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The Child Dental Health Survey, Queensland 2001

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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 differences between the 2000 and 2001 findings. 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), an external 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 2001 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, QEII, Brisbane North, Townsville, Toowoomba, Sunshine Coast, and Logan/Beaudesert HSDs (69.0%). There were small numbers of children sampled from Bundaberg, Central Highland, Central West, Charleville, Charters Towers, Fraser Coast, Roma, and South Burnett HSDs. Some districts failed to sample any children (Cape York, Torres Strait and North Burnett). The percentage change in the number of children sampled in each HSD between 2000 and 2001 is shown in Figure 2.

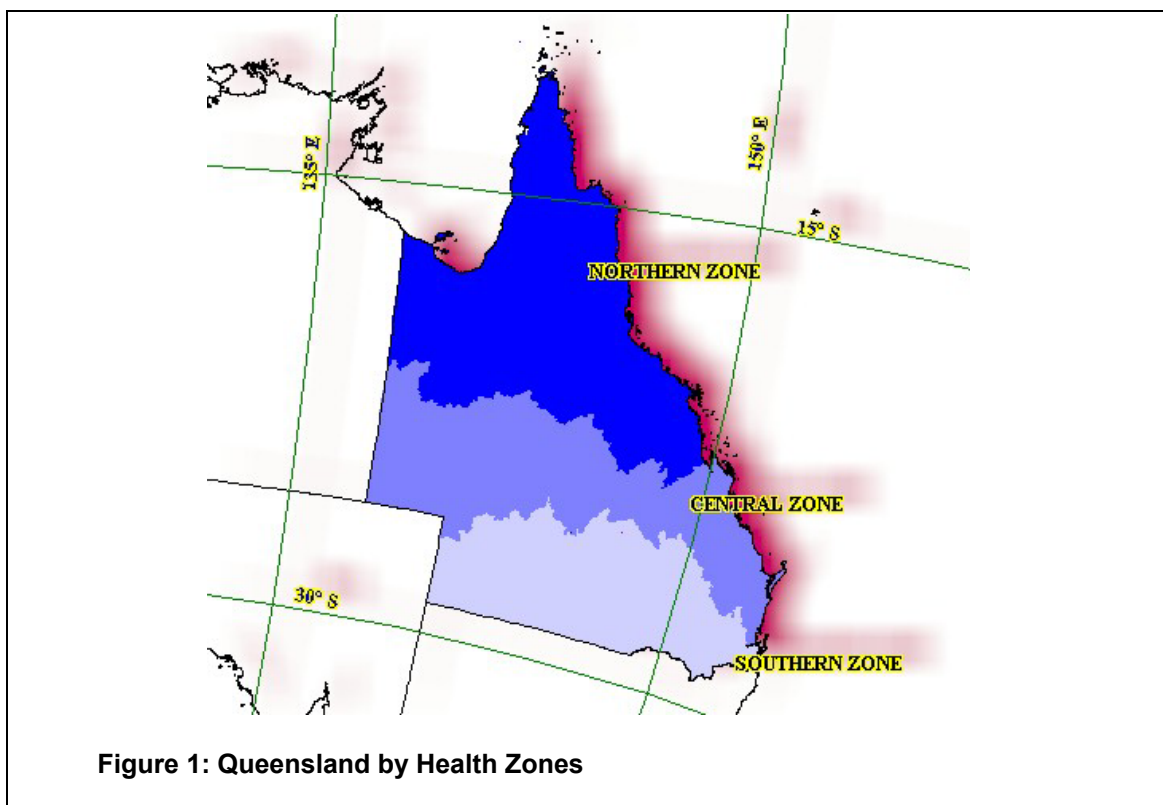


Table 1: Number of children sampled and Estimated Resident Population (ERP) by Health Zone and District

Health Services District	<i>n</i>	Most common sampling ratio	ERP	Per cent of ERP sampled
Northern Zone				
Bowen	140	1 : 15	4,660	3.00
Cairns	391	1 : 15	18,784	2.08
Cape York	0	N/A	1,689	0.00
Charters Towers	26	1 : 15	2,536	1.03
Innisfail	164	1 : 15	4,902	3.35
Mackay	432	1 : 15	17,027	2.54
Moranbah	75	1 : 15	3,578	2.10
Mount Isa	100	1 : 15	5,452	1.83
Tablelands	105	1 : 15	6,636	1.58
Torres Strait	0	N/A	2,246	0.00
Townsville	822	1 : 15	23,491	3.50
Central Zone				
Banana	37	1 : 15	2,623	1.41
Brisbane North	1,192	1 : 15	64,185	1.86
Bundaberg	5	1 : 15	10,883	0.05
Central Highland	11	1 : 15	4,868	0.23
Central West	3	1 : 15	1,821	0.16
Fraser Coast	3	1 : 15	11,581	0.03
Gladstone	114	1 : 15	6,940	1.64
Gympie	188	1 : 15	5,190	3.62
North Burnett	0	N/A	1,449	0.00
Redcliffe/Caboolture	308	1 : 15	26,230	1.17
Rockhampton	379	1 : 15	14,641	2.59
South Burnett	26	1 : 15	4,908	0.53
Sunshine Coast	655	1 : 15	35,025	1.87
Southern Zone				
Bayside	284	1 : 15	25,990	1.09
Charleville	42	1 : 15	1,383	3.04
Gold Coast*	3,591	1 : 1	42,746	8.40
Logan/Beaudesert	595	1 : 15	46,473	1.28
Northern Downs	225	1 : 15	4,743	4.74
QEII	1,239	1 : 15	53,935	2.30
Roma	29	1 : 15	2,652	1.09
Southern Downs	286	1 : 15	8,666	3.30
Toowoomba	717	1 : 15	20,438	3.51
West Moreton	354	1 : 15	26,404	1.34
Unknown	225	N/A	0	N/A

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

Note: ERP obtained from ABS, Population by age and sex, Queensland, 30 June 2000.

Data items

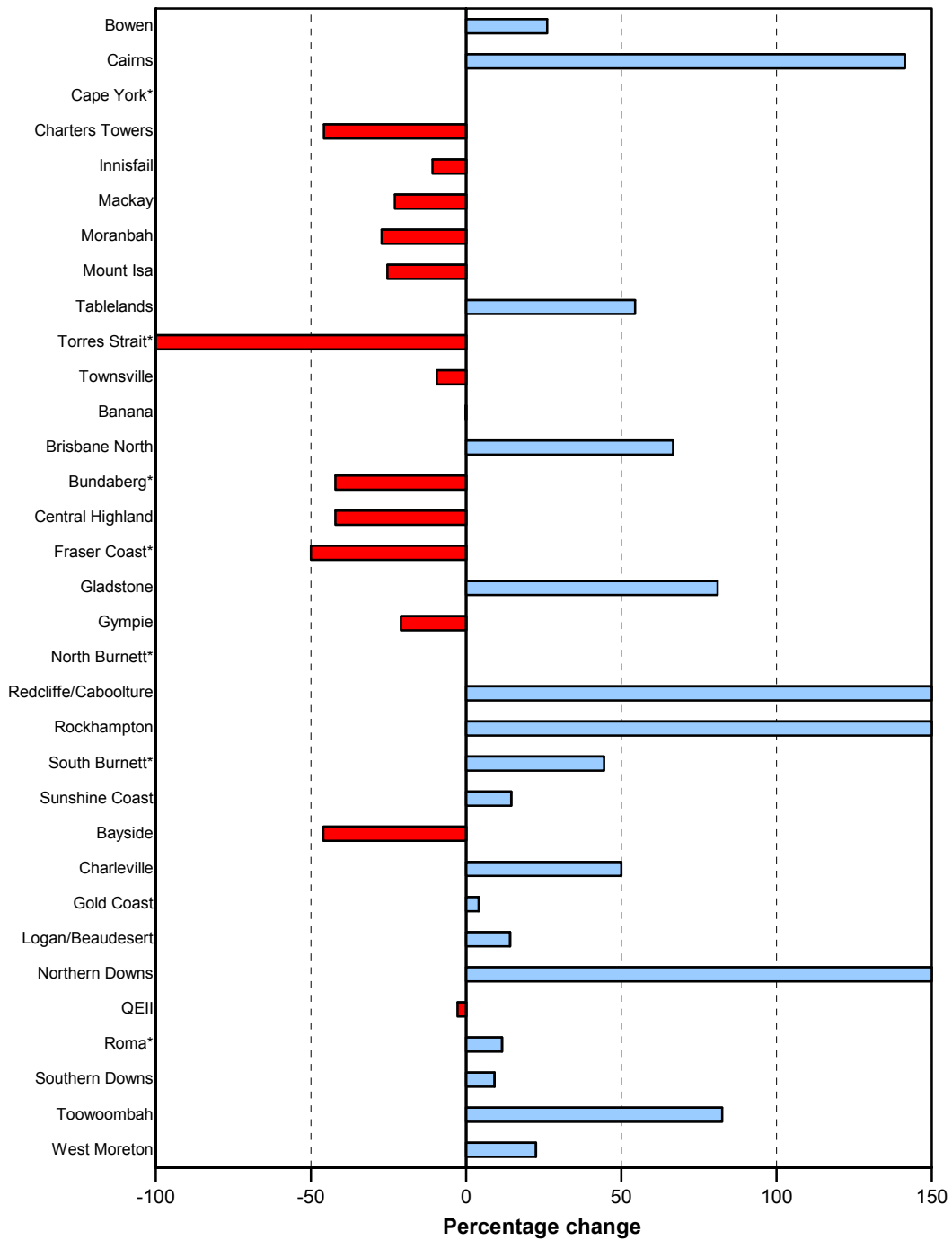
Demographic and service provision data items include the child's age, sex and the date of the current and previous examination. Provision was made for recording country of birth and the indigenous status of each child and mother.

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 or 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

Prior to OMR scanning a check was made for missing or erroneous data. 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.



* Health Service District had no or very few children sampled in 2000.

Figure 2: Percentage change in number of children sampled between 2000 and 2001 by Health Service District

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.

