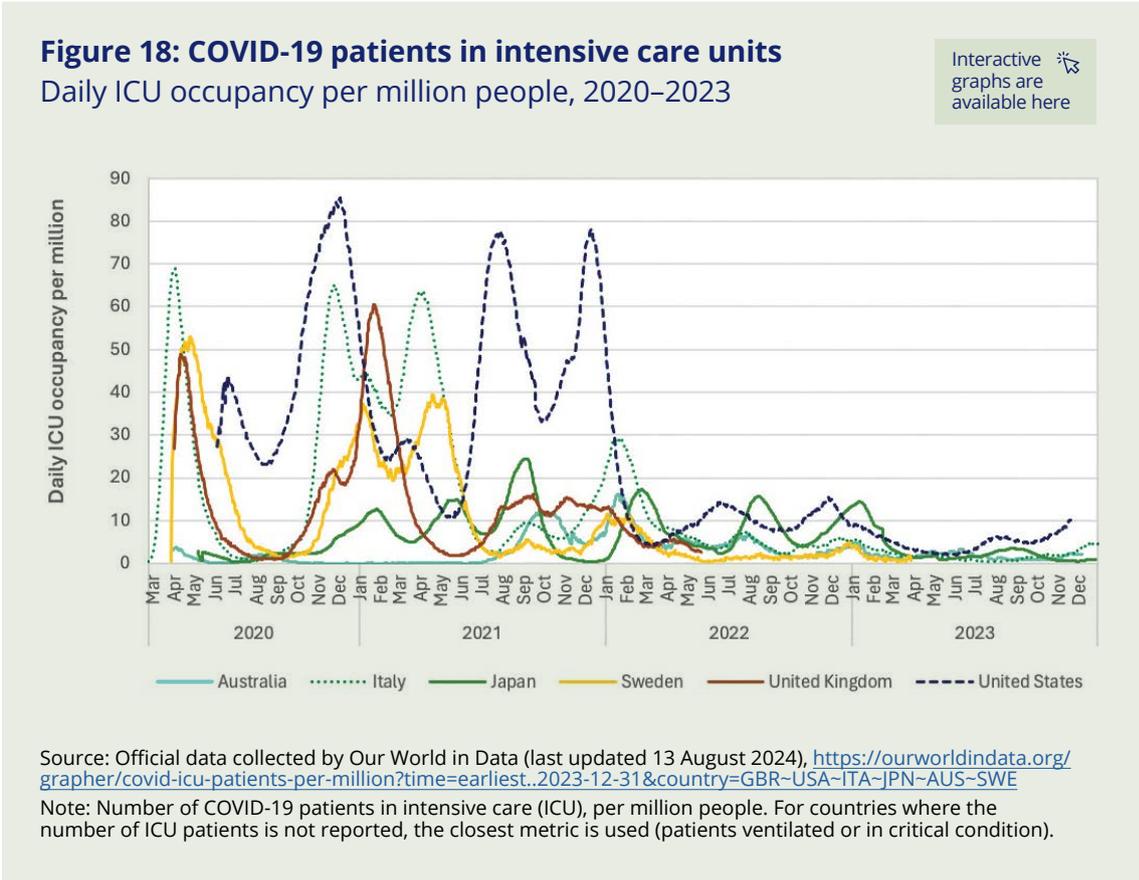
Weekly new hospital and ICU admissions for COVID-19, per million people, 2020–2023



Source: Ministry of Health, New Zealand COVID-19 Data, <https://github.com/minhealthnz/nz-covid-data>
 Note: Weekly admissions refer to the cumulative number of new admissions over the previous week.

People who became seriously ill as a result of COVID-19 could sometimes require intensive care, such as artificial ventilation. The orange line in Figure 17 shows the number of weekly new intensive care unit (ICU) admissions for COVID-19 per million people in New Zealand. ICU admissions peaked in early- to mid-2022, but remained at significant levels through 2023.

Other countries record ICU occupancy rates rather than admissions. Figure 18 shows ICU occupancy rates (per million people) for six of our comparator countries. In five of these countries, ICU occupancy rates for COVID-19 peaked in 2020 or 2021. The exception was Australia, which peaked in early 2022, as did New Zealand.



4.4 Mortality | Te mate

While there were few deaths in New Zealand from COVID-19 during 2020 and 2021, in 2022 death rates approached those of other countries.

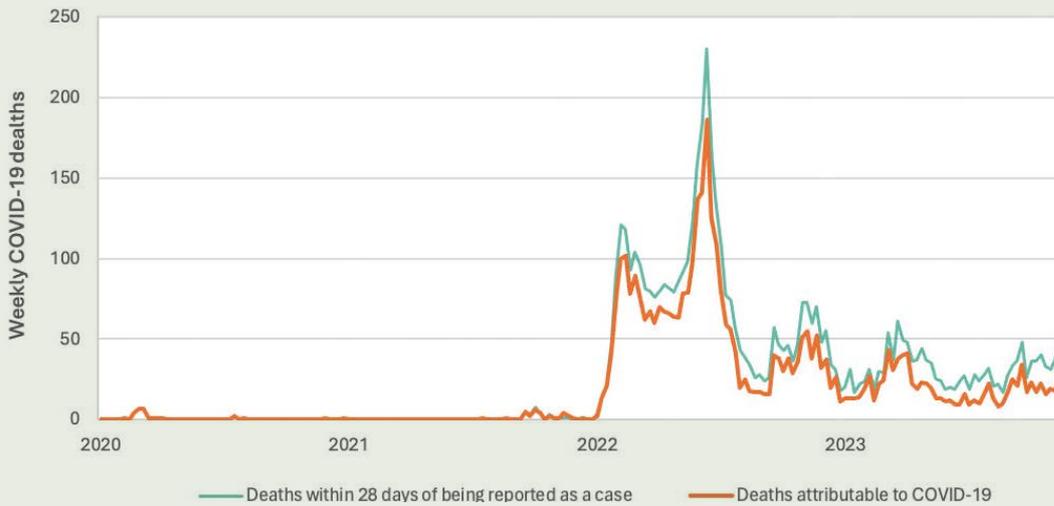
4.4.1 Counting COVID-19 deaths | Te tatau i ngā mate KOWHEORI-19

It is not always possible to be clear about the cause of death, particularly in cases where there are co-morbidities. Respiratory infections such as COVID-19 can trigger other life-threatening events, such as heart failure or stroke. And other health issues may make individuals more susceptible to respiratory infections.

Because of this we present data on weekly COVID-19 deaths in New Zealand using two different measures. The orange line in Figure 19 shows the number of deaths that were directly attributed to COVID-19 by medical staff. The green line shows the number of deaths within 28 days of the person being reported as a COVID-19 case. This will include cases where the individual died of a health issue that has been induced or magnified by the virus. It will, however, also include cases where death was unrelated to COVID-19. Both measures are subject to reporting and classification issues. That said, it is likely that the actual number of deaths caused by COVID-19 lies between the orange and green lines.

Figure 19: Weekly COVID-19 deaths in New Zealand, 2020–2023

Interactive graphs are available here 



Source: Ministry of Health, 'New Zealand COVID-19 Data', <https://github.com/minhealthnz/nz-covid-data>, from Mortality Collection (cause of death) and NHI database (date of death)

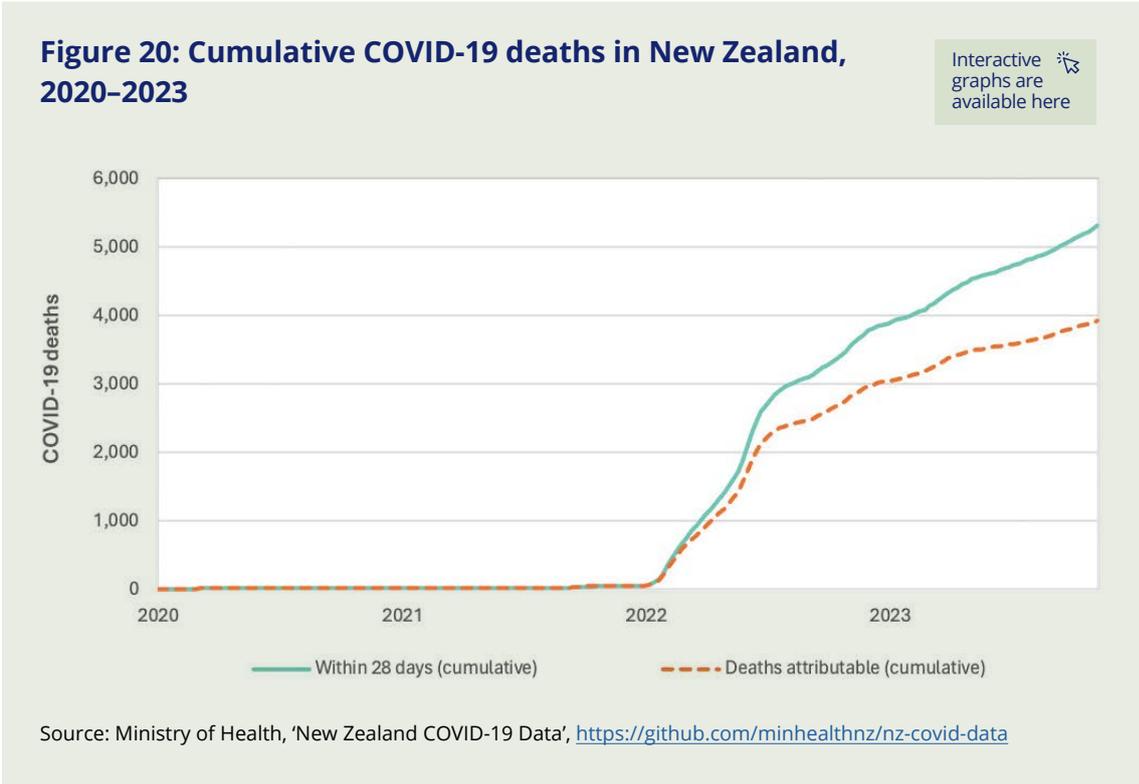
Notes:

1. Deaths attributable to COVID-19 are those where COVID-19 is recorded as either the underlying cause of death or a contributory cause of death, according to World Health Organization guidelines.
2. Deaths within 28 days of being reported as a case also includes people who died within 28 days of being reported as a case, but had a cause of death unrelated to COVID-19.¹⁰ Health New Zealand stopped reporting deaths within 28 days on 16 October 2025.¹¹

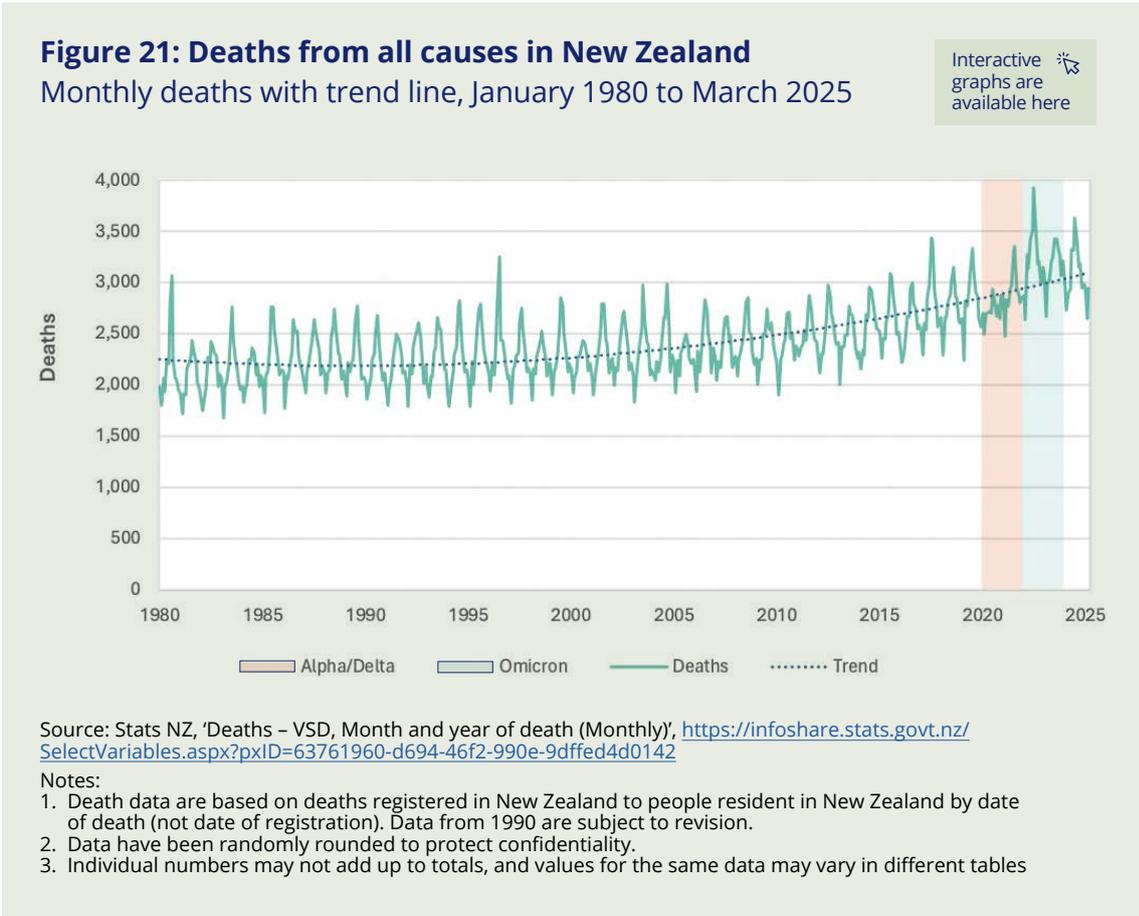
10 Ministry of Health, 'COVID-19 deaths reporting update' (18 May 2022), <https://www.health.govt.nz/news/covid-19-deaths-reporting-update>

11 Health New Zealand | Te Whatu Ora, 'COVID-19 reporting changes' (last updated 24 November 2025), <https://www.tewhātuora.govt.nz/for-health-professionals/data-and-statistics/covid-19/reporting#reporting-changes>

We can see how this translates into total deaths in Figure 20. The differences between the two measures add up over time creating a wider disparity. Nevertheless, the total number of deaths from COVID-19 by the end of the 2023 is likely to have been between four and five thousand people, equating to around one in 1,000 New Zealanders.



To place these numbers in context, we need to understand how they compare to the overall number of deaths that occur in New Zealand. Figure 21 shows deaths from 1980 to 2025. The data are presented quarterly, so we can see the clear seasonality in mortality patterns: deaths are more common in winter months.



There has been a gradual increase in the death rate since the early 1990s due to the ageing population. Older people are more susceptible to illness, including respiratory illness. If we focus on the seasonal pattern, we can see that 2020 was unique as we did not see the usual spike in winter months due to seasonal flu. Measures taken to reduce the spread of COVID-19 also affected the spread of other respiratory infections. We look at this issue in more detail in section 5.3.2.

That said, older New Zealanders are living longer lives. New Zealand – like many high- and middle-income countries – has experienced a steady decline in the age-adjusted mortality rate over the past half century.¹²

12 Health New Zealand | Te Whatu Ora, 'Mortality data web tool' (version published 31 July 2025), <https://tewhatuora.shinyapps.io/mortality-web-tool/>

4.4.2 Excess mortality | Te mate nui ake i te paerewa

Because of the complications in collecting, using and interpreting death data during a pandemic,¹³ an alternate measure used by epidemiologists is excess mortality. Excess mortality refers to the additional number of deaths, from all causes, during a crisis, above the level we would expect to see in 'normal' times.¹⁴ Excess mortality is a more comprehensive measure of the total mortality impact of the COVID-19 pandemic because it captures not only confirmed deaths (as in earlier figures), but also COVID-19 deaths that were not accurately diagnosed and reported. In addition, excess mortality captures non-COVID-19 deaths attributable to the disruption caused by the pandemic, along with deaths avoided because of the pandemic, such as reduced road deaths during lockdowns.

There are several ways to calculate excess mortality, all of which compare actual deaths during a period with an estimate of the number of deaths that might have been expected in that period, given trends in previous years (for example, more in winter than in summer, an ageing population).

We use excess mortality data from the World Mortality Database supplied by Our World in Data.¹⁵ Using this dataset, we find that by the end of 2022, New Zealand was one of only five jurisdictions that experienced fewer deaths than one would expect in a normal, non-pandemic year (that is, negative excess mortality) (Figure 22). The other jurisdictions with negative excess mortality were Bhutan, Greenland, Japan and Taiwan.

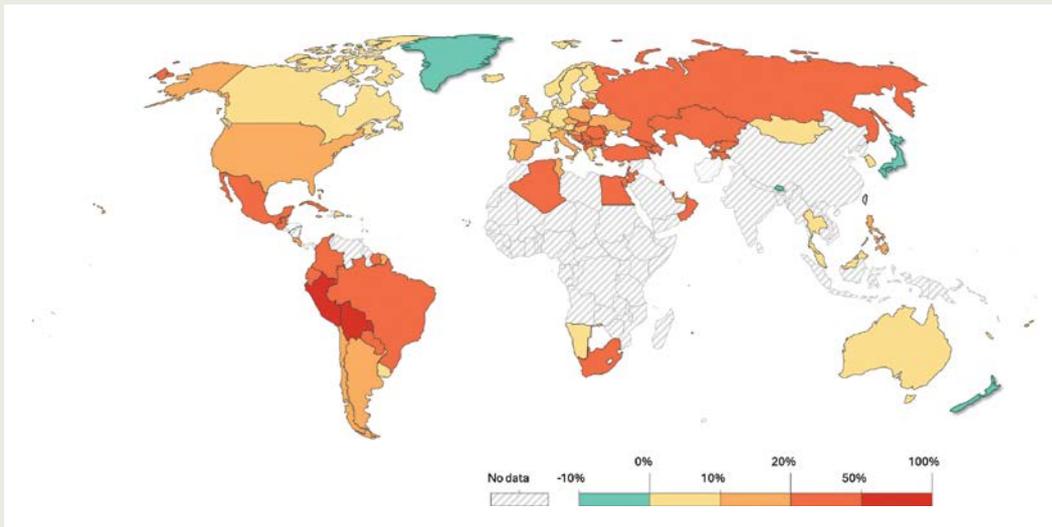
13 Francisco Checchi and Les Roberts, 'Interpreting and using mortality data in humanitarian emergencies', *Humanitarian Practice Network*, 52 (2005)

14 Edouard Mathieu and others, 'Excess mortality during the Coronavirus pandemic (COVID-19)(2020)', <https://ourworldindata.org/excess-mortality-covid>

15 Ariel Karlinsky and Dmitry Kobak, 'Tracking excess mortality across countries during the COVID-19 pandemic with the World Mortality Dataset', *eLife*, 10 (2021), <https://doi.org/10.7554/eLife.69336>

Figure 22: Excess mortality by country, 2020–2022

Interactive graphs are available here

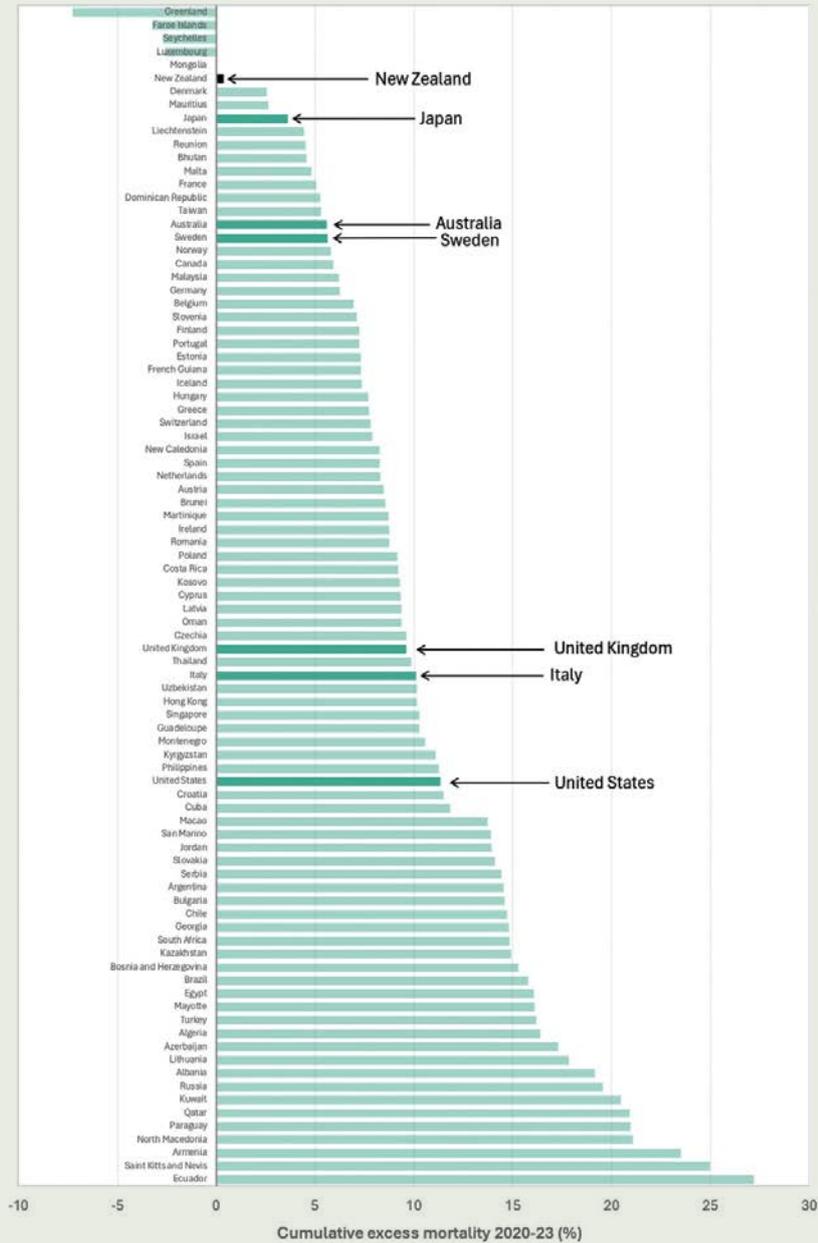


Source: Human Mortality Database; World Mortality Dataset (2024); Karlinsky and Kobak (2021) and other sources, processed by Our World in Data

This situation changed in 2023. New Zealand’s cumulative excess mortality (over the period 2020–2023) became slightly positive, with the number of deaths 0.36% higher than would be expected if there was no pandemic. This was the sixth lowest of the 89 jurisdictions in the Our World in Data dataset (Figure 23). In our group of comparator countries (identified in the Figure), Japan had the next lowest cumulative excess mortality (3.6%), followed by Australia (5.58%) and Sweden (5.64%). Italy, the United Kingdom and the United States had excess mortality rates that were 9% or more higher than would be expected if there was no pandemic.

Figure 23: Excess mortality by country, 2020–2023

Interactive graphs are available here 



Source: Human Mortality Database; World Mortality Dataset (2024); Karlinsky and Kobak (2021) and other sources, processed by Our World in Data.

Note: Excess mortality: cumulative deaths from all causes, 2020–2023, compared with projection from previous years.

4.4.3 Updated excess mortality for New Zealand | Te mate nui ake i te paerewa kua whakahōungia mō Aotearoa

In 2025 Plank, Senanayake and Lyon modelled excess mortality in New Zealand to account for age, sex and seasonality.¹⁶ Their results are presented in Figure 24. They also show a period in 2020 where mortality was less than normal (that is, excess mortality was negative). Figure 24 shows a slightly different story to the World Mortality Data/Karlinsky and Kobal (2021) method used in Figures 22 and 23 for 2021, in which excess mortality is much closer to zero.

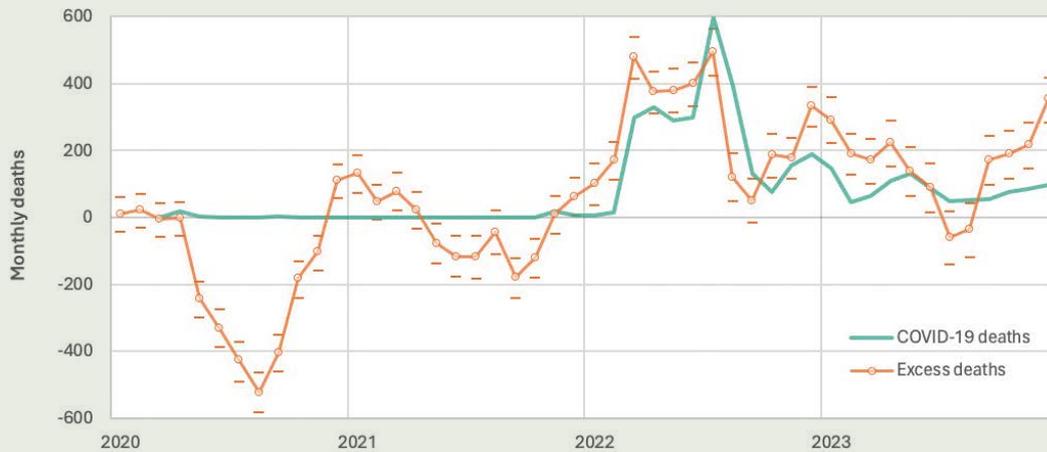
The study shows that excess deaths became positive and followed a similar pattern to COVID-19 deaths in 2022 and early 2023. The authors note that the magnitude, timing and age-distribution of the excess closely matched those of COVID-19-attributed deaths. They interpret this as suggesting that the bulk of the excess mortality in 2022–2023 was directly attributable to COVID-19, either as an underlying or a contributory cause of death. They suggest this could be because there were relatively few COVID-19 deaths that were not recorded as such. They also note that any undocumented COVID-19 deaths may have been offset by reduced mortality from other causes, such as other (non-COVID-19) respiratory diseases. We return to this in section 5.3.2 below.

16 Michael J. Plank, Pubudu Senanayake and Richard Lyon, 'Estimating excess mortality during the Covid-19 pandemic in Aotearoa New Zealand', *International Journal of Epidemiology*, Volume 54, Issue 4 (2025)

Figure 24: Modelled excess mortality in New Zealand, 2020–2023

Interactive graphs are available here

Excess mortality estimates and recorded deaths attributed to COVID-19, monthly



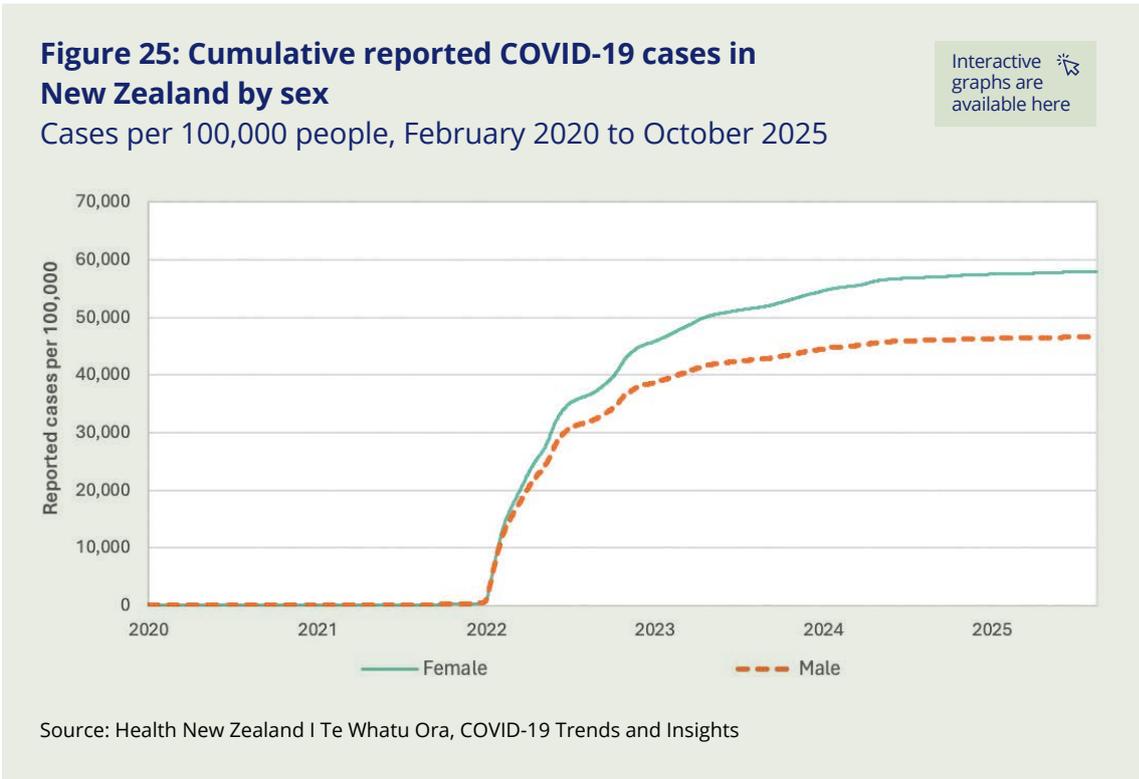
Source: Michael J. Plank, Pubudu Senanayake and Richard Lyon, 'Estimating excess mortality during the Covid-19 pandemic in Aotearoa New Zealand: Addendum', arXiv preprint arXiv:2512.02266, update of original article in *International Journal of Epidemiology*, Volume 54, Issue 4 (2025).

Notes: Monthly COVID-19-attributed deaths (green line) along with excess deaths according to Plank and others' QPR model (orange line and open circles). Error bars show the 95% confidence interval for the QPR model.

4.5 COVID-19 affected different population groups differently | I rerekē te pānga o te KOWHEORI-19 ki ngā rōpū taupori rerekē

4.5.1 Sex | Ira tangata

Figure 25 shows the cumulative number of reported cases per 100,000 people for males and females from 2020 to 2025. This pattern could indicate a higher propensity of females to report cases, or a higher case rate.

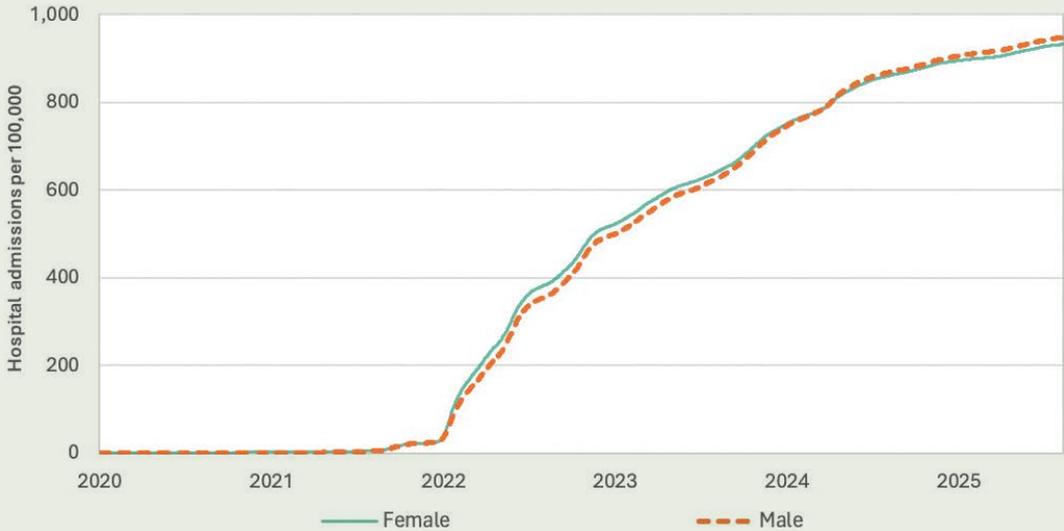


However, Figure 26 shows that males and females were equally likely to be admitted to hospital for COVID-19, suggesting that females were more likely to report cases than males. By 2025, cumulative admissions approached 1,000 per 100,000 for both sexes.

Figure 26: Cumulative COVID-19 hospital admissions in New Zealand by sex

Admissions per 100,000 people, February 2020 to October 2025

Interactive graphs are available here



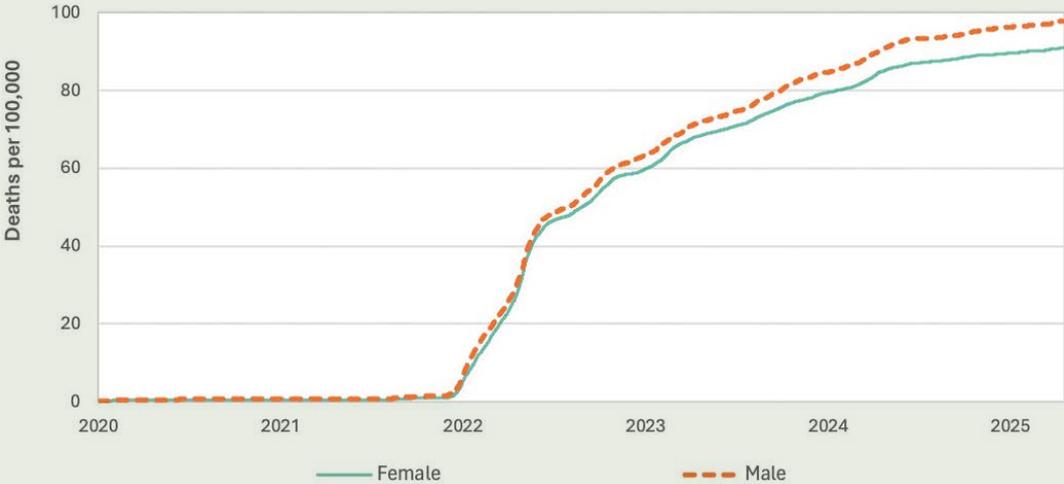
Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights

Along with cases and admissions, deaths attributable to COVID-19 also rose sharply in males and females from 2022 (Figure 27), reflecting the major wave of infections during that period. Throughout the timeline, male deaths consistently exceeded female deaths, with the gap widening slightly over time. By 2025, cumulative deaths among males approached 100 per 100,000, compared with slightly below 90 per 100,000 for females, confirming that COVID-19 mortality was higher among men.

Figure 27: Cumulative COVID-19 deaths in New Zealand by sex

Deaths attributable to COVID-19 per 100,000 people, February 2020 to October 2025

Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights

Note: COVID-19 deaths are defined as people who died with the cause of death being attributable to COVID-19 (that is, an underlying or contributory cause). Recent trends should be interpreted with caution to account for death coding delays.

4.5.2 Age | Tau

Figure 28 displays the number of reported COVID-19 cases by age group and sex. In terms of numbers of overall cases, there were fewer cases in the very young and the very old. Also, females reported higher cases of COVID-19 across most age groups than males. However, this provides a skewed view of how COVID-19 affected each age group, because there are fewer people in the older age groups. Because of this, we present the case rate for each age group in Figure 29. Rates of reported COVID-19 cases are more similar across age groups than the numbers of cases for males, and to a lesser extent for females.

The COVID-19 case rate for people aged 90 years-of-age and older is higher than for those between 60 and 90 years-of-age (Figure 29). Earlier reported cases in New Zealand were more concentrated in the young, but this shifted over time (Figure 30).

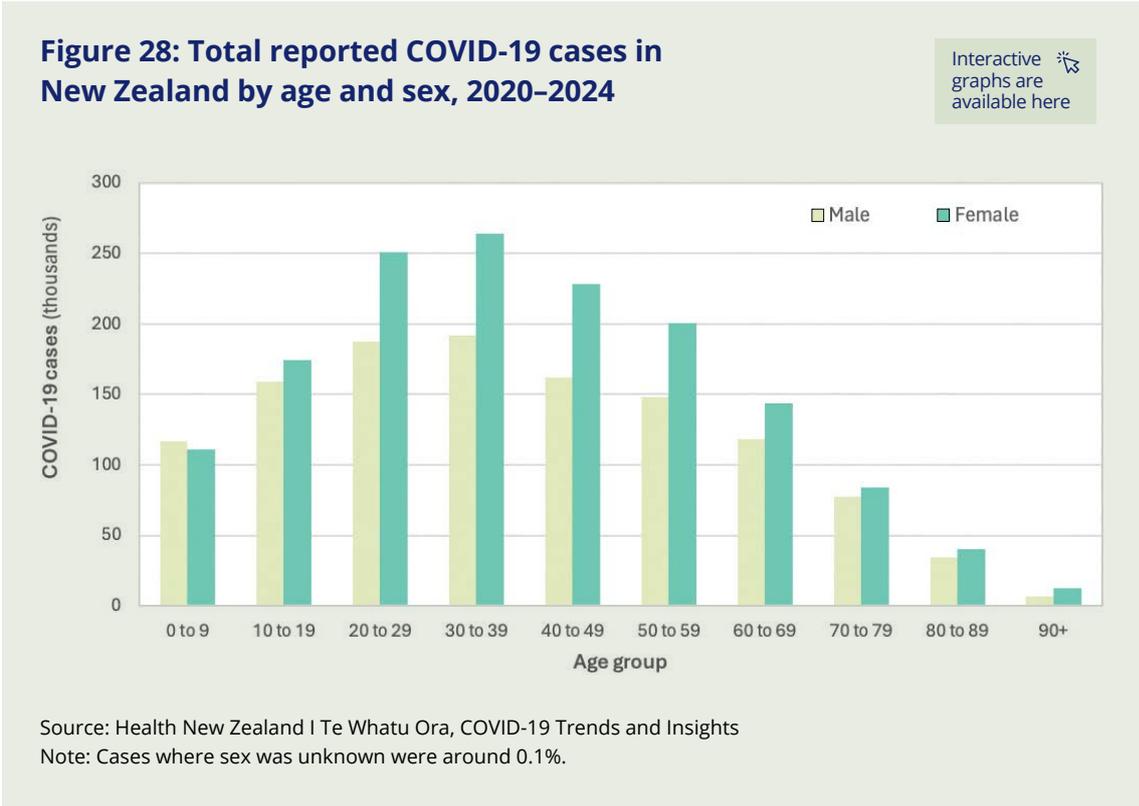
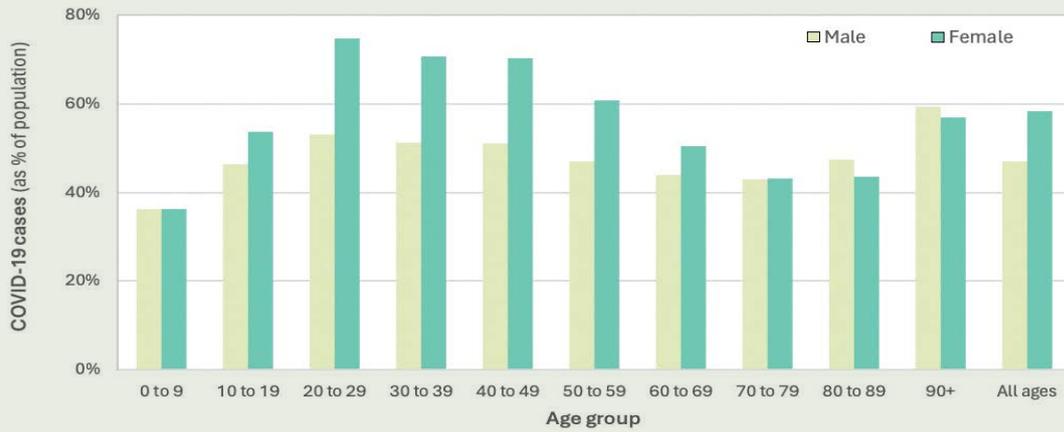


Figure 29: Reported COVID-19 cases in New Zealand by age and sex, 2020–2024

Cases as a percentage of the population

Interactive graphs are available here

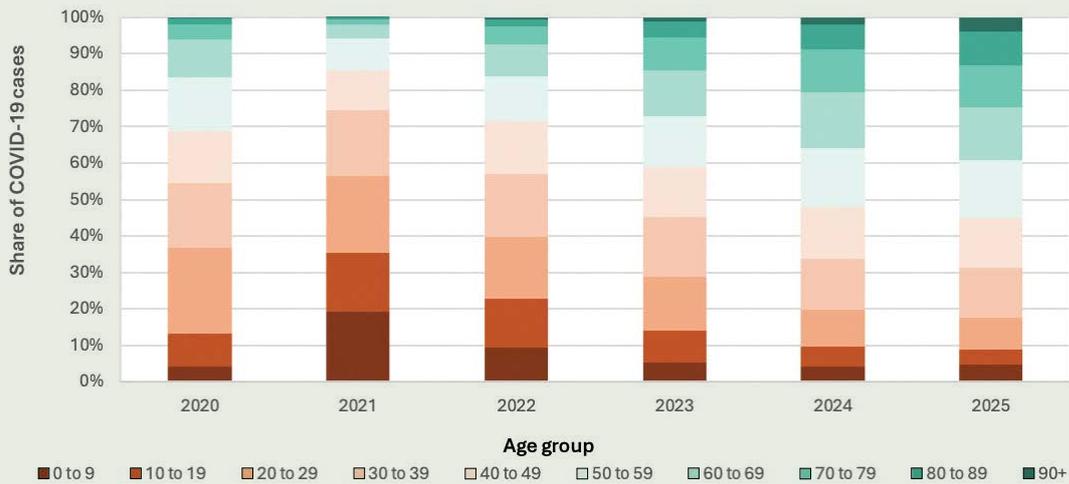


Source: Case numbers: Ministry of Health, 'New Zealand COVID-19 Data', <https://github.com/minhealthnz/nz-covid-data>; Population: Stats NZ, Estimated Resident Population

Note: Cases where sex was unknown were around 0.1%.

Figure 30: Share of reported COVID-19 cases in New Zealand by age group, 2020–2025

Interactive graphs are available here 



Source: Ministry of Health, 'New Zealand COVID-19 Data', <https://github.com/minhealthnz/nz-covid-data>

Notes:

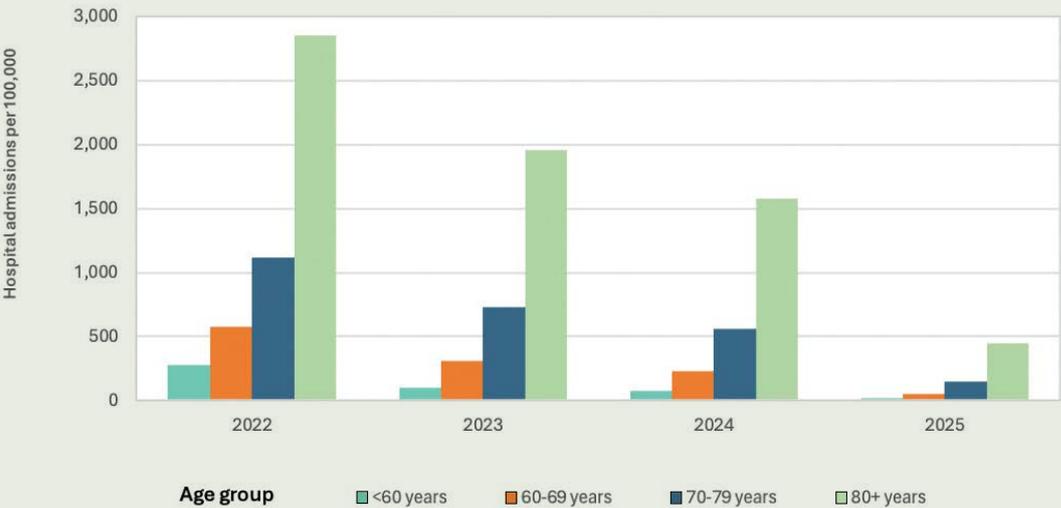
- Note that 2020 and 2021 cases were much lower than in subsequent years. Combined they accounted for around 0.5% of cases. 2022 cases were 77% of total cases, 2023 cases were 16%, 2024 cases were 6%, and 2025 cases were 1%.
- Cases where sex was unknown were around 0.1%.
- 2025 covers the period 1 January to 13 October.

Hospitalisations and deaths were rare among younger people. Because of this, we report people aged under 60 years of age as a single group. People aged 80 years and above accounted for most hospitalisations and most deaths throughout the period (Figure 31 and Figure 32).

Figure 31: Hospitalisations for COVID-19 in New Zealand by age group, 2022–2025

Hospital admissions per 100,000 people

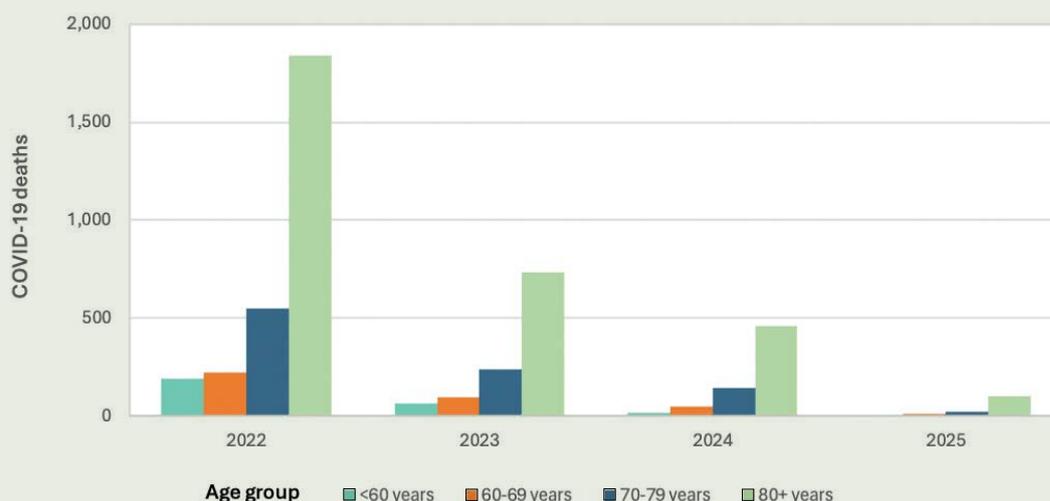
Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights
 Note: 2025 data cover the period January to August.

Figure 32: Deaths attributable to COVID-19 in New Zealand by age group, 2022–2025

Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights

Notes:

1. COVID-19 deaths are defined as people who died with the cause of death being attributable to COVID-19 (that is, an underlying or contributory cause). Recent trends should be interpreted with caution to account for death coding delays.
2. 2025 data cover the period January to August.

Because there are far fewer older people in New Zealand than younger people, Figure 32 should not be interpreted as reflecting the relative risk of dying from COVID-19 for those age groups. In Table 2, we adjust for the size of the underlying population. The mortality rate for those aged under 60 is 3.1 per 100,000 – around one-twentieth of the rate for the whole population (that is 60.0 per 100,000). The mortality rate is significantly higher for those aged 70 and above. For those aged 90 and above, the mortality rate was 2,871 per 100,000 population (that is, a 1 in 35 risk of death).

Table 2: COVID-19 death rates in New Zealand by age group

Death rate per 100,000 people						
Age group	0 to 59	60 to 69	70 to 79	80 to 89	90+	All ages
Death rate	3.1	37.3	146.0	704.1	2,871.4	60.0

Source: Deaths: <https://www.tewhatauora.govt.nz/for-health-professionals/data-and-statistics/covid-19/reporting>
Population: Royal Commission Phase Two calculations based on Stats NZ Census data

Notes:

1. The death rates data are up to 5 October 2025.
2. Age group population is calculated from the 2023 Census.

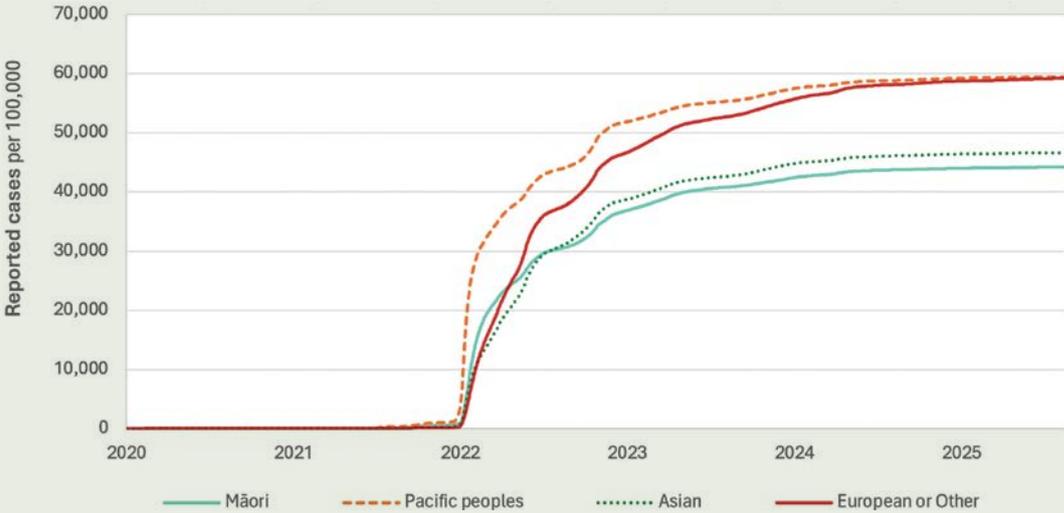
4.5.3 Ethnicity | Mātāwaka

Early COVID-19 cases in New Zealand were concentrated in the Pacific and Māori populations (Figure 33). The first major outbreak in late 2021 and early 2022 particularly affected Pacific peoples. Over time, rates of reported infections for people in the 'European or Other' category approached those of Pacific peoples, while reported rates for Māori and Asian populations were lower.

