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The Child Dental Health Survey, Queensland 2002

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Dental Statistics & Research Unit

AUSTRALIAN RESEARCH CENTRE FOR POPULATION ORAL HEALTH

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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
SDS	School Dental Service

Purpose of this report

This report is part of the annual series providing descriptive statistics concerning child dental health in Queensland. The tables and figures contained in this report describe the demographic composition of the sample, deciduous and permanent caries experience, extent of immediate treatment needs, prevalence of fissure sealants and other relevant information. The report also presents a description of the Survey methods.

The report provides summary statements highlighting trends across the period 1998 to 2002. However, it should be noted that no formal hypothesis tests have been undertaken and descriptions of differences between years are intended as a guide to the reader rather than a formal evaluation of trends.

Background to the Child Dental Health Survey

The Child Dental Health Survey, originally established in 1977 by the (then) Commonwealth Department of Health, is intended to provide time-series data for the purpose of monitoring the dental health status of primary school children. The establishment of the Survey coincided with the development of the Australian School Dental Scheme (ASDS), a government-funded program providing dental care for school children. Implicit within the original goals of the Child Dental Health Survey was the collection of routine data from all patients of the ASDS, which was to be administered through each of the State and Territory health authorities. There was no attempt to obtain information about those children not enrolled in the ASDS. From the inception of the Survey, School Dental Service staff has collected data.

The survey has been maintained annually since 1977. Following some changes to the survey procedures by individual State and Territory health authorities (principally in the methods of sampling, but also including some alterations to data items) a redesigned Survey was developed in 1988. At that time responsibility for the management and processing of the Survey was passed to the Dental Statistics and Research Unit (DSRU), a collaborating unit of the Australian Institute of Health and Welfare. In the process of transferring responsibility for the Survey, State and Territory health authorities were encouraged to adopt some limited changes to the types of data collected and to move towards sampling of a proportion of children. By the end of 1991, those changes were adopted uniformly.

Survey methods

Data for the Child Dental Health Survey were collected during the 2002 calendar year from a sample of patients of the Queensland School Dental Service by dental therapists and dentists. Data items were transcribed from routine clinical records on to Optical Mark Reader (OMR) data sheets.

The AIHW Dental Statistics and Research Unit performed processing and editing of all data forms. Unit record data were forwarded to the DSRU in Adelaide for processing and analysis.

Source of subjects and sampling

It was intended that children throughout Queensland would be sampled at a ratio of approximately 1:15 by selecting those whose date of birth was on either the first or the sixth day of any month. All children with an unknown date of birth were also sampled. Sampling occurred at the time of routine clinical examinations prior to the commencement of any course of care.

The outcome of sampling varied across Queensland Health Service Districts (HSDs) and within these sometimes varied by clinics. HSDs are here grouped according to Health Zones, as shown in Figure 1. The number of children sampled in each district and the sampling procedure predominantly used are given in Table 1. While most HSDs utilised the intended sampling procedure, the large number of children sampled from the Gold Coast HSD derived from a full enumeration of 6- and 12-year-olds in this district. Table 1 also provides information on the Estimated Resident Population (ERP) of Queensland HSDs and the percentage of the HSDs actually sampled. Percentages ranged from 0% in a number of HSDs to 8.4% in the Gold Coast.

The bulk of the children came from the Gold Coast, Brisbane North, QEII, Townsville, Sunshine Coast, Mackay and Toowoomba HSDs (68.0%). There were small numbers of children sampled from Banana, Central West, Charleville, Fraser Coast, Roma, South Burnett and Torres Strait HSDs. Some districts failed to sample any children (e.g., Bundaberg, Central Highland, Cape York, Torres Strait and North Burnett). The percentage change in the number of children sampled in each HSD between 2001 and 2002 is shown in Figure 2.

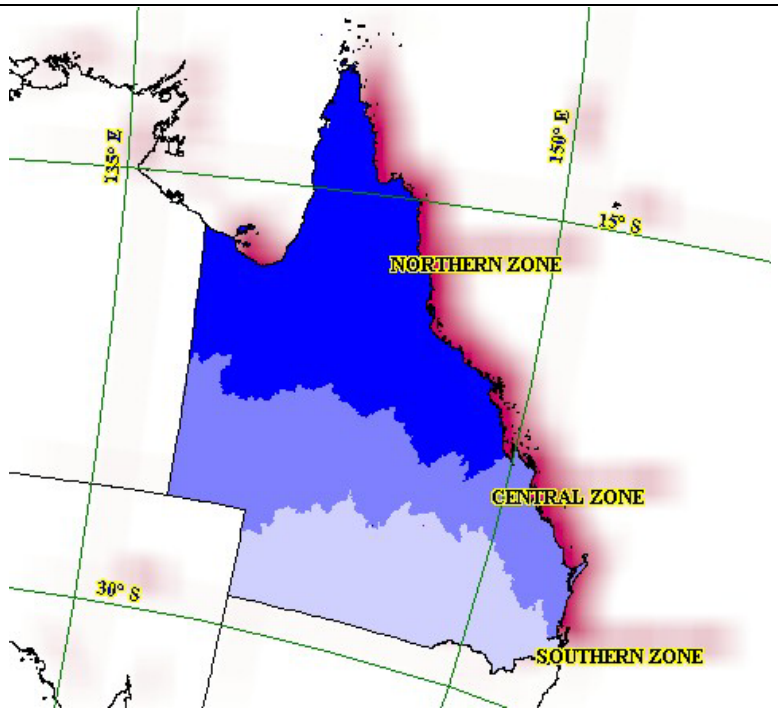


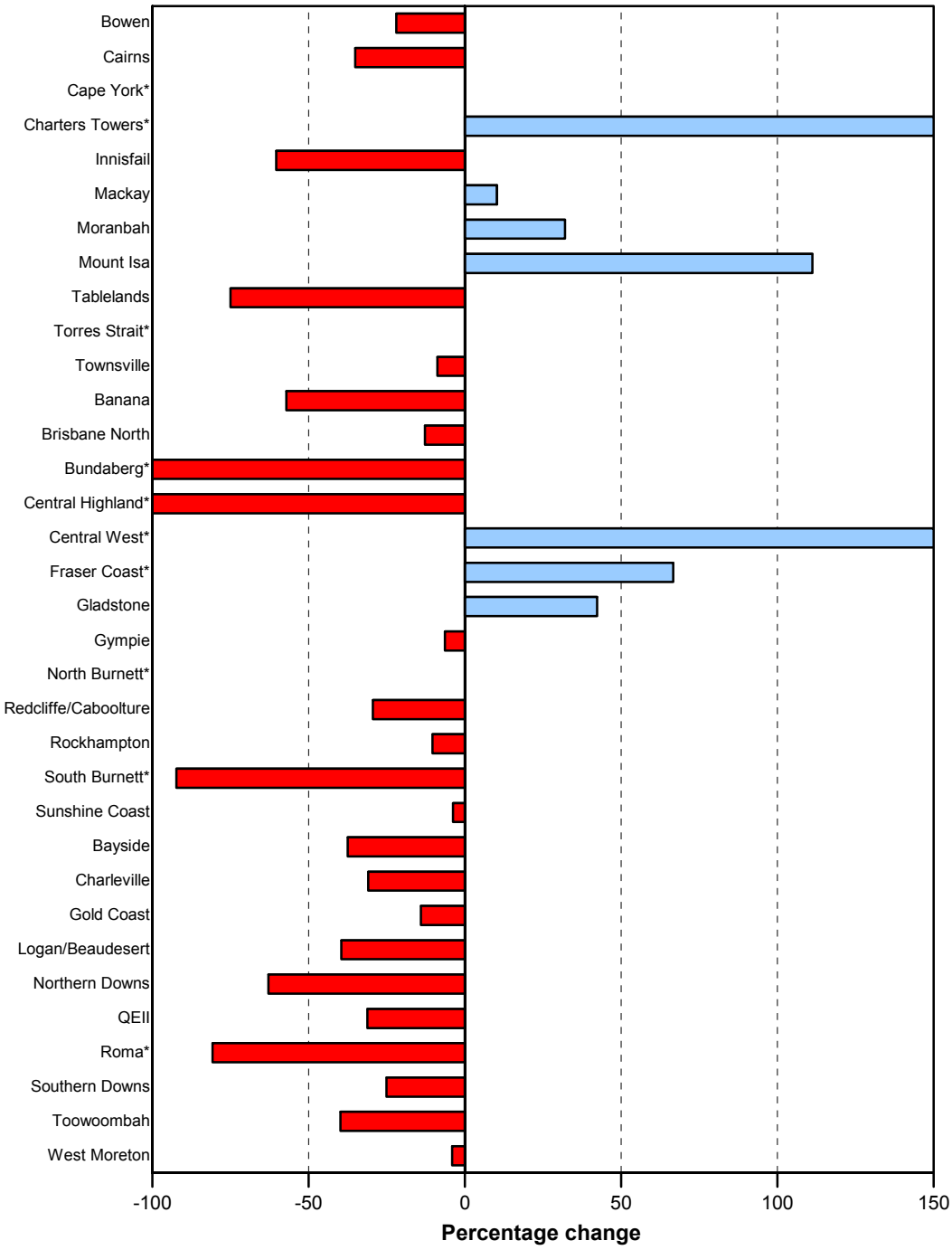
Figure 1: Queensland by Health Zones

Table 1: Number of children sampled and Estimated Resident Population (ERP) by Health Zone and District

Health Services District	*n*	Most common sampling ratio	ERP	Per cent of ERP sampled
		Northern Zone		
Bowen	107	1 : 15	6,521	1.64
Cairns	252	1 : 15	30,990	0.81
Cape York	0	N/A	2,092	0.00
Charters Towers	74	1 : 15	3,611	2.05
Innisfail	65	1 : 15	7,382	0.88
Mackay	472	1 : 15	24,685	1.91
Moranbah	99	1 : 15	5,013	1.97
Mount Isa	207	1 : 15	8,079	2.56
Tablelands	25	1 : 15	8,201	0.30
Torres Strait	35	N/A	3,463	1.01
Townsville	744	1 : 15	36,935	2.01
		Central Zone		
Banana	15	1 : 15	3,219	0.47
Brisbane North	1,020	1 : 15	106,687	0.96
Bundaberg	0	1 : 15	18,524	0.00
Central Highland	0	1 : 15	6,318	0.00
Central West	35	1 : 15	2,977	1.18
Fraser Coast	5	1 : 15	16,205	0.03
Gladstone	158	1 : 15	10,901	1.45
Gympie	176	1 : 15	7,461	2.36
North Burnett	0	N/A	2,078	0.00
Redcliffe/Caboolture	213	1 : 15	39,532	0.54
Rockhampton	328	1 : 15	21,820	1.50
South Burnett	2	1 : 15	7,612	0.03
Sunshine Coast	627	1 : 15	53,501	1.17
		Southern Zone		
Bayside	177	1 : 15	40,211	0.44
Charleville	29	1 : 15	2,085	1.39
Gold Coast*	3,069	1 : 1	71,589	4.29
Logan/Beaudesert	357	1 : 15	71,938	0.50
Northern Downs	82	1 : 15	7,228	1.13
QEII	839	1 : 15	82,501	1.02
Roma	5	1 : 15	4,359	0.11
Southern Downs	209	1 : 15	13,450	1.55
Toowoomba	418	1 : 15	30,704	1.36
West Moreton	331	1 : 15	40,217	0.82
Unknown	402	N/A	0	N/A

* 6- and 12-year-old children only sampled at 1:1

Note: ERP obtained from Queensland Health, 0–14-year-olds , 2004.



