Science for Communities
He Pūtaiao, He Tāngata

INVASIVE PNEUMOCOCCAL DISEASE ANNUAL REPORT 2024

Prepared as part of a Ministry of Health contract for scientific services

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DISCLAIMER

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KEY FINDINGS

This report describes the epidemiology of Invasive pneumococcal disease (IPD) in New Zealand for the year 1 January to 31 December 2024. The analyses are based on IPD notifications in the EpiSurv database, as well as information from the national immunisation register (Aotearoa Immunisation Register—AIR).

- There were 718 cases of IPD notified in New Zealand in 2024 (13.5 cases per 100,000) compared with 757 cases in 2023 (14.5 per 100,000). This is the first year IPD incidence has decreased since 2020, though it remains high compared with 2014-2022.
- The incidence of IPD among children aged <2 years decreased further in 2024 from the peak seen in 2022 (from 50.3 to 21.6 per 100,000). The incidence in this age group is now similar to the incidence in 2017. The incidence of IPD among 2- to 4-year-olds also decreased from a peak of 23.6 per 100,000 in 2022 to 13.3 per 100,000 in 2024.
- The incidence of IPD among adults aged ≥65 years has increased slightly compared with 2023 (from 33.7 to 34.2 per 100,000) and incidence in this age group was higher than for children aged <2 years for the first time since 2019.
- Māori and Pacific peoples continue to experience substantially higher rates of IPD than those of European/Other and Asian ethnicities. This is evident for all age groups but particularly so among children aged <2 years.
- PCV13 was re-introduced to the immunisation schedule in November 2022 in response to increasing incidence of disease caused by serotype 19A. In 2024, cases due to serotype 19A decreased in all age groups, and incidence of 19A in children aged <2 years is now below 2020 levels. However, serotype 19A remains the most common serotype causing disease in New Zealand (26.2% of all typed cases), followed by serotype 8 (18.5%) and serotype 3 (10.1%). Further reductions in 19A incidence are expected as the cohort of children vaccinated by PCV13 increases in size, and reduced carriage leads to indirect protection of older age groups.
- Serotypes included in PCV13 continue to cause disease among unvaccinated children and children who received PCV10 as part of their routine immunisations. Potentially vaccine-preventable serotypes included in PCV13 were responsible for 16 (40%) of IPD cases in children aged 6 weeks to 4 years (where typing was undertaken).
- Given ongoing changes to the vaccine programme, the phenomenon of serotype replacement and the availability and development of new vaccines, it is important to continually monitor trends in IPD epidemiology to inform future vaccine decisions.

INTRODUCTION

Invasive pneumococcal disease (IPD) refers to disease due to *Streptococcus pneumoniae* (*S. pneumoniae*) entering a sterile site, such as blood, pleural fluid, or cerebrospinal fluid. IPD represents the most severe end of the disease spectrum caused by this bacterium. The most common clinical presentations in IPD are bacteraemic pneumonia, non-localised bacteraemia (bacteraemia without focus), and meningitis. Older adults generally have bacteraemic pneumonia, while young children may have any of the three clinical presentations, with meningitis being the most severe.

S. pneumoniae can also cause non-invasive infections such acute otitis media (predominantly in children) and sinusitis (predominantly older children and adults). Non-invasive *S. pneumoniae* infections are not notifiable and are not discussed in this report.

IPD is largely a vaccine preventable disease with vaccines available that provide protection against different serotypes of the bacterium. A pneumococcal conjugate vaccine (PCV) has been part of the New Zealand childhood immunisation schedule since 2008. A pneumococcal polysaccharide vaccine (PPV) is available for individuals at higher risk of IPD. The history of the pneumococcal vaccine programme in New Zealand is summarised in Table 1 [1].

Table 1. Pneumococcal conjugate vaccine history in New Zealand

Date	Vaccination schedule change
2006	PCV7 and 23PPV introduced for high-risk individuals.
2008	PCV7 introduced to the Schedule at ages 6 weeks, 3 months, 5 months and 15 months.
2011	PCV10 replaced PCV7 on the Schedule. PCV13 replaced PCV7 for high-risk children.
2014	PCV13 replaced PCV10 on the Schedule.
2015	PCV13 became available for patients of any age with certain high-risk conditions.
2017	PCV10 replaced PCV13 on the Schedule. PCV13 and 23PPV continues for high-risk individuals
2020	PCV10 recommended as a 2-dose primary schedule plus booster dose given at 6 weeks, 5 months and 12 months. PCV13 remained at 3-dose schedule plus booster for high-risk infants (i.e. given at ages 6 weeks, 3, 5 and 12 months)
2022	PCV13 replaced PCV10 in a 2-dose primary schedule plus booster dose on 1 December. PCV13 remained at 3-dose schedule plus booster for high-risk infants (i.e. given at ages 6 weeks, 3, 5 and 12 months)

In 2024, PCV13 is the funded vaccine on the childhood immunisation schedule, given as a two-dose primary course at 6 weeks and 5 months, with a booster at 12 months. Children who started their immunisation course with PCV10 prior to December 2022 were able to complete it with PCV13. PCV13 is not funded for those who have previously been fully vaccinated with PCV10. In addition, PCV13 and 23 PPV are available for vaccination and re-vaccination for people of any age with eligible conditions that affect the immune system[1].

This annual report provides an overview of the epidemiology of IPD for 2024. It also presents trends from 2014. Information about IPD in New Zealand is also available on the ESR IPD dashboard.

METHODS

The case data presented in this report are based on the information recorded on EpiSurv, the national notifiable disease surveillance system, as of 28 February 2025. Any updates made to EpiSurv data by public health service staff after this date will not be reflected in this report. EpiSurv data are supplemented with serotype data from the ESR national laboratory-based surveillance of invasive *S. pneumoniae* isolates. The vaccination status of cases aged under 5 years was extracted from AIR.

IPD CASE DEFINITION

IPD has been a notifiable disease since 2008. A confirmed case is one that has a clinically compatible illness that is laboratory confirmed. Most cases present with either meningitis, pneumonia, or septicaemia. Laboratory confirmation requires at least one of the following [2]:

- isolation of *S. pneumoniae* from blood, cerebrospinal fluid (CSF) or another normally sterile site (eg. joint fluid, pleural fluid)
- detection of *S. pneumoniae* nucleic acid from blood, CSF or another normally sterile site
- a positive *S. pneumoniae* antigen test on CSF or pleural fluid.

CALCULATION OF POPULATION RATES

All rates presented in this report are crude rates.

The 2014–2024 population estimates published by Statistics New Zealand were used to calculate the incidence rates for total population.

All rates are presented as the number of cases per 100,000 population. Rates have not been reported where there were fewer than five cases in any category as this produces unstable rates.

ETHNICITY

Prioritised ethnicity is used in this report. Ethnicity is prioritised in the following order: Māori, Pacific peoples, Asian, and European/Other. The European/Other group includes people identifying as Middle Eastern, Latin American or African (MELAA) as case numbers for this group were very small. For more detail on classification refer to the Ministry of Health ethnicity data protocols [3].

SOCIO-ECONOMIC DEPRIVATION

The New Zealand index of deprivation 2023 (NZDep2018) is used to measure socioeconomic deprivation. NZDep2023 is derived from a weighted combination of nine variables from the 2023 census, each reflecting a different aspect of material and socioeconomic deprivation [4]. The deprivation score is calculated for each geographical mesh block in New Zealand.

This report presents NZDep2023 by quintiles, where 1 represents the least socioeconomically deprived areas and 5 the most socioeconomically deprived areas.

The denominator data used to determine disease rates for NZDep2023 categories is based on the proportion of people in each NZDep2018 category from the usually resident 2018 census population.

INVASIVE PNEUMOCOCCAL DISEASE IN NEW ZEALAND

There were 718 cases of IPD notified in New Zealand in 2024 (13.5 cases per 100,000). The age group and ethnicity of the cases is presented in Table 2.

