

Measles preparedness and patterns of immunisation: An evidence brief

Executive summary

Introduction to the evidence brief

- Measles is a highly contagious and life-threatening illness but is preventable by getting the measles, mumps, and rubella (MMR) vaccine. However, childhood immunisation figures at a national level are lower than the national target of 95 percent.
- Measles has been eliminated in New Zealand, but imported cases have caused outbreaks in the country. The 2019 measles outbreak saw more than 2,000 people infected and more than 700 hospitalised. This year Te Whatu Ora - Health New Zealand has notified several instances of imported measles cases.
- This evidence brief is intended to provide a high-level view of insights and lessons learned from past measles outbreaks based on a time-limited scan of online resources. A simple analysis of measles immunisation rates of children in Oranga Tamariki care is also presented to help the organisation get a sense of the current level of measles preparedness.

Key Findings

Improving vaccination coverage is a priority

- Immunisation rates for children in care are comparable to, and sometimes higher than, the general population of children however for both the general population of children and those in care a continued focus on promoting immunisation is needed.
- Measles outbreaks can be prevented by increasing the immunity of children through vaccination and closing the ‘immunity gap’ that persists in the New Zealand population. Oranga Tamariki can assist by improving immunisation rates of the children and young people in our care.
- In an outbreak, prioritise vaccination for populations and geographic areas that are most at risk for measles if the vaccine is in short supply.

The role of community networks and leaders is critical in maintaining visibility, identification of needs and continuity of care

- In an outbreak situation, public health advice related to the outbreak should accompany appropriate support that meets the need of the affected households. A wide range of services that are integrated and take into consideration the needs of various sub-populations is needed.
- Community leaders and local-level providers know their people best, including what supports tamariki and their whānau need. The New Zealand response to COVID-19 is clear evidence of this.



Cross-agency liaison and collaboration contribute to understanding children and whānau who may be at risk, and the support they need

- Lessons learnt from COVID-19 responses in New Zealand, and overseas, shows the importance of proactive collaboration with other government agencies and community groups.
- Lessons learnt so far from the Care in the Community Welfare Response evaluation also shows that increased communication and collaboration – between iwi, agencies, local government, and community leaders facilitated by regional leadership structures – contributed to the success of the collective welfare response effort.
- Cross agency efforts are important also from the perspective of prioritising limited resources. Follow-up of measles cases is labour-intensive, and capacity of public health staff to follow-up individual cases is quickly overwhelmed in a large outbreak.

Preparing the workforce to handle an outbreak can help prioritise scarce resources

- Having a record of staff measles vaccination history, and susceptible staff encouraged to get vaccinated is a useful exercise that also helps prioritise use of scarce resources if there is an outbreak.
- Staff need training on outbreak management in advance of an outbreak. It is critical to continue face-to-face engagement with the most ‘at risk’ groups within health guidelines.

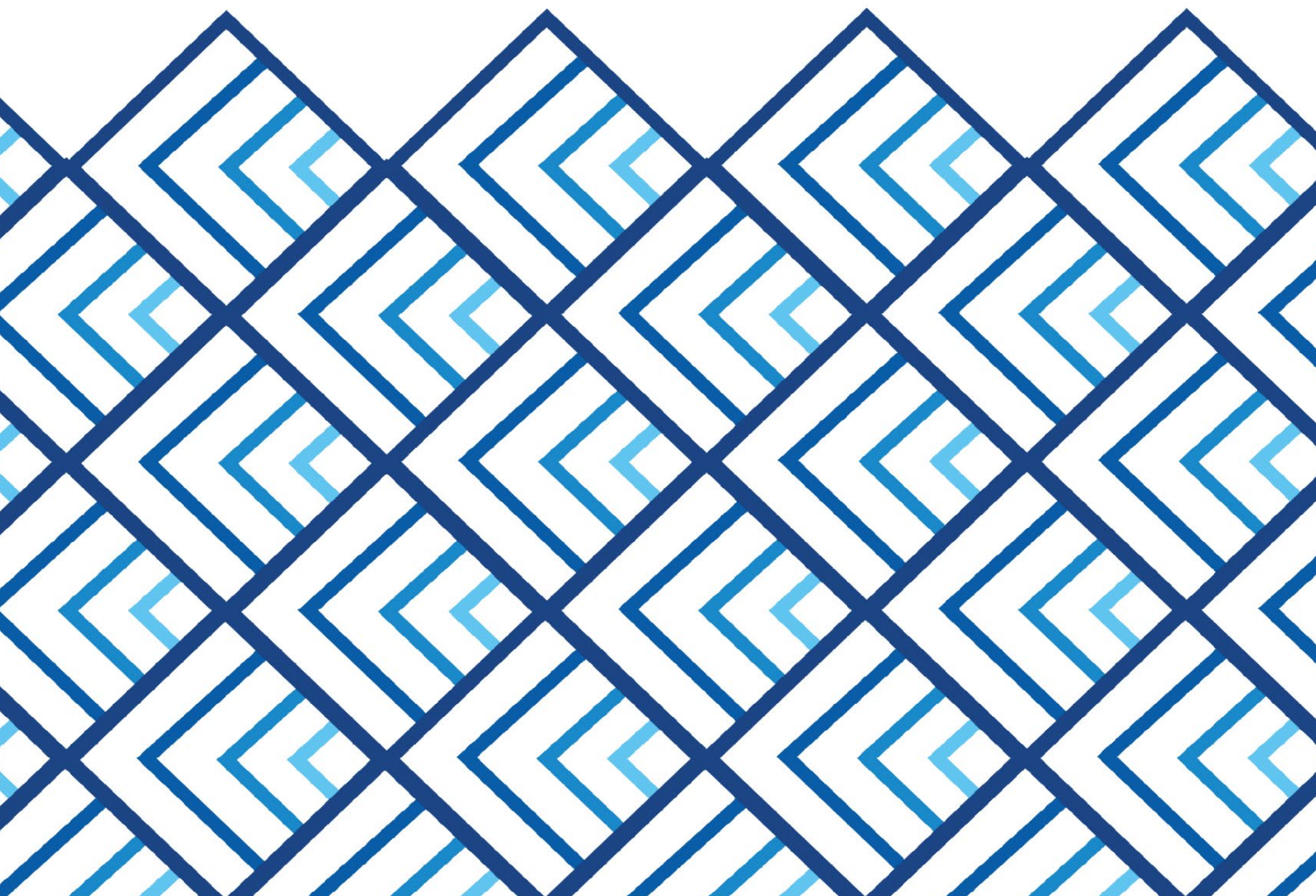
For equitable outcomes, access to information is as important as having standardised, consistent and relevant messaging

- Standardised and clear messaging that is relevant to various groups, and alignment of key messages across agencies is essential, as learnt from New Zealand response to COVID 19. This need for consistency was also highlighted by the 2019 measles outbreaks review.
- However, in the context of care and protection of children and young people, communication and campaigns need to be tailored to young people, culturally diverse groups and community leaders.
- Communities’ access to information is a significant part of protecting tamariki and whānau from disease outbreaks. The 2019 measles outbreaks review found that there was a clear difference in access to health information for Māori and Pacific groups compared with the total population.

