



New Zealand Child and Youth  
Epidemiology Service

# Health and wellbeing of under-five year olds in the South Island 2017

## Oral health

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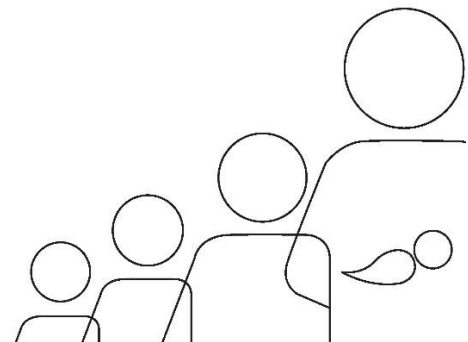
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This report has been prepared for the South Island Alliance: Nelson Marlborough, Canterbury, South Canterbury, West Coast and Southern District Health Boards.

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# XI. ORAL HEALTH

Dental disease is a major public health issue and dental caries is the most widespread non-communicable disease worldwide.<sup>1</sup> Poor oral health affects a child’s growth, development, performance at school, and quality of life.<sup>2,3</sup> Concerted effort is required to achieve ‘Good oral health for all, for life’ and this needs to start in the early years.<sup>4</sup>

This section presents data on oral health of five-year olds in New Zealand from the Community Oral Health Service and National Minimum Dataset (NMDS). Good oral health is indicated by a higher prevalence of being caries-free, and by a lower mean number of decayed, filled, or missing teeth. Hospitalisation rates for dental services is an indicator of the need for and access to treatment for severe cases of dental caries.

## Data sources and methods

### Indicator(s)

*Proportion of 5-year-olds who were caries-free*

Numerator: Number of 5-year-olds whose deciduous teeth were caries-free on completion of treatment with an oral health service.

Denominator: Total number of 5-year-olds examined in the year.

Data source: Community Oral Health Service (COHS) published by the Ministry of Health.

*Mean number of decayed, missing or filled teeth (dmft) at age 5 years*

Numerator: Number of 5-year-olds with teeth that are decayed, missing (due to caries) or filled on completion of treatment.

Denominator: Total number of 5-year-olds examined in the year

Data source: Community Oral Health Service (COHS) published by the Ministry of Health.

*Hospitalisations for dental caries in 1–4 year olds*

Numerator: Hospitalisations of 1–4 year olds with a primary diagnosis of dental caries.

Source: National Minimum Dataset (NMDS).

Denominator: StatsNZ estimated resident population (ERP; with linear extrapolation between Census years).

### Additional information

COHS: Fluoridation status is classified by the fluoridation status of the water at the school the child attends, or in the case of home schooling the child’s residential address.<sup>5</sup>

The Ministry of Health requires that COHS collect ethnicity information in three categories (Māori, Pacific and Other) in the seven ‘official’ Pacific DHBs (those with the highest numbers of Pacific Peoples: Counties Manukau, Auckland, Waitemata, Capital & Coast, Canterbury, Hutt Valley, Waikato) and in two categories (Māori and Other) in the other DHBs.<sup>6</sup>

## Community oral health status

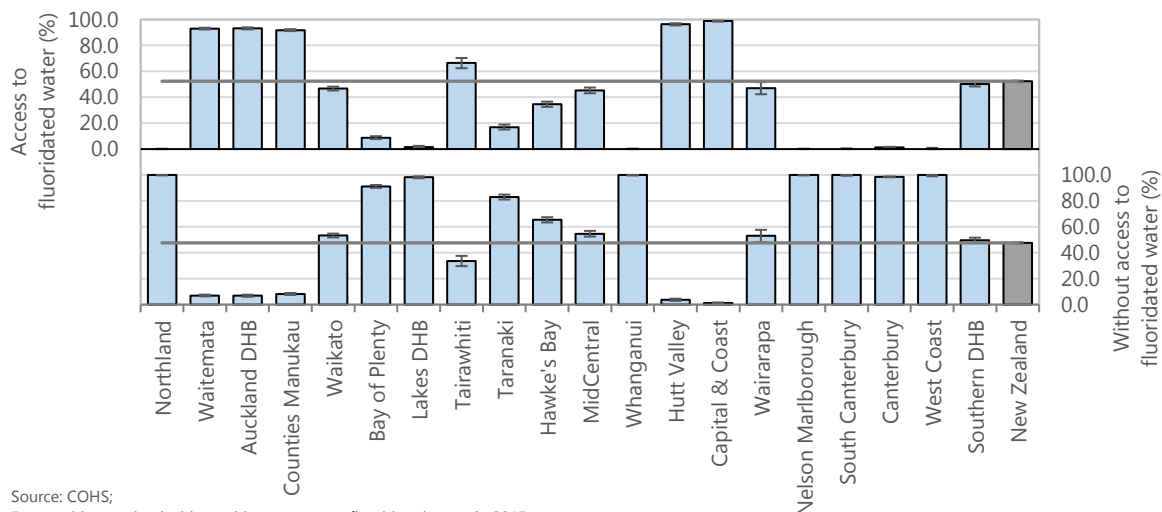
Fluoridation status refers to the attended school’s water supply, rather than the residential area in which the children live.<sup>5</sup> Table XI–1 and Figure XI–1 present the proportion of the five-year-olds examined during 2015 by community oral health services (COHS) and whether or not they had access to fluoridated water. Apart from the Southern DHB, most children in South Island DHBs do not have access to a fluoridated water supply.