Table 2. IPD cases by age group (years) and ethnicity

Age group (years)	Māori	Pacific	Asian	European/ Other	Unknown	Total
<2	13	8	0	5	0	26
2–4	3	6	5	10	0	24
5–14	10	7	6	10	0	33
15–29	27	12	0	7	0	46
30–49	37	27	11	43	1	119
50–64	52	31	6	76	1	166
65+	49	37	13	205	0	304
Total	**191**	**128**	**41**	**356**	**2**	**718**

Figure 1 shows the incidence of IPD from 2014 to 2024 for the total population. The incidence of IPD increased steadily from 2020 to 2023, reaching its highest level in more than 10 years. In 2024, incidence decreased slightly from 2023, though remains high compared to other years.

Figure 1. Incidence of invasive pneumococcal disease in New Zealand, rate per 100,000, 2014–2024

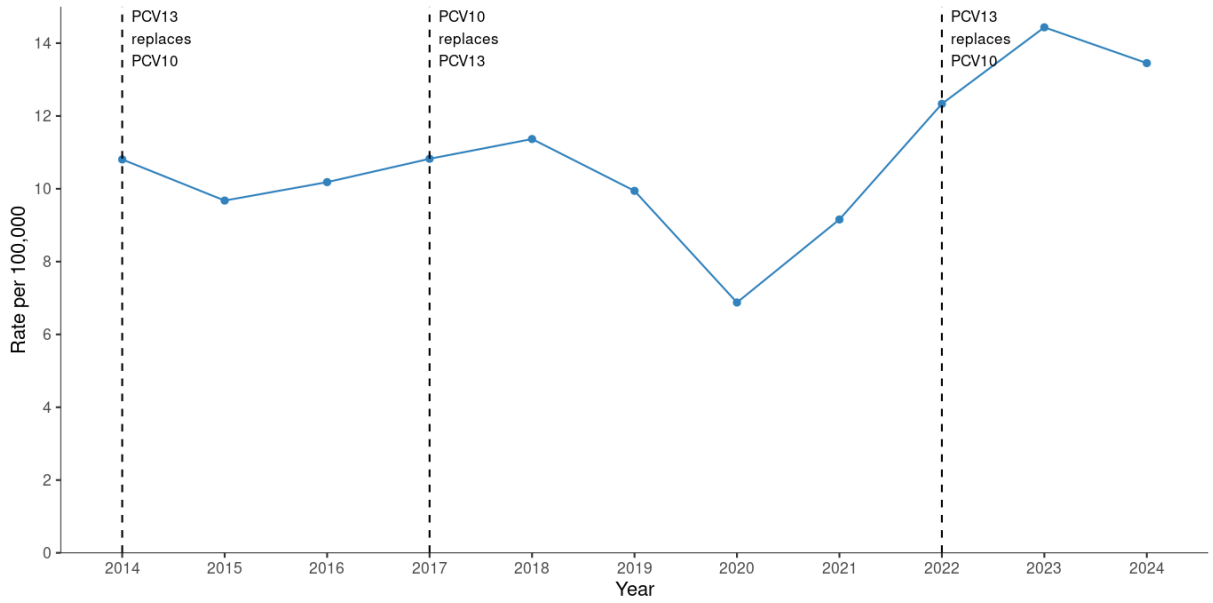
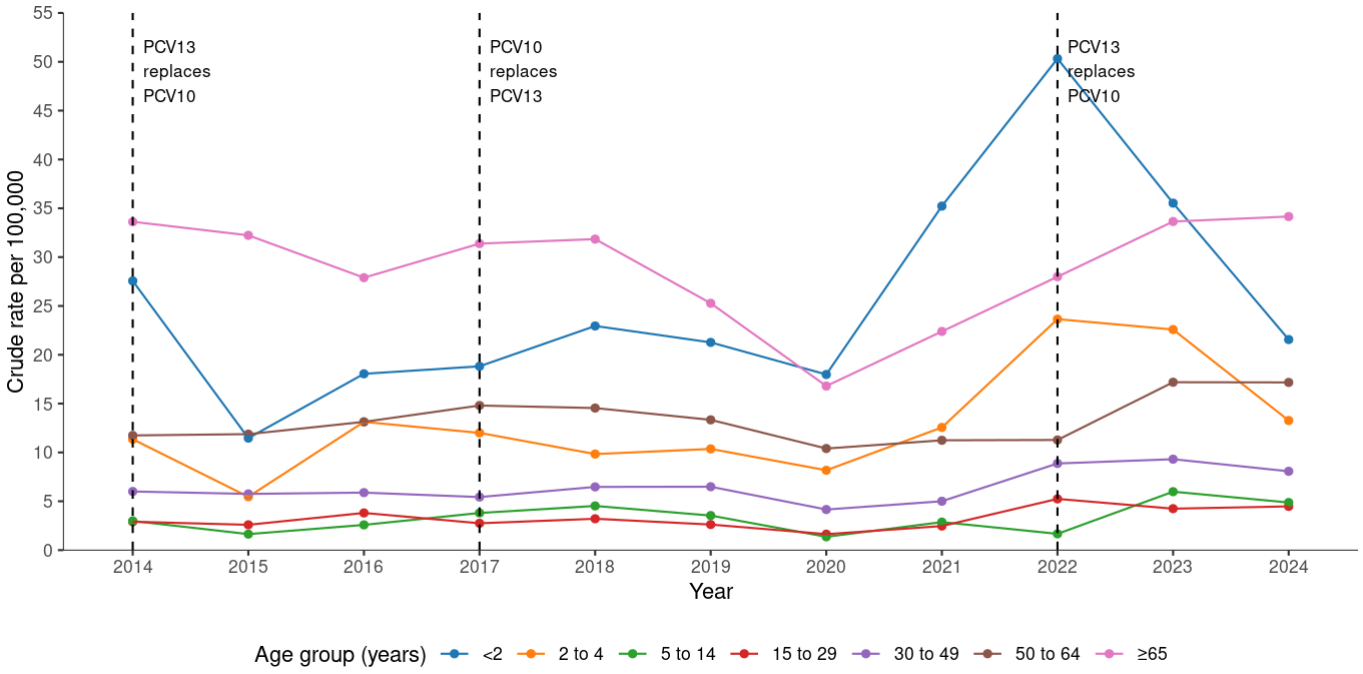


Figure 2 shows IPD trends over time by age group. The incidence for those aged <2 years (21.6 per 100,000) continues to decline and is now approximately equal to 2020 levels. Incidence also decreased among children 2–4 years old from 23.6 per 100,000 in 2022 to 13.3 per 100,000 in 2024.

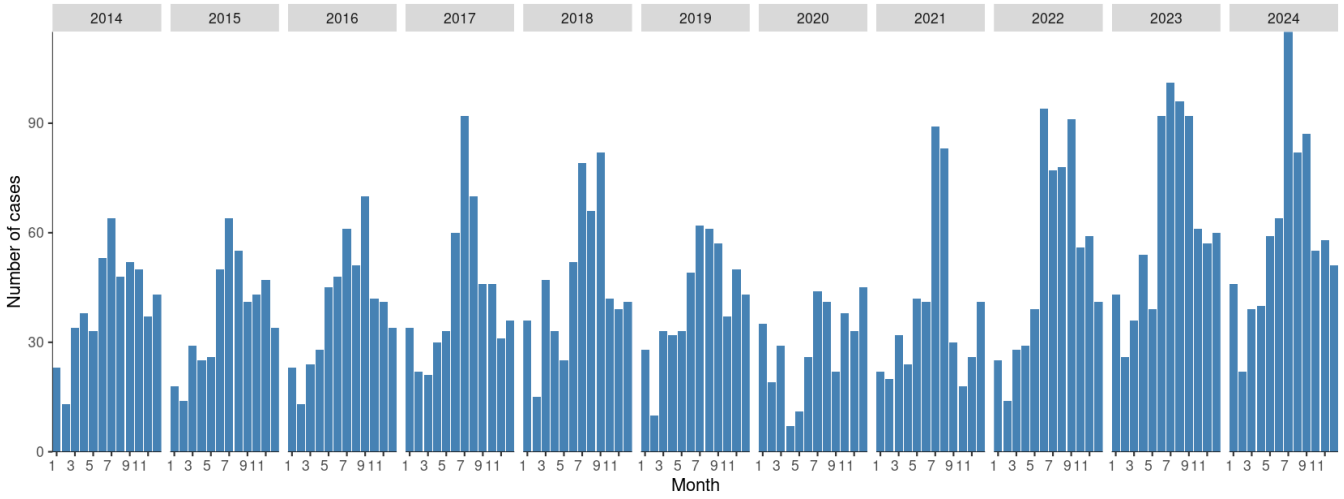
Incidence increased among adults 50–64 years and ≥65 years. Those aged ≥65 years had the highest incidence in 2024 (34.2 per 100,000).

