



The Child Dental Health Survey, Victoria 1998

**AIHW Dental Statistics and Research Unit
The University of Adelaide**

**in collaboration with
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Abbreviations

d	deciduous decayed teeth
m	deciduous missing teeth
f	deciduous filled teeth
dmft	deciduous decayed, missing and filled teeth
D	permanent decayed teeth
M	permanent missing teeth
F	permanent filled teeth
DMFT	permanent decayed, missing and filled teeth
SD	standard deviation

Purpose of this report

This report continues the series of annual reports providing descriptive statistics concerning child dental health in Victoria and follows the 1997 report. Information listed in the tables includes: the age and sex of children in the sample, their deciduous and permanent caries experience, frequency of fissure sealants, history of school dental service examinations and caries experience by geographical region.

The report also provides simple, summary statements highlighting differences between the 1997 and 1998 results. However, no formal hypothesis tests have been undertaken and descriptions of differences between years are intended as a guide to the reader rather than as an evaluation of trends.

Sources of subjects and sampling

Data were collected during the 1998 calendar year on Victoria School Dental Service patients by dental therapists and dentists. Children were sampled on the first day of each month during 1998.

Data were weighted for all analyses to more accurately reflect the child population (5–14 years old) in Victoria. A map showing the geographical regions of Victoria is presented in Figure 1. The regions included five from rural areas (Barwon South Western, Grampians, Loddon Mallee, Hume and Gippsland) and four from metropolitan Melbourne and surrounds (Western Metropolitan, Northern Metropolitan, Eastern Metropolitan and Southern Metropolitan).

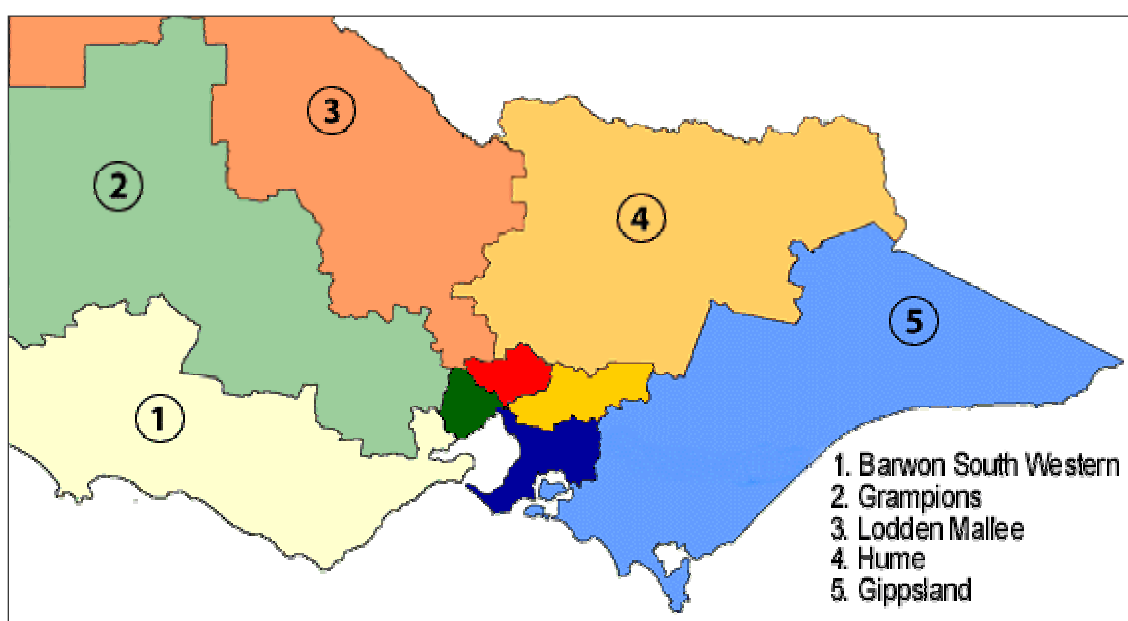


Figure 1: Victoria by geographical region of sampling

Children from the Grampians, Loddon Mallee, Western Metropolitan, Eastern Metropolitan and Southern Metropolitan regions were initially under-represented in the sampling and were weighted up in the analysis whereas children from the Barwon South Western, Hume, Gippsland and Northern Metropolitan regions were over-represented relative to actual population distribution and were weighted down in the analyses (see Table 1).