Table XI–1 Proportion of five-year-olds examined with or without access to fluoridated water, South Island DHBs 2015

DHB	Access to fluoridated water (%)	Without access to fluoridated water (%)
5-year-olds examined by oral health services in 2015		
Nelson Marlborough	0.0	100.0
South Canterbury	0.0	100.0
Canterbury	1.4	98.6
West Coast	0.0	100.0
Southern	50.3	49.7
New Zealand	52.4	47.6

Source: COHS

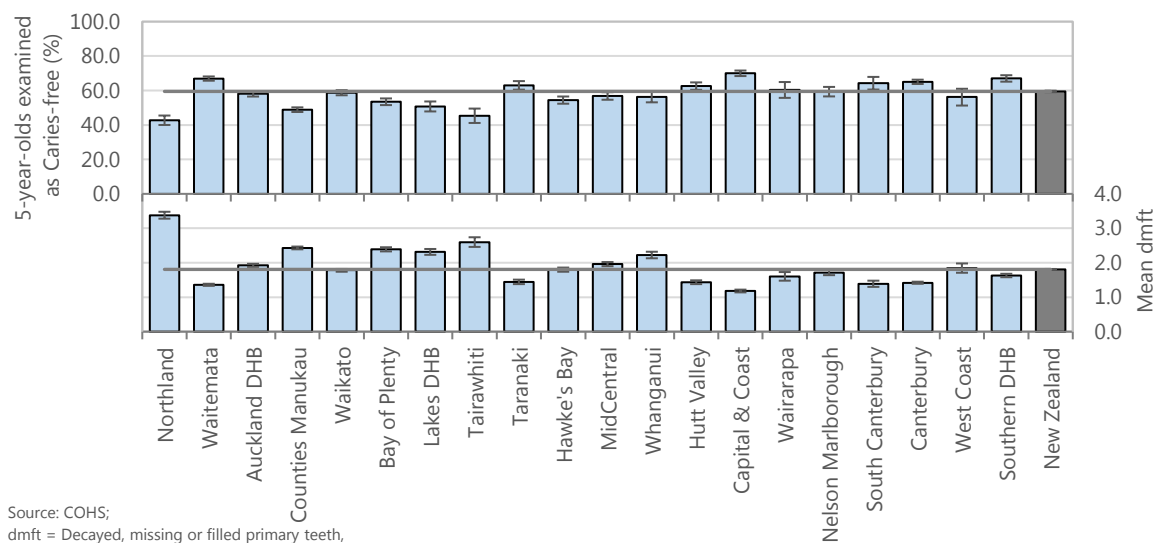
Figure XI-1 Proportion of five-year-olds with access to fluoridated water, by district health board 2015



Source: COHS;  
5-year-olds examined with or without access to fluoridated water in 2015

Figure XI-2 and Table XI-2 present the proportion caries-free or mean dmft (decayed, missing, or filled teeth) among five-year-olds examined in 2015 for each district health board. Nationally, the proportion of five-year-olds who were examined as caries-free was 59.5%, while the mean number of those examined as having decayed, missing, or filled teeth was 1.81. The mean number of five-year-olds with decayed, missing, or filled teeth was significantly lower than the national mean in the South Canterbury, Canterbury and Southern DHBs.

Figure XI-2 Proportion caries-free or mean dmft (decayed, missing or filled teeth) among five-year-olds, by district health board, 2015



Source: COHS;  
dmft = Decayed, missing or filled primary teeth,  
5-year-olds examined by community oral health services in 2015

