



The Child Dental Health Survey, South Australia 1999

AIHW Dental Statistics and Research Unit
Adelaide University

in collaboration with
The South Australian Dental Service

AIHW Catalogue No. DEN 82

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Abbreviations

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

Purpose of this report

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 Australian school students. This report continues the series of annual reports providing descriptive statistics concerning child dental health in South Australia, and follows the 1998 report. There are four aims of the Survey:

1. To maintain the time-series of statistics providing annual estimates of children's dental health status;
2. To examine temporal changes in caries experience among children;
3. To examine the distribution of dental health status by geographic location and demographic factors;
4. To identify high risk groups according to geographic location and demographic status.

The following sections of this report describe: the age and sex of participants in the sample; their deciduous and permanent caries experience; frequency of fissure sealants; history of School Dental Service examinations; and geographic differences in disease experience. In addition, there is a simple summary statement highlighting differences between the 1999 and 1998 data. However, no tests of statistical significance have been undertaken and descriptions of difference between years are intended as a guide to the reader rather than a formal evaluation of trends.

Survey methods

Data for the Child Dental Health Survey were collected during the 1999 calendar year from a sample of patients of the South Australian School Dental Service by dental therapists and dentists. They transcribed data items from routine clinical records on to Optical Mark Reader (OMR) data sheets that were forwarded to the AIHW Dental Statistics and Research Unit for processing and analysis.

Data preparation

Prior to analysis 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.

Linear regression of age on the number of deciduous teeth present and the number of permanent teeth present revealed several outliers with standardised residuals greater than 3 standard deviations from the mean. These cases were corrected where they evidently resulted from a data recording error. A small number of cases that could not be corrected and were highly implausible were eliminated from the data set.

Sampling procedure

A random sampling procedure was used by selecting those students whose birthdays were on the 13th, 30th or 31st day of any month, a sampling ratio of approximately 1:12. Participants from non-metropolitan clinics who had previously participated in the Child Fluoride Study¹ were sampled at a higher rate by including students born on the 13th or between the 26th and 31st of any month, a sampling rate of approximately 1:4.7.

Actual sampling rates varied widely across South Australian clinics and for all clinics except one fell short of the intended sampling rate. A number of clinics failed to sample any students while only one clinic sampled in excess of 80% of the expected number of students. Overall, approximately 30% of the number of children who were expected to be sampled were actually sampled. This comprised approximately 2.5% of the 133,723 students examined by the South Australian School Dental Service in 1999.

Sampling by area is shown in Table 1. Sampling rates between metropolitan and non-metropolitan areas across age groups were roughly comparable. The weighted distribution shown in Table 1 indicates that weighted results are based on a sample comprising approximately 2.5 times the students seen in metropolitan clinics ($n = 2,351$) than those seen in non-metropolitan clinics ($n = 990$). The mean age of clients at metropolitan clinics was 10.03 compared to a mean age of 10.21 for children at non-metropolitan clinics.

Data analyses

All data were weighted by both the sampling ratio used for selection and months since last visit (which was used due to the under-representation of students on longer recall schedules in the sample). Effectively this resulted in reducing the contribution of those students from non-metropolitan areas who had previously participated in the Child Fluoride Study and students whose last School Dental Service examination was more recent.

Unit records were further weighted to reflect the Estimated Residential Population (ERP) of 5–14-year-olds according to Statistical Divisions within South Australia as at 30 June 1999 as published by the Australian Bureau of Statistics (2000). Statistical Divisions are shown in Figure 1. For reporting purposes, the Adelaide Statistical Division was analysed by the four Subdivisions of which it is comprised: Northern Adelaide, Eastern Adelaide, Southern Adelaide and Western Adelaide (Figure 2). Assignment of Statistical Divisions to all unit records was based on the location of the clinic to which a child attended.

The relative sample sizes and population estimates by Statistical Division as a percentage of the total sample and South Australian 5–14-year-old population are shown in Figure 3. While the results of sampling were relatively consistent with ERP by Statistical Division, as a result of sampling Eastern Adelaide, Outer Adelaide, Yorke and Lower North, Northern Adelaide and Northern were weighted up in the analysis (mean weights = 1.53, 1.50, 1.36, 1.21 and 1.16 respectively) while South East, Western Adelaide, Eyre, Southern Adelaide and Murray Lands were weighted down (mean weights = 0.67, 0.73, 0.79, 0.81 and 0.85 respectively).