Table 1: Sample size and assigned weight by region

Region	Number Sampled	Weight
Barwon South Western	785	0.82
Grampians	364	1.15
Loddon Mallee	558	1.07
Hume	569	0.91
Gippsland	674	0.75
Western Metropolitan	948	1.08
Northern Metropolitan	1,590	0.79
Eastern Metropolitan	1,260	1.34
Southern Metropolitan	1,825	1.08

Weighting was carried out so that the regional contributions for the study equalled the distribution of children aged 5–14 years in Victoria as provided by the Australian Bureau of Statistics as at 30 June 1998. A comparison of the percentage of children across regions for both the current sample and for the Victorian population is given in Figure 2. One of the repercussions of the weighting was to slightly increase the weights for children from Metropolitan Melbourne (average weight = 1.06) while decreasing the weights for children both from Rural areas (average weight = 0.92) and those from areas classified as Metropolitan Other (average weight = 0.74).

Data analysis

The data were cleaned prior to analysis to correct data entry errors. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40% and population estimates of these indices are considered to be statistically unreliable and should be interpreted with due care.

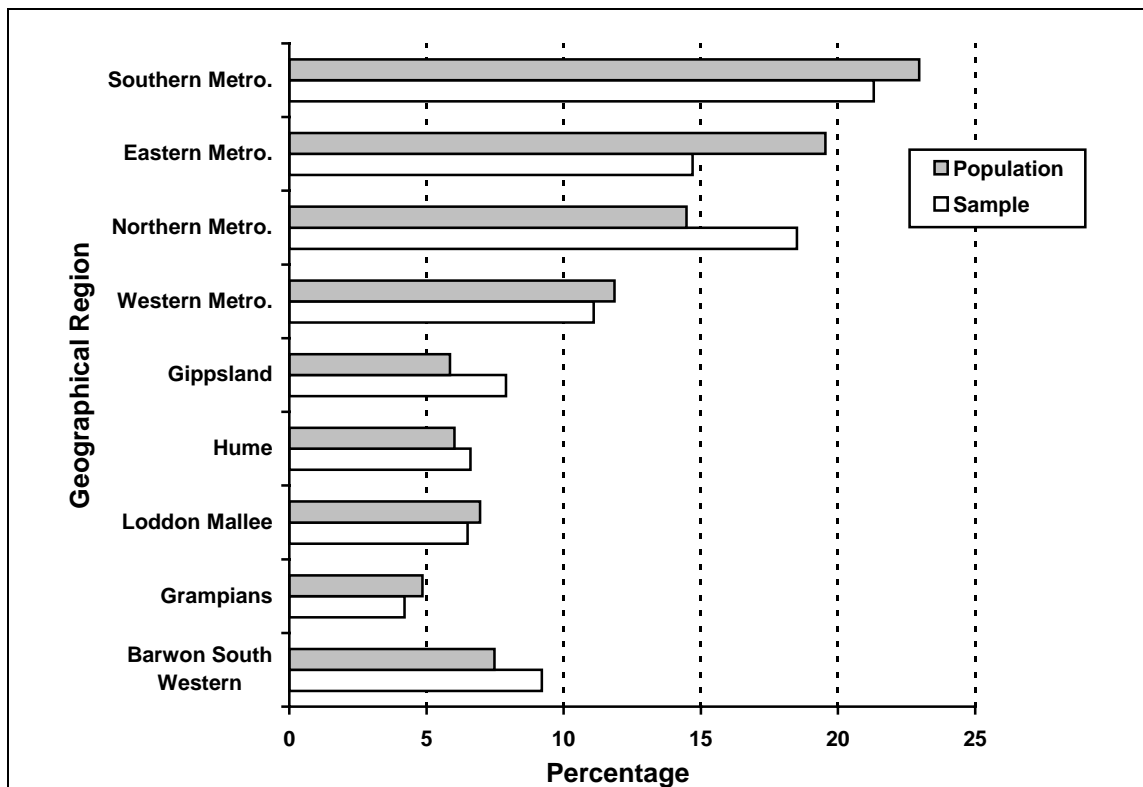


Figure 2: Percentage of children by region for sample and Victorian population (aged 5–14).

Demographic composition of the sample

A total of 8,613 children aged 4 to 15 years were included in the sample for 1998 (see Table 2). The frequency distribution of children’s ages peaked at 6 years, and few children aged less than 5, or more than 12 years, were sampled. Accordingly, it is important to note that the sample was greatest for primary school aged children, and that caution should be used when considering the representativeness of the sample for older children.