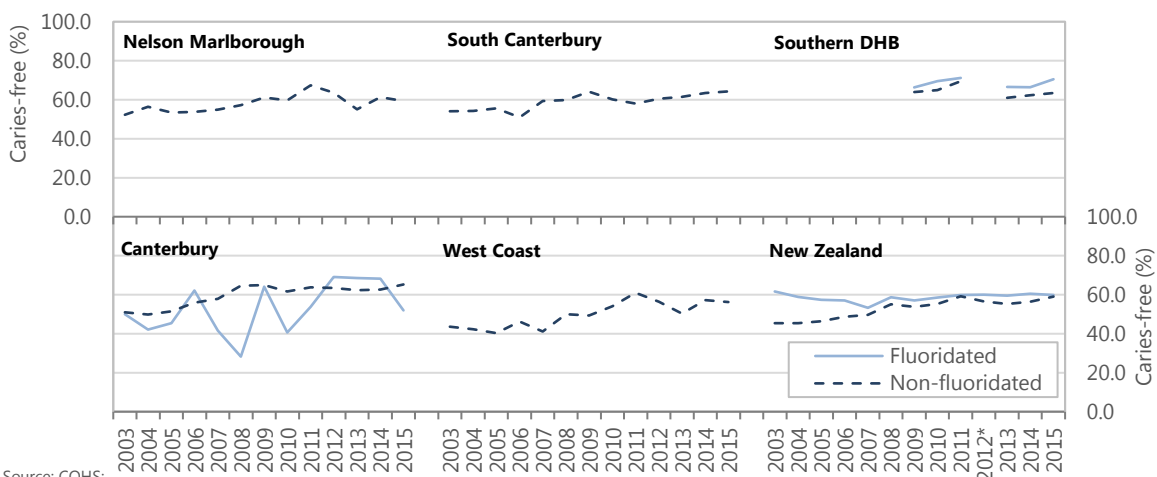
Table XI-2 Proportion caries-free or mean dmft among five-year-olds, by fluoridation status, South Island DHBs, 2015

DHB	5-year-olds examined (n)	Caries-free		Mean dmft
		n	%	
<b>5-year-olds examined by oral health services</b>				
Nelson Marlborough	1,213	720	59.4	1.71
South Canterbury	653	420	64.3	1.39
Canterbury	5,669	3,688	65.1	1.42
West Coast	395	222	56.2	1.84
Southern	2,424	1,625	67.0	1.63
New Zealand	46,948	27,920	59.5	1.81
<b>5-year-olds with access to fluoridated water</b>				
Nelson Marlborough	0	0	0.0	0.00
South Canterbury	0	0	0.0	0.00
Canterbury	79	41	51.9	1.56
West Coast	0	0	0.0	0.00
Southern	1,220	861	70.6	1.55
New Zealand	24,592	14,729	59.9	1.76
<b>5-year-olds without access to fluoridated water</b>				
Nelson Marlborough	1,213	720	59.4	1.71
South Canterbury	653	420	64.3	1.39
Canterbury	5,590	3,647	65.2	1.42
West Coast	395	222	56.2	1.84
Southern	1,204	764	63.5	1.72
New Zealand	22,356	13,191	59.0	1.86

Source: COHS; dmft = decayed, missing or filled teeth

Figure XI-3 presents the trends in proportion of caries-free five-year-olds with and without access to fluoridated water. The proportion of caries-free five-year-olds has increased in all South Island DHBs although data were not complete for Southern.

Figure XI-3 Proportion of caries-free five-year-olds with and without access to fluoridated water, South Island DHBs compared with New Zealand 2003–2015



Source: COHS; 5-year-olds examined by community oral health services, \*2012 - excludes Southern DHB, Southern DHB - Otago and Southland merged from 2009. 2012 missing due to transitioning to a new system

The proportions of five-year-olds examined as caries-free are presented for each district health board by ethnic group in Figure XI-4 and Table XI-3. A higher proportion of five-year-olds in the Other ethnic group were caries-free in all the South Island DHBs, compared with Māori or Pacific ethnic groups. Southern DHB had higher rates of caries-free Māori and Pacific five-year-olds than the New Zealand rate for these ethnic groups.

At present, Community Oral Health Service does not report information on deprivation.

Figure XI-4 Proportion of five-year-olds caries-free, by ethnicity, South Island DHBs 2015