¹ An NHMRC funded project, conducted in collaboration with SADS, designed to examine the effect of water fluoridation on caries incidence.

The final unit record weights were applied to all statistics computed for Tables 2 to 13 such that the weighted contribution of each Statistical Division was proportional to the percentage represented by that Statistical Division in the South Australian population. The intended purpose of the weighting protocol was to obtain a sample with characteristics representative of those of the student population covered by the School Dental Service for 1999. It should be noted that all analyses use the weighted distribution of children to derive results. However, months since last visit was not used to weight the data in Tables 11 and 12 because the results included time since last visit. Weighted numbers are rounded to the nearest whole number for ease of interpretation.

Statistical analyses included in this report are: the age and sex of students in the sample; their deciduous and permanent caries experience; frequency of fissure sealants; children's history of School Dental Service examinations; and caries experience by geographic region. Counts of decayed teeth also include recurrent caries in filled teeth. Except for Tables 11 and 12, data relating to second or subsequent examinations of students within the study period have not been used. Age-specific indices denoted with an asterisk (*) are those in which the relative standard error exceeds 40 per cent and population estimates of these indices should be viewed as statistically unreliable.

Table 1: Area of sampling (weighted)

Age	Metropolitan		Non-metropolitan		Unknown		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
2	9	0.4	0	0.0	0	0.0	9	0.3
3	62	2.6	11	1.1	2	13.3	75	2.2
4	99	4.2	42	4.2	0	0.0	141	4.2
5	171	7.3	64	6.5	1	6.7	236	7.0
6	189	8.0	62	6.3	0	0.0	251	7.5
7	184	7.8	71	7.2	0	0.0	255	7.6
8	179	7.6	93	9.4	1	6.7	273	8.1
9	175	7.4	83	8.4	2	13.3	260	7.7
10	183	7.8	87	8.8	2	13.3	272	8.1
11	177	7.5	100	10.1	0	0.0	277	8.3
12	229	9.7	88	8.9	1	6.7	318	9.5
13	201	8.5	91	9.2	1	6.7	293	8.7
14	163	6.9	58	5.9	2	13.3	223	6.6
15	131	5.6	65	6.6	0	0.0	196	5.8
16	104	4.4	44	4.4	2	13.3	150	4.5
17	87	3.7	27	2.7	1	6.7	115	3.4
18	7	0.3	4	0.4	0	0.0	11	0.3
19	0	0.0	0	0.0	0	0.0	0	0.0
20	1	0.0	0	0.0	0	0.0	1	0.0
Total	2,351	100.0	990	100.0	15	100.0	3,356	100.0