Clarity in roles and responsibilities at national and local levels is essential for equitable outcomes

- In an emergency situation, clarifying roles and responsibilities – at national and local levels – is an important part of being prepared to help mitigate disparities and is required when rapid but co-ordinated decisions are needed at various levels.





Background to the evidence brief

- Measles is a highly contagious viral disease that can be life threatening. Although a highly communicable illness, it is preventable through vaccination.¹
- The measles, mumps, and rubella (MMR) vaccine provides effective protection to both individuals and the wider community. The National Immunisation Schedule has the first dose of the MMR vaccine at twelve months of age, with the second at fifteen months. Approximately 95 percent of vaccinated people are protected from measles after one dose, and 99 percent after two doses. If given within 72 hours of exposure to the measles virus, the MMR vaccine may provide protection to the un-immunised and limit the spread of measles.²
- Unvaccinated children and people with weakened immune systems are at the highest risk of becoming severely unwell from measles. If unvaccinated pregnant people get infected, it can increase the risk of miscarriage and premature labour.³
- In 2017, New Zealand was officially recognised by the World Health Organization (WHO) as having eliminated measles meaning that outbreaks were associated with imported cases only, and there had been no measles cases originating in New Zealand for the previous three years.
- However, measles outbreaks in 2019 saw 2,145 people in Aotearoa New Zealand infected and more than 700 hospitalised.^{4, 5} Young infants, particularly under two years of age, were mostly affected – followed by teenagers and young adults under the age of 30 years. In Auckland, two thirds of cases occurred in those living in areas of high deprivation (NZDep 9 or 10).⁶
- Ethnicity-wise, the Pacific population⁷ was most affected, representing 41 percent of all cases.⁸ To get a sense of the disparities in measles-related hospitalisations, a report on data from January – September 2019 shows that of those hospitalised 36.0 percent were Pacific people and 39.6 percent were Māori.⁹

¹ [Measles | Ministry of Health NZ](#)

² [Post-exposure MMR vaccination and exclusion – Te Whatu Ora - Health New Zealand](#)

³ [Measles | Ministry of Health NZ](#)

⁴ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁵ Prior to 2019, the most recent measles epidemic in New Zealand occurred in 1991 with an estimation of tens of thousands of cases, followed by 1997 with 2,169 cases notified. Since then smaller outbreaks have occurred in 2009, 2011, 2014 and 2016, with the largest of these being in 2011 with 489 cases ([nzma.org.nz](#)).

⁶ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁷ Based on the 2013 census results, approximately 300,000 people (~7% of the New Zealand population) identified with at least one Pacific ethnic group. Pacific peoples are highly concentrated geographically in certain parts of New Zealand, with approximately two third living in the Auckland region (Source: [Tofa Saili: A review of evidence about health equity for Pacific Peoples in New Zealand \(pacificperspectives.co.nz\)](#)).

⁸ [Health Sector Response to the 2019 Measles Outbreaks](#). The NZDep is an index of deprivation that measures socio-economic status of population in specific geographic areas based on Census indicators. The NZDep divides New Zealand into equal tenths; a score of 10 indicates a geographic area that is in the most deprived 10 percent of all areas in New Zealand. The scoring system is interpreted in the opposite way to the prior decile rating system that the Ministry of Education used.

⁹ [A measles epidemic in New Zealand: Why did this occur and how can we prevent it occurring again? \(nzma.org.nz\)](#)

- On 13 February this year (2023), Te Whatu Ora (Health New Zealand) confirmed the first imported measles case detected in Auckland since the 2019 outbreak. In May, two more cases were confirmed which included a secondary school student infected by a household contact who had just returned from overseas. A further imported case was confirmed in September. To help prevent local transmission from imported case, the National Immunisation Programme of Te Whatu Ora has made attempts to reach out to young people born between 1989 and 2004, some of whom may not have received both doses of the MMR vaccine.¹⁰
- As COVID-19 restrictions are relaxed and the country is open to more international travellers, there is a high risk of outbreaks if a case were to arrive..
- The high likelihood of community transmission of measles in Auckland is also accentuated by the recent national emergency weather events as communities are unable to access healthcare early-on, if sick. Oranga Tamariki therefore needs to be ready for the rapid spread throughout the community and be able to respond at pace.
- This evidence brief, based on a time-limited scan of publicly available online resources, pulls together insights and lessons learnt from past measles outbreaks, predominantly the 2019 outbreak in New Zealand, and our COVID-19 response. To understand the immunisation status of children in Oranga Tamariki Care, we are liaising with Te Whatu Ora and carrying out a data match between their MMR vaccination data and those recorded in CYRAS. Furthermore, we analysed the MMR vaccination data from the Integrated Data Infrastructure (IDI). The findings from the IDI data analyses are presented in this evidence brief.
- This pro-active piece of work is intended to support our organisation should any large measles outbreak occur, informed by evidence, we can be ahead of the curve and ready to address any potential significant impact on:
 - the children and young people, tamariki and rangatahi Māori in our care, and their families/whānau,
 - our kaimahi, and
 - the critical services we provide.

Overview of the MMR status analysis

- The Evidence Centre carried out an exploratory study to understand the vaccination status of children and young people in our care. We extracted MMR vaccination information from the Integrated Data Infrastructure (IDI)

¹⁰ [Measles: Health body texting, emailing young people who may be undervaccinated](#)

for children in care¹¹ and compared this to children in the general population¹². Summary tables are presented in Appendix 1.