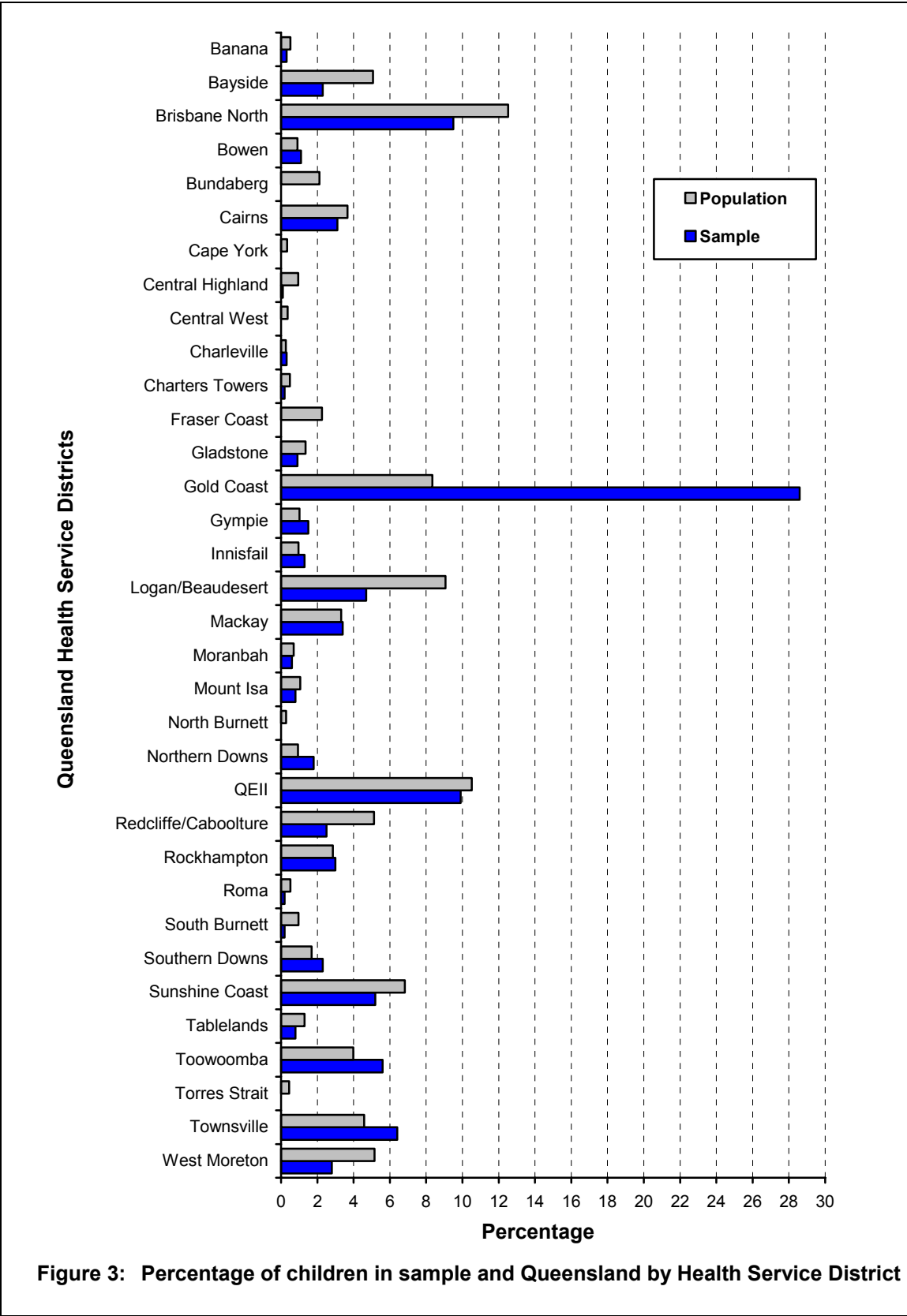
A further aspect of the analysis was the weighting of unit records to reflect the sampling procedure. This was necessary because children were sampled using different probabilities of selection. The probability was 1.0 (i.e., selected by full enumeration) for children with an unknown date of birth throughout 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 5-14-year-olds in each Health Service Division (HSD) in Queensland. District estimates were computed using ERP as at 30 June 2000 by Statistical Local Areas, as published by the Australian Bureau of Statistics (2000), where were mapped to HSDs. 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 2001. 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% and 50% of 5-12-year-olds and 13-15-year-olds respectively 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 were not weighted by region, but remained in the data set.

Demographic composition of the sample

A total number of 12,763 individual children were sampled during 2001 (see Table 2). The majority of children in the complete sample were aged between 5 and 15 years inclusive (96.9%). There were very small numbers of children aged less than 4 or greater than 15 years. In the weighted distribution, males and females were represented in approximately equal numbers. There was little difference between the average age of males (mean = 9.04) and that of females (mean = 8.85).

Table 2: Demographic composition of the sample

Age (years)	Known date of birth			Age only known			Weighted no. of children		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
1	2	5	7	0	0	0	2	7	9
2	2	11	13	0	0	0	2	16	18
3	5	6	11	0	0	0	4	6	10
4	154	137	291	1	0	1	145	142	287
5	486	486	976	2	6	8	502	504	1,010
6	840	928	1,778	445	547	992	641	755	1,405
7	519	568	1,089	9	6	15	689	751	1,443
8	496	553	1,053	2	2	4	667	714	1,388
9	485	504	990	4	8	12	650	684	1,335
10	548	512	1,061	4	3	7	765	685	1,451
11	493	504	1,002	6	9	15	691	667	1,363
12	626	608	1,237	412	401	814	547	481	1,030
13	312	254	568	4	2	6	433	333	768
14	246	217	463	1	0	1	405	310	715
15	161	140	301	0	1	1	235	227	462
16	20	20	40	0	0	0	31	30	61
17	4	3	7	0	0	0	4	3	7
Total	5,399	5,456	10,887	890	985	1,876	6,414	6,316	12,763

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 or less 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.

Country of birth and Indigenous status

The birthplace/Indigenous status of 77.2% of children was missing or recorded as not known. Australian-born (non-Indigenous) children represented 94.4% of the remainder of the sample (21.6% of the total sample). Children identified as Australian-born Indigenous comprised 0.9% of the total sample and 4.1% 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 1.47 for children aged 5 years of age to 0.14 for 12-year-old children. In contrast, the mean number of filled teeth increased with age, peaking at 1.65 for 8-year-olds before declining to 0.36 for 12-year-olds. Mean dmft scores increased from 1.86 for children aged up to and including 4 years to 2.65 for 7-year-olds before declining to 0.52 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 81.0% for children aged up to and including 4 years of age to 28.2% for 11-year-olds. Between the ages of 5 and 10 the percentage of children free of clinical caries (dmft = 0) ranged from a high of 53.0% among children aged 5 years to a low of 36.4% among 8-year-olds.

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

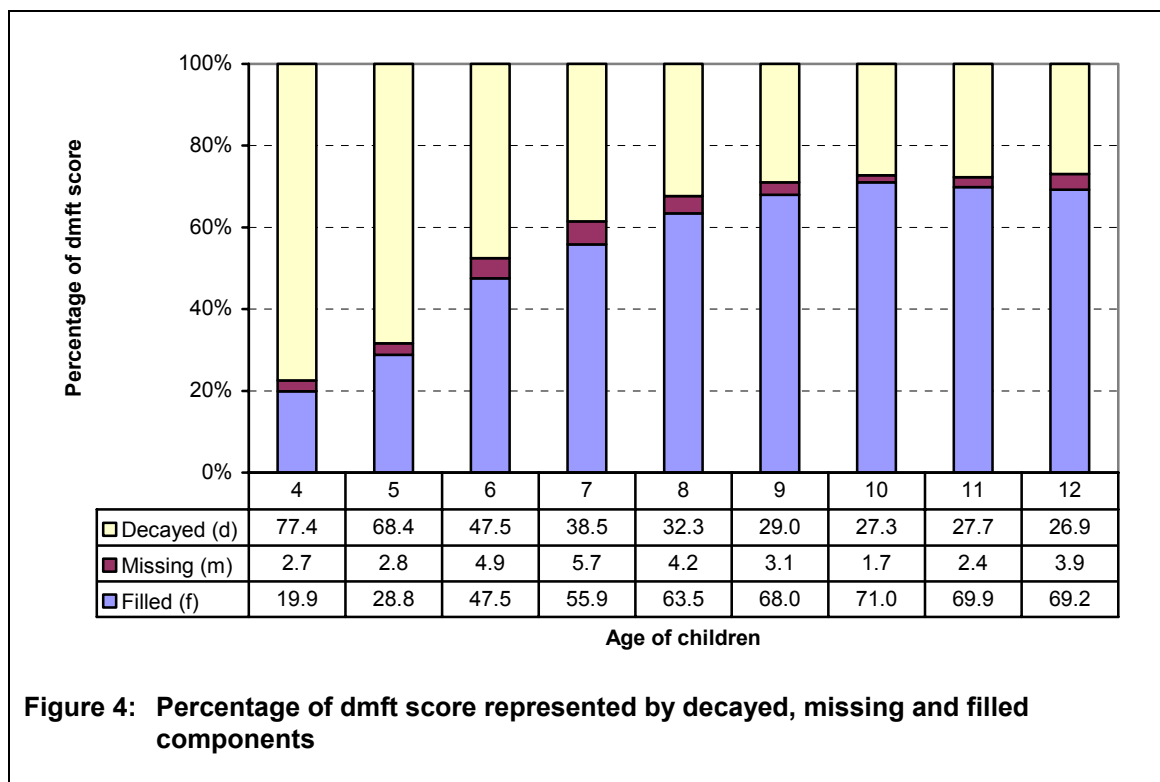
Age	Children	Decayed (d)		Missing (m)		Filled (f)		dmft	
	<i>n</i>	mean	SD	mean	SD	mean	SD	mean	SD
≤4	325	1.44	2.59	0.05*	0.44*	0.37	1.26	1.86	3.05
5	1,010	1.47	2.53	0.05	0.37	0.62	1.60	2.15	3.33
6	1,405	1.16	2.05	0.11	0.67	1.16	2.06	2.44	3.38
7	1,443	1.02	1.77	0.14	0.71	1.48	2.16	2.65	3.24
8	1,388	0.84	1.40	0.11	0.64	1.65	2.15	2.60	2.95
9	1,335	0.66	1.18	0.06	0.42	1.55	2.06	2.28	2.68
10	1,451	0.48	1.02	0.03	0.24	1.25	1.87	1.76	2.39
11	1,363	0.23	0.69	0.02	0.27	0.58	1.28	0.83	1.61
12	1,030	0.14	0.49	0.01*	0.19*	0.36	0.97	0.52	1.27

* relative standard error ≥ 40%

Table 4: Deciduous dentition – caries experience indices by age

Age	Mean d/dmft index		dmft = 0	
	<i>n</i>	%	<i>n</i>	%
≤4	139	81.0	325	57.0
5	475	72.0	1,010	53.0
6	731	50.7	1,405	48.0
7	857	41.1	1,443	40.6
8	883	34.8	1,388	36.4
9	773	31.8	1,335	42.1
10	745	29.7	1,451	48.6
11	429	28.2	1,363	68.6
12	209	30.3	1,030	79.7

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, 47.5% 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 77.4% for the youngest children to 27.3% among 10-year-olds. The percentage of dmft accounted for by filled teeth shows the opposite trend, increasing from 19.9% for children aged up to including 4 years old to 71.0 for 10-year-olds.



Permanent teeth

The mean number of clinically detectable decayed teeth increased with increasing age (see Table 5), ranging from 0.03 among 5-year-old children up to 0.89 for children aged 15 years old. Similarly, across the same age range, the mean number of teeth with fillings increased with age, ranging from 0.00 to 1.72. DMFT scores increased from 0.03 among 5-year-olds to 2.72 for 15-year-olds. The mean DMFT score for 12-year-olds was 1.25. 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 12 years, more than 55% 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 89.3% for 5-year-olds to a low of 32.3% for 13-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 64.5% for 7-year-olds to 32.7% 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.

