

# Universal Newborn Hearing Screening and Early Intervention Programme (UNHSEIP)

## Monitoring Report

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January to December 2020



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# Executive Summary

Universal newborn hearing screening is the standard of care internationally, and in New Zealand. The early detection of hearing loss, and the application of appropriate medical and educational interventions, has been demonstrated to significantly improve the baby's long-term language skills and cognitive ability.

This is the first published Universal Newborn Hearing Screening and Early Intervention Programme annual report since 2015. Annual reports were put on hold due to a number of data issues.

The period covered by this report coincides with the arrival of COVID-19 in New Zealand, the level 4 national lockdown and other more localised lockdowns. DHBs made significant efforts to either continue screening babies during lockdowns or to quickly catch up afterwards.

## Key points for January to December 2020.

- 84.5% of babies born completed screening by 1 month of age and a total of 94.2 percent completed screening for the period. Completion rates were higher for Other and Asian babies than for Māori and Pacific babies, and for babies from areas of lower deprivation compared to high deprivation.
- Nationally the screen completion rate was 94.2 percent, falling short of the  $\geq 97$  percent standard. Six DHBs achieved a screening completion total of 97 percent or more babies, with West Coast DHB having the highest completion rate at 99.6 percent.
- The average annual rate of referral to audiology for babies screened during the period was 1.4%.
- The Positive Predictive Value for referrals from screening where there was a diagnosis of permanent congenital hearing loss (PCHL) was 17 percent nationally.
- The target for Audiology Completion is that greater than 90 percent of babies referred to audiology complete their audiology assessment by 3 months of age. Nationally the target is not being met, with 82.1 percent of babies completing audiology overall and 65.4 percent completion before 3 months of age. Assessment completion rates were lower for Māori and Pacific babies, and for babies living in areas of greater deprivation.
- National Audiology Did Not Attend (DNA) rates were 10.6 percent. Māori babies were disproportionately affected for this indicator.
- Nationally, permanent hearing loss was detected in 0.24 percent of babies screened. Pacific babies reported the highest rates of permanent hearing loss detection followed by Māori and Asian babies.
- Nationally, 74 percent of eligible whānau were contacted by Early Intervention education services within 10 working days in 2020. While the standard was not met, 74% is a 7% increase from 2018.
- 97% of children up to six months of age eligible for request for support to Early Intervention education services began receiving a service by six months of age. This far exceeds the 90% standard.

# Introduction

## Background

National implementation of New Zealand's Universal Newborn Hearing Screening and Early Intervention Programme (UNHSEIP) was completed in 2010. It is jointly overseen by Te Whatu Ora - Health New Zealand (from 1 July 2022) and the Ministry of Education. Te Whatu Ora has responsibility for screening, audiological diagnosis of hearing loss and medical interventions, and the Ministry of Education has responsibility for early intervention services. This report refers to the Ministry of Health and District Health Boards (DHBs) as that was the organisational structure for the period covered by this report.

The core goals of the programme, which are based on international best practice, are described as '1-3-6' goals:

- **1** - ≥95 percent of babies to be screened by **1 month** of age
- **3** - ≥90 percent of audiology assessments to be completed by **3 months** of age
- **6** - initiation of appropriate medical, audiological, and early intervention education services by **6 months** of age

## Programme Monitoring

The National Screening Unit (NSU) is responsible for providing leadership and oversight of the UNHSEIP, including monitoring of UNHSEIP delivery against core programme indicators. The UNHSEIP Monitoring Framework (2015) outlines the core indicators for programme monitoring at a national and local level. These indicators measure service delivery along the UNHSEIP pathway from the offer of newborn hearing screening through to completion of the screening pathway, commencement and completion of diagnostic audiology for those babies referred to audiology, and commencement of educational early intervention. Routine monitoring based on newborn hearing screening and audiology data is reported to the Ministry by DHBs on a quarterly basis.

## NSU Quality Improvements for Data Collection

The last full UNHSEIP Annual Monitoring Report was for the 2015 calendar year. A significant number of data quality issues were identified while preparing the 2016 report, meaning that reporting was limited to a high-level summary report only. The 2017 report was also limited to a summary report.

Since then, there have been significant improvements in the mechanism for collecting newborn hearing screening data and now all screening data is submitted electronically from three different sources. A UNHSEIP data mart is under development to combine data from the different sources to enable accurate national monitoring reporting.

## COVID-19

The UNHSEIP is considered a high priority screening programme. As such, it continued to be delivered during COVID-19 where feasible and while demand could be met. A framework for service delivery across the different alert levels was developed in partnership with providers, with the focus

on prioritising screening babies born in hospital prior to discharge to maximise coverage and completion rates and minimise burden and risk to families and their babies.

During the initial level 4 lockdown in March and April 2020, all except two DHBs were able to continue to provide newborn hearing screening for babies born in a hospital and, for some DHBs, at some birthing centres as well. Two DHBs (Hauora Tairāwhiti and Wairarapa) paused service delivery due to staff shortages or redeployment to other hospital services, although in both cases these DHBs had systems in place to effectively identify and track babies who were not screened. For all DHBs except one (Nelson Marlborough), outpatient screening appointments were paused. Diagnostic audiology provision was focused on acute cases only (e.g., babies at high risk of a hearing loss due to specific conditions). Many DHBs reported that, during Alert Level 4, fewer babies were born in hospital and were subsequently discharged quicker than usual, further impacting on screening coverage and completion rates.

At Alert Level 3, most DHBs were able to recommence outpatient appointments, with babies who had commenced their screening pathways but who required further screening, and babies over six weeks of age being prioritised for appointments. In addition, the NSU liaised with the Paediatric Technical Advisory Group (PTAG) within the New Zealand Audiological Society to implement otoacoustic emission (OAE) screening by audiologists to support newborn hearing screening catch up, particularly with screening of older babies.

Delivery of equitable services to ensure all babies had the opportunity to have their hearing tested remained a priority. To support screening catch up, DHBs operated extra outpatient clinics and implemented local initiatives to support screening completion. Anecdotally, while some DHBs reported higher levels of screening declines during Alert Level 4, many also reported fewer Did Not Attend because of the extra clinics being put in place which better met need. As a result, the majority of DHBs had caught up with their backlog of babies for screening within two to four weeks of the move to Alert Level 3.

While the metropolitan Auckland area were affected by subsequent Alert Level 3 lockdowns during August 2020, the response plan developed helped ensure that the impacts were managed and newborn hearing screening continued to be delivered.

# Information Included in This Report

The information included in this report relates to babies under 3 months of age that:

- commenced screening between 1 January 2020 and 31 December 2020
- Were eligible for screening between 1 January 2020 and 31 December 2020

Data for babies who started screening during the reporting period was extracted on 09 May 2023.

The data presented in this report covers the following indicators from the UNHSEIP Monitoring Framework for National programme reporting:

1.3 Newborn hearing screening coverage

(a) Completed by 1 month [*one-month goal*]

(b) Completed total

1.5 Referral rate to audiology assessment.

1.8 Positive predictive value of the screening test

2.2 Audiology completion by three months [*three-month goal*] and audiology completion total

2.3 Audiology not attended

2.4 Hearing loss detected.

## Ethnicity

Ethnicity data for the hearing screening indicators is determined according to a prioritised system, which is commonly applied across the health sector. Prioritisation involves allocating each person to a single ethnic group, based on the ethnicities they have identified with, in the prioritised order of Māori, Pacific, Asian and Other. For example, if someone identifies as being New Zealand European and Māori, under the prioritised ethnic group method, they are classified as Māori for the purpose of the analysis.

Ethnicity data was sourced from the NHI database as at the time of data extraction.

## Neighbourhood Deprivation

Deprivation data for screening indicators was based on the DHB of domicile for each baby during the reporting year. The New Zealand deprivation index (NZDep) is the average level of deprivation of people living in an area at a particular point in time, relative to the whole of New Zealand. Deprivation refers to areas (based on New Zealand 2018 Census mesh blocks) rather than individuals. All reporting by NZDep is based on the 2018 New Zealand deprivation index decile



associated with the residential address held in the NHI database for each baby at the time of data extraction.

In the deprivation index system used by the health sector, areas classified as Decile 1 have the least deprivation and areas classified as Decile 10 have the most deprivation. This is opposite to some other systems of classification, such as that used by education, where level 10 is the least disadvantaged and level 1 the most disadvantaged.

This report presents results by 2018 NZDep quintiles. Each quintile groups two deciles together and contains about 20% of small areas in New Zealand. The two quintiles at opposite ends of the scale are quintile 1 (deciles 1 and 2), which represents children living in the least deprived 20% of small areas ('the least deprived areas'), and quintile 5 (deciles 9 and 10), which represents children living in the most deprived 20% of small areas ('the most deprived areas').

### Births

The number of live births by DHB of Domicile was sourced from the National Maternity Collection, which combines information from live birth registrations from the Births, Deaths and Marriages (BDM) Register along with hospital discharge information and Lead Maternity Carer claims. This supplementation is due to the fact that maternity is an incomplete data set and doing so prevents coverage rates exceeding 100 percent.

# Data Calculations

### Reporting by DHB

Screening completion indicators are reported by the DHB of domicile, as this is the DHB responsible for ensuring screening completion. For most babies (about 95 percent) the DHB of domicile is also the DHB of birth. Refer rate is calculated by the DHB where the "Refer to Audiology" outcome was obtained. This is because this indicator is a measure of screening quality.

DHB of domicile is taken from the National Enrolment System (NES) data-warehouse. The NES has historical address data so the DHB of domicile for a baby during the reporting year can be derived. In cases where a baby is not in the NES, the DHB is then taken from the Health Care User (HCU) data-warehouse. When a newborn's DHB of domicile is unknown it is set to 'Unknown'.

DHB of screen is determined as the DHB where the latest screen was administered.

# Methodology

Indicators 1.3.A Screening Completion by 1 Month, 1.3.B Screening Completion, 2.2 Audiology Completion, 2.3 Audiology DNA and 2.4 Hearing loss detected are reported according to the babies' DHB of domicile at the time the data for this report was extracted. For example, if a baby was born and screened by one DHB but was domiciled in another, that DHB of domicile will be assigned as responsible for ensuring the baby is offered screening up until 3 months of age.

Indicators 1.5 Referral to Audiology and 1.8 Positive Predictive Value are measures of screen quality and so are reported by the DHB of service that completed screening.

# Screening Indicators

## 1.3A Screening Completion by One Month

**Description:** Monitoring the proportion of newborns in New Zealand who complete newborn hearing screening by one month of age, adjusted for prematurity.

**Rationale:** Screening completion by one month (corrected age) is a core programme goal and is based on international best practice standards for newborn hearing screening programmes.

Higher screening completion rates by one month best supports achievement of early intervention services by six months for babies identified with a hearing loss.

**Standard:**  $\geq 95$  percent of babies born in New Zealand or who enter New Zealand and receive an NHI before they reach three months of age (adjusted for prematurity) and within each of Māori, Pacific, Asian and Other population groups complete screening by one month of age.

**Interpretation:** The national screen completion rate of 84.5 percent was below the standard of 95 percent with no DHB meeting the target. Nelson Marlborough had the highest rate at 93.1 while Bay of Plenty had the lowest rate at 67.4 of babies completing screening by one month.

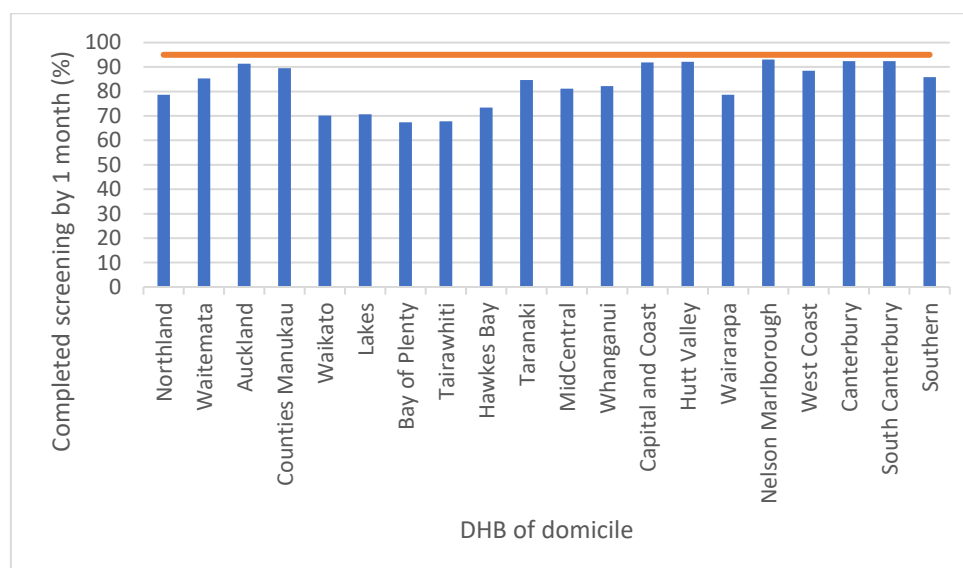
The national standard set for screening completion was not met for any ethnic group. Māori were disproportionately affected for this indicator, with completion rates at 75 percent, around 10 percent lower than Pacific and Other populations at 86.2 and 86.3 respectively. Asian ethnicity recorded the highest completion rate at 91.8 percent.

The national standard set for screening completion was also not met for any deprivation quintile. The completion rate for Quintile 1 (least deprived) was 89.1 percent, for Quintiles 2-4 it was between 84 and 87 percent, and for Quintile 5 (most deprived) it was 78.5 percent, over 10 percent lower than for Quintile 1.