* Health Service District had no or very few children sampled in 2001.

Figure 2: Percentage change in number of children sampled between 2001 and 2002 by Health Service District

Data items

Demographic and service provision data items include the child's age, sex and the date of the current and previous examination. Provision was made for recording country of birth and the indigenous status of each child and mother.

Dental health status data items include a count of the number of teeth that were decayed, missing (because of dental caries) or filled (because of dental caries). Separate counts of caries experience were made of deciduous and permanent teeth. A count of the number of permanent teeth with fissure sealants (and which were not decayed or filled) was also made. An additional data item was marked to indicate if the child had a need for immediate treatment, defined as the presence of oral pain or infection, or the likely occurrence of oral pain of infection within four weeks. This would include children requiring treatment for existing pain, dental abscesses, grossly decayed teeth with pulp exposure, avulsed or fractured teeth, or life threatening conditions. All indices follow recommendations made by the World Health Organization (1987) and by Palmer et al. (1984) concerning epidemiological recording of dental conditions. A survey guide was previously issued to all clinics explaining the conventions for data recording. However, there were no formal procedures for training or calibration in the clinical procedures for detection of caries experience. Instead, clinical staff used their own clinical judgement when making decisions about the presence or absence of decayed, missing, filled or fissure sealed teeth.

Data preparation

A check was made for missing or erroneous data prior to OMR scanning. Where tooth level information was incorrect (e.g. a tooth indicated as both fissure sealed and unerupted), or where required fields were missing, the OMR form was returned to the relevant clinic for correction.

Data were cleaned prior to analysis after a visual check identified a number of cases with erroneous results. In addition, linear regression of age on the number of deciduous and permanent decayed, missing or filled teeth revealed a number of outliers with standardised residuals greater than 3 standard deviations from the mean. A visual check allowed a number of these cases to be corrected where it was evidently a data recording error (e.g. transposition of deciduous and permanent teeth). A small number of cases that could not be reconciled and were clearly erroneous were deleted from the dataset. A small number of cases aged younger than 4 years old and older than 16 years old were also removed from the dataset.

Analyses

Data were analysed to provide age-specific means and percentages for each dental disease index and for periodicity of examinations. Standard deviations were computed for all means. The level of statistical precision for all age-specific estimates was assessed by computing the relative standard error (that is, standard error of the estimate divided by the estimate, expressed as a percentage). Estimates with relative standard errors exceeding 40% are marked with an asterisk. These estimates are statistically unreliable and should be interpreted with caution.

A further aspect of the analysis was the weighting of unit records to reflect the sampling procedure. This was necessary because children were sampled using different probabilities of selection. The probability was 1.0 (i.e., selected by full enumeration) for children with an unknown date of birth throughout the State and for some children from the Gold Coast HSD. Elsewhere the probability was approximately 0.066 (*ie* equivalent to the ratio of 1:15) for students sampled according to the intended procedure. Hence, the weighting process considered the number of students sampled (n_i) and the number of children in the population (assuming accurate sampling, $N_i=n_i/[\text{sampling probability}]$) for each sampling strata. Stratum specific weights, w_i, which could be applied to unit record data, were computed to avoid inflating the sample size. The following formula was used:

$$w_i = \frac{N_i / n_i}{\sum N_i / \sum n_i}$$

Data were further weighted to reflect the Estimated Residential Population (ERP) of 0–14-year-olds in each Health Service Division (HSD) in Queensland. District estimates were computed using 2004 ERP as produced by Queensland Health. The relative sample sizes and population estimates by HSD as a percentage of the total sample and Queensland population are shown in Figure 3.

Data were also weighted by time since last school dental service examination where this information was available. This was necessary because children on a short recall period have a higher probability of being sampled than children on a longer recall period.

The purpose of the weighting protocol was to produce estimates that are representative of the population covered by the School Dental Service for 2002. However, the estimates in this report cannot be applied to children who are not enrolled in the Queensland School Dental Service. Consequently, the results in this report do not represent the complete Queensland child population, but only that portion of the population that is enrolled in the Queensland School Dental Service. In Queensland, approximately 80% of 5–12-year-olds and 50% of 13–15-year-olds are enrolled in the School Dental Service. Hence, estimates for Primary School aged children in this report may not differ substantially from estimates that would be obtained if all children in the State were surveyed, however estimates for Secondary School children may vary from those obtained if all the children in the State were surveyed.

The final unit record weights were applied to all statistics computed for Tables 2 to 9 such that the weighted contribution of each HSD was proportional to the percentage represented by each HSD of the relevant Queensland population. However, analyses of examination periodicity (Tables 10 and 11) excluded time since last visit in the calculation of the weightings.

Cases from HSDs with very few children sampled were retained in the data set but not weighted by region (i.e. given a weight of 1) because the application of weights was deemed likely to significantly influence the results. As a result, cases from Banana, Bundaberg, Central Highland, Central West, Charters Towers, Fraser Coast, Roma, and South Burnett HSDs did not receive region weights, but remained in the dataset.

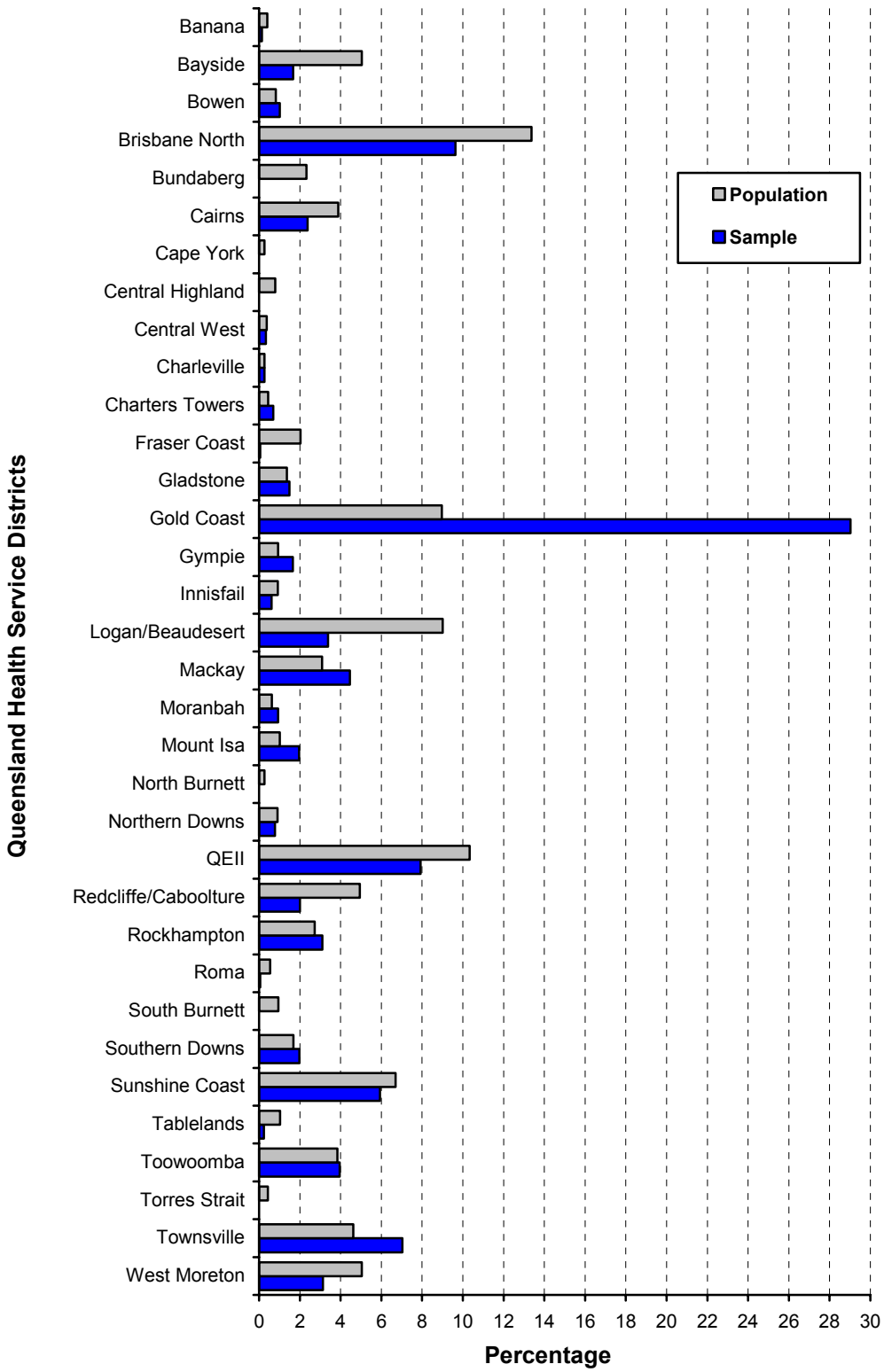


Figure 3: Percentage of children in sample and Queensland by Health Service District

Demographic composition of the sample

A total number of 10,577 individual children were sampled during 2002 (see Table 2). The majority of children in the complete sample were aged between 5 and 15 years inclusive (98.1%). In the weighted distribution, males and females were represented in approximately equal numbers. There was little difference between the average age of males (mean = 9.12) and that of females (mean = 9.05).

The age distribution of the sample reflects the age range of school children who are the principal target group of the Queensland School Dental Service. The small numbers of children aged 4 years and 15 years or more results in less reliability of computed statistics for those ages. Furthermore, children in those ages are outside the main target group of the School Dental Service and it is likely that they have some special characteristics that make them less representative of their respective age groups within the Queensland population. Although results are presented for these age groups in this report's tables and figures, textual descriptions of the results are often excluded, and any use of these results should involve due care in light of the limitations discussed.

Table 2: Demographic composition of the sample

	Known date of birth			Age only known			Weighted no. of children		
Age (years)	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
	n	*n*	*n*	*n*	*n*	*n*	*n*	*n*	*n*
4	85	63	150	1	0	1	89	61	152
5	298	360	659	0	1	1	301	360	664
6	712	695	1,411	528	544	1,074	600	630	1,233
7	437	486	925	2	2	4	582	624	1,211
8	459	435	895	6	3	9	638	550	1,189
9	394	405	799	2	1	3	519	557	1,075
10	420	399	821	4	8	12	598	575	1,175
11	427	411	838	2	5	7	625	631	1,256
12	579	593	1,172	346	391	737	487	587	1,074
13	233	217	451	2	1	3	328	315	645
14	190	171	361	2	1	3	296	249	544
15	98	101	199	2	5	7	159	153	313
16	17	18	35	1	0	0	22	23	45
Total	**4,349**	**4,354**	**8,716**	**897**	**962**	**1,861**	**5,246**	**5,316**	**10,577**

Country of birth and Indigenous status

The birthplace/Indigenous status of 77.0% of children was missing or recorded as not known. Australian-born (non-Indigenous) children represented 92.6% of the remainder of the sample (23.0% of the total sample). Children identified as Australian-born Indigenous comprised 1.2% of the total sample and 5.2% of the known valid sample. Only small numbers of children were identified as being born outside of Australia. Due to the small amount of known information concerning the birthplace/Indigenous status of the children's mothers these results are omitted from this report.

