The Child Dental Health Survey, Queensland 1999

AIHW Dental Statistics and Research Unit
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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 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 1998 and 1999 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 have 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 1999 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, some clinics in a small number of districts sampled all children with dates of birth between the 1st and 6th of any month. 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.

The bulk of the children came from the Brisbane North, Bayside, Gold Coast Logan/Beaudesert, QEII, Sunshine Coast and Townsville HSDs. There were few children sampled from Bundaberg, Cape York, Charters Towers, Fraser Coast, North Burnett, Roma, South Burnett and Tablelands HSDs. Some districts failed to sample any children.

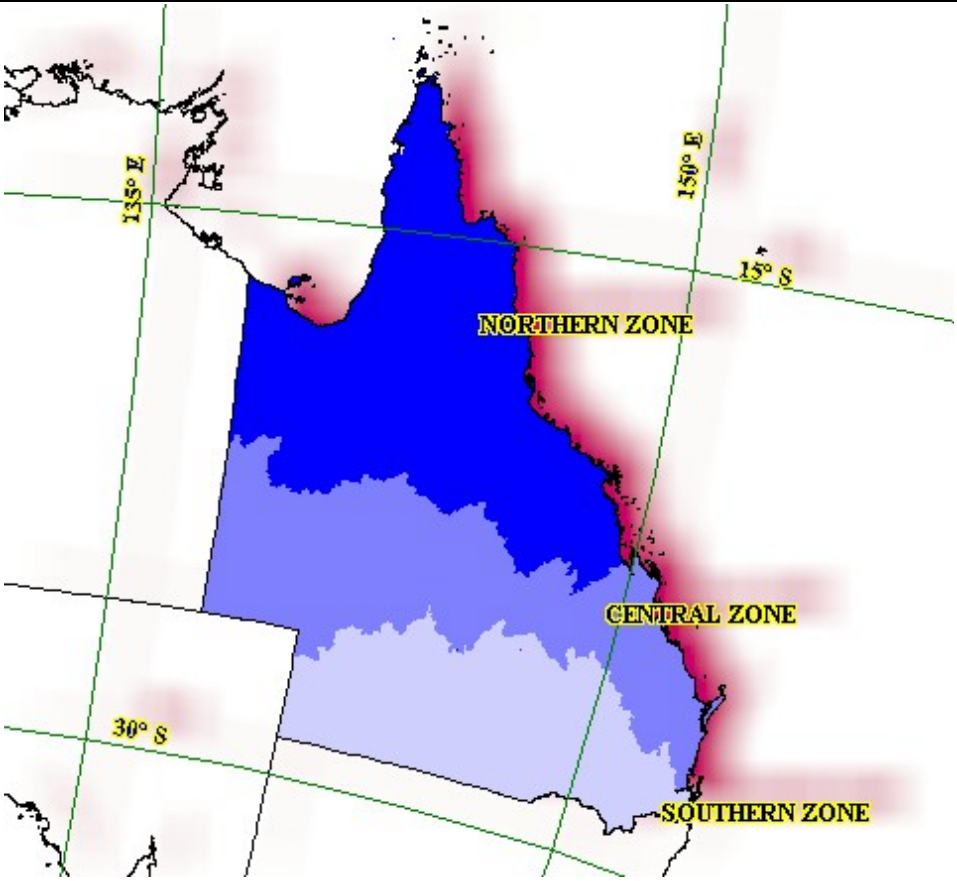
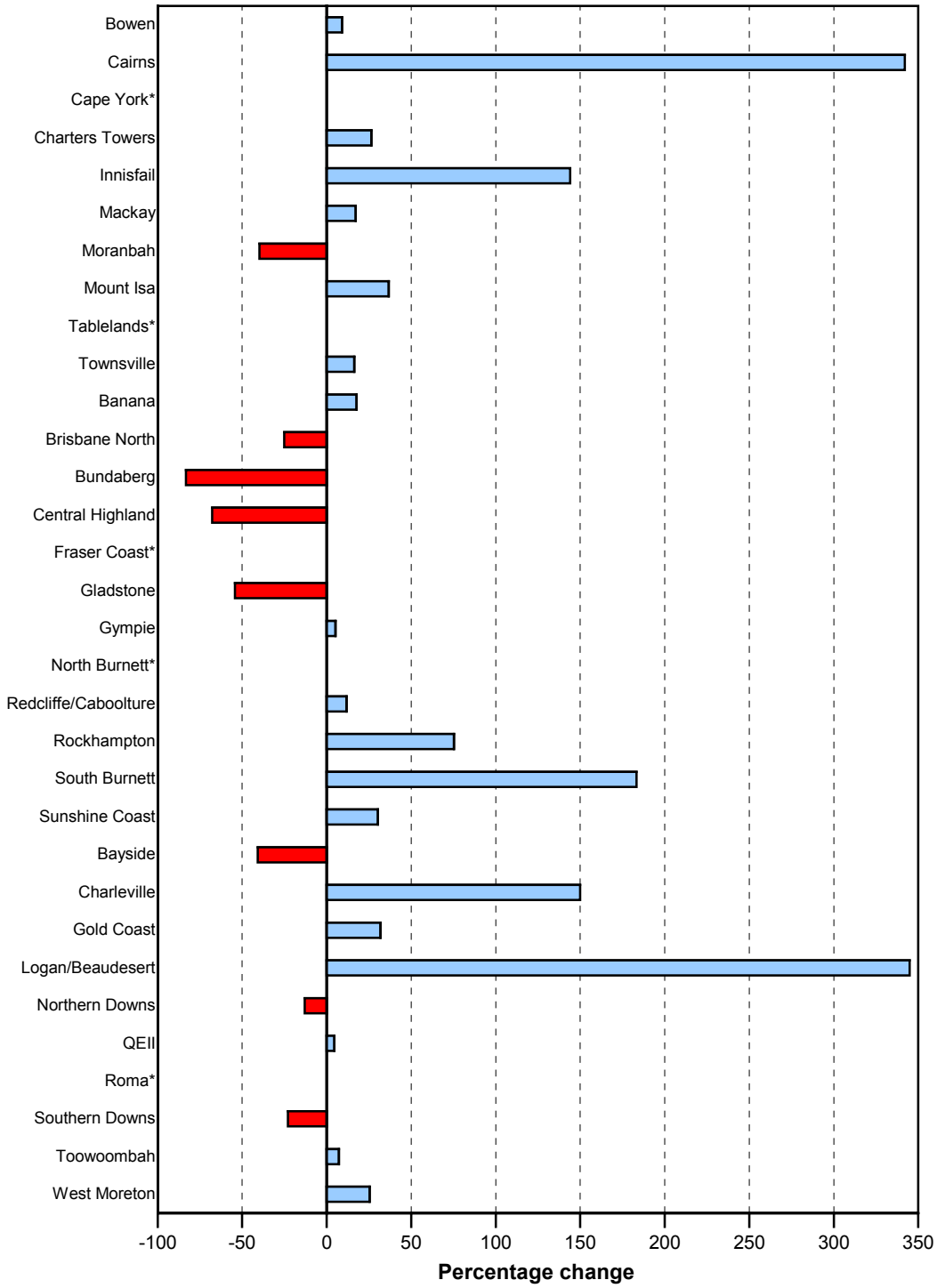