**Table 1: Newborn hearing screening completion by one month of age as a percentage of live births by DHB of domicile, 1 January to 31 December 2020.**

DHB	Births	Screens Completed by 1 Month	
		N	%
Northland	2,390	1,880	78.7
Waitematā	7,472	6,378	85.4
Auckland	5,242	4,792	91.4
Counties Manukau	8,470	7,582	89.5
Waikato	5,598	3,925	70.1
Lakes	1,440	1,017	70.6
Bay of Plenty	3,146	2,121	67.4
Tairāwhiti	712	483	67.8
Hawkes Bay	2,092	1,536	73.4
Taranaki	1,466	1,242	84.7
MidCentral	2,160	1,753	81.2
Whanganui	823	676	82.1
Capital and Coast	3,118	2,865	91.9
Hutt Valley	2,030	1,870	92.1
Wairarapa	525	413	78.7
Nelson Marlborough	1,441	1,341	93.1
West Coast	285	252	88.4
Canterbury	6,145	5,681	92.4
South Canterbury	592	547	92.4
Southern	3,308	2,842	85.9
<b>National</b>	<b>58,466</b>	<b>49,395</b>	<b>84.5</b>

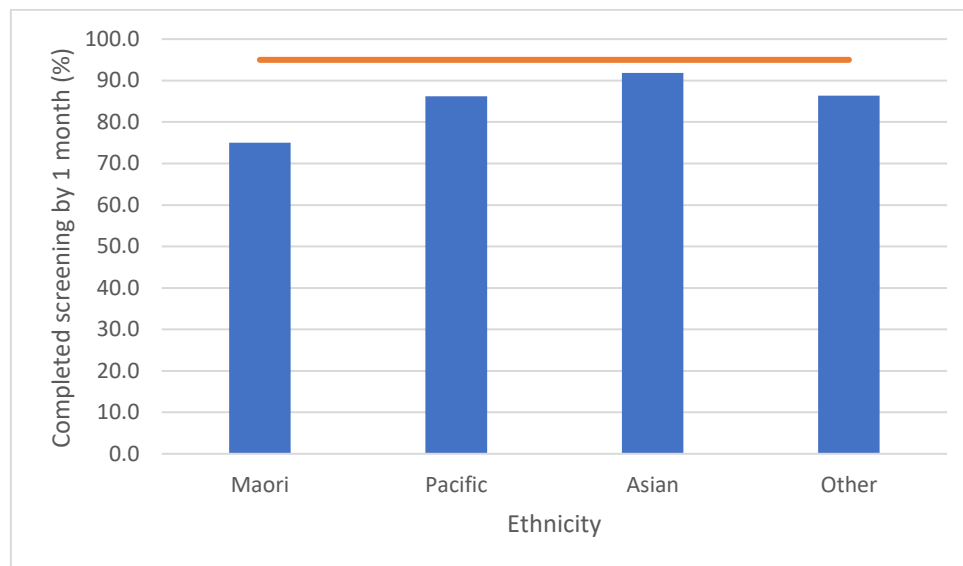
**Figure 1: Newborn hearing screening completion by one month of age as a percentage of live births by DHB of domicile, 1 January to 31 December 2020.**



**Table 2: Newborn hearing screening completion by one month of age as a percentage of live births by ethnicity, 1 January to 31 December 2020.**

Ethnicity	Births	Completed screening by 1 month	
		N	%
Māori	15,174	11,388	75.0
Pacific	6,112	5,270	86.2
Asian	11,374	10,443	91.8
Other	25,783	22,276	86.4
<b>Total</b>	<b>58,466</b>	<b>49,395</b>	<b>84.5</b>

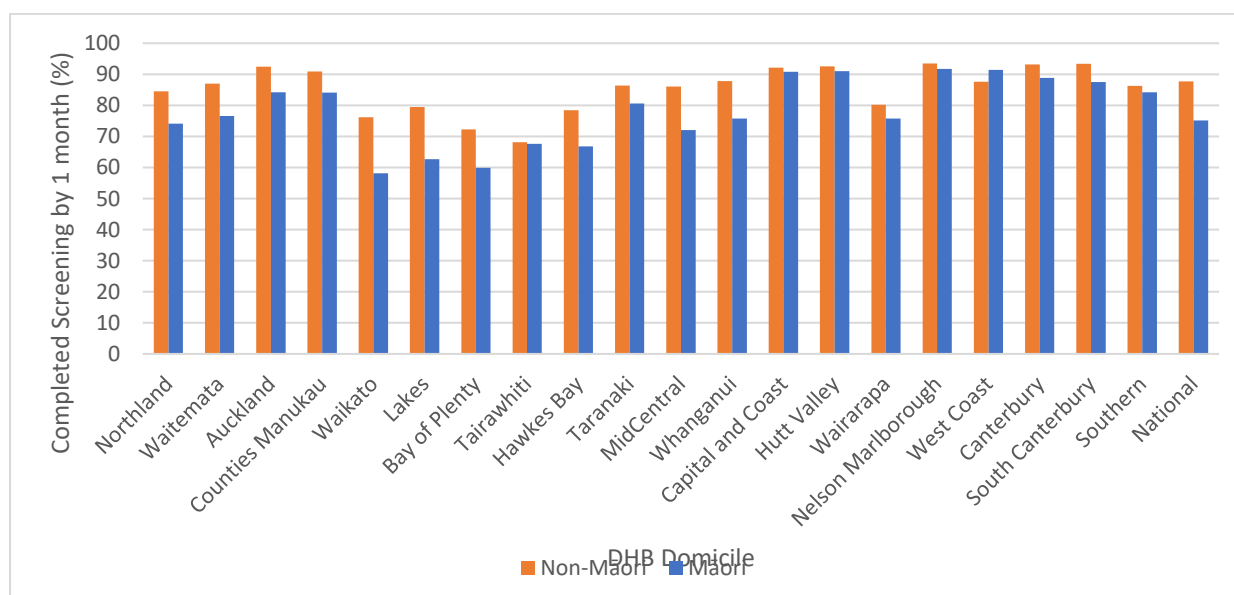
**Figure 2: Newborn hearing screening completion by one month of age as a percentage of live births by ethnicity, 1 January to 31 December 2020.**



**Table 3: Newborn hearing screening completion by one month of age as a percentage of live births by DHB of domicile and ethnicity, 1 January to 31 December 2020.**

DHB	Screens offered per 100 births				Total
	Māori	Pacific	Asian	Other	
Northland	74.1	85.5	94.6	82.4	78.7
Waitematā	76.5	85.3	91.0	84.6	85.4
Auckland	84.4	85.0	94.1	94.4	91.4
Counties Manukau	84.0	86.9	94.4	92.6	89.5
Waikato	58.1	75.1	83.0	74.2	70.1
Lakes	62.7	80.6	79.1	79.4	70.6
Bay of Plenty	59.9	70.6	80.1	70.6	67.4
Tairāwhiti	67.6	68.0	83.3	65.9	67.8
Hawkes Bay	66.8	75.4	86.0	77.3	73.4
Taranaki	80.3	83.9	88.9	86.3	84.7
MidCentral	72.1	72.1	88.9	86.7	81.2
Whanganui	75.8	80.0	95.7	87.9	82.1
Capital and Coast	90.5	91.6	92.6	92.2	91.9
Hutt Valley	91.0	97.7	90.4	92.5	92.1
Wairarapa	74.2	81.3	81.5	81.1	78.7
Nelson Marlborough	91.7	90.9	90.2	94.0	93.1
West Coast	91.4	71.4	100.0	87.4	88.4
Canterbury	88.7	89.3	93.9	93.3	92.4
South Canterbury	87.5	95.7	92.1	93.4	92.4
Southern	84.0	85.2	90.1	85.8	85.9
<b>National</b>	<b>75.0</b>	<b>86.2</b>	<b>91.8</b>	<b>86.4</b>	<b>84.5</b>

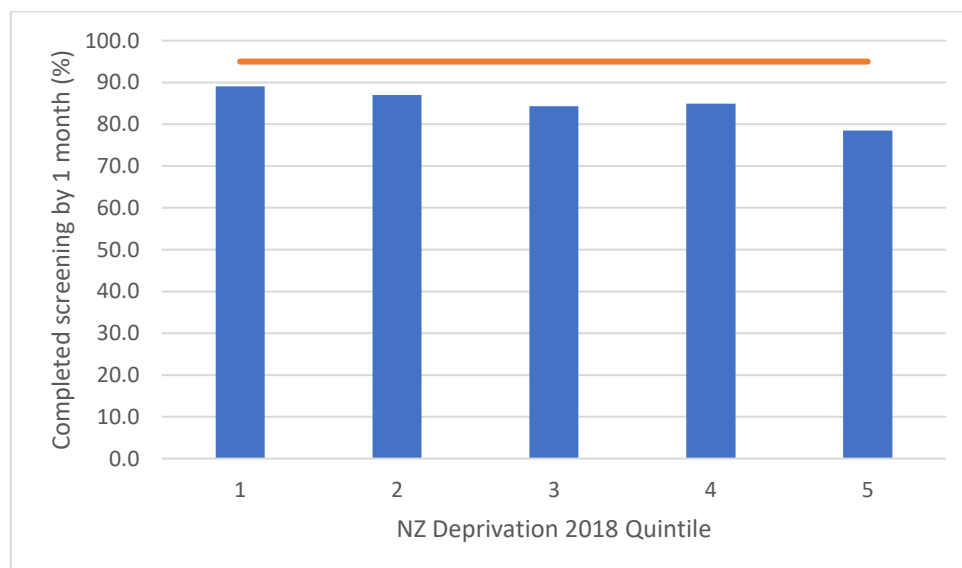
**Figure 3: Newborn hearing screening completion by one month of age as a percentage of live births by DHB of domicile, Māori and Non-Māori, 1 January to 31 December 2020.**



**Table 4: Newborn hearing screening completion by one month of age as a percentage of live births by NZ deprivation quintile, 1 January to 31 December 2020.**

Deprivation Quintile	Births	Completed screening by 1 month	
		N	%
1 (Least Deprived)	8,817	7,855	89.1
2	10,093	8,779	87.0
3	10,533	8,885	84.4
4	13,928	11,834	85.0
5 (Most Deprived)	15,083	11,842	78.5
<b>Total</b>	<b>58,466</b>	<b>49,395</b>	<b>84.5</b>

**Figure 4: Newborn hearing screening completion by one month of age as a percentage of live births by NZ deprivation quintile 2018, 1 January to 31 December 2020.**



## 1.3B Screening Completion

**Description:** Monitoring the proportion of newborn babies in New Zealand who complete newborn hearing screening.

**Rationale:** Not all babies will be able to complete their newborn hearing screening by one month. Newborn hearing screening completion as a total of live births is an important indicator for measuring screening coverage rates.

**Standard:**  $\geq 97$  percent of babies born nationally and within each of the following ethnicity groups: Māori, Pacific, Asian and Other, complete screening.

**Interpretation:** Nationally the screen completion rate was 94.2 percent, falling short of the target by 1647 babies. Six DHBs achieved a screening completion total of 97 percent with West Coast DHB having the highest completion rate at 99.6 percent.

The national standard set for screening completion was not met for any ethnic group. Screening completion rates for Māori were 88.8 percent, for Pacific 93.5 percent, Other at 96.2 percent and Asian at 97.2 percent.

Total screening completion rates are inversely correlated with economic deprivation with the highest rates for Quintile 1 (least deprived) at 96.5 percent, and the lowest rates for Quintile 5 (most deprived) at 90.1 percent. Quintiles 2-4 have roughly similar rates of 95.7 to 94.5 percent.

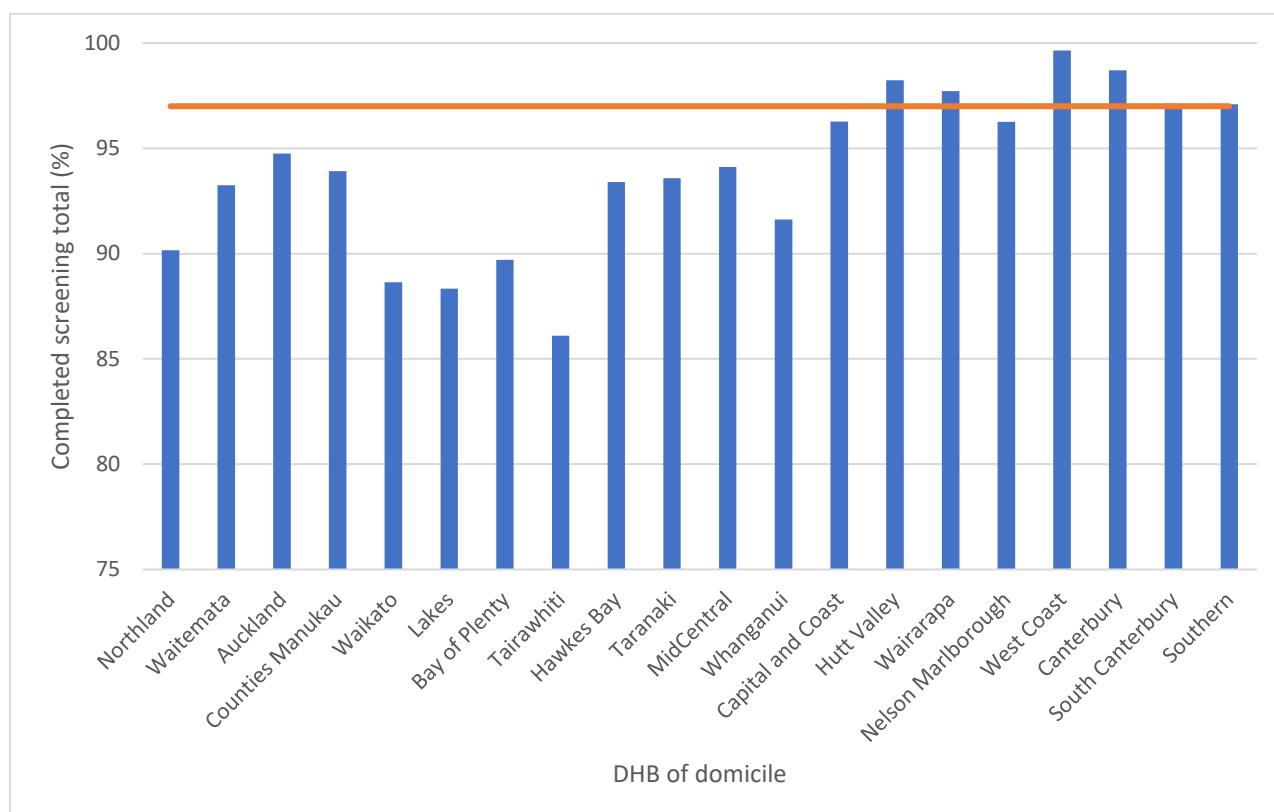


**Table 5: Screen completion total as a percentage of live births by DHB of domicile for 1 Jan to 31 Dec 2020.**

DHB	Births	Completed Screening	
		N	%
Northland	2,390	2,155	90.2
Waitematā	7,472	6,967	93.2
Auckland	5,242	4,967	94.8
Counties Manukau	8,470	7,955	93.9
Waikato	5,598	4,962	88.6
Lakes	1,440	1,272	88.3
Bay of Plenty	3,146	2,822	89.7
Tairāwhiti	712	613	86.1
Hawkes Bay	2,092	1,954	93.4
Taranaki	1,466	1,372	93.6
MidCentral	2,160	2,033	94.1
Whanganui	823	754	91.6
Capital and Coast	3,118	3,002	96.3
Hutt Valley	2,030	1,994	98.2
Wairarapa	525	513	97.7
Nelson Marlborough	1,441	1,387	96.3
West Coast	285	284	99.6
Canterbury	6,145	6,065	98.7
South Canterbury	592	575	97.1
Southern	3,308	3,212	97.1
<b>National</b>	<b>58,466</b>	<b>55,065*</b>	<b>94.2</b>