Due to the very small number of children aged 15 ($n = 3$) results for this age group have been omitted in the results to follow.

Changes since 1997

The total number of children sampled in 1998 was 1,502 fewer than in 1997, continuing the downward trend in the number of children sampled in Victoria. There were decreases in the number of children sampled across all age categories, except for the 5-year-old and 13-year-old categories.

Table 2: Demographic composition of the sample

Age (years)	Children in sample			Children in sample (weighted)		
	Males	Females	Persons	Males	Females	Persons
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
4	15	19	34	15	19	34
5	501	454	955	498	442	940
6	722	685	1,407	711	686	1,398
7	708	663	1,371	706	673	1,379
8	623	590	1,213	629	592	1,221
9	583	525	1,108	592	523	1,115
10	540	515	1,055	539	521	1,060
11	477	456	933	476	459	935
12	204	171	375	205	168	373
13	54	70	124	54	69	123
14	20	14	34	20	12	32
15	2	2	4	2	2	3
Total	4,449	4,164	8,613	4,446	4,167	8,613

Deciduous teeth – age-specific caries experience

As can be seen in Table 3, the mean number of clinically detectable decayed teeth increased from 1.30 for 4-year-olds to a peak of 1.47 for 6-year-olds before steadily declining to 0.29 for children aged 12 years. In contrast, the mean number of filled deciduous teeth increased to 1.16 for 9-year-old children before declining as a result of the exfoliation of deciduous teeth. The variation in mean dmft across the age range showed a similar pattern to that of the filled component, increasing from 1.51 for 4-year-olds to 2.32 for 8-year-old children before declining to 0.74 for 12-year-olds.

Table 3: Deciduous dentition – decayed, missing and filled teeth by age

Age	Children	Decayed (d)		Missing (m)		Filled (f)		dmft	
		<i>n</i>	mean	SD	mean	SD	mean	SD	mean
4	34	1.30	2.16	0.05*	0.31*	0.16*	0.49*	1.51	2.30
5	940	1.40	2.40	0.09	0.67	0.28	1.03	1.78	2.96
6	1,398	1.47	2.44	0.13	0.67	0.48	1.35	2.08	3.15
7	1,379	1.16	1.95	0.13	0.69	0.74	1.56	2.03	2.89
8	1,221	1.09	1.73	0.17	0.69	1.06	1.74	2.32	2.85
9	1,115	0.92	1.44	0.19	0.69	1.16	1.78	2.27	2.74
10	1,060	0.79	1.33	0.10	0.49	1.01	1.59	1.90	2.43
11	935	0.46	0.99	0.09	0.45	0.67	1.26	1.23	1.99
12	373	0.29	0.74	0.06	0.36	0.39	1.00	0.74	1.59

* relative standard error \geq 40%

Table 4: Deciduous dentition – caries experience indices by age

Age	d/dmft		dmft=0	
	<i>n</i>	%	<i>n</i>	%
4	16	88.0	34	53.2
5	408	84.5	940	56.6
6	683	77.3	1,398	51.1
7	707	62.4	1,379	48.7
8	695	51.1	1,221	43.1
9	654	45.9	1,115	41.3
10	589	45.4	1,060	44.4
11	376	38.5	935	59.8
12	98	45.0	373	73.8

The percentage of caries experience due to clinically detectable decay (d/dmft) showed an age-associated decline, more than halving from 88.0% among 4-year-olds to 38.5% among 11-year-olds (see Table 4). In addition, the percentage of children with no recorded caries experience (% dmft=0) reduced from 56.6% among 5-year-olds to a low of 41.3% among 9-year-olds before increasing again due to the exfoliation of deciduous teeth. It is noteworthy that less than one half of children were free of deciduous caries experience between the ages of 7 and 10. The percentage of children with dmft=0 inversely mirrors the mean dmft prevalence.

Changes since 1997

There were inconsistent changes in the mean number of clinically detectable decayed teeth between 1997 and 1998. An increase occurred for children aged 4, 5 and 8 but a decrease occurred for 11- and 12-year-olds.

Reductions in the mean number of filled teeth were in a number of cases large and, other than for 6-year-olds, occurred for most age groups. There were similar decreases in dmft scores for children aged 9 and over but increases for 4- and 6-year-olds. Changes in the d/dmft ratio were also inconsistent, with some age groups showing increases, some decreases and others changing little between 1997 and 1998. The average percentage of children with dmft=0 decreased for the youngest age groups and increased for the oldest children.