Figure 1: Queensland by Health Zones

Table 1: Number of children sampled and sampling procedure by Health Zone and District

Health Services District	*n*	Sampling procedure	Per cent sampled at most common sampling procedure	Most common sampling ratio
		Northern Zone		
Bowen	108	1 and 6	100.0	1 : 15
Cairns	247	1 and 6	100.0	1 : 15
Cape York	41	1 and 6	100.0	1 : 15
Charters Towers	43	1 and 6	100.0	1 : 15
Innisfail	122	1 and 6	100.0	1 : 15
Mackay	652	1 and 6	100.0	1 : 15
Moranbah	94	1 and 6	100.0	1 : 15
Mount Isa	82	1 and 6	100.0	1 : 15
Tablelands	64	1 and 6	100.0	1 : 15
Townsville	761	1 and 6	99.8	1 : 15
		Central Zone		
Banana	72	1 and 6	100.0	1 : 15
Brisbane North	1,138	1 and 6	97.5	1 : 15
Bundaberg	2	1 and 6	100.0	1 : 15
Central Highland	58	1 and 6	100.0	1 : 15
Fraser Coast	12	1 and 6	100.0	1 : 15
Gladstone	65	1 and 6	100.0	1 : 15
Gympie	237	1 and 6	100.0	1 : 15
North Burnett	1	?	100.0	?
Redcliffe/Caboolture	360	1 and 6	100.0	1 : 15
Rockhampton	263	1 and 6	100.0	1 : 15
South Burnett	17	1 and 6	100.0	1 : 15
Sunshine Coast	823	1 and 6	100.0	1 : 15
		Southern Zone		
Bayside	890	1 and 6	50.9	1 : 15
Charleville	75	1 and 6	72.0	1 : 15
Gold Coast	4,010	All*	79.7	1 : 1
Logan/Beaudesert	814	1 and 6	100.0	1 : 15
Northern Downs	80	1 and 6	100.0	1 : 15
QEII	1,406	1 and 6	100.0	1 : 15
Roma	25	1 and 6	100.0	1 : 15
Southern Downs	367	1 and 6	100.0	1 : 15
Toowoomba	608	1 and 6	100.0	1 : 15
West Moreton	354	1 and 6	100.0	1 : 15
Unknown	296	1 and 6	84.4	1 : 15

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



* Health Zone District had no or very few children sampled in 1998.

Figure 2: Percentage change in number of children sampled between 1998 and 1999 by Health Service District

Changes since 1998

Compared to 1998 there were increased numbers of children sampled from Cairns, Gold Coast, Logan/Beaudesert, Townsville and the Sunshine Coast, with fewer children sampled from Bayside, Central Highland and Gladstone. The percentage change in the number of children sampled in each HSD between 1998 and 1999 is shown in Figure 2.