*\*National total includes babies with unknow DHB of domicile, therefore sub-counts may not add up to the national total.*

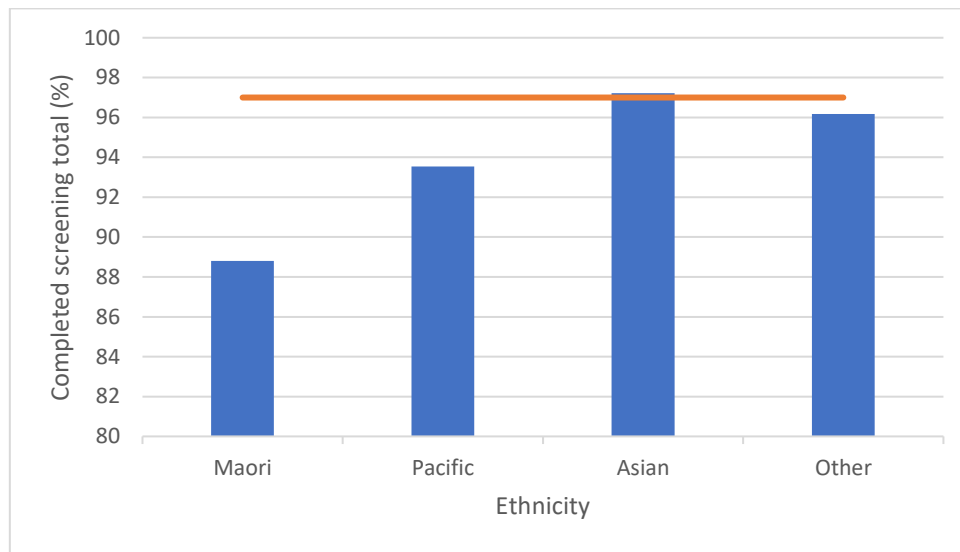
**Figure 5: Screen completion total as a percentage of live births by DHB of domicile for 1 Jan to 31 Dec 2020.**



**Table 6: Screen completion total as a percentage of live births by ethnicity for 1 Jan to 31 Dec 2020.**

Ethnicity	Births	Completed screening	
		N	%
Māori	15,174	13,476	88.8
Pacific	6,112	5,717	93.5
Asian	11,374	11,057	97.2
Other	25,783	24,795	96.2
<b>Total</b>	<b>58,466</b>	<b>55,065</b>	<b>94.2</b>

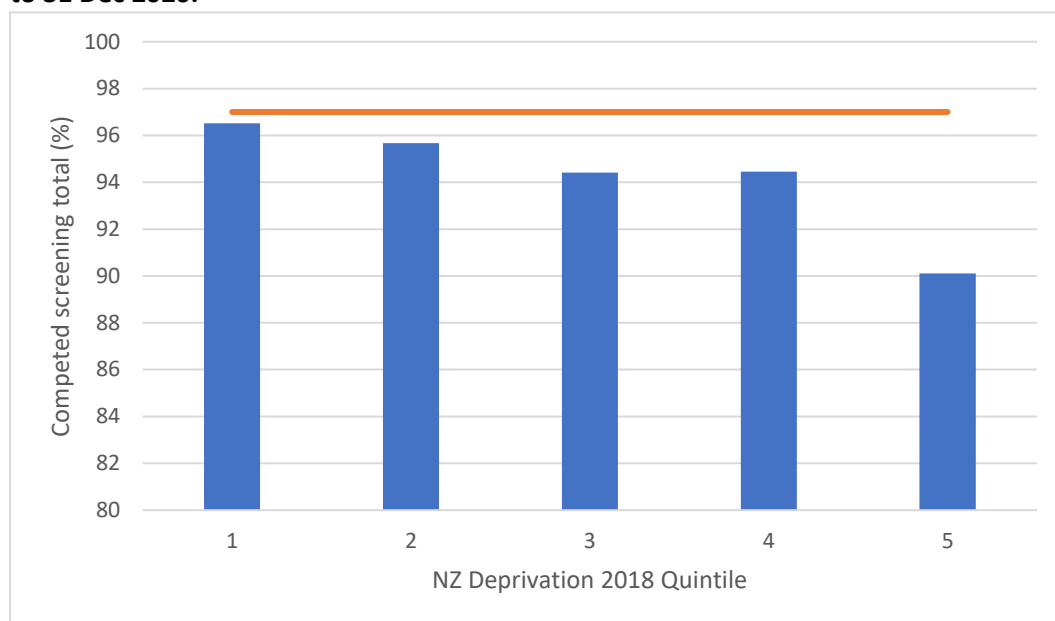
**Figure 6: Screen completion total as a percentage of live births by ethnicity for 1 Jan to 31 Dec 2020.**



**Table 7: Screen completion total as a percentage of live births by NZ deprivation Quintile for 1 Jan to 31 Dec 2020.**

Deprivation Quintile	Births	Completed Screening	
		N	%
1 (Least deprived)	8,817	8,510	96.5
2	10,093	9,656	95.7
3	10,533	9,945	94.4
4	13,928	13,155	94.5
5 (Most deprived)	15,083	13,591	90.1
<b>Total</b>	<b>58,466</b>	<b>55,065</b>	<b>94.2</b>

**Figure 7: Screen completion total as a percentage of live births by NZ deprivation Quintile for 1 Jan to 31 Dec 2020.**



**Table 8: Screen completion total as a percentage of live births by DHB of domicile and ethnicity for 1 Jan to 31 Dec 2020.**

DHB	Ethnicity				Total
	Māori	Pacific	Asian	Other	
Northland	86.9	96.4	97.6	93.6	90.2
Waitematā	86.3	91.9	96.4	93.8	93.2
Auckland	89.4	90.9	96.3	97.1	94.8
Counties Manukau	89.9	92.7	96.7	96.2	93.9
Waikato	80.7	91.3	96.1	91.7	88.6
Lakes	83.3	91.7	93.9	94.2	88.3
Bay of Plenty	84.7	90.6	96.7	92.2	89.7
Tairāwhiti	83.1	88.0	96.7	90.5	86.1
Hawkes Bay	89.6	92.9	99.4	96.1	93.4
Taranaki	89.8	90.3	95.7	95.2	93.6
MidCentral	89.5	89.4	96.8	97.2	94.1
Whanganui	86.1	90.0	100.0	97.0	91.6
Capital and Coast	94.7	96.4	96.7	96.7	96.3
Hutt Valley	98.1	100.6	97.5	98.1	98.2
Wairarapa	96.2	100.0	96.3	98.6	97.7
Nelson Marlborough	96.0	90.9	96.7	96.5	96.3
West Coast	103.4	85.7	100.0	99.0	99.6
Canterbury	97.6	97.9	98.1	99.3	98.7
South Canterbury	94.8	95.7	95.2	98.0	97.1
Southern	94.6	96.6	97.4	97.7	97.1
<b>National</b>	<b>88.8</b>	<b>93.5</b>	<b>97.2</b>	<b>96.2</b>	<b>94.2</b>

Please refer to page 8 to see the measures taken to ensure all babies were offered screening during Covid-19 pandemic conditions.

## 1.5 Referral Rate to Audiology

**Description:** The number of babies that are referred from screening to audiology as a proportion of all babies who completed screening.

**Rationale:** Referral rate to audiology is a measure of how well the screening test is functioning. An overtly high number of referrals to audiology may indicate high false positive screening results while an overtly low number of referrals to audiology may indicate babies with a hearing loss are being missed.

This indicator is measured from the DHB that created the referral to audiology.

**Standard:** <2 percent of babies who completed screening being referred to audiology, nationally and for Māori, Pacific, Asian and Other.

**Interpretation:** Nationally the average annual rate of referral met the standard with 1.4 percent of babies who complete screening being referred to audiology and five DHBs having referral rates greater or equal to 2 percent. Tairāwhiti's higher referral rate is likely due to increased use of OAE screening in response to Covid-19. Since 2015, Northland and Hawke's Bay DHBs have seen significant improvements in referral rates with Northland going from 6.7 to 1.9 percent and Hawke's Bay from 5.9 to 3.2 percent over the 6-year period.

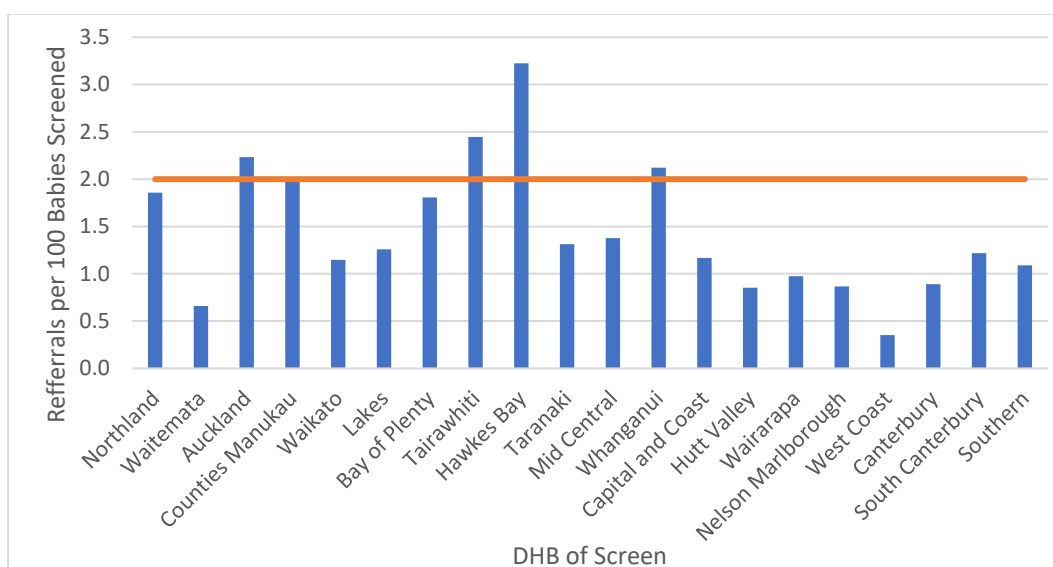
Referral rates for Asian (1.2) and Other (0.9) ethnicities were well within the standard of less than 2 percent while referral rates for Māori (2.2) and Pacific (2.3) babies was just above the standard. While only slightly exceeding the indicator standard, Māori and Pacific babies are referred to audiology at almost double the rate of Other and Asian ethnicity babies.

By economic deprivation, all deciles except Quintile 5 (at 2.1 percent) were within the target, Quintile 5 had significantly higher rates of referral to audiology compared to all other deprivation quintiles.

**Table 9: Referrals to audiology as a percentage of babies who completed screening by DHB of referral for 1 Jan to 31 Dec 2020.**

DHB	Completed Screening	Referrals	
		N	%
Northland	2,155	40	1.9
Waitematā	6,967	46	0.7
Auckland	4,967	111	2.2
Counties Manukau	7,955	159	2.0
Waikato	4,962	57	1.1
Lakes	1,272	16	1.3
Bay of Plenty	2,822	51	1.8
Tairāwhiti	613	15	2.4
Hawkes Bay	1,954	63	3.2
Taranaki	1,372	18	1.3
MidCentral	2,033	28	1.4
Whanganui	754	16	2.1
Capital and Coast	3,002	35	1.2
Hutt Valley	1,994	17	0.9
Wairarapa	513	5	1.0
Nelson Marlborough	1,387	12	0.9
West Coast	284	1	0.4
Canterbury	6,065	54	0.9
South Canterbury	575	7	1.2
Southern	3,212	35	1.1
<b>National</b>	<b>55,065</b>	<b>786</b>	<b>1.4</b>

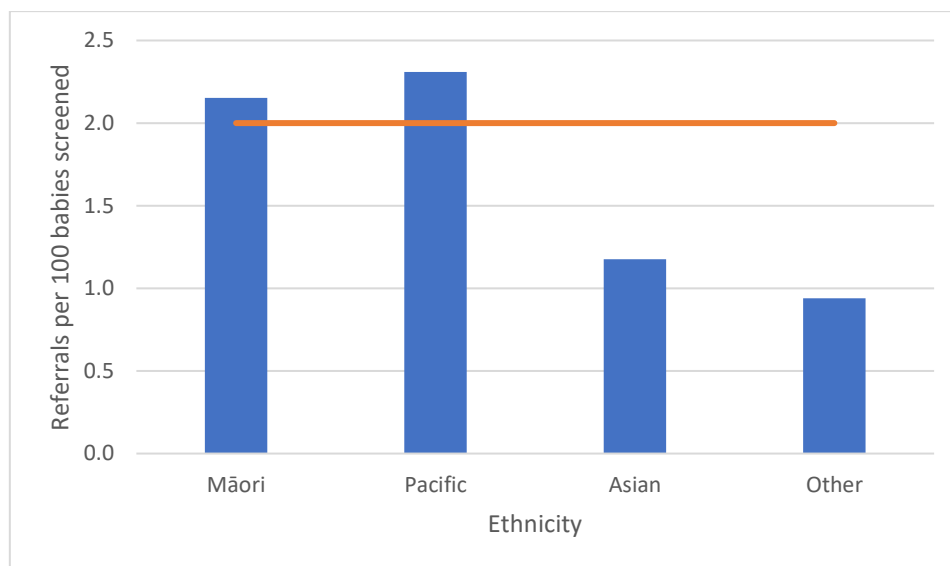
**Figure 8: Referrals to audiology as a percentage of babies who completed screening by DHB of referral for 1 Jan to 31 Dec 2020.**



**Table 10: Referrals to audiology as a percentage of babies who completed screening by ethnicity for 1 Jan to 31 Dec 2020.**