- Key points about the analysis:
 - Years represent the financial year (year to June 30), with the exception of 2022 where data was only available to 31 December 2021.
 - Age groups were selected to match common Oranga Tamariki groupings, covering pre-school (up to 4 years), early primary (5 to 9 years) and the transition from primary to secondary school (10 to 13 years). Note that:
 - Only children aged 18 months or over are included in the pre-school age to capture those eligible to be fully vaccinated (two doses)
 - Children 14 and over have been excluded due to issues with data quality for this age range. There was a shift from paper to electronic records around 2005 which has impacted completeness of records. There is also a slight impact on the 10 to 13 year group for 2018, which can be seen in the graphs.
 - Ethnicity was prioritised according to the standard approach for Oranga Tamariki reporting (Māori, Māori and Pacific, Pacific, and New Zealand European and Other)

Key insights

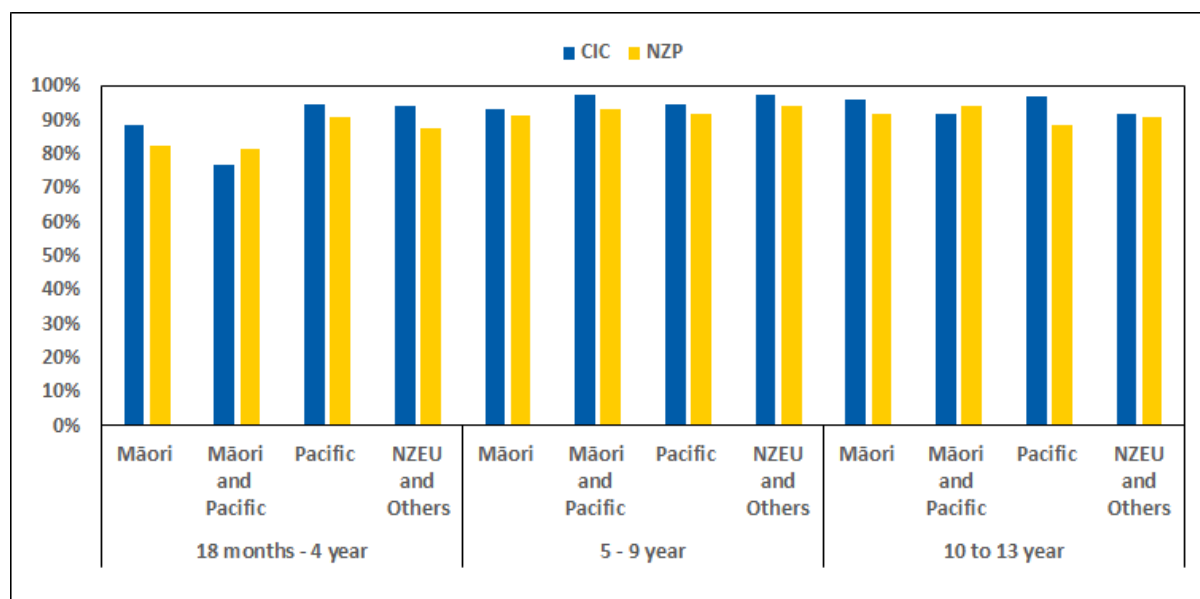
Measles vaccination rates of children in Oranga Tamariki care are comparable to or higher than for children in the general population

- The vaccination rates for children in care in all age-groups overall are comparable to or higher than children in general population. There are some limited differences by ethnicity as shown in Figure 1 below. Table 1 in Appendix 1 shows the MMR vaccination rates for the two groups, stratified by age and ethnicity. Data for the financial year 2022 was not complete and represents the vaccination rates up to 31 December 2022.

¹¹ Children in care includes children in the Care and Protection custody of the Chief Executive of Oranga Tamariki, and includes both out-of-home placements and in-home placements.

¹² The general population is defined as children who have had no contact with the Care and Protection or Youth Justice systems, have not been on either the Orphan's Benefit or Unsupported Child's Benefit, and who also show reasonable to good wellbeing in the Children's Wellbeing Model.

Figure 1: MMR vaccination rates (two doses) for children in care (CIC) as at 31 December 2021 compared to children in general population (NZP) grouped by age¹³ and ethnicity.



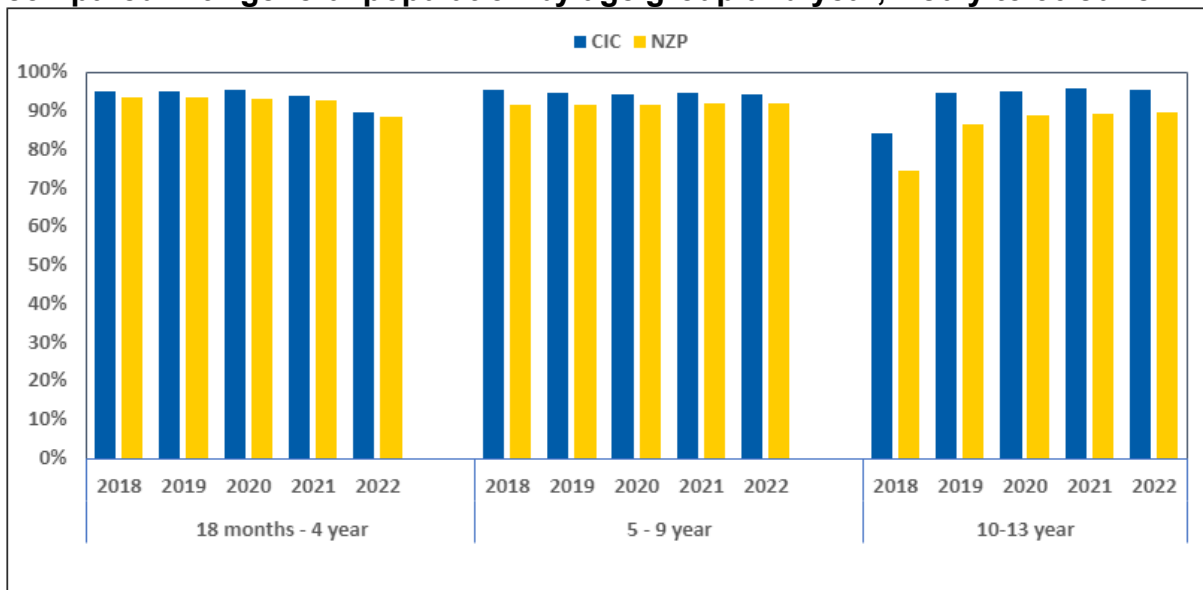
- Table 2 in Appendix 1 shows regional variation in vaccination rates, with Te Tai Tokerau tending to be lower for the general population and Lower South being higher.
- MMR vaccination rates for various age groups are relatively consistent over time. Figure 2 below shows the annual MMR vaccination rates by age group and year (July to June) from 2018¹⁴ to 2022¹⁵ (Table 3 in Appendix 1).

¹³ Note children aged under 18 months have been excluded to better represent rates for children eligible for full vaccination.

¹⁴ Note that the vaccination rates for 10-13 year age group in 2018 are impacted by a shift from paper to electronic records in 2005, with some records not being converted from paper. This shift had a larger impact on the 14-17 year old group, so this group has been excluded completely.