Permanent teeth – age-specific experience

The mean number of clinically decayed permanent teeth generally increased across the age groups (see Table 5). A similar pattern is apparent for filled teeth although at every age children presented with more clinically decayed teeth than filled teeth. The mean DMFT also rose quite consistently across age groups, increasing from 0.06 for 5-year-olds to 1.61 for 14-year-olds. The DMFT for 12-year-old children in 1998 was 1.13.

Table 5: Permanent dentition – decayed, missing and filled teeth by age

Age	Children <i>n</i>	Decayed (D)		Missing (M)		Filled (F)		DMFT	
		mean	SD	mean	SD	mean	SD	mean	SD
5	940	0.05	0.35	0.00	0.00	0.00	0.10*	0.06	0.37
6	1,398	0.12	0.45	0.00	0.03*	0.00	0.04*	0.12	0.45
7	1,379	0.28	0.75	0.00	0.11*	0.03	0.25	0.31	0.84
8	1,221	0.40	0.87	0.01*	0.18*	0.08	0.38	0.49	0.97
9	1,115	0.49	0.93	0.00	0.04*	0.16	0.53	0.65	1.09
10	1,060	0.47	0.95	0.01*	0.20*	0.26	0.68	0.75	1.24
11	935	0.58	1.01	0.01	0.13	0.34	0.77	0.94	1.35
12	373	0.69	1.12	0.05	0.33	0.39	0.88	1.13	1.60
13	123	0.94	1.52	0.09*	0.50*	0.52	0.94	1.55	1.96
14	32	0.78	1.23	0.09*	0.39*	0.74	1.29	1.61	1.77

* relative standard error \geq 40%

Table 6: Permanent dentition – caries experience indices by age

Age	D/DMFT		DMFT=0	
	<i>n</i>	%	<i>n</i>	%
5	26	93.3	940	97.2
6	122	98.2	1,398	91.3
7	246	93.0	1,379	82.1
8	330	93.0	1,221	73.0
9	392	76.3	1,115	64.8
10	402	64.2	1,060	62.0
11	418	63.2	935	55.3
12	183	65.7	373	50.9
13	68	58.9	132	44.3
14	20	54.6	32	38.8

The percentage of DMFT due to decay (D/DMFT) and the percentage caries free (DMFT=0) declined steadily across age groups (see Table 6). At age 12, 50.9% of children had no clinically detectable levels of decay.

Changes since 1997

There were appreciable increases in permanent caries experience between 1997 and 1998. Between the ages of 6 and 13 inclusive, clinically detectable decay increased for all age-groups, with rises from between 16.0% and 55.6%. However, the mean number of filled teeth remained relatively stable between 1997 and 1998, and there were even small decreases for children aged 8, 9, 12 and 14. As a result of the increases in mean decay, mean DMFT scores were higher for all age groups up to and including 13-year-olds, and the percentage of the DMFT score accounted for by the decayed component also increase for most age groups.

Between 1997 and 1998 the percentage of children with a DMFT score of zero decreased for most age-groups. Not only was there more permanent caries experience in 1998 compared to 1997, it was evident in a larger percentage of children.

All teeth – age-specific caries experience

Untreated caries in the combined deciduous and permanent dentitions (see Table 7) existed for between 42.4% and 54.5% of children in each age range from 4 to 14 years. Within this range, the greatest likelihood of untreated decay occurred for 10-year-olds where only 45.5% of children had d+D of zero. The most extensive levels of untreated decay (5 or more deciduous or permanent teeth) declined across ages, ranging from 11.9% of 6-year-olds to 2.6% of 12-year-olds. This age trend indicates that the greatest contribution came from the deciduous dentition.

While 89% or more children had no deciduous or permanent teeth missing due to caries, smaller percentages avoided fillings and this was clearly associated with age. Although 90.2% of 5-year-olds had no fillings, this declined to 51.9% for 10-year-olds before increasing again to 67.8% for 12-year-old children. Similarly, the percentage of children with no caries experience (dmft+DMFT=0) was age associated, reducing to 28.9% for 10-year-old children before increasing to 40.6% for children aged 12.

Figure 3 shows the percentages of children with dmft=0, DMFT=0 and d+D≥4.