Figure 2. Incidence of invasive pneumococcal by age group, rate per 100,000, 2014–2024



IPD follows a seasonal pattern with the highest numbers seen in the winter and early spring months each year. Case numbers in July 2024 were the highest for any month over the period January 2014 to December 2024. (Figure 3)

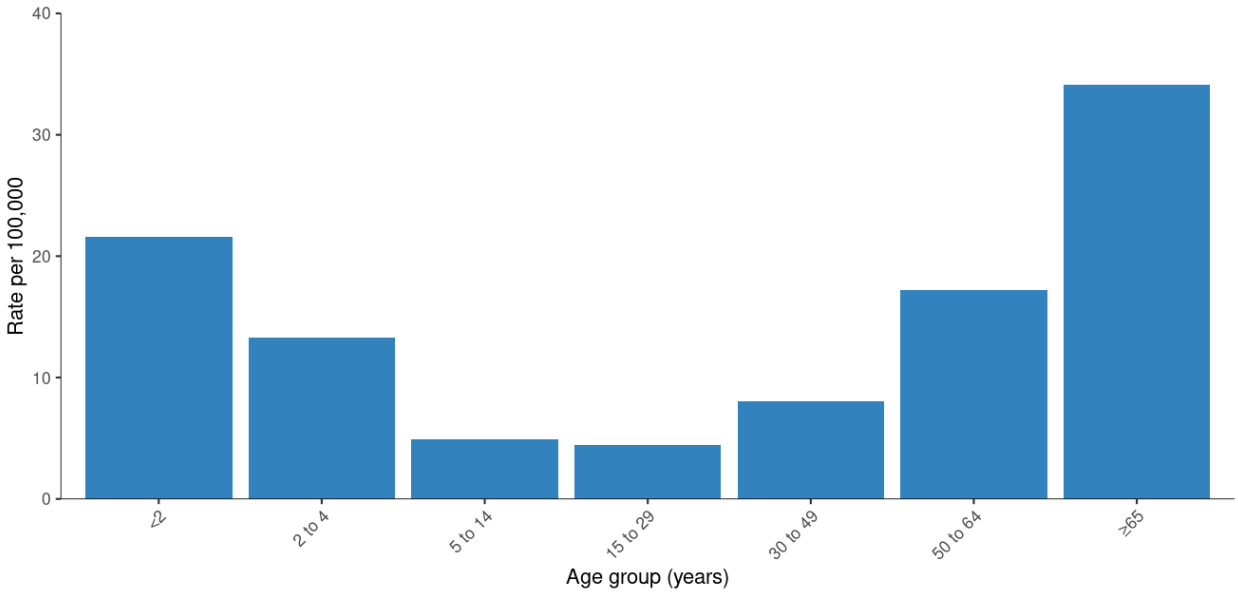
Figure 3. Number of cases of invasive pneumococcal disease by month and year, 2014–2024



INCIDENCE OF INVASIVE PNEUMOCOCCAL DISEASE BY AGE GROUP

Adults 65 years of age or older had the highest incidence of IPD in 2024 (34.2 per 100,000) (Figure 4). Children under 2 years of age had the second highest rate of IPD (21.6 per 100,000).

Figure 4. Incidence of invasive pneumococcal disease by age group, rate per 100,000, 2024



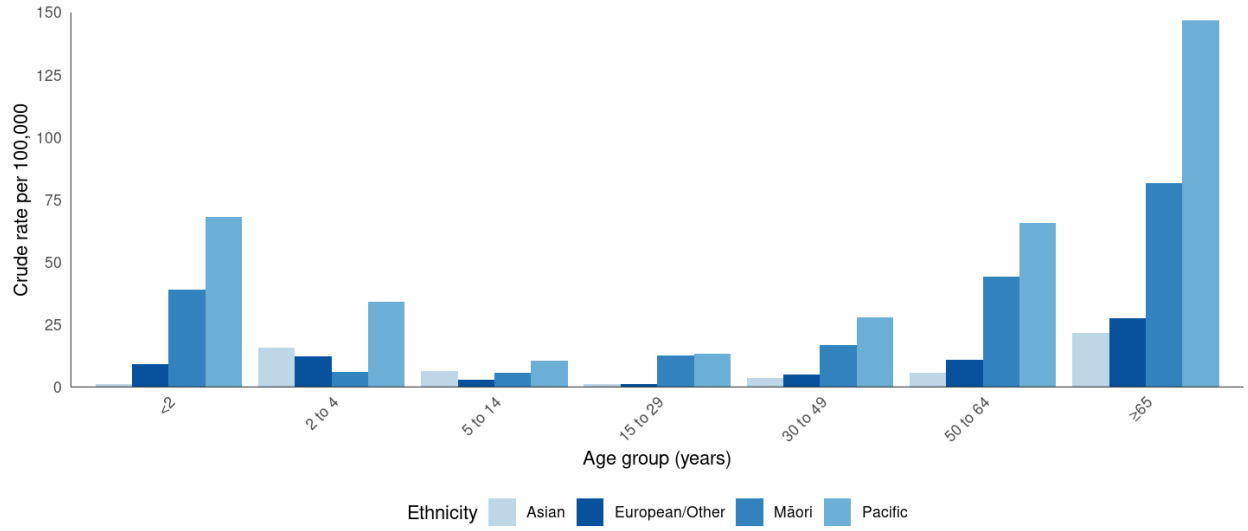
INVASIVE PNEUMOCOCCAL DISEASE BY ETHNIC GROUP

In 2024, Pacific peoples had the highest rates of IPD across all age groups (Figure 5). Pacific adults aged ≥65 years had the highest rate of IPD, followed by Māori adults aged ≥65 years, Pacific adults aged 50–64 years and Pacific children aged <2 years.

Māori and Pacific children aged <2 years had 4.2 and 7.3 times, respectively, the incidence seen in European/Other children <2 years.

Five cases identified as both Māori and Pacific peoples ethnicity and were not included in the Pacific peoples rates below as these were derived using prioritised ethnicity.

Figure 5. Incidence of invasive pneumococcal rates by ethnicity, rate per 100,000, 2024



Over the past 10 years, Pacific peoples and Māori have had the highest crude rates of IPD, despite the younger age structure of these populations. Rates of IPD for Pacific peoples increased in 2024 from 2023, and decreased for Māori, European/other and Asian ethnic groups (Figure 6).

Figure 6. Incidence of invasive pneumococcal disease by prioritised ethnicity, rate per 100,000, 2014–2024