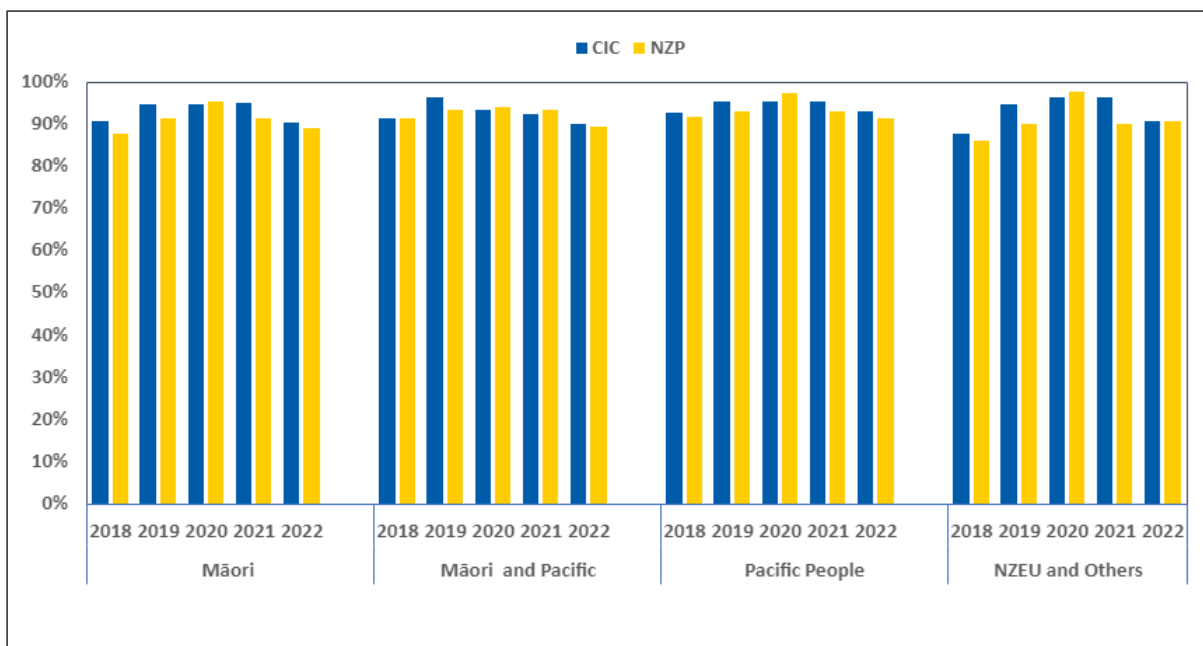
¹⁵ The figure for 2022 is slightly lower than the previous years as it only covers the six months period from 1 July 2021 to 31 December 2021.

Figure 2: Annual MMR vaccination rates (two doses) of children in care compared with general population by age group and year, 1 July to 30 June



— Figure 3 below (and Table 4 in Appendix 1) shows the MMR vaccination rates by ethnicity and year. In general, rates by ethnicity by year are around the same or higher for children in care compared with the general population. As with Figure 1 above there are limited differences by ethnicity over time¹⁶.

Figure 3: Annual MMR vaccination rates (two doses) of children in care compared with general population by ethnicity and year, 1 July to 30 June



¹⁶ The figure for 2022 is slightly lower than the previous years as it only covers the six months period from 1 July 2021 to 31 December 2021.

Improving immunisation figures and quality of recorded vaccination data is a priority

- Widespread measles outbreaks are a result of the virus finding immunity gaps in the population, combined with travel-related importation and exportation of cases and population mixing. The World Health Organization identifies a consistent theme on immunity gap as a failure to achieving and sustaining homogenous high vaccination coverage in each birth cohort, high-quality surveillance, and rapid response capacities.¹⁷
- Increasing the immunity of children is important to prevent future measles outbreaks. This will help close the ‘immunity gap’ in the overall population.¹⁸
- Reports on New Zealand historic immunisation figures¹⁹ indicate that there are likely to be large numbers of adolescents and young adults with inadequate or no immunity to measles, particularly of Māori and Pacific ethnicity. There may be barriers to accessing both information and services for unimmunised individuals. .^{20,21}
- The National and Regional immunisation data available on the Manatū Hauora - Ministry of Health website provides childhood immunisation figures at a national level. In the reporting period of January 2022 – December 2022, 81.5 percent of those turning five years of age were fully-immunised with their scheduled vaccinations.^{22,23} In an editorial published in the New Zealand Medical Journal, Turner (2019) reports a lower MMR vaccination coverage than the national target of 95 percent of infants to have completed their primary course of immunisation on time; and that equity gap persist by ethnicity, socio-economic status, and region.²⁴
- The 2019 measles outbreaks review recommended the need to have accurate registration of vaccinations. However, reactive large-scale immunisation campaigns in outbreak situations carries the risk of inaccurate or missing immunisation data.²⁵ In 2020, a catch-up campaign focused on vaccinating roughly 300,000 unimmunised or under-immunised young adults aged between 15 and 30 were planned.²⁶ However, we could not source any reference in relation to whether an up-to-date immunisation status was recorded during the campaign period. The campaign which was further impacted due to the COVID-19

¹⁷ World Health Organisation: Measles outbreaks strategic response plans 2021 to 2023

¹⁸ [Health Sector Response to the 2019 Measles Outbreaks](#)

¹⁹ In 1991 less than 60 percent of children were fully immunised for all the Schedule vaccines by two years of age with only 42 percent of Māori and 45 percent of Pacific children fully immunised. Gains were made over the following years so that by 2005, 77% of children were fully immunised by the two years milestone.

Source: [A measles epidemic in New Zealand: Why did this occur and how can we prevent it occurring again? \(nzma.org.nz\)](#)

²⁰ [A measles epidemic in New Zealand: Why did this occur and how can we prevent it occurring again? \(nzma.org.nz\)](#)

²¹ [Health Sector Response to the 2019 Measles Outbreaks](#)

²² This includes immunisation against a range of disease including MMR.

²³ [National and regional immunisation data | Ministry of Health NZ](#)

²⁴ [A measles epidemic in New Zealand: Why did this occur and how can we prevent it occurring again? \(nzma.org.nz\)](#)

²⁵ [Health Sector Response to the 2019 Measles Outbreaks](#)

²⁶ [Beehive release: 350,000 More Measles Vaccines for Massive Immunisation Campaign](#)



pandemic that added a new dynamic to the overall vaccination situation (discussed below).

A record of staff vaccination history may help prioritise use of scarce resources during outbreaks

- Preparedness for an outbreak can include staff having their measles vaccination history recorded, and susceptible staff encouraged to get vaccinated.²⁷ The 2019 measles outbreaks review recommended vaccination for all staff in the healthcare setting, as hospital-acquired transmission of measles by healthcare workers is preventable, and it is costly to quarantine staff members after workplace exposure to measles.²⁸ This recommendation is equally valid for Oranga Tamariki as a social service organisation, particularly having staff with social work expertise on high demand and working with tamariki and whānau in vulnerable communities that need extra support – a majority of them being from Māori and Pacific communities.