Deciduous teeth

Table 3 shows that the mean number of clinically decayed teeth among children aged up to 12 years old declined consistently across age groups, from 1.40 for children aged 5 years of age to 0.15 for 12-year-old children. In contrast, the mean number of filled teeth increased with age, peaking at 1.67 for 8-year-olds before declining to 0.30 for 12-year-olds. Mean dmft scores increased from 1.68 for children aged 4 years to 2.82 for 8-year-olds before declining to 0.48 for 12-year-olds.

The ratio of untreated decayed teeth to the total count of decayed, missing, and filled teeth serves as an indicator of how well a child's dental needs are being met. This is presented in Table 4 as the mean of individual children's d/dmft index. Among children with caries experience, the percentage of dmft accounted for by the decayed component declined steadily across age groups, from 76.5% for children aged 4 years old to 32.2% for 10-year-olds. Between the ages of 5 and 10 the percentage of children free of clinical caries (dmft = 0) ranged from a high of 53.8% among children aged 10 years old to a low of 35.6% among 8-year-olds.

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

Age	Children	Decayed (d)		Missing (m)		Filled (f)		dmft	
	n	mean	SD	mean	SD	mean	SD	mean	SD
4	152	1.34	2.46	0.05*	0.39*	0.28	0.85	1.68	2.66
5	664	1.40	2.44	0.12	0.82	0.68	1.73	2.20	3.36
6	1,233	1.34	2.31	0.13	0.86	0.98	1.90	2.44	3.49
7	1,211	1.14	1.94	0.13	0.78	1.44	2.17	2.70	3.23
8	1,189	0.99	1.54	0.16	0.81	1.67	2.22	2.82	3.10
9	1,075	0.66	1.15	0.08	0.59	1.38	2.03	2.13	2.64
10	1,175	0.50	1.04	0.11	0.99	1.12	1.83	1.72	2.64
11	1,256	0.31	0.79	0.04*	0.60*	0.61	1.27	0.96	1.84
12	1,074	0.15	0.54	0.04*	0.69*	0.30	0.90	0.48	1.48

* relative standard error ≥ 40%

Table 4: Deciduous dentition – caries experience indices by age

Age	Mean d/dmft index		dmft = 0	
	n	%	*n*	%
4	67	76.5	152	55.8
5	312	68.8	664	52.8
6	634	57.8	1,233	48.5
7	735	46.0	1,211	39.3
8	762	39.2	1,189	35.6
9	609	35.8	1,075	43.1
10	542	32.2	1,175	53.8
11	408	33.7	1,256	67.3
12	203	33.5	1,074	81.1

The ratio of untreated decayed teeth to the total count of decayed, missing, and filled teeth can also be expressed as the ratio of total decay in the population to total decayed, missing or filled teeth in the population (d/dmft ratio), and this is presented in Figure 4. Unlike the d/dmft index, the d/dmft ratio refers to the proportion of teeth with caries in the population. Thus, the ratio for 6-year-olds indicates that, among 100 teeth with caries experience among 6-year-olds, 54.9% had untreated decay. The d/dmft ratio shows a similar pattern to that of the mean d/dmft index, with the percentage d/dmft reducing across increasingly older age groups, declining from 79.8% for the youngest children to 29.1% among 10-year-olds. The percentage of dmft accounted for by filled teeth shows the opposite trend, increasing from 16.7% for children aged 4 years old to 65.1% for 10-year-olds.

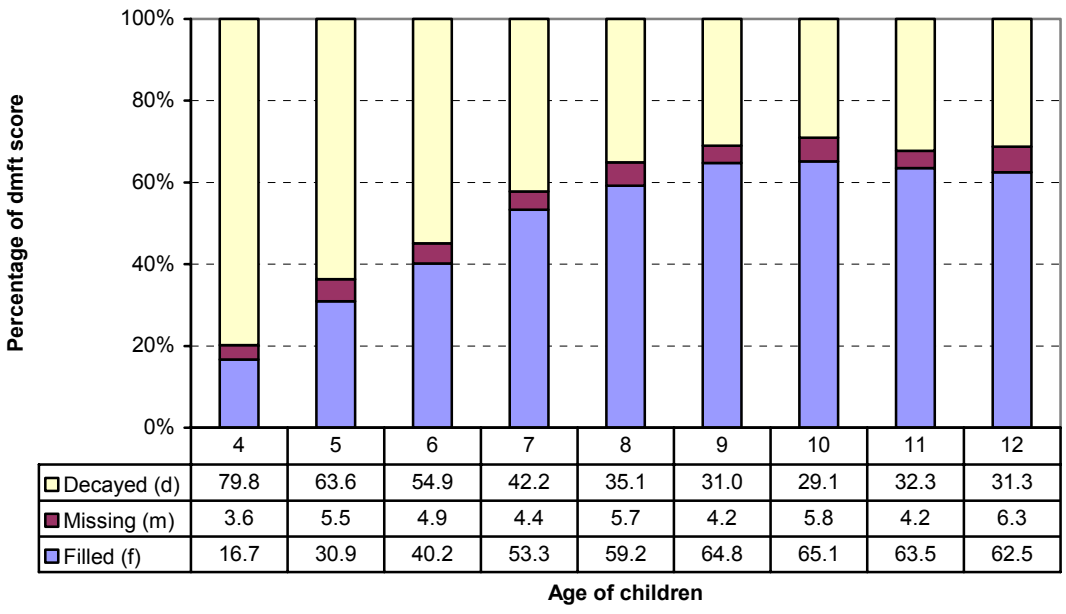


Figure 4: Percentage of dmft score represented by decayed, missing and filled components

Permanent teeth

The mean number of clinically detectable decayed teeth increased with increasing age, ranging from 0.04 among 5-year-old children up to 1.22 for children aged 16 years old (Table 5). Similarly, across the same age range, the mean number of teeth with fillings increased with age, ranging from 0.00 to 1.38. DMFT scores increased from 0.05 among 5-year-olds to 2.54 for 16-year-olds. The mean DMFT score for 12-year-olds was 1.26. Among children aged 10 to 15 years, the age-associated increase in mean DMFT was greater than the pattern observed for the younger half of the age range. This suggests either that caries activity accelerates after the age of 10, or that these older children represent a cohort with a higher historical caries experience. However, this trend is also affected by the increasing number of permanent teeth at risk, and increasing years at risk, which occur with increasing age.

The percentage of children free of clinically detectable caries in the permanent dentition (DMFT = 0) declined with increasing age of the children (Table 6). It is noteworthy that for age groups up to 13 years, more than 50% of children in any age group were free of clinical caries in the permanent dentition (DMFT = 0). The percentage of DMFT present as untreated clinically detectable decay (mean D/DMFT index) decreased from 89.6% for 5-year-olds to a low of 28.5% for 15-year-olds.

The D/DMFT ratio, which refers to the proportion of teeth in the population with caries experience having untreated decay, showed a similar trend to the D/DMFT index, declining from 66.7% for 6-year-olds to 31.6% for 15-year-olds (Figure 5). While the D/DMFT ratio declined between the ages of 10 and 15, there was an increase in the F/DMFT ratio across the same age groups.

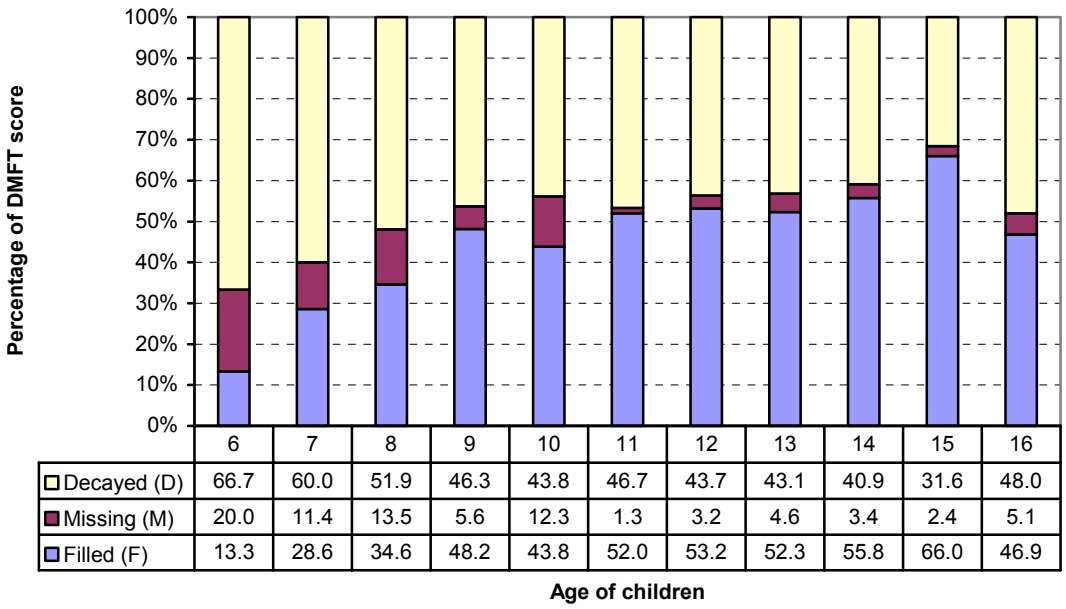
Table 5: Permanent dentition – decayed, missing and filled teeth by age

Age	Children	Decayed (D)		Missing (M)		Filled (F)		DMFT	
	n	mean	SD	mean	SD	mean	SD	mean	SD
5	664	0.04	0.29	0.01*	0.15*	0.00	0.04*	0.05	0.33
6	1,233	0.10	0.41	0.03*	0.72*	0.02	0.20	0.15	0.87
7	1,211	0.21	0.61	0.04*	0.76*	0.10	0.44	0.35	1.08
8	1,189	0.27	0.71	0.07*	1.08*	0.18	0.63	0.52	1.48
9	1,075	0.25	0.71	0.03*	0.59*	0.26	0.73	0.54	1.26
10	1,175	0.32	0.82	0.09	1.03	0.32	0.77	0.73	1.64
11	1,256	0.35	0.85	0.02	0.21	0.39	0.85	0.75	1.32
12	1,074	0.55	1.25	0.04*	0.52*	0.67	1.37	1.26	2.04
13	645	0.66	1.30	0.07	0.50	0.80	1.55	1.53	2.16
14	544	0.85	2.00	0.06	0.44	1.16	1.86	2.08	3.14
15	313	0.66	1.55	0.05	0.38	1.38	2.03	2.09	2.60
16	45	1.22	1.73	0.12*	0.49*	1.19	2.01	2.54	2.72

* relative standard error ≥ 40%

Table 6: Permanent dentition – caries experience indices by age

Age	Mean D/DMFT index		DMFT = 0	
	n	%	*n*	%
5	18	89.6	664	97.0
6	95	83.4	1,233	92.3
7	22	68.9	1,211	81.7
8	283	61.7	1,189	75.9
9	277	49.1	1,075	73.9
10	387	46.0	1,175	67.1
11	428	46.9	1,256	65.6
12	512	44.1	1,074	52.3
13	321	46.4	645	50.1
14	290	35.1	544	46.5
15	199	28.5	313	36.4
16	26	47.1	45	42.5



	6	7	8	9	10	11	12	13	14	15	16
Decayed (D)	66.7	60.0	51.9	46.3	43.8	46.7	43.7	43.1	40.9	31.6	48.0
Missing (M)	20.0	11.4	13.5	5.6	12.3	1.3	3.2	4.6	3.4	2.4	5.1
Filled (F)	13.3	28.6	34.6	48.2	43.8	52.0	53.2	52.3	55.8	66.0	46.9

Figure 5: Percentage of DMFT score represented by decayed, missing and filled components

All teeth

Untreated clinical decay in the combined deciduous and permanent dentitions (d+D ≥ 1) existed for between 28.9% and 48.6% of 5–15-year-old children (Table 7). The greatest likelihood of untreated decay occurred for children aged 8 with 48.6% having d+D of 1 or more. The most extensive levels of untreated clinical decay occurred in the youngest children with the percentage of children with d+D = 5+ generally decreasing with increasing age of the children.