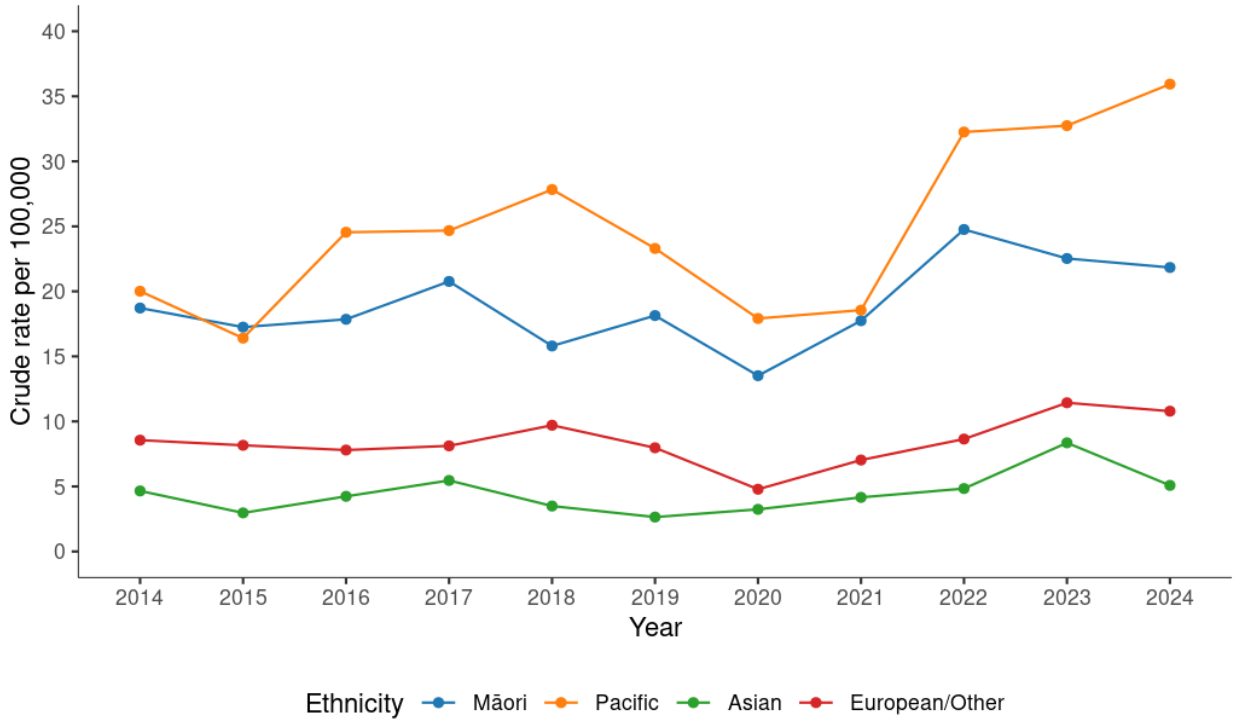
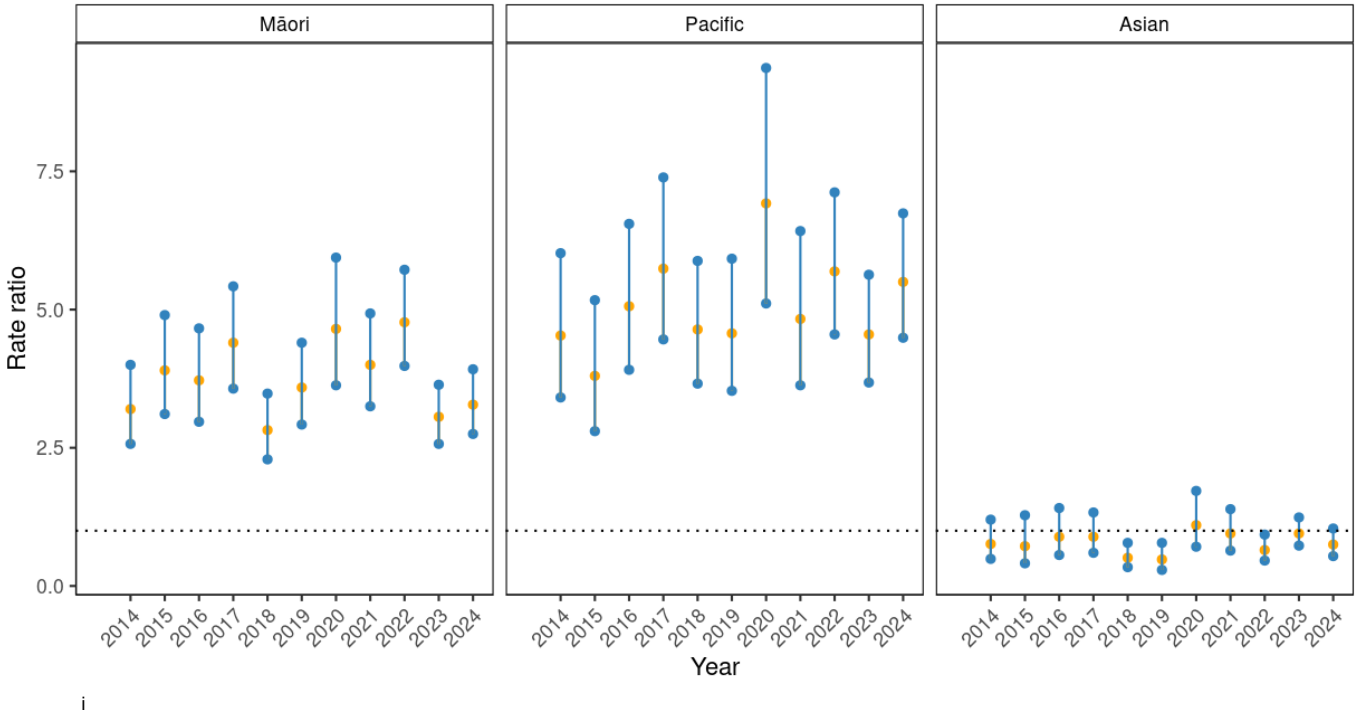


Figure 7 presents age-adjusted incident rate ratios with the European/other rate as the reference for 2014–2024. In 2024, Māori and Pacific people had 3.3 and 5.5 times, respectively, the incidence rate of IPD compared to European/Other after adjusting for age (Figure 7). The age-adjusted incidence rate was similar or lower for people of Asian ethnicity.

Figure 7. Invasive pneumococcal disease - rate ratios and 95 % confidence intervals by ethnicity and year, adjusted by age (reference group European/Other)



[i]

[i] The age-standardised rates are direct-standardised to the age distribution of the total New Zealand population.

INVASIVE PNEUMOCOCCAL DISEASE BY REGION

The Central region had the highest overall IPD incidence in 2024, followed by Northern, Te Manawa Taki, and Te Waipounamu (Table 3).

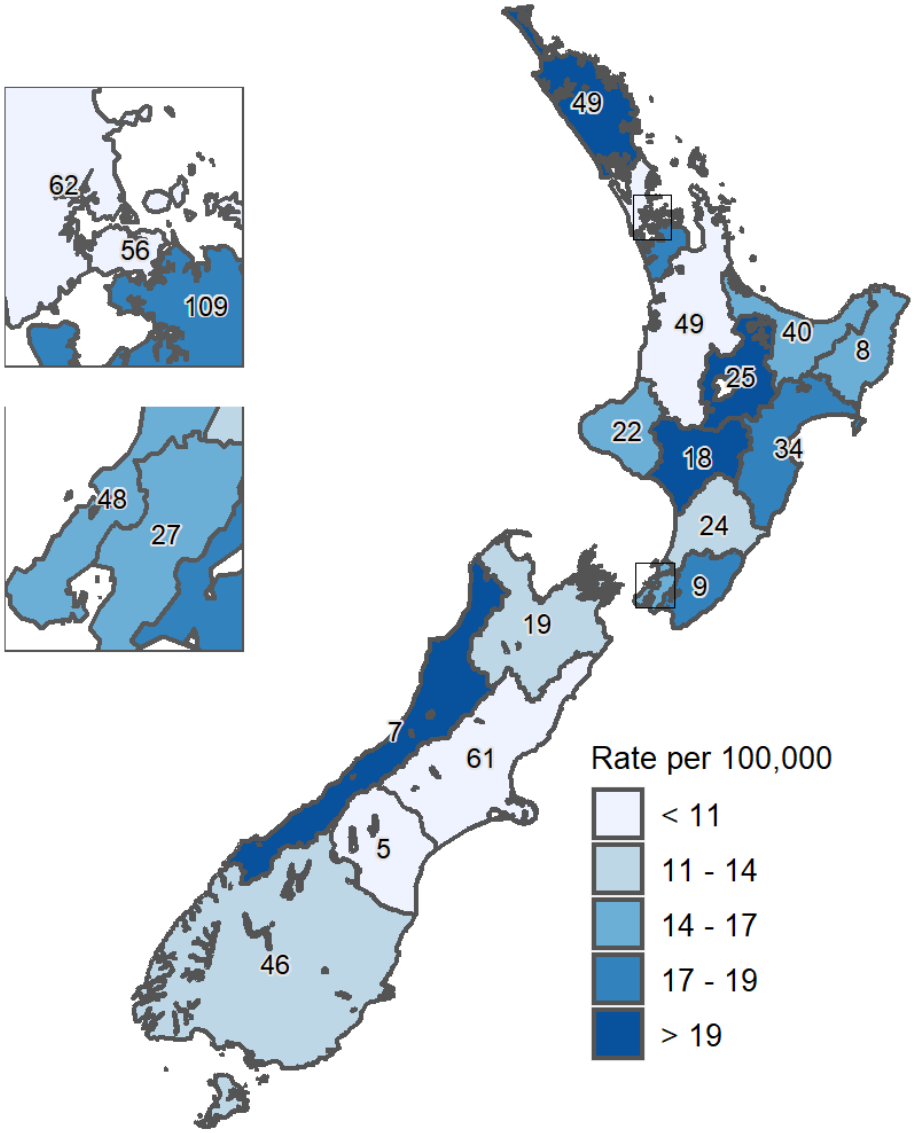
Table 3. Invasive pneumococcal disease by region and age group, case numbers and rate per 100,000, 2024

Region	<2 years		2–4 years		5–64 years		≥65 years		Total	
	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate
Northern	16	33.6	17	23.8	142	8.8	101	35.0	276	13.6
Te Manawa Taki	3	--	5	12.9	67	8.4	69	35.4	144	13.6
Central	6	28.0	1	--	93	12.2	60	34.9	160	16.2
Te Waipounamu	1	--	1	--	62	6.5	74	31.6	138	11.0
Total	**26**	**21.6**	**24**	**13.3**	**364**	**8.8**	**304**	**34.2**	**718**	**13.5**

--: Rate not shown due to counts less than 5.