Kaimahi with experience and training in outbreak management is essential

- Succession planning is important to ensure that sufficient kaimahi with outbreak management skills are available. The 2019 measles outbreaks review reported that capable teams were in place; however, they lacked experience and training in outbreak management. Many initially did not know about emergency plans and had not been trained in outbreak management. The review noted that frequent restructuring within the Ministry of Health over the previous decade(s) created high turnover of staff and new starts did not have the required experience and training that was needed in an outbreak situation.²⁹

Lessons learnt from New Zealand's response to COVID-19 are highly relevant to help prepare us for a potential measles outbreak

- COVID-19 contributed to widespread disruptions to the normal functioning of immunisation programmes in New Zealand and overseas – a challenge to measles immunisation, surveillance, and campaigns since 2020. Globally, vaccination services were completely halted, outreach for routine immunisation stopped or decreased; and this was coupled with fewer children visiting medical centres for vaccination.³⁰ The Ministry of Health data shows that fully immunised children aged 24 months dropped from 91 percent before the pandemic (reporting period April 2019 to March 2020) to 84.4 percent (April 2021 to March 2022).³¹

²⁷ The measles vaccine is free for New Zealand citizens and residents born on or after 1 January 1969. The vaccine is not available to anyone born before 1969. Source: [Ministry of Health NZ](#)

²⁸ [Lessons from a system-wide response to a measles outbreak, Canterbury, February–April 2019](#)

²⁹ [Health Sector Response to the 2019 Measles Outbreaks](#)

³⁰ [World Health Organisation: Measles outbreaks strategic response plans 2021 to 2023](#)

³¹ [National and regional immunisation data | Ministry of Health NZ](#)



- Furthermore, Turner (2019) reports an increase by 1-1.5% since 2017 on those who chose to decline vaccination on the National Immunisation Register (NIR) record^{32,33}; the figures may have changed since the pandemic.
- The Oranga Tamariki Evidence Centre (2020) in their international evidence scan *Proactively supporting children and young people during COVID-19 and Beyond*³⁴ highlights the importance of leveraging networks to maintain visibility and continuity of care to respond to care and protection of children and young people. Agencies' responses to the COVID-19 pandemic included increased use of intelligence functions to support identification of needs of children and families, which requires proactive collaboration with other government agencies and community groups to gather 'soft intelligence'. The international evidence scan reports a number of themes that are relevant to a widespread measles outbreak. These themes include the following.
 - the critical role of the school in providing care and advocacy for children and young people during the crisis
 - the importance of community level relationships to maintain support for families and children
 - the need for communication and campaigns tailored to young people, culturally diverse groups and community leaders
 - the critical need for continuing face-to-face engagement with the most 'at risk' groups and supporting staff to do so within strict health guidelines; and
 - the value in linking government locally with cross-system data sharing channels to enrich the view of families and young people at risk, or who may become at-risk.
- Bloomfield (2021) further identifies some key success factors of the New Zealand COVID-19 response in 2020. The following success factors are relevant to measles preparedness:
 - a willingness to constantly revise and improve in response to new scientific evidence or empirical experience and reviews
 - rapid decision making, including at the political level
 - clear and consistent national communication through regular (often daily) media briefings, supported by a strong public communication campaigns
 - the rapid scaling up of testing and contact tracing supported by rapid Information and Communication Technology developments
 - an excellent response from the health sector, and

³² [A measles epidemic in New Zealand: Why did this occur and how can we prevent it occurring again? \(nzma.org.nz\)](#)

³³ Aotearoa Immunisation Register (AIR) is replacing the National Immunisation Register (NIR) (Source: [Te Whatu Ora - Health New Zealand](#))

³⁴ [Proactively-supporting-children-and-young-people-through-COVID-19-and-beyond](#)

- and effective border management, including the establishment and ongoing operation of over 30 managed isolation and quarantine facilities.³⁵

Prioritising vaccination and targeted supports for disadvantaged or underserved populations at most risk is useful should an outbreak occur and the vaccine is in short supply

- During the 2019 measles outbreak, the public interest was strong and positive with nearly a doubling of vaccine uptake, which resulted in MMR vaccine shortage. The limited amount of vaccine available at short notice necessitated identification of priority groups for vaccination.³⁶
- The 2019 measles outbreaks review emphasised the need to focus on Māori and Pacific populations who continue to bear the heaviest burden of infectious disease outbreaks in New Zealand. Targeted vaccination during the 2019 outbreaks prioritised groups that were most impacted by the outbreak, including children aged under 4 years, Pacific and Māori, and young people aged 15-29 years. However, in practice, it was problematic to turn away people outside these risk groups.³⁷
- The 2014/2015 New Zealand Health Survey³⁸ found that the lowest measles immunity in the age group 15-44 years, was in the Pacific population, especially in women. The NIR data for the 2016 birth cohort who were eligible for MMR1 in 2018 also showed that the lowest coverage of MMR1 was in Māori and Pacific children.
- The 2019 measles outbreaks review suggested that there was a decrease in MMR vaccination rates for Pacific children (despite previous high coverage for Pacific children in the Auckland region); this was likely due to an adverse response to the July 2018 tragedy where two children died after admission of incorrectly prepared MMR vaccination in Samoa.³⁹ Furthermore, the review noted that compared with all other ethnic groups, Pacific Peoples are more likely to live in neighbourhoods of high deprivation, have the lowest median incomes, higher unemployment rates, the lowest rate of home ownership, and the highest rates of household crowding. These factors combined contributed to the rapid spread and disproportionate impact of measles on Pacific communities.⁴⁰
- The New Zealand Influenza Pandemic Plan (2017) identifies priority groups, other than those from Māori and Pacific ethnicities, needing targeted support during a moderate to severe pandemic. These include those whose usual caregivers are unable to provide assistance due to

³⁵ [COVID-19, 20, 21: lessons from New Zealand's 2020 response for 2021 and beyond](#)

³⁶ [Lessons from a system-wide response to a measles outbreak, Canterbury, February–April 2019](#)

³⁷ [Health Sector Response to the 2019 Measles Outbreaks](#)

³⁸ The New Zealand Health Survey is a population-based health survey commissioned by the New Zealand Ministry of Health. The survey involves face-to-face interviews with over 13,000 adults and the parents or primary caregivers of over 4000 children each year. The survey included a biomedical module, which involved collecting blood and urine samples from a subset of adult respondents, based on which measles immunity was estimated. Source: [Overview of New Zealand Health Survey](#)