More than 92% of all children in each age group had no deciduous or permanent teeth missing due to caries. However, smaller percentages avoided having fillings, and this was associated with age. An increase in the percentage of children presenting with fillings was seen up to the age of 8, a decline occurred to the age of 13, followed by a subsequent increase. Children aged 8 had the most fillings, with 52.3% of these children having at least one filling present.

There was a reasonably consistent decline in the percentage of children with no clinical caries experience in either their deciduous or permanent dentition (dmft+DMFT = 0), from 55.8% of children aged 4 years to 30.7% of 8-year-olds, with the percentage subsequently increasing to 47.1% for 11-year-olds before declining again.

Table 7: All teeth – age-specific caries experience

Age	Children	d+D = 0	d+D = 1	d+D = 2	d+D = 3	d+D = 4	d+D = 5+	m+M = 0	f+F = 0	dmft+ DMFT = 0
	n	%	%	%	%	%	%	%	%	%
4	152	61.1	11.2	6.4	7.7	4.2	9.4	97.9	86.8	55.8
5	662	59.6	11.7	6.9	5.6	4.6	11.6	96.9	80.9	52.1
6	1,233	56.9	12.0	10.6	5.0	4.7	10.8	95.4	69.1	46.5
7	1,211	52.8	14.9	13.2	7.5	4.7	7.0	94.2	55.8	36.2
8	1,185	51.4	15.8	15.7	6.5	4.0	6.7	92.3	47.7	30.7
9	1,072	57.4	18.6	12.8	5.3	3.0	2.9	96.0	50.8	36.7
10	1,173	62.5	17.0	8.9	6.1	2.4	3.1	95.2	54.1	39.4
11	1,253	65.7	17.1	9.1	5.0	1.4	1.7	98.0	59.8	47.1
12	1,074	67.2	15.4	8.4	4.3	1.8	2.8	97.9	59.6	42.7
13	643	64.9	18.5	8.7	2.8	2.6	2.5	97.4	64.0	46.1
14	544	67.4	14.9	8.1	1.9	3.1	4.7	96.7	55.9	45.6
15	313	71.1	13.6	5.4	4.3	2.3	3.3	97.5	48.3	35.2
16	45	49.7	13.5	14.8	6.2*	7.4*	7.4	93.8	51.2	37.3

* relative standard error ≥ 40%

Fissure sealants

The mean number of fissure sealants per child peaked for 10- and 14-year-olds (Table 8). Children with some clinical caries experience (DMFT = 1+) were more likely to have fissure sealants than those with no clinical caries experience (DMFT = 0) across all age groups. This is consistent with the targeting of sealants to children with greater disease experience.

Table 8: Fissure sealants – age-specific experience

Age	Children	Sealants		Students with sealants			
				DMFT = 0		DMFT ≥ 1	
	n	mean	SD	*n*	%	*n*	%
6	1,233	0.09	0.51	1,138	2.6	95	14.7
7	1,211	0.38	1.04	989	11.7	222	24.8
8	1,186	0.66	1.33	903	22.6	283	25.8
9	1,071	0.81	1.40	794	27.9	277	30.9
10	1,175	1.03	1.50	788	33.2	387	48.6
11	1,250	0.97	1.49	824	34.4	426	39.8
12	1,073	0.80	1.48	562	28.5	511	35.5
13	643	0.98	1.72	323	29.9	320	41.1
14	544	1.03	1.84	253	25.9	290	45.6
15	311	0.88	1.73	114	19.7	197	38.4
16	45	0.90	1.46	19	30.1	26	44.8

Immediate treatment needs

As can be seen from Table 9, immediate treatment needs were observed for between 2.0% and 4.5% of children aged 5–13 years. These children had a higher mean dmft and mean DMFT and, for most age groups, a higher percentage with 5 or more decayed teeth in comparison with the overall sample. These patterns of caries experience support the view that caries constitutes a substantial burden of disease for this minority of children, and that it presumably contributes to immediate needs for treatment of pain or infection.

Table 9: Immediate treatment needs – age-specific distribution

Age	Children		dmft		DMFT		d+D = 1	2	3	4	5+
	n	%	mean	SD	mean	SD	%	%	%	%	%
5	27	4.1	5.41	3.69	0.16*	0.66*	19.7	6.1*	9.9*	7.0*	50.4
6	43	3.5	5.72	4.28	0.28*	0.81*	18.4	11.9	9.2*	6.5*	44.6
7	39	3.2	5.36	3.19	0.81	1.15	24.8	17.3	10.5*	12.1*	27.6
8	36	3.0	4.30	2.80	0.32	0.83	20.7	19.2	7.4*	5.4*	27.8
9	48	4.5	3.62	3.18	1.02	1.52	28.2	14.2	7.8*	8.4*	13.9
10	37	3.1	4.03	5.06	1.81	1.93	17.2	24.9	11.1*	5.8*	23.6
11	35	2.8	1.90	3.57	2.08	1.77	32.7	18.3	9.6*	9.6*	14.5
12	32	2.9	1.66*	4.72*	1.59	1.78	32.9	17.1	0.8*	1.0*	6.8*
13	13	2.0	n.a.	n.a.	4.16	2.46	7.1*	28.3*	7.1*	25.4*	4.8*
14	5	0.9*	n.a.	n.a.	5.07*	4.63*	16.0*	18.0*	32.5*	0.0	33.5*
15	3	0.9*	n.a.	n.a.	7.62*	8.76*	0.0	0.0	0.0	0.0	47.3*
16	0	0.0*	–	–	–	–	–	–	–	–	–

* relative standard error ≥ 40%

School Dental Service examinations

Table 10 refers to the total number of examinations for children sampled during 2002 (weighted only by geographic region). The percentage of children with no previous examination in the School Dental Service was greatest among those up to 5 years of age and reduced to 4% or less for children aged 8 years or older. The inverse of this pattern can be seen for the percentage of children with a previous examination, although relatively greater percentages of the youngest and oldest children had an unknown previous examination status.

Table 10: School Dental Service examinations – age-specific distribution

Age	Children examined	Previous examination in School Dental Service		
		No	Yes	Unknown
	n	%	%	%
4	190	53.9	11.8	34.3
5	848	35.3	24.2	40.5
6	1,448	20.4	44.3	35.2
7	1,243	7.4	72.0	20.6
8	1,183	3.5	78.4	18.1
9	1,022	3.7	80.1	16.2
10	1,089	2.2	83.5	14.3
11	1,134	1.1	84.2	14.6
12	1,002	1.7	79.2	19.1
13	608	1.6	74.1	24.2
14	487	2.5	72.7	24.7
15	278	0.5*	79.2	20.3
16	46	6.8*	59.8	33.5

Among children with a previous examination (see Table 11) approximately one-third within most ages had received examinations within a period of 13–18 months previously. A re-examination interval of 7–12 months occurred for approximately 20% of the remaining children, being most frequent for children aged 5 years (50.5%). Few children had been examined in the previous 6 months, however approximately one-third of children aged 7 years or over had had their last examination more than 18 months previously.

Table 11: School Dental Service examinations – time since last visit

		Months since last visit						
Age	Children	0–6	7–12	13–18	19–24	25+	mean	SD
	n	%	%	%	%	%		
4	22	24.9	29.4	13.0*	6.5*	26.2	15.8*	11.8*
5	205	14.4	50.5	28.5	6.6	0.0	11.6	4.5
6	642	5.8	29.8	46.2	16.4	1.8	14.3	5.1
7	895	2.9	21.5	42.9	26.3	6.3	16.4	5.9
8	928	5.1	19.1	42.0	24.3	9.6	16.5	6.2
9	818	3.5	21.2	34.1	28.8	12.3	17.6	7.8
10	909	4.5	19.7	35.7	25.4	14.7	17.5	8.0
11	955	4.3	20.2	35.8	24.2	15.5	18.0	9.2
12	793	5.1	20.5	35.4	24.1	14.9	17.8	9.2
13	451	7.0	25.8	30.3	18.9	18.0	17.7	10.5
14	354	2.4	18.9	34.0	19.5	25.2	20.1	10.5
15	220	2.4*	22.5	31.1	23.7	20.2	19.2	9.4
16	27	3.3*	33.3	9.6*	29.5	24.3	17.9	7.9*

* relative standard error ≥ 40%

Caries experience by Health Service District

Tables 12 and 13 describe the mean caries experience in the 5–6-year-old deciduous and 12-year-old permanent dentition respectively by Health Service District. Data are not weighted and reflect the actual children seen in each HSD during 2002. Results have not been reported in many HSDs due to the small numbers of children sampled.. Specifically, areas with less than 30 children sampled in an age group are indicated by an asterisk and mean caries experience scores for these areas would in no way be interpreted as representative of the population of children from these HSDs.

There were often large differences between HSDs in both dentitions.