Figure 8 provides further detail on the incidence of IPD in 2024 across New Zealand by district. The districts with the highest incidence of IPD in 2024 were Whanganui (25.6 per 100,000), Northland (23.9 per 100,000), Lakes (20.8 per 100,000), West Coast (20.1 per 100,000) and Hawke's Bay (18.4 per 100,0000).

Figure 8. Geographic distribution of invasive pneumococcal disease cases, rates per 100,000, 2024



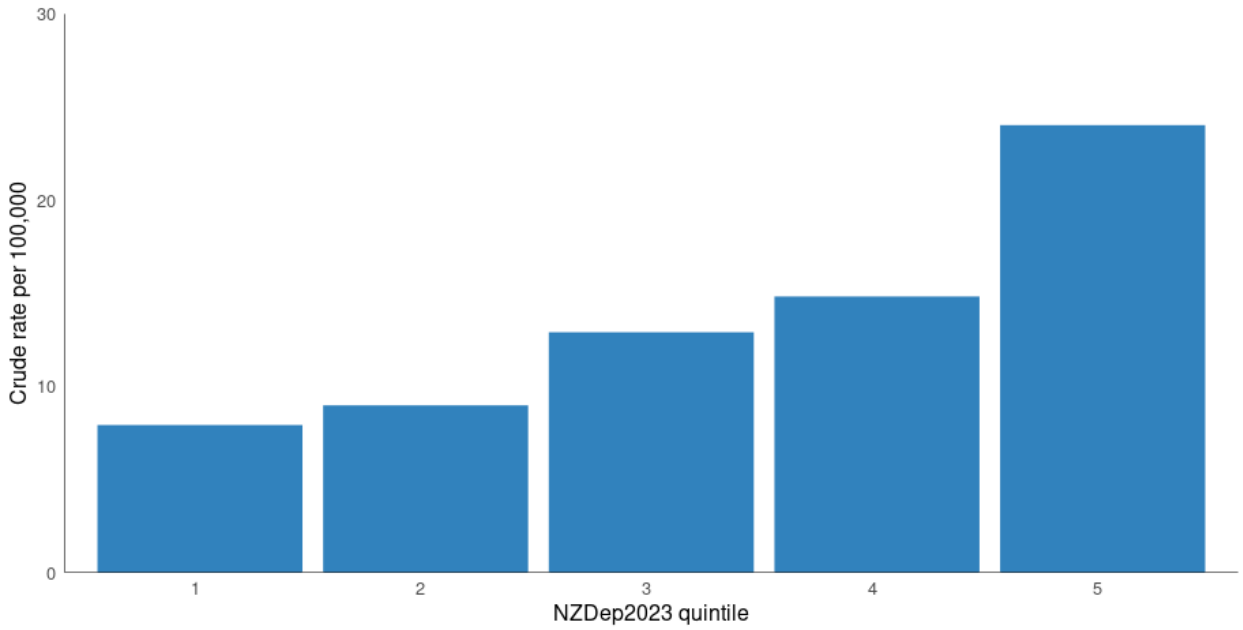
Numbers represent notification count in district.

INVASIVE PNEUMOCOCCAL DISEASE BY DEPRIVATION

The NZDep 2023 quintile could be assigned for 713 of 718 cases (99.3%) in 2024.

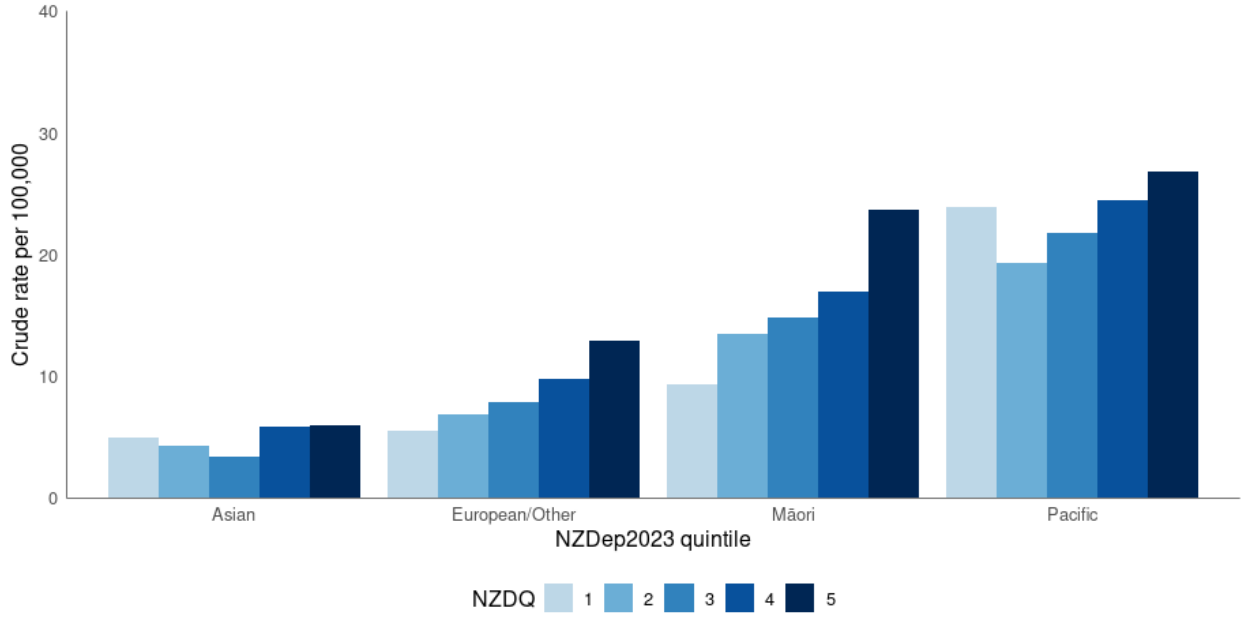
The total population rate for 2024 (Figure 9) shows a clear trend by NZDep2023 quintiles, with quintile 5 experiencing the highest rate (24.0 per 100,000) and quintile 1 experiencing the lowest (7.9 per 100,000). 56.7% of cases (404/713) were in the most deprived quintiles 4 and 5.

Figure 9. Incidence of invasive pneumococcal disease cases by NZDep2023 quintile, rate per 100,000, 2024



For the five years from 2020 to 2024, Pacific peoples residing in an area of the highest deprivation (quintile 5) had the highest rate of IPD (26.8 per 100,000), followed by Pacific peoples residing in an area of the second highest deprivation (quintile 4) (24.5 per 100,000) (Figure 10). Crude incidence rates are higher at all levels of deprivation for Pacific peoples compared to European/Other and Asian ethnic groups.