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

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 numerous 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. A small number of cases that could not be reconciled were deleted 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. Elsewhere the probability was approximately 0.066 (*ie* equivalent to the ratio of 1:15) for students sampled according to the intended procedure and approximately 0.2 for students sampled on the basis of dates of birth falling between the 1st and 6th of any month (i.e., equivalent to the ratio of 1:5). Hence, the weighting process considered the number of students sampled (n_i) and the number of children in the population (assuming accurate sampling, $N_i=n_i/$[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:

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

Weighted records 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 1999 by Statistical Local Areas as published by the Australian Bureau of Statistics (2000). The relative sample sizes and population estimates by HSD as a percentage of the total sample and Queensland population are shown in Figure 3.

For 1999, all data were weighted by time since last school dental service examination. This was implemented to counteract potential bias caused by the under-representation of students on longer recall schedules. Children on shorter recall schedules generally have poorer oral health than children on longer recall schedules.

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 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 Bundaberg, Fraser Coast, North Burnett, Roma and South Burnett HSDs were not weighted by region.

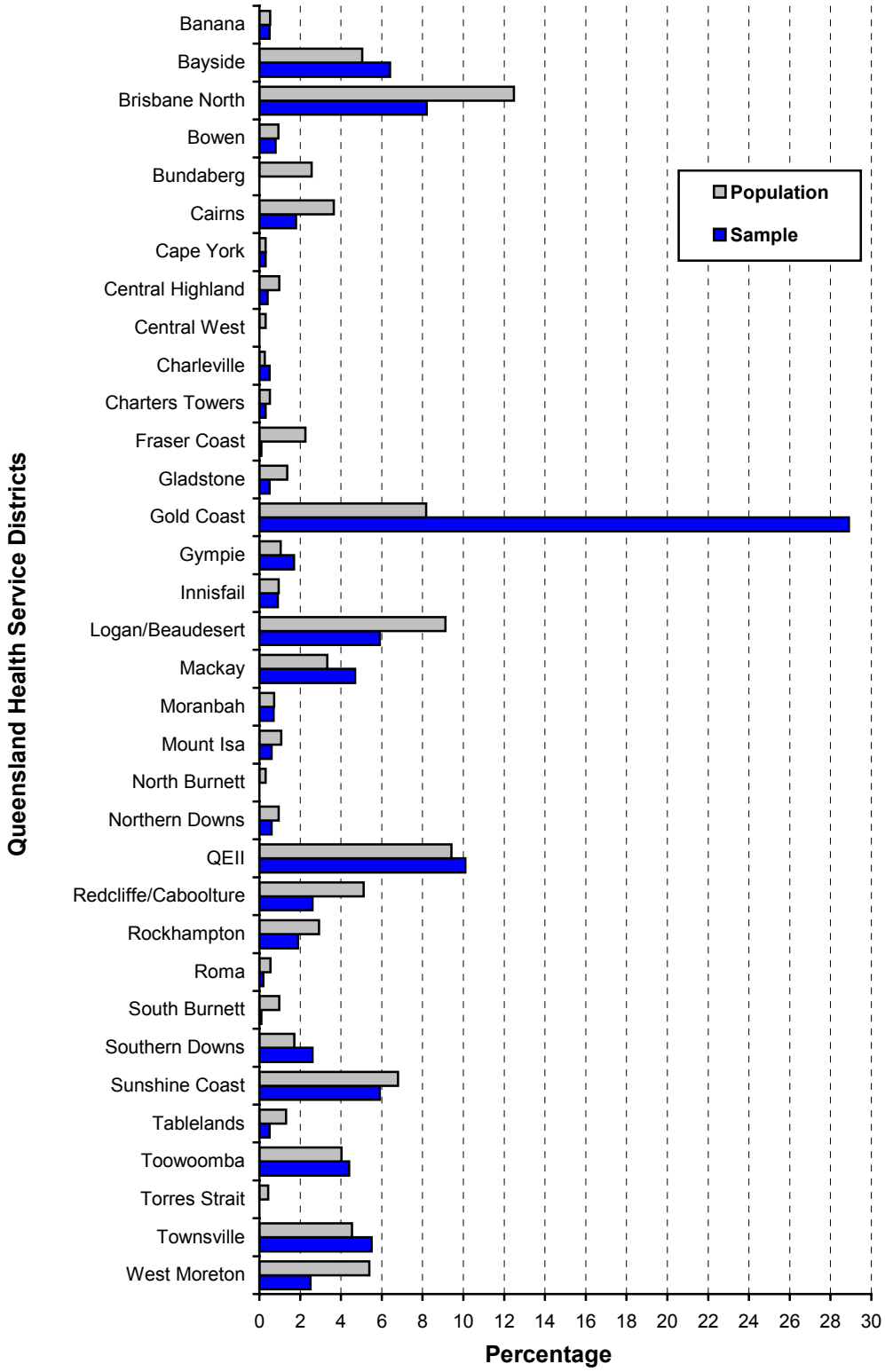


Figure 3: Percentage of children in sample and Queensland by Health Service District

Demographic composition of the sample

A total number of 14,189 individual children were sampled during 1999 (see Table 2). The majority of children in the complete sample were aged between 5 and 15 years inclusive (97.1%). 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 = 8.99) and that of females (mean = 8.92).