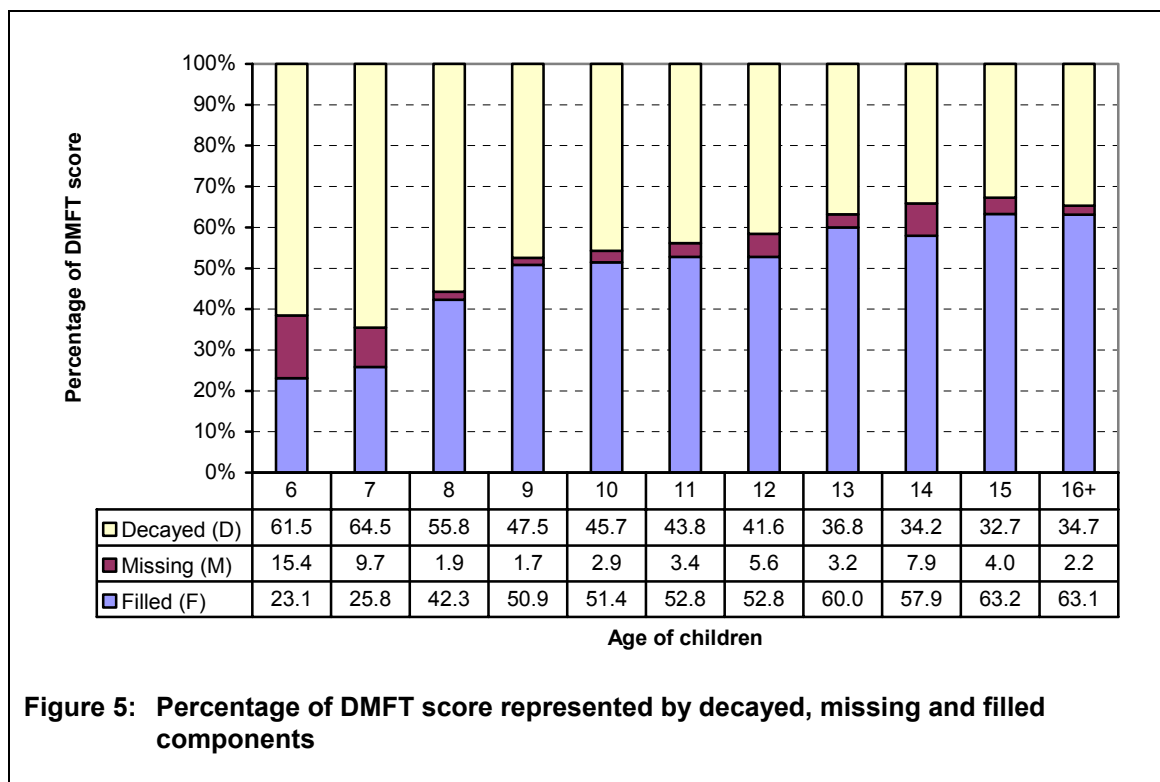
Table 5: Permanent dentition – decayed, missing and filled teeth by age

Age	Children <i>n</i>	Decayed (D)		Missing (M)		Filled (F)		DMFT	
		mean	SD	mean	SD	mean	SD	mean	SD
5	1,010	0.03	0.23	–	–	0.00	0.11*	0.03	0.26
6	1,405	0.08	0.41	0.02*	0.38*	0.03	0.23	0.13	0.63
7	1,443	0.20	0.60	0.04*	0.58*	0.08	0.47	0.31	0.98
8	1,388	0.29	0.72	0.01*	0.17*	0.22	0.73	0.52	1.06
9	1,335	0.28	0.71	0.02	0.19	0.30	0.85	0.59	1.20
10	1,451	0.32	0.80	0.02	0.26	0.36	0.82	0.70	1.27
11	1,363	0.39	0.91	0.03	0.33	0.47	1.01	0.89	1.52
12	1,030	0.52	1.08	0.07	0.43	0.66	1.28	1.25	1.93
13	768	0.57	1.24	0.04	0.31	0.93	1.36	1.55	2.03
14	715	0.69	1.52	0.16	0.62	1.17	1.82	2.02	2.70
15	462	0.89	1.54	0.11	0.49	1.72	2.20	2.72	2.98
≥16	69	0.95	1.85	0.06*	0.29*	1.73	2.12	2.74	3.31

* relative standard error ≥ 40%

Table 6: Permanent dentition – caries experience indices by age

Age	Mean D/DMFT index		DMFT = 0	
	<i>n</i>	%	<i>n</i>	%
5	16	89.3	1,010	98.4
6	92	76.0	1,405	93.5
7	217	75.6	1,443	84.9
8	367	62.5	1,388	73.6
9	368	52.2	1,335	72.4
10	462	44.0	1,451	68.2
11	537	46.6	1,363	60.6
12	444	40.9	1,030	56.9
13	421	32.3	768	45.3
14	425	33.8	715	40.5
15	306	33.3	462	33.8
≥16	48	34.3	69	30.4



All teeth

Untreated clinical decay in the combined deciduous and permanent dentitions ($d+D \geq 1$) existed for between 27.7% and 46.3% of children (see Table 7). The greatest likelihood of untreated decay occurred for children aged 8 with 46.3% 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 11, followed by a subsequent increase. Children aged 8 had the most fillings, with approximately 55% 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 54.1% of children aged up to four to 31.1% of 8-year-olds, with the percentage subsequently increasing to 47.0% for 12-year-olds before declining again.

Table 7: All teeth – age-specific caries experience

Age	Children <i>n</i>	d+D =						m+M = 0 %	f+F = 0 %	dmft+ DMFT = 0 %
		0 %	1 %	2 %	3 %	4 %	5+ %			
≤4	325	58.8	11.2	5.3	8.7	4.3	11.7	98.2	86.3	54.1
5	1,010	58.2	10.4	8.9	5.9	4.9	11.7	97.6	81.0	52.4
6	1,405	60.3	11.3	8.4	6.7	4.2	9.0	95.2	65.1	46.3
7	1,443	55.0	15.8	12.4	5.4	3.9	7.6	93.4	54.1	37.1
8	1,388	53.7	18.1	12.8	6.8	3.0	5.7	94.7	45.2	31.1
9	1,335	57.9	17.8	11.9	6.5	1.8	4.2	95.8	47.9	35.7
10	1,451	62.9	15.8	10.4	6.2	2.1	2.7	96.6	49.6	36.2
11	1,363	68.4	16.7	6.8	4.2	1.6	2.2	97.8	59.2	45.1
12	1,030	68.3	14.1	7.6	5.0	3.3	1.7	96.1	59.1	47.0
13	768	72.3	11.7	6.2	5.3	2.1	2.4	97.4	53.7	42.6
14	715	67.5	16.5	8.3	2.5	1.8	3.3	92.8	52.9	39.1
15	462	64.3	11.8	8.9	7.6	3.4	3.8	94.0	48.1	33.6
≥16	69	53.9	21.3	13.8	1.9*	4.7*	4.7	95.7	41.7	25.4

* relative standard error ≥ 40%

Fissure sealants

The mean number of fissure sealants per child (see Table 8) peaked for 15-year-olds. 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 <i>n</i>	Sealants		Students with sealants			
				DMFT = 0		DMFT ≥ 1	
		mean	SD	<i>n</i>	%	<i>n</i>	%
6	1,401	0.12	0.61	1,309	3.3	92	22.3
7	1,437	0.39	1.07	1,222	13.1	215	17.0
8	1,382	0.80	1.38	1,015	28.8	367	31.6
9	1,333	0.91	1.45	965	31.8	368	37.5
10	1,447	0.89	1.46	989	32.5	458	34.1
11	1,361	0.98	1.50	824	32.5	537	40.9
12	1,027	0.95	1.59	584	34.5	444	35.7
13	765	1.22	2.18	344	33.9	421	39.3
14	715	1.16	1.89	290	28.9	425	45.7
15	459	1.34	2.20	156	31.7	303	43.3
≥16	69	1.17	1.91	21	25.0	48	42.2

Immediate treatment needs

As can be seen from Table 9, immediate treatment needs were observed for between 1.8% and 5.8% of children aged 5–15 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+
	<i>n</i>	%	mean	SD	mean	SD	%	%	%	%	%
5	58	5.8	4.49	4.82	0.08*	0.33*	18.7	6.8*	9.4	8.8*	28.7
6	37	2.6	4.29	3.77	0.17*	0.58*	21.1	11.0*	11.3*	8.0*	30.8
7	54	3.8	6.38	3.76	0.60	0.98	20.5	17.8	6.2*	1.9*	40.7
8	43	3.1	3.43	2.75	0.82	1.17	20.9	9.1*	29.1	6.1*	11.6
9	41	3.1	3.40	3.00	1.50	1.57	45.3	27.3	4.4*	1.8*	17.0
10	31	2.2	3.06	2.21	1.80	1.64	29.2	22.1	20.1	1.7*	3.1*
11	47	3.5	2.06	2.52	3.02	3.29	20.5	3.3*	10. *	11.0	28.9
12	40	3.9	0.67	1.14	2.33	2.01	19.9	3.9*	17.1	33.8	0.4*
13	14	1.8	0.08*	0.28*	3.85	3.84	24.6*	15.5*	0.0	0.0	32.9
14	16	2.2	–	–	5.23	3.69	33.3	30.1	0.0	16.8*	6.3*
15	23	5.0	0.34*	1.28*	3.56	1.99	4.4*	6.8*	36.4	2.3*	0.0
≥16	9	13.0	0.44*	1.12*	3.17	1.66	0.0	74.6	14.6*	0.0	10.9*

* relative standard error ≥ 40%

School Dental Service examinations

Table 10 refers to the total number of examinations for children sampled during 2001 (weighted only by HSD). The percentage of children with no previous examination in the School Dental Service was greatest among those up to 4 years of age and reduced to 4% or less for children aged 7 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.

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. A re-examination interval of 7–12 months also occurred for approximately one-quarter to one-third of the remaining children, being most frequent for children aged 5 years (54.6%). Few children had been examined in the previous 6 months, however approximately one-quarter of children aged 7 years or over had had their last examination more than 18 months previously.