Figure 33: Cumulative reported cases of COVID-19 by ethnicity in New Zealand

Cases per 100,000 people, by ethnicity, January 2020 to October 2025

Interactive graphs are available here



Source: Cases: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights; populations: Royal Commission Phase Two calculations based on Stats NZ Census data

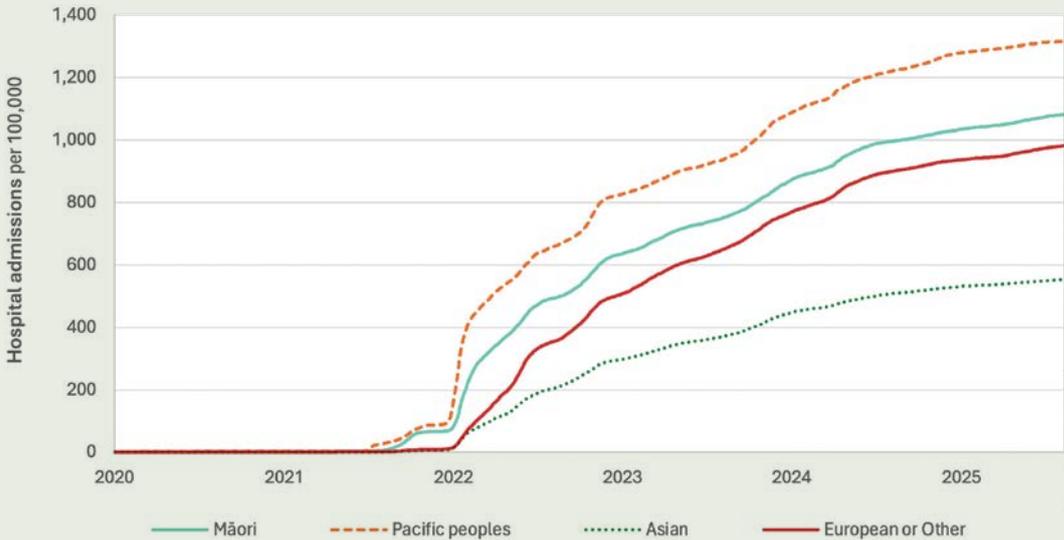
Notes: Data on community cases are sourced from a combination of the National Contact Tracing Service (NCTS) and EpiSurv (New Zealand's public health surveillance platform) databases. Since 24 February 2022, most testing has been through self-administered rapid antigen tests (RATs) which require self-reporting of results. Therefore, it is likely that many infections are not detected or reported, and the proportion of infections reported ('reported cases') may differ by age, ethnicity, deprivation or other demographic factors. The proportion of infections being reported (case ascertainment) has declined from peak ascertainment in March 2022.

Pacific peoples were more likely than other ethnic groups to be hospitalised in New Zealand for COVID-19 (Figure 34).

Figure 34: Cumulative hospital admissions for COVID-19 by ethnicity in New Zealand

Admissions per 100,000 people, January 2020 to October 2025

Interactive graphs are available here

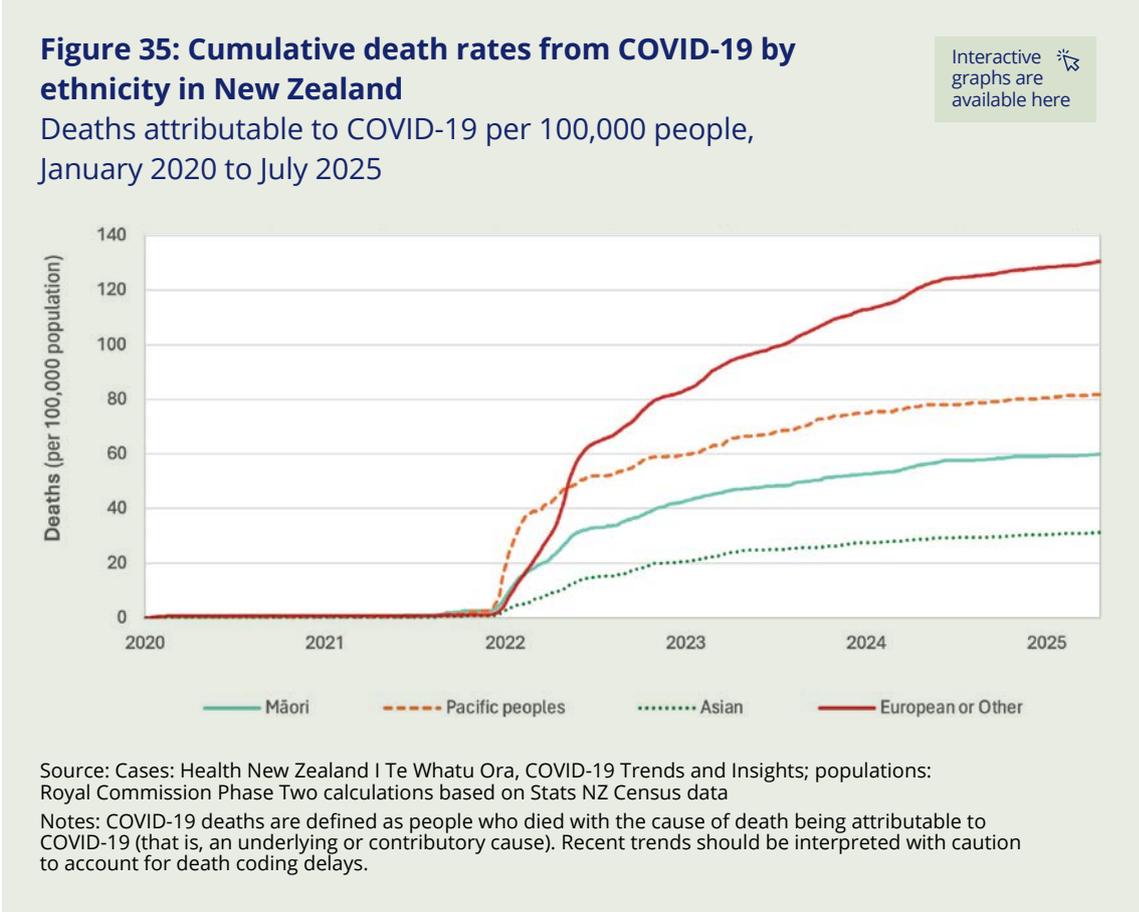


Source: Cases: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights; Populations: Royal Commission Phase Two calculations based on Stats NZ Census data

Notes:

1. Hospital admission data used in this dashboard relate to hospitalisation for COVID-19.
2. For the Inpatient Admission data, the health specialty associated with the hospitalisation is used to determine if the hospital stay may be related to COVID-19; this method rules out hospitalisations that are highly unlikely to be related to COVID-19.

When we look at mortality data, the highest proportion of deaths from COVID-19 was among the European or Other population, followed by the Pacific population (Figure 35).



The data in the figures above, combined with that in section 4.4.2, suggest that older age had a greater effect on likelihood of death from COVID-19 than did ethnicity. This can be seen in Table 3, which shows death rates by age group and ethnicity.

Table 3: COVID-19 death rates in New Zealand by age group and ethnicity

Death rate per 100,000 people					
Age group	Māori	Pacific peoples	Asian	European or Other	Age group (all ethnicities)
0 to 59	5.2	7.4	1.8	2.2	3.1
60 to 69	61.5	114.4	14.1	32.4	37.3
70 to 79	229.2	220.8	92.7	140.4	146.0
80 to 89	747.5	1,045.1	538.3	704.3	704.1
90+	2,557.4	4,729.7	1,727.9	2,907.2	2,871.4
Ethnicity group (all ages)	26.6	38.1	14.9	85.6	60.0

Source: Deaths: <https://www.tewhātuora.govt.nz/for-health-professionals/data-and-statistics/covid-19/reporting>
Population: Royal Commission Phase Two calculations based on Stats NZ Census data

Notes:

1. Deaths are assigned based on prioritised ethnicity.
2. The rate of deaths data are up to 5 October 2025.
3. Age group population is based on prioritised ethnicity calculated from the 2023 Census.

In almost all age groups, death rates from COVID-19 were higher for Pacific peoples than for other ethnicities. Asians had the lowest death rates. Māori had higher death rates than those with European or Other ethnicity, except in the 90+ age group.

4.5.4 Socioeconomic circumstances | Ngā āhuatanga ōhanga-pāpori

In New Zealand, a key measure of socioeconomic circumstances is the New Zealand index of socioeconomic deprivation (NZDep). NZDep combines nine variables from the New Zealand Census reflecting different aspects of deprivation.¹⁷ NZDep is calculated for 'meshblocks', which are small geographical units containing between 100 and 200 residents. Each meshblock is allocated a deprivation score from 1 to 10, where 1 represents the least extent of deprivation and 10 the most. All people living in a meshblock are assigned the same NZDep score.

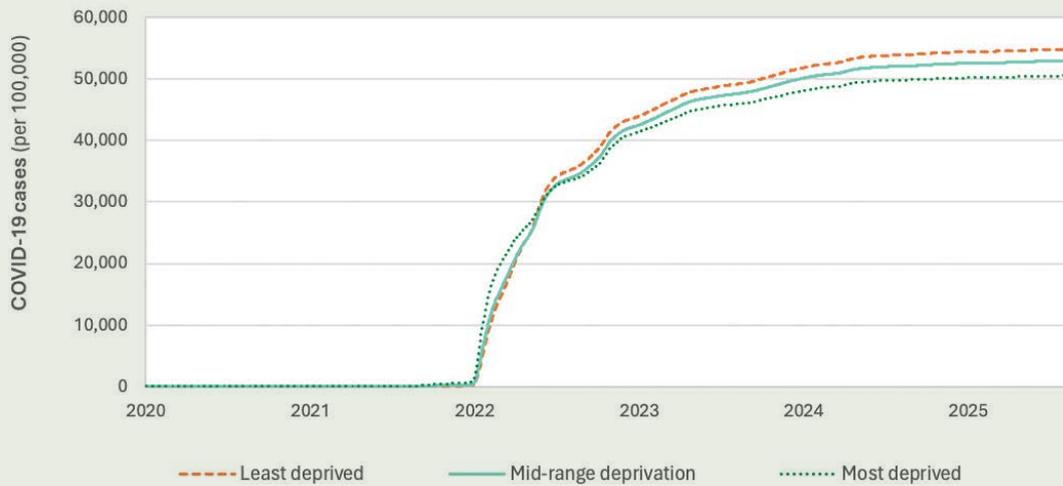
Residents in the most deprived areas reported fewer cases of COVID-19 (Figure 36) but were more likely to be admitted to hospital for COVID-19 (Figure 37), and were the most likely to die from COVID-19 (Figure 38).

¹⁷ June Atkinson and others, 'NZDep2023 Index of Socioeconomic Deprivation: Research Report' (Wellington: University of Otago Department of Public Health, 31 October 2024), https://www.otago.ac.nz/_data/assets/pdf_file/0026/593135/NZDep2023-Research-Report-31-October-2024.pdf, p8

Figure 36: Cumulative reported cases of COVID-19 by Index of Deprivation in New Zealand

Cases per 100,000 people, January 2020 to October 2025

Interactive graphs are available here



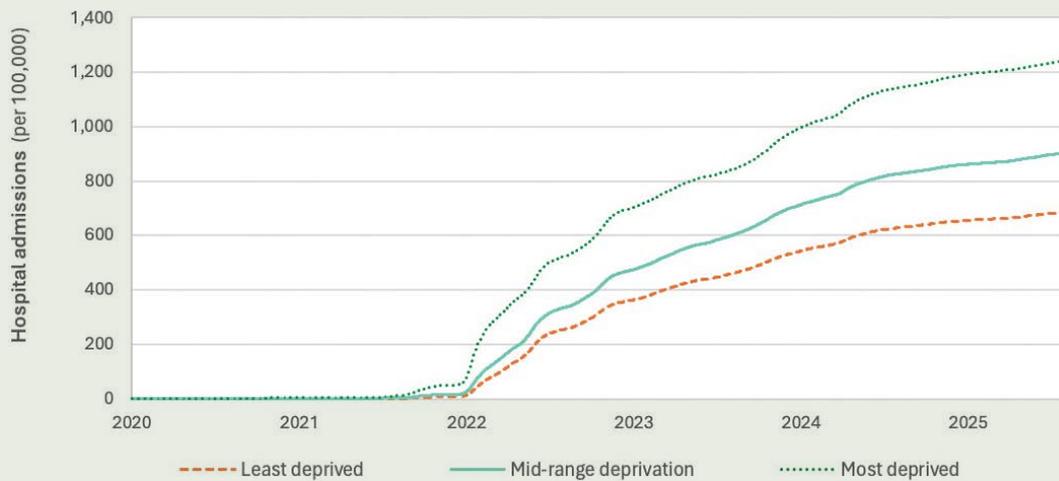
Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights

Notes: Deprivation measured using the New Zealand index of socioeconomic deprivation (NZDep). Least deprived equals the lowest three deciles (1-3). Mid-range = deciles 4-7. Most deprived = deciles 8-10.

Figure 37: Cumulative hospital admissions for COVID-19 by Index of Deprivation in New Zealand

Admissions per 100,000 people, January 2020 to October 2025

Interactive graphs are available here



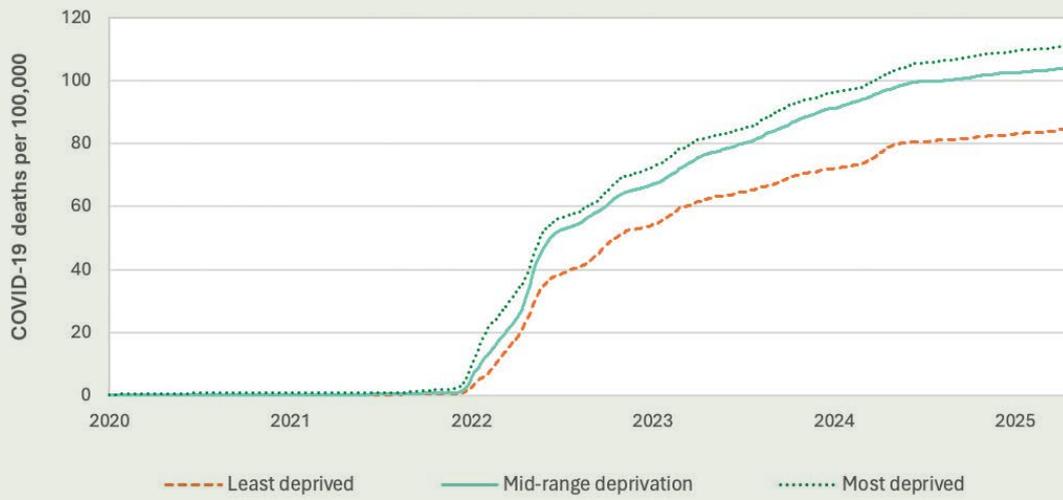
Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights

Notes: Deprivation measured using the New Zealand index of socioeconomic deprivation (NZDep). Least deprived equals the lowest three deciles (1-3). Mid-range = deciles 4-7. Most deprived = deciles 8-10.

Figure 38: Cumulative deaths from COVID-19 by Index of Deprivation in New Zealand

Deaths attributable to COVID-19 per 100,000 people, January 2020 to October 2025

Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, COVID-19 Trends and Insights

Notes: Deprivation measured using The New Zealand Index of Deprivation (NZDep). Least deprived equals the lowest three deciles (1-3). Mid-range = deciles 4-7. Most deprived = deciles 8-10.

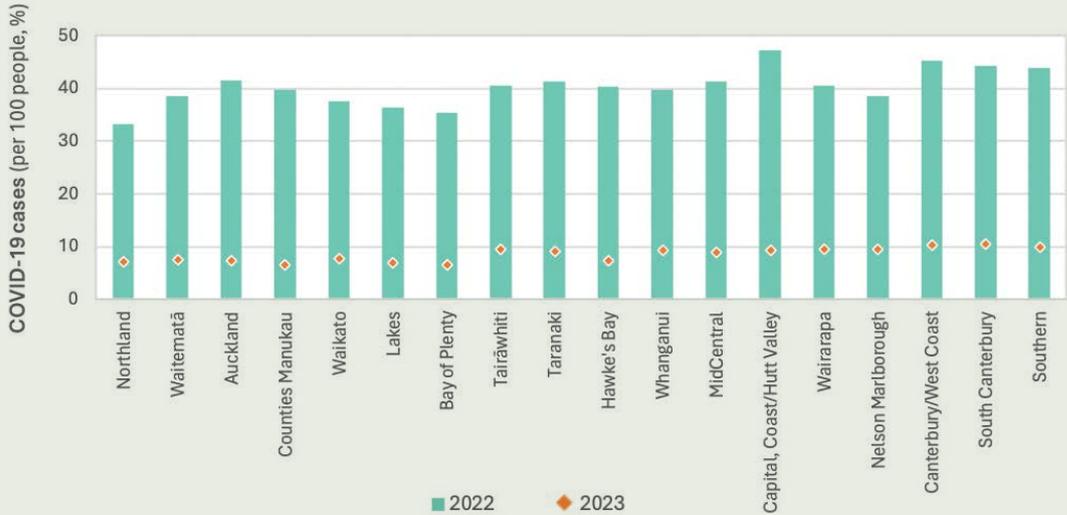
4.5.5 Distribution of reported cases by health district | Te tohatoha o ngā take kua whakamōhiotia mā ia rohe hauora

During the period of the COVID-19 pandemic, much of New Zealand’s public health system was organised regionally, through District Health Boards. Reported COVID-19 cases varied between health districts over 2022 and 2023 (Figure 39). When COVID-19 was at its peak in 2022, the Capital and Coast/Hutt Valley district reported the highest rate of COVID-19 cases (47.2 cases per 100 people, that is, 47.2%), followed by Canterbury/West Coast (with 45.3%) and South Canterbury (with 44.2%). The lowest rate of reported cases in 2022 was in Northland (33.2%).

Figure 39: Reported COVID-19 cases by health district in New Zealand

Interactive graphs are available here 

Cases per 100 people, by health district, 2022 and 2023



Source: Ministry of Health, COVID-19 cases: <https://github.com/minhealthnz/nz-covid-data>
 Note: Population: Stats NZ, Aotearoa Data Explorer.

5

Public health responses | Ngā urupare hauora tūmatanui

In this chapter we look at the response of the public health system to the pandemic. In section 5.1 we look at how the health system stood at the beginning of the pandemic. We then compare the measures implemented by the New Zealand Government in response to the pandemic with those of other countries in section 5.2. In section 5.3 we look at vaccination in response to infectious diseases, including COVID-19.

5.1 Health systems around the world | Ngā pūnaha hauora huri noa i te ao

5.1.1 Health spending | Ngā whakapaunga hauora

When the pandemic arrived, New Zealand’s health expenditure was close to the OECD average. Figure 40 shows health expenditure in OECD countries, and a selection of other middle- and high-income countries, in 2019 and 2023. Spending is measured in US dollars and is adjusted for differences in prices between countries (that is it is PPP, or purchasing power parity, adjusted).

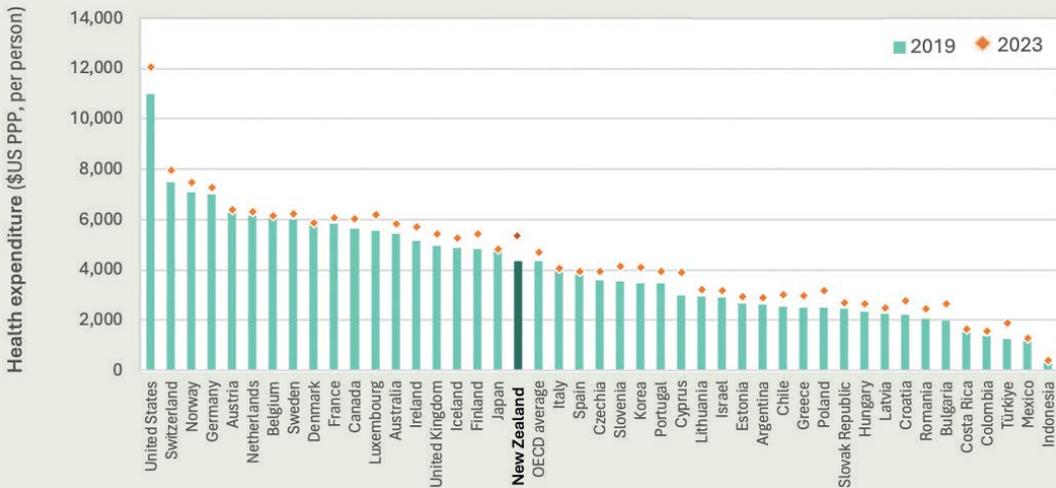
Before the pandemic, New Zealand’s health expenditure was a little over US\$4,300 per person per year. This was a little more than countries like Italy, Spain and South Korea, but less than Australia (US\$5,400), Japan (US\$4,800) and the United Kingdom (US\$5,400). Northern European countries (for example, \$US6,000 in Sweden and US\$7,000 in Germany) generally spend the most on health. The United States, which spends almost US\$11,000 per person per year, is a significant outlier.

Most countries increased their health expenditure (in PPP terms per capita) between 2019 and 2023. New Zealand saw one of the largest increases, from US\$4,345 to US\$5,319.

Figure 40: Per-capita health expenditure across the OECD

In US dollars per person, PPP adjusted, 2020 values, in 2019 and 2023 (or closest year)

Interactive graphs are available here



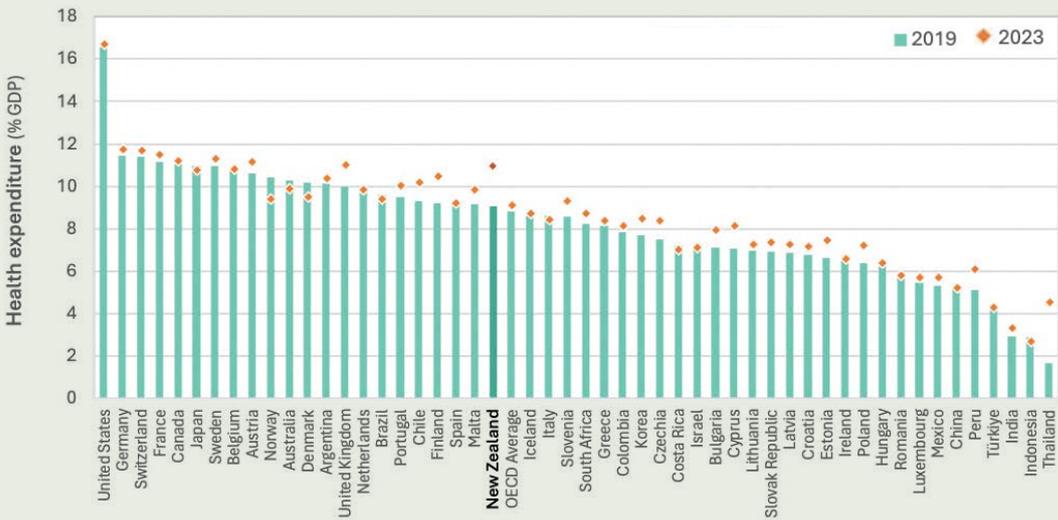
Source: Organisation for Economic Co-operation and Development, OECD Health Statistics 2025, <https://www.oecd.org/en/data/datasets/oecd-health-statistics.html>
 Note: Includes some non-OECD countries, such as Argentina and Cyprus.

Countries spend different amounts on health based, in part, on what they can afford. Figure 41 shows health expenditure relative to the size of the country's economy. New Zealand spent around the OECD average on health relative to the size of its economy in 2019. New Zealand's expenditure (as a proportion of GDP) rose significantly between 2019 and 2023.

Figure 41: Health expenditure as a percentage of GDP across the OECD

In 2019 and 2023 (or closest year)

Interactive graphs are available here



Source: Organisation for Economic Co-operation and Development, OECD Health Statistics 2025, <https://www.oecd.org/en/data/datasets/oecd-health-statistics.html>

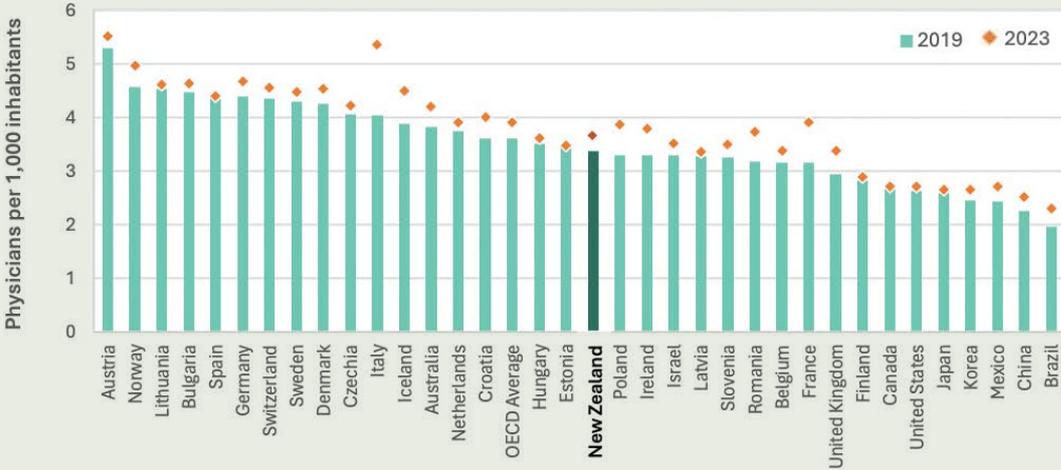
Note: Includes some non-OECD economies, such as Brazil and South Africa.

5.1.2 Human resources | Te kähui kaimahi

New Zealand had 3.4 physicians (medical doctors) per 1,000 inhabitants in 2019, close to the OECD average (Figure 42). While northern European countries tend to have more physicians (for example, Sweden had 4.3 physicians per 1,000 inhabitants, Austria had 5.5), countries like the United States, Canada and the United Kingdom have fewer physicians (2.6, 2.7, and 2.9, respectively). Italy saw a huge increase in physicians over the period of the pandemic, increasing from 4.1 per 1,000 inhabitants in 2019 to 5.5 in 2023. The increase in New Zealand was from 3.4 in 2019 to 3.7 in 2023 (an increase of 8.3%, or 2.0% per annum).

Figure 42: Physicians per capita across the OECD
Per 1,000 people, 2019 and 2023 (or closest year)

Interactive graphs are available here



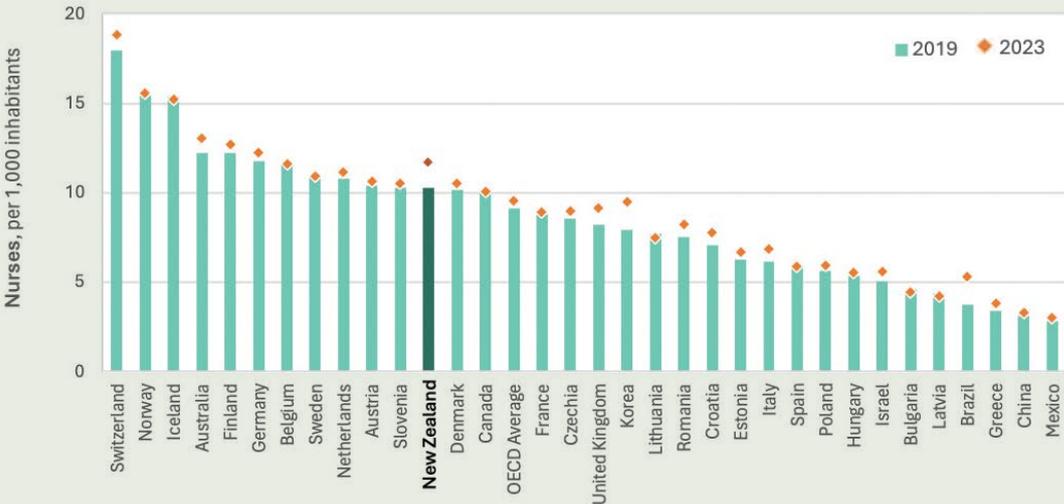
Source: Organisation for Economic Co-operation and Development, Healthcare human resources, <https://www.oecd.org/en/data/datasets/oecd-health-statistics.html>

Notes: Physicians includes Generalist medical practitioners (ISCO-08 code: 2211) [General practitioners, and other generalist (non-specialist) medical practitioners]; plus: Specialist medical practitioners (ISCO-08 code: 2212) [General paediatricians, Obstetricians and gynaecologists, Psychiatrists, Medical group of specialists, Surgical group of specialists, and Other specialists].

The pattern for nurses was similar (Figure 43). In 2019, New Zealand had around 10 nurses per 1,000 inhabitants, more than countries like the United Kingdom (8.2) and South Korea (7.9), but fewer than Sweden (10.9), Australia (12.2) and Switzerland (18). This number had increased to 11.7 by 2023 (an increase of 14%, or 3.4% per annum).

Figure 43: Nurses per capita across the OECD
Practising nurses, per 1,000 people, 2019 and 2023

Interactive graphs are available here



Source: Organisation for Economic Co-operation and Development, Healthcare human resources
<https://www.oecd.org/en/data/datasets/oecd-health-statistics.html>

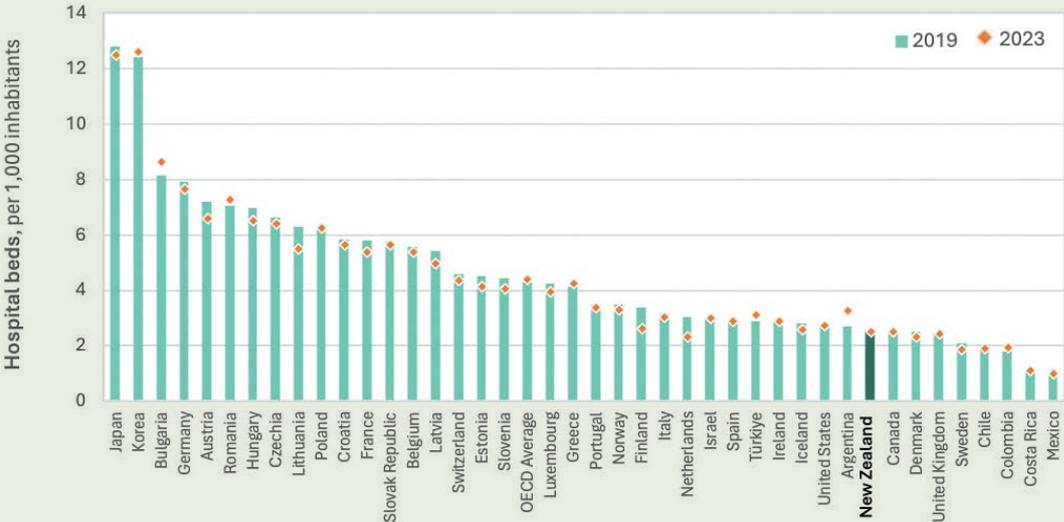
5.1.3 Physical resources | Rauemi hanganga

In terms of physical resources, New Zealand had comparatively few hospital beds in 2019, at around 2.55 per 1,000 people. This was similar to Canada (2.52), the United Kingdom (2.46), and Sweden (2.1). By contrast, Asian countries like Japan and Korea had more than 12, while European countries like Germany and Austria had around 7.

How many in-hospital patients can be treated depends on both the number of beds and the length of stay. Patients in Japan and Korea tend to stay longer in hospital than those in European and North American countries.

Figure 44: Hospital bed capacity across the OECD
 Total hospital beds (public and private) per thousand people, 2019 and 2023

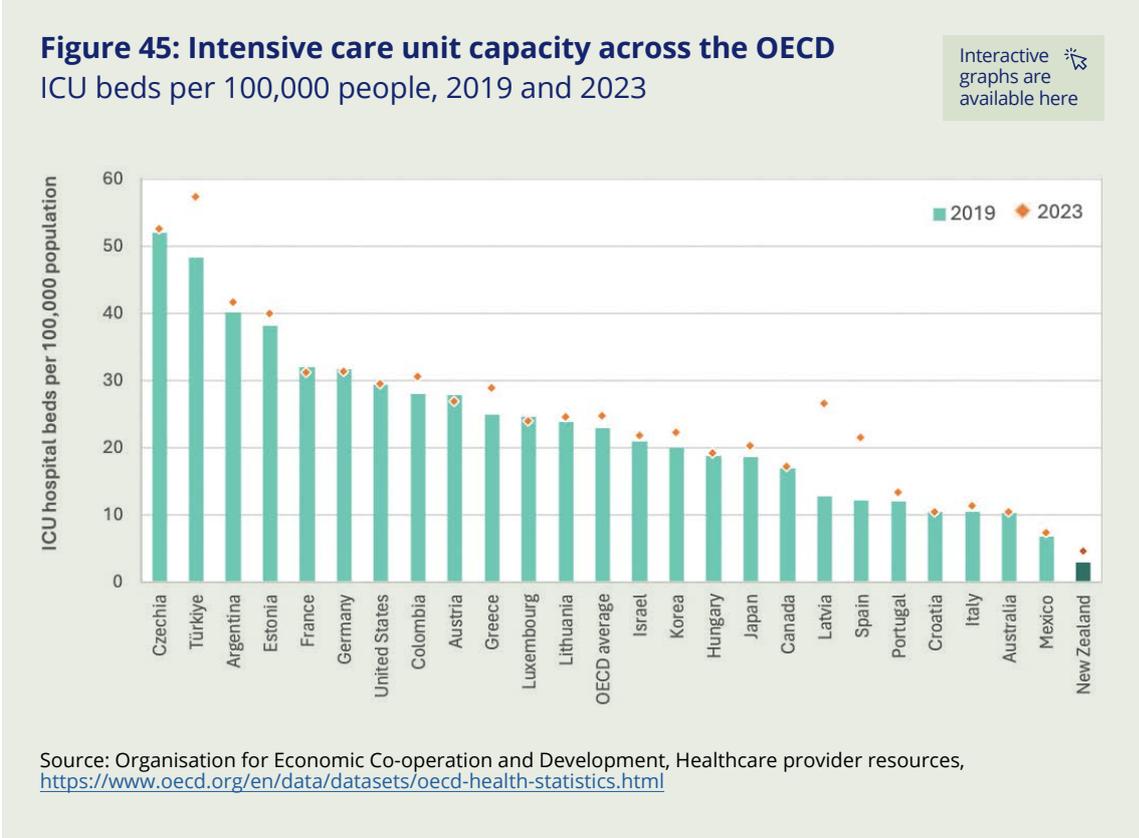
Interactive graphs are available here



Source: Organisation for Economic Co-operation and Development, Healthcare provider resources, <https://www.oecd.org/en/data/datasets/oecd-health-statistics.html>

People with very serious COVID-19 illness often require artificial ventilation. Ventilators are typically available in intensive care units (ICUs), along with other life-preserving equipment, but can be used outside an ICU context.

Cross-country data on ventilator capacity is not available. However, the OECD does have data on ICU beds. According to its data for 2019, New Zealand had the fewest ICU beds at around three per 100,000 population (Figure 45) – roughly 150 beds.



However, this comparison is not definitive in terms of a country’s ability to cope with a COVID-19 outbreak. In normal times, New Zealand has been able to meet ICU and ventilator demand with these resources. A pandemic like COVID-19 is likely to overwhelm normal-time capacity. What matters under such circumstances is the ability to ‘surge’ – to temporarily raise supply to the required level. An editorial in the *New Zealand Medical Journal* in 2021 estimated New Zealand’s effective surge capacity at 243 ICU beds (about five per 100,000 population).¹⁸

18 Paul J Young, Alex Psirides and Stephen Streat, 'New Zealand's staffed ICU bed capacity and COVID-19 surge capacity', *New Zealand Medical Journal*, Vol 134 No 1545 (12 November 2021), <https://nzmj.org.nz/media/pages/journal/vol-134-no-1545/new-zealand-s-staffed-icu-bed-capacity-and-covid-19-surge-capacity/1980f941fc-1696471381/new-zealands-staffed-icu-bed-capacity-and-covid-19-surge-capacity-open-access.pdf>

5.2 Public health measures to contain the pandemic | Ngā tikanga hauora tūmatanui hei aukati i te horapa o te urutā

Governments around the world responded to the COVID-19 pandemic with a wide range of measures, including border closures and stay-at-home orders, as well as support for communities, businesses and the economy through a period of disruption. The most widely used metric of countries' responses was created by the Blavatnik School of Government at the University of Oxford.

5.2.1 Tracking the stringency of public health measures | Te aroturuki i te kaha o ngā tikanga hauora tūmatanui

The Oxford COVID-19 Government Response Tracker is made up of 25 indicators. Nine of these contribute to the Stringency Index, which measures the stringency of a government's response. This includes use of school closures, workplace closures and travel bans. The index ranges from 0 (least stringent) to 100 (most stringent).

When we look across the whole of the period from 2020 to 2023, New Zealand's response was one of the least stringent of the 183 countries for which this measure is available (Figure 46). In our comparison group of countries, China had by far the most stringent policies. Italy's response was the next most stringent, followed by the United States and the United Kingdom. Sweden's was notably different from its European neighbours, in that it did not lock down its society in the early days of the pandemic. Nevertheless, over the four-year period, Sweden had a more stringent response than New Zealand.

Figure 46: COVID-19 policies: Composite Stringency Index, average 2020–2023

Interactive graphs are available here 

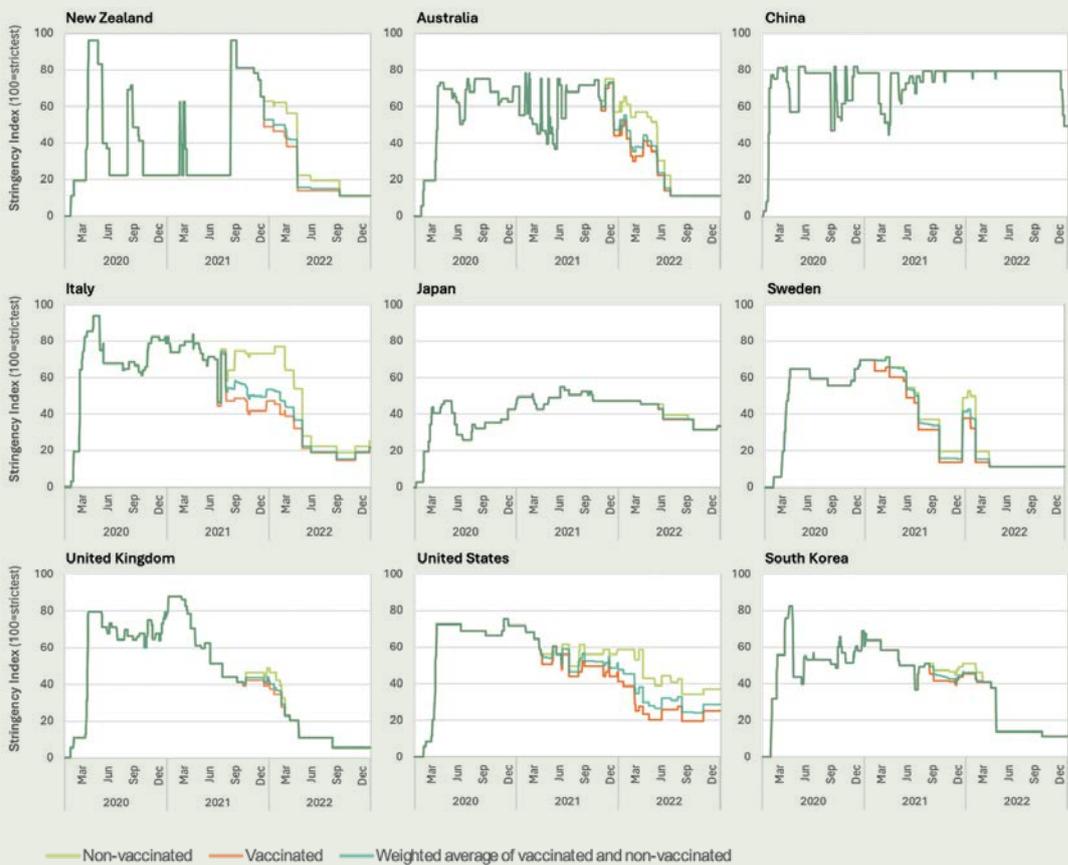


Source: Blavatnik School of Government, University of Oxford (2023), Our World in Data

New Zealand tended to go for short, stringent interventions, which explains to some degree its relatively low stringency score in Figure 46. This can be seen in Figure 47, which tracks the stringency index for New Zealand and our comparator countries (plus South Korea) from January 2020 through to December 2022.

Figure 47: COVID-19 Composite Stringency Index by vaccination status, 2020–2022

Interactive graphs are available here



Source: Blavatnik School of Government, University of Oxford (2023), Our World in Data

Figure 47 shows that this pattern of response was in place until August 2021, after which New Zealand's response was similar to that of other countries, except China.

One theme that emerges from Figure 47 is that, with the arrival of widespread vaccination in 2021 (see section 5.3 below), many countries began to differentiate between those who were vaccinated and those who were not. This was particularly the case in Italy, where the Stringency Index for those who were not vaccinated was almost twice that for those who were vaccinated from mid-2021 to mid-2022.

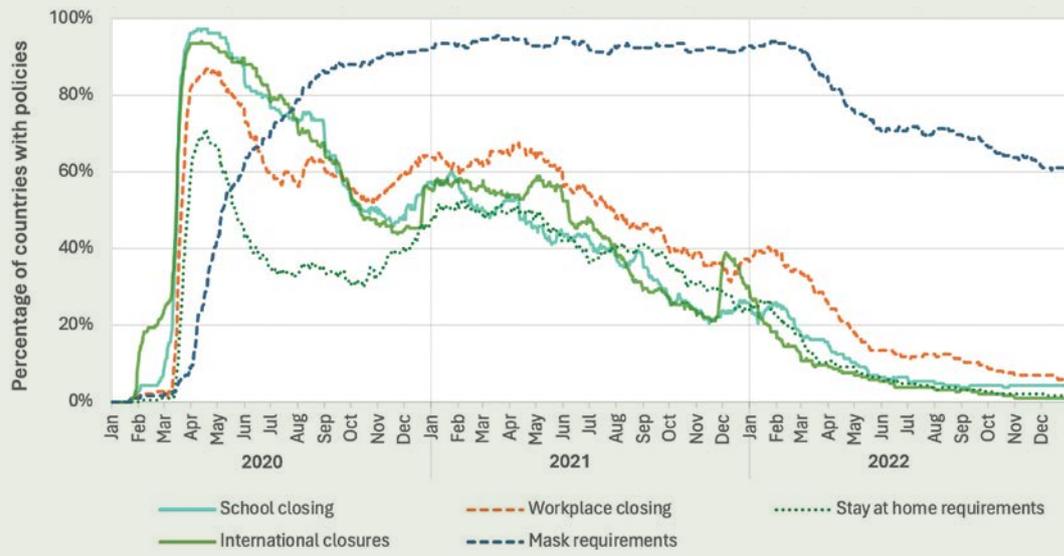
5.2.2 Types of public health measures used | Ngā momo tikanga hauora tūmatanui i whāia

By March 2020, almost all countries had closed their borders and schools (Figure 48). Over 80% had closed workplaces and 60% had required their populations to stay at home (with exceptions for 'essential trips' – for example, to supermarkets or to exercise).

Requirements to wear masks were infrequent in the early months of the pandemic. However, countries began to implement mask requirements in the second quarter of 2020. By late 2020, over 80% of countries required their citizens to wear masks in specified public spaces. This requirement remained in place for almost all countries well into 2022, when other restrictions were being removed. Unlike the closure of schools, workplaces and international borders, which were turned off and on in response to the numbers of COVID-19 cases, mask-wearing requirements generally remained in place for the whole of this period.

Figure 48: Proportion of countries using different types of restrictions, 2020–2022

Interactive graphs are available here



Source: Blavatnik School of Government, University of Oxford (2023), Our World in Data

Notes:

School closing = schools require closing at some (or all) levels or categories

Workplace closing = for some/all sectors or for some/all workers

Stay at home requirements = required to stay at home, may include exceptions for 'essential trips'

International closures = ban on arrivals for some or all regions

Mask requirements = required to wear masks in public settings

5.3 Vaccination | Te rongoā ārai mate

Vaccination is an important tool humans have used to fight pandemics for over two centuries. The smallpox vaccine was the first vaccine to have been developed against a contagious disease. In 1796, British physician Edward Jenner demonstrated that an infection with the relatively mild cowpox virus conferred immunity against the deadly smallpox virus.

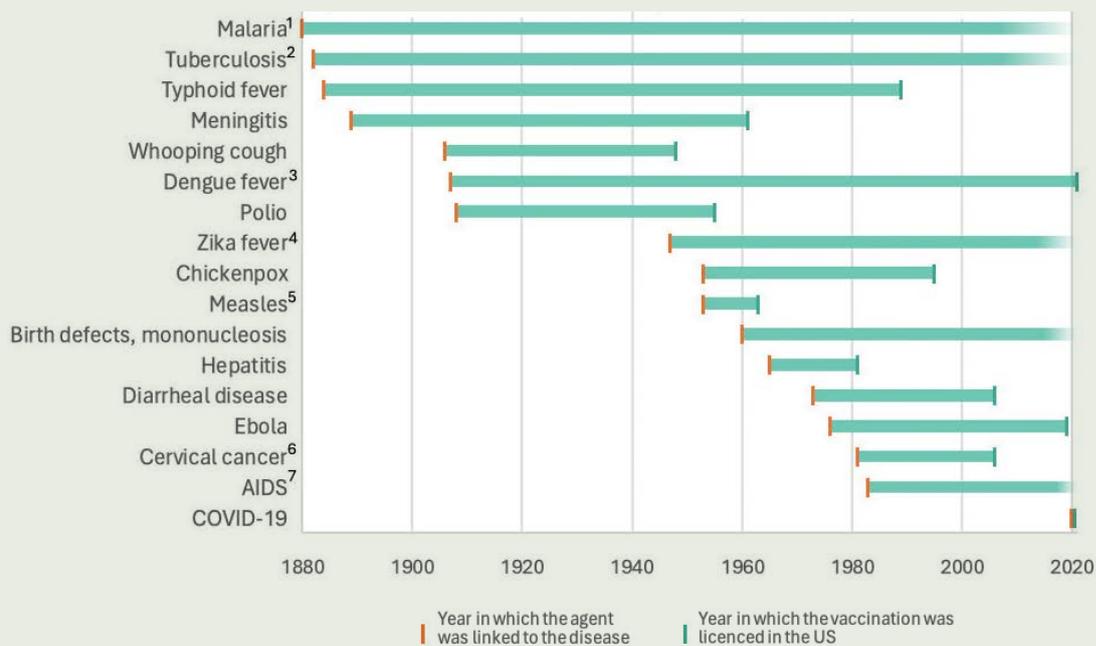
5.3.1 The influenza vaccine | Te kano ārai mate rewharewha

Early attempts at a vaccine during the 1918–1919 influenza pandemic were based on the belief that influenza infection was caused by bacteria. It was not until 1933 that the influenza virus was isolated and identified.

The first influenza vaccine was developed by Thomas Francis and Jonas Salk at the University of Michigan and tested on the United States military, before being licensed for wider use in 1945. Advances in science have meant that the time from the identification of a pathogen to the deployment of an effective vaccine has been drastically reduced (Figure 49).

Figure 49: Vaccination innovation, 1880–2020
 Period from pathogen identification to United States licensing of a vaccine

Interactive graphs are available here



Source: Our World in Data

Notes:

1. In 2021, the malaria vaccine RTS,S/AS01 was recommended by the World Health Organization for widespread use among children in sub-Saharan Africa and in other regions with moderate to high *P. falciparum* malaria transmission.
2. The only approved vaccine is bacilli Calmette=Guérin (BCG), developed in 1921 but its efficacy in adults is variable. Other tuberculosis vaccines are currently in development.
3. Partially effective vaccines CYD-TDV (sold under the brand name Dengvaxia) and TAK-003 (Qdenga), others in development.
4. Successful first human clinical trials of a vaccine against the virus in 2016. The World Health Organization issued statements of concern about the Zika virus' link to Guillain-Barré syndrome and microcephaly in 2016.
5. Several vaccine candidates are under investigation.
6. Not all cervical cancers are caused by the HPV virus, and the HPV vaccine can protect against other cancers caused by the HPV virus.
7. Several vaccine candidates have been trialled without success. Some potentially promising candidates are currently in phase I trials.

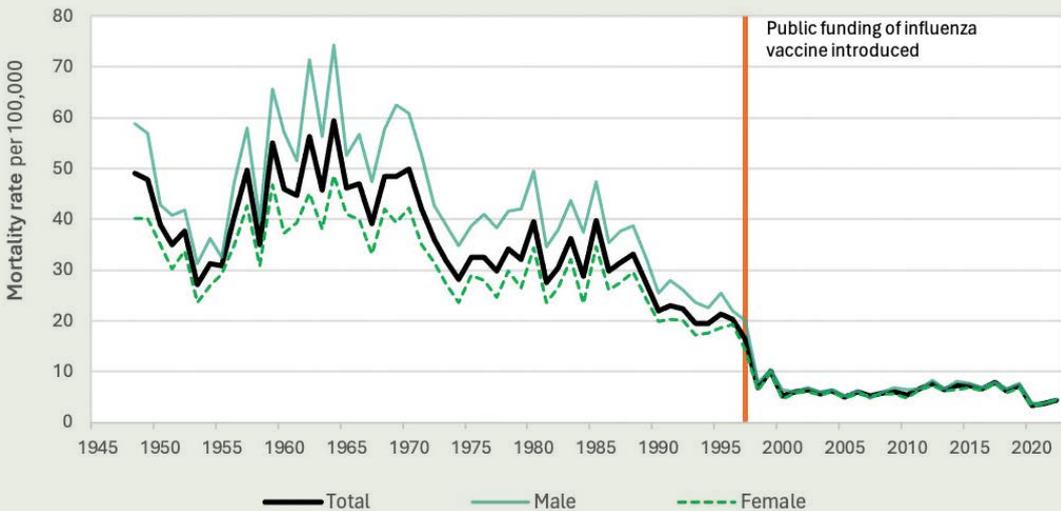
Influenza led to the death of millions of people in the 20th century (section 2.1). The pandemic of 1918–1919 was caused by the H1N1 strain; it led to the deaths of 50 million people. More recent outbreaks of H2N2 (Asian) and H3N2 (Hong Kong) flu in the 1950s and 1960s led to millions more deaths.