Ethnicity	Completed Screening	Referral	
		N	%
Māori	13,476	290	2.2
Pacific	5,717	132	2.3
Asian	11,057	130	1.2
Other	24,795	233	0.9
<b>Total</b>	<b>55,065</b>	<b>786</b>	<b>1.4</b>

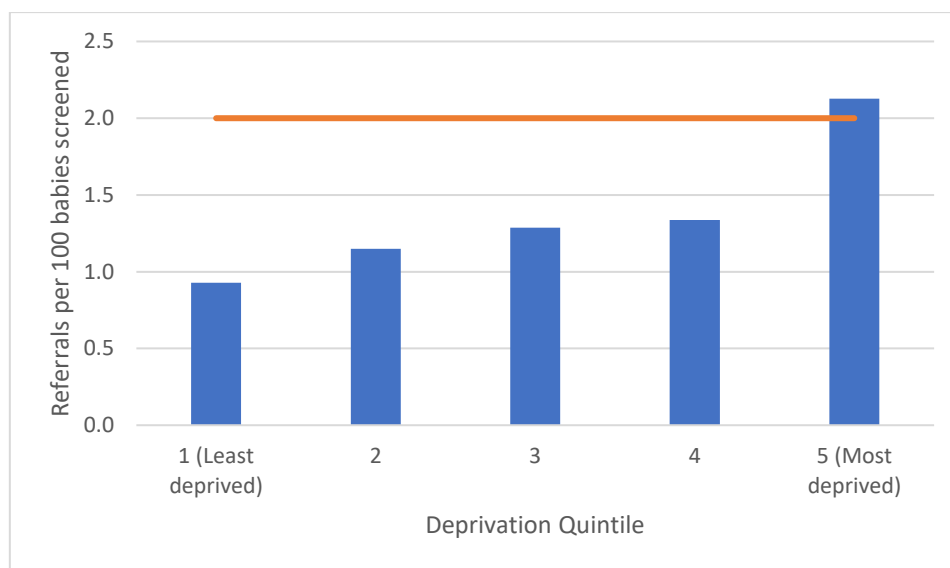
**Figure 9: Referrals to audiology as a percentage of babies who completed screening by ethnicity for 1 Jan to 31 Dec 2020.**



**Table 11: Referrals to audiology as a percentage of babies who completed screening by NZ deprivation quintile for 1 Jan to 31 Dec 2020.**

Deprivation Quintile	Completed Screening	Referrals	
		N	%
1 (Least deprived)	8,510	79	0.9
2	9,656	111	1.1
3	9,945	128	1.3
4	13,155	176	1.3
5 (Most deprived)	13,591	289	2.1
<b>Total</b>	<b>55,065</b>	<b>786</b>	<b>1.4</b>

**Figure 10: Referrals to audiology as a percentage of babies who completed screening by NZ deprivation quintile for 1 Jan to 31 Dec 2020.**





## 1.8 Positive Predictive Value (PPV)

**Description:** The proportion of babies referred from screening who are diagnosed with permanent congenital hearing loss (PCHL). This is an indicator of screen quality and so is presented by DHB that administered the screen.

**Rationale:** This is a measure of quality of screening. A low positive predictive value may indicate that too many babies without hearing loss are referred to audiology or that babies with permanent hearing loss are being missed.

**Standard:** No target currently set

**Interpretation:** PPV rates varied by district from Canterbury DHB at 33.3 percent to Taranaki with the lowest non-zero rate at 5.6 percent. West Coast's 0.0 percent PPV is a statistical artifact due to only a single baby being referred to audiology.

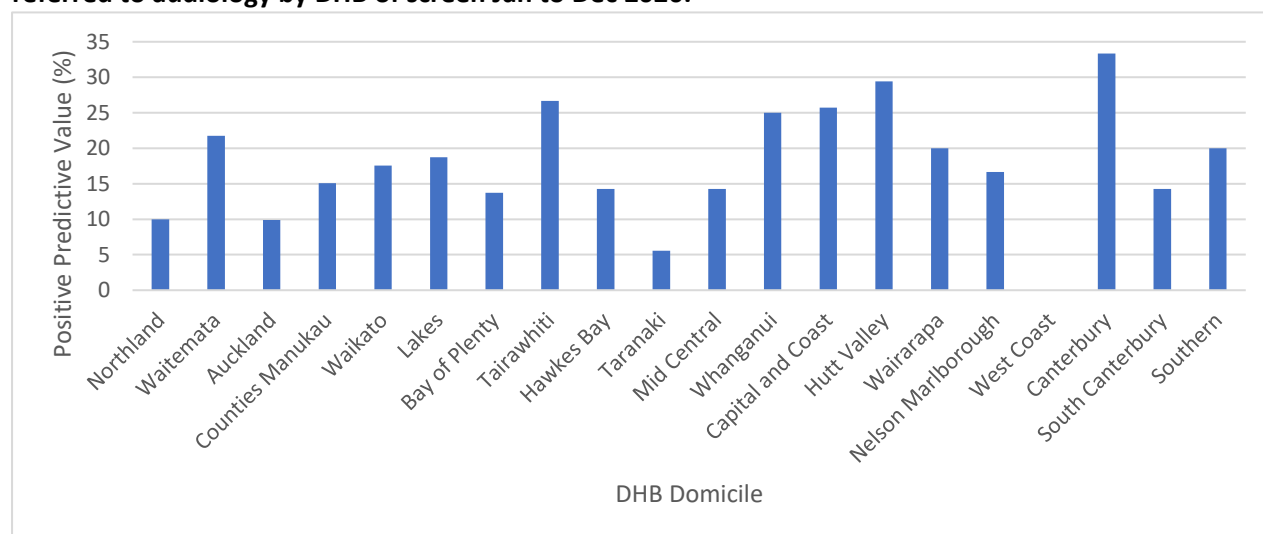
The PPV for Māori was 15.2 percent, for Pacific 21.2 percent, for Asian 24 percent and for Other ethnicity 13.2 percent.

PPV for different deprivation quintiles ranged from 21.6 percent for quintile 2 to 14.5 percent for quintile 5.

**Table 12: Positive Predictive Value of newborn hearing screening as a percentage of babies referred to audiology by DHB of screen Jan to Dec 2020.**

DHB	Referrals	Hearing loss confirmed	Positive Predictive Value (%)
Northland	40	4	10.0
Waitematā	46	10	21.7
Auckland	111	11	9.9
Counties Manukau	159	24	15.1
Waikato	57	10	17.5
Lakes	16	3	18.8
Bay of Plenty	51	7	13.7
Tairāwhiti	15	4	26.7
Hawkes Bay	63	9	14.3
Taranaki	18	1	5.6
MidCentral	28	4	14.3
Whanganui	16	4	25.0
Capital and Coast	35	9	25.7
Hutt Valley	17	5	29.4
Wairarapa	5	1	20.0
Nelson Marlborough	12	2	16.7
West Coast	1	0	0.0
Canterbury	54	18	33.3
South Canterbury	7	1	14.3
Southern	35	7	20.0
<b>National</b>	<b>786</b>	<b>134</b>	<b>17.0</b>

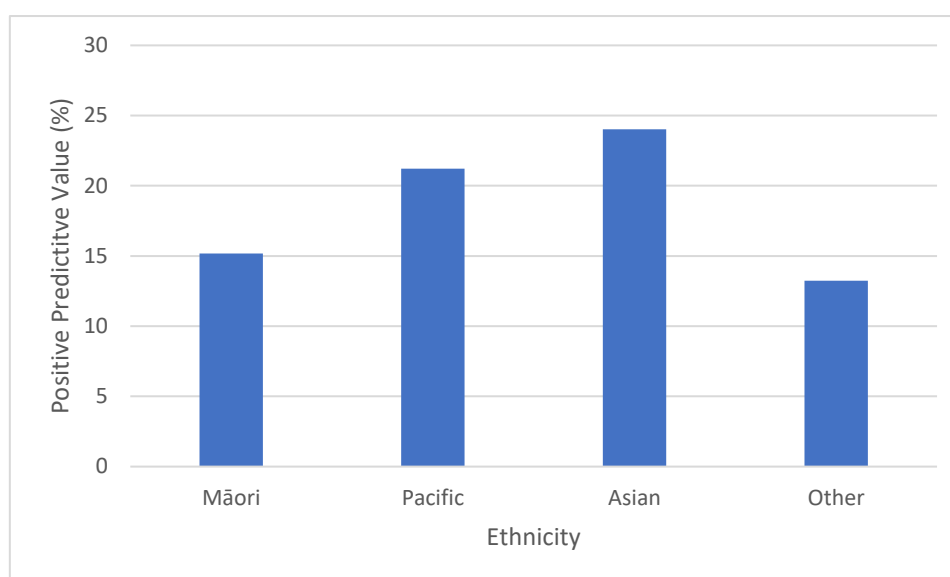
**Figure 11: Positive Predictive Value of newborn hearing screening as a percentage of babies referred to audiology by DHB of screen Jan to Dec 2020.**



**Table 13: Positive Predictive Value of newborn hearing screening as a percentage of babies referred to audiology by Ethnicity Jan to Dec 2020.**

Ethnicity	Referrals	Hearing loss confirmed	Positive Predictive Value (%)
Māori	290	44	15.2
Pacific	132	28	21.2
Asian	129	31	24.0
Other	234	31	13.2
<b>National</b>	<b>786</b>	<b>134</b>	<b>17.0</b>

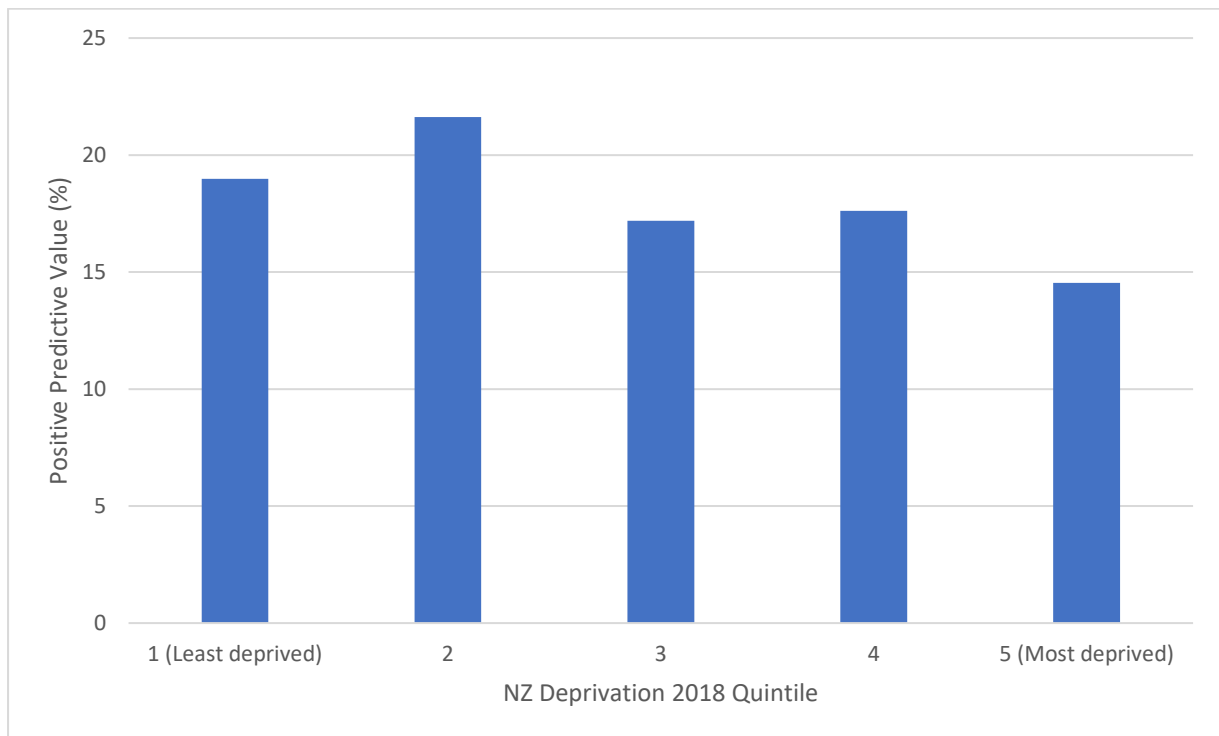
**Figure 12: Positive Predictive Value of newborn hearing screening as a percentage of babies referred to audiology by Ethnicity Jan to Dec 2020.**



**Table 14: Positive Predictive Value of newborn hearing screening as a percentage of babies referred to audiology by NZ Deprivation 2018 Quintile, Jan to Dec 2020.**

Deprivation Quintile	Referrals	Hearing loss confirmed	Positive Predictive Value (%)
1 (Least deprived)	79	15	19.0
2	111	24	21.6
3	128	22	17.2
4	176	31	17.6
5 (Most deprived)	289	42	14.5
<b>National</b>	<b>786</b>	<b>134</b>	<b>17.0</b>

**Figure 13: Positive Predictive Value of newborn hearing screening as a percentage of babies referred to audiology by NZ Deprivation 2018 Quintile, Jan to Dec 2020.**



## 2.2 Audiology Completion

**Description:** The proportion of babies referred from screening who complete audiology assessment.

**Rationale:** Babies referred to audiology have been identified as being at higher risk of hearing conditions. Higher audiology completion by three months rates best support achievement of early intervention services by six months for babies identified with a hearing loss.

**Standard:**  $\geq 90$  percent of babies referred to audiology complete their audiology assessment by 3 months of age.

**Interpretation:** Nationally the target is not being met with 82.1 percent of babies completing audiology overall and 65.4 percent completion before 3 months of age. Hutt Valley DHB has the highest rate of audiology completion before 3 months of age at 89.5 percent and Lakes DHB has the lowest non-zero rate at 31.3 percent. No DHB met the standard of  $\geq 90$  percent.

No ethnicity met the target of 90 percent of babies completing audiology by 3 months of age.

Māori were disproportionately affected for this indicator, with audiology completion rates by 3 months of 53.1% and 71.7% percent for overall completion. Audiology completion rates by 3 months for Asian was 82.3 followed by both Other at 73.8 percent and Pacific at 60.6 percent.

Audiology completion rates overall and by 3 months were higher for babies domiciled in less economically deprived areas. Quintile 2 had the highest rate by 3 months at 74.8 percent, followed by Quintile 1 and Quintile 3 at 73.4 and 68.8 percent respectively. Audiology completion rates were lowest for the most economically deprived quintiles, with Quintile 4 at 62.5 percent and Quintile 5 at 59.5 percent.