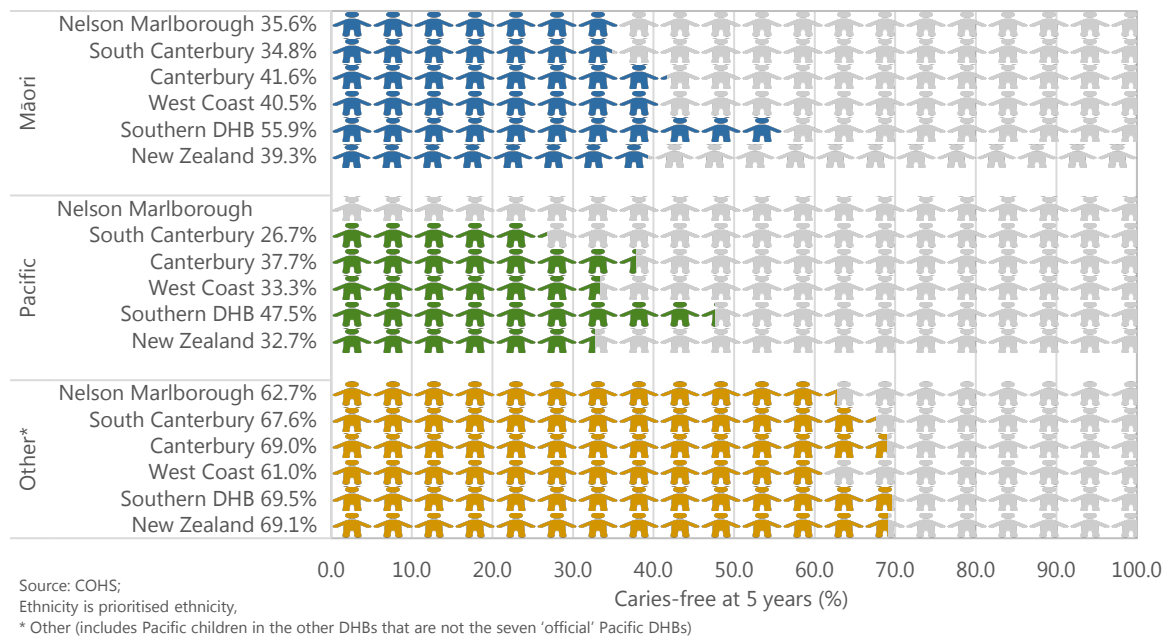


Table XI-3 Proportion of five-year-olds caries-free, by ethnicity, South Island DHBs 2015

DHB	5-year-olds examined (n)	Caries-free		Mean dmft
		n	%	
5-year-olds examined by oral health services in 2015				
Māori				
Nelson Marlborough	149	53	35.6	3.17
South Canterbury	46	16	34.8	3.09
Canterbury	507	211	41.6	2.70
West Coast	84	34	40.5	1.12
Southern DHB	315	176	55.9	2.02
New Zealand	10,211	4,008	39.3	2.92
Pacific				
Nelson Marlborough	0	0	0.0	0.00
South Canterbury	15	4	26.7	4.00
Canterbury	265	100	37.7	3.38
West Coast	6	2	33.3	4.00
Southern DHB	80	38	47.5	2.56
New Zealand	4,007	1,309	32.7	3.55
Other*				
Nelson Marlborough	1,064	667	62.7	1.51
South Canterbury	592	400	67.6	1.19
Canterbury	4,897	3,377	69.0	1.18
West Coast	305	186	61.0	2.00
Southern DHB	2,029	1,411	69.5	1.53
New Zealand	32,730	22,603	69.1	1.25

Source: COHS; Ethnicity is prioritised ethnicity, \* Other (includes Pacific children in the other DHBs that are not the seven 'official' Pacific DHBs)

## Dental hospitalisations

The New Zealand Health Survey 2014/2015 found that 1.0% (95% CI: 0.5–1.7) of 1–4 year olds had had teeth removed due to decay, an abscess, infection or gum disease in the preceding 12 months. This proportion was consistent with the two preceding health surveys.<sup>7</sup>

Table XI–4 to Table XI–6 present the hospitalisation rate of 1–4 year olds in 2011–2015 where the primary diagnosis was a dental condition. Nationally and in the five South Island DHBs, dental caries was the leading reason for oral-health-related hospitalisations of 1–4 year olds.

Table XI–4 Hospitalisations of 1–4 year olds for dental conditions, by primary diagnosis, Nelson Marlborough, South Canterbury and Southern DHBs 2011–2015

Primary diagnosis	2011–2015 (n)	Annual average	Rate	%
<b>Hospitalisations for dental conditions in 1–4 year olds</b>				
<b>Nelson Marlborough</b>				
Dental caries	286	57.2	8.02	61.8
Diseases of the pulp/periapical tissue	142	28.4	3.98	30.7
Disorders of tooth development/eruption	21	4.2	0.59	4.5
Other disorders of the teeth or supporting structures	10	2.0	0.28	2.2
Gingivitis/periodontal diseases	<5	s	s	s
Dentofacial anomalies/malocclusion	<5	s	s	s
<b>Total</b>	<b>463</b>	<b>92.6</b>	<b>13.0</b>	<b>100.0</b>
<b>South Canterbury</b>				
Dental caries	78	15.6	5.51	62.9
Diseases of the pulp/periapical tissue	40	8.0	2.83	32.3
Disorders of tooth development/eruption	<5	s	s	s
Other disorders of the teeth or supporting structures	<5	s	s	s
Gingivitis/periodontal diseases	<5	s	s	s
Dentofacial anomalies/malocclusion	0	..	..	..
Other diseases of the teeth hard tissue	<5	s	s	s
Other disorders of the gingiva/edentulous alveolar ridge	0	..	..	..
Embedded/impacted teeth	0	..	..	..
<b>Total</b>	<b>124</b>	<b>24.8</b>	<b>8.76</b>	<b>100.0</b>
<b>Southern DHB</b>				
Dental caries	855	171.0	10.96	86.2
Diseases of the pulp/periapical tissue	70	14.0	0.90	7.1
Disorders of tooth development/eruption	46	9.2	0.59	4.6
Other disorders of the teeth or supporting structures	12	2.4	0.15	1.2
Gingivitis/periodontal diseases	<5	s	s	s
Dentofacial anomalies/malocclusion	<5	s	s	s
Other diseases of the teeth hard tissue	<5	s	s	s
Other disorders of the gingiva/edentulous alveolar ridge	<5	s	s	s
Embedded/impacted teeth	0	..	..	..
<b>Total</b>	<b>992</b>	<b>198.4</b>	<b>12.72</b>	<b>100.0</b>