With the availability of a vaccine, influenza became much less deadly. In the decades after the Second World War, 30–60 per 100,000 New Zealanders died from influenza and pneumonia (Figure 50). As the vaccine became available, numbers began to fall. In 1997, free influenza vaccination was made available to those aged 65 years and over in New Zealand, and in 1999 free vaccination was extended to at-risk groups under 65 years. Although mortality from influenza had been dropping since the 1960s, the effect of free vaccination is noticeable, with mortality dropping from around 20 per 100,000 population during the early 1990s to single digits. The mortality gap between men and women has also narrowed.

Figure 50: Deaths from influenza and pneumonia in New Zealand, 1948–2022

Deaths per 100,000 people from influenza and pneumonia by sex

Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, New Zealand Mortality Collection: <https://www.tewhatauora.govt.nz/for-health-professionals/data-and-statistics/nz-health-statistics/national-collections-and-surveys/collections/mortality-collection>

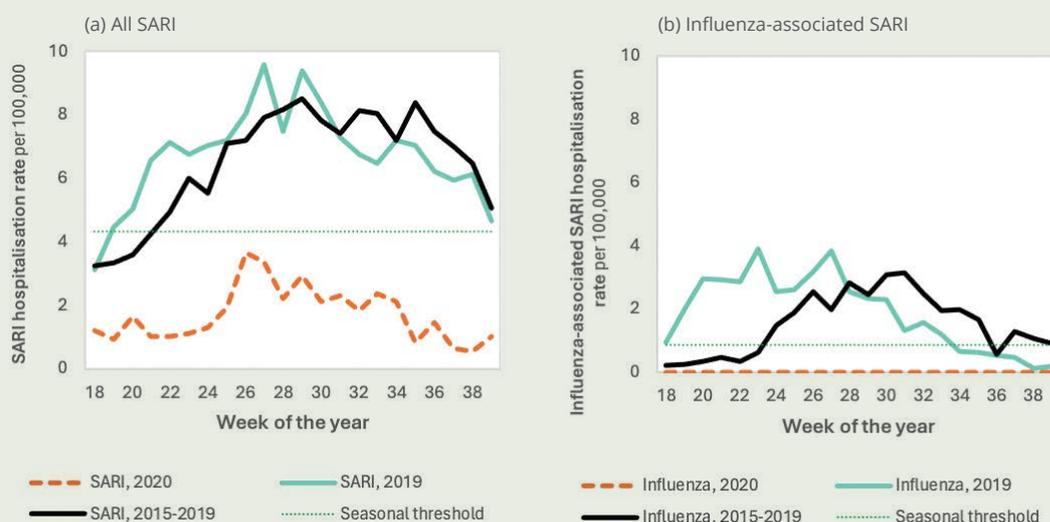
5.3.2 The impact of COVID-19 restrictions on respiratory infections | Te pānga o ngā here KOWHEORI-19 ki te horapa o ngā matehā

Influenza, along with other diseases that can lead to severe acute respiratory infections (SARI), peaks in the winter months. The left panel (a) of Figure 51 shows the rate of hospitalisation due to all SARI for weeks 18 to 38 (April/May to September) of the five years prior to the COVID-19 pandemic, along with the incidence for 2019 and 2020. SARI incidence peaks in week 29 (mid-July) at 8 per 100,000 people. During 2020, when movements were restricted, SARI incidence dropped considerably, not rising above the seasonal threshold. The right panel (b) shows the equivalent rates just for influenza. The 2019 influenza season arrived earlier than normal. In 2020 the restrictions placed on movement to control COVID-19 meant that not one person in New Zealand was hospitalised because of influenza.

Figure 51: Hospitalisations for severe acute respiratory infections

Hospitalisations per 100,000 people by week of year for all SARI and influenza-associated SARI, 2015–2019 average, 2019 and 2020

Interactive graphs are available here

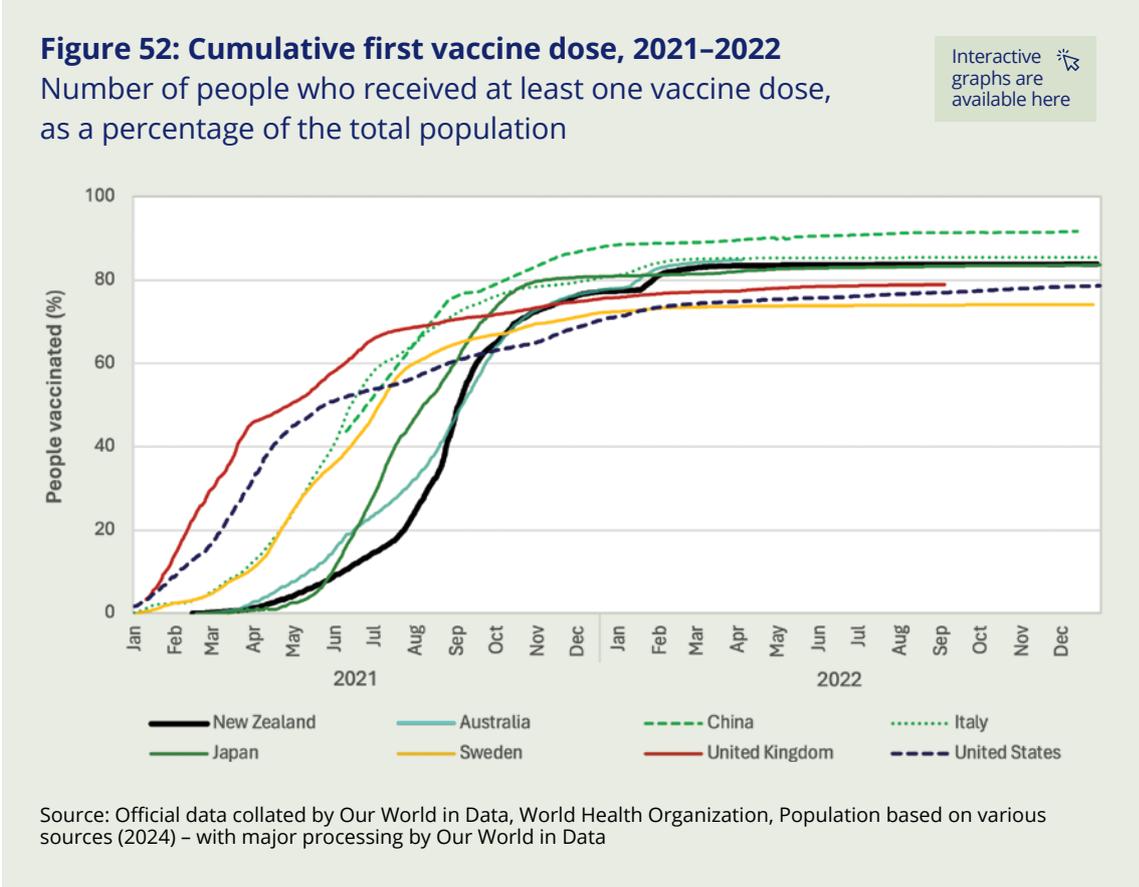


Source: Q. Sue Huang and others, 'Impact of the COVID-19 nonpharmaceutical interventions on influenza and other respiratory viral infections in New Zealand', *Nature Communications*, Volume 12, Issue 1 (2021), pp 1–7.

5.3.3 COVID-19 vaccination in New Zealand | Te rongoā ārai mate KOWHEORI-19 i Aotearoa

Once the COVID-19 vaccines began to be approved and manufactured, vaccination rates grew quickly across the world. Of our comparator countries, the United Kingdom, the United States, Sweden and Italy started their vaccination programmes before New Zealand, Australia and Japan (Figure 52). In the early months of New Zealand’s vaccine rollout, higher-risk groups were prioritised, such as border workers, healthcare workers, and people with underlying health conditions. From August 2021, New Zealand’s vaccination rate began to climb quickly, as eligibility widened to the general population. By mid-2022, vaccinations plateaued at rates between those of Sweden (74%) and China (92%). New Zealand achieved a total population vaccination rate of around 80%.

Figure 52 shows people vaccinated as a proportion of the total population, not of the population eligible for vaccination, and so it also reflects the vaccine eligibility rules of the countries shown. For example, vaccinations were not available to children aged 5–11 years until 17 January 2022 in New Zealand, whereas they were available in China and the United States from October 2021.



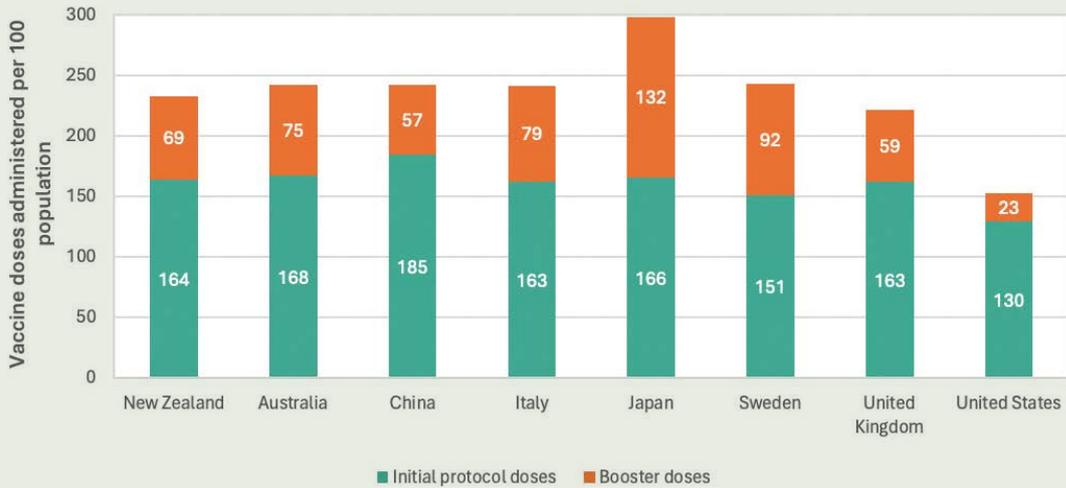
Most of the widely-used COVID-19 vaccines were designed for a two-dose initial protocol. The average number of doses per person was 1.6 (160 per

100 people) in most of the comparator countries in Figure 53. The outliers were China with 1.8 and the United States with 1.3. Booster doses were required to maintain vaccination effectiveness. There was more variation in the number of booster doses, with Japan averaging 1.3 per person, but the United States only 0.2. New Zealand was similar to the remaining countries, with around 0.7 booster doses per person.

Figure 53: Total COVID-19 vaccine doses administered to July 2024

Interactive graphs are available here

Total number of doses administered as part of the initial protocol (generally two doses), and booster doses, per 100 people, to 28 July 2024



Source: Official data collected by Our World in Data; World Health Organization
 Note: Population relates to the whole population of a country, not just those for whom vaccines were made available.

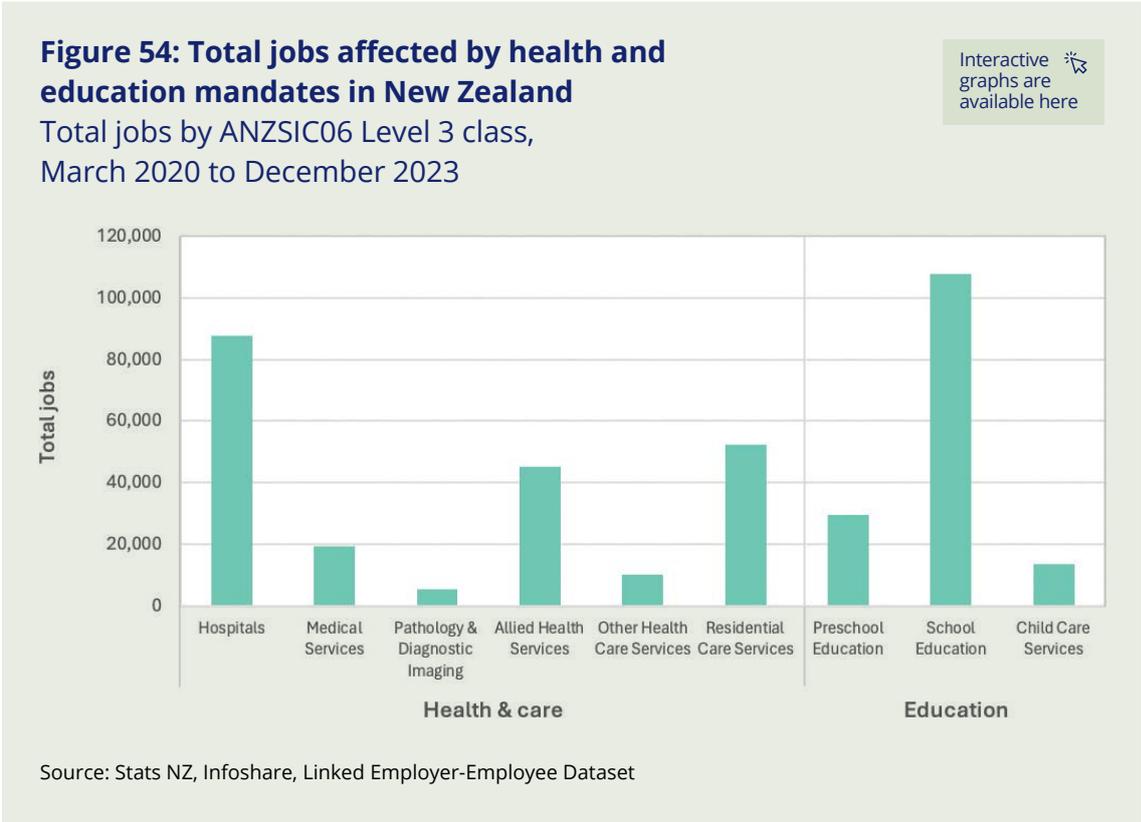
5.4 Health and education workforce mandates | Ngā whakature mō te kāhui kaimahi hauora, mātauranga

During the pandemic, many countries required employees in specific occupations to be vaccinated against COVID-19 to continue working in their fields. These vaccine requirements became known as ‘vaccine mandates’. The reasons behind mandates varied by country and occupation. Reasons included increasing overall vaccination levels, reducing COVID-19 transmission in specific workplaces, and reducing the risk of essential service disruption by staff illness.

The New Zealand Government first introduced vaccine mandates in April 2021 to cover some employees working at the border (that is, ports and airports). Over the course of 2021, government vaccine mandates were expanded to cover other border workers, fire and emergency staff, education and health workers, prison staff, police officers and New Zealand Defence Force staff. A Cabinet paper from October 2021 estimated that Government-issued vaccine mandates for workers in border, health, education and correctional settings would cover roughly 15% of the country’s total workforce.¹⁹

19 Cabinet Paper, Supporting vaccination requirements in the workplace (26 October 2021), <https://www.mbie.govt.nz/dmsdocument/19926-supporting-covid-19-vaccination-requirements-in-the-workplace-proactiverelase-pdf>, para 31

The vaccine mandates for the health and education workers were announced on 11 October 2021.²⁰ Affected workers were required to have their first dose of a COVID-19 vaccine by 15 November 2021, and their second dose by 1 January 2022.²¹ Overall, the mandates applied to more than 350,000 workers in the health and education sectors (Figure 54).



20 The cut-off dates for these mandates were updated on 23 October 2021.

21 Press release by Hon. Chris Hipkins, 'Expanded vaccination order for health and disability, education and prison workers' (23 October 2021), <https://www.beehive.govt.nz/release/expanded-vaccination-order-health-and-disability-education-and-prison-workers>

5.4.1 Many workers were vaccinated before the mandates | He tokomaha ngā kaimahi i werohia i mua i ngā whakature

Around 70% of the New Zealand population had received at least one vaccine dose by 11 October 2021, the date on which the health and education mandates were announced.

Vaccination rates for particular sectors or occupations are not directly available from the Ministry of Health or other public sources. To investigate the employment impacts of these mandates on affected workers, we examined a longitudinal dataset of skilled workers that were employed in the health or education sectors and aged between 20 and 74 years in September 2021 (the month before mandates were announced).²²

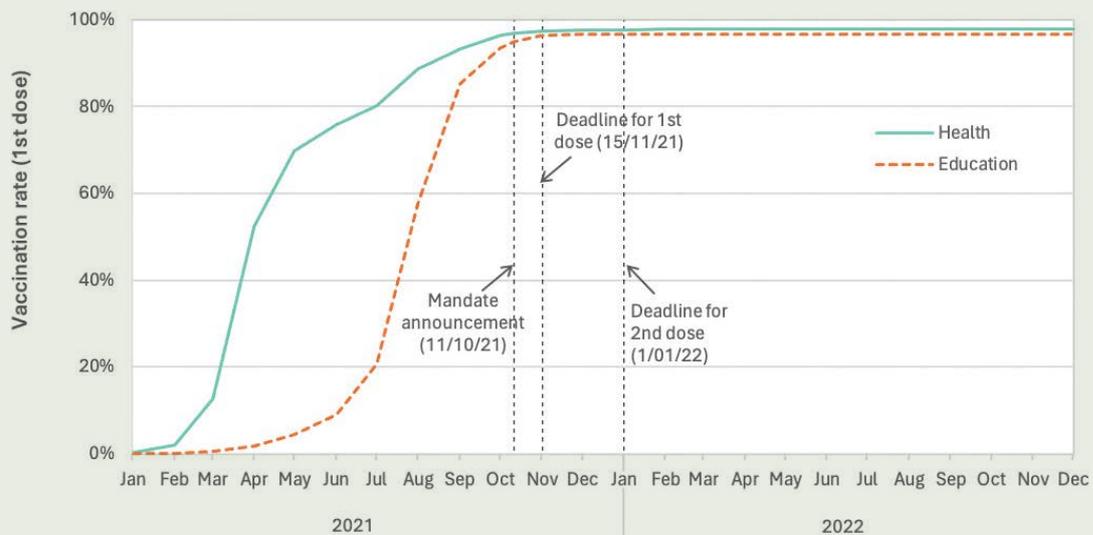
By the time the mandate for the education and health sectors was announced, 88.4% of the education workforce and 94.2% of the health workforce had received one or more doses of the vaccine (Figure 55). The rates for the health sector were high because health workers were some of the first to be eligible to receive the vaccine. For example, nurses and other health workers in frontline roles in managed isolation and quarantine, and medical staff who were frontline vaccinators, were eligible to receive vaccines from February 2021.

22 This research linked vaccination data to information on employment and qualifications using the anonymised data in Stats NZ's Integrated Data Infrastructure. It is possible to identify the sector in which a person is employed (from income tax data) with qualifications and occupation (from the Census) to identify teachers, doctors, nurses and other education and health professionals. See the inside front cover for the disclaimer that applies to this research, and the Appendix for further information on the methodology used.

Figure 55: Cumulative vaccinations, health and education workers

Vaccination rate (one or more doses), skilled education and health sector workers, 2021–2022

Interactive graphs are available here



Source: Royal Commission Phase Two analysis of Stats NZ Integrated Data Infrastructure data
 Note: Workforce determined by a combination of employer industry and worker qualification.

By 1 January 2022, when workers were required to have received their first dose of the vaccine, these rates had risen to 95.8% of education workers and 97.2% of health workers. By mid-2022, the proportions of staff that had received one or more doses had risen to 96.7% and 97.9%, respectively.

5.4.2 Some workers left the workforce before the mandates were introduced | I wehe ētahi kaimahi i te kāhui kaimahi i mua i te whakatūnga o ngā whakature

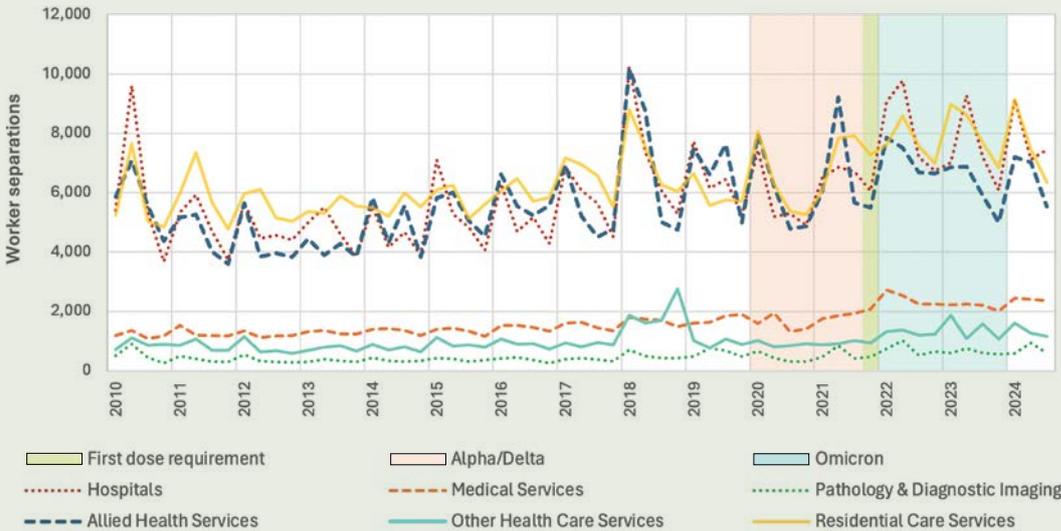
Worker turnover is a fundamental part of employment in all sectors. People leave and join new organisations for a range of reasons – a new challenge, a promotion or pay rise, through to changes in family circumstances.

Figure 56 shows separations; that is, the number of workers who left their health-sector employer for any reason between 2015 and 2024. There was a general upwards trend in separations from around 2015, and some signs of more workers leaving health sector jobs when mandates were introduced at the end of 2021.

Figure 56: Worker separations, New Zealand health sector

Interactive graphs are available here

Workers leaving their employer for any reason, quarterly, by employer type, Q1 2010 to Q3 2024



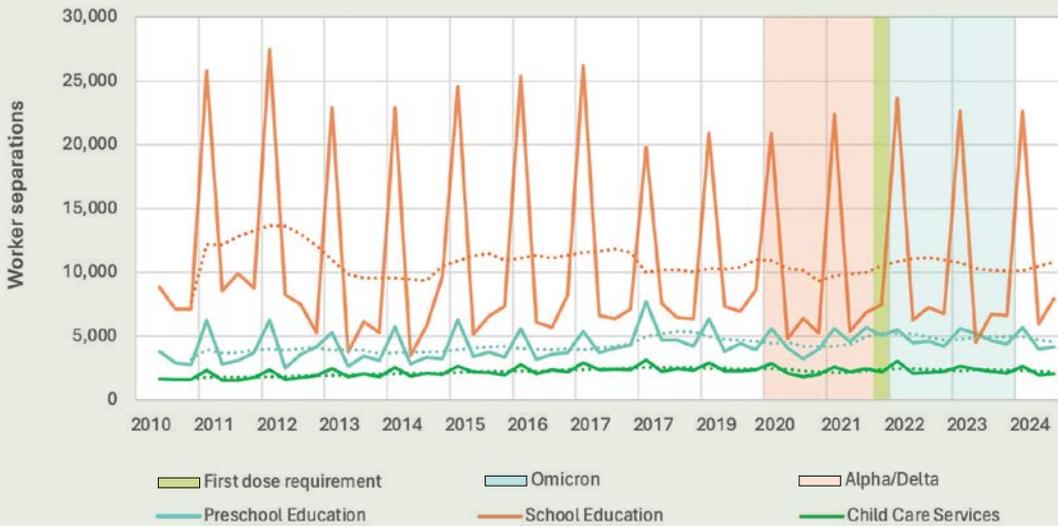
Source: Stats NZ, Infoshare, Linked Employer-Employee Dataset.

By contrast, no longer-term trends in the education worker separation data are evident over the same period (dotted lines in Figure 57). The peaks and troughs in the solid lines reflect the school year.

Figure 57: Worker separations, New Zealand education sector

Workers leaving their employer for any reason, quarterly, by employer type, Q1 2010 to Q3 2024

Interactive graphs are available here



Source: Stats NZ, Infoshare, Linked Employer-Employee Dataset.
 Note: Dotted lines indicate 4-quarter rolling averages.

5.4.3 Understanding the effects of mandates on workers | Te mārama ki ngā pānga o ngā whakature ki ngā kaimahi

Using the longitudinal dataset of skilled workers, we divided workers into three groups based on if and when they received their first dose of the vaccine (Table 4).

Table 4: Vaccination groups, health and education workers

Vaccination group	Employees in sample	
	Health sector	Education sector
Early vaccinated – those who had received their first dose before the mandate was first announced (11 October 2021)	111,276	88,596
Late vaccinated – those who had received their first dose between the announcement and the first dose deadline (15 November 2021)	3,543	7,443
Unvaccinated – those who were still unvaccinated after 15 November 2021	3,291	4,182

Source: Royal Commission Phase Two analysis of Stats NZ Integrated Data Infrastructure data

Health sector analysis

Figure 58 shows the probability of people in each of the three vaccination groups being employed in the health sector (panel (a)). The bottom panel (b) shows the probability of being employed in any job in New Zealand.

The probability of being employed in the health sector is 100% for all three vaccination groups in September 2021 (by design), the month before the mandate announcement (panel (a) of Figure 58). Each vaccination group had quite similar labour market experiences prior to the announcement of the vaccine mandate.

In the period after the announcement, the employment probabilities of the three groups diverged. By 1 January 2022, the booster dose deadline, a large proportion of the Unvaccinated group had left the health sector, and more had left by a few months later. Some of the Unvaccinated group returned to the health sector from September 2022, after the mandates were revoked.

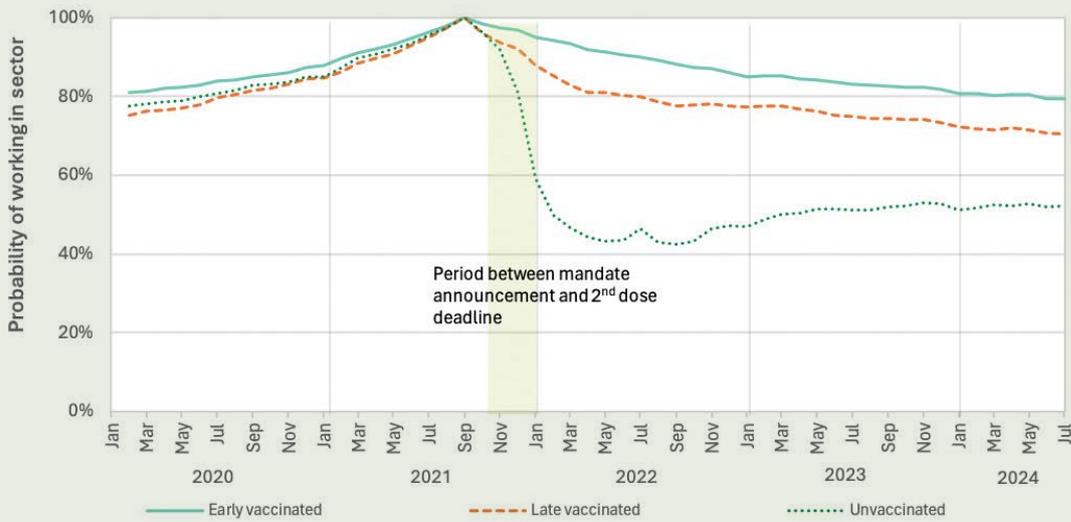
The introduction of the mandate for health workers encouraged 3.0% of the workforce to get vaccinated (the 'Late vaccinated' group in Table 4).

Figure 58: Health sector worker employment by vaccination group in New Zealand

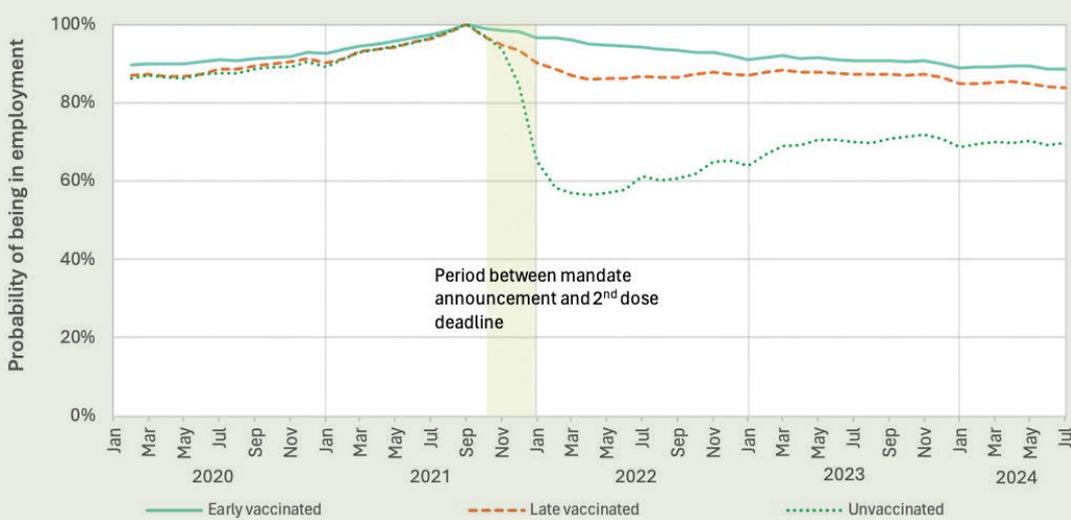
Interactive graphs are available here

Probability of being employed in the health sector or any sector, by vaccination group, January 2020 to July 2024

(a) Probability of being employed in the health sector



(b) Probability of being employed anywhere in New Zealand



Source: Royal Commission Phase Two analysis of Stats NZ Integrated Data Infrastructure data
 Note: Workforce determined by a combination of employer industry and worker qualification.

The difference in employment patterns for the three groups may not be solely due to the imposition of mandates. There could be other differences between the people in each vaccination group. For example, those in one group might be older on average and so be more likely to retire. Because of the richness of the data available in the IDI, we can control for multiple factors, such as age, gender, employment history (for example, years in sector, years outside sector, total years in work), wages, ethnicity, where workers live and, for migrants, their country-of-birth and year of arrival in New Zealand.

In Figure 59 we control for these factors. It shows the difference in probability of being employed in the health sector or another sector for the Unvaccinated, compared with the Early vaccinated groups. Once we control for differences between groups, the employment patterns prior to the mandate announcement are very similar (January 2020 to September 2021).

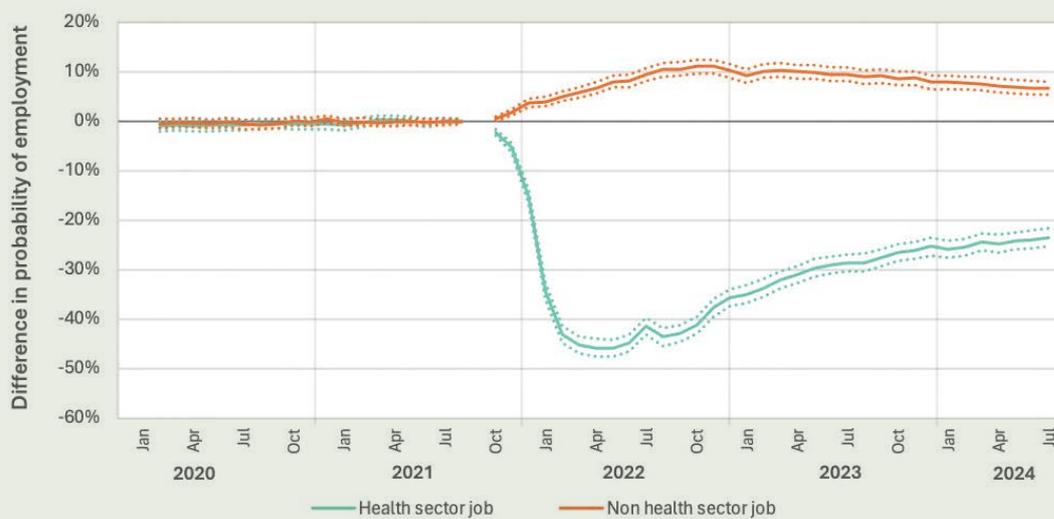
There are however differences in employment patterns after the announcement of the vaccine mandates. For most of 2022, the likelihood of an Unvaccinated worker remaining in the health sector is over 40% lower than for an Early vaccinated worker. This is shown in the green line in Figure 59. Unvaccinated workers were around 10% more likely than Vaccinated workers to be working outside the health sector (orange line).

After two years, Unvaccinated workers were still 25% less likely to be employed in the health sector.

Figure 59: Difference in probability of employment by vaccination status, in health sector or non-health sector job

Interactive graphs are available here

Difference in employment probability between Unvaccinated and Early vaccinated workers, in health sector or non-health sector jobs, January 2020 to July 2024



Source: Royal Commission Phase Two analysis of Stats NZ Integrated Data Infrastructure data

Notes:

1. Dotted lines depict 95% confidence intervals.
2. Control variables include age effects that vary by sex, employment history, wage, ethnicity, post-graduate degree, residential location, country-of-birth and year arrived in New Zealand (for migrants).
3. Sample excludes people who died or left New Zealand.

Those who declined to get vaccinated before the mandates' implementation (2.8% of healthcare staff) faced income and employment losses. Employment rates were 70%, compared with 89% for Early vaccinated. Once other factors were controlled for, the gap in employment rates reduced from 19% to 16%. Conditional on having a job, average annual real wage growth for the Unvaccinated group was 3.9% lower, or 6.3% lower if they had left the health sector, showing real wage losses compared with pre-mandate wages.

Education sector analysis

Most education worker movements happen between the end of one school year and the beginning of the next. This seasonal pattern is reflected in a dip in the probability of employment in January and an increase in February. These can be seen in both panels of Figure 60.

The initial drop in employment for the Unvaccinated group was more than for the usual January dip. This appears to have been followed by a further outflow of workers to a low point in March 2022.

The introduction of the mandate for education workers encouraged 7.4% of the workforce to get vaccinated (the 'Late vaccinated' group in Table 4).

Some Unvaccinated workers returned to the sector over the remainder of the 2022 school year, and their employment rose further in 2023.

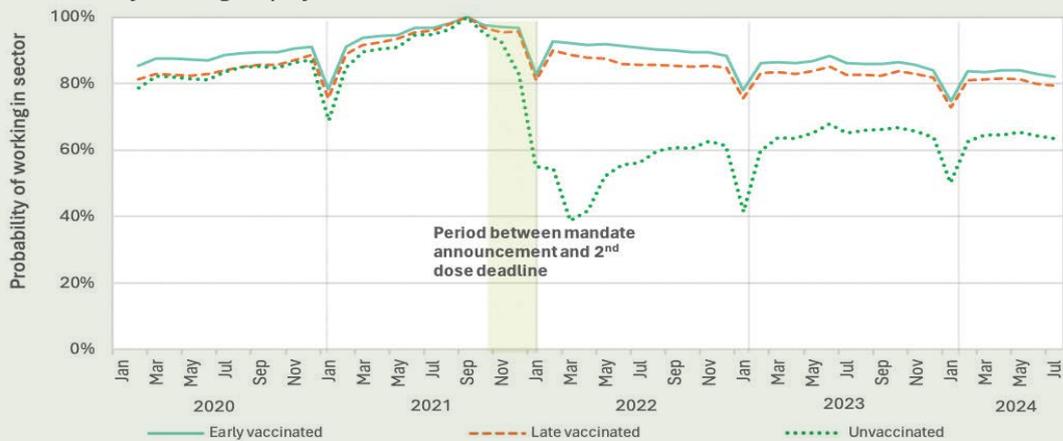
Unvaccinated workers were less likely to be employed in any sector compared with the vaccinated groups, as shown in panel (b) of Figure 60.

Figure 60: Education sector worker employment by vaccination status in New Zealand

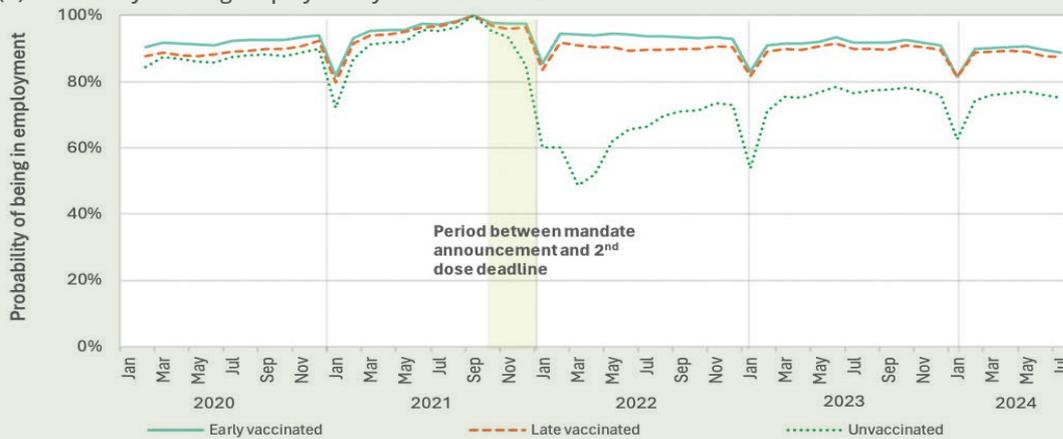
Interactive graphs are available here

Probability of being employed in the education sector or any sector by vaccination group, January 2020 to July 2024

(a) Probability of being employed in the education sector



(b) Probability of being employed anywhere in New Zealand



Source: Royal Commission Phase Two analysis of Stats NZ Integrated Data Infrastructure data
 Note: Workforce determined by a combination of employer industry and worker qualification.

Figure 61 controls for age, sex, work history and other factors that could differ between the Unvaccinated and Early vaccinated groups. There is a rapid decline in the proportion of Unvaccinated workers remaining in the sector (to around 50%), but this bounces back more quickly than was the case for the health sector Unvaccinated group. The education mandates were revoked in April 2022, several months before those covering the health sector.

In March 2022, after the mandate vaccination deadline, the likelihood of an

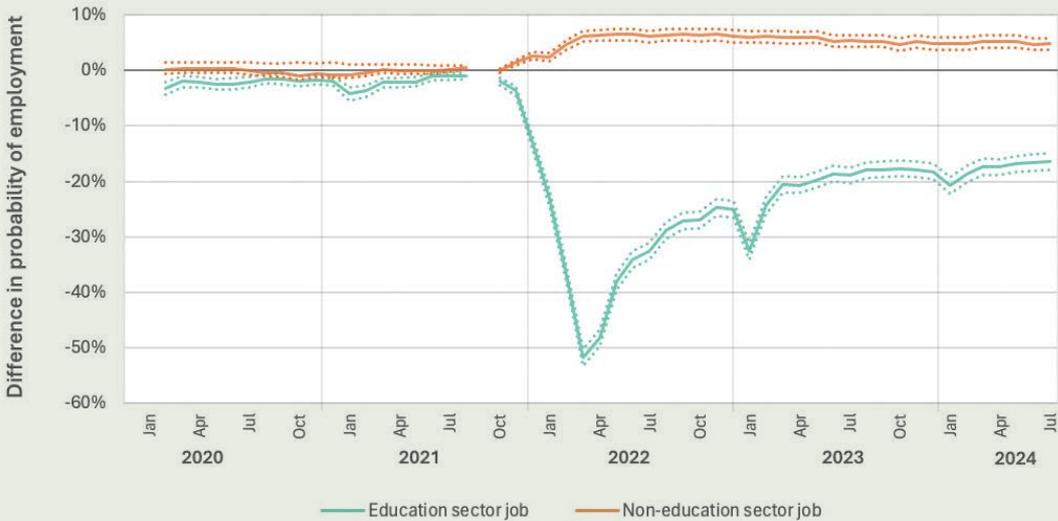
Unvaccinated worker remaining in the education sector was around 50% lower than for an Early vaccinated worker (green line in Figure 61). However, this changed over 2022 to around 25% lower. Unvaccinated workers were around 5% more likely than Vaccinated workers to be working outside the education sector (orange line).

After two years, Unvaccinated workers were nearly 20% less likely to be employed in the education sector.

Figure 61: Difference in probability of employment by vaccination status, in education sector or non-education sector job

Interactive graphs are available here

Difference in employment probability between Unvaccinated and Early vaccinated education workers, in education sector or non-education sector job, January 2020 to July 2024



Source: Royal Commission Phase Two analysis of Stats NZ Integrated Data Infrastructure data
 Notes: Workforce determined by a combination of employer industry and worker qualification.
 1. Dotted lines depict 95% confidence intervals.
 2. Control variables include age x sex, employment history, wage, ethnicity, post-graduate degree, residential location, country-of-birth, year arrived in New Zealand (for migrants)
 3. Sample excludes people who died or left New Zealand

Those who declined to get immunised before the mandates' implementation (4.2% of education workers) faced income and employment losses. Conditional on having a job, average annual real wage growth was 2.5% lower, or 4.7% lower if the workers had left the education sector.

6

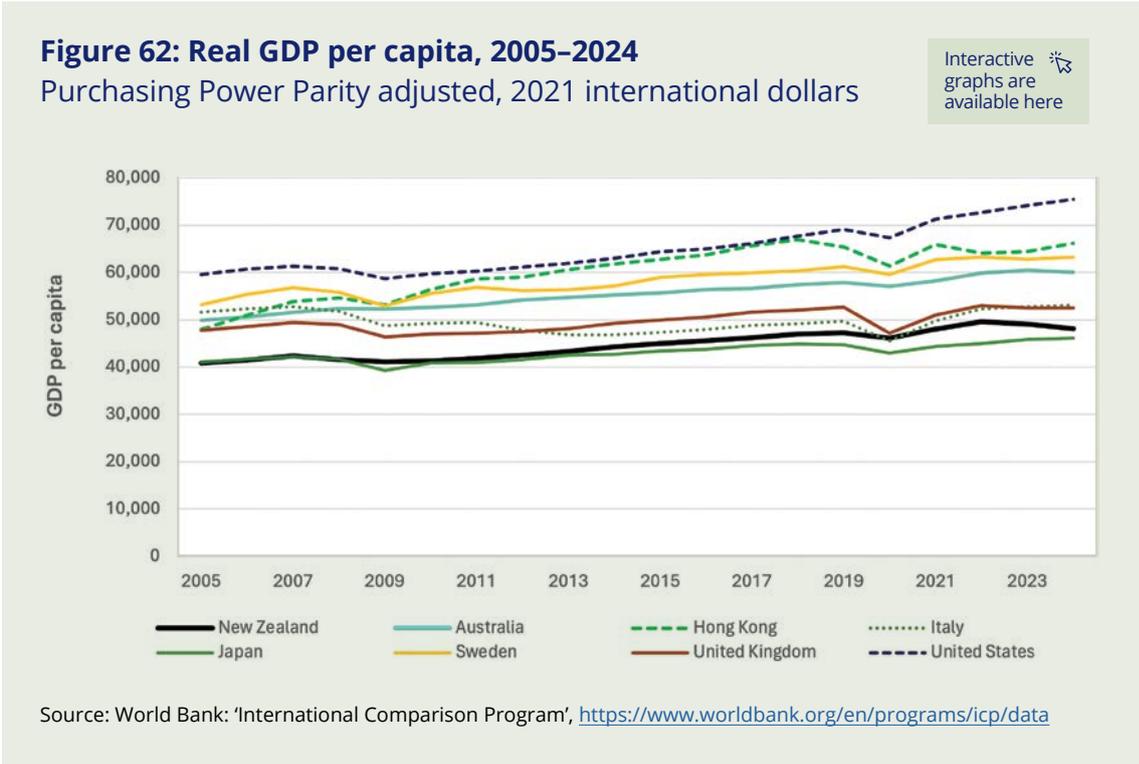
The economy | Te ōhanga

6.1 The big picture: the macroeconomic story | Te tiro whānui: te kōrero ōhanga-matua

This section presents data about some key New Zealand economic indicators during the pandemic – such as retail sales, savings and investment, inflation and debt, comparing across time and with comparator countries.

6.1.1 The size of the COVID-19 economic shock | Te rahi o te rū ōhanga KOWHEORI-19

Figure 62 shows the immediate impact of COVID-19 on the economies of New Zealand and our comparator countries, in terms of a drop in real GDP per capita. New Zealand’s economy was not as affected by the pandemic as some comparator economies.



Closing the borders and restricting the internal movement of people through lockdowns in early 2020 had a large and immediate impact on the New Zealand economy. Figure 63 shows the level of retail trade (orange dashed line) and quarterly change in sales (green line). Retail trade volumes fell by 17.7% (\$3.9 billion in 2010 prices) in the June 2020 quarter. This was more than six times the largest quarterly drop in sales in the previous two decades, including in the Global Financial Crisis. However, this drop was short-lived. Trade bounced back the following quarter, growing by 27.6% (\$5.6 billion). There was a similar drop and bounce back during the 2021 Auckland lockdown, although smaller as the whole economy was not affected. This pattern is consistent with consumers delaying spending. Overall retail sales, when averaged over time, changed relatively little.

After the second bounce-back at the end of 2021, retail trade began to slowly decline in real terms. By the end of the June quarter of 2025, the volume of retail trade was still 8% (\$2.1 billion) lower than its previous peak in the June quarter of 2021.

Figure 63: Retail trade volumes in New Zealand, Q1 2003 to Q2 2025

Retail trade volumes: levels (\$m, seasonally adjusted, 2010 prices) and changes (% quarter-to-quarter)

Interactive graphs are available here



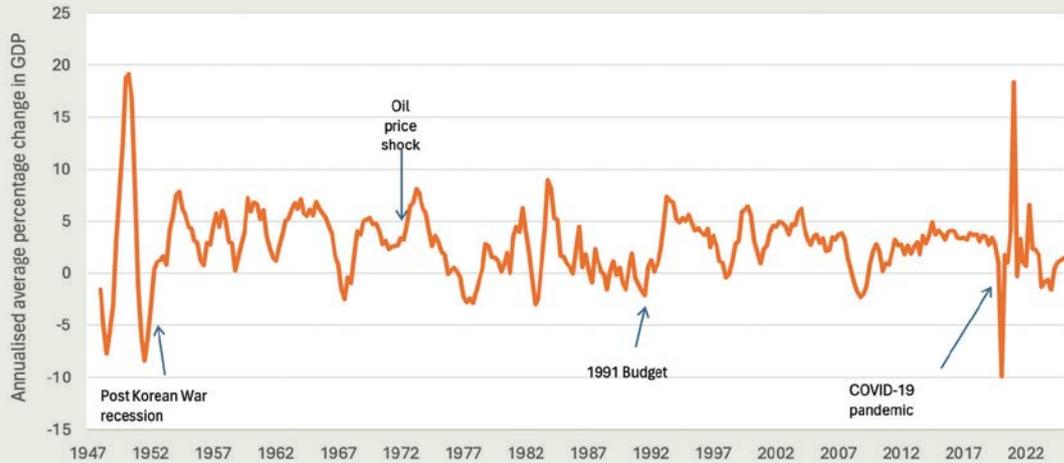
Source: Reserve Bank of New Zealand, 'Consumption (M2)', last updated 18 December 2025, <https://www.rbnz.govt.nz/statistics/series/economic-indicators/consumption>

Note: Retail sales volumes expressed in September 2010 quarter prices.

Previous adverse economic events provide a useful comparison for the scale of the economic shock experienced during the pandemic. Figure 64 shows economic growth in terms of changes to GDP per capita from 1947 to 2025; some of the larger economic shocks during this period are indicated. Measured in terms of change in per capita GDP, the economic shock from the pandemic in 2020 was the largest that New Zealand had experienced post the Korean War. However, its immediate impact on GDP per capita was short-lived.

Figure 64: The COVID-19 pandemic economic shock compared with 75 years of New Zealand recessions
Change in real GDP per capita, Q1 1947 to Q2 2025

Interactive graphs are available here

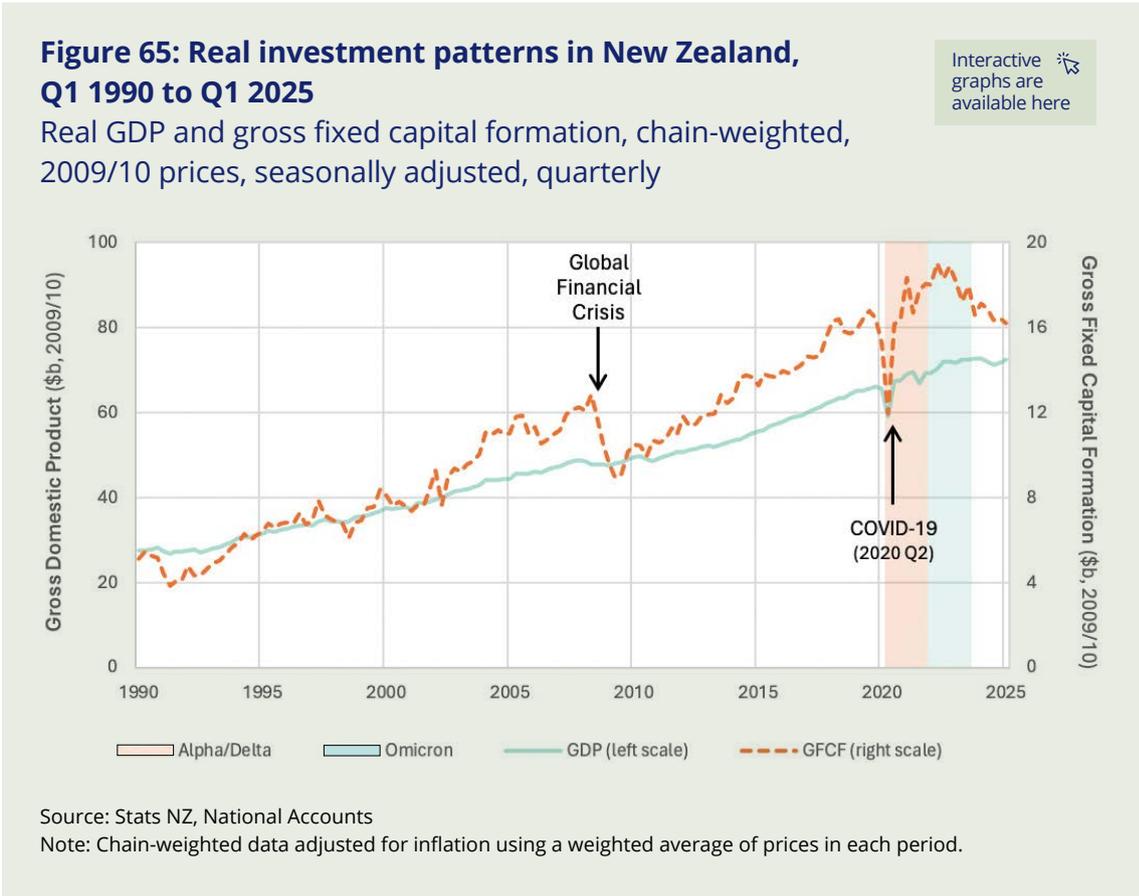


Source: New Zealand Institute of Economic Research, 'Data 1850', <https://www.nzier.org.nz/data-1850>

Figure 65 shows how capital investment in the economy differed between the 2008–2009 Global Financial Crisis and the COVID-19 pandemic. Capital investment reflects business confidence in the future and the availability of capital to invest.