³⁹ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁴⁰ [Health Sector Response to the 2019 Measles Outbreaks](#)

sickness, such as children whose parents/caregivers are sick, older people, people with chronic illness or disability, and people with mental illness. People living in institutions, such as school children and residences are at higher risk of infection than other groups because they are living or working closely to each other.⁴¹

- A 2023 report, *Ngā Kawekawe O Mate Korona – Impacts of COVID-19 in Aotearoa*⁴², recommended, in the context of Pacific peoples during COVID-19 episodes, focus should be given to identifying the main carer/s of families and provide accessible and appropriate support to avoid burn-out. The report highlights that main carers with young children, who care for family members who live with a disability, elderly, or large extended families must be prioritised for support.⁴³

Community-led providers and leaders – who know their people better – can reach and influence hard-to-reach groups

- *Ngā Kawekawe O Mate Korona* highlighted the essential role that community-led providers played in the pandemic, and the success they had in advocating for and pro-actively supporting their communities through the provision of more flexible funding that helped move swiftly to meet a wide range of needs.⁴⁴
- The *Health Sector Response to the 2019 Measles Outbreaks* also highlights the important role of Māori and Pacific leaders and providers that are already working effectively with communities at risk of infectious disease outbreaks. Based on findings from the review, a culturally appropriate response is needed to achieve equitable service outcomes, which requires involvement of social and health care workers with the appropriate cultural and linguistic competencies.⁴⁵
- Furthermore, lessons learnt from the Ministry of Social Development-led real-time evaluation of Care in the Community welfare response showed that community providers and trusted members of the community were instrumental to implementing welfare response. The Care in the Community welfare response was established to provide welfare support to people isolating from COVID-19.⁴⁶

Any public health advice related to an outbreak should accompany appropriate support that meets the needs of the affected households

- The 2019 measles outbreaks highlighted the importance of having isolation and exclusion advice that matches the expectations and needs of the households and families involved. Isolation and exclusion advice can be hard on poorer families, and the extent to which households are willing

⁴¹ [New Zealand Influenza Pandemic Plan: A framework for action \(2nd edn\) \(health.govt.nz\)](https://www.health.govt.nz/publication/new-zealand-influenza-pandemic-plan-a-framework-for-action-2nd-edn)

⁴² [Ngā Kawekawe O Mate Korona – Impacts of COVID-19 in Aotearoa](#)

⁴³ [Ngā Kawekawe O Mate Korona – Impacts of COVID-19 in Aotearoa](#)

⁴⁴ [Ngā Kawekawe O Mate Korona – Impacts of COVID-19 in Aotearoa](#)

⁴⁵ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁴⁶ [Care in the Community \(CiC\) welfare response: Lessons from a real-time evaluation](#)

or able to comply with the advice is not known.⁴⁷ In the 2019 measles outbreaks, the response team had limited capacity to follow up individual households once advice had been provided. The flow-on effect was that many contacts of measles cases found difficulty in maintaining the two-week quarantine period.⁴⁸

- Similarly, *Ngā Kawekawe O Mate Korona*, recommends ensuring easy-to-use, accessible options for disabled people so they can report adverse reactions or unmet health needs, enabling the system to respond in a timely manner.⁴⁹
- *Ngā Kawekawe O Mate Korona* also recommends that in future pandemics (or similar situations), a wider range of more and better integrated services should be delivered to support whānau and families' wellbeing, noting that there were reports from pandemic-affected families of too much contact from too many organisations.⁵⁰ Social service agencies generally had limited visibility of the coming surge in demand. A lack of service integration would mean duplication of services and service providers' ability to proactively prioritise resources to support the (unknown) levels and types of need for both existing and new clients.⁵¹

Standardised and clear messaging and alignment of key messages across agencies is essential

- The 2019 measles outbreaks highlighted the importance of standardised, clear, and coordinated messaging to the service sector and communities. During the earlier stages of the outbreak, communication initiatives to the public and health sector were undertaken at all levels of the health system and on many websites. However, there were no standardised national key messages or clear nationally coordinated public information posted online. Experiments with social media were also resource intensive. The use of Facebook, for example, required constant monitoring to correct misinformation.⁵²
- Clear and consistent messaging that provides reassurance and awareness is important because disease outbreaks can promote a range of parental responses including vaccine related concerns and fear of side effects. A 2016 study from the United States examined the awareness of a measles outbreak among parents and whether awareness of the outbreak affected their beliefs about childhood vaccination, confidence and intentions. The study used two national surveys of parents with children aged five and younger in the United States, collected immediately prior to and in the weeks following the 2014-15 measles outbreak in the United

⁴⁷ [Health Sector Response to the 2019 Measles Outbreaks; Lessons from a system-wide response to a measles outbreak, Canterbury, February–April 2019](#)

⁴⁸ For example, the burden on individuals and families of staying away from work or study due to an infection, or keeping children away from school or early education for extended quarantine periods can be substantial. As a two thirds of the measles cases were from deprivation decile 9 and 10 and were a weekly wage, it was not practicable to comply with quarantine measures for many people.

⁴⁹ [Ngā Kawekawe O Mate Korona – Impacts of COVID-19 in Aotearoa](#)

⁵⁰ [Ngā Kawekawe O Mate Korona – Impacts of COVID-19 in Aotearoa](#)

⁵¹ *Proactively supporting children and young people during COVID-19 and Beyond.* [PowerPoint Presentation](#)

⁵² [Health Sector Response to the 2019 Measles Outbreaks](#)

States. It found that while most parents were aware of the outbreak, many were not, and the level of familiarity mattered, particularly on measures of confidence in vaccines and support for mandates requiring childhood vaccination. Increases in vaccine-related concerns were found as well, indicating that disease outbreaks foster not just awareness of vaccines and their potential to prevent disease, but also result in a range of parental responses on vaccination.⁵³

- A recommendation of the 2019 measles outbreak review included early establishment of regular interagency meetings and early development and adoption of formal communications plans to facilitate alignment of key messages across agencies.⁵⁴ Clear and consistent national communication through regular (often daily) media briefings – supported by a strong public communications campaign – was also a key success factor in New Zealand response to COVID-19.⁵⁵ Similarly, clearly instructing possible measles patients to phone ahead for advice would help partially avoid the need to follow-up on costly waiting-room contacts or contact tracing.⁵⁶
- *Ngā Kawekawe O Mate Korona* recommended public health messaging tailored to diverse groups takes collective wellbeing into account, rather than treating future pandemics as an experience that only impacts infected individuals. The report recommends messaging to include self-help emotional resilience strategies for dealing with common anxieties, like the threat of passing illness on to others, worrying about the health of friends and whānau, or fears of leaving the house again after isolation. Self-help strategies are recommended as a way for whānau/lwi/communities to empower themselves rather than relying on the public health system where they may encounter structural barriers that could preclude access to this important support.⁵⁷