Lower completion rates for indicator 2.2 may be influenced by the downstream effects of lower rates of screen completion by 1 months of age (indicator 1.3A) as delays in screening will contribute to delays in audiology assessment.

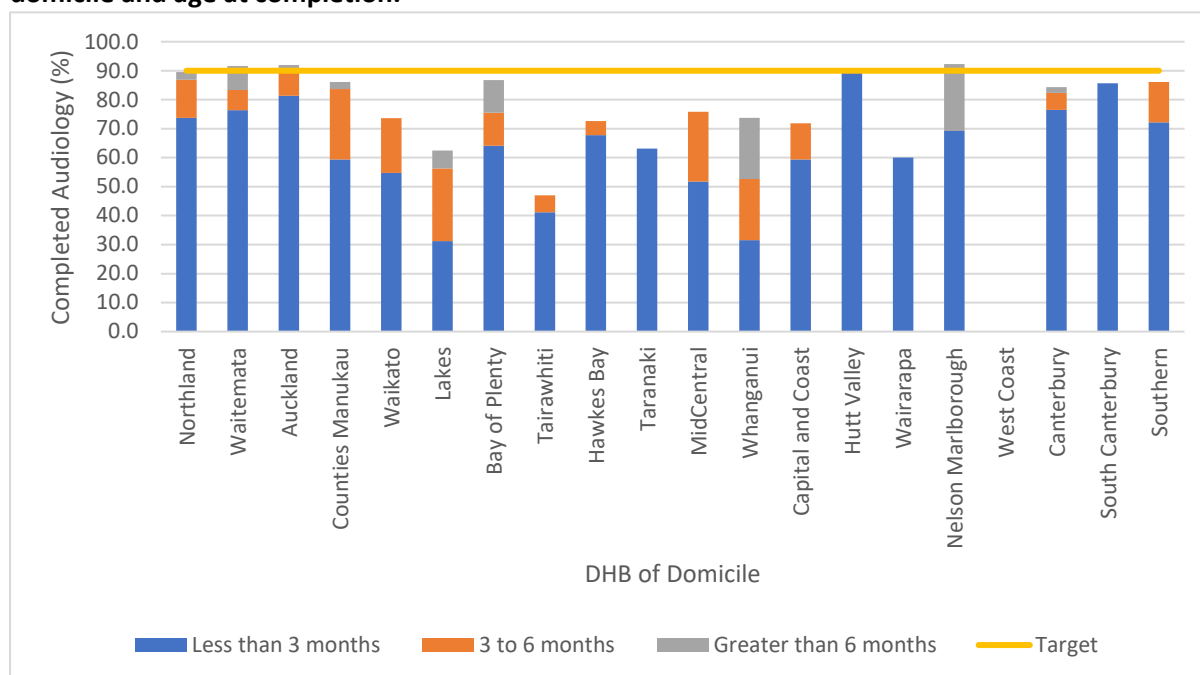
**Table 15: Audiology completion total as a number and rate of babies referred to audiology by DHB of domicile.**

DHB	Referrals	Completed Audiology	
		N	%
Northland	38	34	89.5
Waitematā	72	66	91.7
Auckland	75	69	92.0
Counties Manukau	165	142	86.1
Waikato	53	39	73.6
Lakes	16	10	62.5
Bay of Plenty	53	46	86.8
Tairāwhiti	17	8	47.1
Hawkes Bay	62	45	72.6
Taranaki	19	12	63.2
MidCentral	29	22	75.9
Whanganui	19	14	73.7
Capital and Coast	32	23	71.9
Hutt Valley	19	17	89.5
Wairarapa	5	3	60.0
Nelson Marlborough	13	12	92.3
West Coast	2	0	0.0
Canterbury	51	43	84.3
South Canterbury	7	6	85.7
Southern	36	31	86.1
<b>National</b>	<b>786</b>	<b>645</b>	<b>82.1</b>

**Table 16: Audiology completion as a percentage of babies referred to audiology by DHB of domicile and age at completion.**

DHB	Completed Audiology			Total
	Less than 3 months	3 to 6 months	Greater than 6 months	
Northland	73.7	13.2	2.6	89.5
Waitematā	76.4	6.9	8.3	91.7
Auckland	81.3	8.0	2.7	92.0
Counties Manukau	59.4	24.2	2.4	86.1
Waikato	54.7	18.9	0.0	73.6
Lakes	31.3	25.0	6.3	62.5
Bay of Plenty	64.2	11.3	11.3	86.8
Tairāwhiti	41.2	5.9	0.0	47.1
Hawkes Bay	67.7	4.8	0.0	72.6
Taranaki	63.2	0.0	0.0	63.2
MidCentral	51.7	24.1	0.0	75.9
Whanganui	31.6	21.1	21.1	73.7
Capital and Coast	59.4	12.5	0.0	71.9
Hutt Valley	89.5	0.0	0.0	89.5
Wairarapa	60.0	0.0	0.0	60.0
Nelson Marlborough	69.2	0.0	23.1	92.3
West Coast	0.0	0.0	0.0	0.0
Canterbury	76.5	5.9	2.0	84.3
South Canterbury	85.7	0.0	0.0	85.7
Southern	72.2	13.9	0.0	86.1
<b>National</b>	65.4	13.1	3.6	82.1

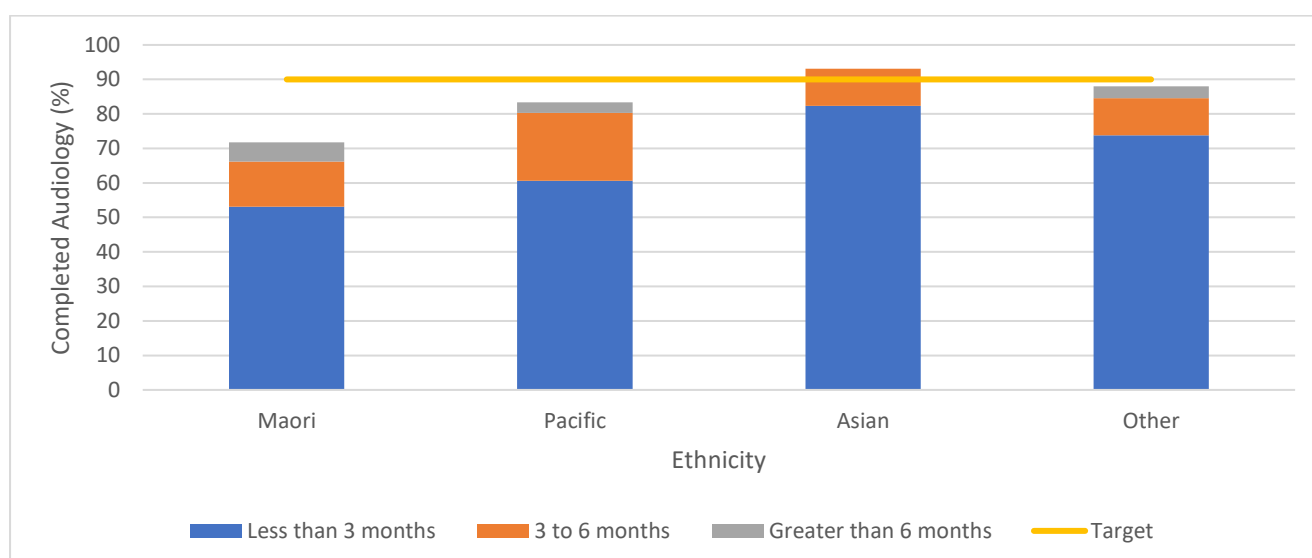
**Figure 14: Audiology completion as a percentage of babies referred to audiology, by DHB of domicile and age at completion.**



**Table 17: Audiology completion as a percentage of babies referred to audiology, by Ethnicity and age at completion.**

Ethnicity	Less than 3 months	3 to 6 months	Greater than 6 months	Total
Māori	53.1	13.1	5.5	71.7
Pacific	60.6	19.7	3.0	83.3
Asian	82.3	10.8	0.0	93.1
Other	73.8	10.7	3.4	88.0
<b>Total</b>	<b>65.4</b>	<b>13.1</b>	<b>3.6</b>	<b>82.1</b>

**Figure 15: Audiology completion as a percentage of babies referred to audiology, by Ethnicity and age at completion.**

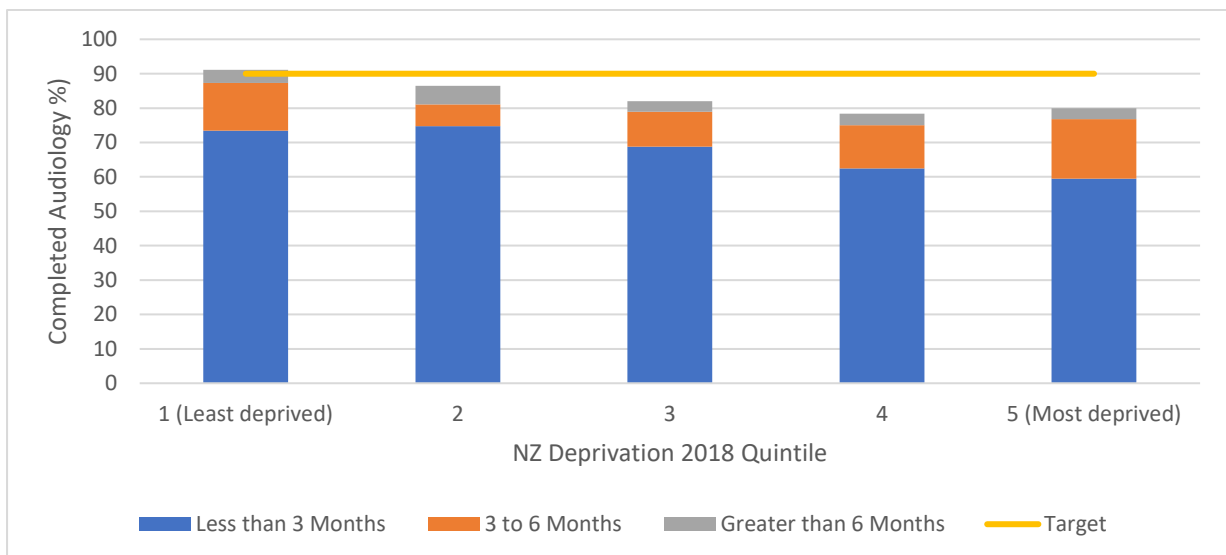




**Table 18: Audiology completion as a percentage of babies referred to audiology, by NZ Deprivation 2018 Quintile and age at completion.**

Deprivation Quintile	Less than 3 months	3 to 6 months	Greater than 6 months	Total
1 (Least deprived)	73.4	13.9	3.8	91.1
2	74.8	6.3	5.4	86.5
3	68.8	10.2	3.1	82.0
4	62.5	12.5	3.4	78.4
5 (Most deprived)	59.5	17.3	3.1	79.9
<b>Total</b>	65.4	13.1	3.6	82.1

**Figure 17: Audiology completion as a percentage of babies referred to audiology, by NZ Deprivation 2018 Quintile and age at completion.**



## 2.3 Audiology DNA

**Description:** The proportion of babies referred from screening where audiology assessment was not completed due to DNA, lost contact, decline, deceased, or left New Zealand. The DHB of domicile is responsible for ensuring diagnostic audiology completion, even where that service is provided by another DHB. Note that the number of DNAs is not equal to referrals minus audiology completions.

**Rationale:** This is an indicator both of how well the programme is at ensuring babies complete the screening pathway as well as how many babies are voluntarily withdrawing from the pathway. A low DNA rate best supports achievement of early intervention services by six months for babies identified with a hearing loss. The programme should aim to see DNA rates of < 2 percent.

**Standard:** No target set.

**Interpretation:** Nationally the DNA rate was 10.6 percent with rates varying widely from DHB to DHB. This range of DNA rates can be attributed to the relatively small volumes of referrals and of DNAs with the majority of DHBs seeing 5 or fewer babies not attending their audiology assessments in 2020. While no target has been set, nationally the rate of babies not attending audiology exceeded the recommended rate of less than 2 percent, with all but three DHBs exceeding the 2 percent DNA rate.

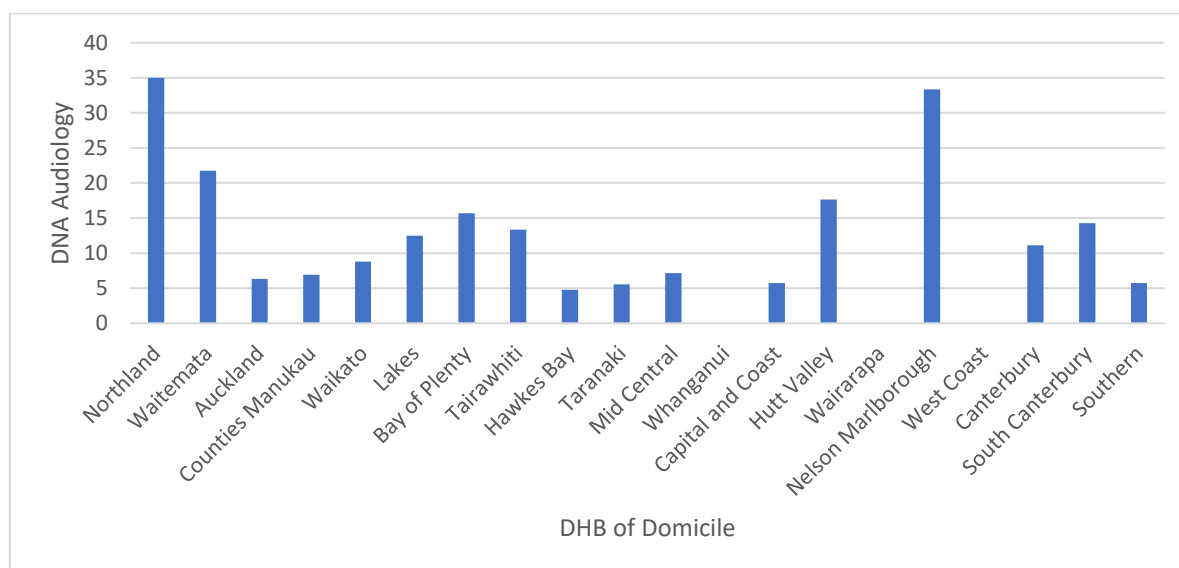
By ethnicity, DNA rates for Māori were 16.9 percent, for Pacific 9.1 percent, for Asian 2.3 percent and for Other 8.2 percent.