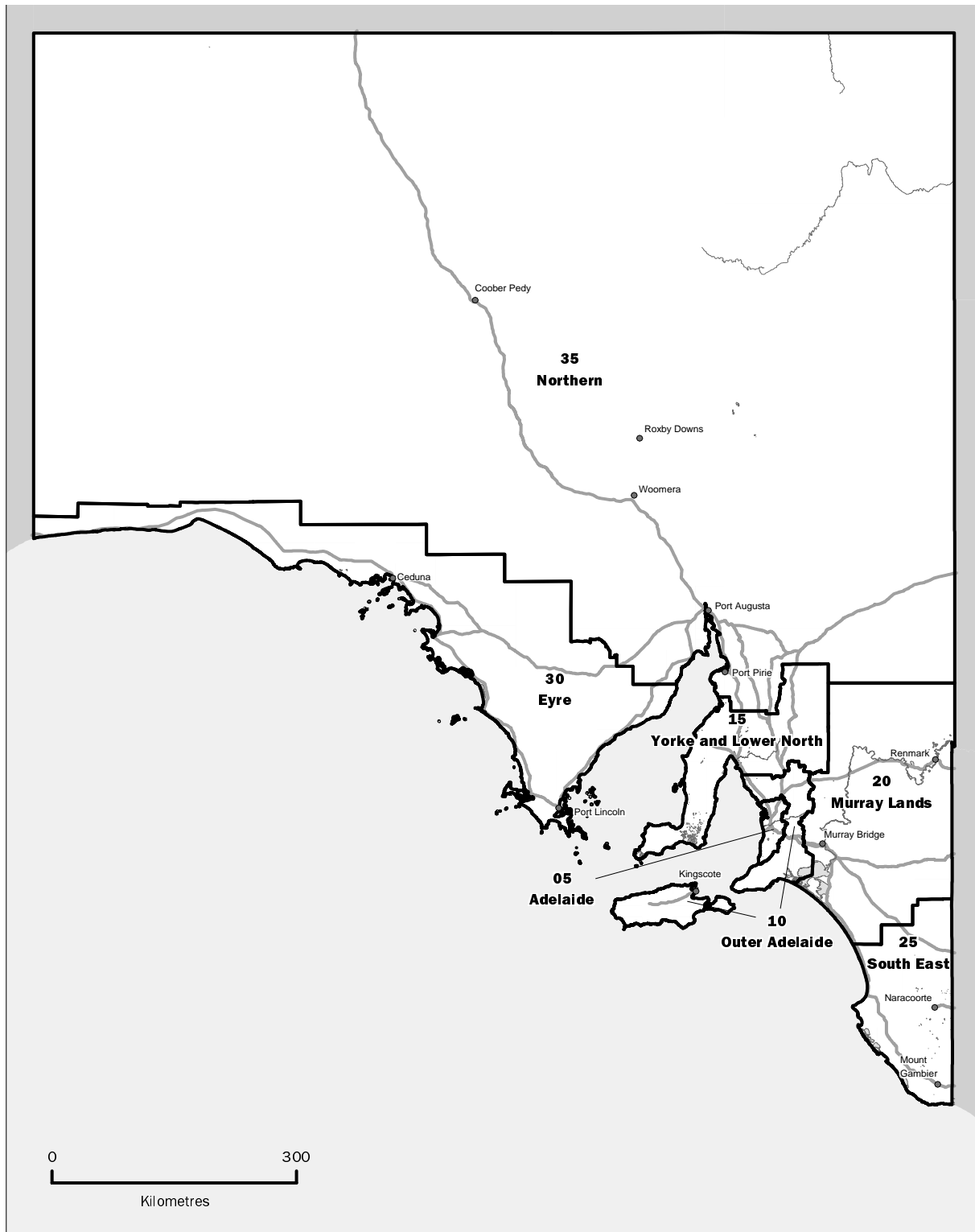


Figure 1: South Australian Statistical Districts (Australian Bureau of Statistics, 2000)