Access to information is critical for equitable outcomes

- Ensuring communities' access to information is a significant part of protecting tamariki and whānau from disease outbreaks. Discussions on barriers to access to health care providers for Māori whānau and Pacific Peoples contributing to low immunisation are found in the literature.^{58, 59} Measles as an 'indicator' of disease outbreak, effectively seeks out unvaccinated individuals and subpopulations who remain unreached by immunisation programmes. The 2019 measles outbreaks review found that there was a clear difference in access to health information for Māori and Pacific groups compared with the total population. With a total of

⁵³ [Exploring The Impact Of The US Measles Outbreak On Parental Awareness Of And Support For Vaccination - PubMed \(nih.gov\)](#); [Knowledge and decisions about maternal immunisation by pregnant women in Aotearoa New Zealand - PMC \(nih.gov\)](#)

⁵⁴ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁵⁵ [COVID-19, 20, 21: lessons from New Zealand's 2020 response for 2021 and beyond](#)

⁵⁶ [Lessons from a system-wide response to a measles outbreak, Canterbury, February–April 2019](#)

⁵⁷ [Ngā Kawekawe O Mate Korona – Impacts of COVID-19 in Aotearoa](#)

⁵⁸ For example, in [Knowledge and decisions about maternal immunisation by pregnant women in Aotearoa New Zealand - PMC](#)

⁵⁹ [Attitudes towards COVID-19 vaccination amongst Pacific peoples](#)

2,185 measles cases recorded during the outbreaks, the Pacific population was most affected with 41% of all cases, followed by Māori.⁶⁰

Clarifying roles and responsibilities – at national and local levels – is an important part of being prepared

- In an emergency situation, underlying system disparities can be exacerbated, and equitable outcomes for priority groups compromised. The 2019 outbreak demonstrated that devolution of infectious disease control to districts can work well in local outbreaks within the districts. This is because the district level authorities have in-depth knowledge of their populations, including vulnerable groups and local context, stakeholders, and networks in their districts. However, when an outbreak becomes trans-district or regional, centralised national coordination and oversight is essential.⁶¹
- In an outbreak situation, the need to clarify roles and responsibilities at national, regional, and local level early on is emphasised in the 2019 outbreak review. When the outbreak started in the Auckland region, there were misunderstandings about the roles and responsibilities of District Health Board and the Ministry of Health. Prior to the activation of National Health Coordination Centre (NHCC) and Northern Region Health Coordination Centre (NRHCC), *'everybody and nobody was responsible for the overall control of the outbreak'*.⁶²
- The 2019 outbreak response (at all levels) followed the outbreak rather than getting ahead of it; many tasks that belonged in the preparedness phase – including documents for upscaling procedures, clarifying roles and responsibilities, and an action plan – were undertaken in the response phase which ultimately delayed the response. There was no uniformity in upscaling procedures, and outbreak plans in place were not followed, which hampered a smooth transition in outbreak management from an individual DHB response, to regional, and then to national level plans.⁶³
- The New Zealand Influenza Pandemic Plan (2017)⁶⁴ recommends the use of established organisational structures and accountabilities as an important consideration in managing a pandemic. In an outbreak situation, activation of an Incident Management Team (IMT), similar to the structure Oranga Tamariki established for COVID-19, may be suitable to manage, coordinate, and lead responses at various levels, both internal and external to the Ministry. The 2017 Influenza Pandemic Plan notes that Government agencies are responsible for leading their own responses and those of the sectors they serve; developing relevant materials that are based on the direction set and the resources developed by the Ministry of Health as a lead agency.

⁶⁰ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁶¹ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁶² [Health Sector Response to the 2019 Measles Outbreaks](#)

⁶³ [Health Sector Response to the 2019 Measles Outbreaks](#)

⁶⁴ [New Zealand Influenza Pandemic Plan: A framework for action \(2nd edn\) \(health.govt.nz\)](#)



Oranga Tamariki is well positioned to contribute towards reducing the immunity gap through community partners and cross-agency liaison

- The locally led, centrally enabled approach that the Oranga Tamariki Future Direction Action Plan calls for, supports the notion that community and local partners know their population better, and are better suited to reach families and whānau that may be hard to reach by government agencies. Working closely with community partners means that tamariki and whānau in our population groups with unknown or unrecorded immunisation status, or those who are under-immunised, are more likely to get the information they need. This will support them to make informed decisions about immunisation which can prevent serious illness and avoidable deaths amongst children and young people in our care.
- Oranga Tamariki is positively contributing towards influencing whānau/families to keep childhood immunisation up-to-date as part of working with partners that deliver early support initiatives, such as the Family Start programme.⁶⁵ There are however, further opportunities for the Quality Practice and Experiences and the Māori Partnerships and Communities groups to influence community and cultural leaders to reach out to young people, whānau, and caregivers that we work with, and improve vaccination records.
- Oranga Tamariki need cross-agency liaison and relationship building at various levels, particularly with community and public health agencies, so that we can identify at-risk groups and households and provide the support they need in an outbreak. The 2019 measles outbreaks review notes that the follow-up of measles cases is labour-intensive, and capacity for individual contact follow-up by public health staff is quickly overwhelmed in a large outbreak.⁶⁶ Lessons learnt so far from the Care in the Community Welfare Response evaluation also reported that increased communication and collaboration, particularly between iwi, agencies, local government, and community leaders facilitated by regional leadership structures contributed to the success of the collective welfare response effort.⁶⁷

The key next step is to improve how Oranga Tamariki monitors immunisation status for children in our care

- Although immunisations rates for children in care are similar to the general population of children there is still room for improvement. Reviewing the quality of MMR vaccination data of tamariki and rangatahi within our rohe should be a priority prior to a major outbreak. We are taking two approaches to this. First, we are exploring opportunities to understand the quality of vaccination data recorded in our administrative system. Second, we are liaising with Te Whatu Ora to understand immunisation status of

⁶⁵ [Family-Start-Evaluation-Synthesis-Report.pdf \(ot.govt.nz\)](#)

⁶⁶ [Lessons from a system-wide response to a measles outbreak, Canterbury, February–April 2019](#)

⁶⁷ [Care in the Community \(CiC\) welfare response: Lessons from a real-time evaluation](#)

children in Oranga Tamariki care and to support maintaining an up-to-date record of immunisations.

- There are also further actions which can be taken that will be informed by this evidence brief, such as understanding supports for increasing vaccination rates for staff as well as children and young people in care.

Appendix 1. Integrated Data Infrastructure information on measles vaccination rates as at 31 December 2021

The tables below show MMR vaccination rates for children (18 months to 13 years of age) in the general population compared with children in care.