DNA rates were highest for babies domiciled in more deprived areas, with Quintile 4 at 15.3 percent and Quintile 5 at 11.1 percent. Rates for Quintile 1 and 2 were 6.3 and 5.4 percent respectively.

**Table 19: Babies not attending audiology as a percentage of babies referred to audiology, by DHB of domicile.**

DHB	Refers	DNA	
		N	%
Northland	40	14	35.0
Waitematā	46	10	21.7
Auckland	111	7	6.3
Counties Manukau	159	11	6.9
Waikato	57	5	8.8
Lakes	16	2	12.5
Bay of Plenty	51	8	15.7
Tairāwhiti	15	2	13.3
Hawkes Bay	63	3	4.8
Taranaki	18	1	5.6
MidCentral	28	2	7.1
Whanganui	16	0	0.0
Capital and Coast	35	2	5.7
Hutt Valley	17	3	17.6
Wairarapa	5	0	0.0
Nelson Marlborough	12	4	33.3
West Coast	1	0	0.0
Canterbury	54	6	11.1
South Canterbury	7	1	14.3
Southern	35	2	5.7
<b>National</b>	<b>786</b>	<b>83</b>	<b>10.6</b>

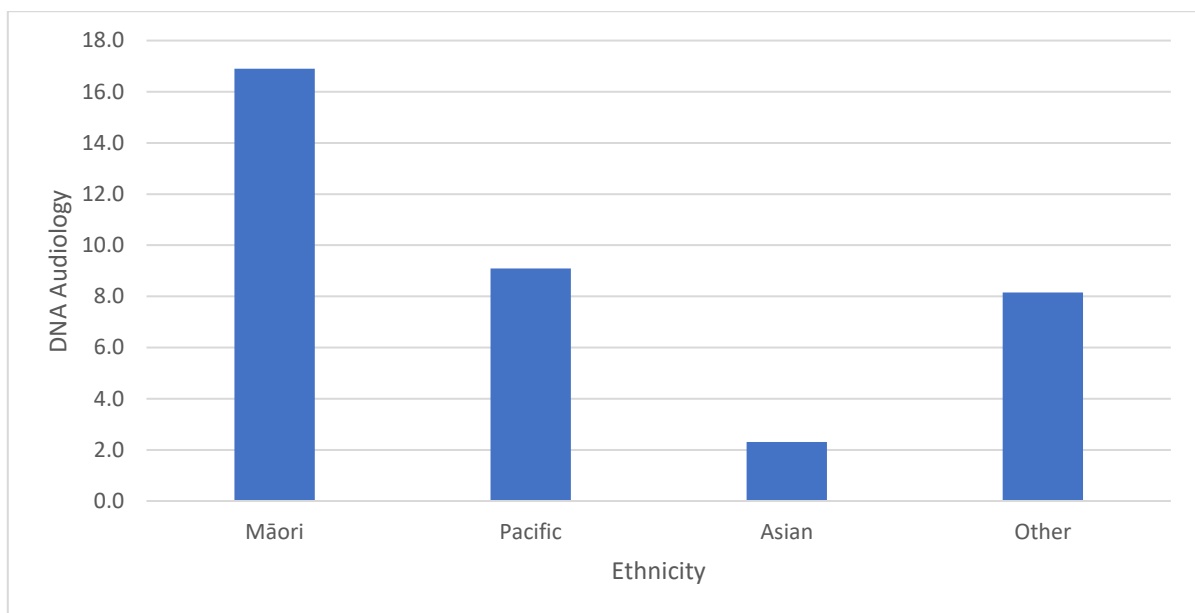
**Figure 18: Babies not attending audiology as a percentage of babies referred to audiology, by DHB of domicile.**



**Table 20: Babies not attending audiology as a percentage of babies referred to audiology, by Ethnicity.**

Ethnicity	Refers	DNA	
		N	%
Māori	290	49	16.9
Pacific	132	12	9.1
Asian	130	3	2.3
Other	233	19	8.2
<b>Total</b>	<b>786</b>	<b>83</b>	<b>10.6</b>

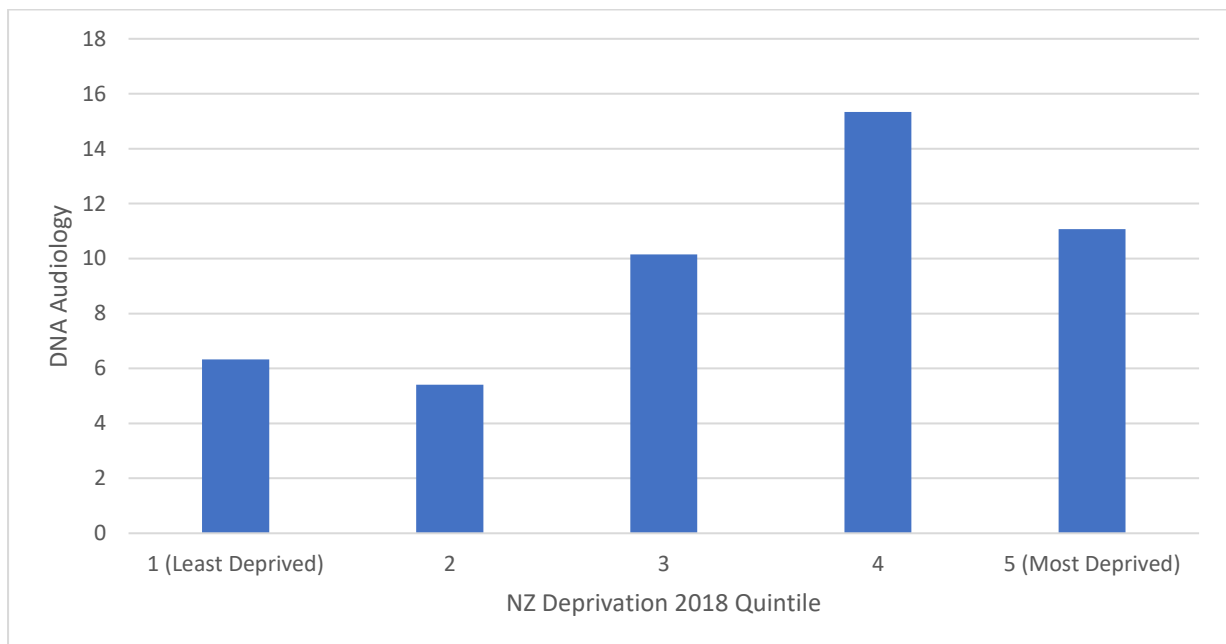
**Figure 19: Babies not attending audiology as a percentage of babies referred to audiology, by Ethnicity.**



**Table 21: Babies not attending audiology as a percentage of babies referred to audiology, by NZ Deprivation 2018 Quintile.**

Deprivation Quintile	Refers	DNA	
		N	%
1 (Least Deprived)	79	5	6.3
2	111	6	5.4
3	128	13	10.2
4	176	27	15.3
5 (Most Deprived)	289	32	11.1
<b>Total</b>	<b>786</b>	<b>83</b>	<b>10.6</b>

**Figure 20: Babies not attending audiology as a percentage of babies referred to audiology, by NZ Deprivation 2018 Quintile.**



## 2.4 Hearing Loss Detected

**Description:** The proportion of babies screened that have a permanent hearing loss detected.

**Rationale:** The detection of PCHL via newborn hearing screening is a key indicator of programme performance and should be in line with international evidence on PCHL prevalence in comparable programmes.

**Standard:** No target set – it is expected that between one to two babies per 1000 screened (0.1-0.2) will have moderate or more severe permanent congenital hearing loss identified.

**Interpretation:** Nationally, permanent hearing loss was detected in 0.24 percent of babies screened with Tairāwhiti (0.65) having the highest and Whanganui (0.53) the lowest non-zero detection rates respectively. Overall bilateral hearing loss was detected at a slightly higher rate of 0.15 percent than unilateral hearing loss at 0.09 percent.

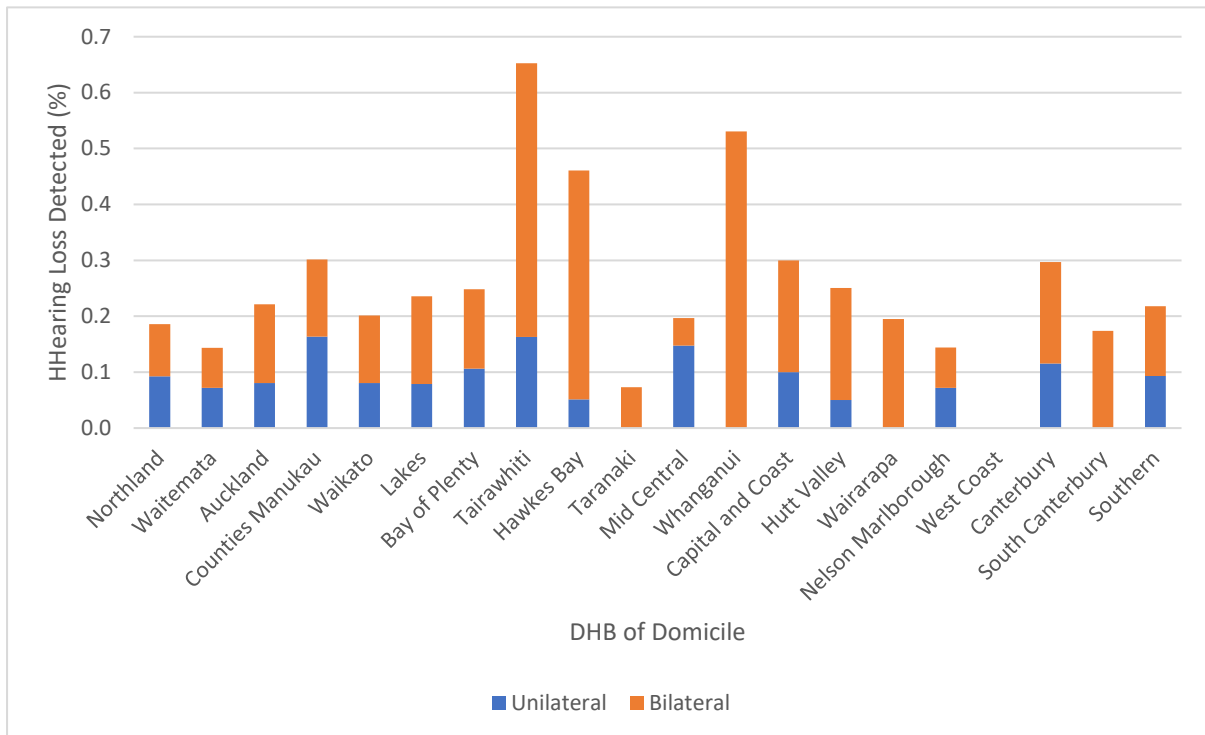
The rates of permanent hearing loss detection was highest for Pacific babies at 0.49 percent, followed by Māori and Asian babies 0.33 and 0.28 percent respectively. Other ethnicity babies had the lowest rate of hearing loss detection with 0.13 percent of screened babies diagnosed with permanent hearing loss.

Hearing loss detection was 0.18 percent for Quintile 1 (least deprived) and 0.31 percent for Quintile 5 (most deprived).

**Table 22: Hearing loss detected as a percentage of babies that completed screening, by DHB of domicile.**

DHB	Unilateral	Bilateral	Total
Northland	0.09	0.09	0.19
Waitematā	0.07	0.07	0.14
Auckland	0.08	0.14	0.22
Counties Manukau	0.16	0.14	0.30
Waikato	0.08	0.12	0.20
Lakes	0.08	0.16	0.24
Bay of Plenty	0.11	0.14	0.25
Tairāwhiti	0.16	0.49	0.65
Hawkes Bay	0.05	0.41	0.46
Taranaki	0.00	0.07	0.07
Mid Central	0.15	0.05	0.20
Whanganui	0.00	0.53	0.53
Capital and Coast	0.10	0.20	0.30
Hutt Valley	0.05	0.20	0.25
Wairarapa	0.00	0.19	0.19
Nelson Marlborough	0.07	0.07	0.14
West Coast	0.00	0.00	0.00
Canterbury	0.12	0.18	0.30
South Canterbury	0.00	0.17	0.17
Southern	0.09	0.12	0.22
<b>National</b>	<b>0.09</b>	<b>0.15</b>	<b>0.24</b>

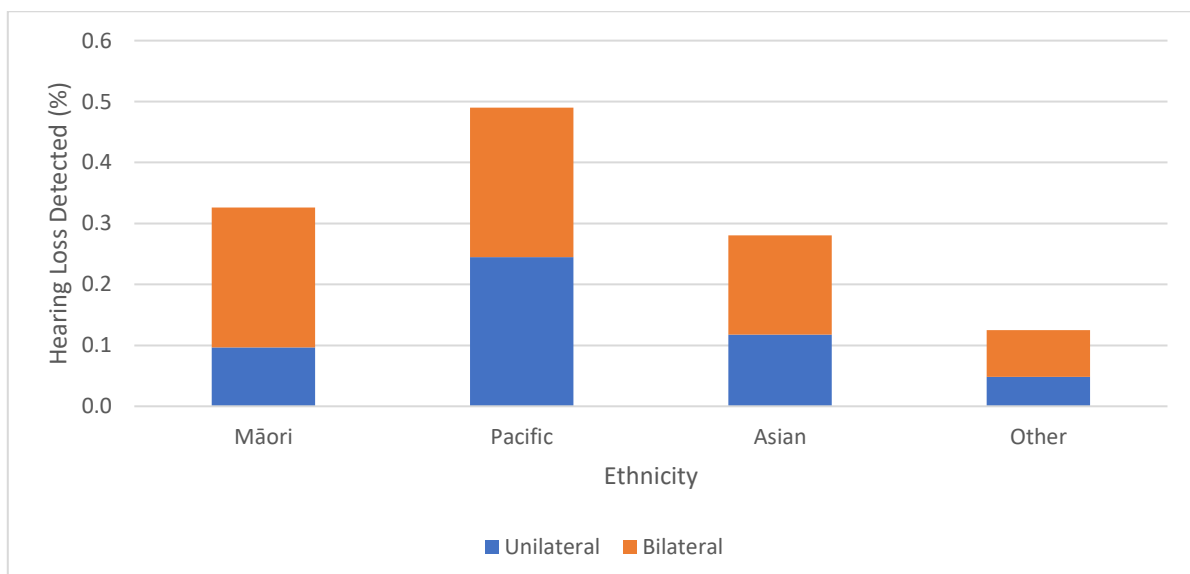
**Figure 21: Hearing loss detected as a percentage of babies that completed screening, by DHB of domicile.**