Capital investment fell significantly during both the Global Financial Crisis and the COVID-19 pandemic. Investment took many years to return to its previous level after the Global Financial Crisis, when business confidence took some time to be regained.

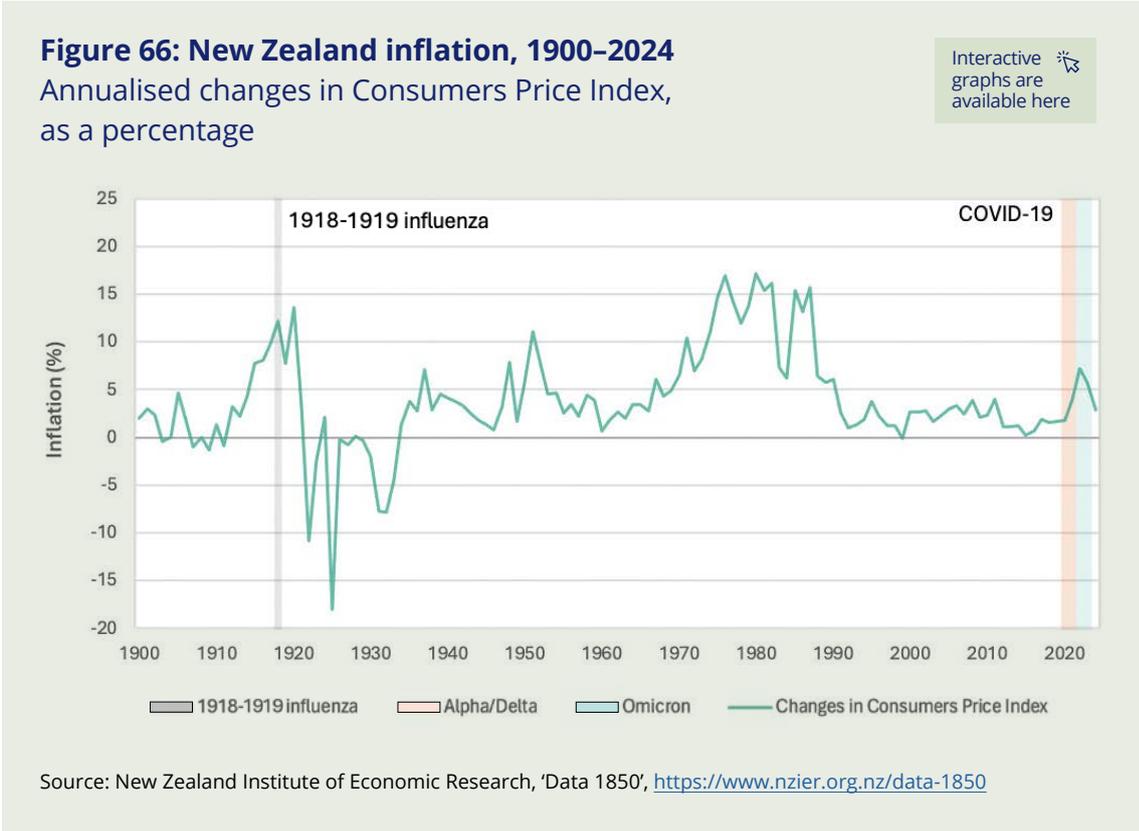
The investment pattern during the COVID-19 pandemic was different. Capital investment fell by 21.7% in the second quarter of 2020, before bouncing back to almost the same level in the following quarter. Investment then grew for a couple of years, before beginning to fall from the final quarter of 2022.



6.1.2 Prices and inflation | Ngā utu me te pikiutu tukipū

COVID-19 created a supply-side shock to the economy.²³ Production slowed or stopped because workers were ill or unable to travel, or their workplaces were closed. Supply shocks can be followed by periods of inflation as demand for goods and services picks up and cannot be met by supply. Figure 66 shows that prices rose after the 1918–1919 influenza and COVID-19 pandemics. Consumer prices rose by over 12% as the New Zealand economy picked up after the 1918–1919 pandemic. Due to disruption to supply as a result of World War One, the economy had already been experiencing inflation.

Although prices also rose during the COVID-19 pandemic, inflation was much lower compared to 1918–1919.



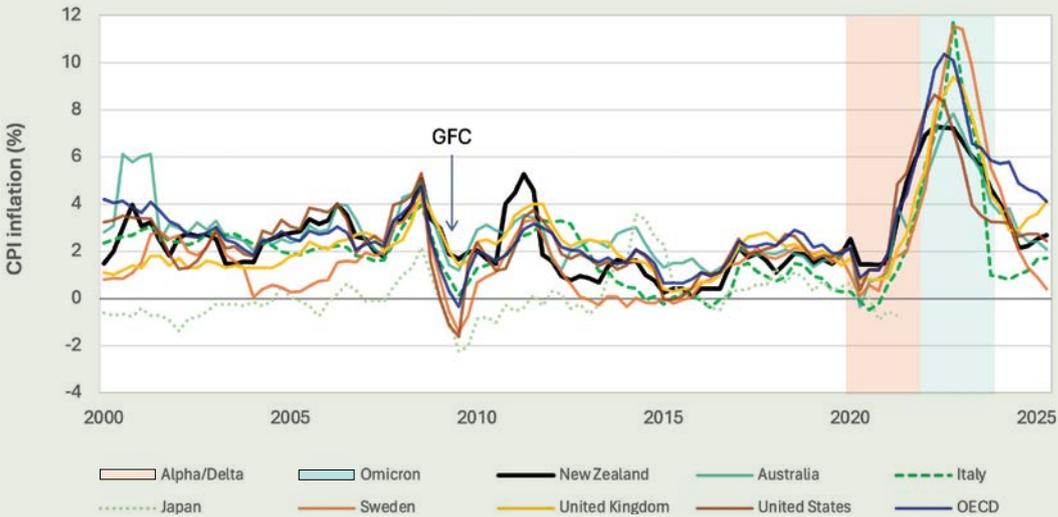
23 It also had elements of a demand-side shock. For a fuller discussion of the nature of the pandemic’s economic shock see Lesson Three in Part 3, NZ Royal Commission of Inquiry into COVID-19 Lessons Learned: Phase Two Main Report (2026).

Figure 67 shows how inflation in New Zealand compared with other countries and the OECD average. All countries experienced a period of low inflation in 2020, as economies slowed. Inflation increased in 2021, peaking in 2022. New Zealand's inflation peaked at around 7% per annum, a lower rate than the other countries in this Figure. By contrast, Italy and Sweden experienced inflation above 11%.

Figure 67: Inflation, selected OECD countries, Q1 2000 to Q2 2025

Quarterly Consumers Price Index inflation (prices relative to one year prior)

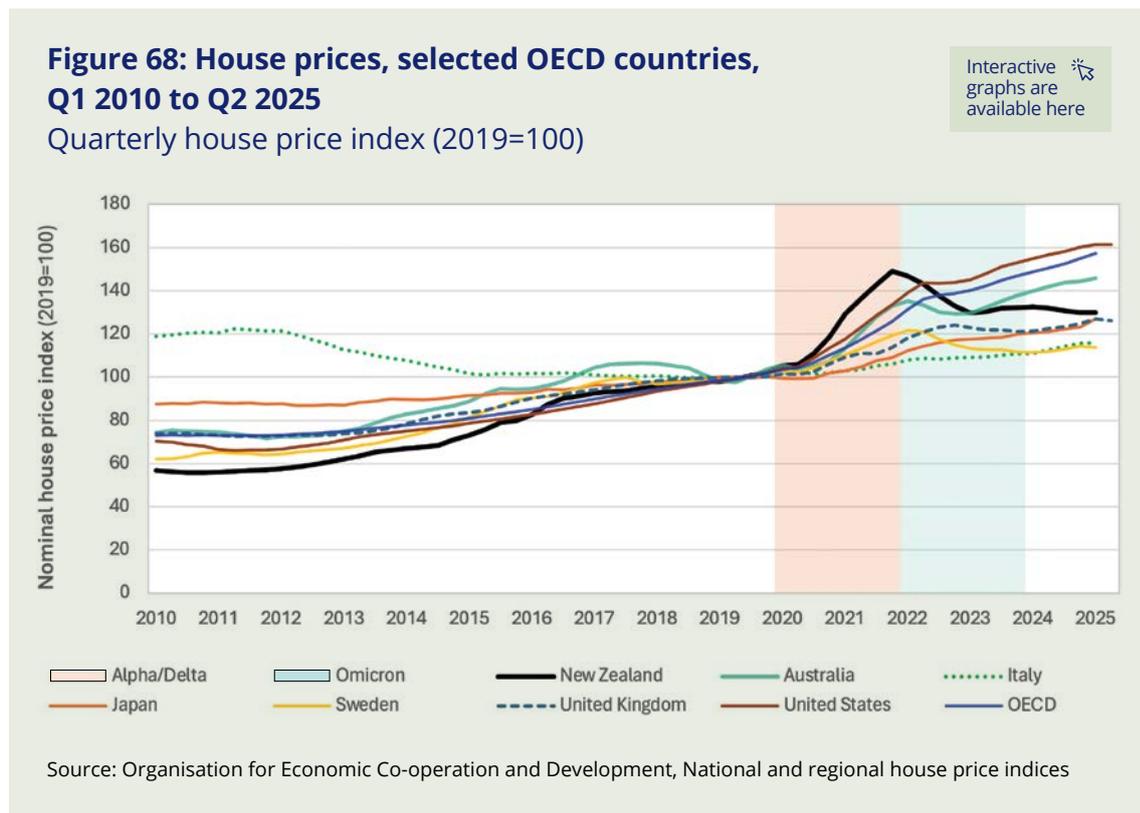
Interactive graphs are available here



Source: Organisation for Economic Co-operation and Development, 'Inflation(CPI)', <https://www.oecd.org/en/data/indicators/inflation-cpi.html>

House prices

While New Zealand experienced relatively low inflation in goods and services during 2020, there was inflationary pressure in the housing market. House prices surged between the middle of 2020 and the end of 2021 (Figure 68). New Zealand's house prices rose by one-third over this period, from an already high base.²⁴



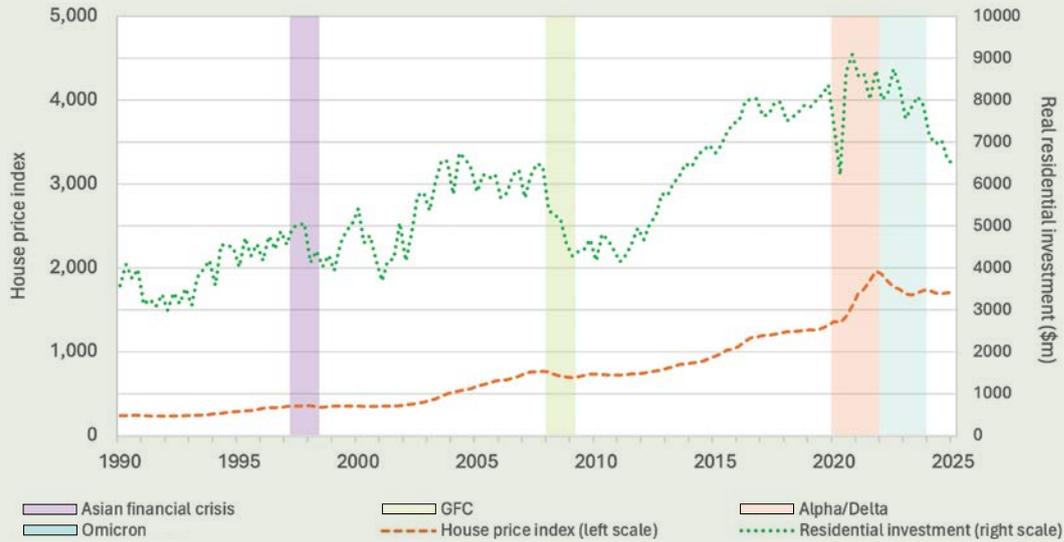
²⁴ See, for example, Demographia, 16th Annual Demographia International Housing Affordability Survey: 2020 (2020 Edition: Data from the 3rd Quarter 2019), <http://www.demographia.com/dhi2020.pdf>

Figure 69 shows that house price inflation during the COVID-19 pandemic was very different from preceding adverse economic shocks. Housing investment (that is, new builds and renovations) rose during the pandemic, after an initial dip. By contrast, housing investment fell substantially in both the Asian Financial Crisis and the Global Financial Crisis (GFC). Similarly, house prices jumped sharply during the pandemic, whereas they were static in the Asian Financial Crisis and fell during the GFC.

Figure 69: House prices and housing investment in New Zealand, Q1 1990 to Q1 2025

House price index and real residential investment (\$000s)

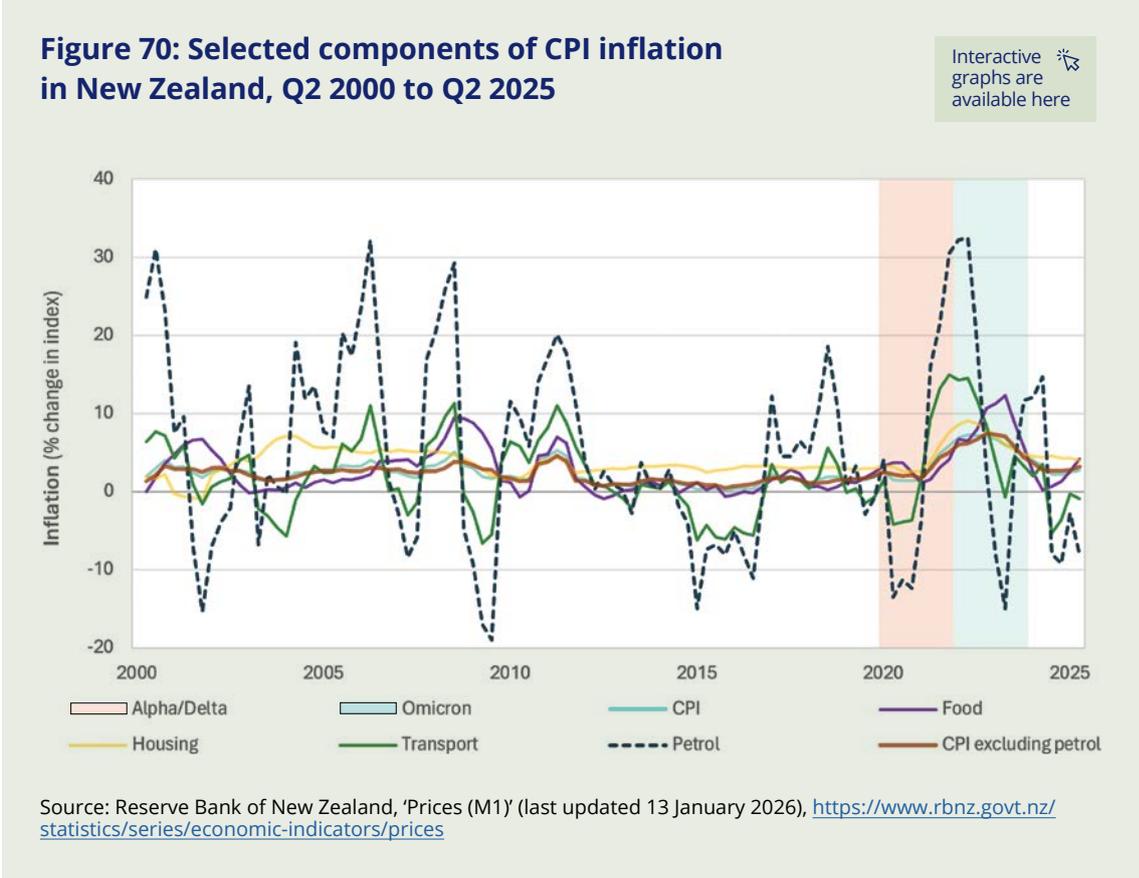
Interactive graphs are available here



Source: Reserve Bank of New Zealand, 'Housing (M10)' (last updated 13 January 2026), <https://www.rbnz.govt.nz/statistics/series/economic-indicators/housing>

Other components of inflation

Figure 70 provides further detail about the components of inflation in New Zealand. Transport prices, and petrol in particular, are typically highly cyclical; they were a major source of inflation (and deflation) during the pandemic. Petrol prices reflected fluctuating world oil prices, which fell in 2020 due to reduced demand as lockdowns were imposed across the world.

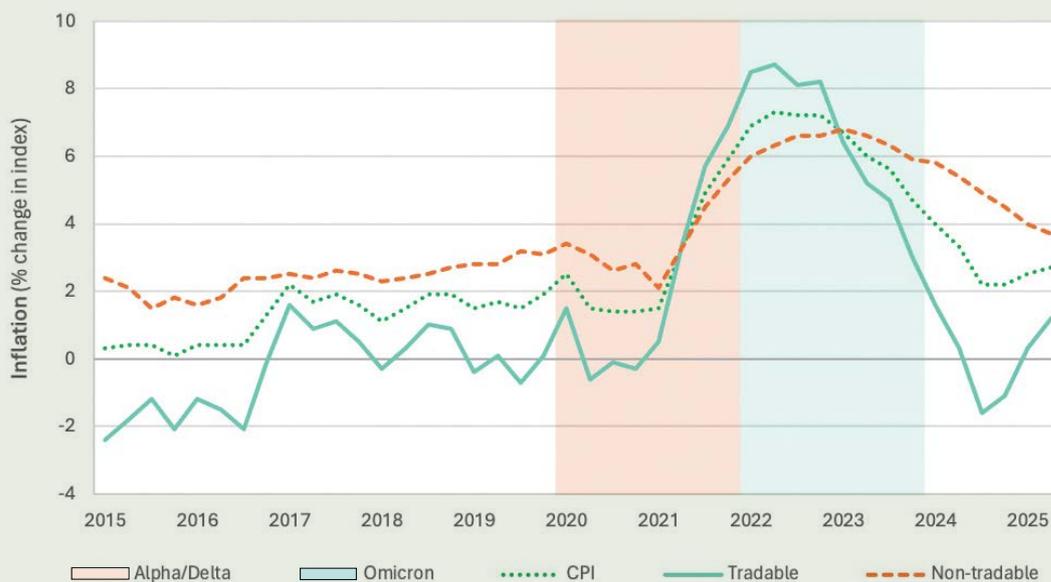


New Zealand's inflation was not solely a domestic phenomenon. Figure 71 separates the tradable and non-tradable components of goods and services inflation in New Zealand.

In the latter part of the previous decade, relatively cheap tradable goods and services (particularly imports) kept prices low for New Zealand consumers. In 2021, inflation in tradables surged ahead of non-tradables, driven in part by disruptions to international supply chains caused by the pandemic. Inflation in tradables then dropped to near zero, yet inflation in non-tradables has persisted through 2025.

Figure 71: Tradable and non-tradable components of CPI inflation in New Zealand, Q1 2015 to Q2 2025

Interactive graphs are available here



Source: Reserve Bank of New Zealand, 'Prices (M1)' (last updated 23 January 2026), <https://www.rbnz.govt.nz/statistics/series/economic-indicators/prices>

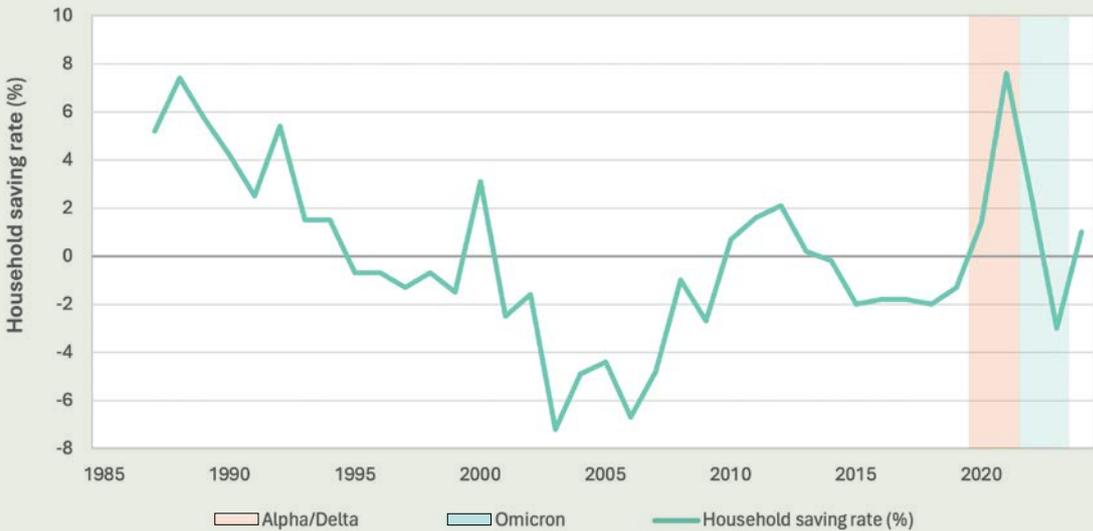
6.1.3 Savings | Penapena pūtea

When sales dropped sharply in 2020 and 2021 (see Figure 63), households entered a period of saving (Figure 72). This may have been either forced saving because of not being able to spend, or precautionary saving because of uncertainty about the future.

Figure 72: Household savings in New Zealand, 1987–2024

Household savings as a percentage of income

Interactive graphs are available here



Source: Reserve Bank of New Zealand, 'National saving – M6 (1972 – current)' (last updated 14 November 2025), <https://www.rbnz.govt.nz/statistics/series/economic-indicators/national-saving>

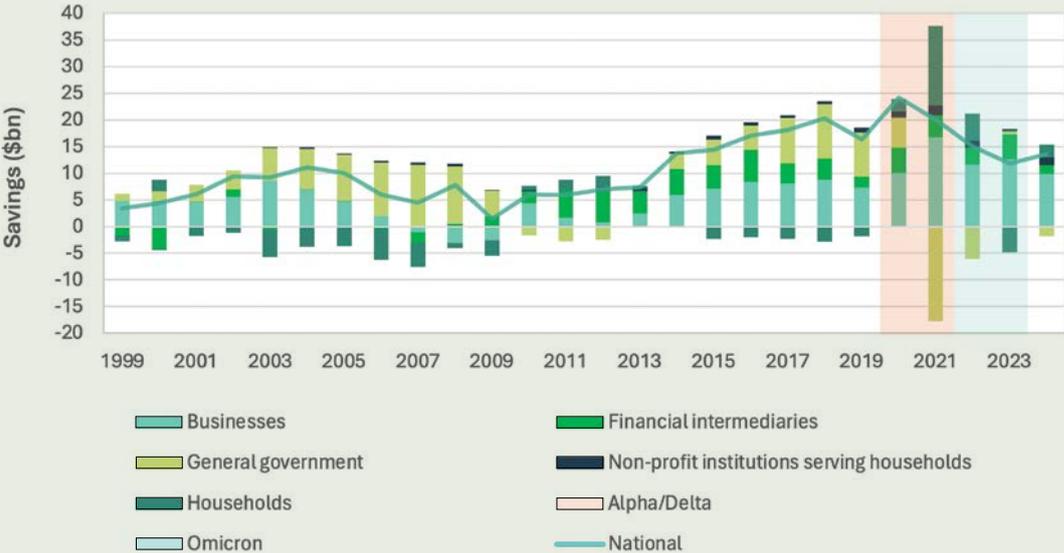
Note: Net saving is equal to gross household disposable income less household final consumption expenditure and consumption of fixed capital.

National savings – the sum of savings by organisations, households and government – also surged in 2020 (Figure 73). Business and household saving surged in 2021, but this was offset by government dissaving (that is, borrowing to cover expenses exceeding revenue) in 2021 and the following year. Government expenses had grown to finance the pandemic response and to fund other programmes intended to stimulate the economy more generally.

Figure 73: Components of total savings in New Zealand, 1999–2024

Savings (\$ billions)

Interactive graphs are available here



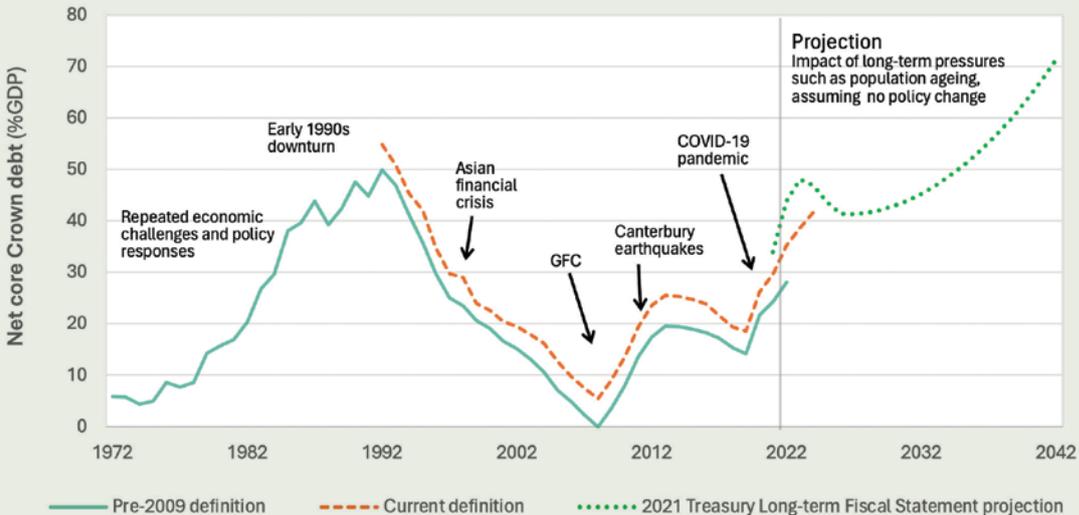
Source: Reserve Bank of New Zealand, 'National saving – M6 (1972 – current)' (last updated 14 November 2025), <https://www.rbnz.govt.nz/statistics/series/economic-indicators/national-saving>

6.1.4 Government debt | Te nama kāwanatanga

Government debt, as a proportion of GDP, fell from the early 1990s until 2008.²⁵ The Global Financial Crisis, followed by the Canterbury earthquakes, saw it climb over five years to around a quarter of GDP. From 2013, government debt fell again until the pandemic arrived in 2020 (Figure 74).

Figure 74: Net core Crown debt as a proportion of GDP in New Zealand, 1972–2042
 Actuals (per definitions used before and since 2009) and Treasury projections from 2022

Interactive graphs are available here



Source: The Treasury, Te Ara MokoPuna: Treasury Long-term Insights Briefing (August 2025)

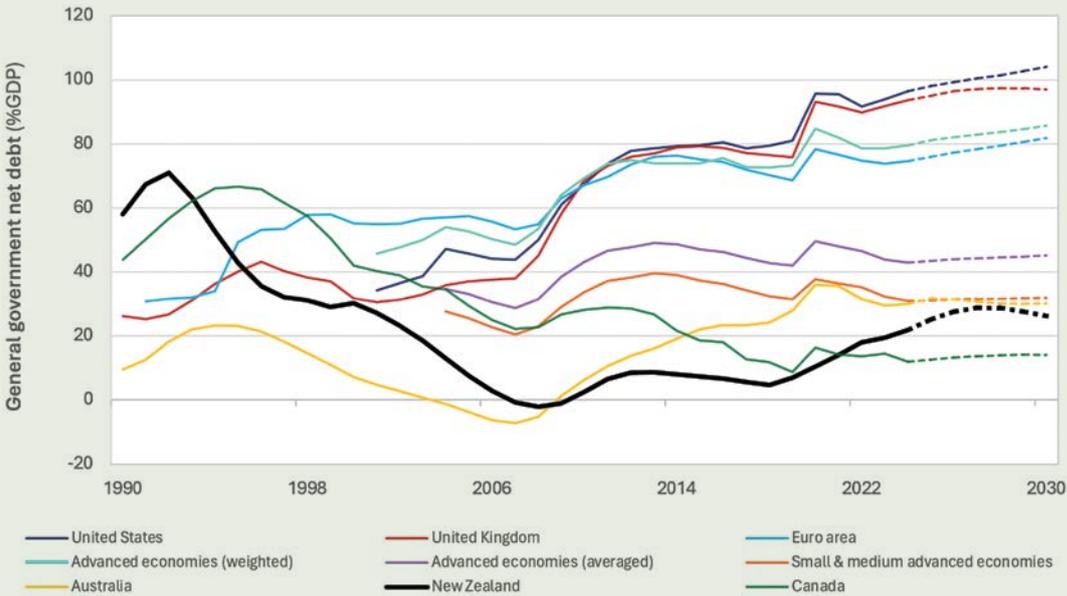
25 Net core Crown debt hit zero in 2008, according to the definition used at the time. It was 5.4% of GDP according to the current definition.

New Zealand’s general government net debt has been low by international standards for the past two decades (Figure 75). By contrast, Australia’s government debt has climbed consistently since 2007, and Canada is unusual in that it has seen its government debt fall substantially since 2010. New Zealand’s government debt remains lower than the average for advanced economies.

Figure 75: Government net debt as proportion of GDP, 1990–2030

Interactive graphs are available here

Actual and projected general government net debt as % of GDP, selected countries and groupings



Source: The Treasury, Te Ara Mōkōpuna: Treasury Long-term Insights Briefing (August 2025)

6.2 Businesses and COVID-19 | Ngā pakihī me te KOWHEORI-19

This section brings together a range of metrics and research on the impact of the pandemic on New Zealand businesses.

6.2.1 Sales, profitability and productivity | Te hokohoko, te huamoni me te māpua

Figure 76 shows business reporting of key metrics between 2007 and 2023, taken from the Business Operations Survey.²⁶ It indicates businesses' sales of goods and services, their profitability and productivity relative to their competitors, as well as their market share.

Sales, profitability and productivity usually move together, whereas market share tends to vary very little year on year. Falling sales mean that, all other things being equal, profitability falls, as some costs (like rents and servicing debt) do not tend to vary in the short run and so the gap between revenue and expenses declines. And if businesses have underutilised resources – capital sitting idle, or staff not working – their productivity will fall.

Businesses reported drops in sales, productivity and profitability in 2020 and 2021. As shown in Figure 63, there were sudden shocks to sales in those years, followed by bounce-backs.

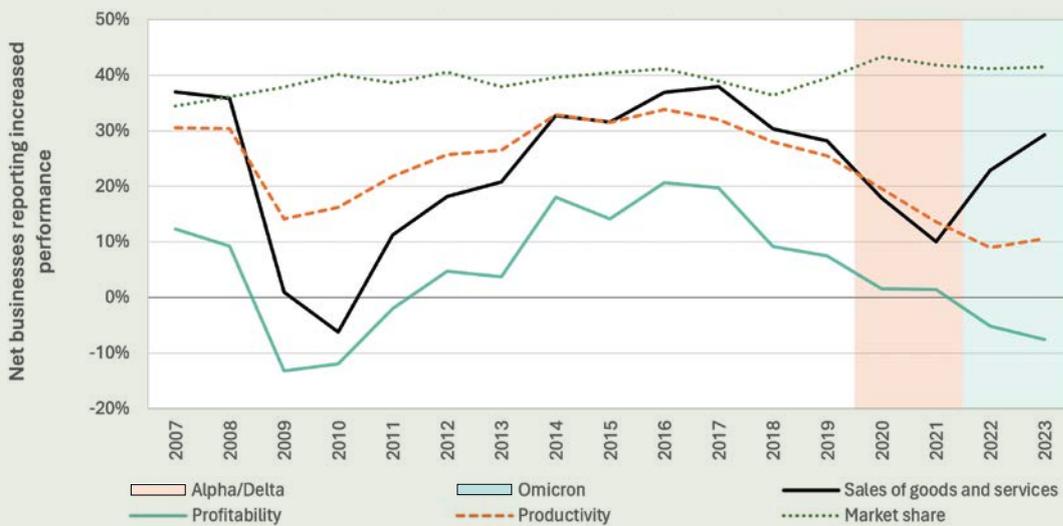
Sales, profitability and productivity moved together between 2007 and 2021. More businesses reported increasing sales after 2021, but there was no corresponding increase in the number of firms reporting increases in profitability or productivity in 2022 and 2023.

26 The Business Operations Survey has a response rate of above 80% and typically has about 10,000 responses representing around 50,000 firms. For more on and results from the Survey in New Zealand, see Productivity Commission, *Business by the numbers* (Wellington: New Zealand Productivity Commission, 2024), <https://www.treasury.govt.nz/sites/default/files/2024-05/pc-rp-nzpc-business-by-the-numbers-20240227.pdf>

Figure 76: Performance of New Zealand businesses

Percentage of businesses reporting an increase in performance less the percentage reporting a decrease, by indicator, 2007–2023

Interactive graphs are available here



Source: Stats NZ, Business Operations Survey

Notes:

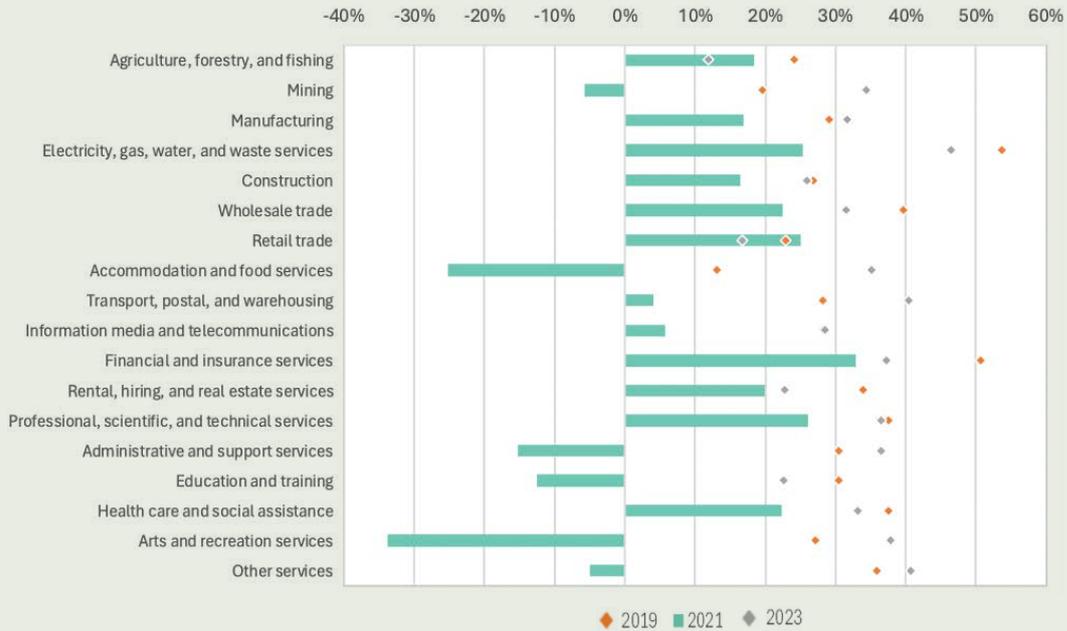
1. The Business Operations Survey samples businesses with six or more employees.
2. Businesses were asked for information about the most recent financial year that the business had results available. The data collection period is typically in the second half of the calendar year. For example, in 2023 it was from August to November. A typical 2023 response would have covered the financial year April 2022 to March 2023; other responses will cover different periods, depending on the respondent business's financial year end, and the availability of accounting data.
3. These results are not weighted by business size.

Public health restrictions affected different industries in different ways, as can be seen by the 2021 sales data in Figure 77. More businesses in the accommodation and food services, administrative and support services, arts and recreation services, mining and education and training sectors reported declining sales than increasing sales in 2021. This was not the case for any industry in 2019 or 2023.

Figure 77: Changes in sales by industry in New Zealand, in 2019, 2021 and 2023

Interactive graphs are available here

Percentage of businesses reporting increases in sales relative to decreases



Source: Stats NZ, Business Operations Survey
 Note: See notes for Figure 76.

6.2.2 Businesses and COVID-19 restrictions in 2020 | Ngā pakihi me ngā here KOWHEORI-19 i te tau 2020

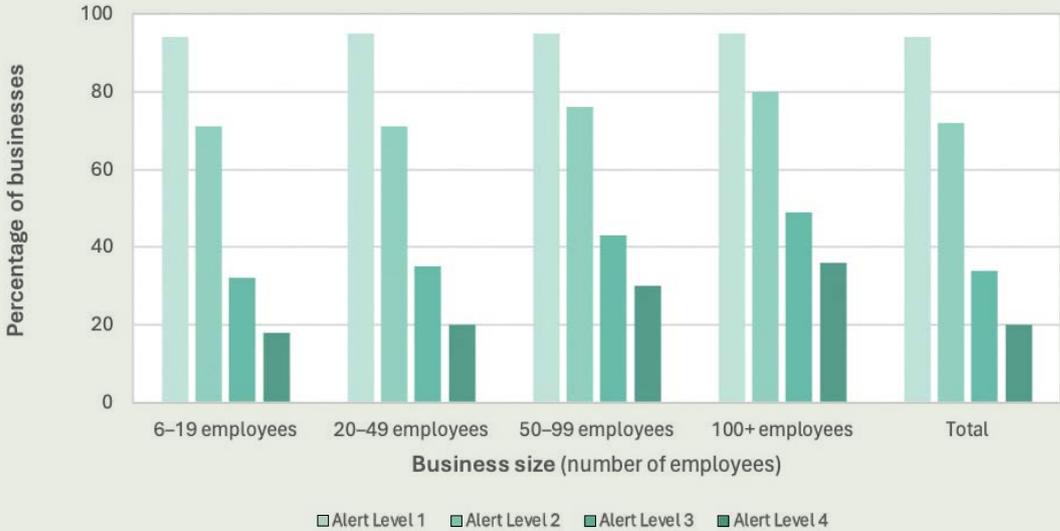
In 2020, the Business Operations Survey included COVID-19-specific questions. These questions were answered by businesses between August and December 2020.

The percentage of businesses that were fully operational fell as the stringency of public health measures increased. Only 20% of all businesses were fully operational at Alert Level 4 (that is, the most stringent lockdown measures). One-third (36%) of large businesses (with 100+ employees) were able to operate fully at Alert Level 4, whereas only 18% of smaller businesses (with 6–19 employees) could do so (Figure 78).

Figure 78: Businesses fully operating at different COVID-19 alert levels in New Zealand, 2020

Percentage of businesses reporting they were fully operational at each alert level

Interactive graphs are available here



Source: Stats NZ, Business Operations Survey.
 Note: The Business Operations Survey samples businesses with six or more employees.

More than half of businesses reported that their domestic suppliers were unable to deliver products to them, and close to half of businesses said that domestic suppliers were unable to produce materials, goods and services in 2020 (Figure 79). Businesses reported fewer disruptions with international suppliers.

Figure 79: Supply disruptions to New Zealand businesses, 2020

Interactive graphs are available here

Percentage of businesses reporting suppliers unable to produce or deliver materials, goods or services by level of disruption



Source: Stats NZ, Business Operations Survey.
 Note: The Business Operations Survey samples businesses with six or more employees.

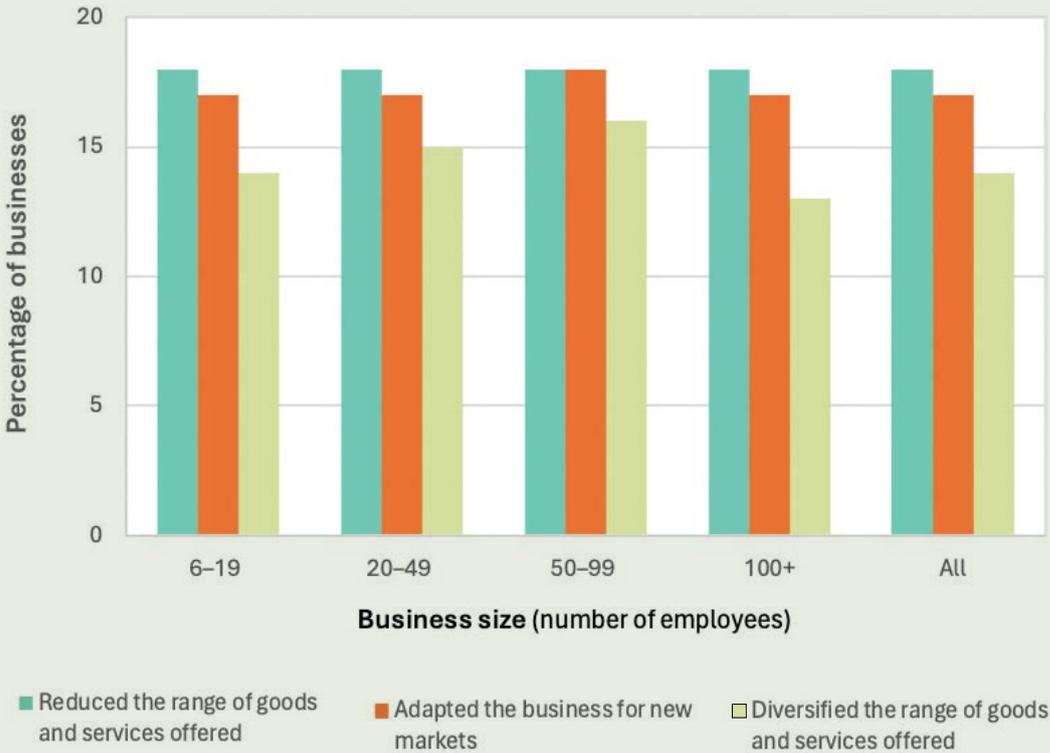
One way of adjusting to the impact of the pandemic and response was for businesses to change the mix of goods and services they offered. The most common response in 2020 was for businesses to reduce their range of goods and services (Figure 80).

Large firms (more than 100 employees) were less likely than other firms to report responding by diversifying the range of goods and services they offered.

Figure 80: Product-range and market responses by New Zealand businesses to COVID-19 restrictions, 2020

Percentage of businesses which reported implementing specified product-range and market measures by business size

Interactive graphs are available here



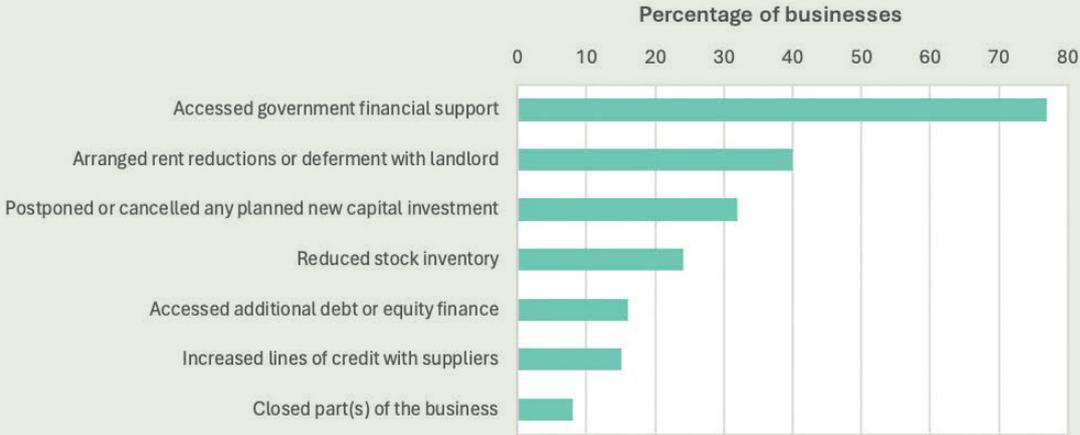
Source: Stats NZ, Business Operations Survey.
 Note: The Business Operations Survey samples businesses with six or more employees.

Businesses also made financial and employment responses to the public health restrictions. The most common financial response was to seek financial support from government programmes such as the Wage Subsidy Scheme. Three-quarters (77%) of businesses reported accessing government financial support. The next-most commonly reported financial response was to arrange a rent reduction or deferment with their landlord – 40% of businesses reported doing so (Figure 81).

Figure 81: Financial responses by New Zealand businesses to COVID-19 restrictions, 2020

Percentage of businesses which reported implementing specified financial measures

Interactive graphs are available here

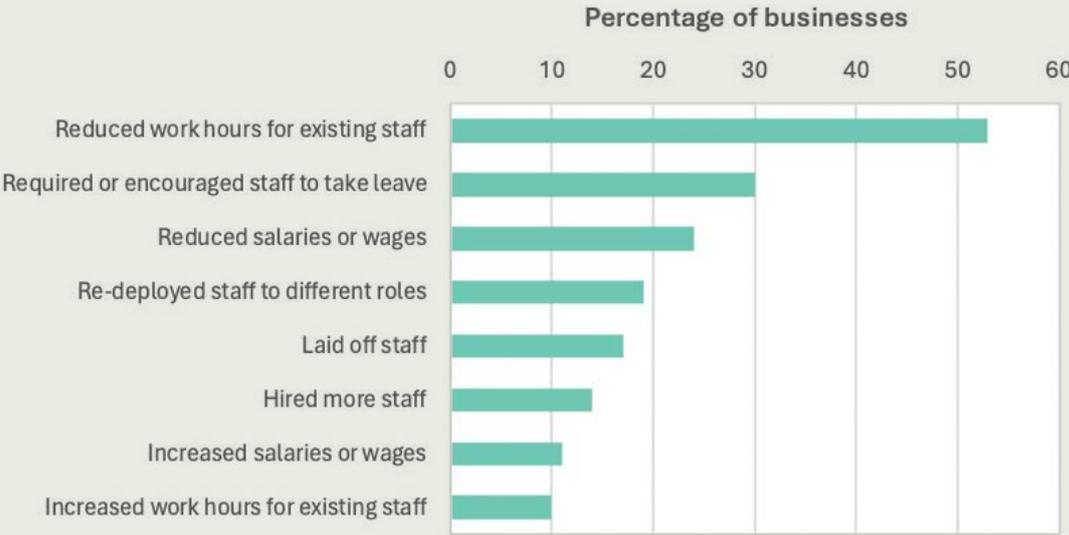


Source: Stats NZ, Business Operations Survey.
 Note: The Business Operations Survey samples businesses with six or more employees.

In terms of employment responses, more than half (53%) of businesses in 2020 reduced work hours for their existing workforce, and 30% required or encouraged their workers to take paid or unpaid leave (Figure 82). The survey revealed that larger businesses undertook a wider set of employment responses than smaller firms.

Figure 82: Employment responses by New Zealand businesses to COVID-19 restrictions, 2020
Percentage of businesses which reported implementing specified employment responses

Interactive graphs are available here



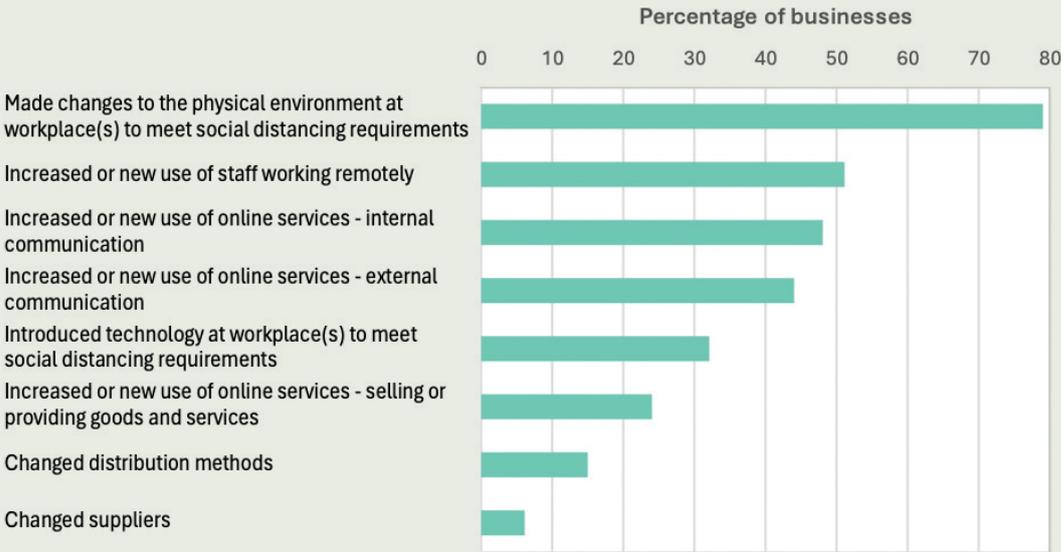
Source: Stats NZ, Business Operations Survey.
Note: The Business Operations Survey samples businesses with six or more employees.

The public health measures forced many firms to change their business processes. The most common change (79%) made by businesses was to the physical environment of their workplaces to allow social distancing (for example, moving desks further apart). Just over half (51%) of businesses increased, or made new use of, remote work for their employees (Figure 83). As with their employment responses to public health restrictions, larger businesses implemented a wider range of business process changes than smaller businesses.

Figure 83: Process responses by New Zealand businesses to COVID-19 restrictions, 2020

Percentage of businesses which reported implementing specified process responses

Interactive graphs are available here



Source: Stats NZ, Business Operations Survey.
 Note: The Business Operations Survey samples businesses with six or more employees.

6.2.3 The impact of lockdowns on Auckland firms | Ngā pānga o ngā rāhui ki ngā pakihi o Tāmaki Makaurau

The Commission conducted research into the impact of region-specific lockdowns on firms in Auckland.²⁷ Auckland spent close to four months longer in lockdown than most of New Zealand, following on from the nationwide lockdown that started in August 2021. We examined lost sales revenue for Auckland firms using similar Christchurch firms as a counterfactual. The sales revenue was estimated using Goods and Services Tax (GST) data.