Figure 10. IPD rates by ethnicity and NZDep2023 (quintiles), 2020–2024



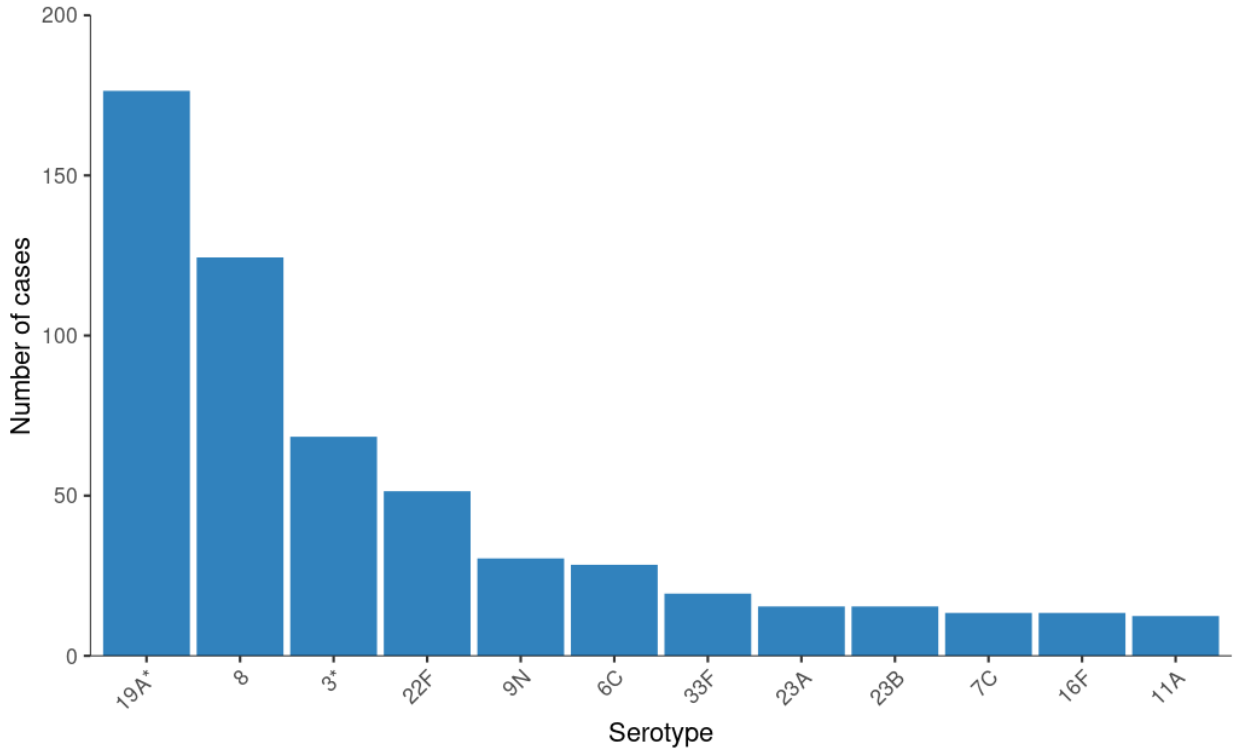
INVASIVE PNEUMOCOCCAL DISEASE BY SEROTYPE

There are over 90 serotypes of *S. pneumoniae* that cause invasive disease.

A serotype was identified in 670 (93.5%) of IPD cases in 2024. Figure 11 shows the most common serotypes causing IPD in New Zealand over this time (more information on serotypes identified is available in Appendix Table 1). Serotype 19A was the most common serotype (26.2%) (the lowest relative frequency of 19A since 2021), followed by serotype 8 (18.5%) and serotype 3 (10.1%). Serotypes 19A and 3 are included in PCV13; serotype 8 is included in PCV20 (not available in New Zealand in 2024).

Only a small proportion of cases in 2024 were due to serotypes included in PCV10 (28/671 (4.2%) of cases where a serotype was identified). This compares to 57% (295/514) of typed IPD cases in 2011, the year prior to the introduction of PCV10 to the childhood schedule.

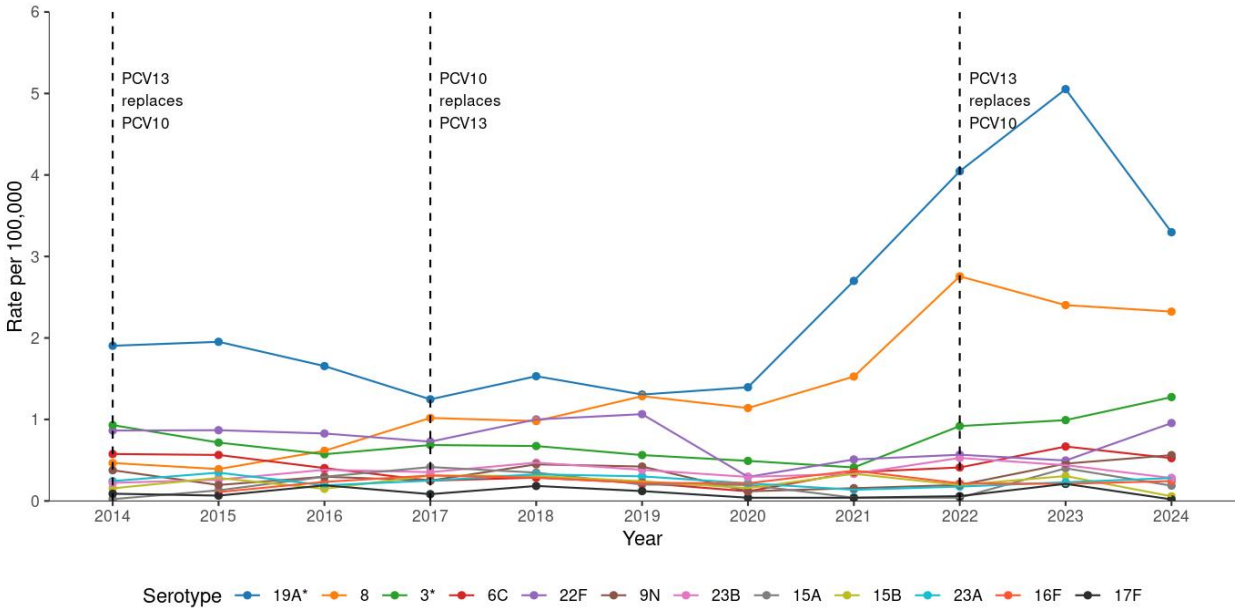
Figure 11. Invasive pneumococcal serotypes, 2024[1]



[1] Only serotypes where there were more than 10 IPD cases are shown.
*PCV13 specific serotype

Figure 12 shows the trend in the incidence of IPD serotypes in New Zealand from 2014 to 2024. Serotype 19A has been the dominant serotype since 2014. The incidence of serotype 19A was relatively stable until 2020 when there was a sharp increase. Serotype 8 has been the second most common serotype seen in New Zealand since 2019; incidence of disease caused by this serotype increased from 2020-2022 but has decreased in 2023 and 2024. Serotype 8 is not covered by PCV13. Serotype 3 was the third most prevalent serotype in 2024 and has been slowly increasing in frequency in recent years. Although included in PCV13, international experience suggests the vaccine is less effective against this serotype.

Figure 12. Invasive pneumococcal serotypes, 2014–2024



*PCV13 serotypes

Serotype 19A trends by age

In 2024, incidence of disease caused by serotype 19A decreased in all age groups (Figure 13). This was most marked for children <2 years; in this age group, incidence of 19A decreased sharply from the high seen in 2022 (from 37 cases to 4) and is now below 2020 levels.

Incidence of 19A also decreased among children aged 2–4 years compared to 2022 (from 25 cases to 8). Incidence of 19A among those aged 5–64 years and ≥65 years increased from 2020 to 2023 but has decreased in 2024.