**Table 23: Hearing loss detected as a percentage of babies that completed screening, by Ethnicity.**

Ethnicity	Unilateral	Bilateral	Total
Māori	0.10	0.23	0.33
Pacific	0.24	0.24	0.49
Asian	0.12	0.16	0.28
Other	0.05	0.08	0.13
<b>Total</b>	<b>0.09</b>	<b>0.15</b>	<b>0.24</b>

**Figure 22: Hearing loss detected as a percentage of babies that completed screening, by Ethnicity.**

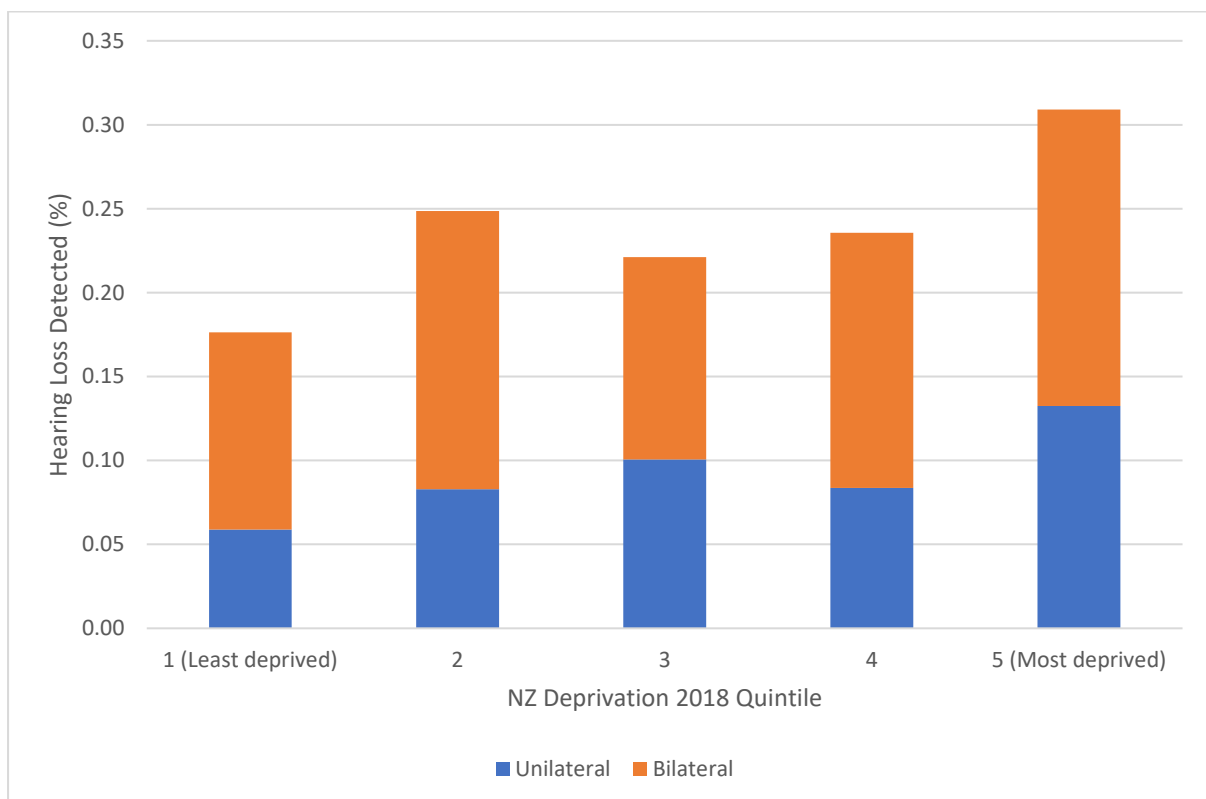




**Table 24: Hearing loss detected as a percentage of babies that completed screening, by NZ Deprivation 2018 Quintile.**

Deprivation	Unilateral	Bilateral	Total
1 (Least deprived)	0.06	0.12	0.18
2	0.08	0.17	0.25
3	0.10	0.12	0.22
4	0.08	0.15	0.24
5 (Most deprived)	0.13	0.18	0.31
Total	0.09	0.15	0.24

**Figure 23: Hearing loss detected as a percentage of babies that completed screening, by NZ Deprivation 2018 Quintile.**



**Table 25: Proportion of babies screened that had permanent congenital hearing loss detected, by type of hearing loss, 1 January to 31 December 2020.**

Left Ear Result	Right Ear Result	Number of Babies	Rate per 10,000 screens	% of babies with PCHL
Auditory Neuropathy	Auditory Neuropathy	3	0.5	2.2
Auditory Neuropathy	Normal	2	0.4	1.5
Conductive Permanent	Conductive Permanent	3	0.5	2.2
Conductive Temporary	Conductive Permanent	1	0.2	0.7
Mixed	Conductive Temporary	3	0.5	2.2
Mixed	Mixed	9	1.6	6.7
Mixed	Conductive Permanent	2	0.4	1.5
Mixed	Normal	2	0.4	1.5
Mixed	Sensorineural	1	0.2	0.7
Mixed	Not Yet Detected	1	0.2	0.7
Normal	Auditory Neuropathy	4	0.7	3.0
Normal	Conductive Permanent	9	1.6	6.7
Normal	Mixed	2	0.4	1.5
Normal	Sensorineural	15	2.7	11.2
Sensorineural	Conductive Temporary	2	0.4	1.5
Sensorineural	Mixed	1	0.2	0.7
Sensorineural	Normal	17	3.1	12.7
Sensorineural	Sensorineural	57	10.4	42.5
<b>Total</b>		134	24.3	100.0

# Early Intervention education services indicators

The following indicators relate to Early Intervention education services provided to babies referred from newborn hearing screening. During the reporting period of 1 January 2020 to 31 December 2020, MoE (Ministry of Education) Learning Support recorded a total of 153 Universal Newborn Hearing Screening (UNHS) requests for support.

Table 27 shows the number and percentage of requests for support received by each region for 2020 and the number and percentage of total requests for support received by each region for the years 2013 to 2020. The percentage of requests for support received by each region for the years 2013 to 2020 aligns with the student population percentages per region as provided by Education Counts Data.

**Table 26: Requests for support received by MoE Regions, 2013 to 2020.**

MoE Region	Requests for support received 2020	Requests for support received 2013 to 2020	
	%	N	%
Tai Tokerau	5.0	43	4.0
Auckland	39.0	394	37.0
Waikato	13.0	129	12.0
Bay of Plenty/Wairariki	7.0	61	6.0
Hawke's Bay/Tairāwhiti	5.0	55	5.0
Taranaki/Whanganui/Manawatu	3.0	68	6.0
Wellington	8.0	102	10.0
Nelson/Marlborough/West Coast	3.0	42	4.0
Canterbury/Chatham Islands	10.0	116	11.0
Otago/Southland	7.0	56	5.0
<b>National</b>	100.0	1066	100.0

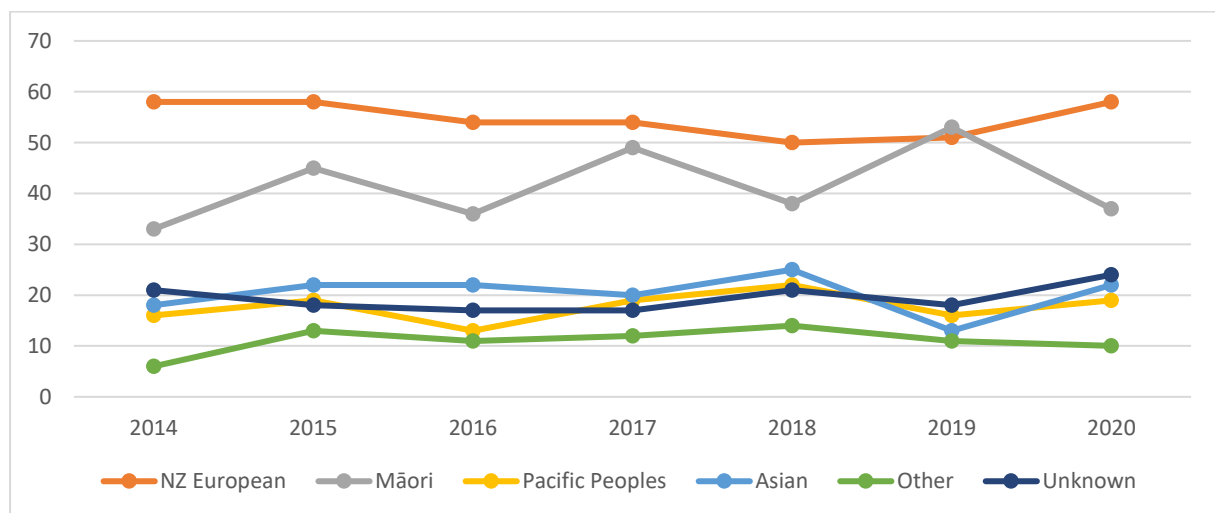
**Table 27: Requests for support received by ethnicity, 2013 to 2020.**

Ethnicity	Requests for support received 2020		Total requests for support received 2013 to 2020	2018 Census - % of population under 20
	N	%	%	%
NZ European	58	31.0	36.0	67.0
Māori	37	33.0	28.0	26.0
Pacific Peoples	19	10.0	12.0	14.0
Asian	22	8.0	13.0	15.0
Other	10	7.0	7.0	N/A
Unknown	24	11.0	12.0	N/A

Note: Clients can identify with more than one ethnicity and can be counted more than once in any ethnicity tables or summaries. For example: a client that identifies as Māori and Pasifika will be counted once in the Māori grouping, and once in the Pacific Peoples grouping.

Compared to the general population, the proportion of requests for support from those of European ethnicities are lower than one would expect based on the size of their population, 67% under 20 years of age identified in the 2018 Census.

**Figure 23: Requests for support received by ethnicity, 2014 to 2020.**



## Indicator 3.1

Number of working days taken for Early Intervention education services to make contact with the families and whānau.

**Standard:** 95% of families and whānau eligible for and referred to Early Intervention education services through universal newborn hearing screening are contacted within 10 working days of request for report being received.

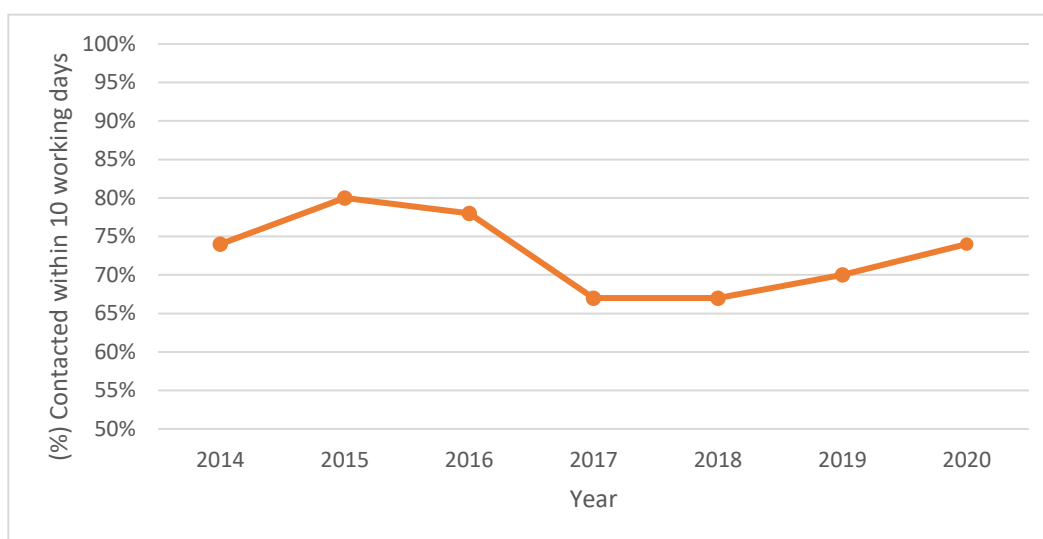
**Interpretation:** Nationally 74% of eligible families and whānau were contacted within 10 working days in 2020. While the standard was not met, 74% is a 7% increase from 2018.

Note: Due to the relatively small number of requests for support received annually, on average 145 per year, the percentages around the '10 day' measure per region varies from year to year.