Raw sales in both Auckland and Christchurch suggest that the 2020 national lockdown had the greatest impact on both regions and, by implication, the rest of New Zealand (Figure 84). The economic impact of the 2021 national lockdown was smaller than that of the 2020 lockdown. This is consistent with the lower uptake of the Wage Subsidy Scheme (WSS) during the 2021 lockdown (noting that eligibility criteria had also tightened).

While sales fell for both sets of firms in late 2021, Auckland firms shifted from having roughly 4% (0.4 log points) higher sales than similar Christchurch firms in July 2021 to around 8% less than them in September. We do not know what the impact on Auckland firms would have been if COVID-19 had spread in the absence of a lockdown.

²⁷ See the Appendix for the disclaimer that applies to this research, and for further information on the methodology used.

Figure 84: Comparison of sales by Auckland and Christchurch firms

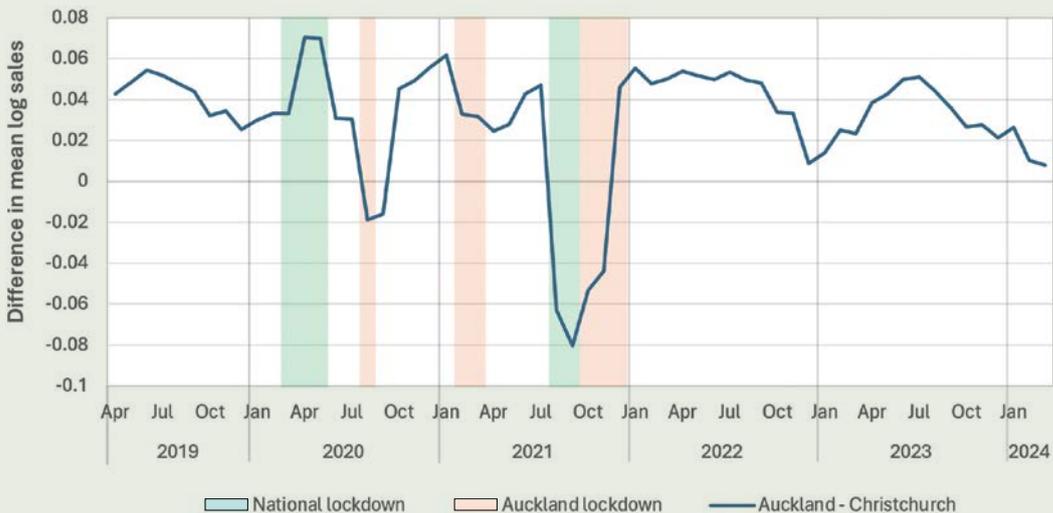
Interactive graphs are available here

Monthly sales from GST data, for firms with positive sales in that month, levels (panel (a)) and differences (panel (b)), April 2019 to March 2024

(a) Auckland and Christchurch firms' sales



(b) Auckland firms' sales relative to Christchurch firms



Source: Royal Commission Phase Two analysis of Stats NZ Longitudinal Business Database

Notes:

1. In panel (b), a positive difference means that Auckland firms had higher sales in that month than matched Christchurch firms, and a negative means lower sales.
2. Restricted to firms with positive sales recorded in their GST returns in the month. Christchurch firms weighted using match weights.
3. Shading reflects months with national (green) or Auckland-specific (orange) lockdowns.

We also looked at the distribution of impacts across Auckland firms. We split industries (and the firms within them) according to their initial uptake of the WSS. Table 5 sets out this split, distinguishing between ‘low impact’ and ‘high impact’ industries, where low and high refer to the relative extent to which firms in those industry subdivisions claimed the wage subsidy.

Table 5: Initial uptake of Wage Subsidy Scheme by industry classification
Low- and high-impact industries, as defined by WSS uptake by firms in those industries

Code	Industry classification	WSS uptake	Impact
A01	Agriculture	0.239	Low
K62	Finance	0.363	Low
M70	Computer system design & related services	0.365	Low
L67	Property operators & real estate services	0.459	Low
K64	Auxiliary finance & insurance services	0.505	Low
A05	Agriculture, forestry & fishing support services	0.505	Low
M69	Professional, scientific & technical services	0.554	Low
Q85	Medical & other health care services	0.554	Low
S94	Repair & maintenance	0.777	High
C22	Fabricated metal product manufacturing	0.779	High
E30	Building construction	0.782	High
P80	Preschool & school education	0.785	High
E32	Construction services	0.794	High
C14	Wood product manufacturing	0.791	High
C20	Non-metallic mineral product manufacturing	0.792	High
H45	Food & beverage services	0.800	High
S95	Personal & other services	0.804	High
I46	Road transport	0.816	High

Source: Royal Commission Phase Two analysis of the Stats NZ Longitudinal Business Database

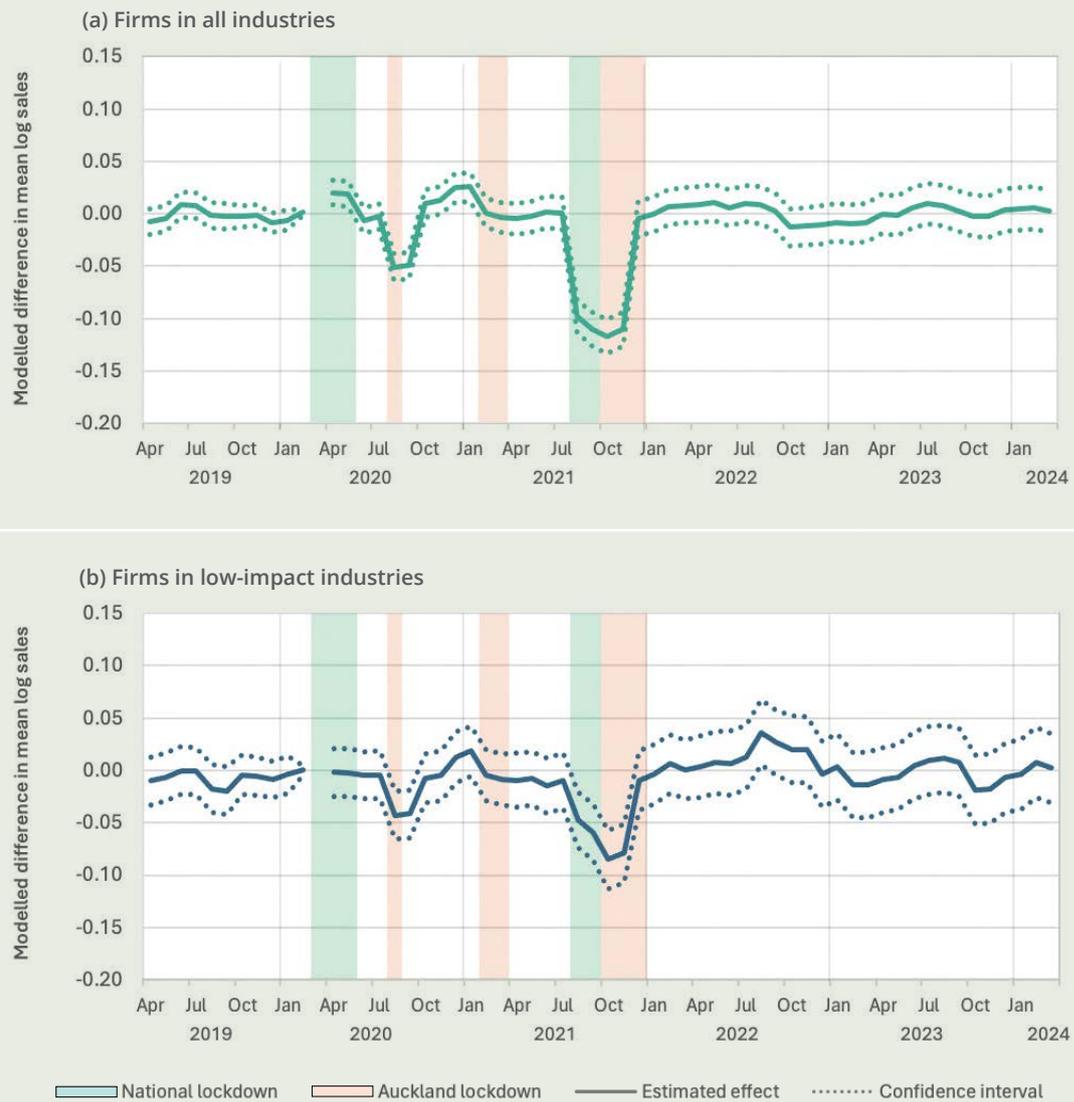
Notes: Classification of low/high-impact industries based on initial industry-level COVID-19 Wage Subsidy Scheme uptake rate. Christchurch firms weighted using match weights. Moderate-impact industries not shown.

Figure 85 sets out the estimated effect on Auckland firms’ sales, relative to Christchurch firms. The effect is shown for all firms (panel (a)), and separately for firms in low- and high-impact industries (panels (b) and (c) respectively). The effects of the Auckland lockdown were unevenly spread. As would be expected, Auckland firms in industries that had made more use of the WSS experienced larger declines in sales during the Auckland lockdown than their matched Christchurch counterparts.

Figure 85: Modelled difference in sales for similar Auckland and Christchurch firms

Adjusting for observed differences in firm characteristics, April 2019 to March 2024

Interactive graphs are available here



continued on next page



Source: Royal Commission analysis of the Stats NZ Longitudinal Business Database

Notes:

1. A positive difference means that Auckland firms had higher sales in that month than did matched Christchurch firms, and a negative difference means lower sales.
2. Christchurch firms weighted using match weights.
3. Shading reflects months with national (green) or Auckland specific (red) lockdowns.
4. Estimated using month-specific OLS with controls for firm characteristics. Dotted lines are 95% confidence interval for estimated effects (robust standard errors).

The study focused on monthly sales revenue, and did not consider the effect of the lockdowns on indebtedness, job turnover or profitability, which could have longer-term and persistent effects on firm survival.

Research into other economically-disruptive events in New Zealand provides an indication of the severity of the lockdowns on high-impact industries. For example, the immediate effects on sales for those firms in Canterbury affected by the Canterbury earthquakes was slightly smaller than those estimated for Auckland firms during lockdowns, although the negative effects persisted longer following the earthquakes.²⁸

6.2.4 Firm creation and exit | Te whakatūnga pakihi me te putanga

Thousands of firms enter and exit the economy every year. Firm exits tend to be more visible when business conditions are tough. However, often the main driver of declining numbers of firms is the drop-off in new firms entering the economy. As the economy looks bleaker, and expectations become more negative, people are less likely to risk starting a business, or they find it harder to obtain the necessary financing. This occurred during the Global Financial Crisis, where there was a long decline in the number of firms entering the New Zealand economy from 2009 through to 2010.

Similarly, the overall number of firms in New Zealand fell during 2020, driven by a decline in the number of new firms entering the economy. The number of firm exits climbed slowly during 2020 and into the first part of 2021, before declining once more (Figure 86).

28 See, for example, Richard Fabling, Arthur Grimes and Levente Timar, 'Natural selection: Firm performance following the Canterbury earthquakes', Motu Working Paper 14-08 (Wellington: Motu Economic and Public Policy Research 2014), https://motu-www.motu.org.nz/wpapers/14_08.pdf
Richard Fabling, Arthur Grimes and Levente Timar, 'Natural selection: Firm performance following a catastrophic earthquake' in Kamila Borsakova and Peter Nijkamp (eds), *Resilience and urban disasters* (Cheltenham: Edward Elgar Publishing, 2019), pp 30–50
Richard Fabling, Arthur Grimes and Levente Timar, 'Emigration and employment impacts of a disastrous earthquake: country of birth matters'. *Regional Studies*, Volume 57, Issue 12 (2023), 2491–2502.

Figure 86: New Zealand firms, entries and exits

Total number of firms, and 12-month rolling average of firm entries and exits, January 2000 to August 2025

Interactive graphs are available here



Source: Stats NZ, Business Count Indicators

Note: Entries and exits averaged over the current and prior 11 months.

The Global Financial Crisis saw large increases in the numbers of firms going into liquidation, administration or receivership. By contrast, these numbers either fell or stabilised in the first two years of the pandemic, before beginning to grow in 2022 (Figure 87).

Figure 87: Company liquidations, voluntary administration and receiverships in New Zealand
 12-month counts, January 2002 to December 2025

Interactive graphs are available here



Source: Companies Office, 'Latest company statistics', <https://www.companiesoffice.govt.nz/insights-and-articles/latest-company-statistics/>

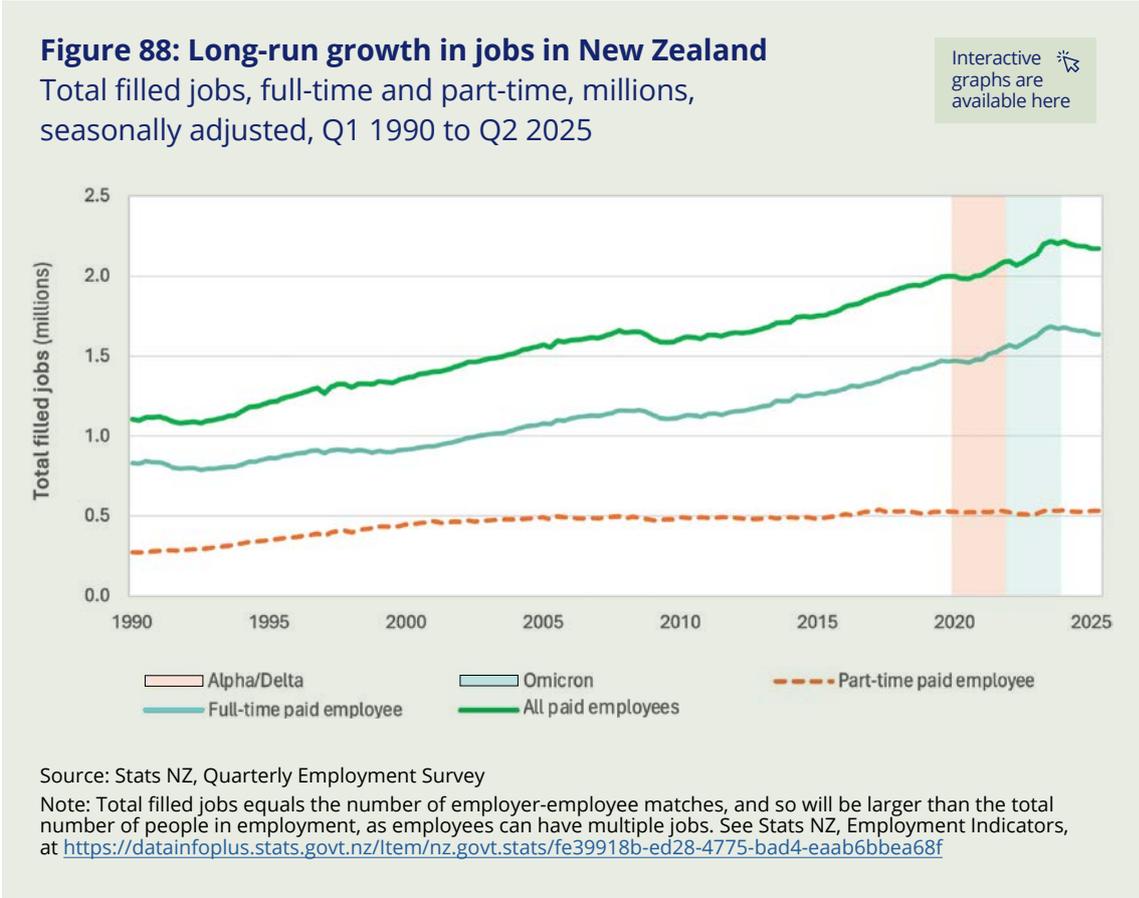
Note: Graph shows monthly data on the total number of companies going into liquidation, voluntary administration and receivership over the previous 12 months.

6.3 The labour market | Te kāhui kaimahi

One of the great concerns at the onset of the COVID-19 pandemic was that it would lead to high levels of unemployment, due to falling business revenues as people voluntarily avoided contact with others or were prevented from working and shopping by public health measures. This was ultimately not the case, due in part to the Government’s financial support policies (discussed below in chapter 7).

6.3.1 The pandemic had a minor impact on the number of jobs | He iti noa te pānga o te mate urutā ki te maha o ngā tūranga mahi

The number of filled jobs grew consistently between 2010 and 2019 but fell slightly in the second and third quarters of 2020 (Figure 88).²⁹ Jobs grew over the next three years, reaching an all-time peak of 2.215 million in the third quarter of 2023.



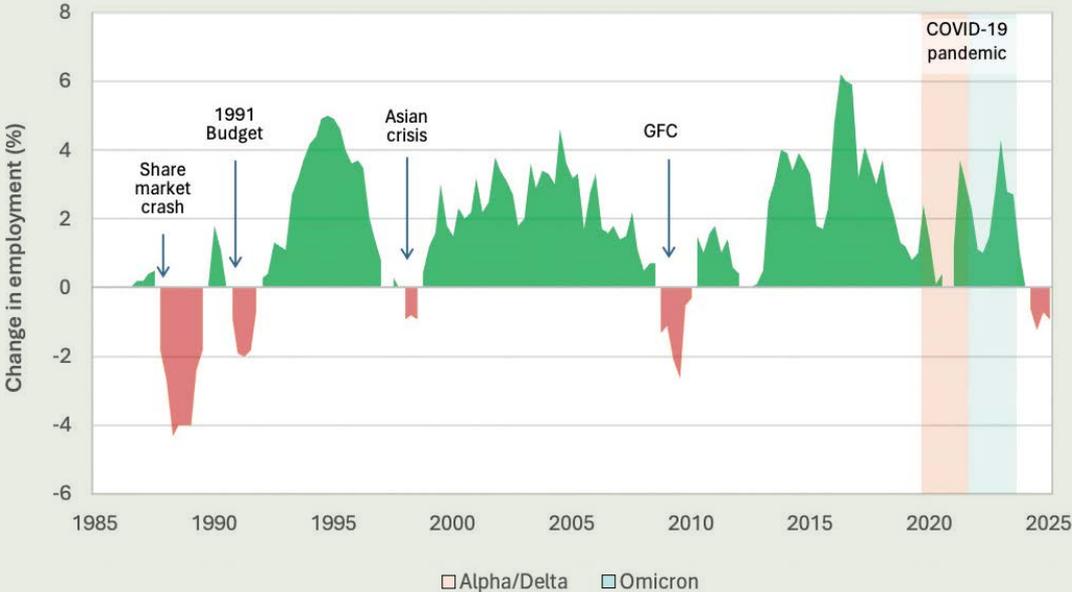
29 Note that because workers can have more than one job, 'total filled jobs' will be slightly higher than the number of people employed. These data are derived from surveys, so a small increase or decline may not reflect reality.

Compared with other economic shocks New Zealand has experienced over the past 40 years, the COVID-19 pandemic did not have a major impact on overall employment (Figure 89).

Figure 89: Economic shocks and change in employment in New Zealand

Interactive graphs are available here

Percentage change in people employed from same quarter previous year, Q1 1987 to Q2 2025



Source: Stats NZ, Household Labour Force Survey

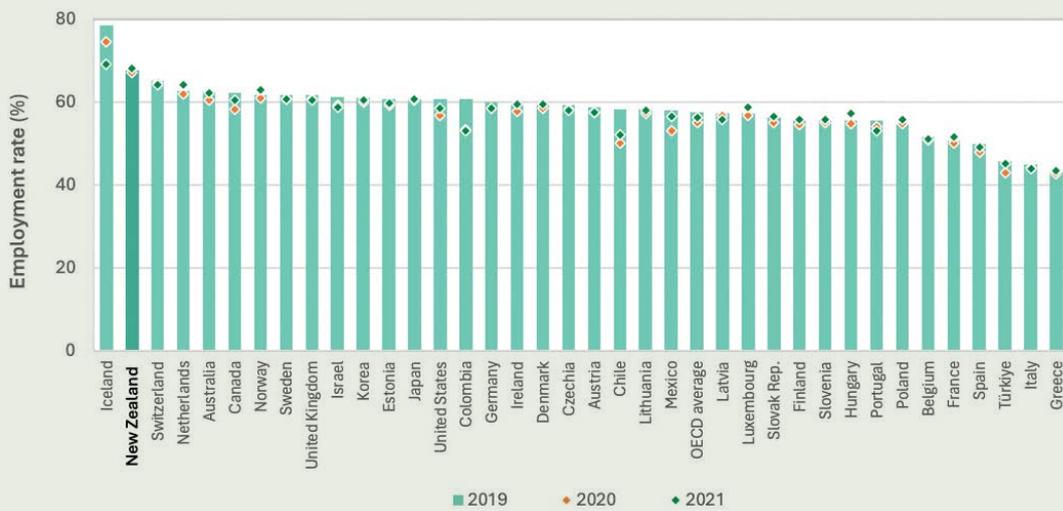
International comparison

Historically, New Zealand has had high rates of employment as a share of its working-age population compared with other OECD countries. This continued through the pandemic (Figure 90).

Figure 90: Employment rates across the OECD

Employment as a percentage of the working age population, 2019–2021

Interactive graphs are available here



Source: Organisation for Economic Co-operation and Development Data Explorer

6.3.2 Hours worked declined during the pandemic | I heke ngā hāora mahi i te wā o te mate urutā

Figure 82 reported results from the Business Operations Survey showing that businesses responded to COVID-19 restrictions by reducing the numbers of hours worked by their existing staff.

This can be seen at the aggregate level in Figure 91, in the context of other economic shocks.

Figure 91 shows results from the Household Labour Force Survey, covering the impact of COVID-19 and the government response on employment and hours worked. It shows an upward trend in the seasonally adjusted number of people employed (orange dashed line) and the hours they worked (green line).

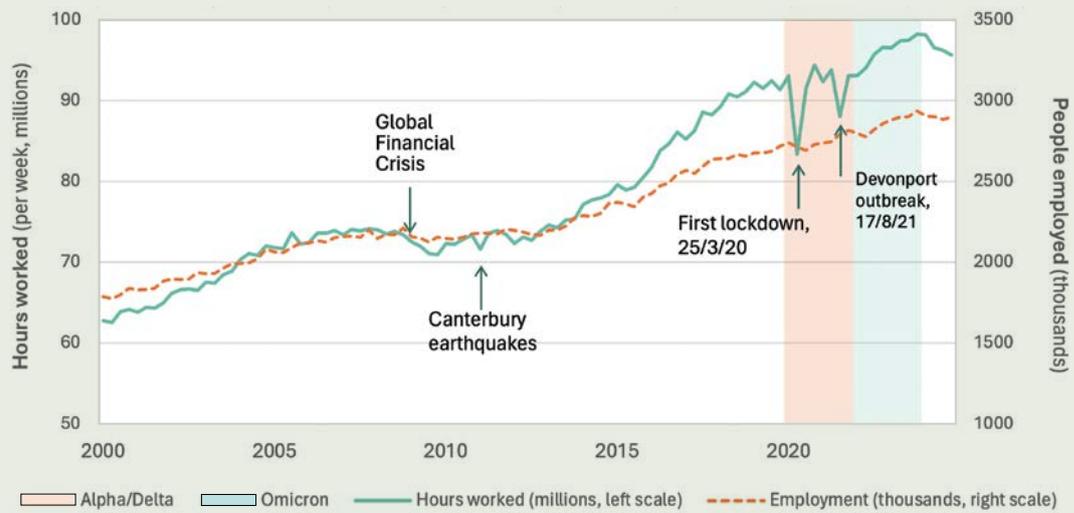
The initial lockdown, which started on 26 March 2020, resulted in a large drop in actual hours worked – over 9 million hours (per week). Because of government financial support, the impact on numbers employed was small. Hours worked bounced back in the third quarter – although not completely, because of a second outbreak in Auckland in August 2020. Hours worked returned to trend levels in the last quarter of 2020. The Auckland lockdown, starting in August 2021, resulted in a drop of over 6 million hours worked.

These fluctuations in hours worked (green line) are substantially greater than those seen for the Global Financial Crisis and the Canterbury earthquakes. However, the overall impact of COVID-19 on employment was more muted than for those events.

Figure 91: Hours worked and employment in New Zealand

Weekly hours worked per week and employment, quarterly, seasonally adjusted, Q1 2000 to Q4 2024

Interactive graphs are available here



Source: Stats NZ, Household Labour Force Survey

6.3.3 Employment by age, occupation and industry | Te whai mahi mā te pakeke, te momo mahi me te rāngai

Although overall employment growth during the pandemic was strong, employment outcomes varied depending on worker age, occupation and industry.

Employment of young workers (that is, those aged 15–24) fell in 2020, possibly reflecting that this cohort was overrepresented in industries that were particularly affected by lockdowns (for example, retail trade, accommodation and hospitality). Employment of workers aged 65 over also dropped in 2020. Employment in both younger and older age groups rebounded in 2021 (Figure 92).

Figure 92: Change in employment by age group in New Zealand

Interactive graphs are available here

Change in employment relative to same quarter previous year by age group, Q2 2017 to Q2 2025



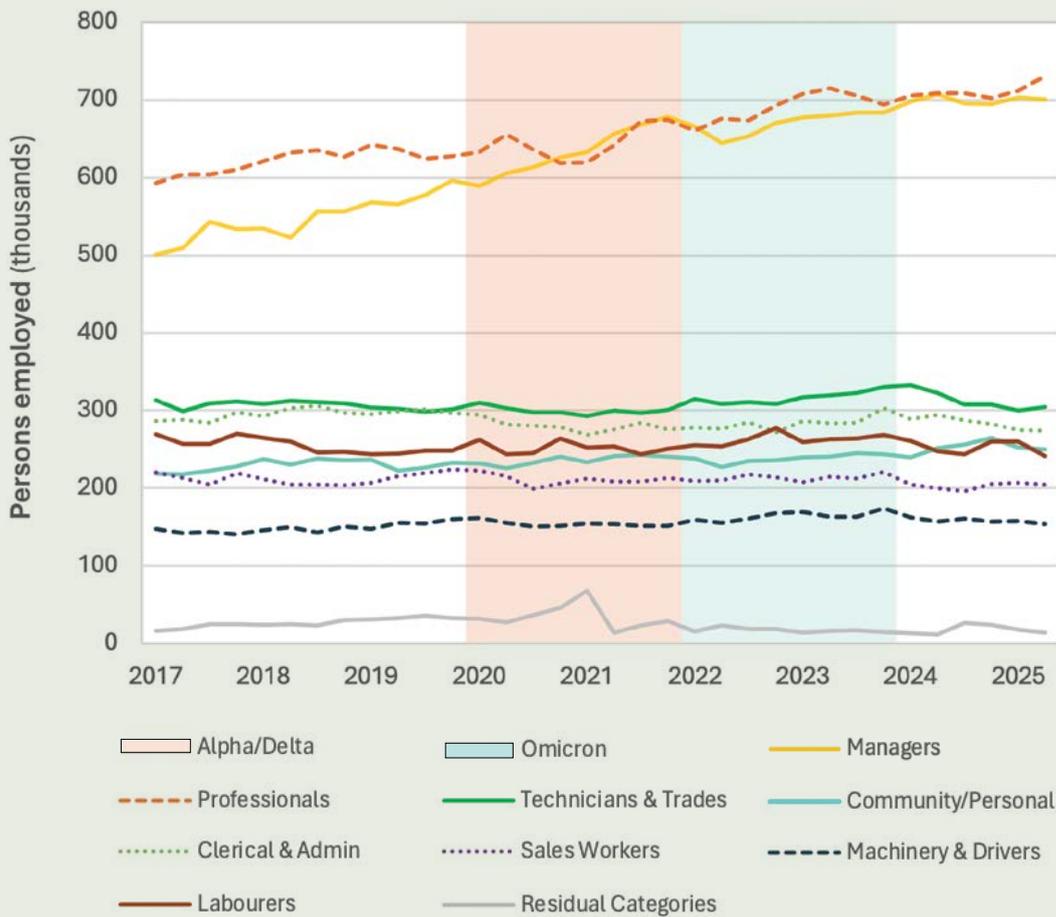
Source: Stats NZ, Household Labour Force Survey

The pandemic did not disrupt the distribution of occupations within the New Zealand labour market. Professionals and managers remained the two largest occupational groups. Growth in both groups continued during and after the pandemic, albeit with temporary variations (Figure 93).

Figure 93: Occupational makeup of the New Zealand workforce

Persons employed by occupational category (000s), Q1 2017 to Q2 2025

Interactive graphs are available here



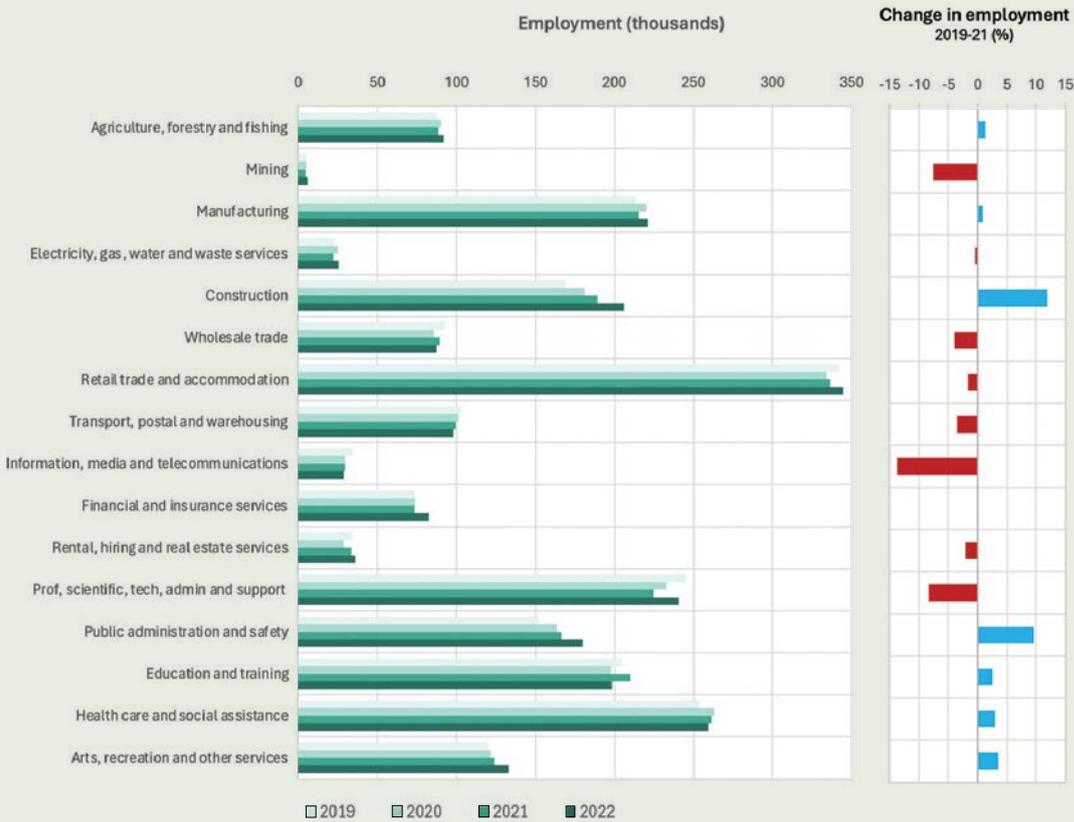
Source: Stats NZ, Household Labour Force Survey

Retail trade and accommodation is the largest-employing industry in New Zealand, with over 300,000 employees. This industry saw a big drop in employment in 2020, but this rebounded in 2021 and 2022 (Figure 94). Information, media and telecommunications saw the largest proportional drop in employment.

Employment in construction grew every year between 2019 and 2022. Employment in the industries in which government is the main employer (for example, public administration and safety, health care and social assistance) also grew over the period 2019–2021.

Figure 94: Employment by industry in New Zealand
 Employment (000s) 2019–2022, and change in employment (%) 2019–2021

Interactive graphs are available here



Source: Stats NZ, Household Labour Force Survey

6.3.4 Recruitment became easier in 2020, then harder in 2021 and 2022 | I māmā ake te kimi kaimahi i te tau 2020, ā, i uaua ake i 2021 me 2022

Firms found it easier to find new employees in 2020, but harder in 2021 and 2022. Close to 60% of firms in 2022 reported severe difficulty hiring tradespeople and related workers such as apprentices, and a further 30% reported moderate difficulty (Figure 95).

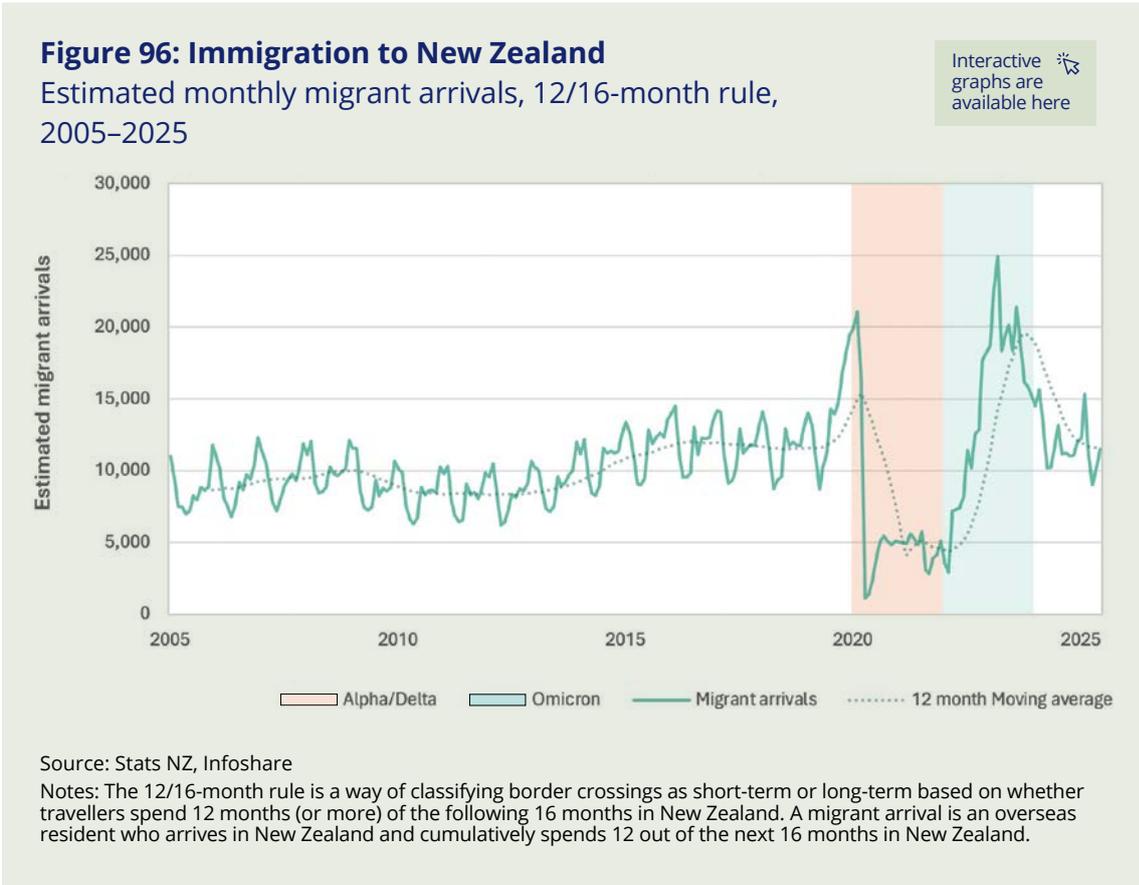


6.3.5 Migration | Te hekenga tāngata

Disruptions to migration flows contributed to the increased difficulty in hiring in 2021 and 2022 (see Figure 95).

New Zealand closed its border to non-citizens and non-residents from 2020 to 2022 and required arriving travellers to enter managed isolation and quarantine (MIQ). The closure was announced on 19 March 2020, taking immediate effect. Only those who qualified for ‘border exceptions’ were able to enter New Zealand.³⁰

Prior to the pandemic, net monthly migrant arrivals had been positive and rising from the mid-2010s, reaching a peak of over 20,000 just before the border was closed. With the closure of the border, net monthly arrivals initially fell to just over 1,000 before settling at around 5,000 until the staged reopening of international travel in 2022. Migrant arrivals then jumped to around 25,000, before moving back towards longer-term trends (Figure 96).



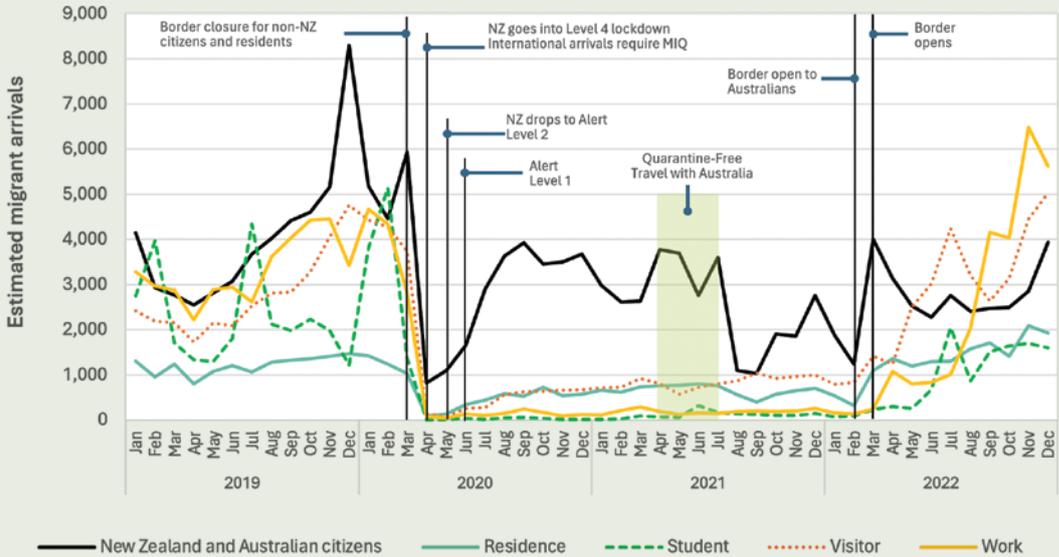
30 NZ Royal Commission of Inquiry into COVID-19 Lessons Learned: Phase One, Main Report (2024), Part 2 Section 4.2.1, <https://www.covid19lessons.royalcommission.nz/reports-lessons-learned/main-report/part-two/4-2-what-happened>

During the period of the border closure, most arrivals were Australian or New Zealand citizens. This reflected that New Zealand citizens (and permanent residents) and Australian citizens (and permanent residents) ordinarily resident in New Zealand were the majority qualifying for border exceptions. Additionally, quarantine-free travel between Australia and New Zealand was possible for a brief period during 2021 (Figure 97).

Figure 97: Migrant arrivals by citizenship or visa type into New Zealand, 2019–2022

Interactive graphs are available here

Estimated monthly migrant arrivals, 12/16-month rule



Source: Stats NZ, NZ Royal Commission of Inquiry into COVID-19 Lessons Learned: Phase One Main Report (2024)

Notes:

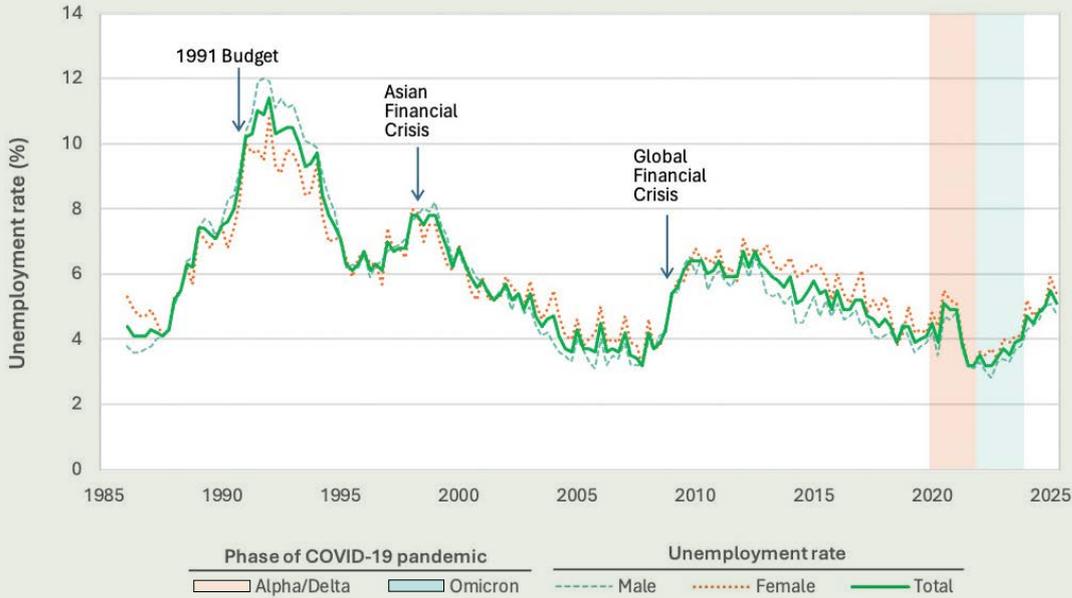
1. The 12/16-month rule is an overseas resident who arrives in New Zealand and cumulatively spends 12 out of the next 16 months in New Zealand. Data points placed on first day of month for all events.
2. Some seasonal and temporary workers arrived between April 2020 and April 2022, and they may have stayed long enough to meet the 12/16-month rule.

6.3.6 Unemployment | Te kore mahi

Unemployment increased in the aftermath of the first national lockdown, reaching 5.0% in the third quarter of 2020 (Figure 98). It then fell to 3.2% at the end of 2021 and remained low over the following year. Unemployment during and since the pandemic had not reached the peaks that followed the GFC and earlier economic crises.

Figure 98: Economic shocks and unemployment
 Percentage unemployed, Q1 1985 to Q2 2025

Interactive graphs are available here



Source: Stats NZ, Household Labour Force Survey

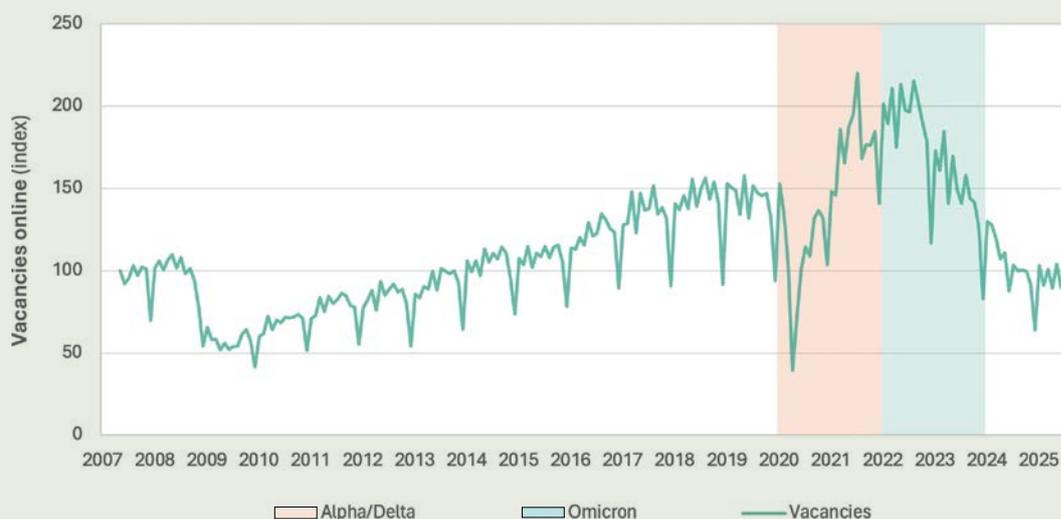
Vacancies

Job vacancies during the pandemic fell in 2020, perhaps reflecting initial uncertainty about the economic impact of COVID-19. However, they quickly rebounded, reaching their highest levels in August 2022 (Figure 99). Vacancies subsequently declined, before plateauing in 2024–2025.

Figure 99: Online job vacancies in New Zealand

Jobs Online index, May 2007=100, January 2007 to January 2025

Interactive
graphs are
available here



Source: Ministry of Business, Innovation and Employment, Jobs Online monthly data release

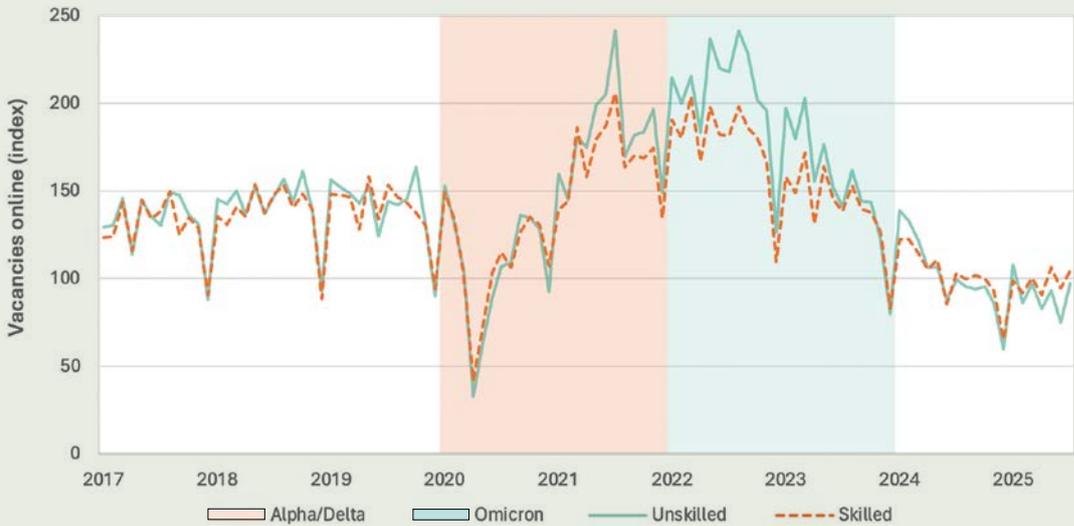
Note: Jobs Online is a regular data series that measures changes in online job advertisements from four internet job boards – Seek, Trade Me Jobs, Education Gazette and Kiwi Health Jobs.

Demand for unskilled workers grew particularly quickly over 2021–2023 (Figure 100). Because of the border closure, there was limited immigration for work purposes during this period (see Figure 97).

Figure 100: Online job vacancies for skilled and unskilled workers

Jobs Online index, May 2007=100, January 2017 to January 2025

Interactive graphs are available here

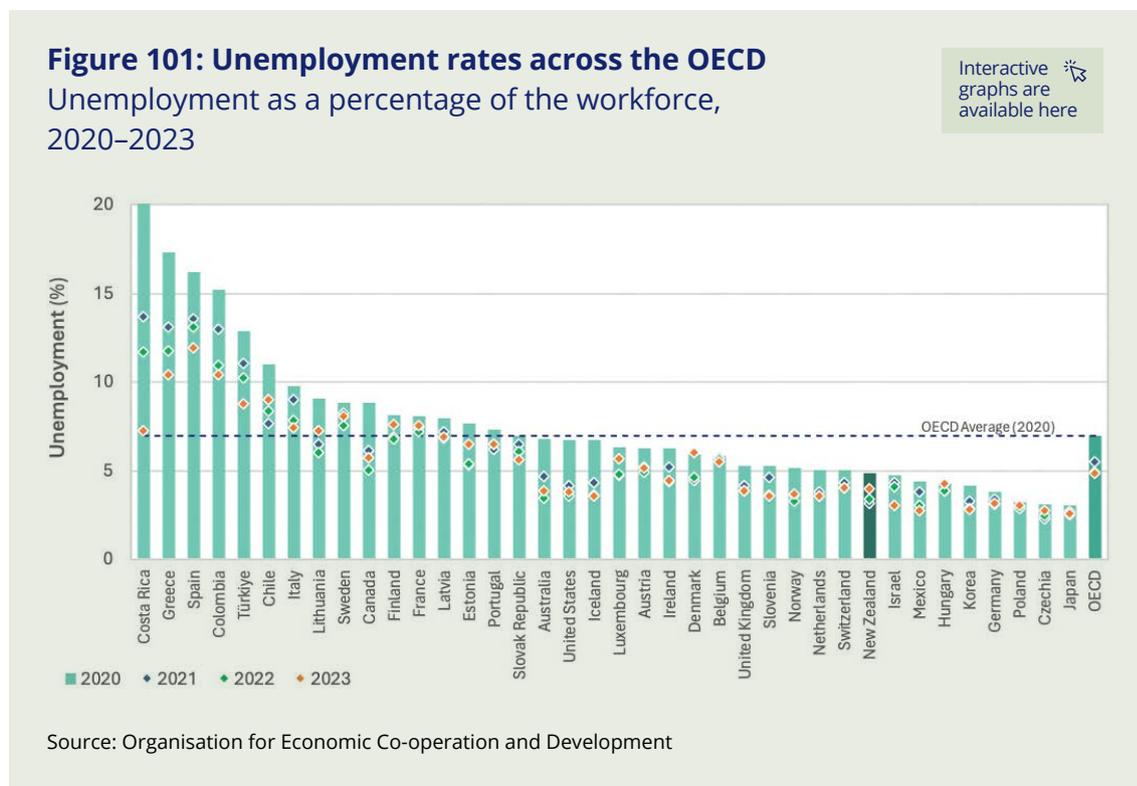


Source: Ministry of Business, Innovation and Employment, Jobs Online monthly data release
 Note: Jobs Online is a regular data series that measures changes in online job advertisements from four internet job boards – Seek, Trade Me Jobs, Education Gazette and Kiwi Health Jobs.

International comparison

The small and short-lived increase in unemployment over 2020 in New Zealand was below the average for OECD countries (Figure 101).