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.

Changes since 1998

The total number of children sampled in 1999 was 1,760 cases more than for 1998. A considerable increase in the number of children sampled with age only known was a result of more 6- and 12-year-old children being sampled from the Gold Coast region.

There was a reduction in the mean age of the weighted sample, with males and females being 0.23 and 0.32 years younger respectively than in 1998.

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*
2	0	2	2	0	0	0	0	2	2
3	6	2	8	0	0	0	5	2	7
4	147	144	291	1	1	2	160	157	317
5	542	558	1,100	1	3	4	580	589	1,169
6	1,122	1,179	2,301	403	434	837	757	786	1,543
7	667	592	1,259	6	5	11	856	792	1,648
8	621	634	1,255	7	4	11	798	836	1,635
9	585	563	1,148	10	6	16	805	771	1,576
10	515	568	1,083	3	3	6	683	770	1,453
11	501	563	1,064	5	6	11	668	746	1,415
12	809	798	1,607	286	238	524	579	564	1,142
13	374	312	686	0	0	0	500	427	928
14	297	258	555	4	1	5	419	357	776
15	176	158	334	4	1	5	266	228	494
16	20	24	44	0	1	1	30	36	66
17	8	1	9	0	0	0	9	1	9
18	1	1	2	0	0	0	1	1	2
19	2	4	6	0	0	0	2	3	5
Total	**6,393**	**6,361**	**12,754**	**730**	**703**	**1,433**	**7,119**	**7,068**	**14,187**

Country of birth (including Indigenous status)

The birthplace/Indigenous status of 75.8% of children was missing or recorded as not known. Australian-born (non-Indigenous) children represented 94.0% of the remainder of the sample (22.7% of the total sample). Students identified as Australian-born Indigenous comprised 2.9% of the total 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.

Changes since 1998

There have been few changes in the percentages of children sampled by country of birth between 1998 and 1999.

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 1.52 for students aged 5 years of age to 0.17 for 12-year-old students. In contrast, the mean number of filled teeth increased with age, peaking at 1.64 for 8-year-olds before declining to 0.43 for 12-year-olds. Mean dmft scores increased from 2.25 for children aged 5 years to 2.57 for 8-year-olds before declining to 0.62 for 12-year-olds.

Among children with caries experience, the percentage of dmft accounted for by the decayed component declined steadily across age groups, from 79.0% for children aged up to and including 4 years of age to 29.7% for 12-year-olds (Table 4). Between the ages of 5 and 10 the percentage of children free of clinical caries (dmft = 0) ranged from a high of 51.5% among children aged 5 years to a low of 40.6% among 8-year-olds.

Together these distributions suggest that the caries experience of younger children, probably presenting for the first time to the School Dental Service, is mostly represented by untreated decay, and that this is managed in later years to achieve a relatively low frequency of untreated decay.

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	326	1.91	3.37	0.11	0.62	0.41	1.43	2.43	3.92
5	1,169	1.52	2.73	0.10	0.58	0.63	1.65	2.25	3.41
6	1,543	1.21	2.17	0.09	0.59	0.94	1.86	2.24	3.17
7	1,648	0.97	1.70	0.14	0.75	1.36	2.10	2.47	3.09
8	1,635	0.81	1.39	0.12	0.73	1.64	2.25	2.57	3.06
9	1,576	0.66	1.20	0.11	0.81	1.55	2.18	2.33	2.82
10	1,453	0.49	1.03	0.04	0.54	1.20	1.85	1.73	2.43
11	1,415	0.30	0.76	0.01*	0.11*	0.80	1.57	1.11	1.95
12	1,142	0.17	0.56	0.02*	0.36*	0.43	1.09	0.62	1.43

* relative standard error ≥ 40%

Table 4: Deciduous dentition – caries experience indices by age

Age	d/dmft		dmft = 0	
	n	%	*n*	%
≤4	140	79.0	326	56.9
5	566	70.1	1,169	51.5
6	812	57.2	1,543	47.4
7	929	40.7	1,648	43.7
8	971	33.8	1,635	40.6
9	920	32.8	1,576	41.6
10	743	31.2	1,453	48.8
11	531	30.6	1,415	62.5
12	274	29.7	1,142	76.1

Changes since 1998

There were large changes in the mean number of decayed and dmf teeth between 1998 and 1999, with increases shown by all age groups up to age 9. Children up to age 9 also demonstrated an increased mean number of missing teeth. In contrast, children aged between 7 and 11 had a lower mean number of filled teeth in 1999 than in 1998. The percentage of children with dmft = 0 was lower for some of the younger age groups in 1999, compared to 1998.