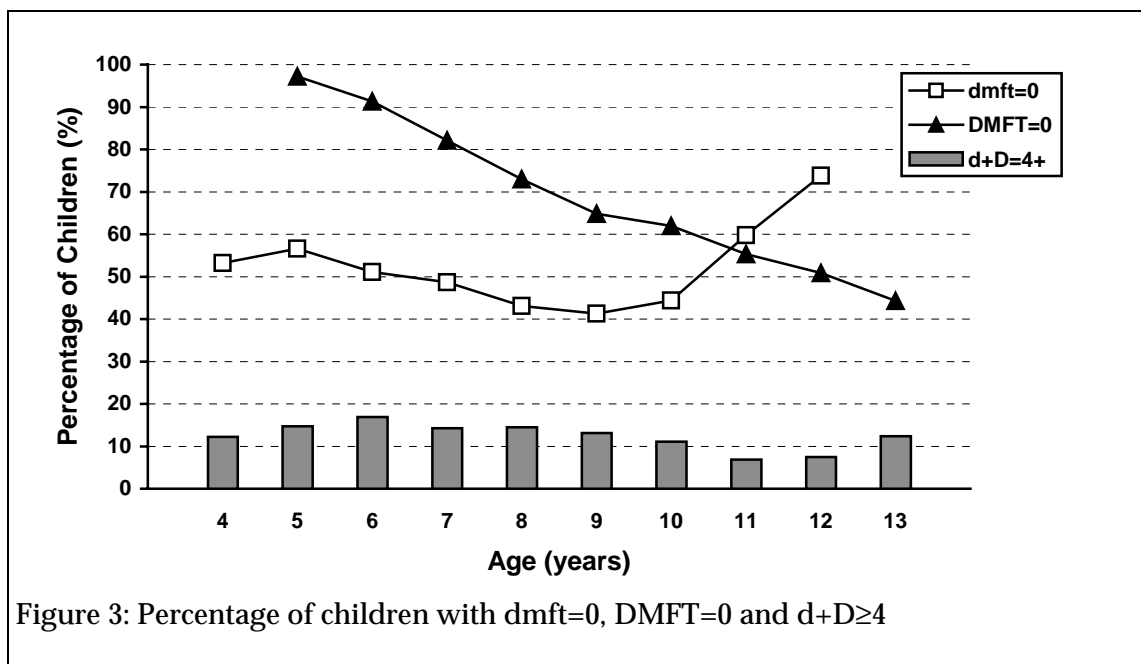
Changes since 1997

Children in most age groups had more caries experience in 1998 than in 1997 with reductions in the percentage d+D=0 across these years. This finding was also reflected in statistics for dmft+DMFT=0 where the percentages were lower in 1998 than in 1997 for children aged 4, 5, 6, 10 and 13.

Table 7: All teeth – age-specific caries experience

Age	Students <i>n</i>	d + D =						m+M=0 %	f+F=0 %	dmft+ DMFT=0 %
		0 %	1 %	2 %	3 %	4 %	5+ %			
4	34	53.2	22.0	4.9*	7.7*	4.6*	7.6	97.6	88.8	53.2
5	940	57.6	12.1	10.4	5.1	3.5	11.2	96.5	90.2	55.6
6	1,398	53.2	13.4	9.5	7.0	5.0	11.9	94.4	84.0	48.7
7	1,379	51.9	16.1	9.5	8.3	5.3	9.0	93.6	73.0	44.4
8	1,221	48.1	16.8	12.3	8.3	5.2	9.3	90.4	60.7	36.9
9	1,115	45.7	20.1	13.2	7.9	5.3	7.8	89.0	54.9	32.3
10	1,060	45.5	22.9	14.6	5.9	5.6	5.5	92.9	51.9	28.9
11	935	51.7	20.6	13.5	7.3	3.3	3.6	93.8	56.1	36.0
12	373	52.4	22.5	11.1	6.5	4.9	2.6	94.0	67.8	40.6
13	123	50.1	20.7	10.9	5.9	7.1	5.3	94.2	64.1	37.5
14	32	57.0	22.2	12.3*	3.3	2.3*	2.8*	94.1	63.9	36.4

* relative standard error ≥ 40%



Fissure sealants – age-specific experience

The use of fissure sealants increased sharply for children across the age range of 6 to 11 (see Table 6), rising from a mean of 0.06 to a mean of 1.69 across these age groups. There was generally a higher frequency of fissure sealants among children with permanent caries experience (DMFT≥1) than for those with no caries experience (DMFT=0), although some differences were small in magnitude.