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

Age	Children examined	Previous examination in School Dental Service		
		No	Yes	Unknown
	<i>n</i>	%	%	%
≤4	395	58.5	12.8	28.7
5	1,235	40.6	23.6	35.8
6	1,590	15.8	55.7	28.5
7	1,541	4.0	78.8	17.2
8	1,346	3.6	80.5	15.9
9	1,279	2.5	79.6	18.0
10	1,367	2.9	80.7	16.5
11	1,288	2.3	81.8	15.9
12	1,016	1.9	75.9	22.2
13	733	1.4	72.5	26.0
14	606	1.5	78.9	19.6
15	392	1.6	77.2	21.2
≥16	65	7.5*	50.9	41.6

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

Age	Children	Months since last visit					mean	SD
		0–6	7–12	13–18	19–24	25+		
	<i>n</i>	%	%	%	%	%		
≤4	51	12.1	35.3	41.4	7.9*	3.3*	13.49	5.65*
5	291	10.1	54.6	33.6	0.8*	0.9*	11.09	6.50
6	886	7.1	42.9	39.9	8.1	2.0	13.03	5.59
7	1,144	3.6	31.2	39.9	20.4	4.9	15.08	5.56
8	1,083	3.9	26.4	41.9	18.7	9.1	15.87	6.41
9	1,017	3.4	31.0	38.2	16.3	11.1	16.04	7.31
10	1,102	4.8	28.8	38.3	18.8	9.3	16.31	8.82
11	1,054	3.4	30.4	39.4	16.4	10.3	16.31	8.53
12	771	5.7	26.8	40.4	19.6	7.4	15.44	7.74
13	531	7.6	28.2	38.6	13.1	12.6	16.18	9.57
14	478	3.2	20.8	40.6	15.8	19.7	18.88	12.88
15	303	3.8	19.1	38.3	18.8	20.0	19.60	10.81
≥16	33	6.2*	8.6*	46.4	27.2	11.6*	18.37	11.32*

* 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 2001. Due to the small numbers of children sampled in many HSDs, caution should be used when interpreting results by region, as they may not be representative of the child population for the HSD. In particular, areas with less than 10 children sampled in an

age group are indicated by an asterisk and mean caries experience scores for these areas should 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

Health Service District	n	Decay (d)		Missing (m)		Filled (f)		dmft	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Northern Zone									
Bowen	38	1.71	2.56	0.03	0.16	1.26	2.36	3.00	4.26
Cairns	97	1.20	1.98	0.05	0.27	1.02	1.95	2.27	3.00
Charters Towers*	2	3.00	4.24	0.00	0.00	2.50	3.54	5.50	7.78
Innisfail	40	1.87	3.07	0.38	1.41	1.88	2.58	4.13	4.95
Mackay	96	1.44	2.28	0.02	0.20	1.22	2.00	2.68	3.45
Moranbah	14	1.14	2.25	0.00	0.00	0.86	1.75	2.00	2.75
Mount Isa	22	1.23	1.77	0.09	0.43	1.95	2.95	3.27	4.52
Tablelands	15	1.73	1.58	0.07	0.26	0.27	0.59	2.07	1.83
Townsville	161	1.11	2.19	0.06	0.56	0.73	1.72	1.90	3.17
Central Zone									
Banana	11	1.55	2.25	0.82	1.33	0.91	1.92	3.27	3.72
Brisbane North	264	1.13	1.95	0.09	0.49	0.66	1.51	1.88	3.10
Bundaberg*	2	0.50	0.71	0.00	0.00	2.50	3.54	3.00	4.24
Gladstone	25	0.96	2.57	0.00	0.00	0.48	1.09	1.44	2.99
Gympie	40	1.87	2.99	0.00	0.00	1.00	1.88	2.88	4.02
Redcliffe/Caboolture	51	0.98	1.90	0.14	0.98	0.94	1.81	2.06	3.09
Rockhampton	92	1.09	1.72	0.00	0.00	1.87	2.45	2.96	3.33
South Burnett*	7	3.29	2.56	0.29	0.49	2.57	3.16	6.14	4.14
Sunshine Coast	147	1.20	1.98	0.24	0.90	1.11	2.11	2.56	3.55
Southern Zone									
Bayside	52	1.17	2.24	0.00	0.00	0.79	1.66	1.96	2.85
Charleville	13	2.77	2.24	0.00	0.00	0.23	0.83	3.00	2.08
Gold Coast	1,695	1.28	2.31	0.05	0.61	0.88	1.82	2.21	3.29
Logan/Beaudesert	135	1.61	2.39	0.10	0.51	0.90	1.97	2.61	3.21
Northern Downs	50	1.52	2.18	0.12	0.44	0.28	1.05	1.92	2.77
QEII	282	1.44	2.58	0.06	0.43	0.88	1.99	2.38	3.68
Roma*	6	0.67	1.63	0.00	0.00	2.33	3.20	3.00	4.69
Southern Downs	62	1.87	3.07	0.24	1.48	1.02	1.64	3.13	4.11
Toowoomba	157	1.33	2.53	0.01	0.08	0.52	1.25	1.86	2.79
West Moreton	94	1.12	1.98	0.04	0.33	1.02	2.07	2.18	3.16

* Fewer than 10 subjects sampled, results may not be representative

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

Health Service District	n	Decay (D)		Missing (M)		Filled (F)		DMFT	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Northern Zone									
Bowen*	4	0.00	0.00	0.00	0.00	0.25	0.50	0.25	0.50
Cairns	23	0.78	1.68	0.09	0.29	0.74	1.57	1.61	2.48
Charters Towers*	4	0.75	0.96	0.00	0.00	0.00	0.00	0.75	0.96
Innisfail	11	0.64	1.12	0.09	0.30	1.09	1.51	1.82	2.14
Mackay	21	0.10	0.44	0.00	0.00	0.62	1.72	0.71	1.74
Moranbah*	5	0.00	0.00	1.20	1.79	0.40	0.89	1.60	1.67
Mount Isa*	6	0.33	0.82	0.00	0.00	1.33	1.63	1.67	1.97
Tablelands	19	0.11	0.32	0.05	0.23	0.47	0.91	0.63	1.21
Townsville	59	0.42	1.12	0.20	0.83	0.53	1.12	1.15	2.05
Central Zone									
Banana*	3	0.67	1.16	0.00	0.00	1.00	1.73	1.67	2.89
Brisbane North	97	0.56	0.99	0.01	0.10	0.73	1.38	1.30	2.12
Bundaberg*	1	1.00	–	0.00	–	1.00	–	2.00	–
Fraser Coast*	1	1.00	–	3.00	–	0.00	–	4.00	–
Gladstone	13	0.38	0.65	0.00	0.00	0.23	0.44	0.62	0.96
Gympie	16	0.94	1.48	0.00	0.00	0.38	0.81	1.31	1.85
Redcliffe/Caboolture	32	0.25	0.72	0.06	0.35	1.22	1.85	1.53	2.00
Rockhampton	36	0.64	1.53	0.06	0.33	0.47	0.74	1.17	2.02
South Burnett*	2	0.00	0.00	1.00	1.41	1.00	1.41	2.00	2.83
Sunshine Coast	49	0.71	1.19	0.20	0.84	0.45	0.94	1.37	1.94
Southern Zone									
Bayside	22	0.36	1.05	0.18	0.85	0.50	1.06	1.05	1.84
Charleville*	1	4.00	–	0.00	–	0.00	–	4.00	–
Gold Coast	1,363	0.42	0.96	0.02	0.21	0.63	1.29	1.07	1.73
Logan/Beaudesert	51	0.80	1.28	0.02	0.14	0.76	1.24	1.59	2.07
Northern Downs	28	0.54	0.92	0.00	0.00	0.46	0.92	1.00	1.18
QEII	83	0.31	0.81	0.02	0.22	0.48	0.99	0.82	1.39
Roma*	1	1.00	–	0.00	–	1.00	–	2.00	–
Southern Downs	27	0.30	0.61	0.04	0.19	0.89	1.58	1.22	1.95
Toowoomba	41	0.44	1.03	0.02	0.16	0.56	1.21	1.02	1.99
West Moreton	16	0.13	0.34	0.00	0.00	0.19	0.40	0.31	0.48

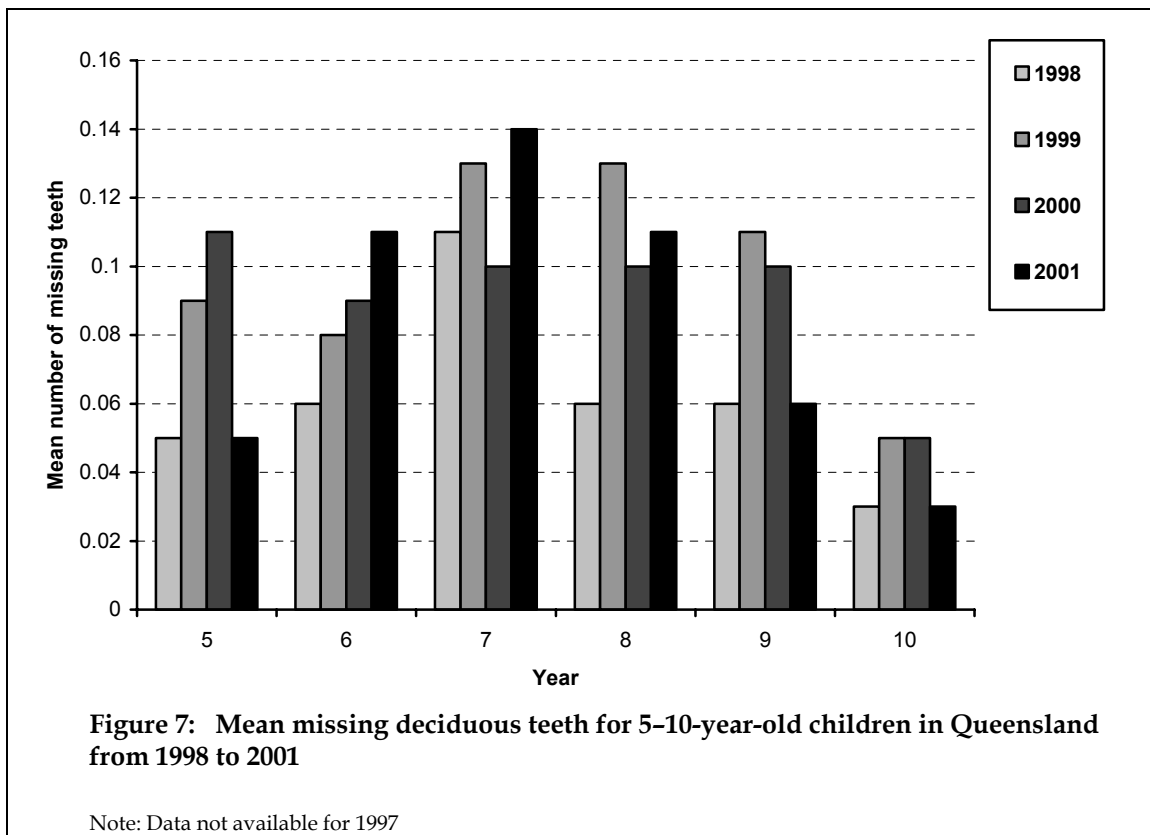
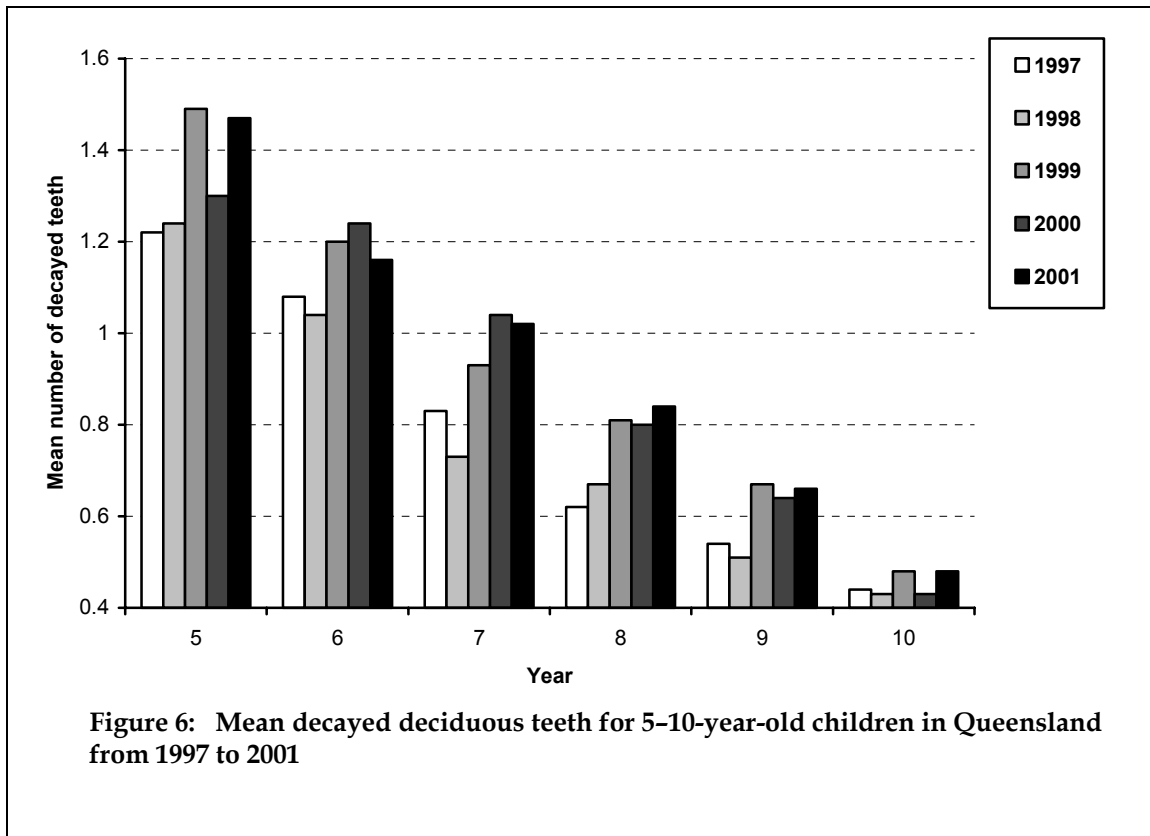
* Fewer than 10 subjects sampled, results may not be representative