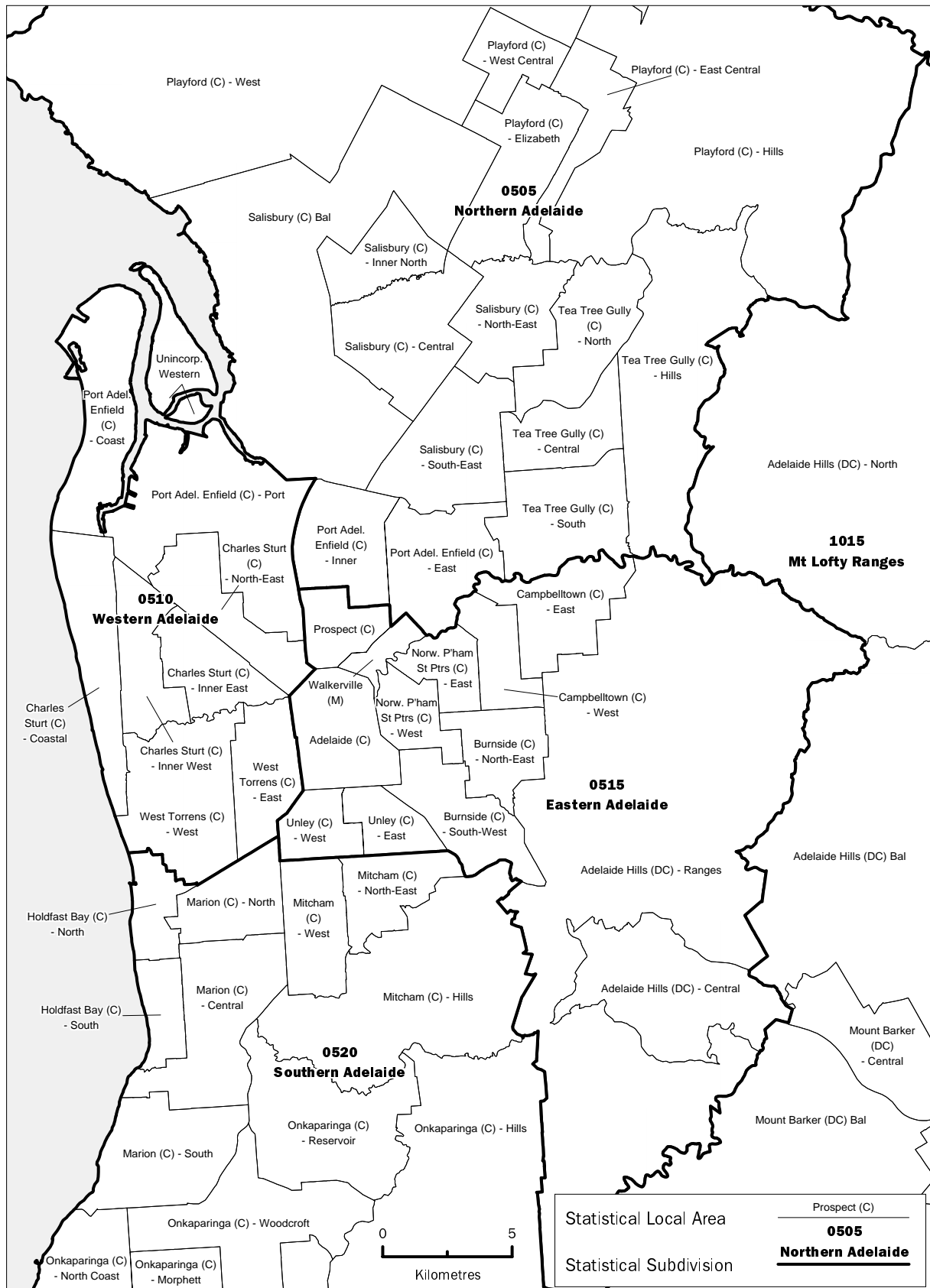


Figure 2: Subdivisions of Adelaide Statistical Division (Australian Bureau of Statistics, 2000)