Table 12: Five–six-year-old deciduous caries experience by Health Zone by Health Service District

		Decay (d)		Missing (m)		Filled (f)		dmft	
Health Service District	***n***	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
					Northern Zone				
Bowen	30	1.63	2.28	0.00	0.00	1.43	2.75	3.07	3.99
Cairns	57	1.30	2.28	0.51	2.51	0.63	1.48	2.44	3.82
Charters Towers*	9	. .	. .	. .	. .	. .	. .	. .	. .
Innisfail*	9	. .	. .	. .	. .	. .	. .	. .	. .
Mackay	102	1.18	1.82	0.08	0.34	1.02	1.74	2.27	3.07
Moranbah*	24	. .	. .	. .	. .	. .	. .	. .	. .
Mount Isa	36	1.75	2.09	0.00	0.00	1.22	1.62	2.97	3.03
Tablelands*	4	. .	. .	. .	. .	. .	. .	. .	. .
Torres Strait*	11	. .	. .	. .	. .	. .	. .	. .	. .
Townsville	139	1.35	2.60	0.07	0.33	0.55	1.47	1.97	3.22
					Central Zone				
Banana*	2	. .	. .	. .	. .	. .	. .	. .	. .
Brisbane North	230	1.13	2.28	0.07	0.66	0.66	1.71	1.86	3.17
Bundaberg*	0	. .	. .	. .	. .	. .	. .	. .	. .
Central West*	3	. .	. .	. .	. .	. .	. .	. .	. .
Fraser Coast*	1	. .	. .	. .	. .	. .	. .	. .	. .
Gladstone	30	1.73	3.06	0.07	0.25	0.67	1.52	2.47	4.02
Gympie	35	1.91	2.44	0.40	1.14	1.14	2.26	3.46	3.95
Redcliffe/Caboolture	33	0.82	0.63	0.15	0.87	0.94	1.92	1.91	2.94
Rockhampton	60	2.63	3.53	0.58	1.64	1.40	2.15	4.62	4.36
South Burnett*	1	. .	. .	. .	. .	. .	. .	. .	. .
Sunshine Coast	125	1.43	2.43	0.28	1.18	0.75	1.64	2.46	3.52
					Southern Zone				
Bayside	34	1.29	2.68	0.00	0.00	1.00	2.34	2.29	3.84
Charleville*	6	. .	. .	. .	. .	. .	. .	. .	. .
Gold Coast	1,514	1.28	2.21	0.06	0.42	0.82	1.75	2.16	3.20
Logan/Beaudesert	69	1.42	2.42	0.14	0.79	0.86	2.04	2.42	3.72
Northern Downs*	9	. .	. .	. .	. .	. .	. .	. .	. .
QEII	168	1.75	2.68	0.05	0.26	1..04	2.07	2.83	3.67
Roma*	0	. .	. .	. .	. .	. .	. .	. .	. .
Southern Downs	35	2.29	3.06	0.29	1.53	0.43	1.12	3.00	4.02
Toowoomba	90	1.16	2.04	0.04	0.26	0.94	1.71	2.14	3.06
West Moreton	93	1.30	2.27	0.11	0.70	0.87	1.77	2.28	3.22

* Fewer than 30 subjects sampled, results not presented

Table 13: Twelve-year-old permanent caries experience by Health Zone by Health Service District

		Decay (D)		Missing (M)		Filled (F)		DMFT	
Health Service District	***n***	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
					Northern Zone				
Bowen*	6	. .	. .	. .	. .	. .	. .	. .	. .
Cairns	17	. .	. .	. .	. .	. .	. .	. .	. .
Charters Towers*	11	. .	. .	. .	. .	. .	. .	. .	. .
Innisfail*	6	. .	. .	. .	. .	. .	. .	. .	. .
Mackay	46	0.50	1.57	0.00	0.00	0.43	0.96	0.93	1.90
Moranbah*	8	. .	. .	. .	. .	. .	. .	. .	. .
Mount Isa	33	1.24	2.09	0.00	0.00	0.33	0.82	1.58	2.62
Tablelands*	4	. .	. .	. .	. .	. .	. .	. .	. .
Townsville	77	0.44	0.93	0.23	2.05	0.70	1.15	1.38	2.65
					Central Zone				
Banana*	1	. .	. .	. .	. .	. .	. .	. .	. .
Brisbane North	76	0.59	1.4	0.00	0.00	0.68	1.09	1.28	2.15
Bundaberg*	0	. .	. .	. .	. .	. .	. .	. .	. .
Central West*	1	. .	. .	. .	. .	. .	. .	. .	. .
Fraser Coast*	1	. .	. .	. .	. .	. .	. .	. .	. .
Gladstone*	17	. .	. .	. .	. .	. .	. .	. .	. .
Gympie*	8	. .	. .	. .	. .	. .	. .	. .	. .
Redcliffe/Caboolture	30	0.50	1.08	0.00	0.00	1.07	2.16	1.57	2.46
Rockhampton	34	0.26	0.67	0.03	0.17	0.47	1.05	0.76	1.23
South Burnett*	0	. .	. .	. .	. .	. .	. .	. .	. .
Sunshine Coast	62	0.42	0.92	0.11	0.63	0.90	1.88	1.44	2.41
					Southern Zone				
Bayside*	11	. .	. .	. .	. .	. .	. .	. .	. .
Charleville*	2	. .	. .	. .	. .	. .	. .	. .	. .
Gold Coast	1,189	0.40	0.95	0.04	0.53	0.58	1.12	1.02	1.67
Logan/Beaudesert	38	0.95	1.68	0.05	0.23	0.95	1.37	1.95	2.32
Northern Downs*	5	. .	. .	. .	. .	. .	. .	. .	. .
QEII	73	0.51	1.43	0.00	0.00	0.90	1.99	1.41	2.46
Roma*	0	. .	. .	. .	. .	. .	. .	. .	. .
Southern Downs*	20	. .	. .	. .	. .	. .	. .	. .	. .
Toowoomba	39	1.10	2.01	0.00	0.00	0.82	1.28	1.92	2.59
West Moreton*	25	. .	. .	. .	. .	. .	. .	. .	. .

* Fewer than 30 subjects sampled, results not presented

Selected trends, 1998–2002

Presented below is a table and a series of figures of selected 5-year trends across the period 1998–2002. Trends are provided for sample size, deciduous and permanent caries experience, fissure sealants and time since last visit.

Trends in the number of decayed, missing and filled deciduous teeth across 1998–2002 indicate an increase in disease experience (Figures 6–9). This increase is most apparent for children aged up to 8 years of age and is seen most prominently in relation to the mean number of decayed teeth across the 5-year period. Trends for 9- and 10-year-olds are for little change across the period. While the percentage of children with dmft = 0 does not change appreciably for 9-year-olds there appears to be a decline for children aged 7 and 8 years old (Figure 10).

Changes in the mean number of decayed, missing and filled permanent teeth across the period 1998–2002 are less pronounced than changes observed in the deciduous dentition (Figures 11–13). Some increases in decayed teeth are offset by reductions in filled teeth. The percentage of children with DMFT = 0 reduces slightly for younger children between 1998 and 2002, but few obvious trends are apparent for children aged 10 years and older (Figure 14).

In the combined deciduous and permanent dentitions there have been reductions in the percentages of a number of age groups with no decayed, no missing and no filled teeth between 1998 and 2002 (Figures 15, 17 and 18). The percentage of children with higher decay experience ($d+D \geq 4$) has increased between 1998 and 2002 (Figure 16).

In general, the mean number of fissure sealed teeth across age groups increased between 1998 and 2002 with changes most marked for children aged 9 years and over (Figure 19).

Mean time since children last visited the School Dental Service in Queensland continues to increase with the average time longer in 2002 for every age group than in any preceding year (Figure 20).

Table 14: Sample size by region, 1998–2002

Region	1998	1999	2000	2001	2002
Bowen	99	108	111	140	107
Cairns	7	247	162	391	252
Cape York	0	41	0	0	0
Charters Towers	34	43	48	26	74
Innisfail	50	122	184	164	65
Mackay	557	652	561	432	472
Moranbah	156	94	103	75	99
Mount Isa	60	82	134	100	207
Tablelands	1	64	68	105	25
Torres Strait	0	0	2	0	35
Townsville	654	761	908	822	744
Banana	62	73	37	37	15
Brisbane North	1,520	1,138	1,193	1,192	1,020
Bundaberg	12	2	3	5	0
Central Highland	183	59	19	11	0
Central West	0	0	0	3	35
Fraser Coast	0	0	6	3	5
Gladstone	142	65	63	114	158
Gympie	225	237	238	188	176
North Burnett	0	1	0	0	0
Redcliffe/Caboolture	322	360	27	308	213
Rockhampton	150	263	140	379	328
South Burnett	6	17	18	26	2
Sunshine Coast	631	823	572	655	627
Bayside	1,501	890	526	284	177
Charleville	30	75	28	42	29
Gold Coast	3,041	4,010	3,744	3,591	3,069
Logan/Beaudesert	183	814	521	595	357
Northern Downs	92	80	85	225	82
QEII	1,344	1,406	1,275	1,239	839
Roma	1	25	26	29	5
Southern Downs	283	367	262	286	209
Toowoomba	652	608	393	717	418
West Moreton	444	354	289	354	331
Unknown	430	274	204	225	402
Total	*12,427*	*13,708*	*11,950*	*12,763*	*10,577*

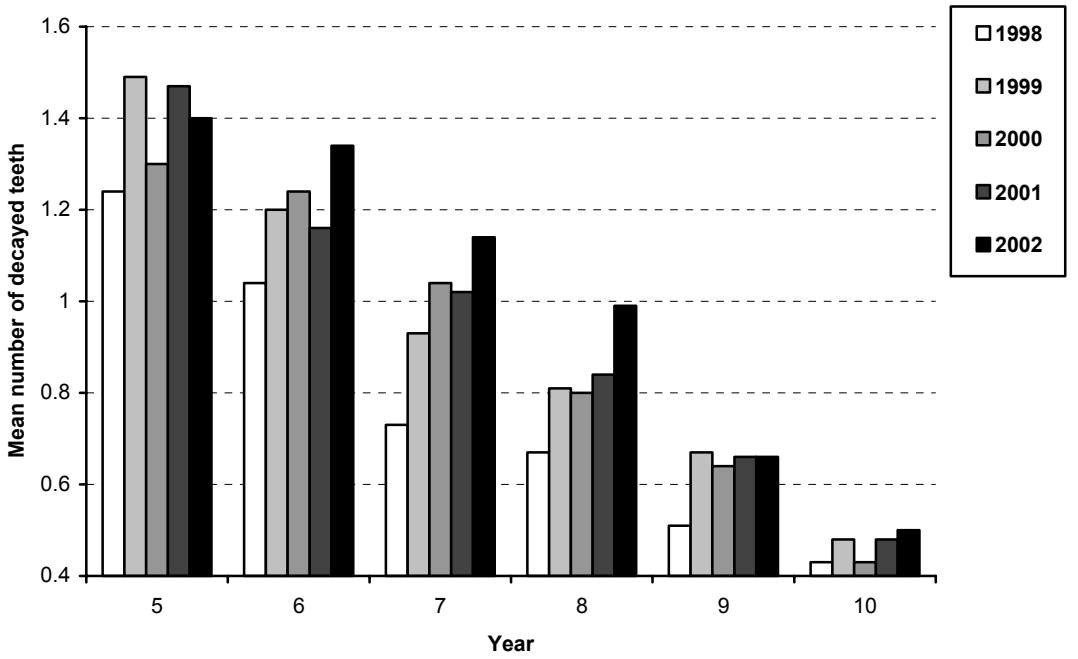


Figure 6: Mean decayed deciduous teeth for 5–10-year-old children in Queensland from 1998 to 2002