Table 8: Fissure sealants – age-specific experience

Age	Students <i>n</i>	Sealants		Students with sealants			
				DMFT=0		DMFT≥1	
		mean	SD	<i>n</i>	%	<i>n</i>	%
6	1,398	0.06	0.44	1,276	2.1	122	3.9
7	1,379	0.22	0.82	1,133	6.2	246	13.8
8	1,221	0.64	1.31	891	22.1	330	25.2
9	1,115	1.15	1.57	722	39.7	392	41.4
10	1,060	1.51	1.73	658	50.8	402	52.3
11	935	1.69	1.76	517	56.3	418	57.5
12	373	1.65	1.71	190	56.3	183	55.9
13	123	1.51	1.87	55	47.4	68	55.2
14	32	1.96	2.20	12	42.6	20	63.9

Changes since 1997

There were considerable reductions between 1997 and 1998 in the mean number of fissure sealants for 8–13-year-olds. Reductions were evident both for those children with clinical caries experience (DMFT \geq 1) and those without (DMFT=0).

School Dental Service examinations

Table 9 describes the percentage of children who were new patients within the School Dental Service (having had no previous dental examination). As expected, the figure was highest for the youngest ages (7 years or less) indicating that most patients were enrolled during their early school years. For children up to 14 years of age, the highest percentage with a known previous examination was 73.7% for 11-year-olds.

Table 10 refers only to children with previous examinations and indicates their distribution according to time since last dental examination. More than 70% of 5-year-old children had had an examination within the previous 12 months. However, fewer than 15% of children aged 7 years or more had had a previous examination within the preceding 12 months. The most common time period since a previous examination for older children was greater than 2 years. Substantial percentages of children aged 7 years or more had also had their previous examination between 18 months and 24 months previously. For 12-year-old children who had previously had an examination, only 32.5% had had an examination within the previous 2 years.

The mean time since last examination increased from 16.98 months for 6-year-old children to 29.78 months for children aged 12 years old. The dramatic change across age groups in the time since last exam can be seen graphically in Figure 4. For 6-year-olds, 65.2% had their last exam 0–18 months previously whereas 67.5% of 12-year-olds had their last exam greater than 24 months previously.

Table 9: School Dental Service examinations – age-specific distribution

Age	Students examined <i>n</i>	Previous examination in School Dental Service		
		No %	Yes %	Unknown %
4	34	62.4	12.1*	25.5
5	940	69.1	2.2	28.7
6	1,398	61.2	6.6	32.2
7	1,379	35.9	37.6	26.4
8	1,221	15.3	59.4	25.3
9	1,115	10.1	67.4	22.5
10	1,060	7.1	68.9	24.0
11	935	5.6	73.7	20.8
12	373	5.9	60.0	34.1
13	123	2.0*	37.6	60.4
14	32	2.4*	25.2	72.3

Table 10: School Dental Service examinations – time since last visit

Age	Students	Months since last visit					mean	SD
		0-6	7-12	13-18	19-24	25+		
	<i>n</i>	%	%	%	%	%		
4	4	0.0	0.0	26.1*	22.0*	51.9*	27.17*	8.64*
5	21	38.1	35.6	5.6*	16.8*	4.0*	11.13*	12.30*
6	93	13.8	24.3	27.1	23.3	11.6	16.98	13.98
7	520	3.8	9.2	12.7	44.2	30.1	21.43	8.81
8	726	2.1	7.0	12.5	38.7	39.8	22.98	7.73
9	752	2.0	6.8	9.5	35.6	46.1	24.48	8.95
10	732	2.2	4.6	10.4	31.2	51.6	26.14	10.29
11	690	2.2	4.2	8.3	33.2	52.1	26.40	10.60
12	24	0.4*	3.5	5.2	23.4	67.5	29.78	11.79
13	46	3.8*	2.9*	17.9	15.0	60.4	28.85	12.20
14	8	0.0	10.1*	13.4*	43.0	33.5*	23.74*	7.88*

* relative standard error $\geq 40\%$

Changes since 1997

The changes during 1998 in frequency and timing of examinations indicate a decreased percentage of children known to have had a previous examination in the school dental service. Of those children with previous examinations, there were considerably larger percentages of children across most age groups in 1998 compared to 1997 having received their last examination greater than 24 months previously. The mean number of months since last examination increased for 6-13-year-olds.