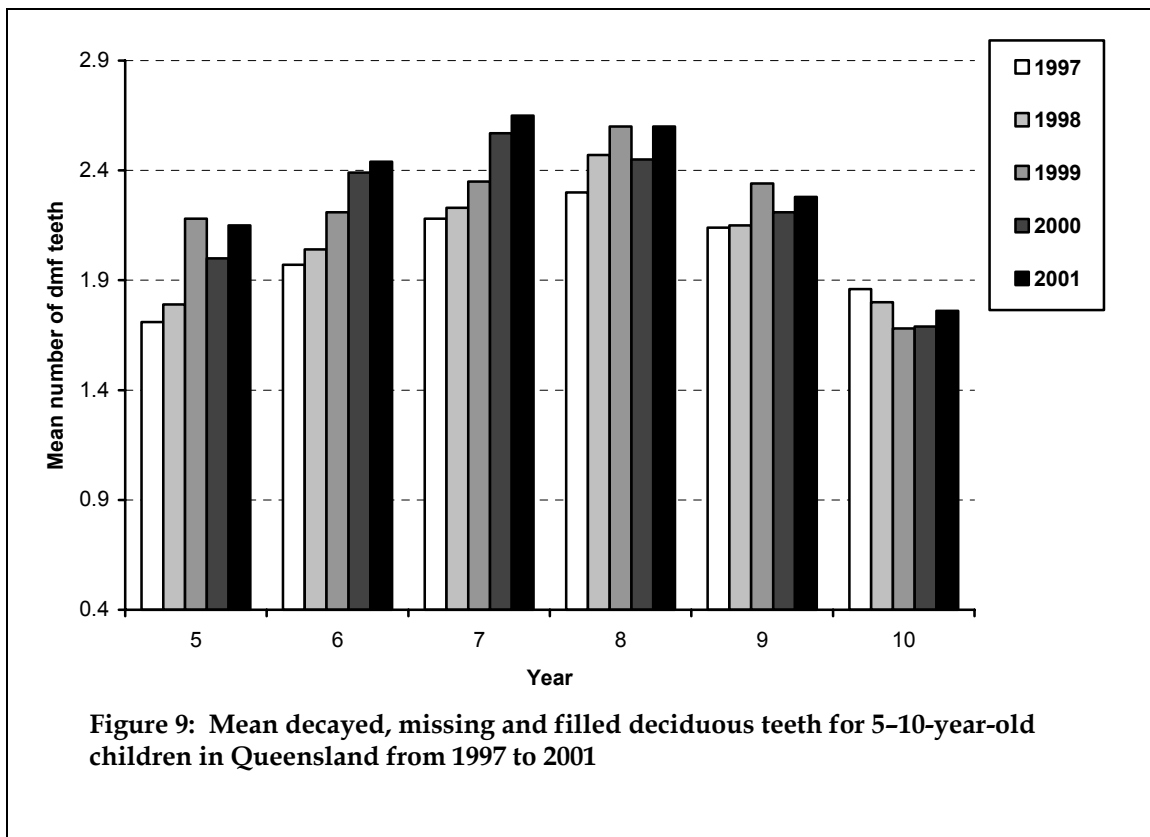
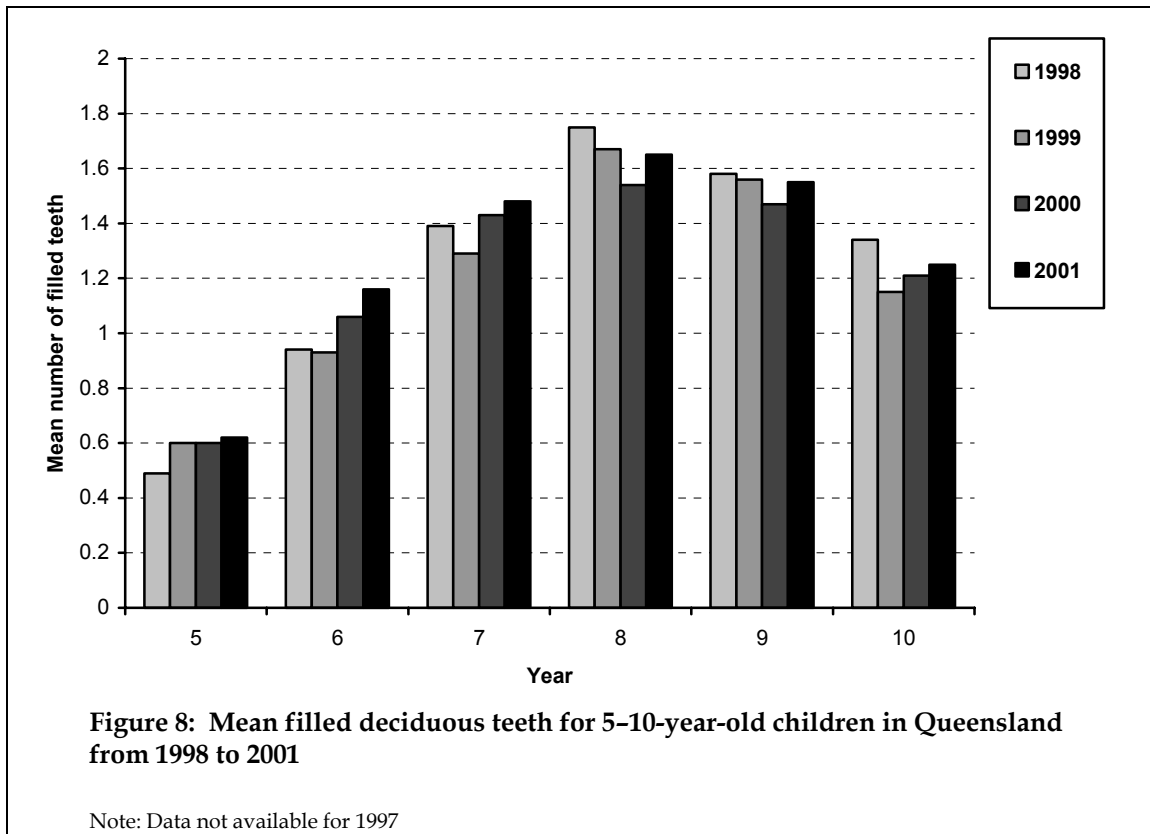
Selected trends, 1997–2001