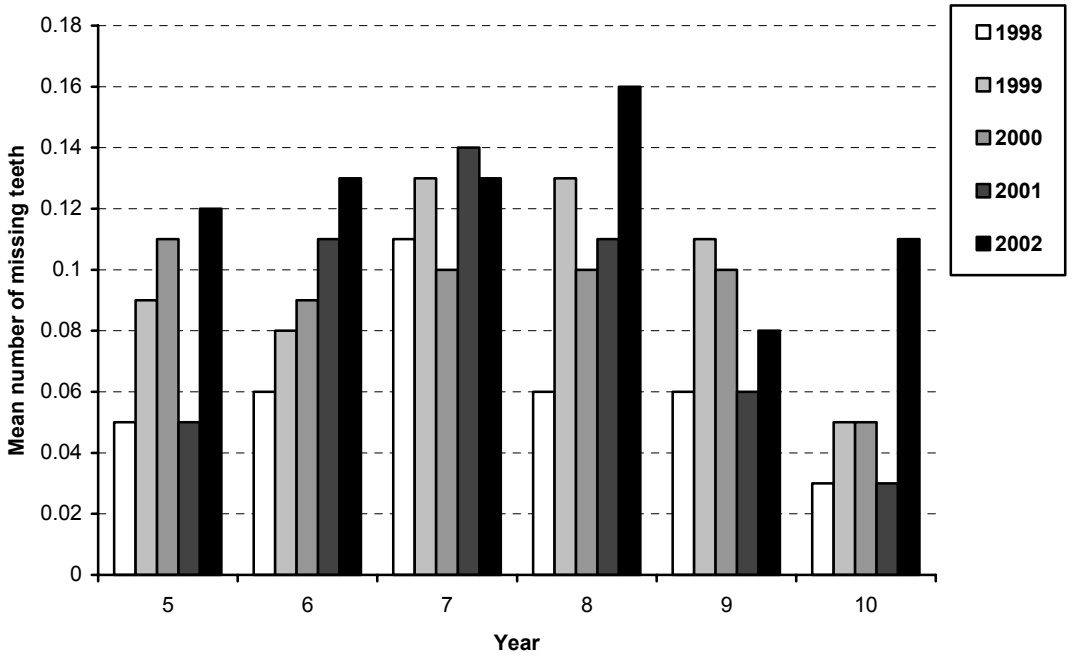


Figure 7: Mean missing deciduous teeth for 5–10-year-old children in Queensland from 1998 to 2002

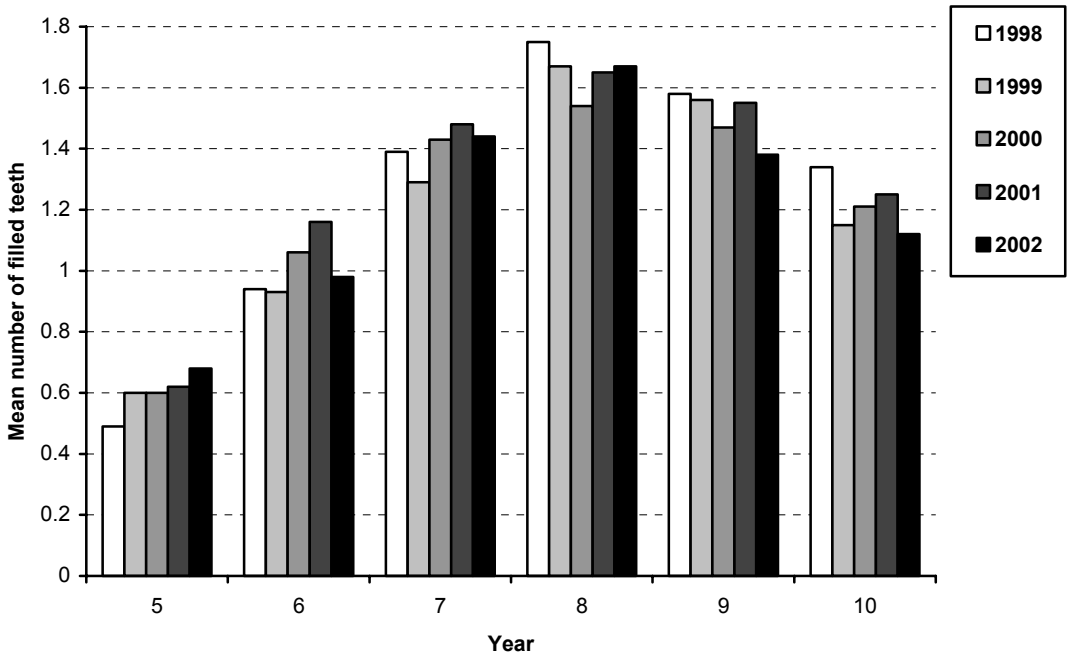


Figure 8: Mean filled deciduous teeth for 5–10-year-old children in Queensland from 1998 to 2002

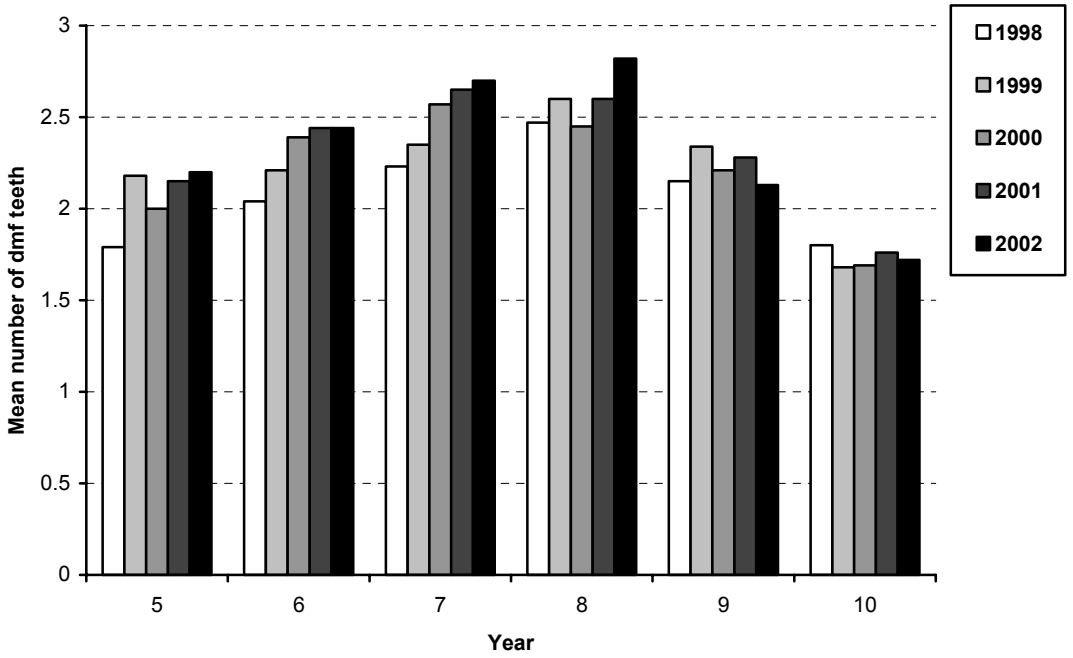


Figure 9: Mean decayed, missing and filled deciduous teeth for 5–10-year-old children in Queensland from 1998 to 2002

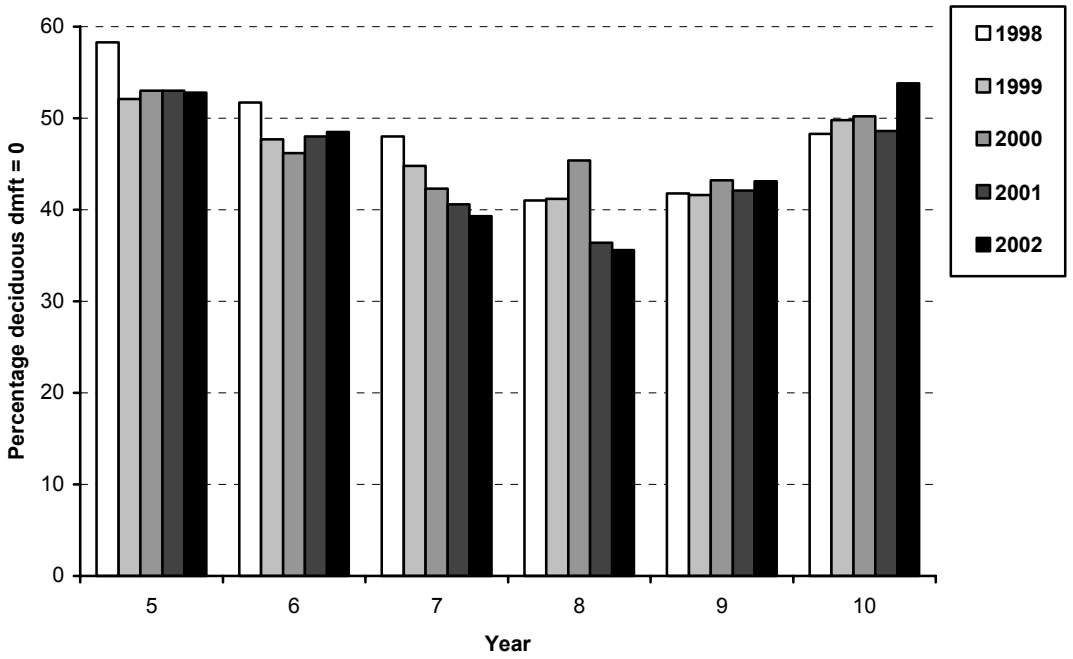


Figure 10: Percentage dmft = 0 for 5–10-year-old children in Queensland from 1998 to 2002

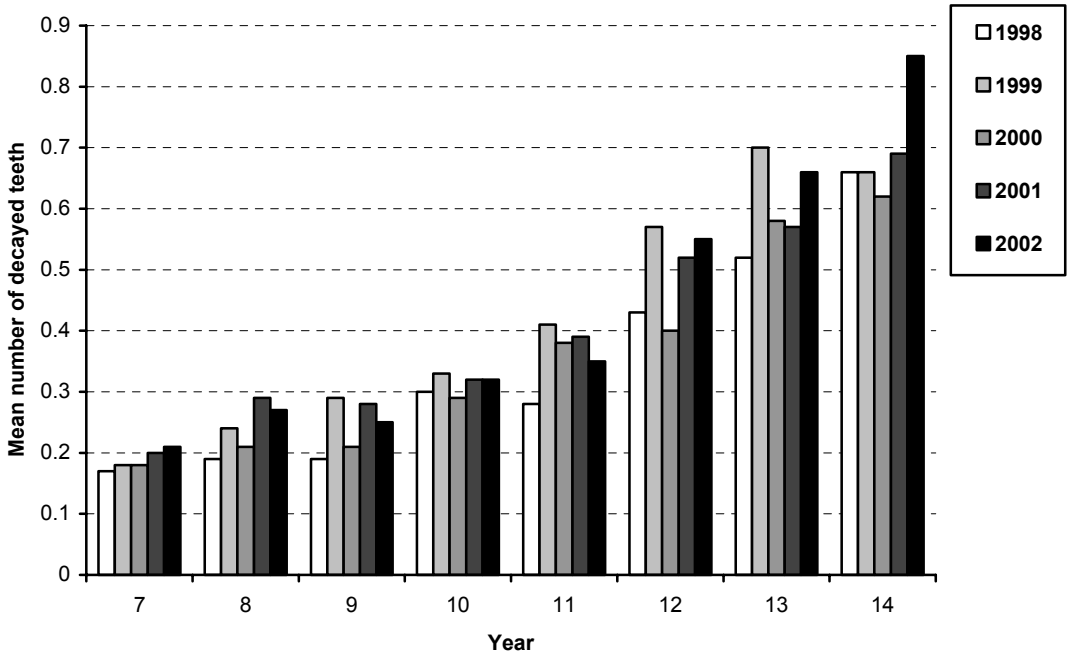


Figure 11: Mean decayed permanent teeth for 7–14-year-old children in Queensland from 1998 to 2002