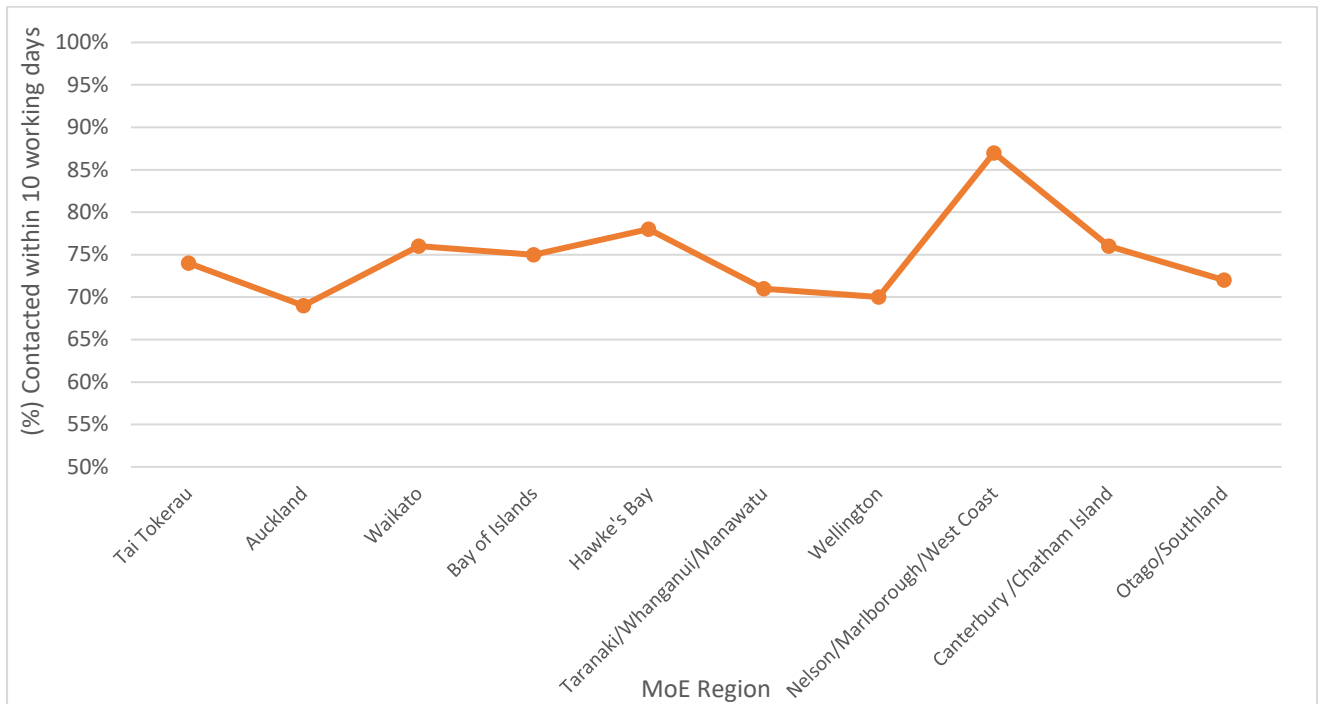
**Table 28: Time taken (days) for first contact with family and Whānau after support requested, Jan to Dec 2020.**

Time Taken (Days)	Requests for support	
	N	%
< 10 Days	113	74.0
> 10 Days	40	26.0
<b>Total:</b>	<b>153</b>	

**Figure 24: Percentage of families and whānau contacted within 10 working days of request for support, by year 2014 to 2020.**



**Figure 25: Percentage of families and whānau contacted within 10 working days of request for support, by region averaged over 2014 to 2020.**



**Table 29: Time taken (days) for first contact after support requested by Ethnicity, Jan to Dec 2020.**

Ethnicity	< 10 Days	>10 Days	<= 10 Days	Total
	N	N	%	N
Māori	26	11	70.3	37
Pacific	12	7	63.2	19
Asian	17	5	77.3	22
Other	52	16	76.5	68
Unknown	18	0	100.0	18
<b>Total</b>	<b>125</b>	<b>39</b>	<b>76.2</b>	<b>164</b>

## Indicator 3.2a

Proportion of eligible children referred to Early Intervention education services who began receiving a service within one month following receipt of request for support.

**Standard:** 90% of children referred to the Early Intervention education service through newborn hearing screening will have begun receiving a service by one month following receipt of request for support.

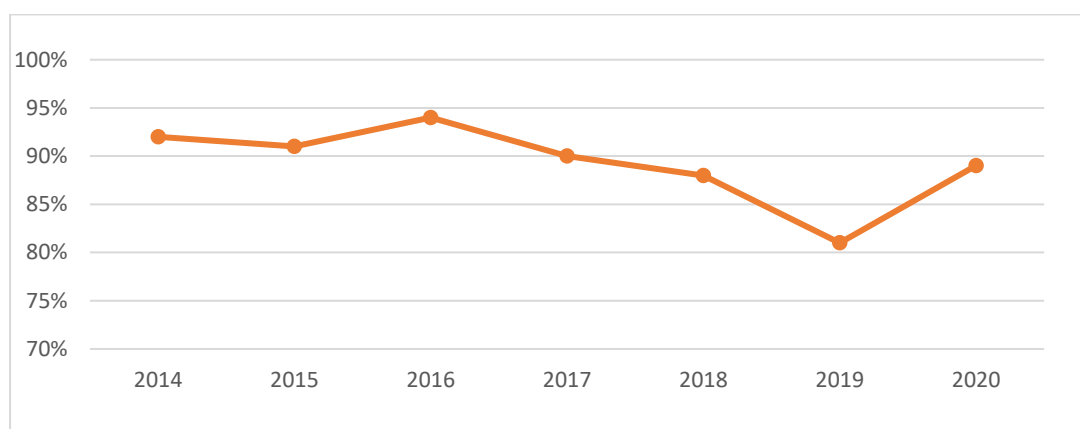
**Interpretation:** Nationally 89% of children began receiving a service by one month following receipt of request for support. While the target was met in the years 2014 - 2017, the 89 percent achieved in 2020 is an increase of 8 percent from 2019.

Note: Due to the relatively small number of referrals received annually, on average 145 per year, the percentages around the 'one month' measure per region varies from year to year.

**Table 30: Time taken (months) for first service after request for support Jan to Dec 2020.**

Time Taken for First Service (Months)	Number of Referrals	Percentage Received Service
<=1	136	88.89
1 to 2	9	5.88
2 to 3	6	3.92
3 to 4	1	0.65
4+	1	0.65
<b>Total</b>	<b>153</b>	

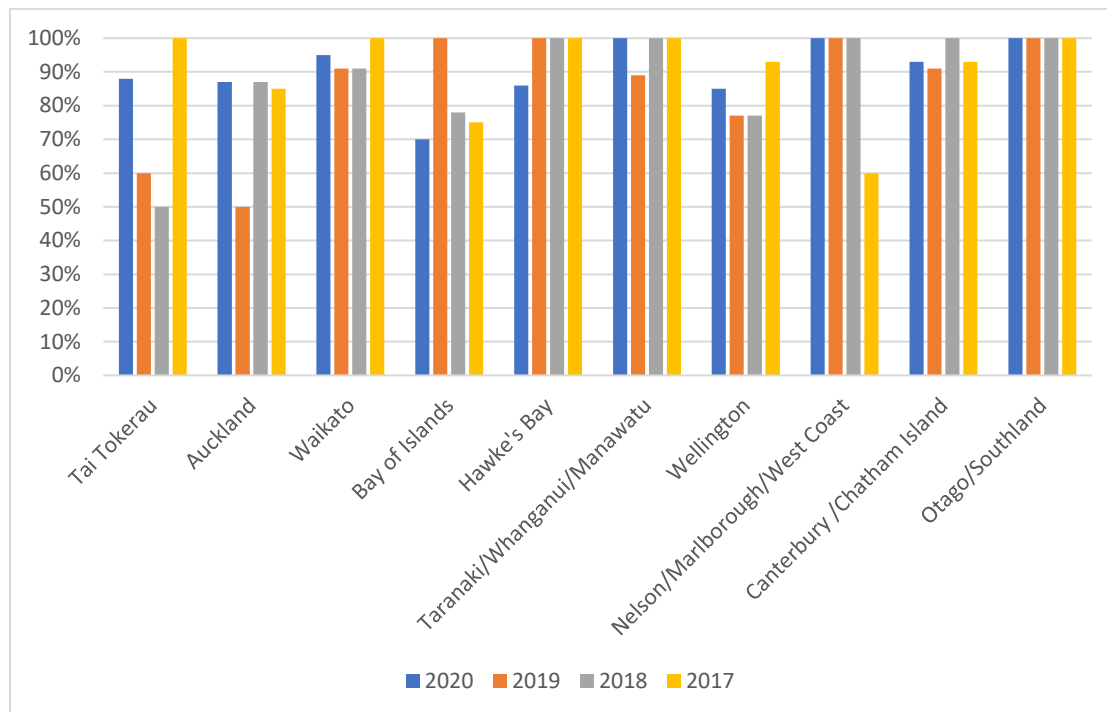
**Figure 26: Percentage of families and whānau who received a service within one month of request for support, 2014 to 2020.**



**Table 31: Time taken for first service after request for support, by ethnicity Jan to Dec 2020.**

Ethnicity	<=1 Month		> 1 Months	Total
	N	%	N	N
Māori	29	78.0	8	37
Pacific	16	84.0	3	19
Asian	20	91.0	2	22
NZ European	53	91.0	5	58
Other	10	100.0	0	10
Unknown	21	93.0	3	24
<b>Total</b>	<b>149</b>	<b>87.6</b>	<b>21</b>	<b>170</b>

**Figure 27: Percentage of families and whānau who began receiving a service within one month of request for support, by MoE Regions, 2017 to 2020.**





## Indicator 3.2b

Proportion of children up to six months of age eligible for request for support to Early Intervention education services who began receiving a service by six months of age.

**Standard:** 90% of children referred up to six months of age will have begun receiving a service by six months of age.

**Interpretation:** Nationally the standard was met with 97% of children referred up to six months of age began receiving a service by six months of age.

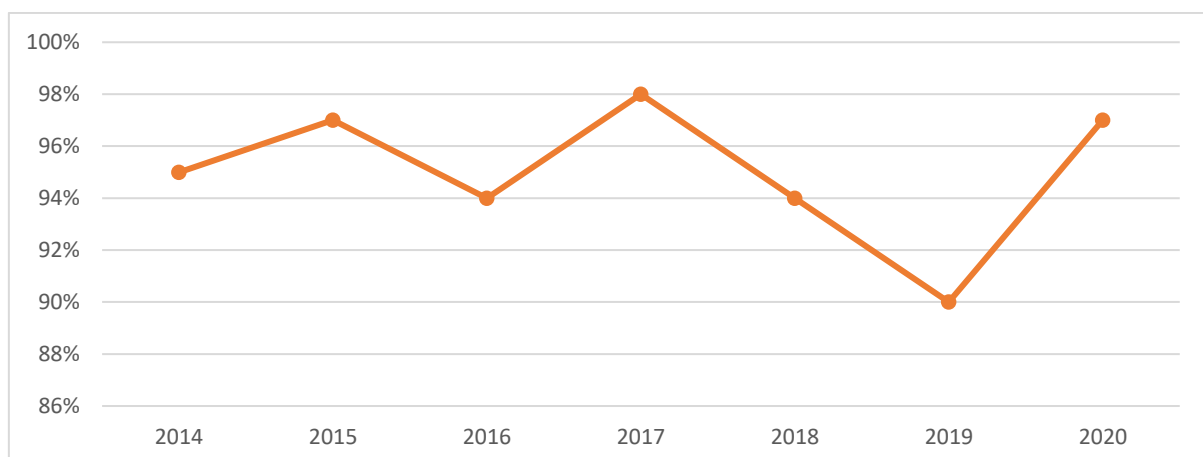
**Table 32: Number and percentage of children under 6 months old with requests for support that received service by 6 months of age.**

Age When Service First Received (Months)	Referred before 6 months of age	
	N	%
<6	88	97%
6 to 10	3	3%
<b>Total</b>	<b>91</b>	

Figure 7 shows the percentage of requests for support for children under 6 months of age who began receiving a service by six months of age - 2014 to 2020.

Note: The Ministry of Education has always met the 90% target for this indicator since 2014.

**Figure 28: Percentage of children under 6 months of age with requests for support who began receiving a service by six months of age, 2014 to 2017.**



**Table 32: Number of requests for support for children under six months of age who began receiving a service by six months of age, by ethnicity Jan to Dec 2020.**

Ethnicity	Time taken for First Service (Months)			
	Less than 6		6 to 10	Total
	N	%	N	N
Māori	20	100.0	0	20
Pacific	11	93.0	1	12
Asian	13	93.0	1	14
NZ European	34	97.0	1	35
Other	8	100.0	0	8
Unknown	12	100.0	0	12
<b>Total</b>	<b>98</b>	<b>97.0</b>	<b>3</b>	<b>101</b>

## Indicator 3.2c

Proportion of children eligible for and referred to Early Intervention education services after six months of age.

**Standard:** No target set but the desired outcome is to receive requests for support before the child reaches six months of age.

**Interpretation:** During the reporting period, MoE recorded 153 requests for support, 91 (59%) requests for support were received for children up to 6 months of age, 62 requests for support, (41%) requests for support were received for children who were 6 months or older.

**Table 33: Number of requests for support received, by age at referral, Jan to Dec 2020.**

Age when referred (months)	Number of Referrals
<6	91
6 to 10	27
11 to 15	7
16 to 20	8
21 to 25	4
26 to 30	3
31 to 35	2
36+	11
<b>Total</b>	<b>153</b>

## Indicator 3.3a

Proportion of children referred as a result of newborn hearing screening and eligible for the Early Intervention education service who exited services prior to three years of age.

For the reporting period 1<sup>st</sup> January 2020 to 31<sup>st</sup> December 2020, 30 children under 3 years exited services.

## Indicator 3.3b

Proportion of children referred as a result of newborn hearing screening and eligible for the Early Intervention education service who exited services prior to five years of age.

For the reporting period 1<sup>st</sup> January 2020 to 31<sup>st</sup> December 2020, 31 children 3 to <5 years exited services.

# Appendix 1: All hearing loss detected

**Table 34: Proportion of babies screened that had hearing loss detected by type of hearing loss, 1 January to 31 December 2020.**

Left Ear Result	Right Ear Result	Number of Babies	Rate per 10,000 screens	% of babies with hearing loss
Auditory Neuropathy	Auditory Neuropathy	3	0.5	1.0
Auditory Neuropathy	Normal	2	0.4	0.6
Conductive Permanent	Conductive Permanent	3	0.5	1.0
Conductive Temporary	Conductive Permanent	1	0.2	0.3
Conductive Temporary	Conductive Temporary	91	16.5	29.2
Conductive Temporary	Normal	48	8.7	15.4
Conductive Temporary	Not Yet Detected	2	0.4	0.6
Mixed	Conductive Temporary	3	0.5	1.0
Mixed	Mixed	9	1.6	2.9
Mixed	Conductive Permanent	2	0.4	0.6
Mixed	Normal	2	0.4	0.6
Mixed	Sensorineural	1	0.2	0.3
Mixed	Not Yet Detected	1	0.2	0.3
Normal	Auditory Neuropathy	4	0.7	1.3
Normal	Conductive Permanent	9	1.6	2.9
Normal	Conductive Temporary	33	6.0	10.6
Normal	Mixed	2	0.4	0.6
Normal	Sensorineural	15	2.7	4.8
Sensorineural	Conductive Temporary	2	0.4	0.6
Sensorineural	Mixed	1	0.2	0.3
Sensorineural	Normal	17	3.1	5.4
Sensorineural	Sensorineural	57	10.4	18.3
Not Yet Detected	Conductive Temporary	3	0.5	1.0
DNA	Conductive Temporary	1	0.2	0.3
<b>Total</b>		<b>312</b>	<b>56.7</b>	<b>100.0</b>