Not visible in Figure 101 is the particularly high, but brief, increase in unemployment in 2020 in the United States. Unemployment peaked at 14.8% in April 2020, before falling to 6.7% by December 2020 and 3.9% by December 2021.³¹ This reflected both the very flexible nature of the United States labour market, and the fact that government financial supports in the United States were paid to unemployed workers and to households, rather than to employers to preserve jobs.³²



31 United States Bureau of Labor Statistics, 'Civilian unemployment rate', <https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm>

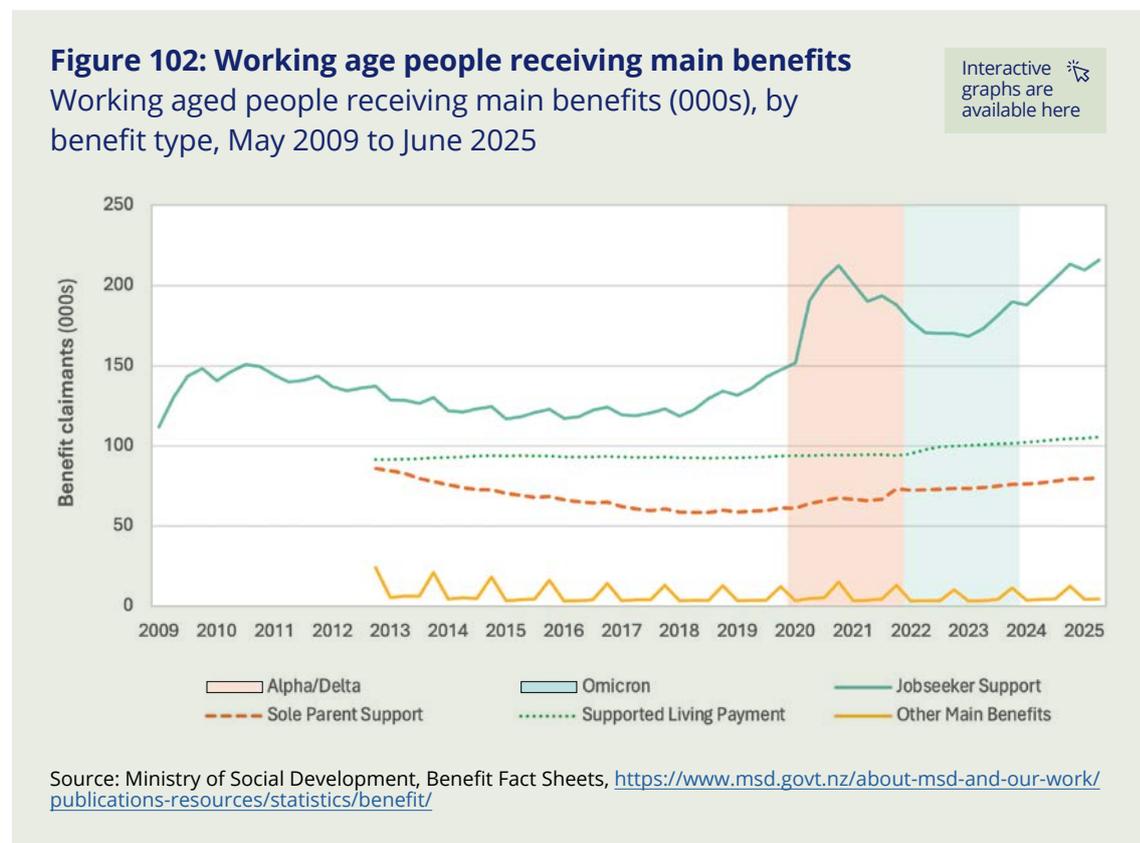
32 Alex Bell, Early evidence on federal government income supports for U.S. individuals, workers, and families during the COVID-19 pandemic, Washington Center for Equitable Growth (December 2022), <https://equitablegrowth.org/wp-content/uploads/2023/01/121222-Alex-Bell-Wyss-Report.pdf>

Jobseeker Support for the unemployed

Another perspective on unemployment is to consider the people receiving government benefits. Jobseeker Support is a benefit provided to people who are actively looking for or are preparing for work.³³ The numbers of people receiving Jobseeker Support grew rapidly in 2020 (Figure 102).

Not all people who experience unemployment receive a benefit. Some people find new work on their own, and others do not qualify because they have partners who are still working or because they have enough resources in the meantime.

Other types of benefits, for example, Sole Parent Support and Supported Living Payment, did not show the same increase in 2020.



33 Ministry of Social Development, Benefit Fact Sheets, <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/benefit/>

7

Government support for businesses, workers and the economy | Te tautoko a te kāwanatanga mō ngā pakihi, ngā kaimahi me te ōhanga

COVID-19, and the public health response to it, caused significant economic disruption. Governments across the world mobilised large amounts of economic resources to respond to the COVID-19 pandemic. These resources were used, among other things, to pay for public health materials such as vaccines and personal protective equipment, to meet rising health system demand, and to provide financial assistance to people and businesses.

This chapter describes the main programmes funded by the New Zealand Government during the pandemic, concentrating on financial support for businesses and workers.

7.1 Government spending on the pandemic | Ngā whakapaunga a te kāwanatanga mō te mate urutā

The New Zealand Government allocated \$70.4 billion to public health measures and economic supports during and after the pandemic. This consisted of an initial response package of \$12.1 billion, and a further \$58.4 billion from a funding envelope called the COVID-19 Response and Recovery Fund.^{34,35}

The COVID-19 Response and Recovery Fund was formally closed on 19 May 2022. However, many initiatives continued into subsequent years, managed through standard fiscal processes. At the time of closure some initiatives were forecast to have continued expenditure out to 2026.

The spending proposals in Budgets are divided into areas known as 'Votes'. Each Vote is the responsibility of a particular Minister or Ministers. In presenting the Budget, the Government asks Parliament for specific amounts of money ('appropriations') to be made available to be spent in each Vote.³⁶

The New Zealand Treasury has broken down COVID-19 spending in various ways. The funding allocated to each Vote is depicted in Figure 103, totalling \$74.3 billion (of that total, \$4 billion was returned unspent, leaving \$70.3 billion.)

Over one-third of all funding went to Vote Social Development,³⁷ half as much went to Vote Revenue,³⁸ with the third largest amount going Vote Health. These three Votes accounted for two-thirds of the total amount.

34 The Treasury, 'COVID-19 Response and Recovery Funding – Allocation' (last updated 14 June 2023), <https://www.treasury.govt.nz/information-and-services/nz-economy/covid-19-economic-response/overview-covid-19-response-and-recovery-fund-crrf/covid-19-response-and-recovery-funding-allocation>

35 The numbers in this section do not always sum to the totals given due to rounding.

36 New Zealand Parliament, Select committees and the Budget (last updated 6 March 2025), <https://www.parliament.nz/en/visit-and-learn/how-parliament-works/the-budget/select-committees-and-the-budget/>

37 The \$26 billion allocated to Vote Social Development was used for the Wage Subsidy Scheme, along with emergency financial assistance and expanded social support services to address increased demand for benefits and other social support during the pandemic.

38 The \$13.2 billion allocated to Vote Revenue was largely used to support tax relief and revenue forgone measures, as well as major business support initiatives such as the Small Business Cashflow Scheme and Resurgence Support Payment.

Figure 103: Total COVID-19 funding allocation by Vote, New Zealand

Interactive graphs are available here



Source: The Treasury, 'COVID-19 Response and Recovery Funding – Allocation' (last updated 14 June 2023), <https://www.treasury.govt.nz/information-and-services/nz-economy/covid-19-economic-response/overview-covid-19-response-and-recovery-fund-crrf/covid-19-response-and-recovery-funding-allocation>

Notes:

1. The allocations in the figure add up to \$74.3 billion, reflecting the amounts allocated before the \$4.0 billion of offsets from the November 2020 and September 2021 funding returns. The figures do not add up exactly to the \$70.4 billion total allocation figure due to rounding.
2. The allocations cover the time period of 2019/20 to 2025/26 and outyears.

In terms of what the money was spent on, by far the largest expenditure (appropriation) was the Wage Subsidy Scheme (Table 6).

Table 6: New Zealand Government expenditure by COVID-19-specific appropriations

Significant initiatives, 2019/20 to 2021/22

Appropriation name	Actual \$m
Business Support Subsidy COVID-19 (i.e. Wage Subsidy Scheme)	17,996
COVID-19 Resurgence Support Payment	2,912
National Response to COVID-19 Across the Health Sector	2,705
Infrastructure Reference Group Projects (i.e. Shovel-ready Programme) ³⁹	2,500
Small Business Cashflow Scheme COVID-19	2,263
Implementing the COVID-19 Vaccine Strategy	1,709
Isolation and Quarantine Management (MIQ)	1,568
COVID-19 Support Payments	1,307
Jobs for Nature programme ⁴⁰	1,200

Source: The Treasury, 'COVID-19 Response and Recovery – What has been achieved?', last updated 24 April 2025, <https://www.treasury.govt.nz/information-and-services/nz-economy/covid-19-economic-response/overview-covid-19-response-and-recovery-fund-crrf/covid-19-response-and-recovery-what-has-been-achieved>

³⁹ Not all Shovel-ready Programme projects have been completed as of January 2026.

⁴⁰ Jobs for Nature ran until June 2025.

7.2 Approaches to supporting businesses and workers | Ngā aronga tautoko a te kāwanatanga mō ngā pakihi me ngā kaimahi

Governments across the world delivered financial assistance in different ways. Some provided it in the form of direct spending or foregone revenue (such as tax breaks). Such measures, which we refer to as 'direct support', have a direct impact on government accounts, either reducing operating surpluses or increasing operating deficits.

Others – particularly governments in Europe – tended to provide assistance in the form of loans, guarantees or equity (for example, taking an ownership stake in a business). We refer to such measures as 'indirect support'. Although they do have an impact on the government accounts, their fiscal cost can be smaller than for direct support. Equity stakes can be sold, many loans will be repaid, and some guarantees may not be called upon – meaning that the final cost of these approaches will typically be lower than the headline numbers.

New Zealand's fiscal response to COVID-19 was largely made up of direct support measures, including programmes such as the Wage Subsidy Scheme (see section 7.3), COVID-19 Support Payments (see section 7.4.3), and Resurgence Support Payments (see section 7.4.2). A counter example – the Small Business Cashflow Scheme (see section 7.4.1) – involved loans to businesses, which made it an indirect support. New Zealand had the second largest direct-support fiscal response as a share of GDP, after the United States (Figure 104).

Figure 104: Fiscal response to COVID-19 pandemic, direct vs. indirect support

Fiscal cost as a percentage of GDP, selected advanced economies

Interactive graphs are available here



Source: International Monetary Fund, Database of Country Fiscal Measures in Response to the COVID-19 Pandemic; and IMF staff estimates

Notes:

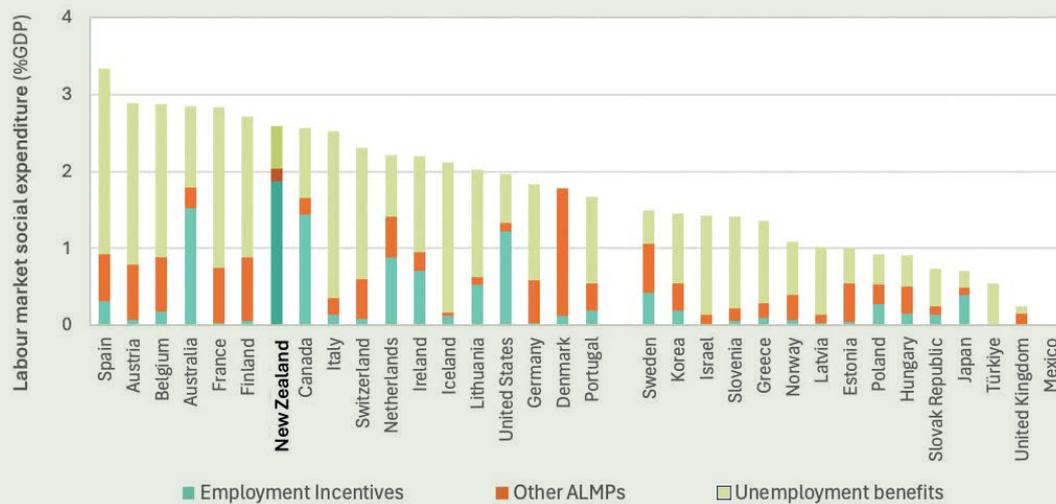
1. Estimates as of September 27, 2021. Numbers in U.S. dollar and percentage of GDP are based on October 2021 World Economic Outlook unless otherwise stated. It includes COVID-19 related measures since January 2020 and covers measures for implementation in 2020, 2021, and beyond. It focuses on government discretionary measures that supplement existing automatic stabilizers. These existing stabilizers differ across countries in their breadth and scope. Estimates included here are preliminary as governments are taking additional measures or finalising the details of individual measures.
2. The IMF use the terms 'above the line' and 'below the line' measures, whereas we have used the terms 'direct support' and 'indirect support'.

Many countries assumed that some level of unemployment would occur and relied on unemployment benefits or active labour market policies (ALMPs)⁴¹ to help displaced workers adjust and find alternative work (Figure 105).

Figure 105: Financial assistance to workers across the OECD, 2019–2021

Labour market social expenditure as a percentage of GDP by category of assistance

Interactive graphs are available here



Source: OECD Social Expenditure Database (SOCX), <https://www.oecd.org/en/data/datasets/social-expenditure-database-socx.html>

Notes: ALMPs include all social expenditure (other than education) which is aimed at the improvement of the beneficiaries' prospect of finding gainful employment or to otherwise increase their earnings capacity. This category includes spending on public employment services and administration, labour market training, special programmes for youth in the transition from school to work, special labour market and rehabilitation programmes for persons with disabilities, and labour market programmes to provide or promote employment for all other groups of unemployed and inactive persons.

41 Active labour market policies are government programmes designed to help unemployed or underemployed people find work by improving skills, job matching and work incentives.

7.3 Support for businesses to retain workers | Te tautoko mō ngā pakihi kia mau tonu ai ngā kaimahi

The Wage Subsidy Scheme supported people to remain connected to their jobs during the pandemic and helped mitigate potential layoffs or reductions in hours. Wage subsidies were available between March 2020 and December 2021. Wage subsidies amounting to \$18 billion were paid across 1.76 million unique jobs in 2020, and 1.36 million unique jobs in 2021.

7.3.1 Wage Subsidy Scheme timeline | Te rārangi wā o te Kaupapa Utu Moni Āwhina

The Wage Subsidy Scheme operated during lockdowns. It was delivered in a series of tranches. Eligibility conditions and subsidy amounts varied across those tranches.

In 2020:⁴²

- The Wage Subsidy Scheme opened on 17 March 2020 for applications from employers, including self-employed people, across New Zealand who experienced at least a 30% decline in revenue over a month related to COVID-19. It provided eligible employers a lump-sum payment for each employee, to help pay and retain employees for a 12-week period. It closed on 9 June 2020.
- The Wage Subsidy Extension opened on 10 June 2020 for applications from employers, including self-employed people, across New Zealand who experienced at least a 40% decline in revenue over a month related to COVID-19. It provided eligible employers a lump-sum payment for each employee, to help pay and retain employees for an eight-week period. It closed on 1 September 2020.
- The Resurgence Wage Subsidy opened on 21 August 2020 for applications from employers, including self-employed people, across New Zealand who experienced at least a 40% decline in revenue over two weeks related to COVID-19. It provided eligible employers a lump-sum payment for each employee, to help pay and retain employees for a two-week period. It closed on 3 September 2020.

42 Ministry of Social Development, 'Who received the 2021 COVID-19 wage subsidies?' (May 2022), <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/covid-19/who-received-the-covid-19-wage-subsidies-may-2022.html>

In 2021:

- The Wage Subsidy March 2021 opened on 4 March 2021 for applications from employers, including self-employed people, across New Zealand who experienced at least a 40% decline in revenue over two weeks related to the rise to Alert Level 3 on 28 February 2021. It provided eligible employers a lump-sum payment for each employee, to help pay and retain employees for a two-week period. It closed on 21 March 2021.
- The Wage Subsidy August 2021 #1 opened on 20 August 2021 for applications from employers, including self-employed people, across New Zealand who experienced at least a 40% decline in revenue over two weeks related to the effects of Alert Level 4 or 3. It provided eligible employers a lump-sum payment for each employee, to help pay and retain employees for a two-week period. It closed on 3 September 2021.
- Seven further fortnightly wage subsidies followed, starting with Wage Subsidy August 2021 #2 (open 3 September 2021 to 16 September 2021) and ending with Wage Subsidy August 2021 #8 (open 26 November 2021 to 9 December 2021).

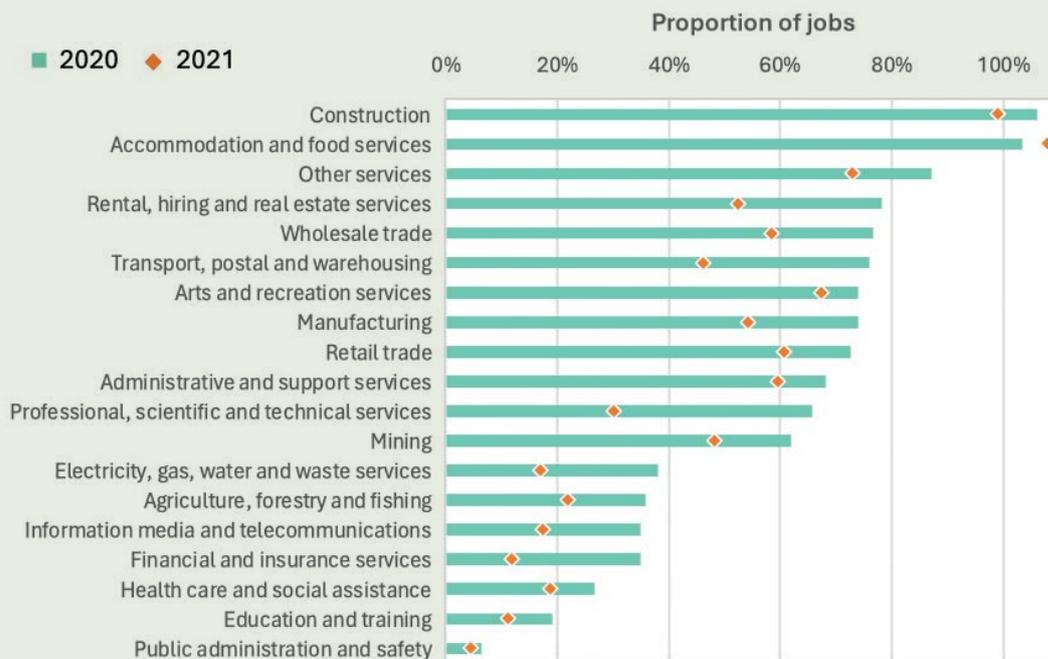
7.3.2 Wage Subsidy Scheme uptake | Te whiwhinga o te Kaupapa Utu Moni Āwhina

Uptake of the Wage Subsidy Scheme was highest in the construction and accommodation and food services sectors, and lowest in sectors dominated by the public sector (for example, public administration and safety, education and training, health care and social assistance) (Figure 106).

Figure 106: Jobs supported by wage subsidies in New Zealand by industry

Proportion of unique jobs supported by at least one wage subsidy, by industry, in 2020 and 2021

Interactive graphs are available here



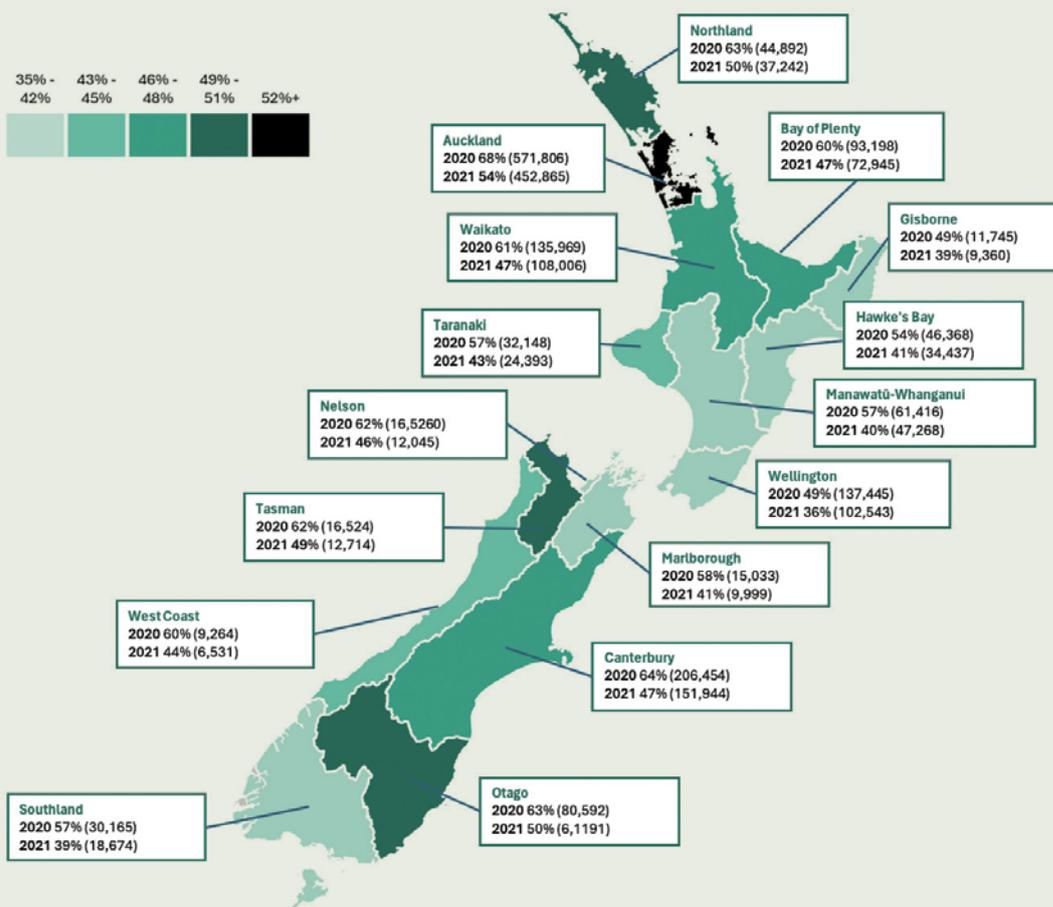
Source: Ministry of Social Development. Who received the 2021 COVID-19 wage subsidies? – May 2022, <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/covid-19/who-received-the-covid-19-wage-subsidies-may-2022.html>

Notes: In some cases, the calculated proportion of unique jobs supported by the Wage Subsidy Scheme can exceed 100%. Some employees paid a wage subsidy are not included in Inland Revenue data. For example, some business owners could apply as employees.

Figure 107: Jobs supported by wage subsidies in New Zealand, by region

Percentage and number of unique jobs supported by at least one wage subsidy, in 2020 and 2021

Interactive graphs are available here



Source: Ministry of Social Development, Who received the 2021 COVID-19 wage subsidies? – May 2022, <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/covid-19/who-received-the-covid-19-wage-subsidies-may-2022.html>

Note: Heat map based on 2021 percentage.

7.4 Support for businesses to keep them afloat | Te tautoko mō ngā pakihi kia toitū ai

The Government offered various schemes to provide financial support for businesses facing a loss of revenue due to the pandemic. This section provides details of three such schemes, which operated between 2020 and 2022.

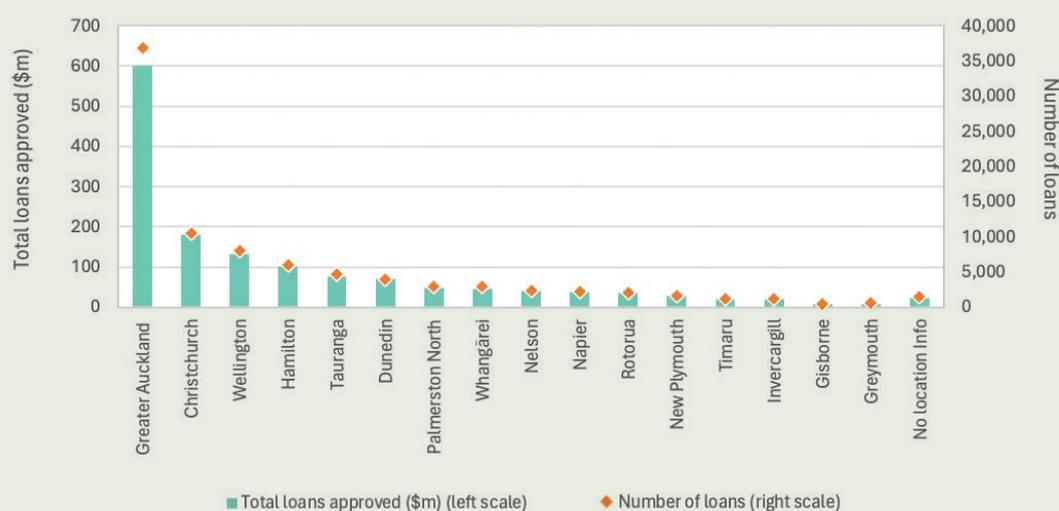
7.4.1 Small Business Cashflow Scheme | Te Kaupapa Pūtea Kapewhiti mō ngā Pakihi Iti

The Small Business Cashflow Scheme supported small to medium businesses and organisations facing a loss of revenue due to COVID-19.⁴³ Under this scheme, \$2.3 billion was paid to more than 128,000 businesses. Based on the data up to 24 June 2020, most applications and approved loans were for businesses based in Auckland (Figure 108).

Figure 108: Small Business Cashflow Scheme loans by region

Number of loans and total loans approved (\$ millions), as of 24 June 2020

Interactive graphs are available here



Source: Inland Revenue and the Treasury, Extension of the Small Business Cashflow (Loan) Scheme After 24 July 2020

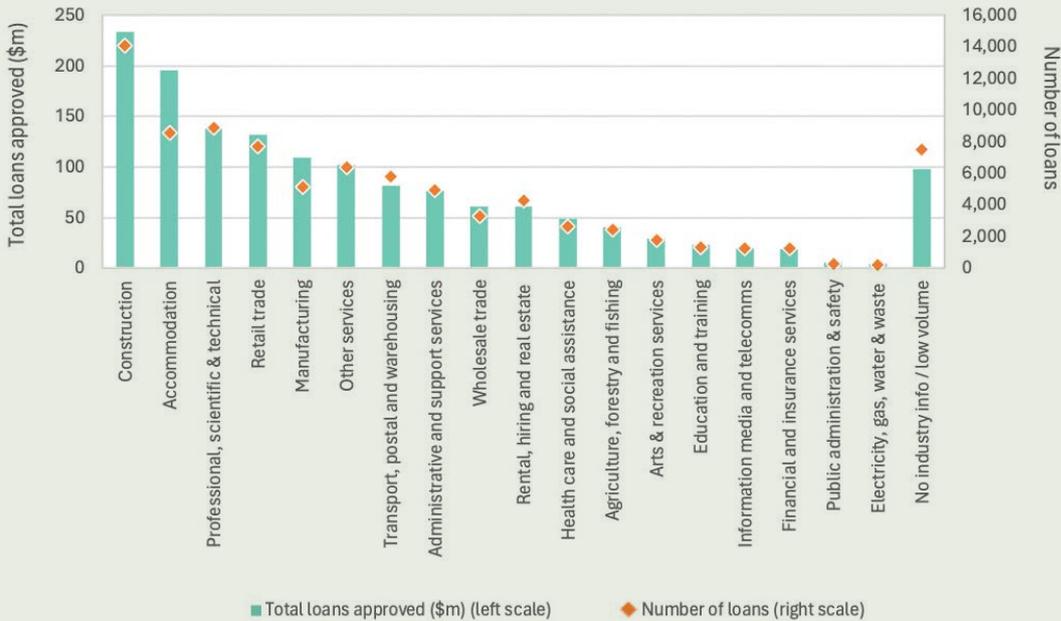
43 Inland Revenue, 'Eligibility for the Small Business Cashflow Scheme' (last updated 15 November 2024), <https://www.ird.govt.nz/covid-19/business-and-organisations/sbcs/eligibility-for-the-small-business-cashflow-scheme>

Figure 109 breaks down the Small Business Cashflow Loans by industry. Based on the data up to 24 June 2020, the highest number of applications and approved loans were from businesses in the construction industry, followed by the accommodation industry.

Figure 109: Small Business Cashflow Scheme loans by industry

Interactive graphs are available here

Number of loans and total loans approved (\$ millions), as of 24 June 2020



Source: Inland Revenue and the Treasury, Extension of the Small Business Cashflow (Loan) Scheme After 24 July 2020

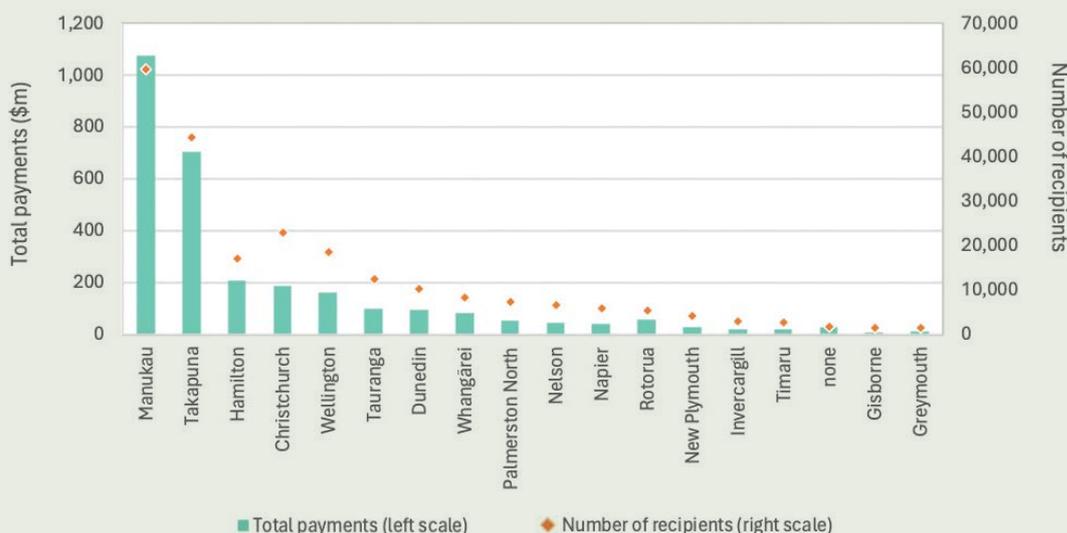
7.4.2 Resurgence Support Payment | Te Utunga Āwhina Ararewa

The Resurgence Support Payment was paid to help support viable and ongoing businesses or organisations that had experienced a 30% drop in revenue over seven days due to increased COVID-19 alert levels. Through this initiative \$2.9 billion was paid to 231,000 eligible recipients, mostly companies.⁴⁴ Most recipients were in Auckland (Manukau and Takapuna) (Figure 110).

Figure 110: Resurgence Support Payment by region

Number of distinct recipients and total payments (\$ millions), as of 20 January 2022

Interactive graphs are available here



Source: Inland Revenue, 'Resurgence Support Payment disbursements statistics' (last updated 22 October 2025), <https://www.ird.govt.nz/about-us/tax-statistics/resurgence-support-payment-statistics>

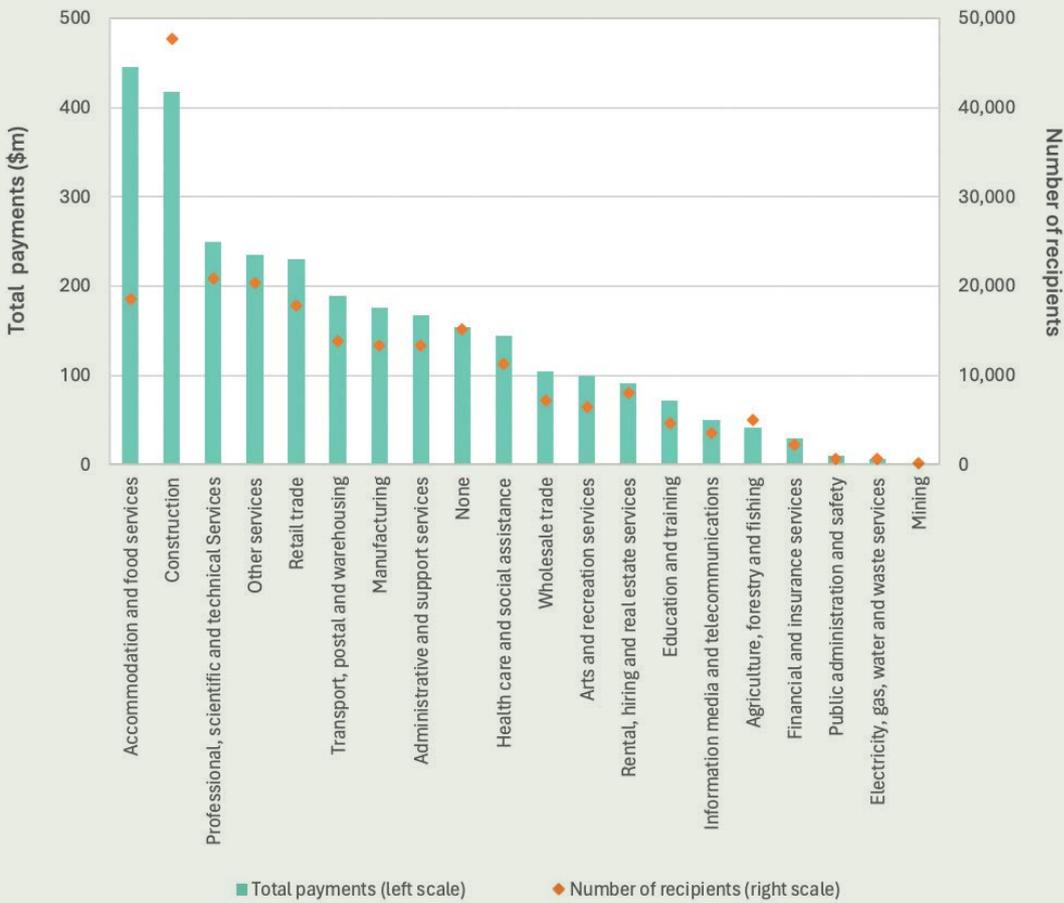
44 Inland Revenue, 'Resurgence Support Payment disbursements statistics' (last updated 22 October 2025), <https://www.ird.govt.nz/about-us/tax-statistics/resurgence-support-payment-statistics>

The largest numbers of recipients were in the construction industry, but total payments were higher for the accommodation and food services industry (Figure 111).

Figure 111: Resurgence Support Payment by industry

Number of distinct recipients and total payments (\$ millions), as of 20 January 2022

Interactive graphs are available here

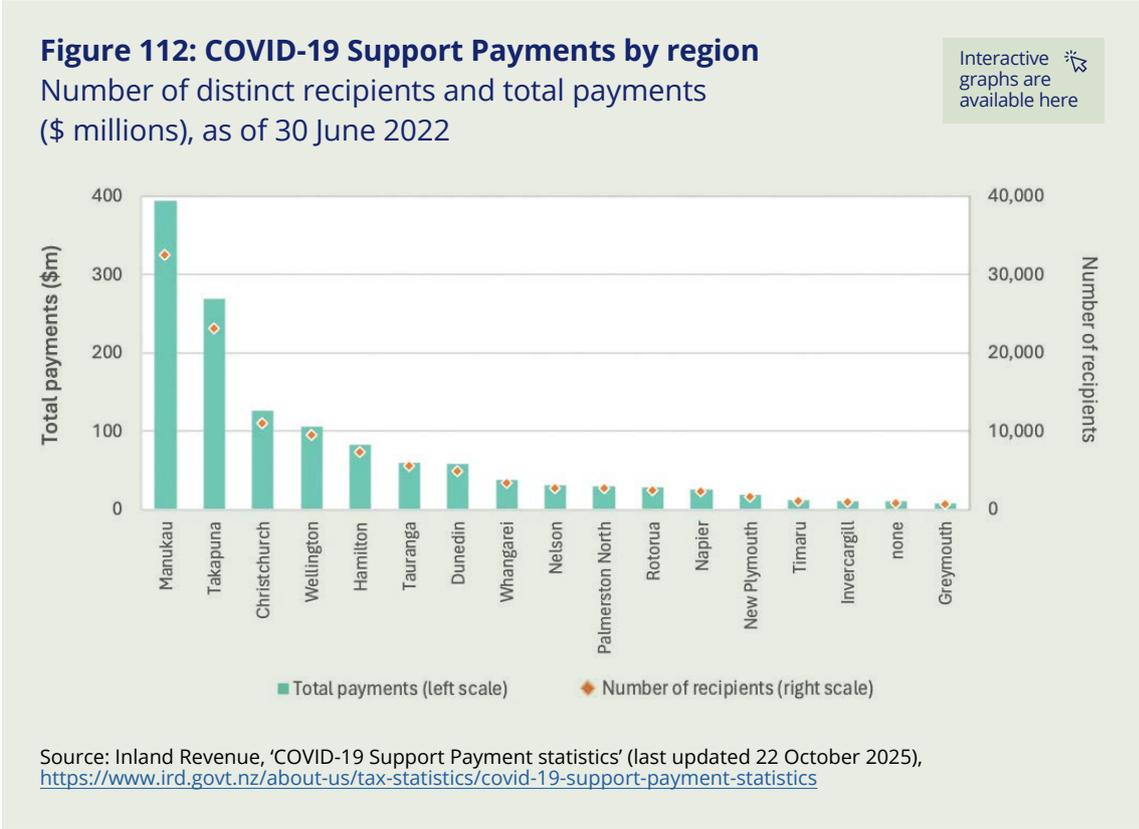


Source: Inland Revenue, 'Resurgence Support Payment disbursements statistics' (last updated 22 October 2025), <https://www.ird.govt.nz/about-us/tax-statistics/resurgence-support-payment-statistics>

7.4.3 COVID-19 Support Payment | Te Utunga Āwhina KOWHEORI-19

The COVID-19 Support Payment was paid to help support viable and ongoing businesses or organisations that experienced a 40% or more drop in revenue due to the pandemic. The COVID-19 Support Payment was available for a period in 2022, after the Resurgence Support Payment had closed.

Three support payment rounds between February to April 2022 paid \$1.3 billion to 113,000 eligible businesses (as of 30 June 2022). Approximately half of total COVID-19 Support Payments were made to firms located in Auckland (Manukau and Takapuna) (Figure 112).

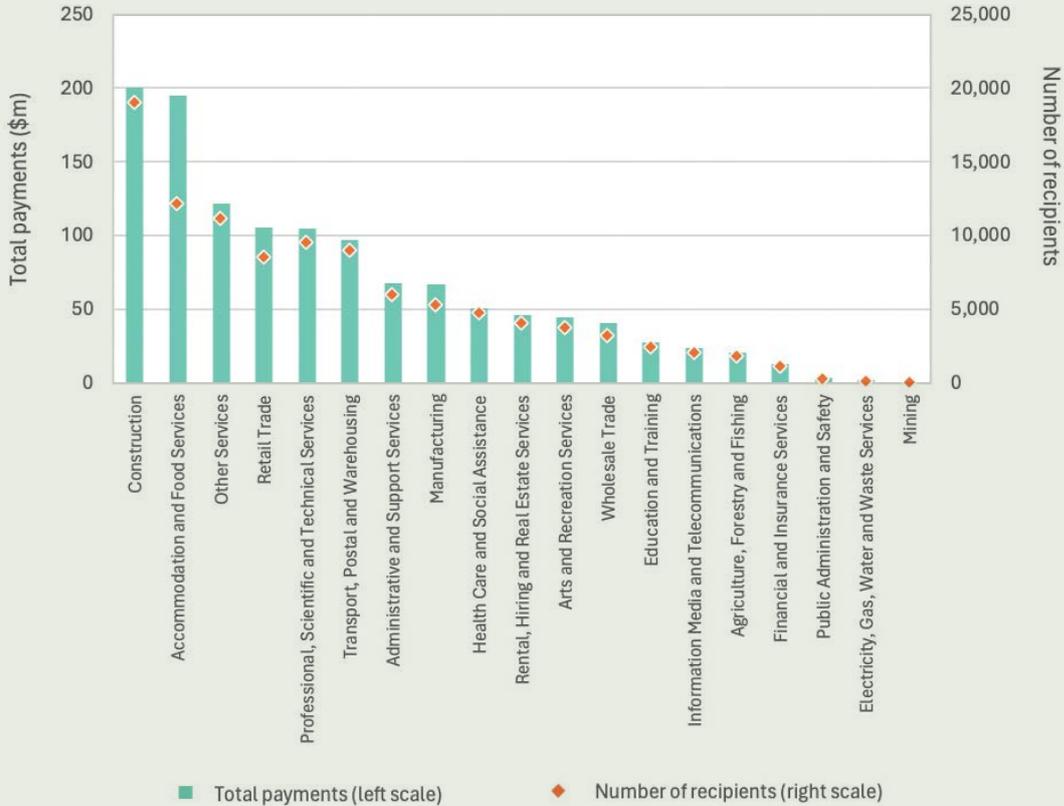


Recipients of the COVID-19 Support Payment were concentrated in the construction and accommodation and food services industries, and these industries received the largest proportion of payments (Figure 113).

Figure 113: COVID-19 Support Payments by industry

Number of distinct recipients and total payments (\$ millions), as of 30 June 2022

Interactive graphs are available here



Source: Inland Revenue, 'COVID-19 Support Payment statistics' (last updated 22 October 2025), <https://www.ird.govt.nz/about-us/tax-statistics/covid-19-support-payment-statistics>

8

Education | Mātauranga

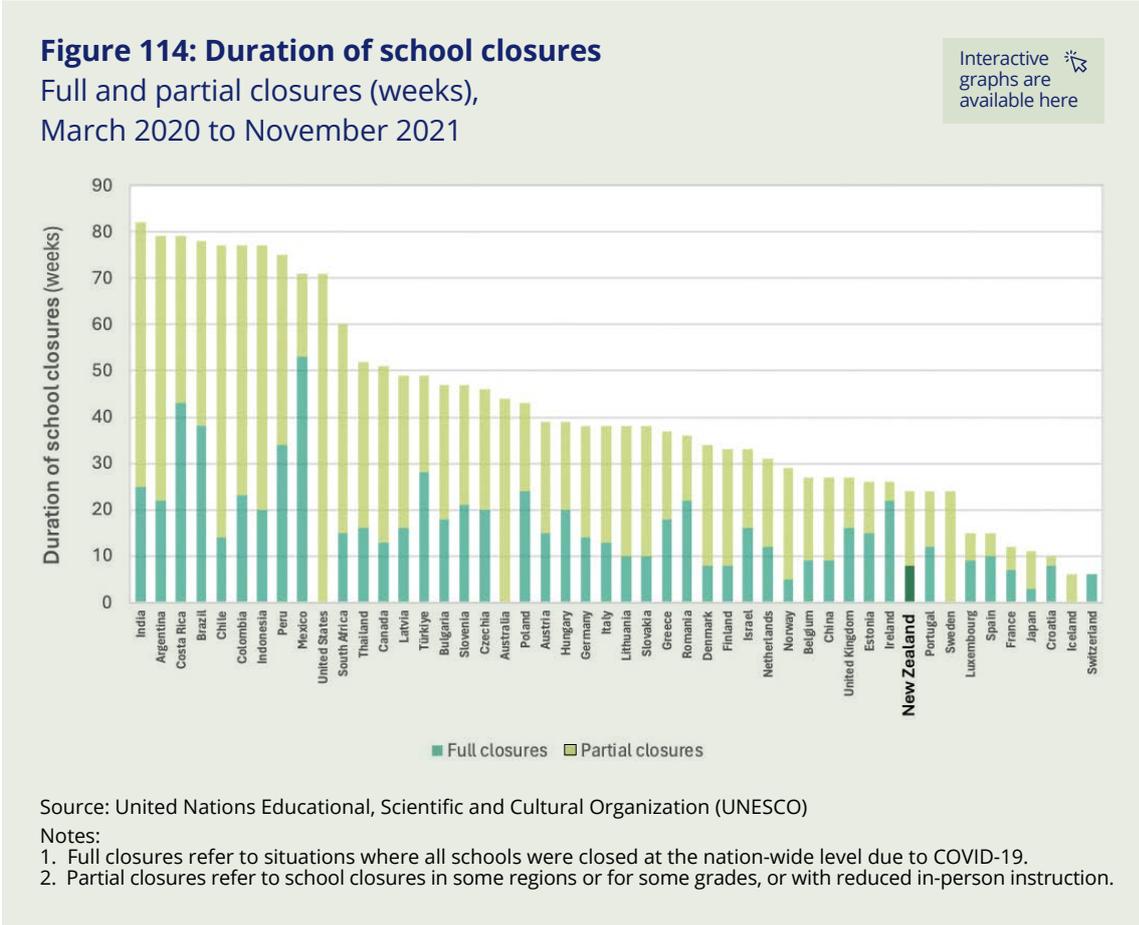
It will be some years before the effects of the COVID-19 pandemic on young people's education become fully apparent. Even where adequate data exists, understanding those effects is complex. We cannot say, for example, what impact lockdowns had on education, without acknowledging the inevitable disruption that would have occurred if lockdowns had not taken place.

This chapter presents the data available.

8.1 School closures | Ngā katinga kura

School closures were an integral part of the COVID-19 public health response across the world. In New Zealand, schools were closed for a shorter time than most other countries (Figure 114). Countries like India and the United States closed their schools for more than 70 weeks. The average school year of OECD countries is 38 weeks, so 70 weeks amounts to almost two years' schooling.

Partial school closures accounted for the majority of weeks of closures in New Zealand.



8.2 School attendance | Te haere ki te kura

When schools were closed in New Zealand, education switched to remote learning where feasible. Student attendance includes remote learning, and is measured in half-days. Figure 115 shows that regular student attendance held up during 2020 and 2021, then dipped sharply in 2022. Relative attendance by ethnicity and socioeconomic background remained unchanged.

Figure 115: Regular student attendance in New Zealand, term 1 2019 to term 2 2025

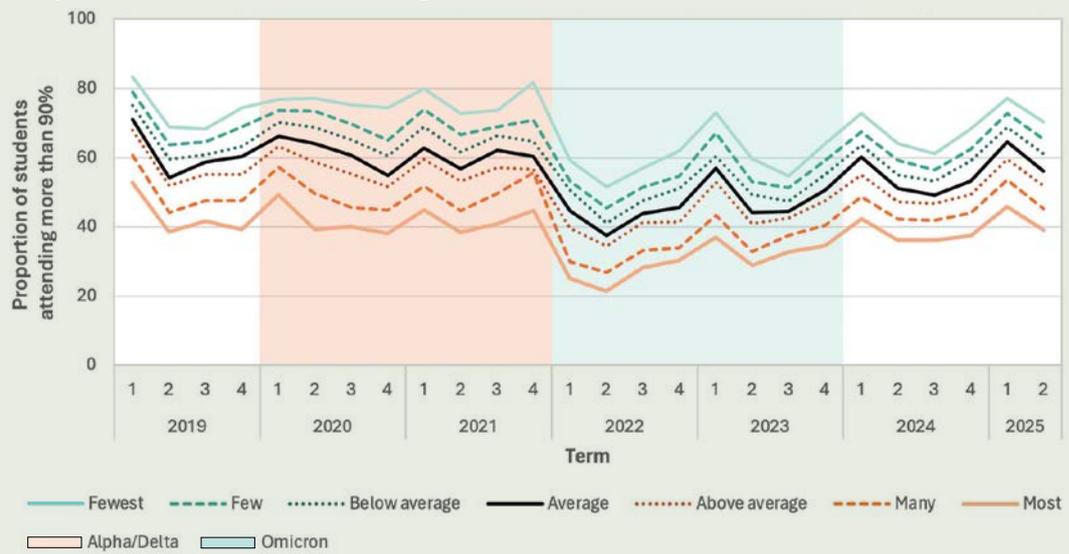
Interactive graphs are available here

Proportion of students attending more than 90% of the time, by ethnicity and socioeconomic group

(a) By ethnicity



(b) By socioeconomic barriers to learning



Source: Ministry of Education, Student Attendance, 2019–2025

Notes:

1. Attending more than 90% of half-days is considered 'Regular Attendance' by the Ministry of Education.
2. Socioeconomic background as measured by the Ministry of Education's Equity Index. The seven bands (Fewest to Most) contain roughly equal numbers of schools. Students in the Fewest category are at schools with the lowest Equity Index scores (that is, fewest socioeconomic barriers to achievement) and those in the Most category are at schools with the highest Equity Index scores (that is, most socioeconomic barriers to achievement). For more information see <https://www.education.govt.nz/our-work/changes-in-education/equity-index>
3. MELAA refers to students identifying as Middle Eastern, Latin American or African.

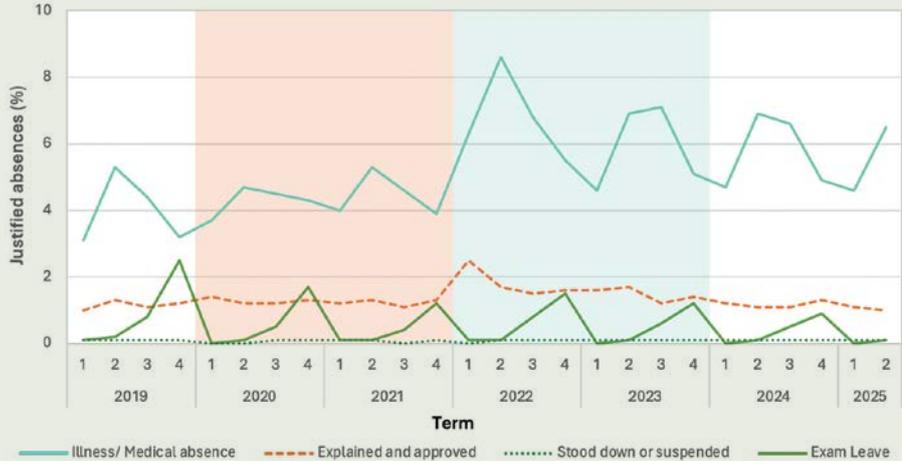
Student absences considered justified because of illness or medical absences exceeded 8% of half-days in mid-2022, coinciding with widespread community transmission of the Omicron variant. Truancies also peaked in 2022, before falling to between 1–2% of half-days in 2024 (Figure 116).