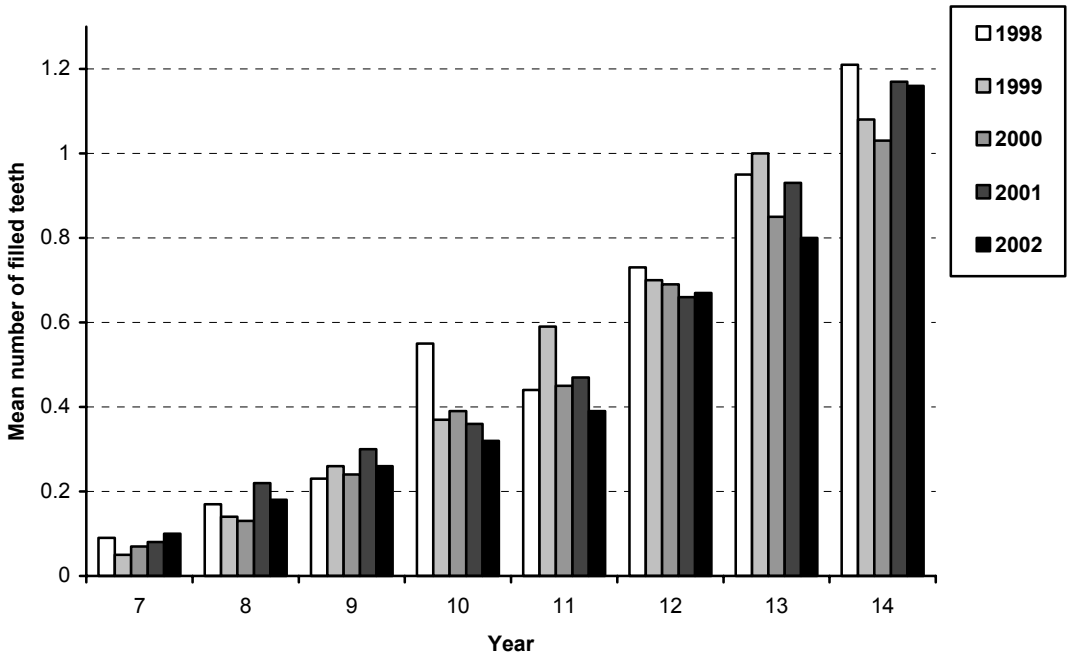


Figure 12: Mean filled permanent teeth for 7–14-year-old children in Queensland from 1998 to 2002

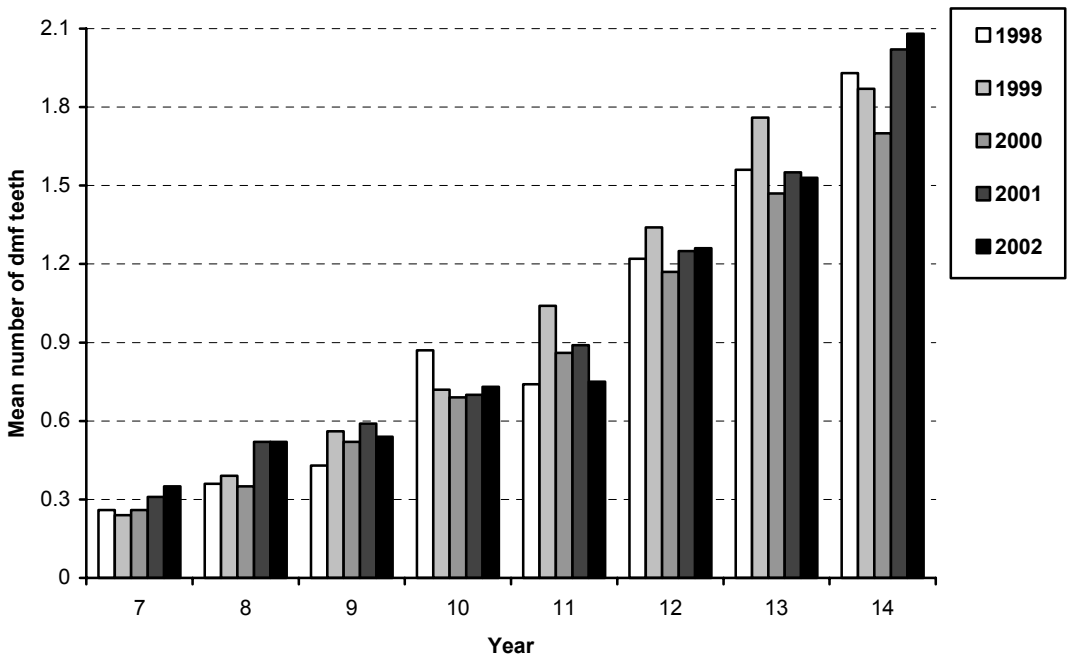


Figure 13: Mean decayed, missing and filled permanent teeth for 7–14-year-old children in Queensland from 1998 to 2002

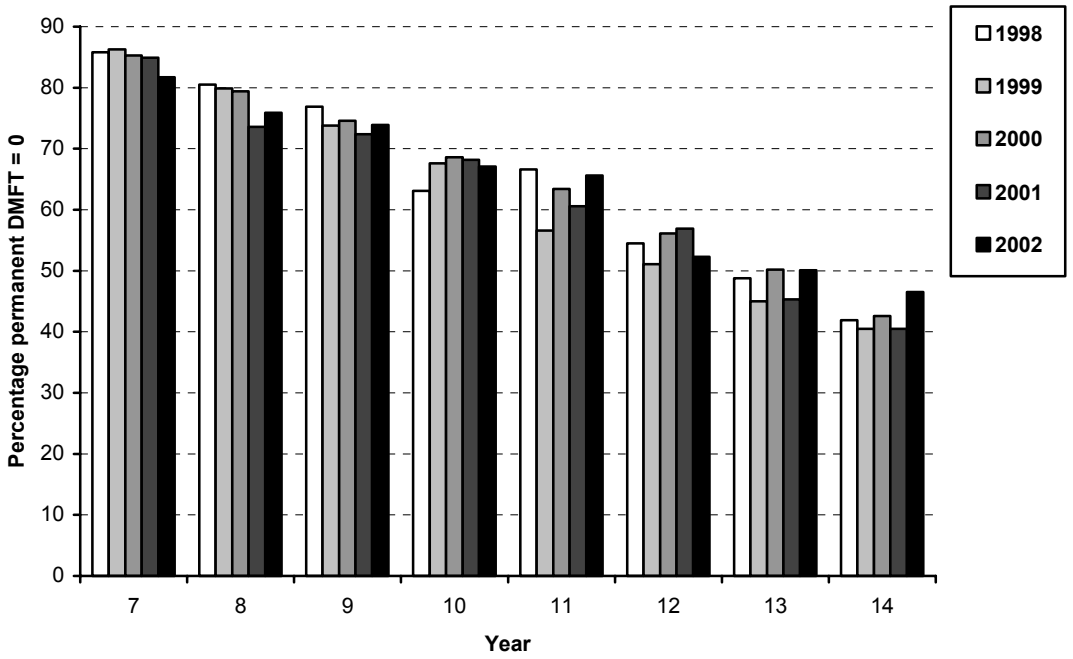


Figure 14: Percentage permanent DMFT = 0 for 7–14-year-old children in Queensland from 1998 to 2002

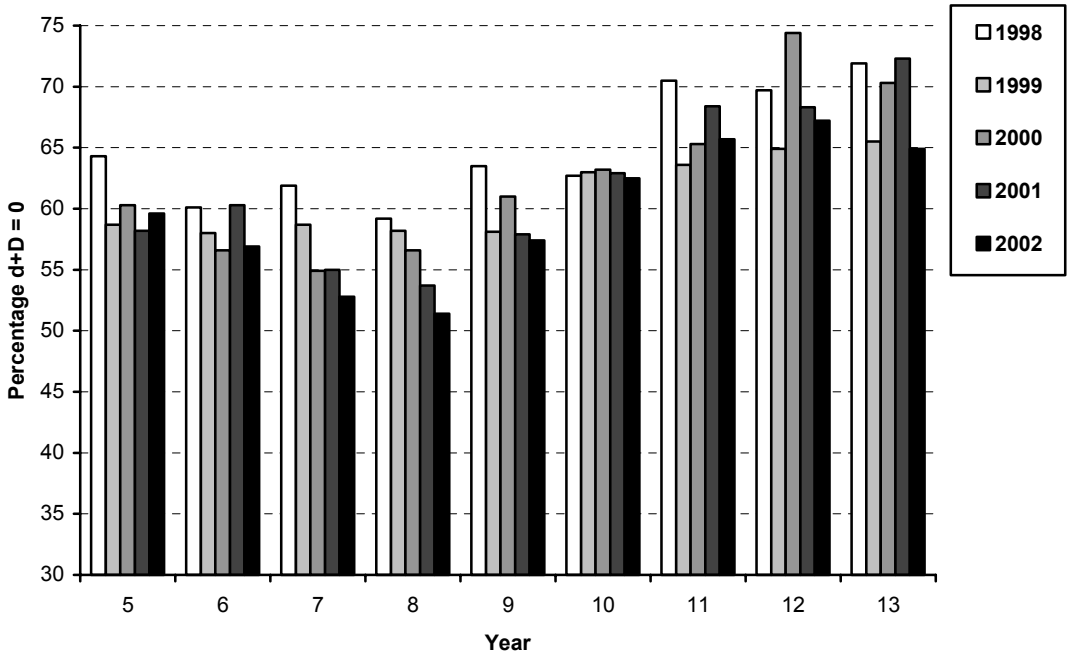


Figure 15: Percentage d+D = 0 for 5–13-year-old children in Queensland from 1998 to 2002