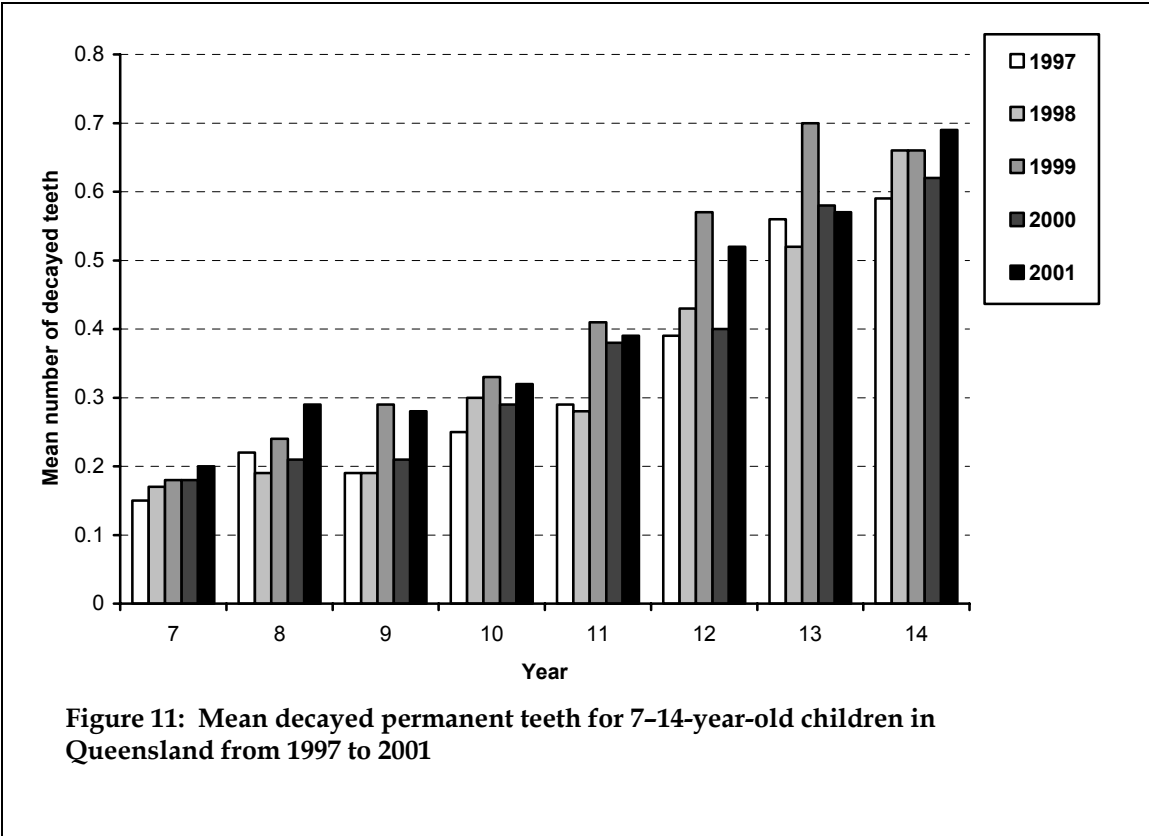
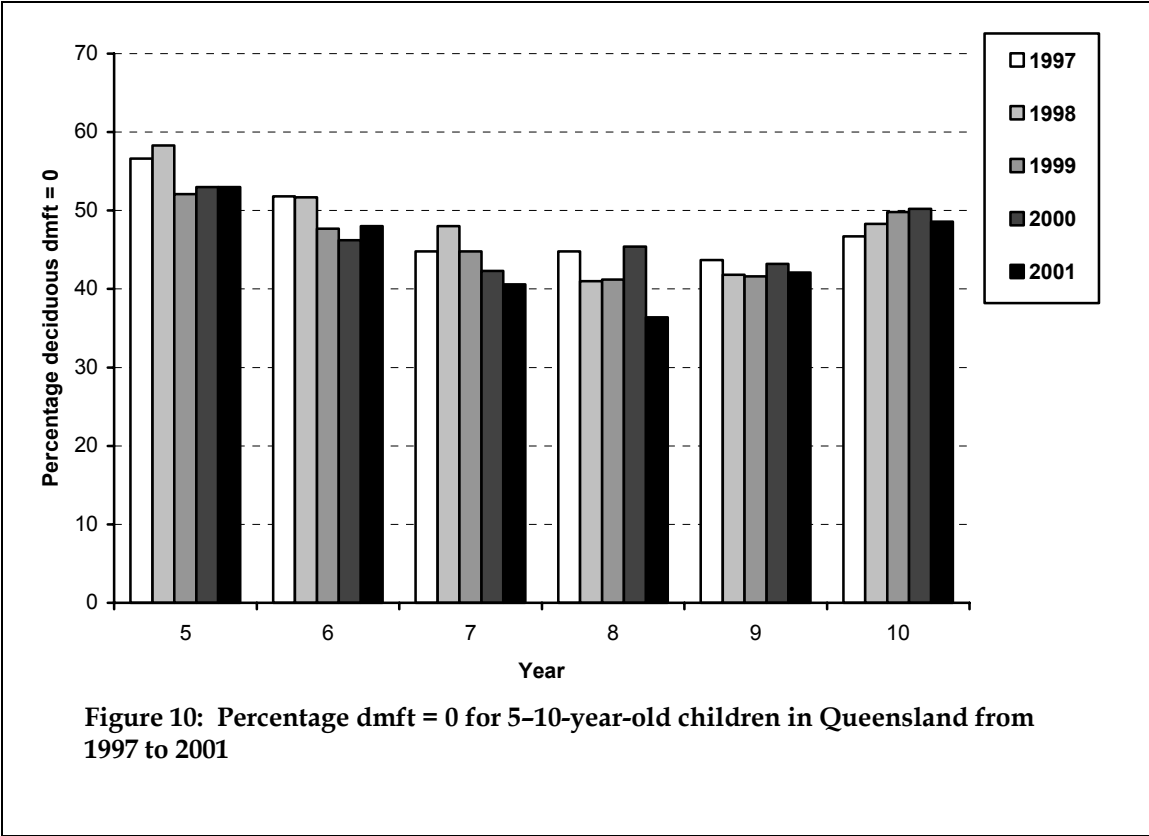
Presented below is a table and a series of figures of selected 5-year trends across the period 1991–2001. Trends are proved for sample size, deciduous and permanent caries experience, fissure sealants and time since last visit.

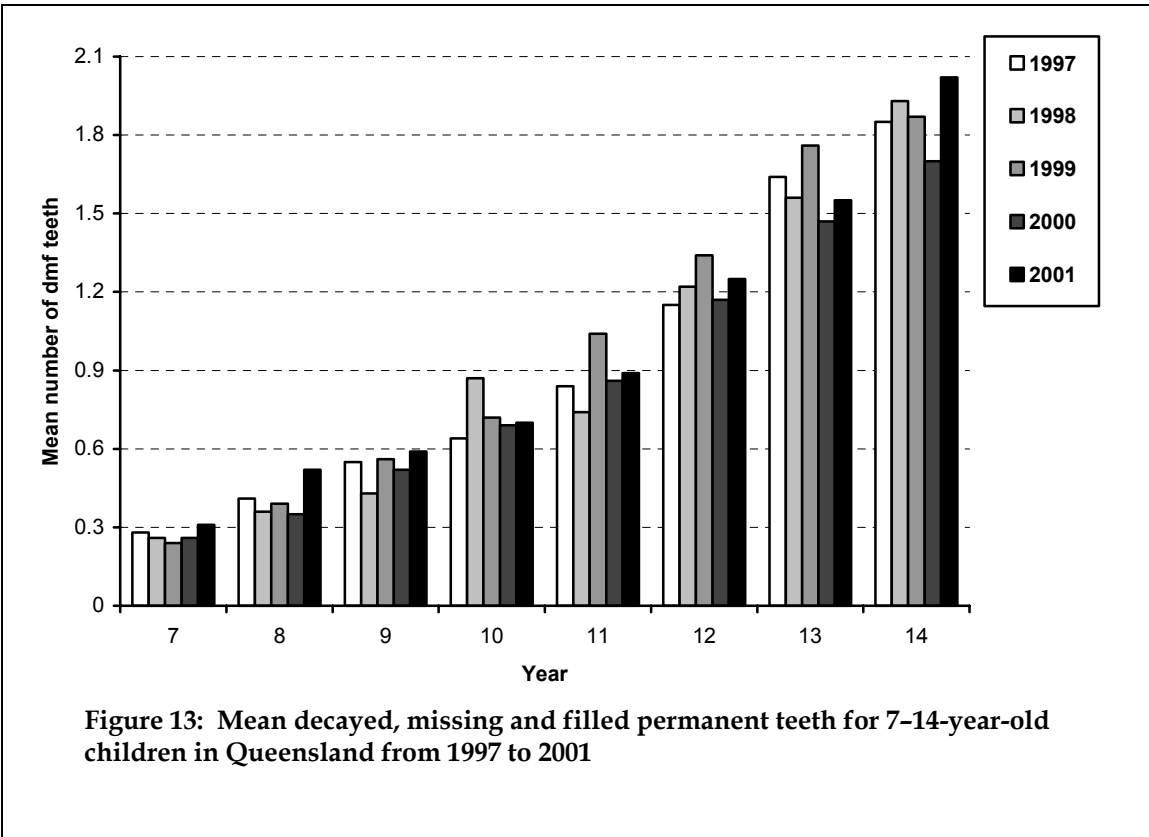
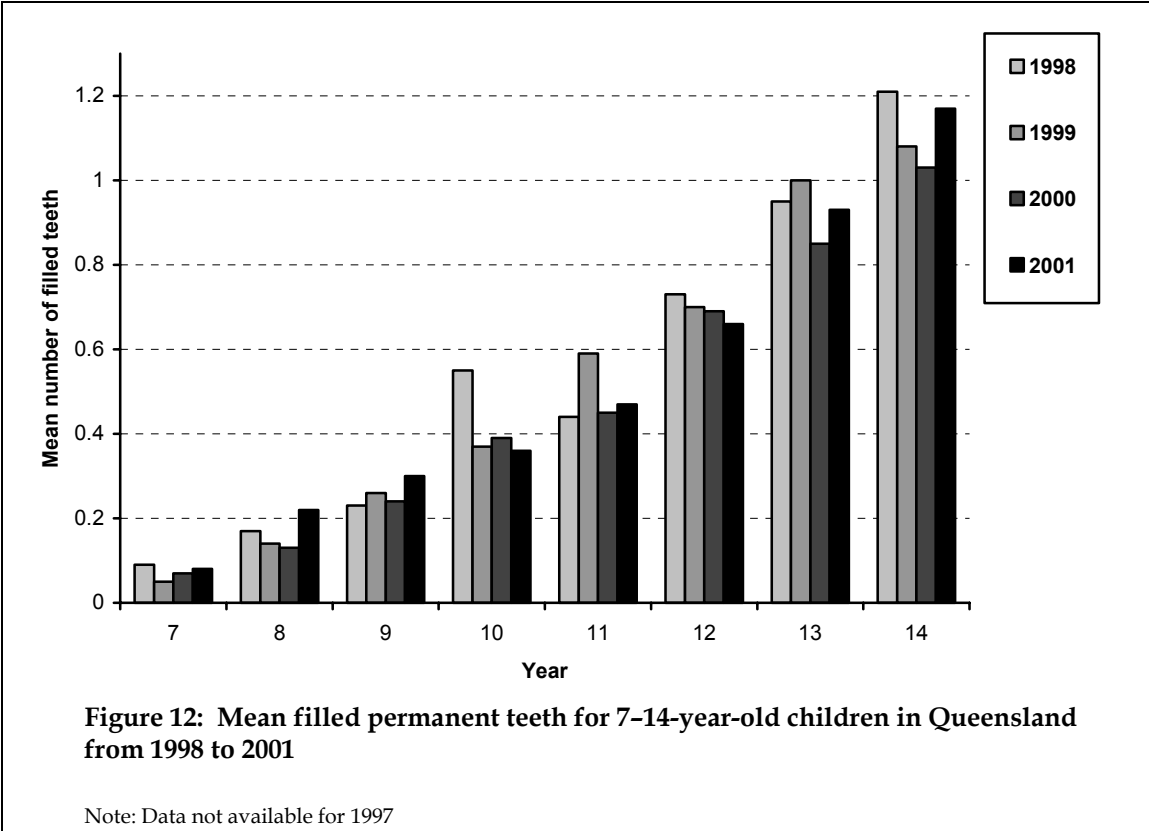
Table 14: Sample size by region, 1998–2001