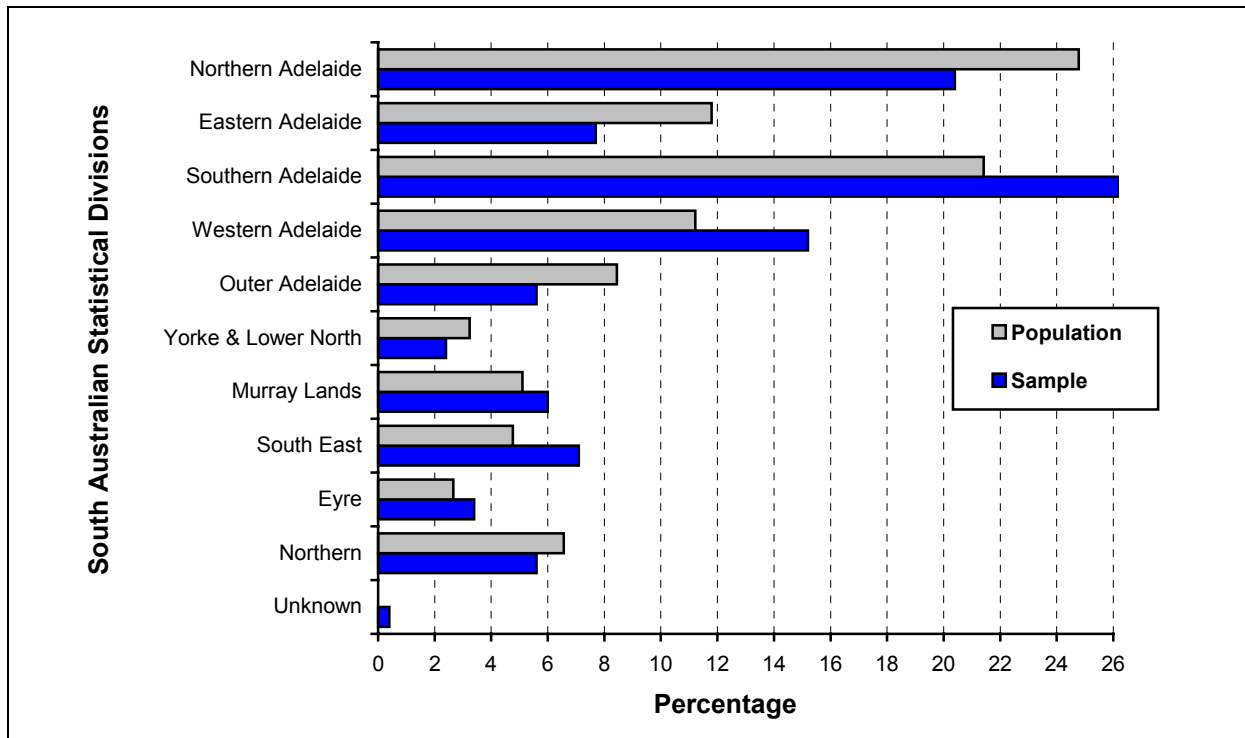


Figure 3: Percentage of children in sample and South Australian population by Statistical Division

Demographic composition of the sample

Table 2 lists at the left the unweighted number of students sampled according to their age. The majority of students were aged 5 years or more (91.1%) and there were large numbers of students in the range 5 to 16 years. The ages of sampled children approximated a normal distribution, peaking for 13-year-olds.

The age distribution of the sample is related to the main target groups of students served by the School Dental Service in SA. This illustrates that the sample is representative of students in primary school and early secondary school, rather than all students in South Australia up to the age of 18. Consequently, those children who are outside the main school dental service target groups (less than 5 or more than 17 years) may differ on key characteristics and are likely to be less representative of their respective age groups in the SA population.

Males and females were represented in approximately equivalent numbers although more males than females were sampled overall. The mean age of males (9.97 years) was slightly lower than for females (10.25 years).

There was little change in the age distribution for male or female children as a result of weighting.

Changes since 1998

The 1999 sample was slightly smaller than the 1998 sample by 228 children. However, there was an increase in the weighted number of children in all age groups between 3 and 8, and a decrease for children aged 9 and in all age groups between 11 and 17. The ratio of males to females was similar in 1999 (1.00:1) to the ratio in 1998 (1.06:1).

Table 2: Demographic composition of the sample

Age	Children in sample (unweighted)			Children in sample (weighted)		
	Males	Females	Persons	Males	Females	Persons
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
2	5	6	77	5	5	10
3	41	35	76	40	35	74
4	71	76	147	69	71	141
5	128	114	242	122	114	236
6	137	122	259	139	115	254
7	140	120	260	136	121	257
8	129	131	260	136	136	272
9	123	129	252	136	124	259
10	132	124	256	137	138	275
11	139	113	252	151	130	281
12	153	149	302	158	162	320
13	141	167	308	134	159	293
14	127	114	241	116	107	223
15	99	110	209	96	101	196
16	64	90	154	57	94	150
17	54	70	124	46	69	116
18	8	5	13	6	5	11
20	0	1	1	0	1	1
Total	1,691	1,676	3,367	1,681	1,686	3,367

Deciduous dentition caries experience

For children between 4 and 12 years of age, the mean number of clinically decayed teeth ranged from a high of 0.86 among 6-year-old children to a low of 0.27 among students aged 12 years (see Table 3). Few teeth in any given age group were indicated as missing due to caries although this figure was generally highest for the younger children. The mean number of filled teeth showed a consistent increase to the age of 9 before declining as a result of the exfoliation of deciduous teeth. The mean number of decayed, missing and filled teeth (dmft) showed a similar trend, generally increasing with age to peak at 1.62 for 9-year-old children before declining to 0.67 for 12-year-olds.