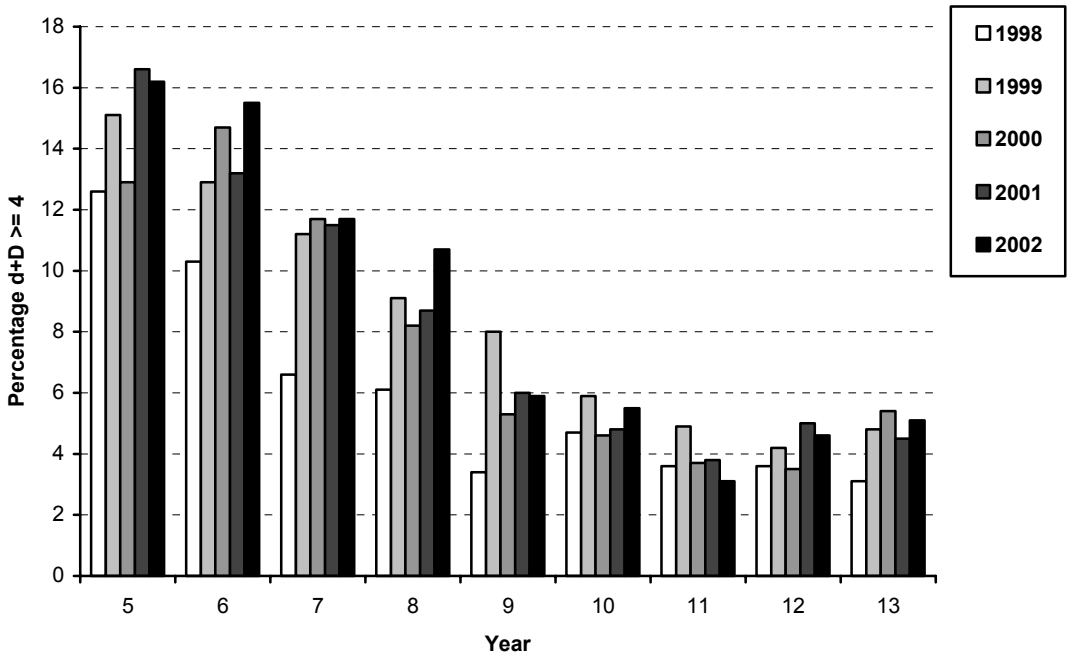


Figure 16: Percentage d+D >= 4 for 5–13-year-old children in Queensland from 1998 to 2002

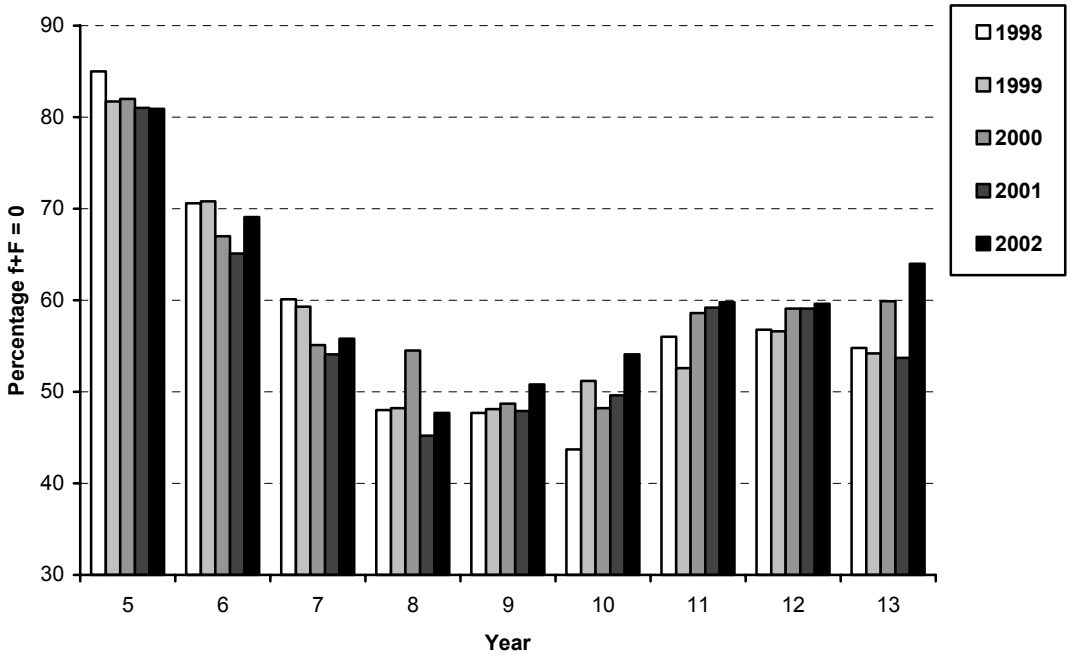


Figure 17: Percentage f+F = 0 for 5–13-year-old children in Queensland from 1998 to 2002

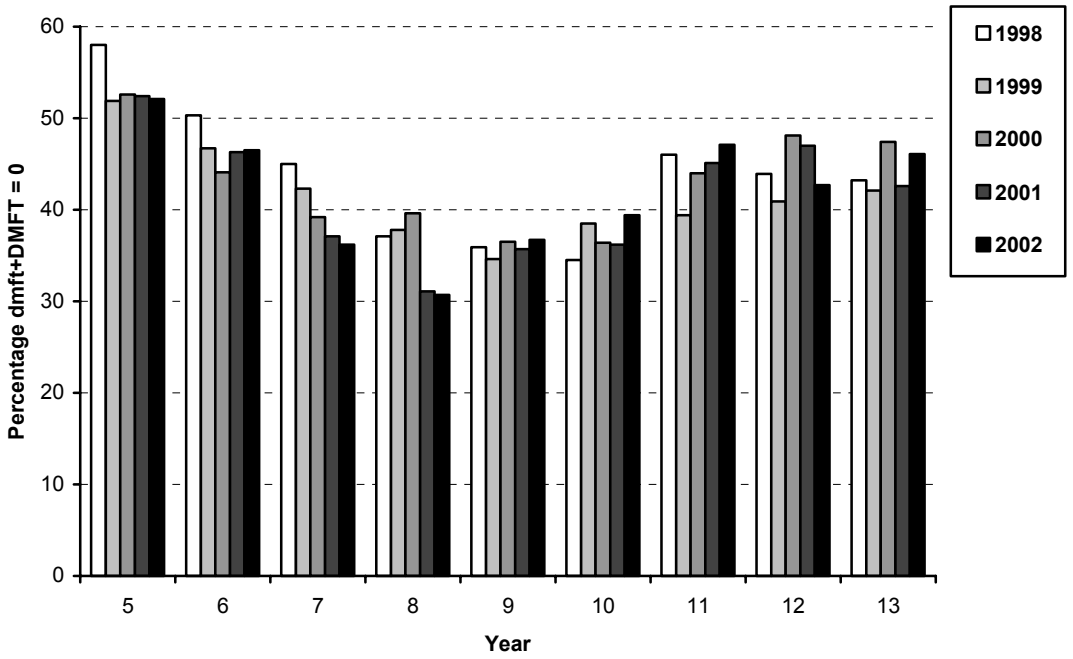


Figure 18: Percentage dmft+DMFT = 0 for 5–13-year-old children in Queensland from 1998 to 2002

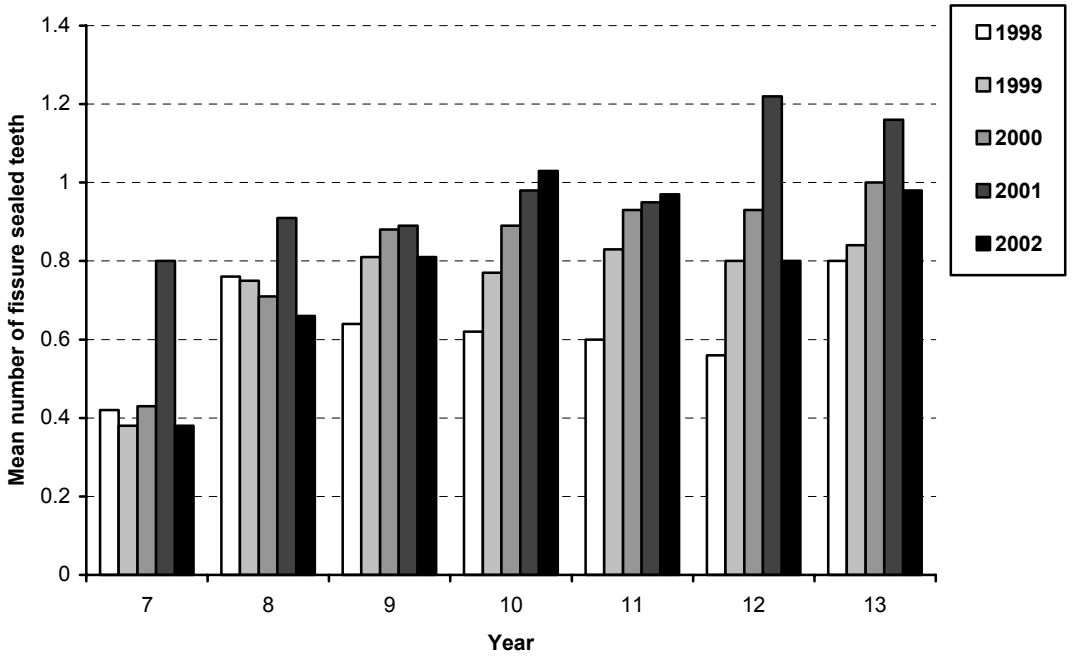


Figure 19: Mean fissure sealed teeth for 7–13-year-old children in Queensland from 1998 to 2002

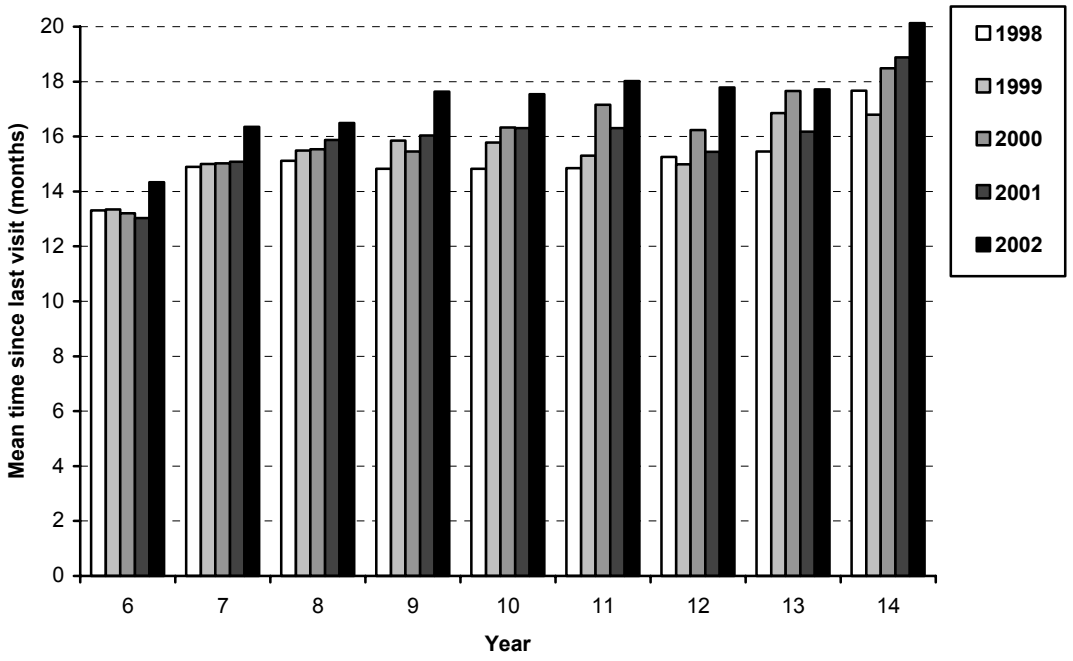


Figure 20: Mean time since last visit for 6–14-year-old children in Queensland from 1998 to 2002

References

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