Permanent teeth

The mean number of clinically detectable decayed teeth increased with increasing age (see Table 5), ranging from 0.02 among 5-year-old children up to 0.77 for students aged 16 to 19 years old. Similarly, across the same age range, the mean number of teeth with fillings increased with age, ranging from 0.02 to 1.60. DMFT scores increased from 0.05 among 5-year-olds to 2.51 for the oldest age group. The mean DMFT score for 12-year-old students was 1.30. Among students 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 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 (D/DMFT) decreased from 81.2% for 6-year-olds to a low of 29.3% for the oldest children in the sample.

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	1,169	0.02	0.24	0.00	0.10*	0.02	0.18	0.05	0.41
6	1,543	0.10	0.44	–	–	0.04	0.41	0.14	0.62
7	1,648	0.18	0.56	0.01*	0.13*	0.06	0.35	0.25	0.69
8	1,635	0.24	0.70	0.01*	0.16*	0.16	0.57	0.41	1.00
9	1,576	0.28	0.71	0.01*	0.18*	0.27	0.75	0.56	1.14
10	1,453	0.31	0.80	0.02	0.26	0.38	0.89	0.71	1.32
11	1,415	0.41	0.92	0.03	0.33	0.57	1.09	1.01	1.56
12	1,142	0.54	1.19	0.08	0.55	0.68	1.19	1.30	1.91
13	928	0.71	1.34	0.07	0.47	1.01	1.51	1.79	2.42
14	776	0.64	1.42	0.12	0.68	1.08	1.64	1.84	2.51
15	494	0.69	1.40	0.13	0.61	1.41	1.97	2.24	2.87
≥16	82	0.77	1.72	0.14*	0.62*	1.60	2.39	2.51	3.35

* relative standard error ≥ 40%

Table 6: Permanent dentition – caries experience indices by age

Age	D/DMFT		DMFT = 0	
	n	%	*n*	%
5	23	53.7	1,169	98.1
6	113	81.2	1,543	92.7
7	229	76.9	1,648	86.1
8	331	58.0	1,635	79.8
9	415	54.5	1,576	73.7
10	471	42.5	1,453	67.6
11	611	41.0	1,415	56.8
12	552	41.2	1,142	51.6
13	512	37.7	928	44.8
14	461	31.2	776	40.6
15	290	31.5	494	41.3
≥16	47	29.3	82	42.8

Changes since 1998

There were several increases, some large, in both clinically detectable decay and DMFT scores between 1998 and 1999 for children aged between 8 and 13 years. Mean filled scores, in contrast, decreased for several age groups with increases occurring only for children aged 9 and 13. As a result of these changes, increases in the percentage of DMFT expressed as decay occurred for the majority of age groups and for all age groups between 6 and 13. There were inconsistent changes in the percentages of children with DMFT = 0, with decreases for children aged 9, 11, 12 and 13 and increases for children aged 10, 15 and 16 years and older.

All teeth

Untreated clinical decay in the combined deciduous and permanent dentitions (d+D ≥ 1) existed for between 27.1% and 42.7% of the sample (see Table 7). The greatest likelihood of untreated decay occurred for children aged 8 where 42.7% had 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 93% of students aged up to 12 years 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 12, followed by a subsequent increase. Children aged 8 and 9 had the most fillings, with approximately 51% 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 56.9% of 2–4-year-olds to 34.5% of 9-year-olds, with the percentage subsequently increasing to 42.0% for 13-year-olds.

Changes since 1998

There were increases in the percentages of clinically detectable decay between 1998 and 1999 for several age groups. However, inconsistent changes between 1998 and 1999 were evident in the percentages of children with dmft+DMFT = 0, with increases (greater than 3%) for four age groups (≤4, 10, 15 and ≥16) and decreases for four age groups (5, 6, 7 and 11).

Table 7: All teeth – age-specific caries experience

Age	Children	d+D = 0	1	2	3	4	5+	m+M = 0	f+F = 0	dmft+ DMFT = 0
	n	%	%	%	%	%	%	%	%	%
≤4	326	61.5	8.1	5.6	2.2	5.6	17.1	96.1	88.0	56.9
5	1,169	58.8	10.8	9.7	5.4	3.6	11.6	95.2	80.3	51.0
6	1,543	57.9	12.8	10.7	5.6	4.7	8.4	96.2	69.6	46.0
7	1,648	57.7	12.9	12.7	6.0	4.0	6.6	93.5	58.0	41.2
8	1,635	57.3	17.2	9.9	6.8	3.4	5.3	94.2	47.8	37.2
9	1,576	59.0	17.5	9.6	5.8	4.6	3.6	96.2	48.3	34.5
10	1,453	62.6	19.2	7.5	4.9	2.6	3.2	97.5	49.6	37.5
11	1,415	64.0	18.8	9.8	2.9	2.5	2.1	98.2	53.2	39.4
12	1,142	65.6	16.7	9.2	4.5	1.5	2.5	96.3	56.7	41.1
13	928	64.6	16.2	8.6	6.0	1.4	3.2	96.7	54.0	42.0
14	776	71.7	12.9	6.2	2.9	3.0	3.3	94.8	53.0	38.7
15	494	68.1	13.0	9.5	3.9	2.0	3.5	93.4	50.1	39.4
≥16	82	72.9	10.4	6.3*	0.8*	1.0*	8.6	94.3	50.7	40.7