Numerator: NMDS, Denominator: StatsNZ ERP; Rate per 1,000 1–4 year olds, Suppressed applied for small numbers

Table XI-5 Hospitalisations of 1–4 year olds for dental conditions, by primary diagnosis, Canterbury and West Coast DHBs 2011–2015

Primary diagnosis	2011–2015 (n)	Annual average	Rate	%
Hospitalisations for dental conditions in 1–4 year olds				
Canterbury				
Dental caries	1,051	210.2	8.07	96.9
Diseases of the pulp/periapical tissue	17	3.4	0.13	1.6
Disorders of tooth development/eruption	5	1.0	0.04	0.5
Other disorders of the teeth or supporting structures	<5	s	s	s
Gingivitis/periodontal diseases	7	1.4	0.05	0.6
Dentofacial anomalies/malocclusion	0	..	..	..
Other diseases of the teeth hard tissue	<5	s	s	s
Other disorders of the gingiva/edentulous alveolar ridge	<5	s	s	s
Embedded/impacted teeth	0	..	..	..
Total	1,085	217.0	8.33	100.0
West Coast				
Dental caries	152	30.4	17.01	96.2
Diseases of the pulp/periapical tissue	<5	s	s	s
Disorders of tooth development/eruption	0	..	..	..
Other disorders of the teeth or supporting structures	<5	s	s	s
Gingivitis/periodontal diseases	0	..	..	..
Dentofacial anomalies/malocclusion	0	..	..	..
Other diseases of the teeth hard tissue	0	..	..	..
Other disorders of the gingiva/edentulous alveolar ridge	0	..	..	..
Embedded/impacted teeth	0	..	..	..
Total	158	31.6	17.69	100.0

Numerator: NMDS, Denominator: StatsNZ ERP; Rate per 1,000 1–4 year olds, Suppressed applied for small numbers

Table XI-6 Hospitalisations of 1–4 year olds for dental conditions, by primary diagnosis, New Zealand 2011–2015

Primary diagnosis	2011–2015 (n)	Annual average	Rate	%
Hospitalisations for dental conditions in 1–4 year olds				
New Zealand				
Dental caries	13,122	2624.4	10.45	86.0
Diseases of the pulp/periapical tissue	1,631	326.2	1.30	10.7
Disorders of tooth development/eruption	220	44.0	0.18	1.4
Other disorders of the teeth or supporting structures	136	27.2	0.11	0.9
Gingivitis/periodontal diseases	71	14.2	0.06	0.5
Dentofacial anomalies/malocclusion	43	8.6	0.03	0.3
Other diseases of the teeth hard tissue	26	5.2	0.02	0.2
Other disorders of the gingiva/edentulous alveolar ridge	11	2.2	0.01	0.1
Embedded/impacted teeth	5	1.0	0.00	0.0
Total	15,265	3,053.0	12.16	100.0

Numerator: NMDS, Denominator: StatsNZ ERP; Rate per 1,000 1–4 year olds, Suppressed applied for small numbers



Rates of hospitalisation for dental caries among 1–4 year olds were significantly lower than the New Zealand rate in Nelson Marlborough, South Canterbury and Canterbury DHBs, significantly higher on the West Coast and not significantly different in Southern DHB (Figure XI–5, Table XI–7).

Figure XI–5 Hospitalisations of 1–4 year olds for dental caries, by district health board vs New Zealand 2011–2015