Figure 116: Justified and unjustified student absences in New Zealand, term 1 2019 to term 2 2025

Half-day absences as a percentage of total half-days

Interactive graphs are available here

(a) Justified absences



(b) Unjustified absences



Source: Ministry of Education, Student Attendance, 2019–2025

Notes:

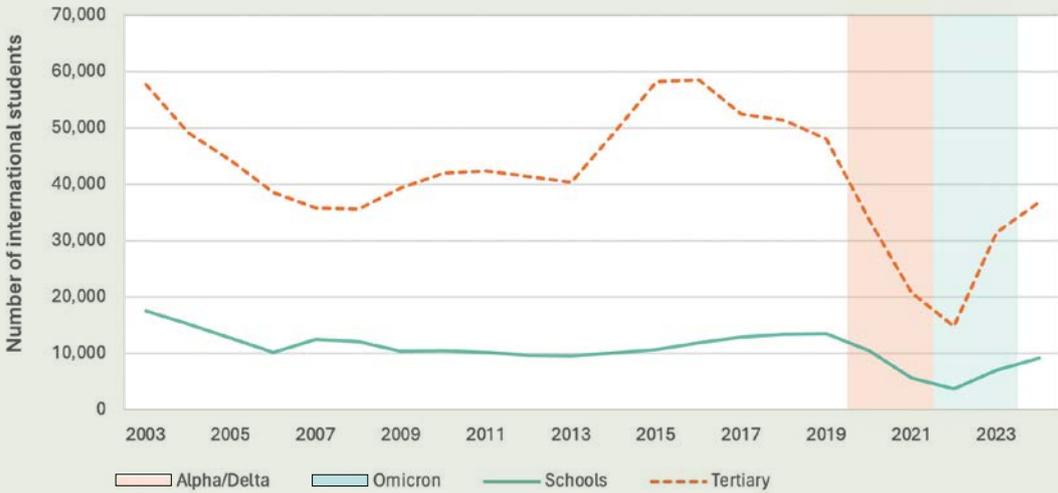
1. The calculation of the proportion of Half-Days Present, Justified or Unjustified is based on time in half-days that students attended or were absent from school, not the number of students.
2. Justified absence: An explained absence, within the school's policy as an acceptable reason for the student to be away from school, for example, Absent due to short-term illness/medical reasons; an absence where the reason for absence is within the school policy; Stood down or suspended.
3. Unjustified absence: An absence that is either unexplained or, explained, but the explanation is not within the school's policy as an acceptable reason for the student to be away from school. For example, No information or throw-away explanation; Absent with an explained but unjustified reason; Holiday during term time; Unknown reason.

The closure of the border to travellers who were not New Zealand citizens or residents in March 2020 led to a striking fall in the number of international students in New Zealand. Much of the fall was concentrated in tertiary student numbers, which dropped by more than two-thirds between 2019 and 2022, before beginning to recover the following year (Figure 117).

Figure 117: International fee-paying students in New Zealand

Interactive graphs are available here

Number of equivalent full-time international fee-paying students, school and tertiary sectors, 2003–2024



Source: Ministry of Education, 'Export Education Levy: Full-year statistics 2024' (last updated May 2025), <https://www.educationcounts.govt.nz/statistics/international-students-in-new-zealand>

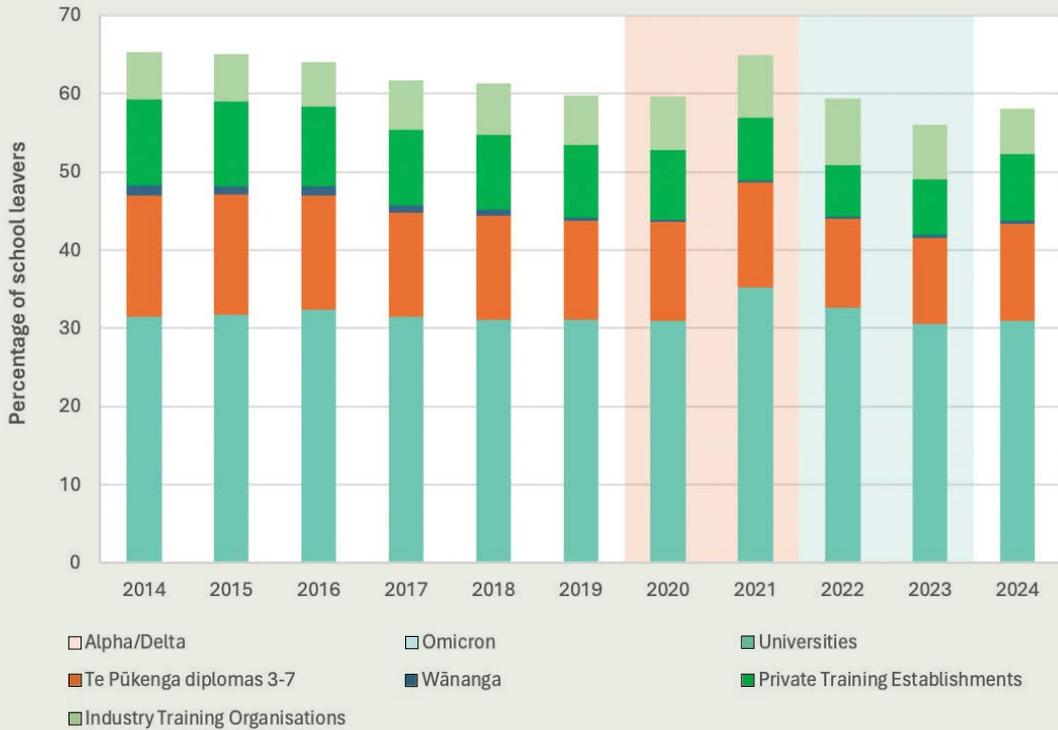
Notes: One equivalent full-time student (EFTS) unit is defined in the school sector as 40 weeks for a primary student and 39 weeks for a secondary student. It is defined in funded tertiary providers as a full-time student (20 hours or more per week) studying for 36 weeks or more. It is defined in unfunded tertiary providers as total teaching hours divided by 40, or as total teaching hours divided by total teaching weeks divided by 40, depending on the data provided.

8.3 School leavers | Ngā ākonga wehe kura

Figure 118 shows that a higher proportion of those leaving New Zealand schools in 2020 went on to tertiary education in 2021 than had done so in the preceding six years. This pattern was short-lived: the share of school leavers going on to tertiary education reverted to pre-pandemic levels in 2022 and dropped further in 2023. It had not returned to pre-pandemic levels by 2024.

Figure 118: Tertiary education destinations of New Zealand school leavers
 First year destination after leaving school, 2014–2024

Interactive graphs are available here



Source: Ministry of Education, School Leavers Tertiary Destinations (2014 to 2024), <https://www.educationcounts.govt.nz/statistics/what-happens-to-school-leavers>

Notes:

1. Tertiary information is based on tertiary enrolments in formal qualifications at tertiary education providers and industry training.
2. Excludes students who did not attend a New Zealand school.
3. Data excludes those Private Training Establishments that neither received tuition subsidies/targeted training funding nor were approved for student loans or allowances.
4. Data for formal tertiary enrolments at a tertiary education provider relates to students enrolled at any time during the year with a tertiary education provider in formal qualifications of greater than 0.03 EFTS (see figure 117 for explanation of EFTS).
5. 'Te Pūkenga diplomas 3-7' refers to diploma courses at Institutes of Technology and Polytechnics in New Zealand.

8.4 Learning progress | Te ahunga ako

It is difficult to quantify the impact of the pandemic on learning progress. We can observe snapshots of achievement of cohorts of students across the world through international studies such as those led by the OECD (section 8.4.1).

In New Zealand, we cannot use National Certificate of Educational Achievement qualifications to assess the impact of the pandemic on student learning, as there were changes to assessment standards during 2020, 2021 and 2022 so that students were not disadvantaged in later life by the qualifications they attained under pandemic learning conditions.⁴⁵

However, the Ministry of Education was able to examine student learning for students in Years 4–10 (section 8.4.2). We also commissioned new research on this topic (section 8.4.3).

8.4.1 International comparisons of 15-year-olds | Ngā whakataurite ā-ao mō ngā 15-tau

New Zealand participates in the OECD-led Programme for International Student Assessment (PISA), which tests the competency of 15-year-olds' application of reading, mathematics and science to real-life problems.⁴⁶

The strength of international studies such as PISA is that they use consistent methods that enable comparison across countries and over time. However, they are conducted at 3–5-year intervals and are therefore better suited to understanding the evolution of the education system rather than sudden shocks to the system.

That said, the results from the 2022 PISA survey allow comparison of the proficiency of 15-year-olds with results of previous surveys and results from other countries.

New Zealand has been experiencing a long-term decline in mathematics proficiency, as measured by PISA. This decline continued in 2022 (Figure 119). Of the comparator countries shown in the Figure, all except Australia and Japan experienced a statistically significant decline in PISA scores between 2018 and 2022.

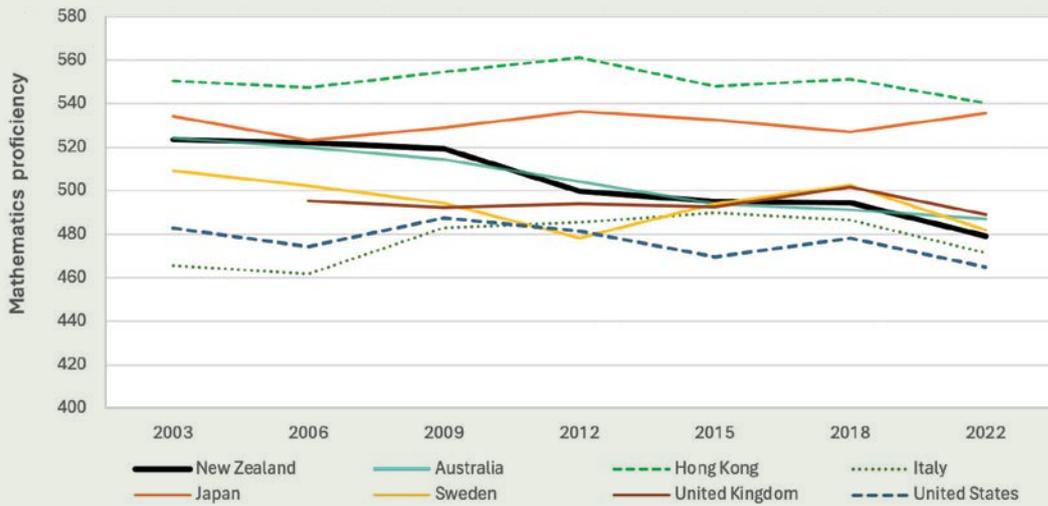
45 New Zealand Qualifications Authority, 'COVID-19 related changes to NCEA and University Entrance' (12 October 2023), <https://www2.nzqa.govt.nz/ncea/about-ncea/covid-19-related-changes-to-ncea-and-ue> for further details

46 New Zealand also participates in two studies led by the International Association for the Evaluation of Educational Achievement: The Progress in International Reading Literacy Study (PIRLS) study of reading (comprehension) achievement in 9/10-year-olds, and the Trends in International Mathematics and Science Study (TIMSS) assessment of the mathematics and science knowledge of Years 5 and 9 students.

Figure 119: Programme for International Student Assessment, proficiency in mathematics

PISA average proficiency in mathematics, New Zealand and comparator countries, 2003–2022

Interactive graphs are available here



Source: Organisation for Economic Co-operation and Development, PISA 2022 Database <https://www.oecd.org/en/data/datasets/pisa-2022-database.html>, Table 1.B.5.4

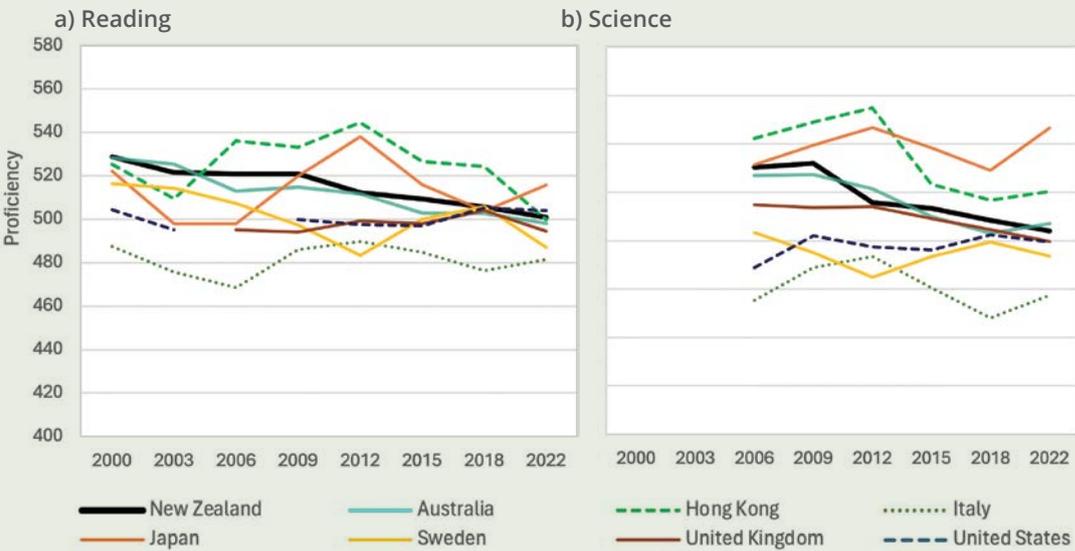
Note: Decline in PISA scores between 2018 and 2022 are statistically significant in all countries except Australia and Japan.

Similar declines occurred in New Zealand students' reading and science proficiency (Figure 120). The pattern, however, was more mixed in our comparator countries.

Figure 120: Programme for International Student Assessment, proficiency in reading and science

PISA average proficiency in reading and science, New Zealand and comparator countries, 2000–2022 (reading) and 2006–2022 (science)

Interactive graphs are available here



Source: Organisation for Economic Co-operation and Development, PISA 2022 Database <https://www.oecd.org/en/data/datasets/pisa-2022-database.html>, Tables 1.B.5.5 and 6

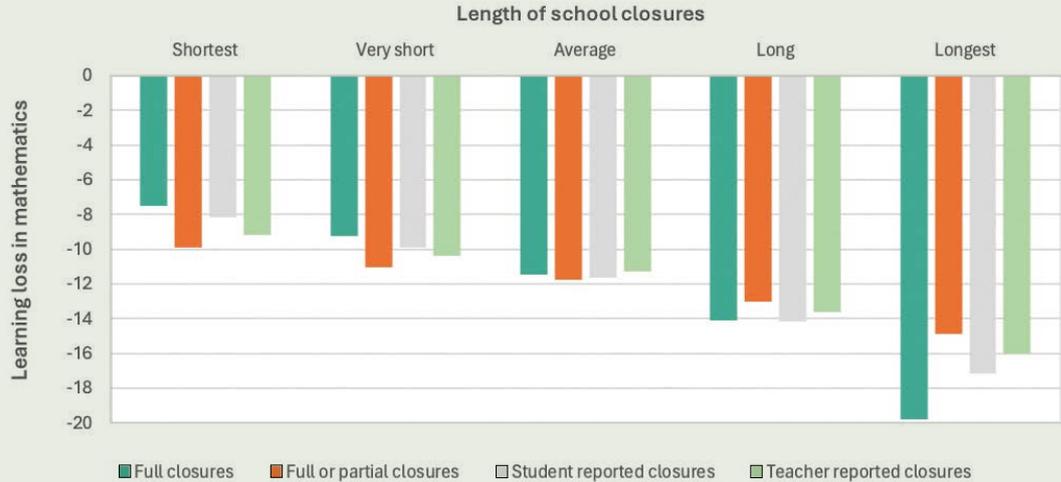
Notes: Declines in reading performance between 2018 and 2022 were statistically significant in Hong Kong, Sweden and the United Kingdom, as was the increase in Japan's score. Increases in science performance were statistically significant in Italy and Japan.

Research published in 2025 using PISA data⁴⁷ suggests that learning loss in mathematics from school closures due to the pandemic increased with the length of the closure (Figure 121). The learning loss was roughly equal to seven months of learning across the countries in the PISA dataset. This was measured by the deviation of mathematics scores in the 2022 PISA study from the trend since 2000. The researchers measured the length of school closures four different ways, all of which gave similar estimates of learning loss.

Figure 121: Programme for International Student Assessment, estimated learning loss in mathematics, by length of school closure

Interactive graphs are available here

Deviation of mathematics scores in the 2022 PISA study from the trend since 2000, four measures



Source: Maciej Jacubowski, Tomasz Gajderowicz and Harry Anthony Patrinos, 'COVID-19, school closures, and student learning outcomes. New global evidence from PISA', *npj Science of Learning*. 10,5 (2025), pp 1–7

Note: -20 corresponds with one year of learning loss.

47 Maciej Jacubowski, Tomasz Gajderowicz and Harry Anthony Patrinos, 'COVID-19, school closures, and student learning outcomes. New global evidence from PISA', *npj Science of Learning*, Volume 10, Issue 5 (2025), pp 1–7.

8.4.2 Measuring the impact of the pandemic on learning in Years 4–10 in New Zealand using e-asTTle data | Te ine i te pānga o te mate urutā ki te ako i ngā Tau 4–10 i Aotearoa mā te raraunga e-asTTle

New Zealand teachers use assessment tools as a part of teaching practice, including the e-asTTle tool.⁴⁸ The Ministry of Education used anonymised results from that tool to understand the patterns of learning progress in reading, writing and maths for students in Years 4–10 (that is those aged approximately 8–15). This data covers hundreds of thousands of students, but it is not a representative sample of the student population as not all teachers or schools use e-asTTle.

The Ministry's initial analysis⁴⁹ found that reading and maths learning progress for most student groups in 2020 was essentially unchanged compared with previous years. There was some evidence that progress in writing was slower. This amounted to an equivalent loss of five weeks of learning. This is in the context of declining writing progress in most year groups since 2013.

The Ministry of Education looked at whether these results varied by demographic factors, but found no significant change in pre-existing patterns of learning progress by ethnicity, by socioeconomic background,⁵⁰ or in Auckland relative to the rest of New Zealand.⁵¹

The Ministry subsequently updated its analysis.⁵² The updated analysis suggests that any learning losses in 2020 were reversed in subsequent years (2021 and 2022). See Figure 122 for the combined results. The changes experienced during the COVID-19 pandemic were not unprecedented in previous years. For example, Year 9 and 10 writing scores have varied quite considerably from year to year since 2013.

48 For more on e-asTTle, see Ministry of Education, 'Achievement and progress in mathematics, reading and writing in primary schooling: Analysis of e-asTTle assessment data, 2011 to 2016' (Wellington: April 2018), https://www.educationcounts.govt.nz/_data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf

49 Andrew Webber, 'Student learning during COVID-19: Literacy and maths in Years 4-10', *He Whakaaro: Education Insights* (Wellington: Ministry of Education, 2021), <https://www.educationcounts.govt.nz/publications/schooling/he-whakaaro-student-learning-during-covid-19>

50 As measured using the old decile system.

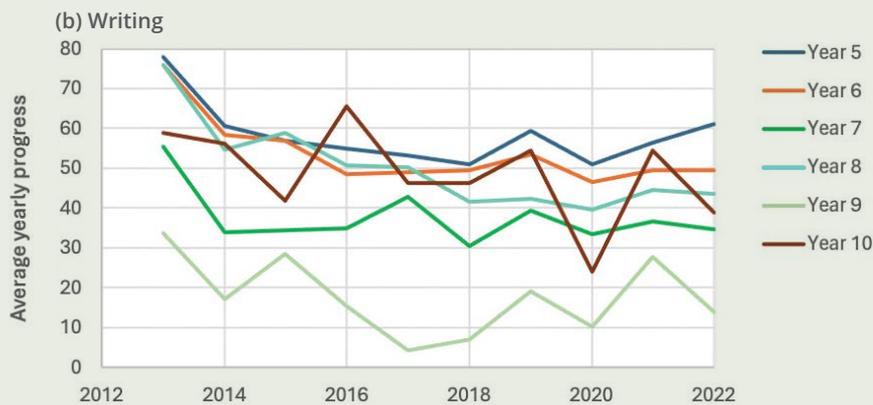
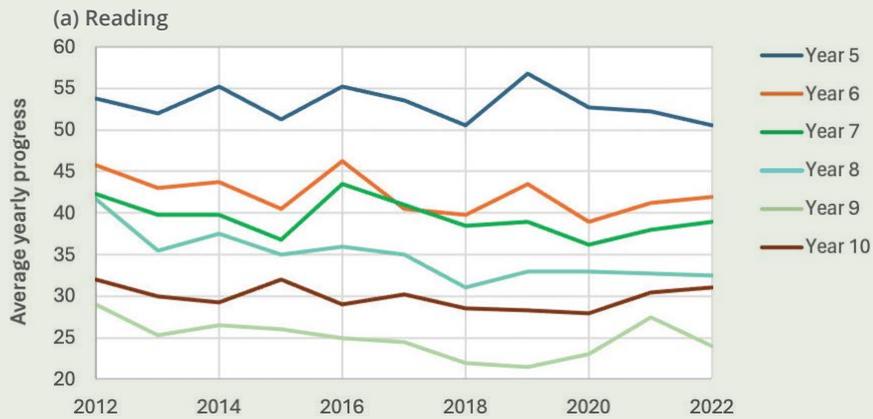
51 Note that there are not enough data to examine the progress of students in Māori medium schools and settings such as specialist schools, alternative education providers, teen parent units or activity centres.

52 Andrew Webber, 'Student learning during COVID-19: Literacy and Maths in Years 4-10 updated to 2022' (Wellington: Ministry of Education, 2022), https://www.educationcounts.govt.nz/_data/assets/pdf_file/0020/221609/Update-July-2023.pdf

Figure 122: Yearly progress in reading, writing and mathematics, Years 5–10 in New Zealand

As measured by e-asTTle, 2012–2022

Interactive graphs are available here 



Source: Andrew Webber, 'Student learning during COVID-19: Literacy and Maths in Years 4–10 updated to 2022' (Wellington: Ministry of Education, 2022).

Note: Average yearly progress calculated by average difference in e-asTTle scores.

8.4.3 Measuring the impact of the pandemic on learning in Years 4–10 in New Zealand using Progressive Achievement Test data | Te ine i te pānga o te mate urutā ki te ako i ngā Tau 4–10 i Aotearoa mā te raraunga Progressive Achievement Test

Another tool used by teachers to understand students' achievement levels and learning progress is the Progressive Achievement Test (PAT) tool. PATs are standardised, multiple-choice assessments developed by the New Zealand Council for Educational Research (NZCER). PATs can be administered to students in Year 4 through Year 10 (roughly ages 8–15).

We asked NZCER to analyse data from schools that used the PAT to measure students' mathematics and reading comprehension over the period of the pandemic. A comparison of the average PAT scores during and after the pandemic with scores from 2019 allows us to investigate the impact of the pandemic on learning. Comparing schools in Auckland with the rest of the country helps us understand how the extended 2021 Auckland lockdown affected learning.

Figure 123 shows the difference in average mathematics learning over 2020, 2021 and 2022, relative to that during 2019.⁵³ We provide error bars to distinguish between changes that are statistically significant, and those that might be due to random variation.⁵⁴ In the following text, we focus on observations that are statistically significant.

The average mathematics learning score (the orange line) fell in 2020, fell even further in 2021, then rose in 2022 to slightly above 2019 levels (Figure 123). The drop between 2019 and 2021 represents about one month of learning.⁵⁵ On average, students leaving at the end of 2021 experienced the 2021 learning loss in mathematics but did not experience the 2022 recovery.

Mathematics learning scores in Auckland (the green dotted line) are normally slightly above those for the rest of New Zealand (the blue dashed line). This difference is not statistically significant in 2019 but is in 2020. However, in the year when schools in Auckland were affected by the extended lockdown, their students' mathematics scores dropped below those of the rest of New Zealand. This difference was statistically significant, even when accounting for differences in populations.⁵⁶ By 2022, learning scores at Auckland schools had risen, and those scores were statistically indistinguishable from non-Auckland schools.

53 The mathematics test was changed in 2023, so there is no time-series consistency between that year and the previous years.

54 'Statistically significant' in the text means that the difference is statistically significant at the 95% level. That is, there is only a 5% chance that this difference could have occurred by chance. For the national data, if the error bars above and below a 2020, 2021 or 2022 datapoint (what is called the confidence interval) do not include zero, we can say the difference is statistically significant. When comparing the Auckland with the non-Auckland data, if the error bars for a datapoint are non-overlapping, the difference is statistically significant.

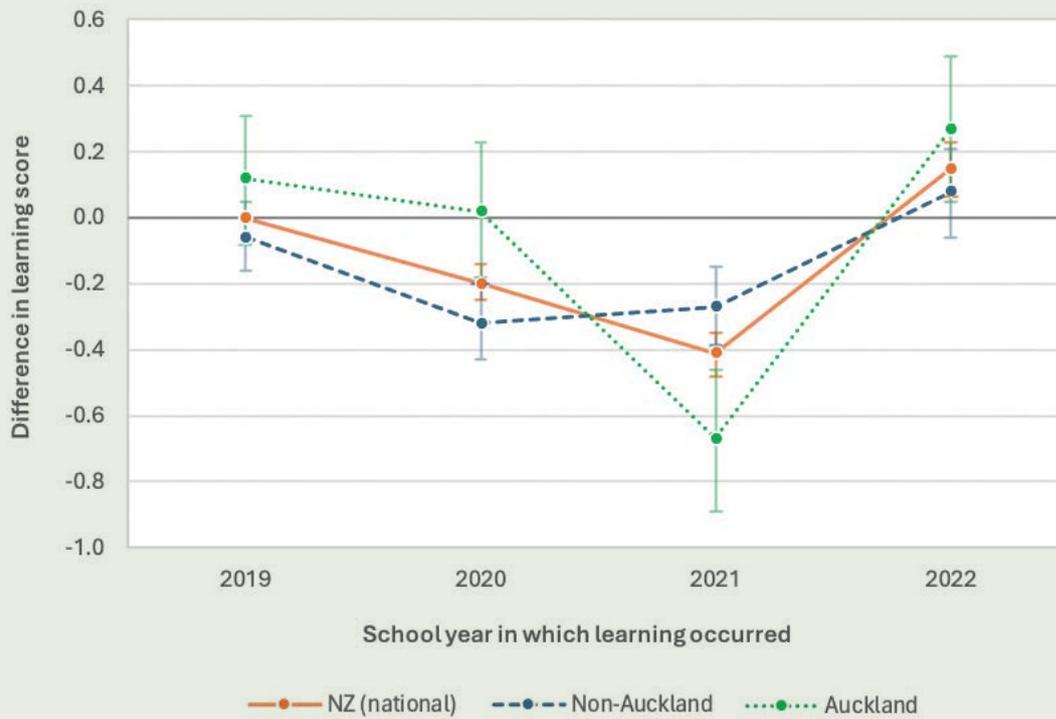
55 One year's progress tends to be between 6–7 units in upper primary years, and about 3–5 units in later years.

56 NZCER also used a statistical model to account for differences in populations across the gender, socioeconomic background and ethnicity of students (as well as their year of study) between Auckland and non-Auckland schools. They found that once they accounted for these differences, scores in Auckland schools fell by 0.73 scale points in 2021.

Figure 123: Mathematics learning, Years 4–10 in New Zealand, Auckland and non-Auckland

Interactive graphs are available here

Difference between average mathematics learning scores in 2020, 2021 and 2022 compared to the national average in 2019, as measured by the Progressive Achievement Test



Source: New Zealand Council for Educational Research, COVID-19 and student achievement in Aotearoa New Zealand (Wellington: 2025)

Notes:

1. Learning scores for a given year relate to tests taken at the beginning of the following year.
2. Error bars denote 95% confidence intervals.

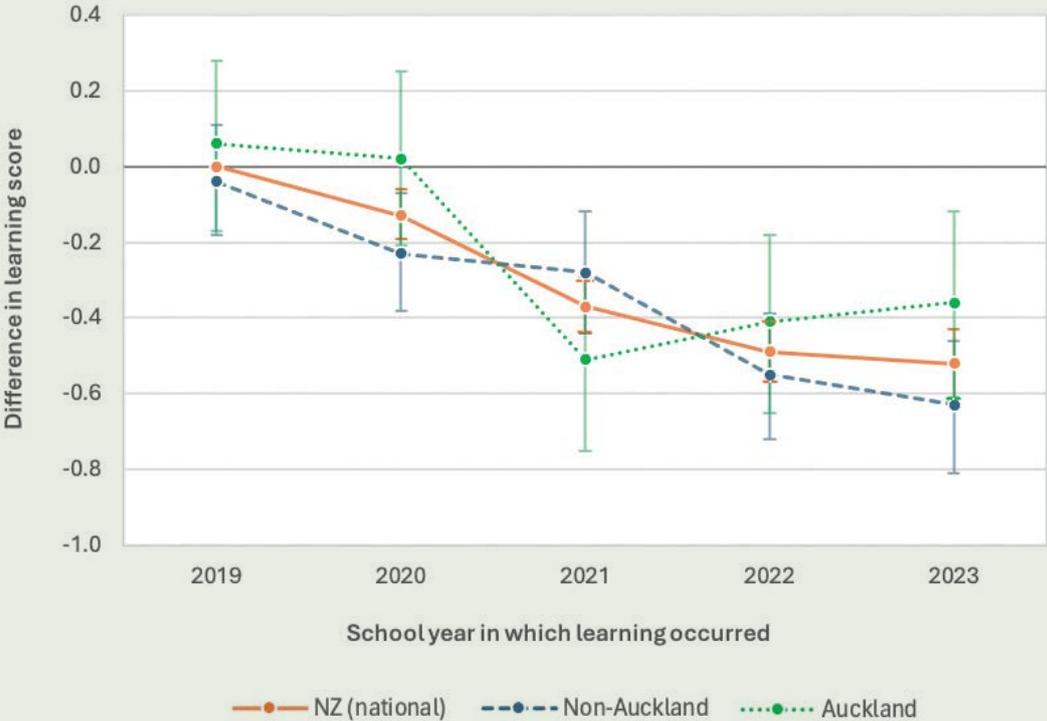
Figure 124 shows the equivalent results for reading comprehension. These show a different pattern to the mathematics results. National reading comprehension scores dropped in 2020 and 2021. Both drops were statistically significant. Average reading comprehension stayed below 2019 levels in both 2022 and 2023. On average, students leaving at the end of 2020, 2021, 2022 and 2023 suffered a reading comprehension learning loss relative to those leaving at the end of 2019.

Reading comprehension scores in Auckland are statistically indistinguishable from those in the rest of New Zealand, except from in 2021. Auckland students did experience a statistically significant fall in reading comprehension scores in 2021, when they shifted from slightly above the rest of New Zealand to slightly below. This fall coincided with the extended Auckland lockdown, like the pattern we saw with mathematics scores.

Figure 124: Reading comprehension learning, Years 4–10 in New Zealand, Auckland and non-Auckland

Difference between average reading comprehension learning scores 2020–2023 compared to the national average in 2019, as measured by the Progressive Achievement Test

Interactive graphs are available here



Source: New Zealand Council for Educational Research, COVID-19 and student achievement in Aotearoa New Zealand (Wellington: 2025)

Notes:

1. Learning scores for a given year relate to tests taken at the beginning of the following year.
2. Error bars denote 95% confidence intervals.

Figure 125 shows how learning scores for mathematics and reading comprehension differed according to socioeconomic status, as measured by the Ministry of Education's Equity Index.⁵⁷ The Equity Index is an estimate of the extent to which the students attending a school face socioeconomic barriers to achievement in education. Schools are divided into three bands – schools where their students face 'fewer' socioeconomic barriers to achievement, 'moderate' socioeconomic barriers to achievement, or 'more' socioeconomic barriers to achievement.⁵⁸ The following analysis is of students, where each student is assigned the Equity Index of their school.

There is no simple relationship between socioeconomic barriers and learning loss. Auckland students from all socioeconomic backgrounds experienced falls in mathematics scores in 2021, when Auckland was in extended lockdown unlike the rest of the country (panel (a) in Figure 125). This drop in scores for all groups was statistically significant relative to the national average in 2019. Mathematics scores for all groups recovered in 2022, such that they were almost identical to what they were prior to the pandemic.

Conversely, there was relatively little change in schools outside of Auckland over the entire period. Students in schools that face 'more' socioeconomic barriers saw almost no change in their mathematics scores. These are the students with the lowest overall mathematics achievement, but they did not drop further. Students with fewer or moderate barriers saw a small decline in 2020 and 2021, recovering in 2022.

The most disadvantaged students (those in the 'more' barriers group) experienced a greater drop in mathematics score in Auckland than they did outside of Auckland. Similarly, the least disadvantaged students (those in the 'fewer' barriers group) in Auckland also experienced larger drops than their compatriots in the rest of New Zealand. Both differences were statistically significant.

57 For more information on the Equity Index, see Ministry of Education, He Whakaaro: Accounting for educational disadvantage (September 2019), <https://www.educationcounts.govt.nz/publications/schooling/he-whakaaro-accounting-for-educational-disadvantage>

58 While the bands contain approximately the same number of schools, those schools with more socioeconomic barriers to achievement tend to be smaller, which means that the three bands contain unequal numbers of students.

The pattern for reading comprehension (panel (b) in Figure 125) is different, and less clear. Students in Auckland schools with more socioeconomic barriers had lower reading comprehension scores than those with moderate or fewer socioeconomic barriers in 2019, before the COVID-19 pandemic began.⁵⁹ This pattern remained (indeed the differences declined slightly) over the period of the pandemic. While there were declines in all groups in 2021, these were too small to be statistically significant.

Conversely, the students with more socioeconomic barriers outside of Auckland improved their reading comprehension relative to those with moderate or fewer barriers prior to COVID-19. It is the students with moderate socioeconomic barriers who experience the largest fall in reading comprehension in schools outside of Auckland. Between 2019 and 2021, reading comprehension in the top and bottom socioeconomic groups (the fewer and more barrier groups) remained unchanged, and only began to fall slightly in 2021.

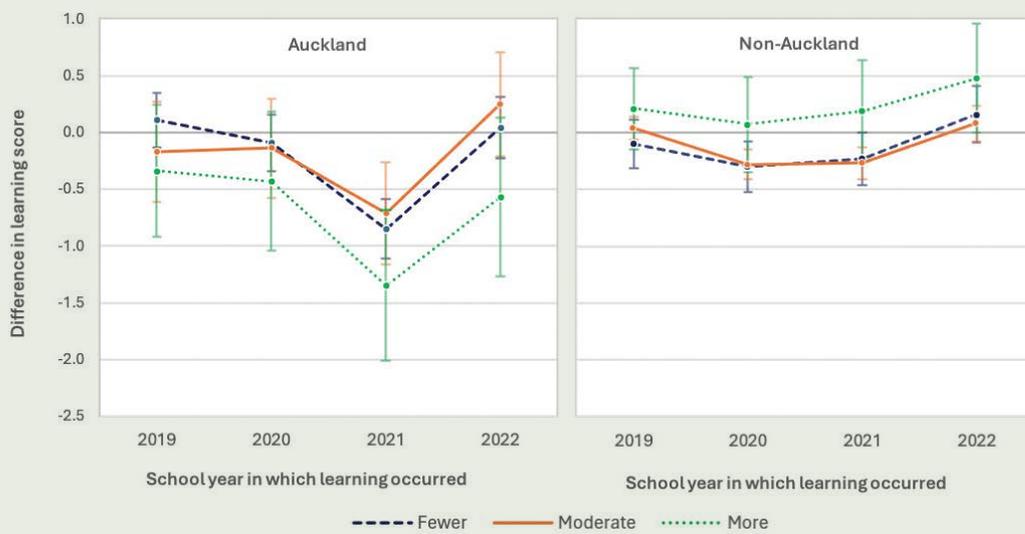
⁵⁹ Although the difference from the moderate group is not statistically significant, because of the larger variation within that group (in other words, the 95% confidence intervals are wider than those for students in the fewer barriers group).

Figure 125: Learning by socioeconomic group, Auckland and non-Auckland

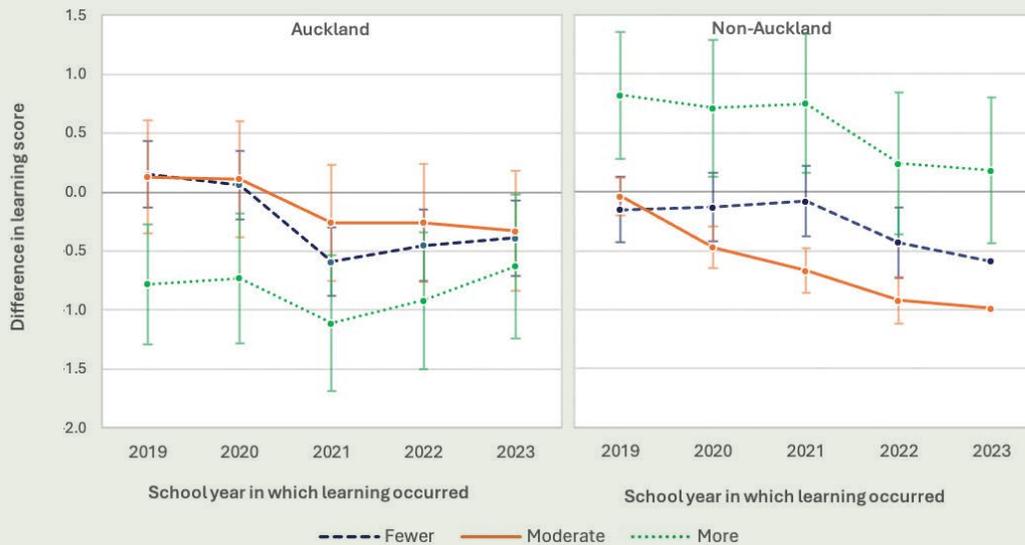
Interactive graphs are available here

Difference between average learning scores and the 2019 national average, by Equity Index of student's school, for (a) mathematics 2020–2022 and (b) reading comprehension 2020–2023

(a) Mathematics



(b) Reading comprehension



Source: New Zealand Council for Educational Research, COVID-19 and student achievement in Aotearoa New Zealand (Wellington: 2025)

Notes:

1. Learning scores for a given year relate to tests taken at the beginning of the following year.
2. Error bars denote 95% confidence intervals.
3. Fewer/moderate/more = students at schools whose students face fewer/moderate/more socioeconomic barriers to achievement.

Figure 126 shows patterns of learning across students of different ethnicities. Mathematics learning scores moved broadly together within Auckland and the rest of New Zealand. Mathematics scores for North Asian students outside of Auckland increased over the whole period, as did those for South Asian students, from a lower base. While patterns outside of Auckland largely remained flat or increasing, those within Auckland show a clear dip in 2021. The difference in scores between Māori ākonga in Auckland and those outside Auckland was around 1.16 units in 2021, and remained 0.73 units in 2022 (both differences between Auckland and non-Auckland scores for Māori were statistically significant). It was a similar story for Pacific students in 2021, with students in Auckland achieving scores in mathematics 0.7 units lower than those in the rest of New Zealand. However, this difference had disappeared for Pacific students by 2022.

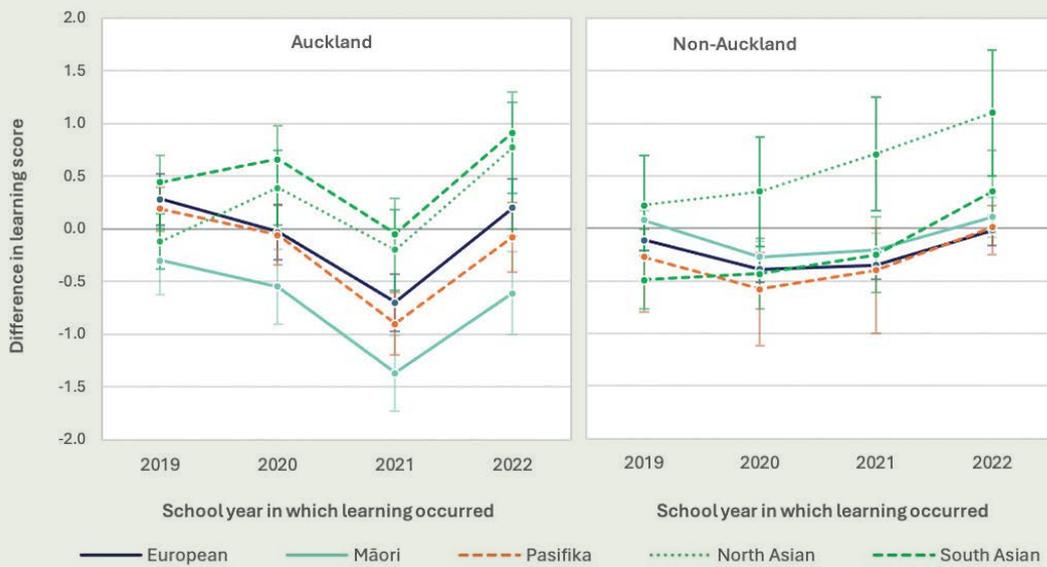
Reading comprehension scores for Māori ākonga declined in both Auckland and the rest of New Zealand. The reading comprehension scores of Māori in Auckland remained below those of outside of Auckland over the entire period. This difference was statistically significant in all years, excepting 2023 when the rise in Auckland narrowed the difference. The reading comprehension of Māori ākonga outside of Auckland was more like students of other ethnicities. Once more, there was a significant difference in non-Auckland North Asian students and those of other ethnicities over the entire period. This difference expanded as the reading comprehension scores of North Asian students increased for much of the period.

Figure 126: Learning by ethnicity, Auckland and non-Auckland

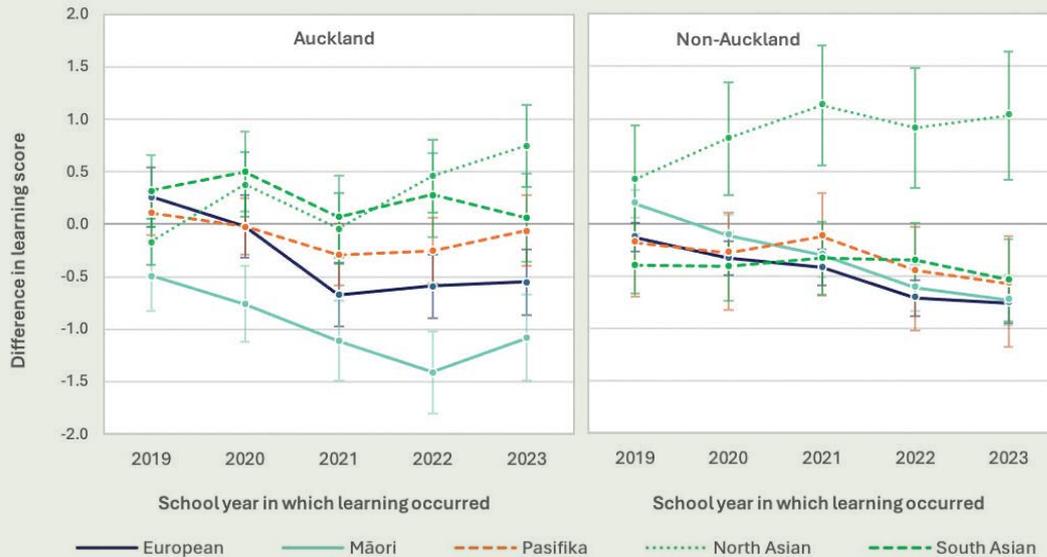
Interactive graphs are available here

Difference between average learning scores and the 2019 national average, by ethnicity, for (a) mathematics 2020–2022 and (b) reading comprehension 2020–2023

(a) Mathematics



(b) Reading comprehension



Source: New Zealand Council for Educational Research, COVID-19 and student achievement in Aotearoa New Zealand (Wellington: 2025)

Notes:

1. Learning scores for a given year relate to tests taken at the beginning of the following year.
2. Error bars denote 95% confidence intervals.

9

Health services | Ngā ratonga hauora

The COVID-19 pandemic disrupted the delivery of various public health services. In this chapter we have compiled some information about the impact of the pandemic on health-screening services and immunisation. A wide range of health services may have been affected by the pandemic. We have focused on those where data are publicly available.

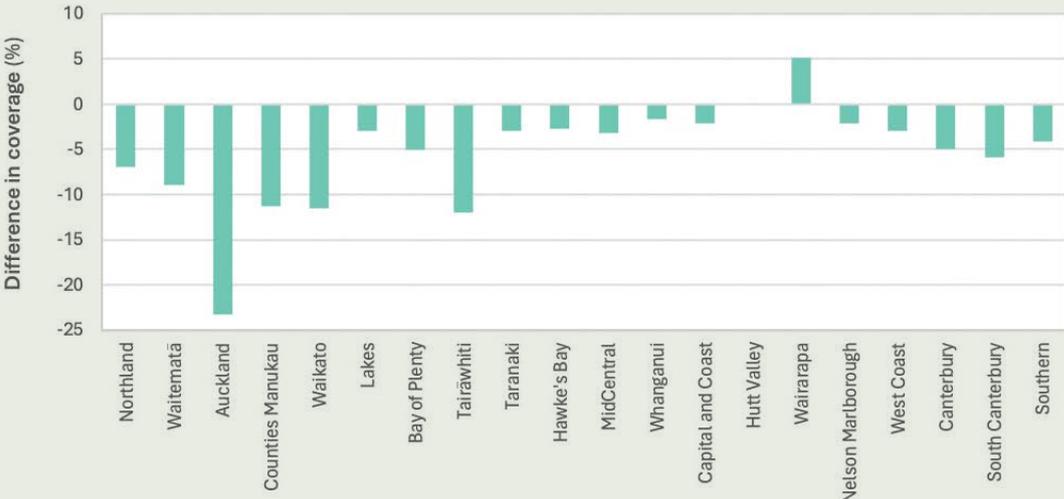
9.1 Breast cancer screening | Te tiroiro mate pukupuku ū

Breast-screening coverage rates (that is the proportion of eligible women who had a mammogram in the preceding two years) fell in all health districts between February 2020 and February 2022, excepting Wairarapa and Hutt Valley. The largest falls in coverage occurred in Auckland and Tairāwhiti (Figure 127).

Figure 127: Changes in breast screening coverage in New Zealand by health district

Difference (%) in 2-year coverage as of February 2022 compared with February 2020 baseline

Interactive graphs are available here



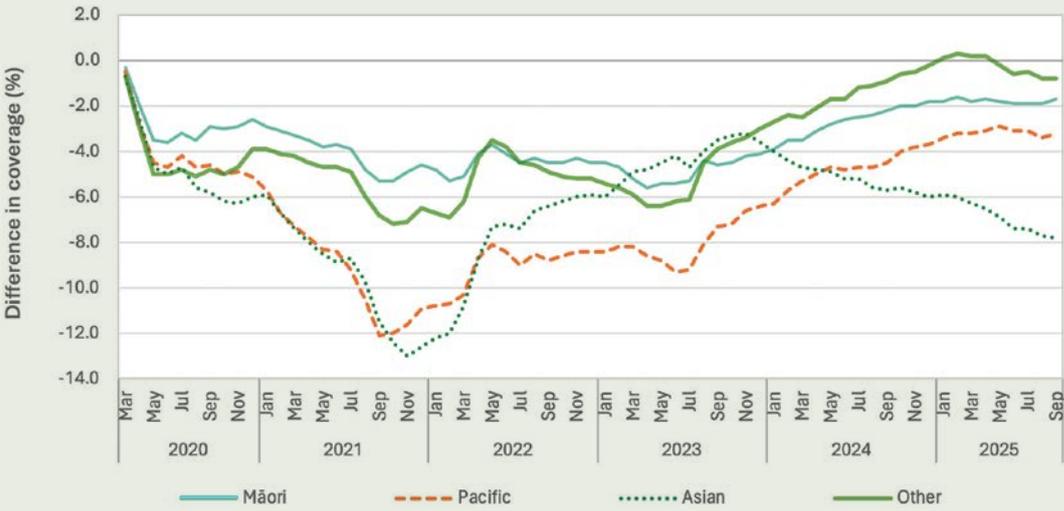
Source: BreastScreen Aotearoa interactive coverage data tool, <https://tewhatuora.shinyapps.io/nsu-bsa-coverage/>

Breast-screening coverage rates fell for all ethnicities from February 2020. Rates declined most for people of Pacific and Asian ethnicity. Coverage rates were still below the February 2020 baseline for all ethnicities in September 2025, with only people in the 'Other' ethnic group close to the baseline at this date (Figure 128).