* relative standard error ≥ 40%

Fissure sealants

The mean number of fissure sealants per child (see Table 8) shows a bimodal distribution, peaking for 11- and 14-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	Sealants		Students with sealants			
				DMFT = 0		DMFT ≥ 1	
	n	mean	SD	*n*	%	*n*	%
6	1,543	0.10	0.58	1,430	3.2	113	12.3
7	1,648	0.48	1.31	1,419	14.9	229	18.3
8	1,635	0.78	1.51	1,304	24.6	331	36.4
9	1,570	0.81	1.41	1,161	28.6	409	33.7
10	1,453	0.83	1.75	982	25.8	471	39.5
11	1,415	0.93	1.89	804	29.0	611	35.3
12	1,142	0.91	2.25	590	28.1	552	30.1
13	928	0.84	1.68	416	24.2	512	30.2
14	776	1.12	1.87	315	26.5	461	46.5
15	494	1.08	1.86	204	29.9	290	40.5
≥16	82	0.84	1.54	35	12.9	47	38.1

Changes since 1998

The mean number of fissure sealants was higher for most age groups in 1999 than in 1998, with large increases for children aged between 9 and 12. This was mostly accompanied by increases in the percentage of children with fissure sealants and was seen for both those children without and those with caries experience.

Immediate treatment needs

As can be seen from Table 9, immediate treatment needs were observed for between 5.4% and 10.3% 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.

Changes since 1998

The percentages of children with immediate treatment needs were similar for almost all age groups than in 1998. However, compared to 1998, in 1999 mean dmft and DMFT scores were higher for a number of age groups with many of these increases being substantial.

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	92	7.8	4.62	4.62	0.38	1.27	1.1*	13.7	8.2	5.4*	29.5
6	159	10.3	3.35	3.54	0.52	1.32	6.1	19.6	7.6	6.5	20.8
7	139	8.4	4.56	3.54	0.26	0.80	7.6	31.9	9.3	9.7	11.9
8	157	9.6	2.81	2.70	0.60	1.32	26.9	14.9	10.5	1.7*	4.7
9	127	8.1	2.71	2.86	0.72	1.32	12.8	11.1	3.9*	12.0	3.9*
10	101	7.0	2.79	2.78	0.82	1.29	28.2	4.0*	8.5	6.5	2.1*
11	77	5.4	1.24	2.23	0.98	1.28	20.8	21.3	1.4*	0.0	3.4*
12	71	6.2	1.15	1.90	1.39	2.26	10.8	22.7	3.3*	1.2*	5.7*
13	73	7.8	0.49	1.44	2.89	3.28	22.7	13.4	7.7	7.2*	5.9*
14	64	8.2	0.40*	1.44*	1.73	2.43	6.0*	5.1*	3.0*	4.7*	9.2
15	39	8.0	0.56*	2.22*	3.85	4.14	15.1	17.5	11.5*	5.4*	18.1
≥16	2	2.9*	–	–	9.32*	6.69*	0.0	0.0	29.0*	0.0	71.0

* relative standard error ≥ 40%

School Dental Service examinations

Table 10 refers to the total number of examinations for children during 1999. 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 less than 4% for children aged older than 7 years. 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-half within most ages had received examinations within a period of 13–18 months. A re-examination interval of 7–12 months occurred for approximately one-quarter to one-third of the remaining children, being most frequent for 5-year-old children (50.8%) and occurring for between 22.8% and 43.1% of 6–15-year-olds. Few children had been examined in the previous 6 months, however approximately one-quarter of children aged 13 years or over had their last examination more than 18 months previously.

Figure 3 presents graphically time since last visit for 6- and 12-year-old children. Children aged 12 years were less likely to have had an examination within the previous 12 months (35.2%) than were children aged 6 years old (47.3%).

Changes since 1998

In comparison to 1998, there was a consistent trend for children between the ages of 7 and 13 to have had fewer examinations between 7 and 12 months previously, and increased percentages between 13–18 months previously. This has resulted in increased mean months since last examination for several age groups. However, there was a decrease in the mean number of months since the last examination for children aged 14 years and older. It should also be noted that more children were indicated as having an unknown previous examination in 1999 than in 1998.