Table 3: Deciduous dentition – tooth level caries experience by age

Age	Children	Teeth	Decayed (d)			Missing (m)		Filled (f)		dmft	
			<i>n</i>	mean	mean	SD	mean	SD	mean	SD	mean
≤3	84	19.96	0.67	1.94	0.07*	0.50*	0.07*	0.45*	0.82	2.07	
4	141	19.96	0.58	1.46	0.12*	0.81*	0.22	0.88	0.92	2.37	
5	236	19.68	0.61	1.37	0.01*	0.15*	0.48	1.42	1.10	2.20	
6	254	17.53	0.86	1.77	0.05*	0.40*	0.59	1.41	1.50	2.55	
7	257	14.48	0.64	1.40	0.05*	0.34*	0.70	1.41	1.39	2.26	
8	272	12.32	0.52	0.99	0.07	0.42	1.03	1.68	1.61	2.23	
9	254	11.06	0.50	0.86	0.00	0.09*	1.12	1.82	1.62	2.18	
10	255	8.57	0.46	1.01	0.06*	0.76*	0.94	1.48	1.46	2.21	
11	193	6.50	0.37	0.90	0.01*	0.19*	0.71	1.26	1.09	1.62	
12	130	4.59	0.27	0.53	0.01*	0.12*	0.39	0.77	0.67	0.96	

* relative standard error ≥ 40%

Table 4: Deciduous dentition – caries experience indices by age

Age	Teeth present		d/dmft		dmft = 0	
	<i>n</i>	<i>n</i>	<i>n</i>	%	<i>n</i>	%
≤3	19.96	16	16	77.5	84	81.4
4	19.96	35	35	73.1	141	75.1
5	19.68	75	75	64.3	236	68.0
6	17.53	102	102	61.8	254	59.7
7	14.48	107	107	49.3	257	58.1
8	12.32	139	139	37.1	272	48.9
9	11.06	129	129	37.5	254	49.2
10	8.57	123	123	30.4	255	51.7
11	6.50	86	86	31.8	193	55.4
12	4.59	59	59	46.3	130	54.9

* relative standard error ≥ 40%

The percentage of caries experience represented as untreated decay (d/dmft) showed a strong age-associated decline, reducing from 77.5% among the youngest children to 30.4% for children aged 10 years (see Table 4). This pattern of deciduous caries experience indicates that children in the youngest age groups enter the School Dental Service program with a relatively high level of untreated decay. However, it should be noted that only a small number of children are sampled from these young age groups.

The percentage of students free of caries experience (% dmft = 0) also showed a general age-associated reduction from 81.4% for children up to the age of 3 years to 48.9% among 8-year-olds before increasing to 55.4% for 11-year-olds.

The surface level caries experience (see Table 5) shows approximately 40–80% higher caries experience (dmfs) than that shown when looking at the tooth level. There were approximately 25–55% more clinically decayed surfaces than there were clinically detectable decayed teeth. General trends are similar to those indicated in analyses at the tooth level.

Changes since 1998

The mean number of clinically decayed teeth increased from 1998 for most ages, the exceptions being 4- and 5-year-olds. The largest change was for 6-year-olds, an increase of 91.1% from 0.45 to 0.86. However, other changes between 1998 and 1999 were less consistent. The mean number of teeth with fillings increased for 3 age groups but decreased for children aged 4, 6, 9, 10 and 12. Similarly, mean dmft scores increased for 5 age groups but decreased for 4 age groups.

There was an increase in the percentage of dmft expressed as decay between 1998 and 1999, with increases for children aged up to 8 years old and for 12-year-olds. Changes in the percentage of students with no deciduous caries experience (dmft = 0) were inconsistent between 1998 and 1999. Percentage dmft = 0 increased for children aged 4, 5, 9 and 10 years but decreased for children aged 6, 7, 8 and 12 years old.