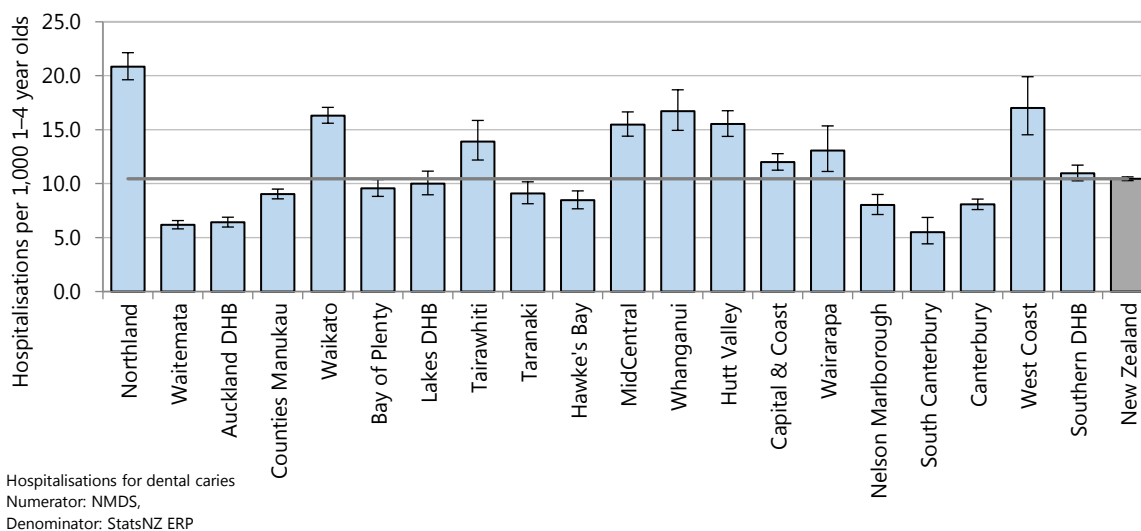


Table XI–7 Hospitalisations of 1–4 year olds for dental caries, South Island DHBs vs New Zealand 2011–2015

DHB	2011–2015 (n)	Annual average	Rate per 1,000 1–4 year olds	Rate ratio	95% CI
Hospitalisations of 1–4 year olds for dental caries					
Nelson Marlborough	286	57	8.02	0.77	0.68–0.86
South Canterbury	78	16	5.51	0.53	0.42–0.66
Canterbury	1,051	210	8.07	0.77	0.73–0.82
West Coast	152	30	17.01	1.63	1.39–1.91
Southern	855	171	10.96	1.05	0.98–1.12
New Zealand	13,122	2,624	10.45	1.00	

Numerator: NMDS, Denominator: StatsNZ ERP

Figure XI–6 to Figure XI–10 present the hospitalisation rate of 1–4 year olds for dental caries within each district health board by the residential deprivation score (NZDep2013 index of deprivation score), ethnicity, and sex. The unadjusted rate ratio presents the gap, if any, between the groups and the reference group. The following associations were observed, bearing in mind that this univariate analysis does not quantify the independent effect of each demographic factor:

- Except for the West Coast, hospitalisation rates for dental caries was significantly higher for those residing in areas with higher (quintile 5; deciles 9–10) NZDep2013 scores compared with quintile 1
- Hospitalisation rates were significantly higher than the European/Other rate for Pacific 1–4 year olds in South Canterbury and for Māori and Pacific 1–4 year olds in the other South Island DHBs
- With the exception of Southern DHB, there was little difference between the hospitalisation rate of boys and girls for dental caries within the South Island DHBs.

Figure XI-6 Hospitalisations of 1-4 year olds for dental caries, by demographic factor, Nelson Marlborough DHB vs New Zealand 2011-2015

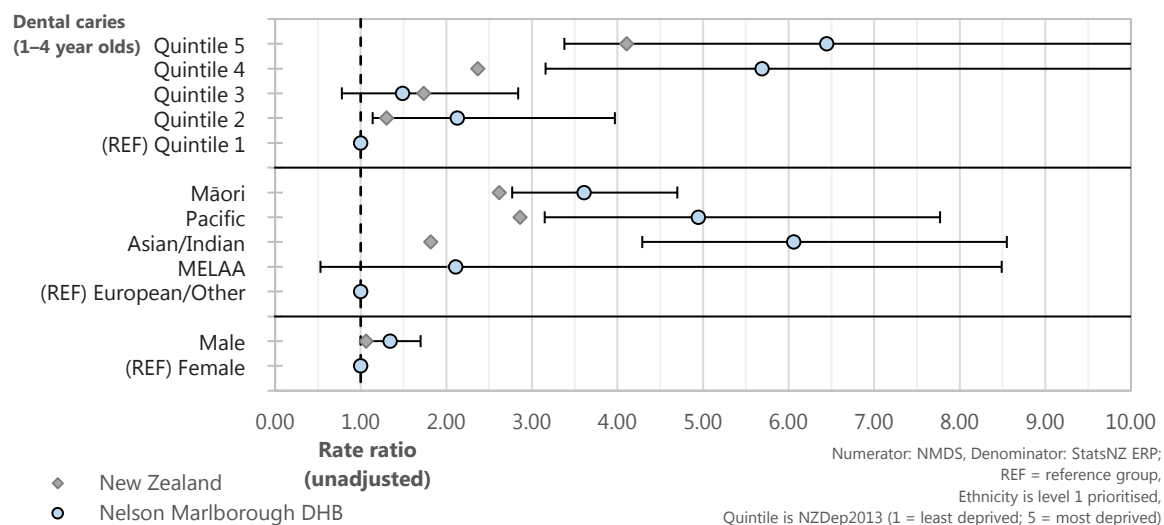


Figure XI-7 Hospitalisations of 1-4 year olds for dental caries, by demographic factor, South Canterbury DHB vs New Zealand 2011-2015