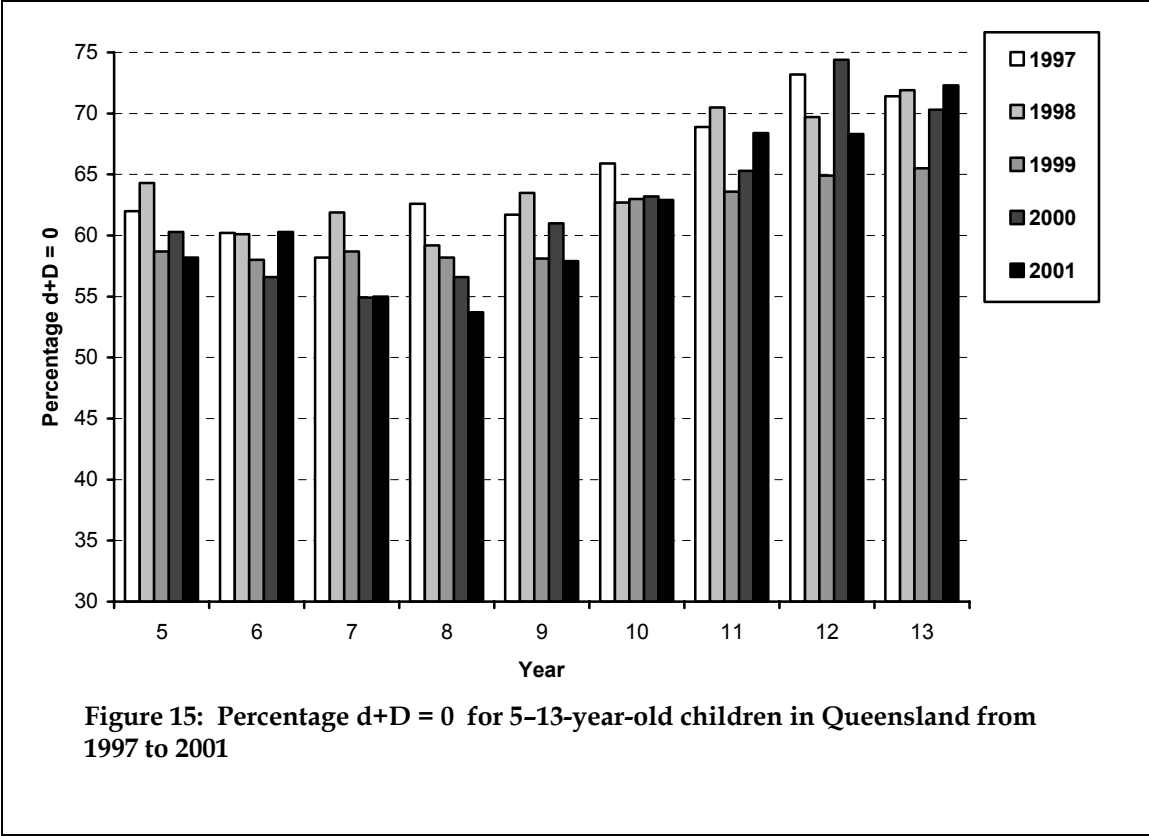
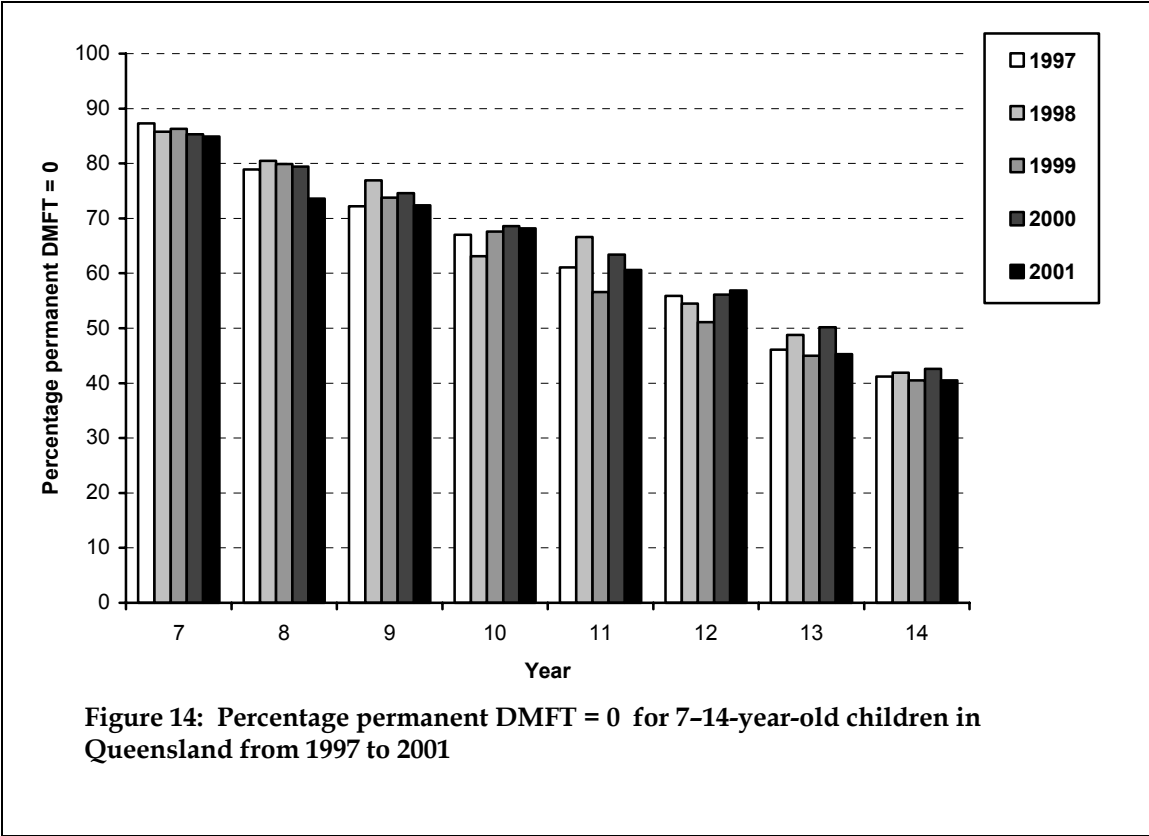
Region	1998	1999	2000	2001
Bowen	99	108	111	140
Cairns	7	247	162	391
Cape York	0	41	0	0
Charters Towers	34	43	48	26
Innisfail	50	122	184	164
Mackay	557	652	561	432
Moranbah	156	94	103	75
Mount Isa	60	82	134	100
Tablelands	1	64	68	105
Torres Strait	0	0	2	0
Townsville	654	761	908	822
Banana	62	73	37	37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

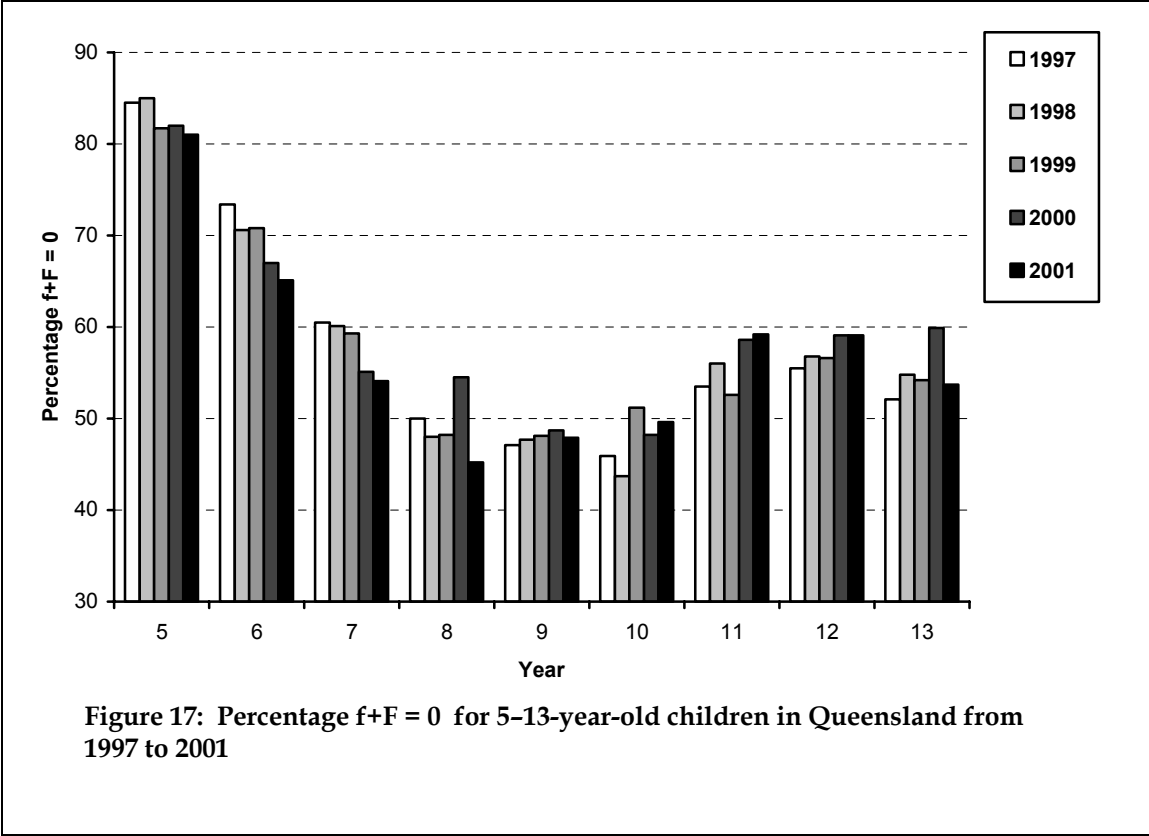
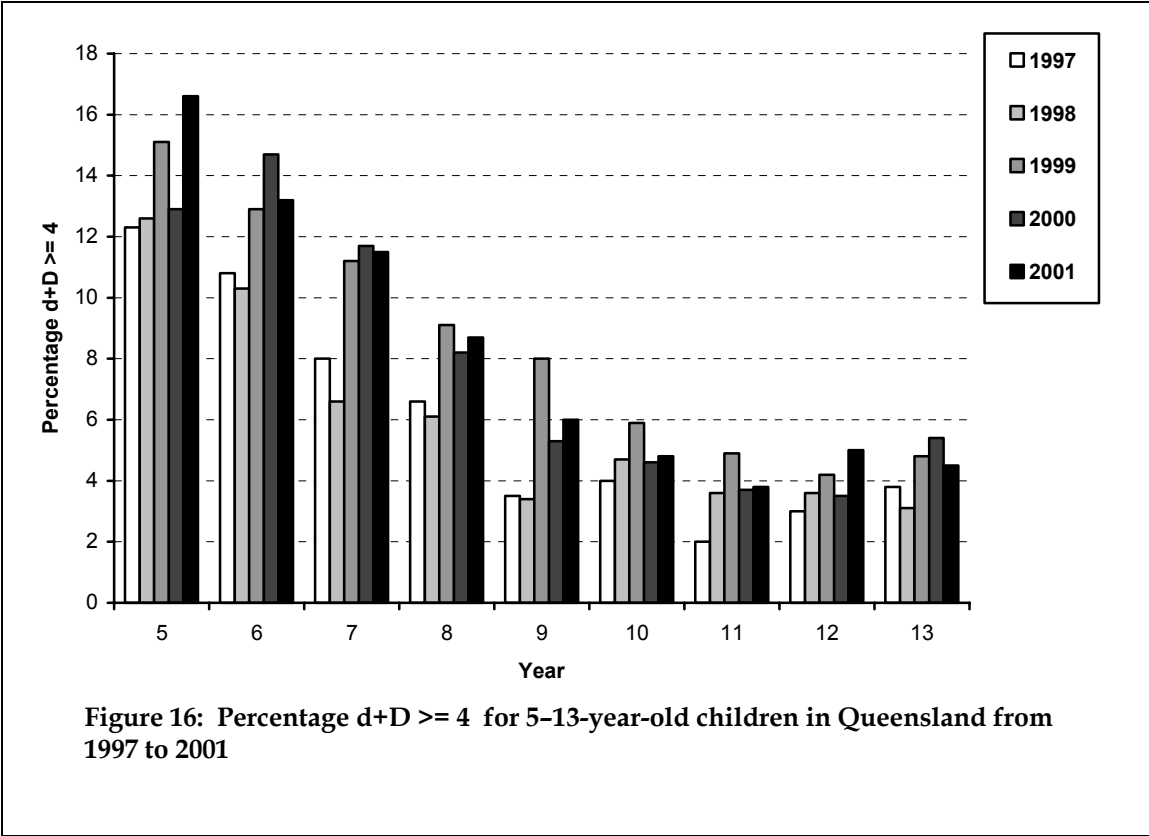