Table 5: Deciduous dentition – surface level caries experience by age

Age	Children	Surfaces	Decayed (d)			Missing (m)		Filled (f)		dmfs	
			mean	mean	SD	mean	SD	mean	SD	mean	SD
≤3	84	87.55	1.03	3.24	0.29*	2.01*	0.10*	0.88*	1.42	3.93	
4	141	87.32	0.85	2.33	0.51*	3.48*	0.30	1.28	1.66	5.40	
5	236	86.68	0.77	1.92	0.05*	0.69*	0.71	2.23	1.53	3.42	
6	254	77.87	1.32	3.00	0.25*	1.80*	1.02	3.11	2.58	5.53	
7	257	65.65	1.04	2.86	0.22*	1.57*	1.09	2.42	2.35	4.70	
8	272	56.75	0.65	1.31	0.35	2.11	1.51	2.73	2.50	4.17	
9	254	51.73	0.63	1.21	0.02*	0.47*	1.71	3.20	2.36	3.69	
10	255	40.03	0.57	1.47	0.30*	3.64*	1.59	2.93	2.46	5.18	
11	193	30.67	0.46	1.18	0.07*	0.93*	0.99	1.96	1.51	2.67	
12	130	21.73	0.33	0.70	0.07*	0.58*	0.51	1.10	0.91	1.48	

* relative standard error ≥ 40%

Permanent teeth caries experience

The mean number of clinically decayed permanent teeth was consistently smaller than the mean number of decayed deciduous teeth for children aged up to 12 years (see Table 6). For children up to the age of 8 years this can be accounted for by the small number of permanent teeth present. However the mean number of clinically decayed permanent teeth remained low into the teen years (peaking at a mean of 0.49 for 15-year-olds) despite the increasing number of permanent teeth present from the age of 9 onwards.

The mean number of teeth missing due to caries was low for all age groups while the mean number of filled teeth increased with increasing age, from 0.00 at age 6 to 1.25 for children aged 17 years and over. The mean DMFT increased with age from a low of 0.07 for 6-year-olds to a high of 1.75 for the oldest age group. The mean DMFT for 12-year-olds was 0.58.

The D/DMFT ratio declined with age, reducing from 97.4% for 6-year-olds to 25.2% for students aged 17 years and older (Table 7). Approximately one-half of 12-year-old DMFT was accounted for by clinically detectable decay. The percentage of students with no caries experience in their permanent dentition also declined systematically with increasing age, although remaining above 50% for all age groups. Approximately 68% of 12-year-old children had a DMFT = 0.

The surface level caries experience in the permanent dentition (see Table 8) shows approximately 15–35% higher caries experience (DMFS) than that shown in the tooth level analyses. There were approximately 5–20% more clinically decayed surfaces than there were clinically detectable decayed teeth.

Table 6: Permanent dentition – tooth level caries experience by age

Age	Children	Teeth	Decayed (D)			Missing (M)		Filled (F)		DMFT	
			mean	SD	SD	mean	SD	mean	SD	mean	SD
5	56	2.76	–	–	–	–	0.01*	0.07*	0.01*	0.07*	
6	206	5.22	0.06*	0.37*	–	–	0.00	0.04*	0.07*	0.38*	
7	252	8.83	0.10	0.40	–	–	0.03	0.20	0.13	0.50	
8	271	11.15	0.14	0.50	0.00	0.06*	0.07	0.32	0.21	0.60	
9	259	12.74	0.15	0.56	0.01*	0.14*	0.14	0.49	0.30	0.76	
10	275	16.00	0.14	0.37	–	–	0.15	0.43	0.28	0.60	
11	281	20.66	0.18	0.48	0.01*	0.11*	0.21	0.62	0.39	0.85	
12	320	24.24	0.26	0.67	0.01*	0.10*	0.31	0.75	0.58	1.07	
13	293	26.49	0.44	1.19	0.02*	0.25*	0.41	0.99	0.87	1.69	
14	223	27.26	0.32	0.80	0.04*	0.25*	0.66	1.37	1.02	1.73	
15	196	27.44	0.49	1.04	–	–	0.71	1.44	1.21	1.73	
16	150	27.59	0.38	0.86	–	–	0.84	1.47	1.22	1.77	
≥17	128	27.54	0.49	1.29	0.01*	0.14*	1.25	2.08	1.75	2.58	