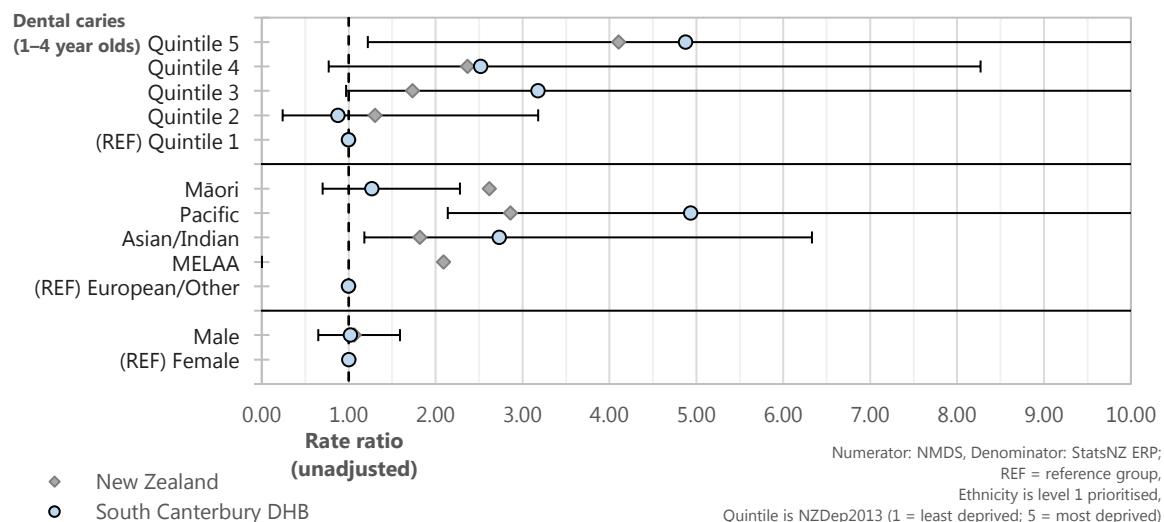


Figure XI-8 Hospitalisations of 1-4 year olds for dental caries, by demographic factor, Canterbury DHB vs New Zealand 2011-2015

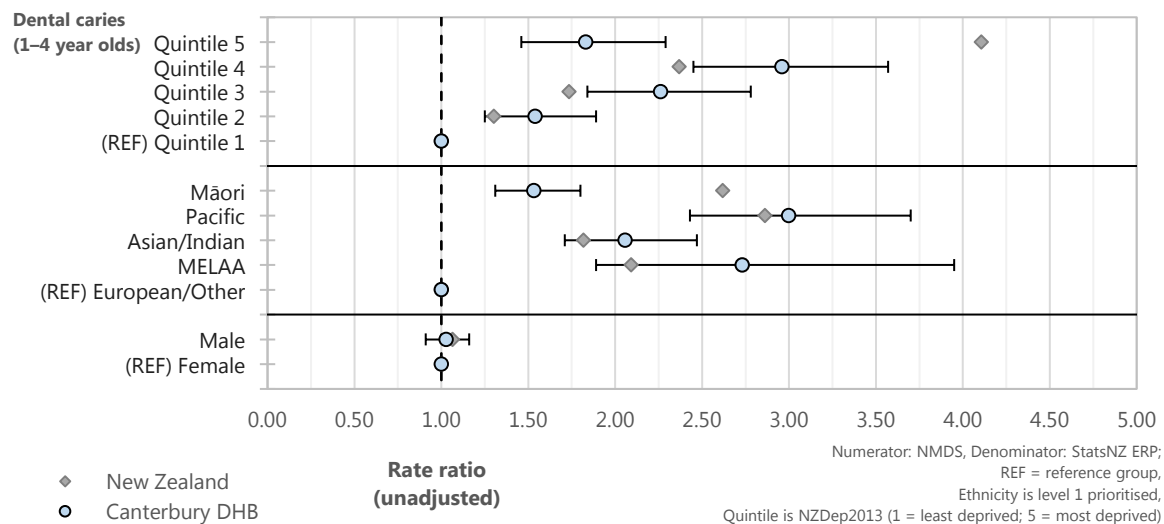


Figure XI-9 Hospitalisations of 1-4 year olds for dental caries, by demographic factor, West Coast DHB vs New Zealand 2011-2015