Notes:

- Children and young people in either in home care or out of home care are grouped as Children in Care. Youth Justice custody has been excluded as this is only relevant for young people 14 and older, who have been excluded (see below)
- General population includes children who have had no contact with Oranga Tamariki, and who have reasonable apparent wellbeing based on the Children's Wellbeing Model.
- For these tables children under 18 months old have been excluded to better represent the vaccination status for those children eligible for full vaccination.
- Due to a shift from paper records to electronic records around 2005, data for young people aged 14 to 17 is incomplete and has been excluded. We can also see the impact of this shift in the 2018 data for children aged 10 to 13, so while vaccination rates appear lower this is likely due to incomplete data.
- Data for the financial year 2022 was not complete so represents 1 July 2021 to 31 December 2021, likely explaining the slight drop in apparent vaccination rates.

Table 1: MMR vaccination rates by age and ethnicity, 31 December 2021

Ethnicity by age group	General population		Children in Care group	
	Total count	Percent vaccinated	Total count	Percent vaccinated
Total 18 months to 13 years	608,892	90%	3627	94%
18 months to 4 years	170,169	88%	735	90%
Māori	31,788	82%	372	89%
Māori and Pacific	7,290	81%	78	77%
Pacific	16,410	88%	51	94%
New Zealand European and Other	114,681	91%	234	95%
5 to 9 years	244,623	92%	1473	94%
Māori	38,316	92%	834	93%
Māori and Pacific	7944	93%	117	97%
Pacific	21,267	94%	114	97%
New Zealand European and Other	177,096	92%	408	95%
10 to 13 years	194,100	90%	1419	96%
Māori	30,789	92%	735	96%
Māori and Pacific	5886	94%	144	92%
Pacific	17,070	91%	111	92%
New Zealand European and Other	140,355	89%	429	97%

Table 2: Measles vaccination rates by age and region, 31 December 2021

Care and protection region by age group	General population		Children in Care	
	Total count	Percent vaccinated	Total count	Percent vaccinated
18 months to 4 years⁶⁸	170,166	88%	717	88%
Te Tai Tokerau	6129	79%	66	82%
North and West Auckland	22,815	90%	75	88%
Central Auckland	19,401	90%	69	87%
South Auckland	18,096	89%	51	76%
Waikato	14,190	87%	60	75%
Bay of Plenty	14,115	84%	57	89%
East Coast	9,756	88%	72	88%
Taranaki-Manawatu	12,351	89%	48	94%
Wellington	14,592	93%	69	91%
Upper South	5,544	87%	15	100%
Canterbury	21,552	92%	90	100%
Lower South	9,468	93%	45	87%
5 to 9 years	244,623	92%	1464	95%
Te Tai Tokerau	8,610	87%	114	92%
North and West Auckland	34,812	92%	120	95%
Central Auckland	28,131	93%	126	100%
South Auckland	25,539	94%	129	93%
Waikato	20,409	91%	129	98%
Bay of Plenty	19,440	90%	138	96%
East Coast	13,797	92%	183	97%
Taranaki-Manawatu	17,241	92%	150	92%
Wellington	22,017	94%	120	93%
Upper South	8,376	90%	48	81%
Canterbury	30,783	94%	132	95%
Lower South	14,157	94%	75	100%
10 to 13 years	194,103	90%	1413	95%
Te Tai Tokerau	6,738	87%	108	94%
North and West Auckland	26,718	87%	111	92%
Central Auckland	22,719	89%	141	98%
South Auckland	19,605	89%	153	92%
Waikato	16,218	88%	138	96%
Bay of Plenty	15,084	89%	102	94%
East Coast	11,100	91%	150	94%
Taranaki-Manawatu	13,602	91%	123	100%
Wellington	18,225	92%	111	92%
Upper South	7,146	88%	48	88%
Canterbury	24,735	92%	135	98%
Lower South	11,691	93%	93	94%

⁶⁸ Note this group only includes children 18 months old and older to better represent rates for children eligible for full vaccination.

Table 3: MMR vaccination rates by age group and year, 1 July – 30 June

Age Group	Year	General Population		Children in Care	
		Total count	Percent vaccinated	Total count	Percent vaccinated
18 months to 4 years⁶⁹					
	2018 ⁷⁰	173,763	93%	1467	95%
	2019	173,220	93%	1458	95%
	2020	170,619	93%	1269	95%
	2021	171,360	93%	1011	94%
	2022 ⁷¹	170,169	88%	735	90%
5 to 9 years					
	2018	253,308	92%	2022	96%
	2019	253,176	91%	2067	95%
	2020	249,807	92%	1941	94%
	2021	246,609	92%	1719	95%
	2022	244,623	92%	1473	94%
10 to 13 years					
	2018	188,193	75%	1587	84%
	2019	192,129	87%	1671	95%
	2020	194,919	89%	1632	95%
	2021	195,156	89%	1521	96%
	2022	194,100	90%	1419	96%

⁶⁹ Note this group only includes children 18 months old and older to better represent rates for children eligible for full vaccination.

⁷⁰ 2018 data is impacted by the shift from paper immunisation records to electronic records due to the older children being immunised around the time of this shift. This means vaccination rates likely appear lower than they actually were.

⁷¹ 2022 financial year data only covers six months (1 July 2021 to 31 December 2021) so vaccination rates may appear lower than they actual were.

Table 4: MMR vaccination rates by ethnicity and year, 1 July – 30 June

Ethnicity	Year	General population		Children in care	
		Total count	Percent vaccinated	Total count	Percent vaccinated
Māori	2018 ⁷²	104,433	88%	3723	90%
	2019	103,227	91%	2961	95%
	2020	102,081	95%	2697	94%
	2021	103,227	91%	2343	95%
	2022 ⁷³	100,893	89%	2901	90%
Māori and Pacific	2018	20,052	91%	687	91%
	2019	19,995	93%	495	96%
	2020	20,205	94%	450	93%
	2021	19,995	93%	384	92%
	2022	21,120	89%	504	90%
Pacific	2018	54,606	92%	495	93%
	2019	54,681	93%	387	95%
	2020	54,324	97%	369	95%
	2021	54,681	93%	315	95%
	2022	54,747	91%	417	93%
New Zealand European and Other	2018	436,173	86%	1758	88%
	2019	440,622	90%	1353	94%
	2020	438,735	97%	1326	96%
	2021	440,622	90%	1209	96%
	2022	432,132	90%	1590	91%

⁷² 2018 data is impacted by the shift from paper immunisation records to electronic records due to the older children being immunised around the time of this shift. This means vaccination rates likely appear lower than they actually were.

⁷³ Vaccination data for the 2022 financial year is available only for the first six months of the year (1 July 2021 to 31 December 2021).