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

Age	Children examined	Previous examination in School Dental Service		
		No	Yes	Unknown
	n	%	%	%
≤4	383	55.4	12.1	32.5
5	1,385	41.6	24.9	33.4
6	1,736	18.3	55.8	25.9
7	1,673	5.5	76.8	17.7
8	1,596	3.5	78.6	17.9
9	1,509	2.3	80.3	17.4
10	1,385	2.7	81.2	16.1
11	1,387	1.8	81.3	16.9
12	1,122	1.6	78.0	20.5
13	850	1.4	72.6	26.0
14	701	1.5	79.7	18.9
15	449	0.9*	75.3	23.8
≥16	78	3.4*	62.0	34.6

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

Age	Children	Months since last visit						
		0–6	7–12	13–18	19–24	25+	mean	SD
	n	%	%	%	%	%		
≤4	46	8.6*	27.8	43.7	0.0	19.9	16.21*	11.46*
5	345	5.8	50.8	37.6	4.7	1.2*	12.43	4.77
6	969	4.2	43.1	46.7	5.3	0.8	13.09	4.05
7	1,285	3.8	29.5	50.7	13.2	2.8	14.69	5.05
8	1,255	2.3	28.5	49.8	13.2	6.1	15.40	5.81
9	1,212	2.2	26.3	52.7	12.5	6.2	15.75	5.92
10	1,125	2.2	28.7	48.8	13.2	7.2	15.79	6.92
11	1,128	3.2	30.6	47.9	11.4	6.8	15.06	5.98
12	875	5.1	30.1	46.6	12.8	5.4	14.93	6.53
13	617	4.8	29.6	39.3	13.6	12.7	16.74	10.06
14	558	0.2*	24.5	47.6	15.5	12.2	17.01	7.14
15	338	0.0	22.8	52.0	10.8	14.4	17.21	7.58
≥16	48	0.0	27.1	43.9	17.5	11.6	17.01	6.34*

* relative standard error ≥ 40%

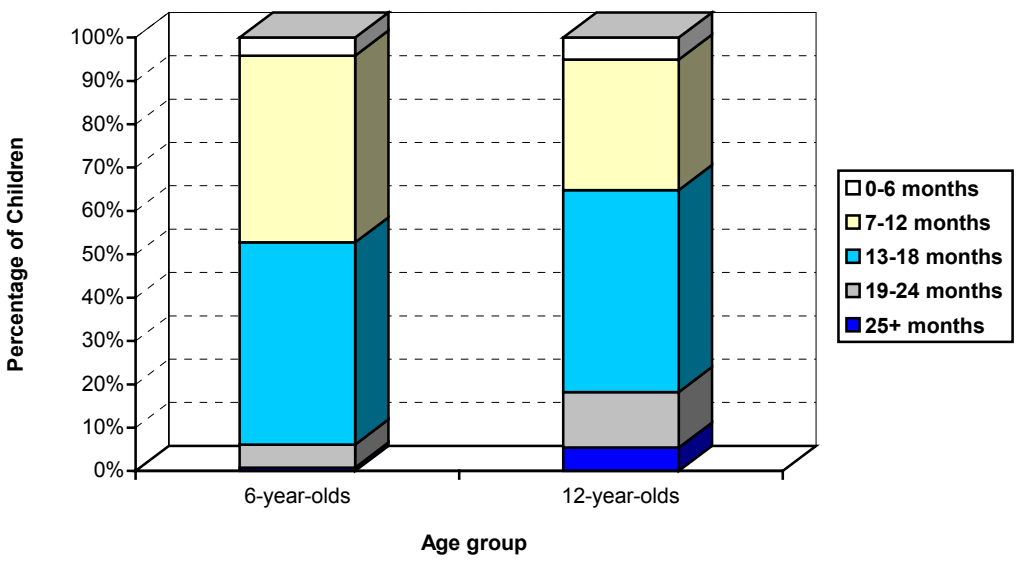


Figure 4: Time since last dental examination, 6- and 12-year-olds

Percentage of children with dmft = 0, DMFT = 0 and d+D = 4+

Figure 5 presents data contained in Tables 4, 6 and 9 to summarise the extent of dental health (represented by percentage with no clinical caries experience) and the extent of more extensive untreated decay (represented by the percentage with d+D = 4 or more).