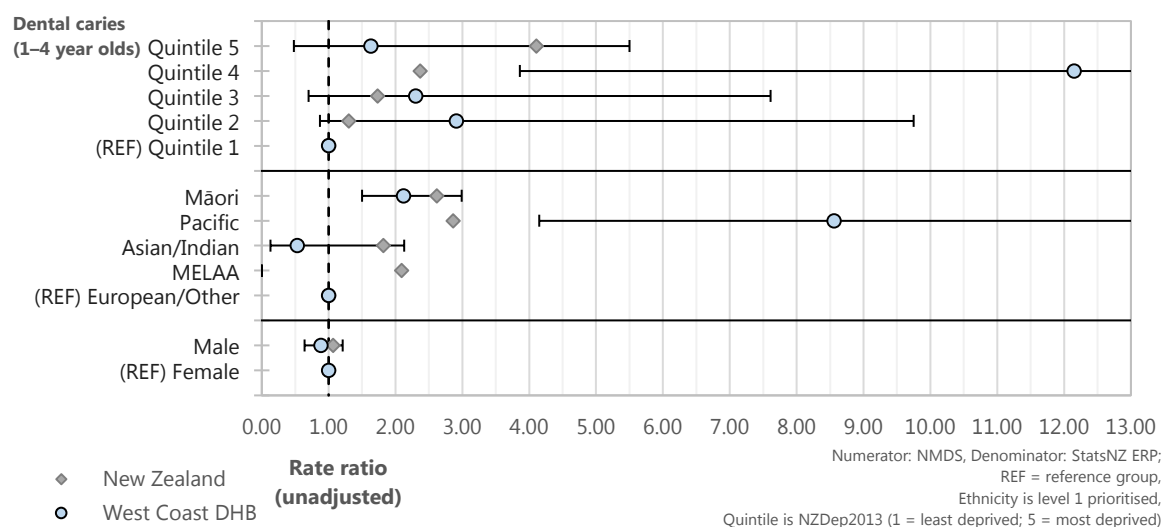
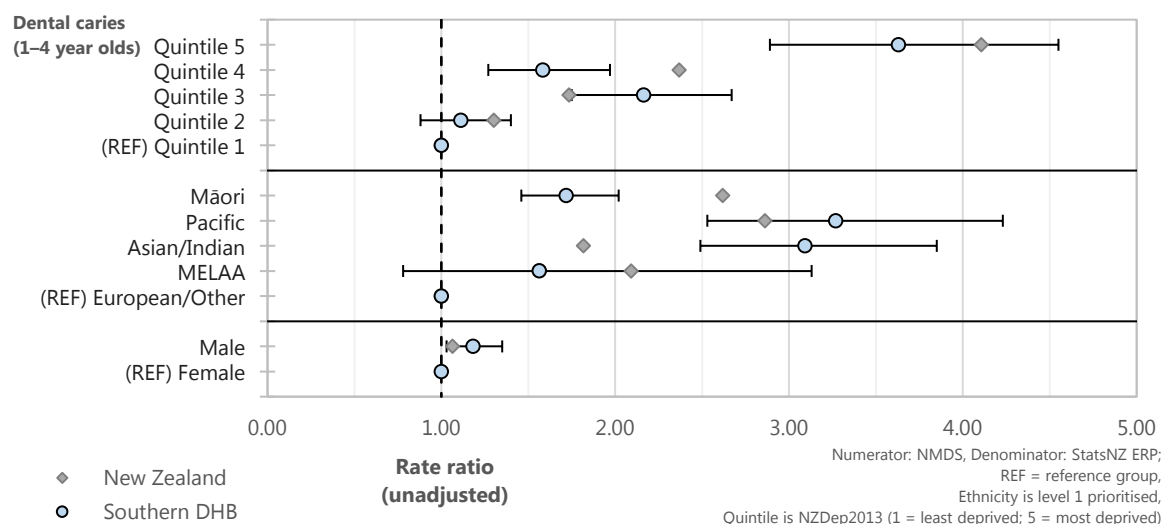


Figure XI-10 Hospitalisations of 1-4 year olds for dental caries, by demographic factor, Southern DHB vs New Zealand 2011-2015



## Evidence for good practice

In addition to the oral health review topic, a selection of New Zealand publications relevant to good practice in oral health is listed below:

### On the horizon

The development of an electronic oral health record for DHB-provided oral health services is underway by the Ministry of Health. For more information - <http://www.health.govt.nz/our-work/preventative-health-wellness/oral-health/electronic-oral-health-record-cohr-programme>

### New Zealand publications

- **Oral health** — <http://www.health.govt.nz/our-work/preventative-health-wellness/oral-health>
- **Fluoride and oral health** — <http://www.health.govt.nz/our-work/preventative-health-wellness/fluoride-and-oral-health>
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