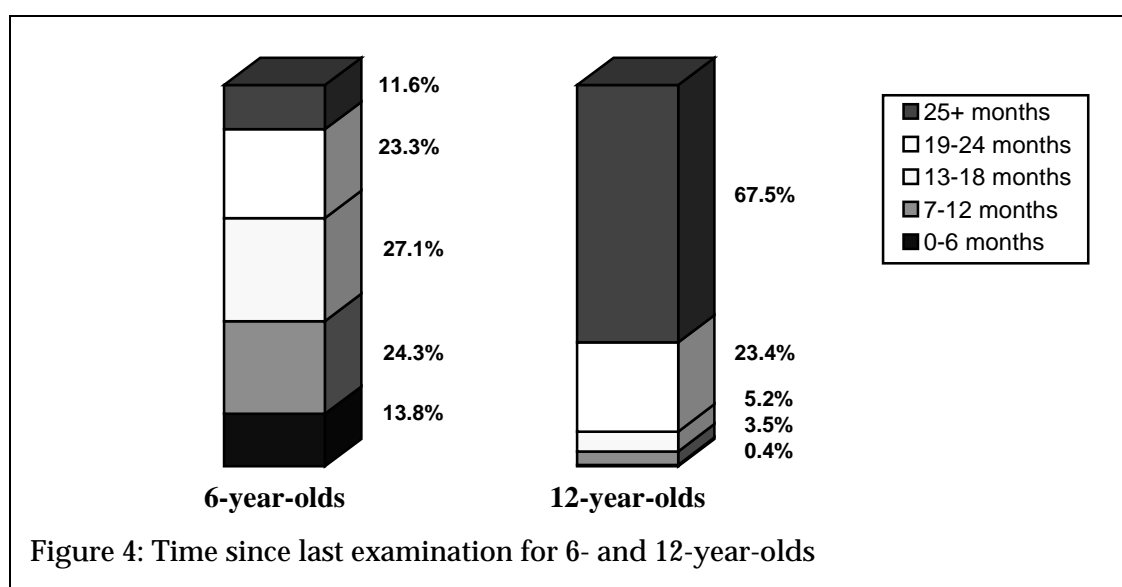


Figure 4: Time since last examination for 6- and 12-year-olds

Caries experience by region

Caries experience in the deciduous dentition varied markedly by region (see Table 11). Clinically detectable caries was lowest in the four metropolitan regions and highest in Gippsland which had a mean decay score almost double that in metropolitan areas. A similar pattern can also be seen in respect to deciduous dmft scores which ranged from 1.39 in the Eastern Metropolitan region to 3.18 in the Gippsland region.

The slightly different pattern in the permanent dentition for 12-year-olds (see Table 12) may be explained to some extent by the small number of children sampled in some regions. Apart from Barwon South Western, metropolitan regions generally had the lowest mean decay and DMFT scores. The number of clinically detectable decayed teeth was highest in Loddon Mallee and the highest DMFT was in Gippsland.

Table 11: Five–six-year-old deciduous caries experience by region

Region	n	Decayed teeth (d)		dmft	
		Mean	SD	Mean	SD
Barwon South Western	215	1.70	2.88	2.38	3.73
Grampions	98	1.87	2.55	3.00	3.57
Lodden Mallee	151	2.06	2.96	2.97	3.88
Hume	176	1.76	2.33	2.44	3.21
Gippsland	169	2.55	3.00	3.18	3.42
Western Metropolitan	266	1.31	2.02	1.78	2.66
Northern Metropolitan	476	1.33	2.38	1.83	3.03
Eastern Metropolitan	289	1.04	2.12	1.39	2.56
Southern Metropolitan	511	1.16	2.23	1.47	2.67

Table 12: Twelve-year-old permanent caries experience by region

Region	n	Decayed teeth (D)		DMFT	
		Mean	SD	Mean	SD
Barwon South Western	36	0.19	0.40	0.81	1.06
Grampions	24	0.88	1.03	1.29	1.57
Lodden Mallee	32	1.12	1.39	1.56	1.97
Hume	28	0.89	1.29	1.28	1.58
Gippsland	38	0.87	1.28	1.63	2.12
Western Metropolitan	24	0.37	0.82	1.04	1.60
Northern Metropolitan	57	0.79	1.47	1.12	1.69
Eastern Metropolitan	50	0.48	0.74	0.70	0.95
Southern Metropolitan	77	0.70	1.17	1.09	1.72