Figure 128: Changes in breast screening coverage in New Zealand by ethnicity, March 2020 to September 2025

Interactive graphs are available here

Difference (%) in 2-year coverage compared with February 2020 baseline



Source: BreastScreen Aotearoa interactive coverage data tool, <https://tewhatuora.shinyapps.io/nsu-bsa-coverage/>

9.2 Cervical screening | Te tiroiro kōpū

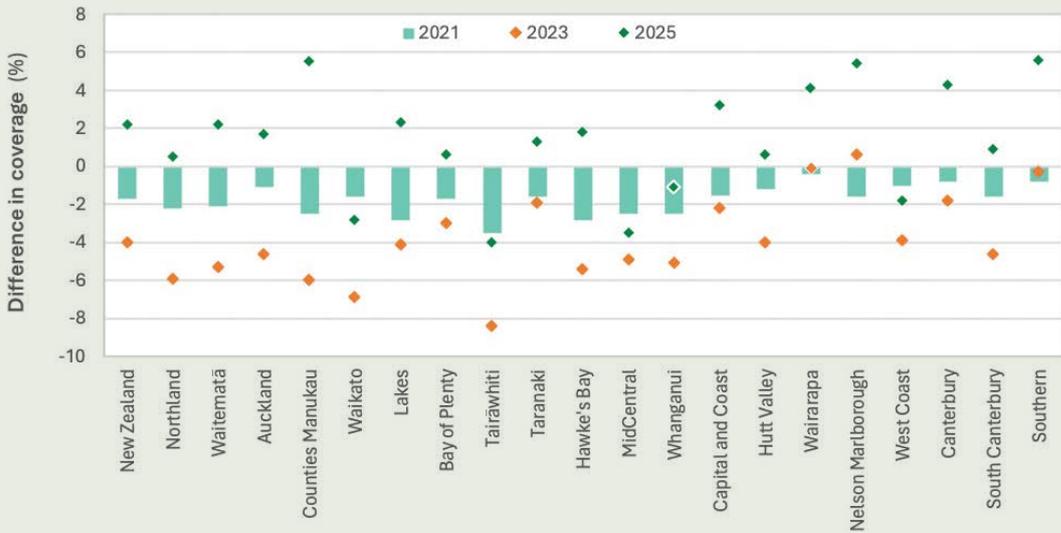
The primary test for cervical screening in New Zealand is a test for human papillomavirus (HPV), the cause of over 95% of cervical cancers. Health New Zealand | Te Whatu Ora offered the option of self-testing in July 2023, which created a rise in numbers of women undergoing cervical screening by 2025.

Figure 129 shows that screening coverage declined in 2021, relative to the February 2020 baseline. It had declined further by 2023 but then recovered strongly to exceed baseline levels in 2025, likely because of the self-testing option.

Figure 129: Changes in cervical screening coverage in New Zealand by health district

Difference (%) in coverage compared with February 2020 baseline, in 2021, 2023 and 2025

Interactive graphs are available here



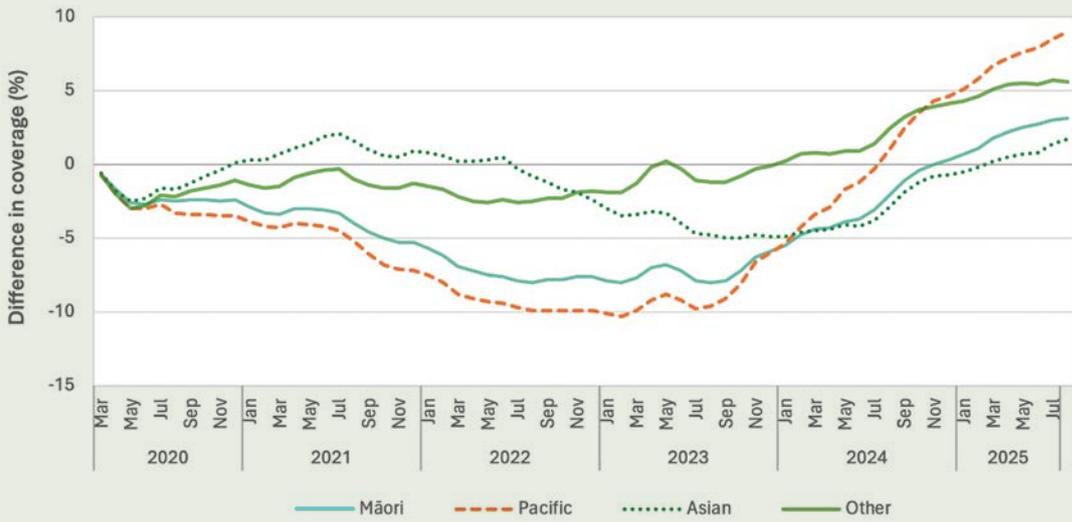
Source: Health New Zealand | Te Whatu Ora, National Cervical Screening Programme Coverage Report, <https://tewhatauora.shinyapps.io/nsu-ncsp-coverage/>

By early 2025, coverage rates for women of all ethnicities had returned to the baseline rates. Coverage rates fell the most for Pacific women over the pandemic, but these rates recovered rapidly from late 2023 (Figure 130). Again, self-testing is the likely reason.

Figure 130: Changes in cervical screening coverage in New Zealand by ethnicity, March 2020 to July 2025

Difference (%) in coverage compared with February 2020 baseline

Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, National Cervical Screening Programme Coverage Report, <https://tewhatauora.shinyapps.io/nsu-ncsp-coverage/>

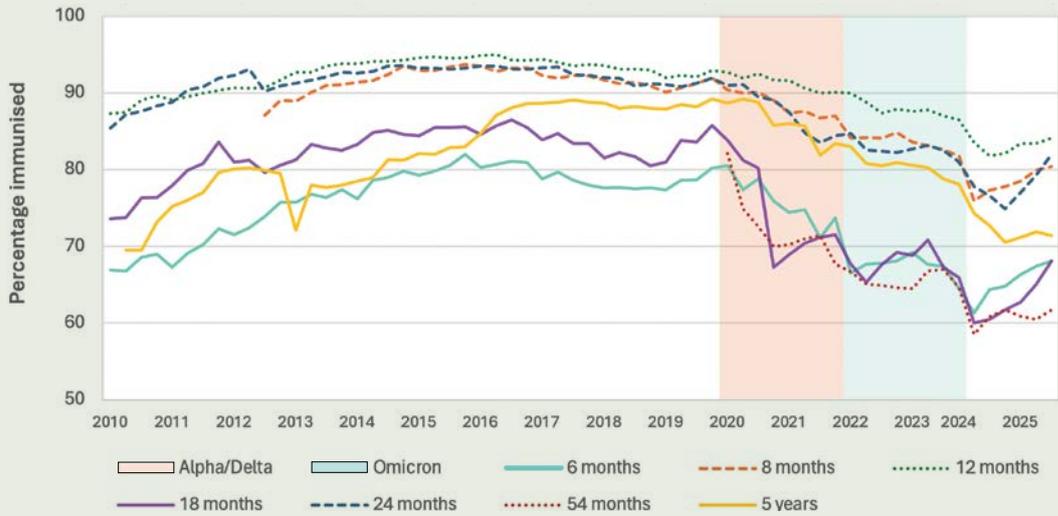
9.3 Immunisation | Te kano ārai mate

Figure 131 shows trends in infant immunisation coverage in New Zealand from 2010 to September 2025, measured at key ‘milestone’ ages in the National Immunisation Schedule. It shows how the proportion of children who are fully immunised on time has changed over this period: rising and then plateauing in the 2010s, falling across all milestone ages from 2020 during the COVID-19 pandemic, and only beginning to recover again in 2025. Infant immunisation coverage across all milestones remains well below 2020 rates.

Figure 131: Immunisation coverage of infants at milestone ages in New Zealand

Percentage of infants fully immunised at milestone ages, January 2010 to September 2025

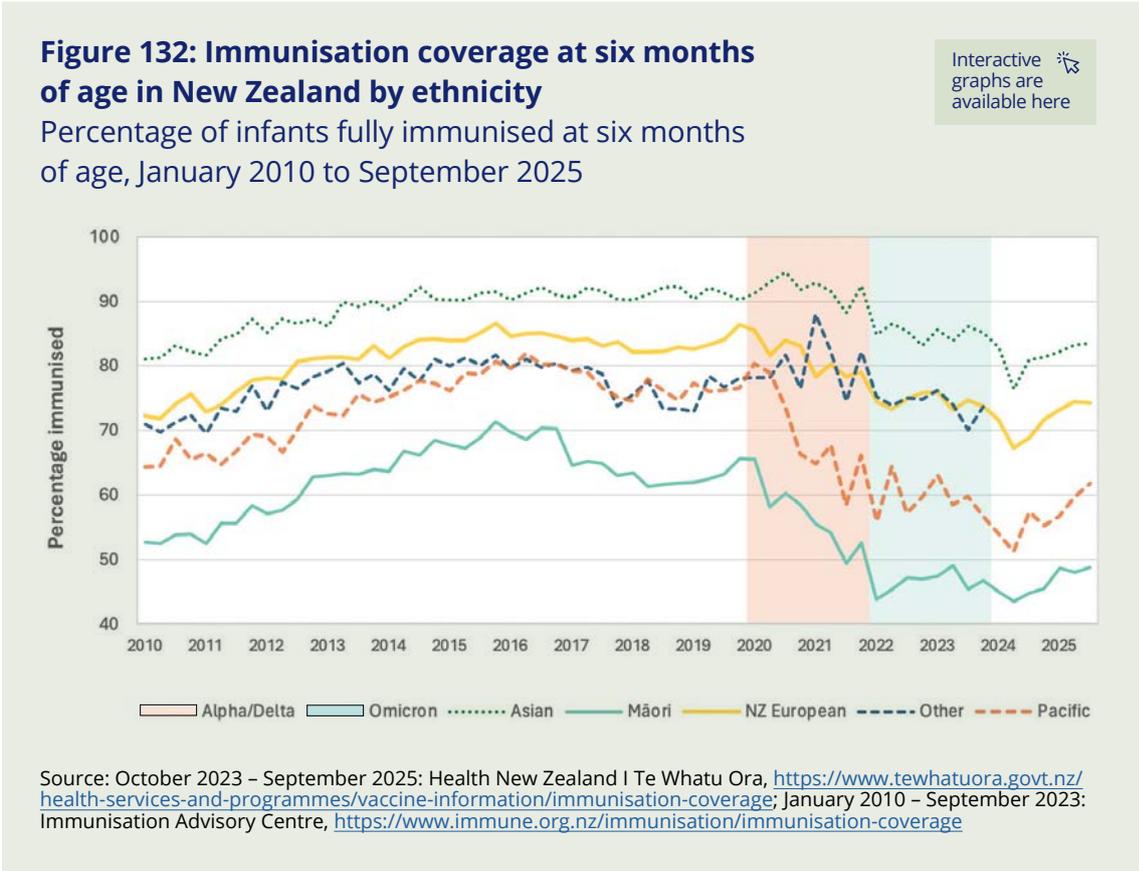
Interactive graphs are available here



Source: October 2023 – September 2025, Health New Zealand | Te Whatu Ora, <https://www.tewhātuora.govt.nz/health-services-and-programmes/vaccine-information/immunisation-coverage>; January 2010 – September 2023, Immunisation Advisory Centre, <https://www.immune.org.nz/immunisation/immunisation-coverage>

Notes: Coverage at the 18-month milestone was affected by the MMR schedule change in 2020. It was recommended that the measles, mumps and rubella (MMR) vaccine doses be given at 12 and 15 months rather than 18 months and 4 years, to enable children to be protected as early as possible. This change meant that some children appeared to be overdue in practice management systems when they had not yet had an opportunity to be immunised, and that immunisation coverage became difficult to compare to other points in time.

Figure 132 shows trends in immunisation coverage at six months of age in New Zealand from 2010 to September 2025, broken down by ethnicity. It shows the overall decline since 2020 in on-time infant immunisation, with minor recovery in 2025. The Figure highlights persistent gaps in coverage between children of different ethnicities.



10

Wellbeing, mental health and trust | Te oranga, te hauora hinengaro me te whakawhirinaki

The COVID-19 pandemic was one of the biggest upsets to the collective wellbeing of New Zealanders in generations, even though the country initially experienced relatively low infection and death rates. Evidence from national surveys and administrative data shows increased loneliness and financial pressure, and a drop in self-reported wellbeing. Patterns of delivery for mental health and addiction services shifted to accommodate public health restrictions. Levels of trust in government and public institutions were high before the pandemic but have fallen since. This chapter presents the available data.

10.1 Wellbeing | Te oranga

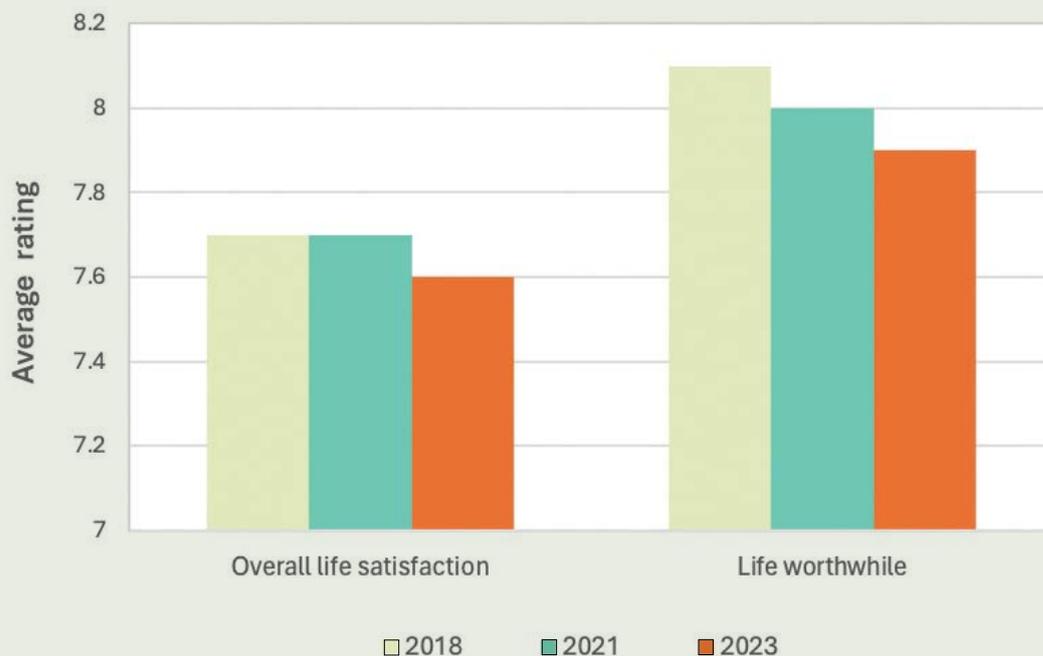
Wellbeing measures are one way to understand how people experience their daily lives and the conditions that support or undermine their quality of life. Indicators such as life satisfaction and feelings of purpose provide insight into the social, economic and personal factors that shape overall wellbeing. These measures help governments and public agencies identify emerging pressures, monitor changes over time and assess whether policy settings are effectively supporting the population.

Overall wellbeing declined in the period following the pandemic (Figure 133). The data are drawn from the Wellbeing Survey, which has been conducted by Stats NZ biannually since 2014 as part of the General Social Survey and as a standalone survey since 2021. The mean rating for overall life satisfaction fell after the pandemic, while the mean rating for whether people feel things they do in life are worthwhile declined during the pandemic and throughout the post-COVID-19 period.

Figure 133: New Zealanders' subjective wellbeing

Life satisfaction and life worthwhile ratings (0=lowest, 10=highest), in 2018, 2021 and 2023

Interactive graphs are available here



Source: Stats NZ, Wellbeing Survey

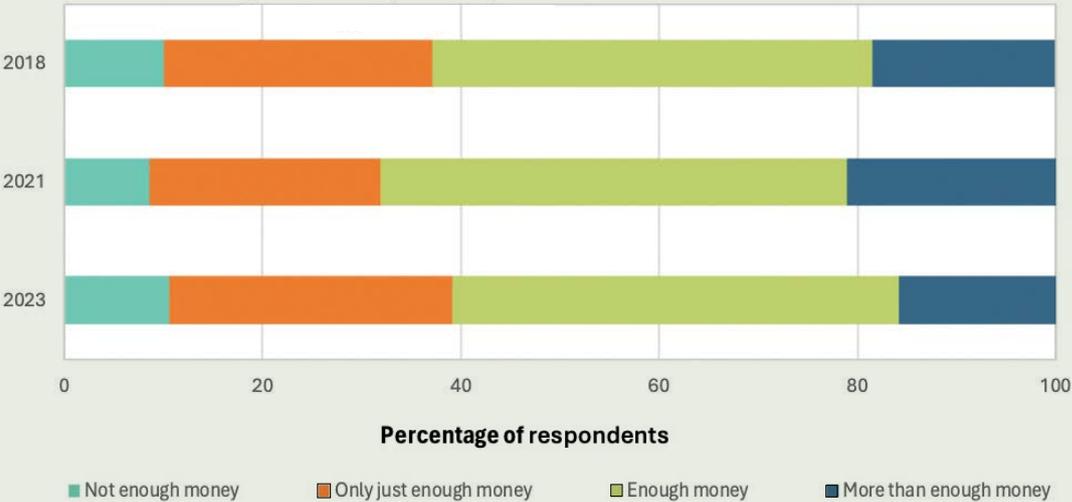
Notes:

1. For 'overall life satisfaction', the question asked was: 'I'm going to ask you a very general question about your life as a whole these days. This includes all areas of your life ... where zero is 'completely dissatisfied', and ten is 'completely satisfied', how do you feel about your life as a whole?'
2. For 'life worthwhile', the question asked was: 'where zero is 'not at all worthwhile', and ten is 'completely worthwhile', overall, to what extent do you feel the things you do in your life are worthwhile?'

The Wellbeing Survey showed a noticeable shift in reported financial pressure between 2018 and 2023 (Figure 134). Financial pressure eased for many households during the pandemic, but these gains did not last – financial pressure was greater in 2023 than it was in 2018.

Figure 134: New Zealanders’ financial pressure
 Self-reported financial pressure by response category, in 2018, 2021 and 2023

Interactive graphs are available here



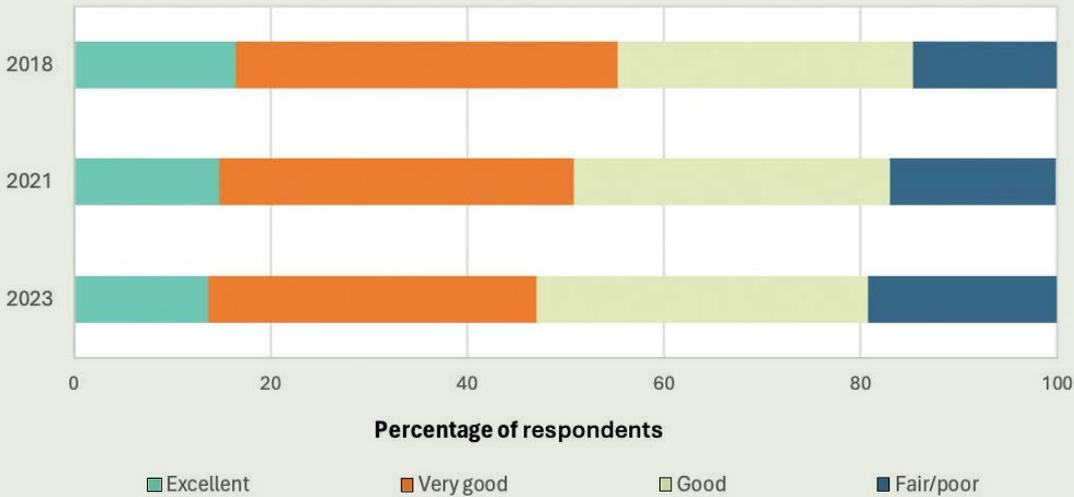
Source: Stats NZ, Wellbeing Survey
 Note: The question asked was: How well does your [and your partner’s combined] total income meet your everyday needs, for things like accommodation, food, clothing, and other necessities?

Self-rated health shifted across the three survey periods (Figure 135). The proportion of people rating their health as 'excellent' or 'very good' declined in 2021 and fell further in 2023.

Figure 135: New Zealanders' health status

Perceived health status by response category, in 2018, 2021 and 2023

Interactive graphs are available here



Source: Stats NZ, Wellbeing Survey

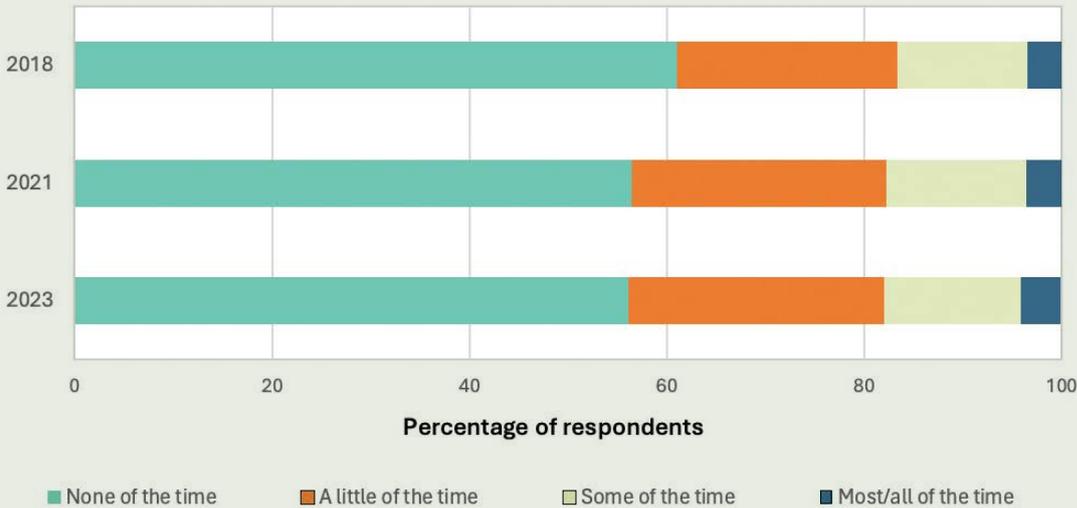
Note: The question asked was: 'In general, would you say your health is excellent, very good, good, fair, or poor?'

Loneliness was more commonly reported during and since the pandemic (Figure 136). The share of respondents who reported feeling lonely a little, some or most/all of the time increased markedly from 2018 to 2021 and remained at that level in 2023.

Figure 136: New Zealanders’ experience of loneliness during pandemic

Self-reported loneliness by response category, in 2018, 2021 and 2023

Interactive graphs are available here



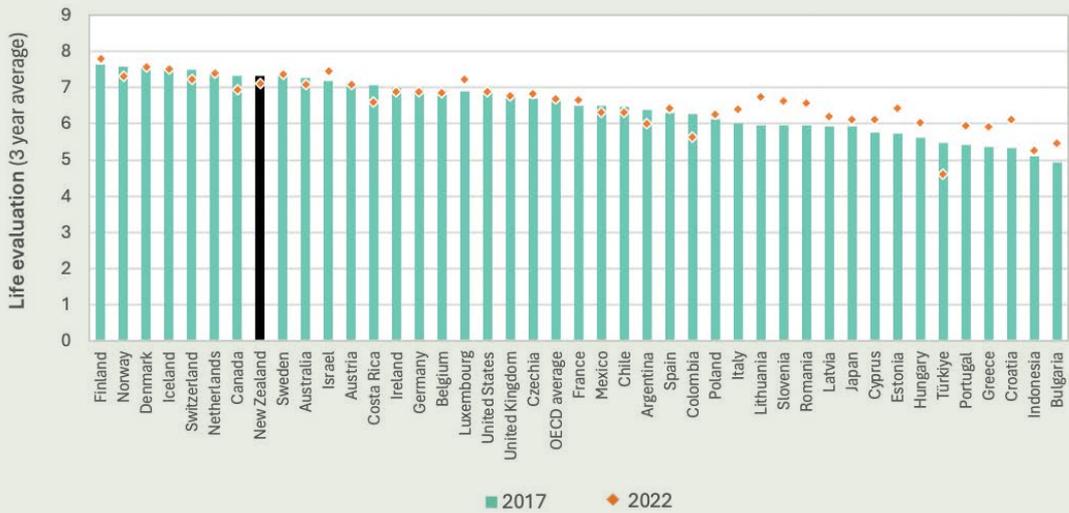
Source: Stats NZ, Wellbeing Survey

Note: The question asked was: People who have contact with family and friends can still feel lonely sometimes, while those who have little contact may not feel lonely at all ... in the last four weeks, how much of the time have you felt lonely

Across OECD countries, changes in life evaluation scores between 2017 and 2022 were mixed. New Zealand experienced a slight drop in life evaluation score, although it remained above the OECD average (Figure 137).

Figure 137: Life evaluation scores across the OECD
Life evaluation (3-year average), in 2017 and 2022

Interactive graphs are available here



Source: University of Oxford Wellbeing Research Centre, World Happiness Report, <https://www.worldhappiness.report/>

Note: The question asked was: Please imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?

10.2 Mental health | Te hauora hinengaro

It is difficult to directly observe the numbers of people experiencing mental health issues. However, we can observe treatments.

10.2.1 Medications for depression | Ngā rongoā mō te pōuritanga

Many common mental health conditions are treated with pharmaceuticals. We can use dispensing records as an indication of the prevalence of mental health conditions.

Selective serotonin reuptake inhibitors (SSRIs) are the most prescribed type of antidepressant. They are used to ease symptoms of moderate to severe depression.

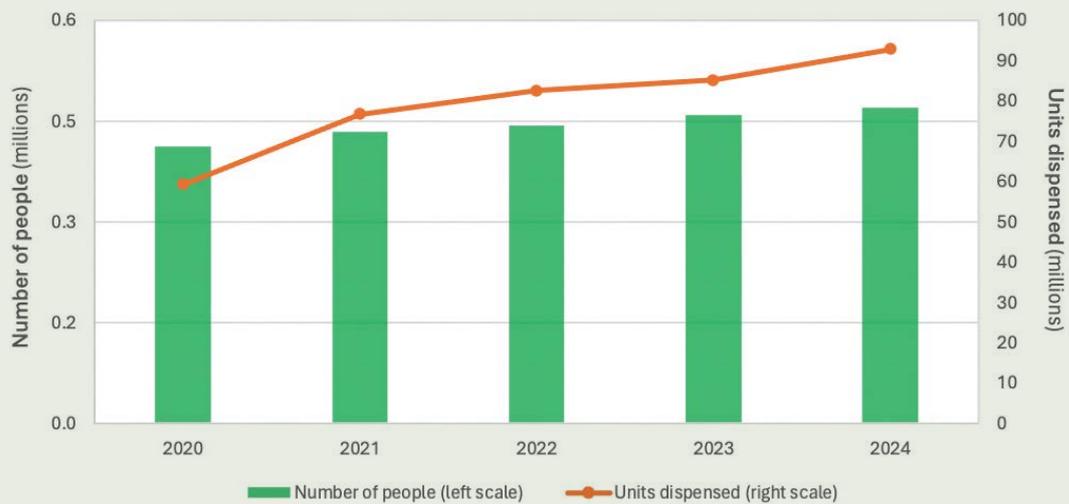
Health New Zealand's published data starts at 2020, so we do not have a pre-pandemic baseline. Pharmaceutical dispensing of SSRIs increased steadily between 2020 and 2024, both in terms of the total number of units dispensed and the number of people receiving them (Figure 138). Dispensed units rose each year, reaching its highest point in 2024. The number of people receiving SSRIs also grew, although at a slower rate, suggesting that individuals were receiving a larger volume of units on average. Overall, the data indicates rising use of SSRIs across the population.⁶⁰

⁶⁰ Note that we have not adjusted for population increase or ageing.

Figure 138: Antidepressant use in New Zealand, 2020–2024

Users and volumes dispensed of selective serotonin reuptake inhibitors (SSRIs)

Interactive graphs are available here



Source: Health New Zealand | Te Whatu Ora, Pharmaceutical Data web tool, <https://www.tewhātuora.govt.nz/for-health-professionals/data-and-statistics/pharmaceutical/data-web-tool>

10.2.2 Specialist mental health services | Ngā ratonga mātanga mō te hauora hinengaro

The number of people using specialist mental health services increased gradually from 2012/13 to a peak around 2020/21 before declining over the following years (green line in Figure 139).

The Mental Health and Wellbeing Commission attribute the decline in numbers of people accessing specialist mental health and addiction services between 2018/19 and 2022/23 to 'the increased pressure on the workforce due to high vacancies, and a focus on caring for those with higher and more severe needs'.⁶¹

Face-to-face specialist services (orange dashed line) followed a similar pattern but with a more pronounced drop from 2020/21 onwards, possibly reflecting the impact of COVID-19 restrictions and the shift toward alternative modes of service (Figure 139).

Figure 139: Clients of mental health and addiction specialist services in New Zealand

Clients of specific service types, per 100,000 people, 2012/13 to 2023/24

Interactive graphs are available here



Source: Programme for the Integration of Mental Health Data (PRIMHD), <https://tewhatauora.shinyapps.io/mental-health-and-addiction-web-tool/>

Notes:

1. Data refers to financial (July–June) year. Stages of COVID-19 relate to year in which financial year ends. Rates are per 100,000 population, standardised to the World Health Organization's standard world population.
2. Face-to-face services are a subset of total specialist services. In many cases, the sum of clients accessing services may exceed the total number of unique individuals accessing services reported. This is because some clients may be counted under multiple categories. For example, a client may be seen both by a District (former DHB) and an NGO service provider; may have been seen by multiple different team types; may have lived in two residences with different deprivation quintiles; and so on. The totals reported here count the total number of unique clients for the relevant category, rather than double-counting clients that fall under multiple categories.

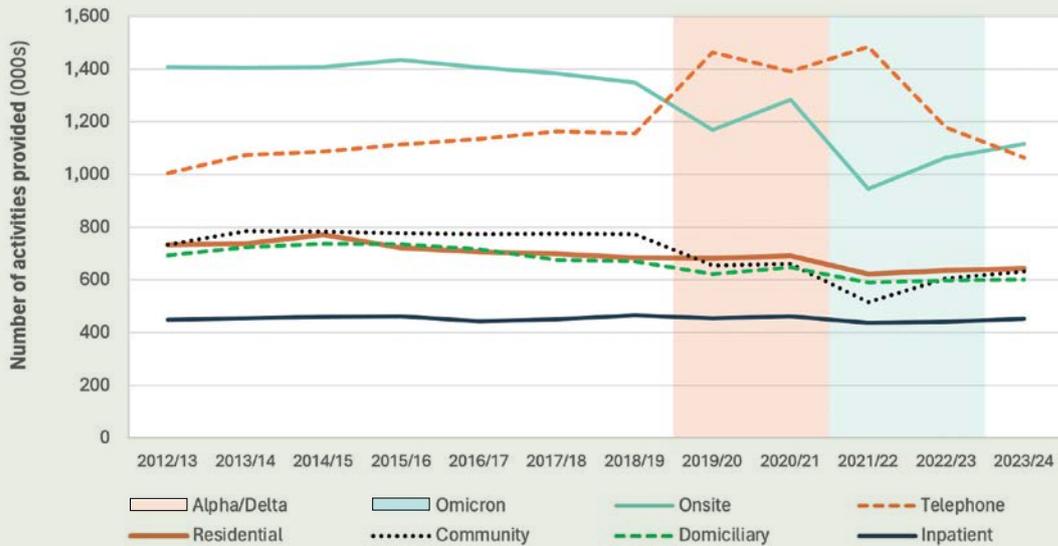
61 Te Hīringa Mahara New Zealand Mental Health and Wellbeing Commission, *Kua Timata Te Haerenga | The Journey Has Begun* – Mental health and addiction service monitoring report 2024: Access and options (5 June 2024), <https://www.mhwc.govt.nz/news-and-resources/kua-timata-te-haerenga/>

The data indicate that service delivery adapted to pandemic-related constraints, with shifting patterns between in-person and remote modes of care delivery. Onsite services dropped sharply in 2020/21 and then partially recovered in subsequent years (Figure 140). By contrast, telephone-based services rose substantially during the pandemic years, before declining again as onsite services began to resume. Residential, community and domiciliary activities all exhibited moderate decreases around 2021/22. Inpatient activity remained relatively stable across the period.

Figure 140: Selected mental health support activities provided in New Zealand by activity setting

Activities provided (000s), by activity setting, 2012/13 to 2023/24

Interactive graphs are available here



Source: Programme for the Integration of Mental Health Data (PRIMHD), <https://tewhatuora.shinyapps.io/mental-health-and-addiction-web-tool/>

Note: Data refer to financial (July–June) year. Stages of COVID-19 relate to year in which financial year ends.

10.3 Trust in public institutions | Te whakawhirinaki ki ngā whakahaere tūmatanui

Overall trends show a broad erosion in New Zealanders' trust in public institutions between 2018 and 2023.

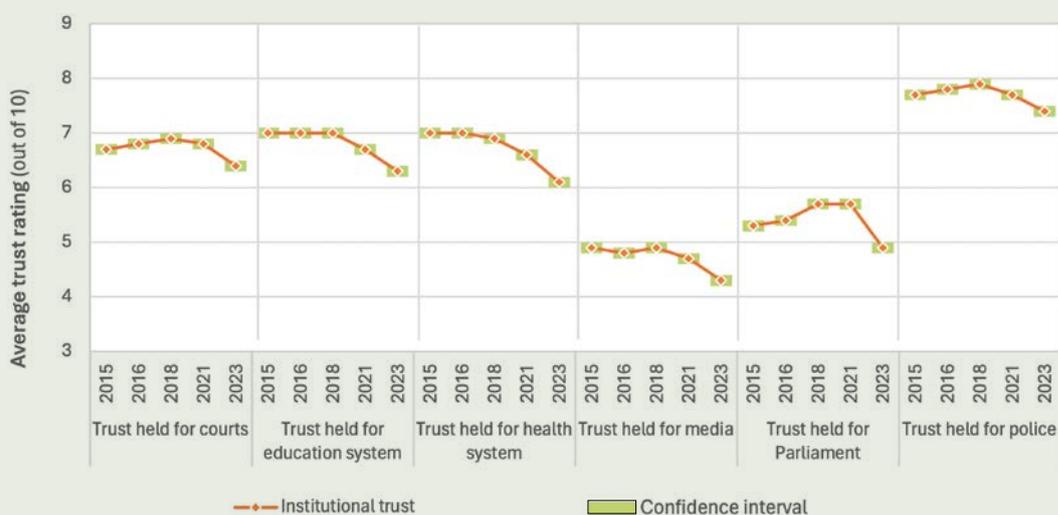
Trust declined between 2018 and 2023 (Figure 141). Trust in the courts, education system and police remained relatively high but showed modest downward shifts in 2021 and 2023. Trust in the health system and Parliament fell more sharply. The media had the lowest trust ratings of the institutions measured in 2018, and those ratings further declined during this period.

It is unclear whether these trends will continue or stabilise. Figure 141 is based on the General Social Survey. The most recent version of this Survey was carried out in 2025, and results will be publicly available in 2027.

Figure 141: New Zealanders' trust in public institutions

Trust, average rating (0=lowest, 10=highest), by institution, 2015–2023

Interactive graphs are available here



Source: Stats NZ, General Social Survey

Notes:

1. The confidence intervals mark the absolute standard error, 95% margin of error expressed as an absolute value.
2. The questions asked were: The following questions are about whether you have trust in various institutions in New Zealand. Even if you've had very little or no contact with them, please base your answer on your general impression of these institutions. ... on a scale of zero [not at all] to ten [completely], how much do you trust the [courts/education system/etc.]?

**Appendix: Methodology
for commissioned
research projects |
Āpitihanga: Te tikanga
rangahau mō ngā
kaupapa rangahau
i tukuna ki waho**

Disclaimer

The following relates to the results presented in sections 5.4 and 6.2.3. Sections A.1 and A.2 describe the methodology used to create those results.

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI), which is carefully managed by Stats NZ. 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 Stats NZ 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. Access to the data used in this study was provided by Stats NZ under conditions designed to give effect to the security and confidentiality provisions of the Data and Statistics Act 2022. The results presented in this study are the work of the author, not Stats NZ or individual data suppliers.

A.1 Health and education workforce mandates | Ngā whakature mō te hunga kaimahi hauora me te mātauranga

Our analysis of the impacts of vaccine mandates on skilled workers in the education and health sectors in section 5.4 uses data from the Integrated Data Infrastructure (IDI). The IDI contains an anonymised dataset of information on individuals, employers and households from administrative and survey data. These data include the New Zealand Census, surveys such as the Household Labour Force Survey and tax data. Stats NZ links these data together and creates a de-identified dataset for approved researchers to use in secure datalabs.

We use data on employment and earnings from the Fabling-Maré labour tables, derived from the IDI and the Stats NZ Longitudinal Business Database.⁶² The core information on which these tables are built is the confidentialised Employer Monthly Schedule record of monthly wage and salary earnings provided by firms to Inland Revenue, summarising all payments with tax deducted at source. A 'job' is a continuous monthly spell of wage and salary payments from an employer to an employee (treating one-month earnings gaps as continuous).

62 Richard Fabling and David C. Maré, Addressing the absence of hours information in linked employer-employee data. Working Paper 15-17, (Wellington: Motu Economic and Public Policy Research, 2015)

The industry of the employer comes from the Longitudinal Business Frame, a longitudinal representation of Stats NZ's Business Register. The Longitudinal Business Frame forms the backbone of the Stats NZ Longitudinal Business Database, to which all other firm-level datasets are linked. It captures basic information on all economically significant employers operating in New Zealand since 1999, including location, industry, business type, institutional sector and parent-subsidiary relationships.

Data on individual worker characteristics come from a range of sources within the IDI, such as the Census, Department of Internal Affairs birth records, and Ministry of Business, Innovation and Employment border movement data.

We created a longitudinal panel of skilled workers that were employed in the health or education sectors and aged between 20 and 74 years in October 2021 (the month that mandates were announced). To workers in this panel, we linked vaccination data to information on employment, qualifications and occupation (from the Census) to identify teachers, doctors, nurses and other education and health professionals.

A.2 Auckland firm performance in COVID-19 lockdown | Te whakatutukitanga o ngā pakihī o Tāmaki Makaurau i te rāhui KOWHEORI-19

Our analysis of firm performance during lockdowns in section 6.2.3 uses data from the IDI, specifically anonymised tax data for firms from the Longitudinal Business Database.

We focus on quantifying lost sales revenue for Auckland businesses and the uneven distribution of these losses. The scale of revenue losses suggests other impacts, including financial insecurity, job loss and stress on business owners and employees.

We estimate the sales revenue impact using comprehensive Goods and Services Tax (GST) data and using Christchurch firms as a counterfactual for Auckland firm performance in the absence of lockdowns.

There is no perfect counterfactual as we cannot observe what would have happened to Auckland in the absence of a lockdown, in particular what would have happened to COVID-19 cases and the impact on businesses.

The average Christchurch firm is not like the average Auckland firm. We address this concern by matching like firms, weighting and controlling directly for firm characteristics.

Despite substantial geographic distance between the two locations, Christchurch firms may have been affected by the Auckland lockdowns, for example, through supply chains. We show that government support, in the form of the COVID-19 Wage Subsidy Scheme (WSS), is limited for Christchurch firms during these periods compared with during national lockdowns, mitigating this concern. We cannot rule out that Christchurch firms in the tradables sector benefited from the Auckland lockdowns due to, for example, increased demand from Auckland consumers or reduced competition from Auckland firms. Given the closer proximity of other cities to Auckland, we maintain that this outcome is unlikely.

The entire South Island of New Zealand was free of COVID-19 during the period of Auckland-specific lockdowns. As such, our counterfactual represents the behaviour of firms and consumers in the absence of the risk of contracting COVID-19. This is unlikely to be the appropriate alternative outcome for Auckland, given that COVID-19 was present in the community. We interpret the estimated effects, therefore, as a bound on the potential negative impact of Auckland firms' sales. We mean this in the sense that – in the absence of a lockdown, the (unlikely) best case scenario is that the COVID-19 outbreak did not spread further. A scenario where COVID-19 spreads is assumed to be worse for the local economy and, therefore, our estimated effects are an upper bound for how much better off Auckland firms would be without regional lockdowns.

A.2.1 Data and methods | Ngā raraunga me ngā tikanga

We use the Longitudinal Business Database and related user-generated tables for most variables. Plant-level data in the Fabling-Maré labour tables⁶³ identify active employing firm locations, and the Business Register is used to identify working-proprietor-only locations. Monthly GST sales and purchases come from the method developed by Fabling⁶⁴ that apports two- and six-monthly returns to a monthly frequency.⁶⁵

GST data are additionally used to track firm exit (that is, the permanent absence of GST activity). Restricting the analysis to firm (GST) sales and purchases allows us to include working-proprietor-only firms in the analysis, which are otherwise restricted to annual frequency of observation. We exclude the government and not-for-profit sectors, for whom sales revenue is unlikely to be a good measure of firm performance or continuity.

63 Richard Fabling and David C. Maré, Addressing the absence of hours information in linked employer-employee data. Working Paper 15–17 (Wellington: Motu Economic and Public Policy Research, 2015)

64 Richard Fabling, Still medalling: Productivity gets a bronze (data source). Working Papers 24–06, (Wellington: Motu Economic and Public Policy Research, 2024)

65 These data are updated annually by Richard Fabling, and available to all authorised users of the Stats NZ Longitudinal Business Database via secure datalab access. We used the 202410 instance, which were the latest available at the time of analysis. Sales and purchases are GST-exclusive and deflated by the Consumers Price Index.

Employer WSS data are drawn from the IDI and linked to firms using confidentialised Inland Revenue numbers. The WSS was paid to firms during lockdowns to enable them to retain workers in cases where the impact of COVID-19 and associated events was substantial.⁶⁶ We use these data to confirm that we have correctly identified Auckland firms, to allay concerns that Christchurch firms were adversely affected by Auckland-specific lockdowns, and to establish industry groupings that were more and less affected by the pandemic. Because of the WSS, we do not consider firm employment outcomes, which may present an unduly rosy picture for recipients.

A.2.2 Lockdown identification | Te tautuhi i ngā wā rāhui

New Zealand operated a four-stage Alert Level System over the period where lockdowns occurred. Levels 3 and 4 of New Zealand's Alert Level System can be understood as 'soft' and 'hard' lockdowns respectively, because they required people to stay at home, closed schools and businesses, and involved heavy restrictions on public gatherings.⁶⁷

We follow this categorisation treating all Alert Level 3 or 4 periods as lockdowns, ignoring distinctions between the two levels for ease of analysis. Using the timeline reported by the Department of the Prime Minister and Cabinet,⁶⁸ we summarise the periods of nationwide and Auckland-specific lockdowns. For our analytical work, we simplify this classification to the monthly level of our data by treating September 2021 as a NZ-wide lockdown month, despite most of the month being Auckland-specific.

A.2.3 Matching firms | Ngā pakihī e whakataurite ana

To establish a counterfactual for Auckland firm outcomes, we apply a combined matching and regression approach. Matching follows a similar methodology to a 2014 study of the impact of the Canterbury earthquakes on firm performance.⁶⁹

Firms are located in the Auckland or Christchurch functional urban area if the majority of total labour input is located in one of those areas.⁷⁰ Thus multi-location firms are included in the analysis when secondary locations are small relative to the primary location.

66 For an evaluation of the WSS and discussion of the related data see Dean Hyslop, David C. Maré, and Shannon Minehan, COVID-19 Wage Subsidy: Outcome evaluation, Working Paper 23-03 (Wellington: Motu Economic and Public Policy Research, 2023)

67 NZ Royal Commission of Inquiry into COVID-19 Lessons Learned: Phase One, Main Report (2024), <https://www.covid19lessons.royalcommission.nz/reports-lessons-learned/main-report>

68 Department of the Prime Minister of Cabinet, Timeline of Aotearoa New Zealand's significant events and key All-of-Government activities (1 September 2023), <https://www.dpmc.govt.nz/sites/default/files/2023-10/pr-timeline-significant-events-activities.pdf>

69 Richard Fabling, Arthur Grimes and Levente Timar, Natural selection: Firm performance following the Canterbury earthquakes. Working Paper 14-08 (Wellington: Motu Economic and Public Policy Research, 2014)

70 We rely on plant-level employment to identify the relative size of firm locations because sales/output is only available at the firm level.

While the quintile-based process assures an even distribution of Auckland firms across cells (within industry-labour type), cells can have a relatively small number of Christchurch firms. We drop cells where there are fewer than one Christchurch firm for every 20 Auckland firms. Assigning a weight of one to each Auckland firm, Christchurch firms are weighted by the ratio of Auckland to Christchurch firms in the relevant cell. The weighted count of the Christchurch firms, therefore, equals the (un)weighted count of Auckland firms in each cell. These weights are used throughout the analysis.

Since GST is mandatory above a minimal filing threshold, and our data-based exclusions are minor, we consider the resulting sample of 96,636 private-for-profit Auckland firms – 51,708 working-proprietor-only and 44,928 with employees – to be highly representative of the population. Results represent the average experience of Auckland firms relative to similar Christchurch firms. We track sales, purchases and firm survival from April 2019 (a year prior to the base month) through to March 2024 (the latest complete March year) – a total of 60 months. By tracking results prior to the base month, we can assess the quality of the matching by checking for parallel trends violations that might invalidate the comparison.

A.3 COVID-19 and student achievement in Aotearoa New Zealand | Te KOWHEORI-19 me te whakatutukitanga ākonga i Aotearoa

Section 8.4.3 summarises the results of research into Progressive Achievement Test (PAT) data held by the New Zealand Council for Educational Research (NZCER). The research did not use Stats NZ's Integrated Data Infrastructure.

A.3.1 About the PAT tests | Mō ngā whakamātautau PAT

PAT assessments have a long history in New Zealand, with the first PAT test developed by NZCER in the late 1960s. The tests have been regularly updated to stay current with the curriculum and testing standards. They have been one of the most widely used assessment tools in New Zealand schools.

A student's raw score (that is, how many questions they got right on a particular test form) is converted into a scale score, using a psychometric Rasch model. This score indicates both how difficult the questions were that the student could reliably answer and where that sits relative to curriculum expectations. For the purposes of our analysis, a change in the scale score of roughly 5–7 units can be thought of as corresponding to one year's average progress in mathematics. A difference of roughly 7–9 units is approximately one year of learning in reading comprehension.

Scale score points were converted into approximate weeks of learning, by assuming that 6 scale points represents 38 weeks of learning in mathematics, and that 8 scale points represents a similar period of learning in reading comprehension.

A.3.2 Data | Ngā raraunga

To allow for the inclusion of school-level demographic information, the NZCER student PAT database was merged with the Ministry of Education's school directory.

As PAT assessments have historically been disproportionately administered in term 1, analysis was restricted to term 1 exams only. This gave a single, clean measure of achievement for each student in the dataset for each year they were present.

To control for school-specific factors that were not in the database, analysis was restricted to those schools that used the PAT mathematics assessment for at least 10 students each year between 2020 and 2023. For PAT reading comprehension assessments, the analysis window was extended to five years, covering 2020–2024 (providing information primarily about 2019 through 2023).

The dataset was restricted to English-medium, state and state-integrated schools to ensure alignment between the assessments used and the New Zealand Curriculum. PAT tests are available only in English, and many private schools do not follow the New Zealand Curriculum in full.

A.3.3 Analysis populations | Ngā taupori tātari

Ethnicity in the PAT database is encoded into the following categories: NZ European; detailed European subgroups (such as Australian or Dutch); Māori; Pacific subgroups; Southeast Asian subgroups; Chinese; Indian; other Asian subgroups; Middle Eastern; Latin American; African; Other Ethnicity; and Not Stated.

Modelling was done using three complementary population frames. The first and primary frame was a stable-schools analysis population that included all schools that consistently used PAT exams throughout the analysis period. The second looked at each of the three Equity Index (EQI) bands, and the third frame looked at ethnicity and gender focused subsets. Ethnicity groups were pooled based in part on cultural affinity but also on similar achievement coefficients in the models themselves. For this reason, North Asian (Chinese, Korean and Japanese) and South and Southeastern Asian populations were distinguished.

Table 7: PAT test data: Analysis populations, mathematics

Analysis population	Assessments	Unique students	Unique schools	Assessments from Auckland (%)
Stable schools	387,134	200,640	575	34.7
'Fewer' Equity Index group (schools with EQI<428)	186,762	99,357	238	47.6
'Moderate' Equity Index group (schools with EQI 428–494)	172,864	93,146	265	20.4
'More' Equity Index group (schools with EQI>494)	27,508	15,041	72	34.5
European	266,079	134,589	575	28.2
Māori	86,483	45,306	572	24.3
Pacific (Tongan, Samoan, Cook Islands Māori, Niuean, or Fijian)	30,538	16,089	523	61.4
North Asian (Chinese, Japanese or Korean)	28,717	15,295	452	63.8
South & Southeast Asian (Indian, Sri Lankan, Vietnamese, Filipino, Cambodian, or Other Asian)	38,083	20,169	535	51.4

Source: Progressive Achievement Test database

Table 8: PAT test data: Analysis populations, reading comprehension

Analysis population	Assessments	Unique students	Unique schools	Assessments from Auckland (%)
Stable schools	481,648	228,393	494	40.4
'Fewer' Equity Index group	251,457	118,821	230	50.7
'Moderate' Equity Index group	194,347	100,666	206	25.7
'More' Equity Index group	35,844	18,852	58	47.7
European	321,763	149,033	494	32.6
Māori	94,407	45,668	494	28.4
Pacific	50,067	24,049	472	64.0
North Asian	43,526	20,386	419	71.9
South & Southeast Asian	51,451	25,089	472	54.6

Source: Progressive Achievement Test database

A.3.4 Statistical methods | Ngā tikanga tātari tatauranga

All analyses used linear mixed-effects regression fitted in R (version 4.5 or higher) with the lme4 and lmerTest package, estimated by restricted maximum likelihood. Inference for fixed effects used Satterthwaite degrees of freedom as implemented in lmerTest, and the analysis reports model-based 95% confidence intervals and two-sided p-values.

The causal contrast was defined through a differences-in-differences design comparing Auckland (as defined by the Regional Council boundary) with the rest of New Zealand across multiple years. This removes changes that both groups would have experienced anyway (such as national curriculum changes), so that what remains is the extra change associated with Auckland's additional disruptions. A key assumption is that, without Auckland-specific disruptions, Auckland and the rest of New Zealand would have followed similar underlying movements.

Time was represented with an 'exposure year' factor that linked each term 1 test to the school year immediately preceding it, took the earliest pre-COVID-19 exposure year as the baseline, and included a binary region indicator for Auckland versus the rest of New Zealand. To improve comparability and reduce confounding, models further adjusted for student year level, gender, school socioeconomic context via the Ministry of Education's Equity Index (which was treated as continuous) and broad ethnic-group indicators where sample sizes permitted stable estimation.



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