Figure 13. Serotype 19A by age group, rate per 100,000, 2014–2024

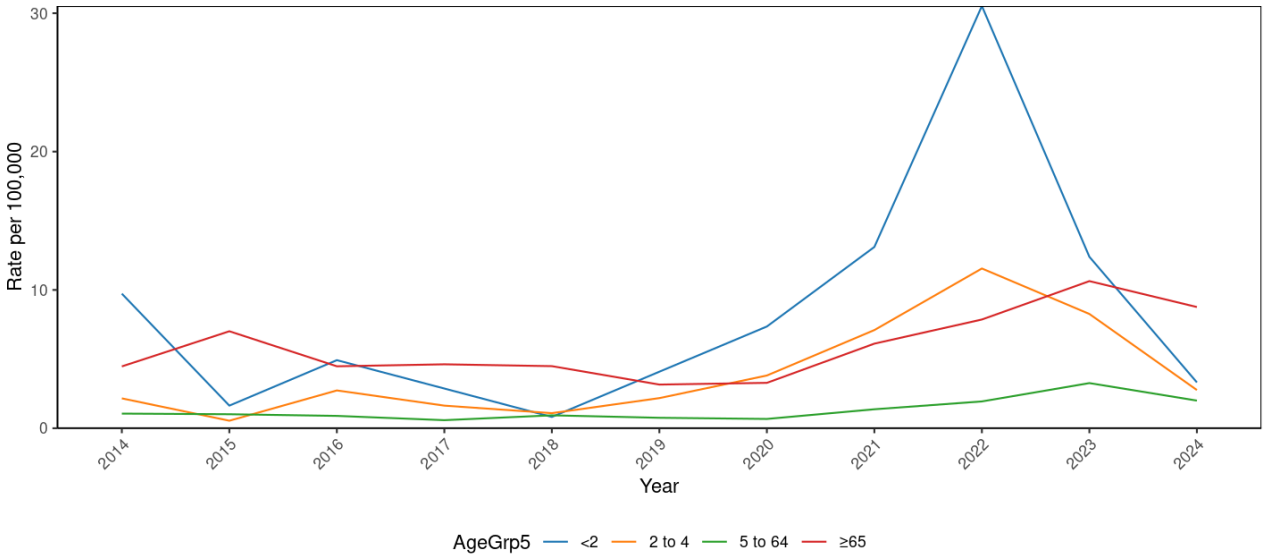


Table 4 shows the number of 19A cases by age group and year as well as the proportions of total typed cases for each age group that were 19A. From 2020 to 2022 the absolute number of 19A cases increased for all age groups, before decreasing for children aged <2 years and 2–4 years in 2023 and further again in 2024. Among people 5 years and older, the number of serotype 19A cases increased further in 2023 but has decreased in 2024.

Table 4. Serotype 19A cases and proportions of total typed cases by age group (years) and year

Age group (years)	2020	2021	2022	2023	2024
	n (%)	n (%)	n (%)	n (%)	n (%)
<2	9/22 (41)	16/43 (37)	37/61 (61)	15/43 (35)	4/26 (15)
2–4	9/15 (60)	16/23 (70)	25/43 (58)	18/41 (44)	8/24 (33)
5–64	27/180 (15)	56/219 (26)	79/292 (27)	140/382 (37)	86/364 (24)
≥65	26/133 (20)	50/183 (27)	66/235 (28)	92/291 (32)	78/304 (26)

HOSPITALISATIONS AND DEATHS

Hospitalisation status was recorded for 710/718 (98.9%) cases in 2024. Among cases with hospitalisation status recorded, almost all were hospitalised (681, 95.9%).

A clinical presentation was recorded for 717/718 (99.9%) cases in 2024 (Table 5). Pneumonia and meningitis were the most common presentations in children aged <2 years, while pneumonia was the most common presentation among other age groups. Bacteraemia without focus was the second most common presentation in age groups 2–4 years and over.

Table 5. Invasive pneumococcal disease, clinical presentation by age group, 2024[1]

Age group (years)	Meningitis		Empyema		Pneumonia		Bacteraemia		Other		Total
	n	%	n	%	n	%	n	%	n	%	n
<2	7	26.9	2	7.7	9	34.6	4	15.4	4	15.4	26
2–4	1	4.2	4	16.7	14	58.3	5	20.8	0	0.0	24
<5	8	16.0	6	12.0	23	46.0	9	18.0	4	8.0	50
5–64	34	9.4	13	3.6	247	68.0	51	14.0	16	4.4	363
≥65	14	4.6	7	2.3	232	76.3	45	14.8	4	1.3	304
Total	**56**	**7.8**	**26**	**3.6**	**502**	**70.0**	**105**	**14.6**	**24**	**3.3**	**717**

[1] N: number of cases with 'yes' recorded for the clinical presentation. Any cases for which *S. pneumoniae* was identified in CSF were considered to be cases of pneumococcal meningitis. If more than one clinical presentation has been recorded, clinical presentations have been prioritised as: meningitis, empyema, pneumonia, bacteraemia, other. %: percentage of cases within the age group with the clinical presentation. 'Other' includes septic arthritis. At least one clinical presentation was recorded for 717 (99.9%) of cases notified in 2024.

Based on the information in EpiSurv, there were 55 deaths due to IPD in 2024. Nearly a third (16/55, 29.1%) of deaths occurred in those aged <65 years. Two deaths were in children aged <5 years. The mortality data available in EpiSurv is provisional and may differ from the mortality collection.

IMMUNISATION STATUS

A pneumococcal vaccine was introduced to the childhood schedule in 2008 and there have been numerous changes to the schedule since this time (described in Table 1, above). Most recently, PCV13 replaced PCV10 on the childhood immunisation schedule in December 2022.

In 2024, there were 49 IPD cases in children aged 6 weeks to <5 years. Table 6 summarises the vaccination status and serotype causing disease for these cases. There was also one case of IPD in a child <6 weeks of age and thus not yet eligible for PCV13. Of the 49 cases, 42 children had at least one dose of vaccine more than 14 days prior to onset of IPD, five children were not vaccinated, and vaccination status was unknown for two children.

A serotype was identified in 40 of the 49 cases; 16 (40.0%) of these cases were due to serotypes covered by PCV13 (12 cases of 19A, three cases of 3, and one case of 19F); five (12.5%) due to additional serotypes included in PCV15 (four 22F and one 33F); and six (15.0%) due to additional serotypes included in PCV20 (three cases of 8, one case of 10A, two cases of 11A). There were 13 cases (32.5%) due to serotypes not included in any pneumococcal conjugate vaccine in production in 2024.

Most PCV13-serotype cases occurred in children who had no vaccination history or only received PCV10 (13 cases). There were three cases of PCV13-serotype who were either unvaccinated or for whom their vaccination status was unknown; there were two PCV13-serotype cases among those who only received one or two doses of PCV13 (both 19A), and one who received a mix of PCV10 and PCV13 (19A). There were no breakthrough infection cases in children <5 years with three or more PCV doses.

Table 6. Number of cases aged 6 weeks to 5 years by vaccination type, and serotype, 2024

Vaccine serotype	PCV7[a]	PCV10[b]	PCV13			PCV15		PCV20					Non-PCV[c]	Unknown[d]	Total cases
Vaccine received/dose			19A	3	6A	22F	33F	8	10A	11A	12F	15B			
Unvaccinated		1	1	1										2	5
Unknown Vaccination Status													2		2
PCV10															
1													1	1	2
2			1												1
3+			7	2									4	2	15
PCV13															
1			1						1				1		3
2			1			2		1		2			2	2	10
3+														1	1
Mixed PCV															
PCV10/13			1			2	1	2					3	1	10
Total	**0**	**1**	**12**	**3**	**0**	**4**	**1**	**3**	**1**	**2**	**0**	**0**	**13**	**9**	**49**

Note: blank cells represent 0 observations. Children diagnosed before they were PCV eligible (6 weeks) are not included.
[a]PCV7 serotypes: 4, 6B, 9V, 14, 18C, 19F, 23F
[b]Additional PCV10 serotypes: 1, 5, 7F.
[c]A serotype not covered by any PCV in production in 2024.
[d]Serotype is not known either because the case was identified from an antigen test, the isolate was not typed, or the typing did not yield a result.

DISCUSSION

In 2024, the incidence of IPD decreased in New Zealand for the first time since 2020. However, while the 2024 rate is lower than the high observed in 2023, it remains higher than any other year in the past decade. This reflects a continued high burden of disease in older adults.

Incidence of IPD in children <2 years has more than halved in 2024 from the peak in 2022. The re-introduction of PCV13 to the childhood immunisation schedule has successfully reduced IPD incidence and specifically incidence of disease due to 19A back to levels seen in 2020, prior to the increase driven by serotype 19A that prompted the vaccine change. In 2024, there were no cases of IPD due to 19A in children <2 years who had received three doses of PCV13.