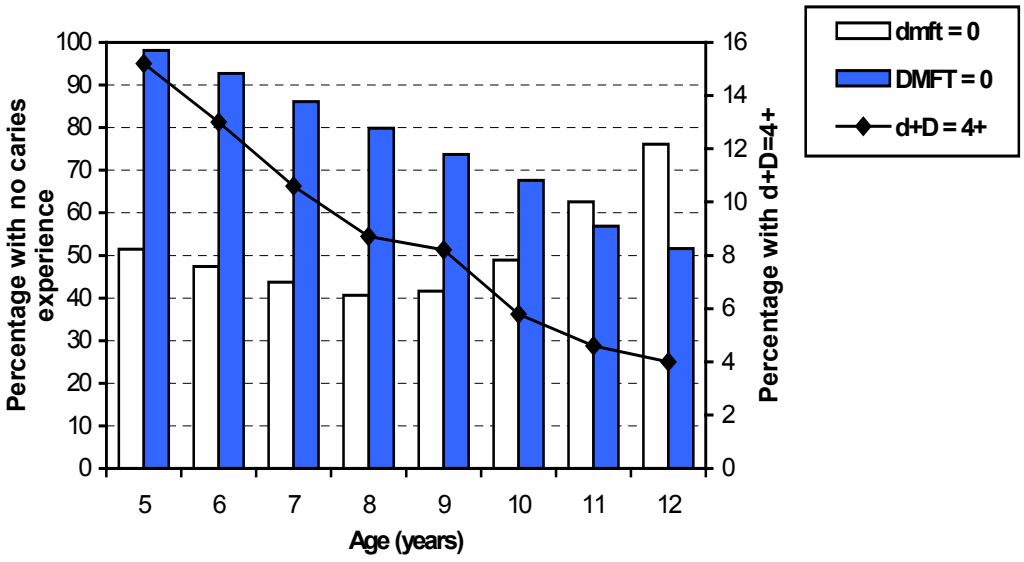


Figure 5: Percentage of children with dmft = 0, DMFT = 0 and d+D = 4+

Caries experience by Health Service District

Tables 12 and 13 describe the mean caries experience of the 5–6-year-old deciduous and 12-year-old permanent dentition respectively by Health Service District. There were often large differences between HSDs in both dentitions. However, there were small numbers of children sampled in some HSDs and mean caries experience scores for these areas should be interpreted with due care.

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

		Decayed teeth (d)		dmft	
Health Service District	***n***	**Mean**	**SD**	**Mean**	**SD**
		Northern Zone			
Bowen	39	1.50	2.72	2.30	3.03
Cairns	93	3.25	4.07	4.00	4.44
Cape York	9	1.98	4.30	2.62	4.30
Charters Towers	17	4.88	3.61	7.09	6.32
Innisfail	36	1.52	2.22	2.28	2.88
Mackay	108	0.90	1.97	1.83	3.24
Moranbah	31	0.63	1.13	1.30	2.16
Mount Isa	47	2.49	3.57	3.15	4.14
Tablelands	38	1.58	1.68	2.86	2.42
Townsville	123	1.07	2.16	1.76	2.85
		Central Zone			
Banana	18	1.05	1.91	2.11	2.43
Brisbane North	349	0.83	1.77	1.32	2.32
Central Highland	36	1.87	2.56	3.04	3.56
Fraser Coast	2	0.00	0.00	0.00	0.00
Gladstone	43	1.67	2.89	3.47	4.49
Gympie	31	1.98	2.87	3.96	4.19
Redcliffe/Caboolture	118	0.77	1.24	1.67	2.47
Rockhampton	89	1.68	3.18	2.44	3.45
South Burnett	4	2.00	3.56	4.80	6.26
Sunshine Coast	197	1.48	2.51	2.46	3.76
		Southern Zone			
Bayside	125	1.09	1.81	1.85	2.59
Charleville	13	1.11	1.52	2.46	3.94
Gold Coast	247	1.21	2.25	1.85	2.87
Logan/Beaudesert	267	1.28	2.21	2.22	2.96
Northern Downs	19	1.82	3.16	1.82	3.16
QEII	273	1.54	2.86	2.72	3.78
Roma	5	4.47	4.55	4.47	4.55
Southern Downs	37	0.84	2.10	1.90	3.01
Toowoomba	114	1.27	1.94	2.28	2.85
West Moreton	111	0.91	1.33	2.38	3.20

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

		Decayed teeth (D)		DMFT	
Health Service District	***n***	**Mean**	**SD**	**Mean**	**SD**
		Northern Zone			
Bowen	12	0.31	0.65	1.26	1.90
Cairns	44	1.75	2.24	2.12	2.31
Cape York	4	5.90	3.37	5.90	3.37
Charters Towers	11	0.55	1.21	0.81	1.17
Innisfail	12	0.20	0.42	0.69	1.04
Mackay	22	0.53	1.01	1.03	1.18
Moranbah	14	0.77	1.16	1.00	1.08
Mount Isa	10	0.19	0.41	1.05	1.36
Tablelands	13	1.76	3.97	2.32	3.73
Townsville	63	0.56	1.08	1.06	1.45
		Central Zone			
Banana	6	0.15	0.39	0.15	0.39
Brisbane North	130	0.31	0.64	0.90	1.29
Central Highland	7	0.00	0.00	0.00	0.00
Gladstone	20	0.00	0.00	0.88	1.40
Gympie	15	0.81	1.41	2.30	2.30
Redcliffe/Caboolture	57	0.64	1.00	1.56	2.11
Rockhampton	21	0.41	0.81	0.60	0.81
Sunshine Coast	82	0.64	0.98	1.62	1.92
		Southern Zone			
Bayside	77	0.44	0.89	1.29	1.82
Charleville	3	0.59	0.61	1.66	1.84
Gold Coast	106	0.59	1.21	1.29	1.94
Logan/Beaudesert	88	0.59	1.15	1.76	2.15
Northern Downs	14	0.38	0.71	2.18	4.00
QEII	119	0.29	0.69	0.84	1.48
Southern Downs	26	0.57	1.14	1.84	1.86
Toowoomba	62	0.38	0.87	1.25	2.25
West Moreton	79	0.45	1.07	1.37	1.99

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