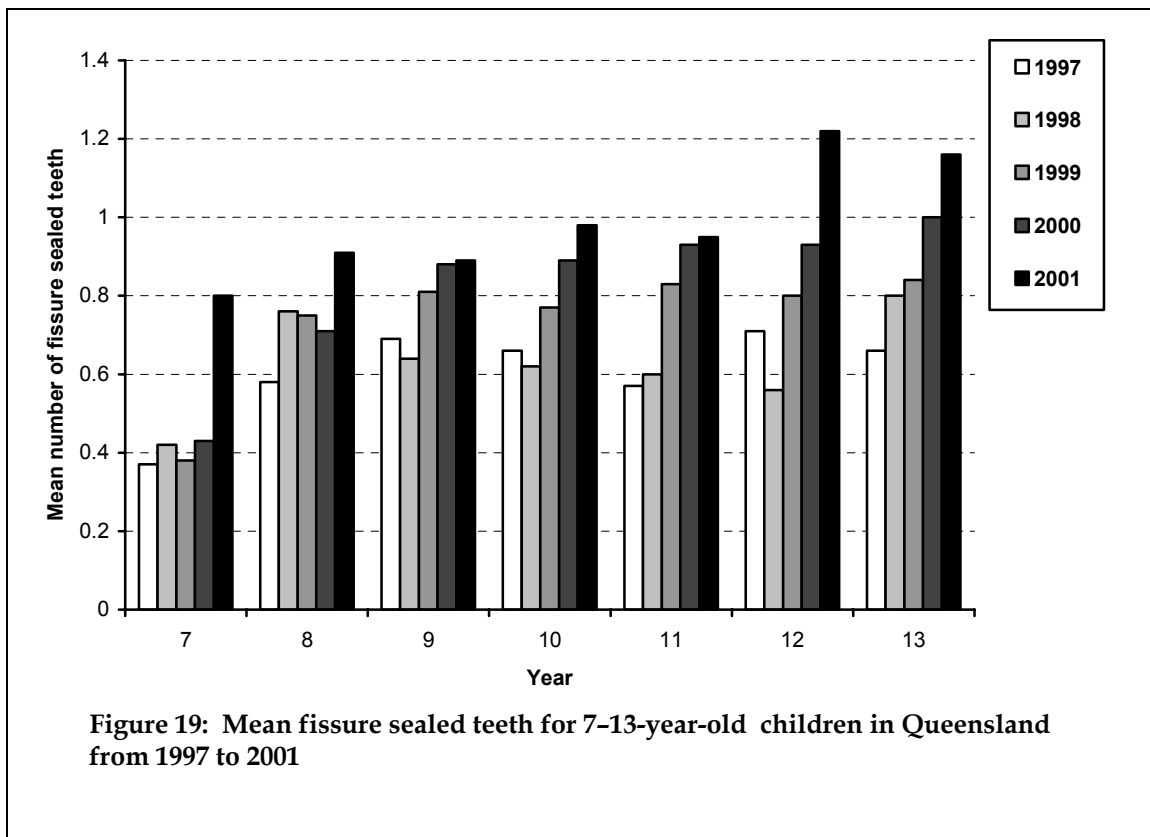
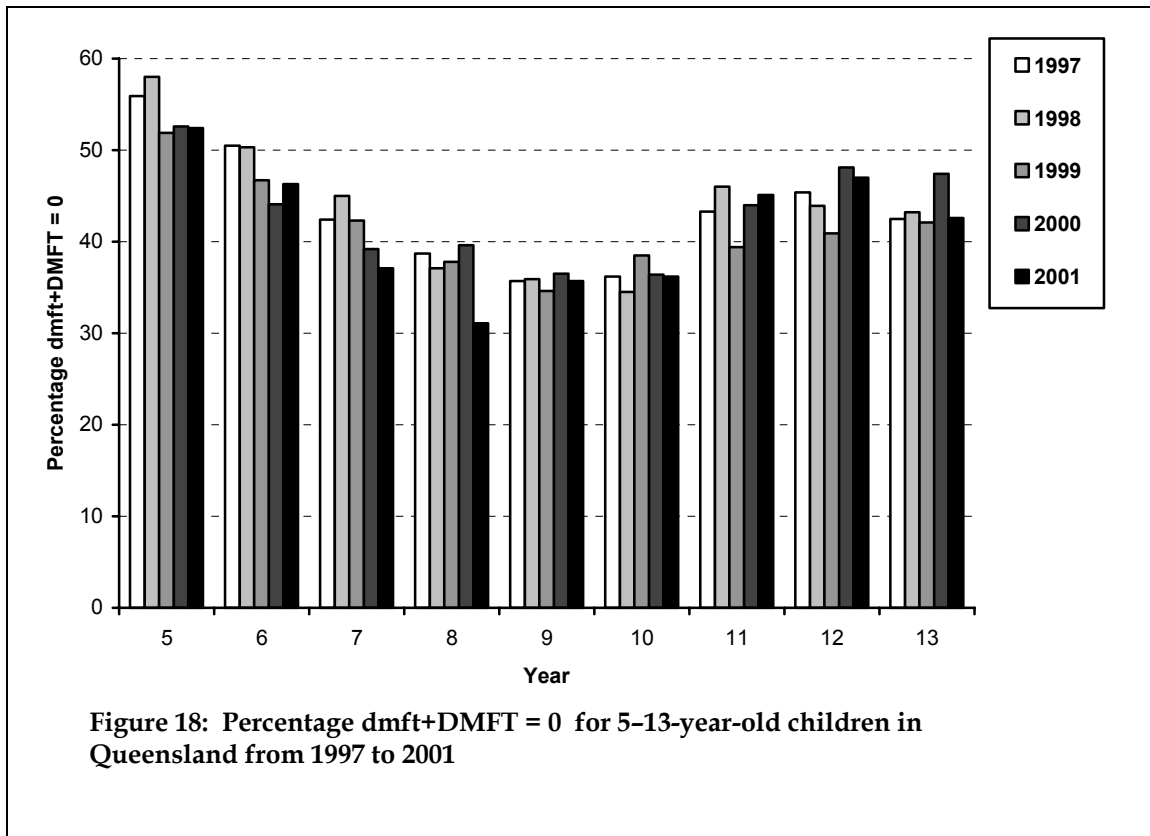


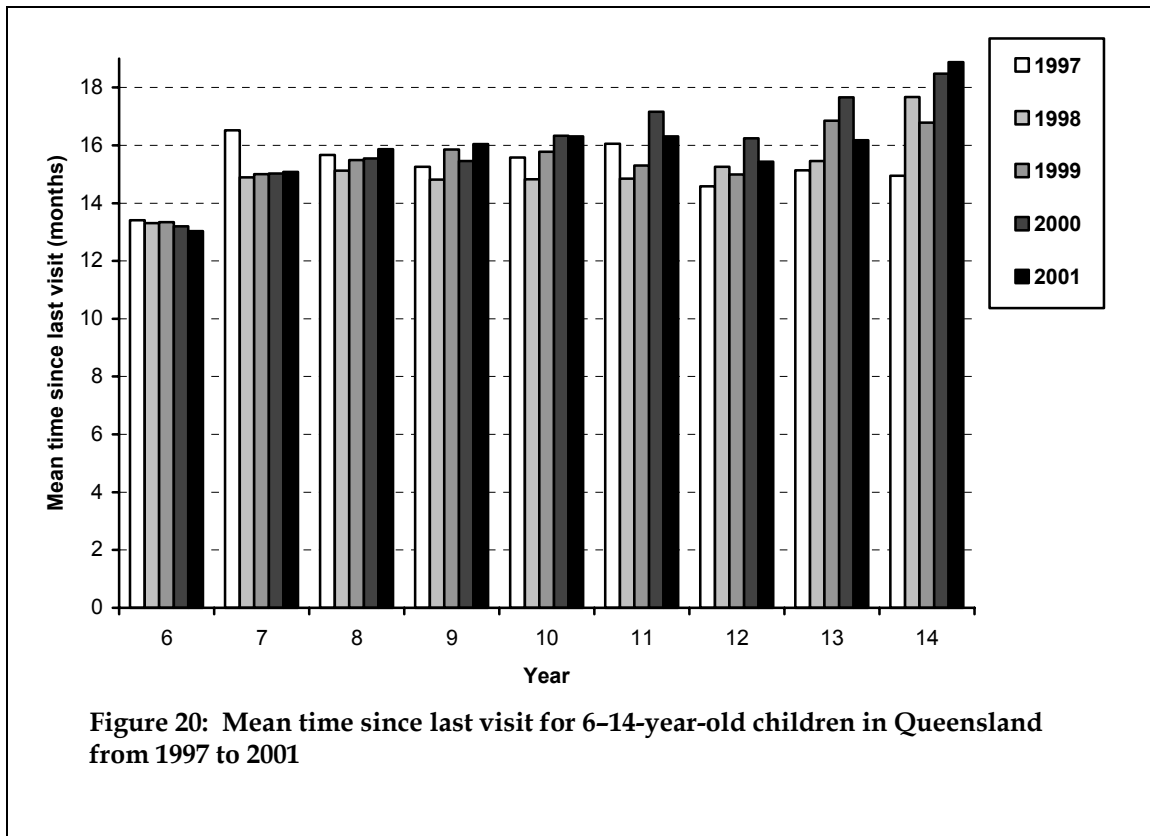












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