In addition, despite there being no catch-up campaign to deliver PCV13 to children who had already received three doses of PCV10 at the time of the re-introduction, IPD incidence in 2–4 year olds has also nearly halved in 2024 compared to 2022. Some of these children may have received one or more dose of PCV13 as part of their schedule, and there has likely been some indirect protection in this age group due to reduced carriage among younger children who received PCV13.

Of the 40 cases in children <5 years with serotype information available, more than one-third were due to serotypes covered by PCV13 (19A (12 cases) or serotype 3 (3 cases)). These cases mostly occurred in children who had been immunised with PCV10 on schedule or were unvaccinated. Further reductions in IPD incidence in this age group can be expected over the coming years as the cohort of children receiving PCV13 increases.

A further third of serotyped cases in children <5 years were due to serotypes covered by PCV15 (5 cases) or PCV20 (6 cases). These are newer vaccines that are now in use in some high-income countries. It will be important to monitor the impact these higher valency vaccines have on IPD incidence and serotype prevalence where they are in use, and to continue to monitor changes in the incidence of IPD due to serotypes covered by these vaccines in New Zealand. This will inform decisions on if and when a higher valency vaccine should be considered for introduction into the schedule.

There were three cases due to PCV13-preventable serotypes that occurred in unvaccinated children, and two in under-vaccinated children. Childhood immunisation coverage rates have declined and disparities in coverage have increased in New Zealand in recent years. Achieving equitable immunisation coverage is an important priority to further reduce the incidence of IPD and the inequities in IPD incidence in New Zealand.

Despite the overall reduction in IPD incidence among children, there remain significant ethnic disparities with incidence of IPD among Māori and Pacific children <2 years consistently much higher than for non-Māori, non-Pacific children. IPD incidence is higher for Pacific peoples and Māori than European/Other and Asian ethnic groups at all ages, and for Pacific peoples, incidence is higher at all levels of deprivation than for other groups. Persistent inequities in vaccine coverage for these groups will be contributing to this through both reduced direct protection of children by vaccination and reduced indirect protection of adult that results from elimination of *S. pneumoniae* carriage in vaccinated children. Not all cases of IPD are vaccine preventable, however, and prevention and control efforts should extend to addressing systemic and healthcare access issues that may contribute to the spread of *S. pneumoniae.*

IPD incidence among older adults aged 50–64 years and ≥65 years reached the highest level in a decade in 2023 and remains high in 2024. A large proportion of disease in these age groups was due to serotypes 19A and 3, though incidence of 19A decreased compared to 2023. As carriage of these serotypes reduces in children who received PCV13 as part of childhood schedule, incidence of disease due to these serotypes is expected to decline in older ages. International experience suggests it typically takes 3 to 4 years after introduction of PCV13 for this indirect protection to substantially reduce incidence in non-vaccine-eligible age groups. To reduce the incidence of disease, some countries fund an adult pneumococcal vaccination program, for example Australia have a funded pneumococcal vaccine program for Aboriginal and Torres Strait Islander adults aged 50 years and over and other adults aged 70 years and over. [5]

In summary, IPD incidence in children <5 years has decreased in 2024, but IPD incidence in older age groups remains high. Given the relatively recent changes to New Zealand's pneumococcal vaccine programme, the phenomenon of serotype replacement and the availability and development of new vaccines, it is important to continually monitor trends in IPD epidemiology to inform future vaccine decisions.

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APPENDIX

Appendix Table 1. Number and percentage of invasive pneumococcal disease cases by serotype and age group, 2024

Serotype	<2 years		2–4 years		<5 years[a]		5–64 years		≥65 years		Total	
	Cases	%[b]	Cases	%[b]	Cases	%[b]	Cases	%[b]	Cases	%[b]	Cases	%[b]
4	0	0.0	0	0.0	0	0.0	2	<1.0	1	<1.0	3	<1.0
6B	0	0.0	0	0.0	0	0.0	0	0.0	2	<1.0	2	<1.0
9V	0	0.0	0	0.0	0	0.0	1	<1.0	1	<1.0	2	<1.0
14	0	0.0	0	0.0	0	0.0	1	<1.0	1	<1.0	2	<1.0
18C	0	0.0	0	0.0	0	0.0	2	<1.0	0	0.0	2	<1.0
19F	0	0.0	1	4.2	1	2.0	4	1.1	4	1.3	9	1.3
23F	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PCV7	0	0.0	1	4.2	1	2.0	10		9	3.0	20	2.8
1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	0	0.0	0	0.0	0	0.0	1	<1.0	0	0.0	1	<1.0
7F	0	0.0	0	0.0	0	0.0	7	1.9	0	0.0	7	<1.0
PCV10	0	0.0	0	0.0	0	0.0	8	2.2	0	0.0	8	1.1
19A	4	15.4	8	33.3	12	24.0	86	23.6	78	25.7	176	24.5
3	2	7.7	2	8.4	4	4.0	35	9.6	29	9.5	68	9.5
6A	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PCV13	6	23.1	10	41.7	16	32.0	121	33.2	107	35.2	244	34.0
6C	0	0.0	0	0.0	0	0.0	9	2.5	19	6.3	28	3.9
7B	0	0.0	0	0.0	0	0.0	0	0.0	1	<1.0	1	<1.0
7C	2	7.7	0	0.0	2	4.0	2	<1.0	9	3.0	13	1.8
8	2	7.7	1	4.2	3	6.0	82	22.5	39	12.8	124	17.3
9N	1	3.8	1	4.2	2	4.0	16	4.4	12	3.9	30	4.2
10A	1	3.8	0	0.0	1	2.0	4	1.1	2	<1.0	7	<1.0
10B	0	0.0	0	0.0	0	0.0	1	<1.0	0	0.0	1	<1.0

10F	0	0.0	0	0.0	0	0.0	1	<1.0	0	0.0	1	<1.0
11A	1	3.8	1	4.2	2	4.0	7	1.9	3	<1.0	12	1.7
11E	0	0.0	0	0.0	0	0.0	1	<1.0	1	<1.0	2	<1.0
12F	0	0.0	0	0.0	0	0.0	2	<1.0	0	0.0	2	<1.0
13	0	0.0	0	0.0	0	0.0	1	<1.0	1	<1.0	2	<1.0
15A	1	3.8	2	8.4	3	6.0	2	<1.0	5	1.6	10	1.4
15B	0	0.0	0	0.0	0	0.0	1	<1.0	2	<1.0	3	<1.0
15C	0	0.0	0	0.0	0	0.0	2	<1.0	4	1.3	6	<1.0
16F	1	3.8	1	4.2	2	4.0	7	1.9	4	1.3	13	1.8
17F	0	0.0	0	0.0	0	0.0	0	0.0	1	<1.0	1	<1.0
18A	0	0.0	0	0.0	0	0.0	1	<1.0	0	0.0	1	<1.0
18F	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
21	0	0.0	0	0.0	0	0.0	1	<1.0	0	0.0	1	<1.0
22A	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
22F	4	15.4	0	0.0	4	8.0	17	4.7	30	9.9	51	7.1
23A	1	3.8	0	0.0	1	2.0	6	1.6	8	2.6	15	2.1
23B	0	0.0	1	4.2	1	2.0	6	1.6	8	2.6	15	2.1
31	0	0.0	0	0.0	0	0.0	1	<1.0	4	1.3	5	<1.0
33F	1	3.8	0	0.0	1	2.0	11	3.0	7	2.3	19	2.6
34	0	0.0	0	0.0	0	0.0	4	1.1	5	1.6	9	1.3
35B	0	0.0	1	4.2	1	2.0	2	<1.0	7	2.3	10	1.4
35F	0	0.0	0	0.0	0	0.0	3	<1.0	2	<1.0	5	<1.0
37	0	0.0	0	0.0	0	0.0	1	<1.0	0	0.0	1	<1.0
38	0	0.0	1	4.2	1	2.0	3	<1.0	5	1.6	9	1.3
42	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Unknown	5	19.2	4	16.7	9	18.0	30	8.2	8	2.6	47	6.5
Other[c]	0	0.0	0	0.0	0	0.0	1	<1.0	1	<1.0	2	<1.0
Total[d]	26		24		50		364		304		718	

[a] Aggregated age group.
[b] Percentage of cases within the age group with the serotype.
[c] Includes non-typeable serotypes.
[d] Total number of isolates from culture-positive cases referred to ESR for serotyping for each age group.

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