* relative standard error ≥ 40%

Table 7: Permanent dentition – caries experience indices by age

Age	Teeth present		D/DMFT		DMFT = 0	
	<i>n</i>	<i>n</i>	<i>n</i>	%	<i>n</i>	%
5	2.76	0	0	0.0	56	99.5
6	5.22	8	8	97.4	206	96.4
7	8.83	21	21	76.1	252	91.8
8	11.15	39	39	66.2	271	85.7
9	12.74	45	45	45.0	259	82.6
10	16.00	59	59	53.2	275	78.6
11	20.66	66	66	51.9	281	76.5
12	24.24	102	102	47.9	320	68.2
13	26.49	96	96	50.3	293	67.1
14	27.26	94	94	32.3	223	57.8
15	27.44	96	96	44.5	196	51.2
16	27.59	68	68	35.0	150	54.9
≥17	27.54	59	59	25.2	128	53.8

* relative standard error ≥ 40%

Table 8: Permanent dentition – surface level caries experience by age

Age	Children	Surfaces	Decayed (D)		Missing (M)		Filled (F)		DMFS	
			mean	SD	mean	SD	mean	SD	mean	SD
5	56	12.81	–	–	–	–	0.02*	0.22*	0.02*	0.22*
6	206	23.59	0.08*	0.50*	–	–	0.00	0.09*	0.09*	0.51*
7	252	39.06	0.11	0.48	–	–	0.03	0.20	0.15	0.59
8	271	48.73	0.15	0.57	0.02*	0.31*	0.07	0.32	0.24	0.74
9	259	55.46	0.16	0.64	0.06*	0.69*	0.17	0.66	0.38	1.18
10	275	70.64	0.15	0.39	–	–	0.19	0.61	0.33	0.77
11	281	92.67	0.18	0.49	0.05*	0.48*	0.26	0.85	0.50	1.20
12	320	109.77	0.31	0.80	0.05*	0.52*	0.37	0.95	0.73	1.46
13	293	120.55	0.47	1.24	0.11*	1.24*	0.51	1.43	1.09	2.49
14	223	124.19	0.43	1.46	0.18*	1.27*	0.83	1.83	1.44	2.98
15	196	125.29	0.56	1.23	–	–	0.82	1.64	1.38	1.99
16	150	125.98	0.41	0.92	–	–	1.24	2.82	1.64	3.14
≥17	128	125.75	0.60	1.67	0.05*	0.71*	1.71	3.19	2.35	3.92

* relative standard error ≥ 40%

Changes since 1998

There was an increase in the number of decayed permanent teeth across most age groups, with the biggest differences being 91.3% for 13-year-olds. Changes in DMFT scores between 1998 and 1999 were similar to those for mean decay, with increases for children aged 7 and 9 and for all age groups over 10 years.

Changes in the percentage of DMFT expressed as clinically detectable decay were also consistent between 1998 and 1999 with increases for 10 of the age groups. The percentages of children with DMFT = 0 were mostly little changed between 1998 and 1999 although children aged 13 and 17+ demonstrated an increase while those aged 8, 12, 14 and 15 showed small decreases. There was a 4.1% decrease in the percentage of 12-year-old children with no caries experience in the permanent dentition between 1998 and 1999.

All teeth caries experience

Not including the very young children, the percentage of students with at least one instance of untreated clinically observable decay in the combined deciduous and permanent dentition ranged from 18.0% of children aged 17+ years old to 36.6% of children aged 9 years (Table 9). Few children had in excess of 4 clinically detectable decayed teeth, with the highest percentages being in the youngest age groups.

Table 9: All teeth - caries experience by age

Age	Children	d+D =						m+M = 0	f+F = 0	dmft+ DMFT = 0
		0	1	2	3	4	5+			
	<i>n</i>	%	%	%	%	%	%	%	%	%
≤3	84	85.6	0.9*	0.7*	0.6*	0.4*	6.2	97.3	97.0	81.4
4	141	80.1	6.1	0.4*	0.4*	0.4*	3.5	97.9	91.3	75.1
5	236	75.3	9.0	7.5	2.8	0.4*	3.2	99.5	84.3	68.0
6	254	67.2	12.6	5.4	5.6	4.5	4.6	97.9	78.0	59.0
7	257	68.1	12.9	9.5	6.2	0.8*	2.7	97.4	69.8	55.5
8	272	64.6	19.1	8.3	5.6	0.4*	2.1	96.1	59.3	44.7
9	259	63.4	21.5	8.2	2.8	0.6*	0.9	99.1	57.0	45.1
10	275	69.5	18.4	5.1	2.5	0.5*	1.2	98.9	54.4	44.4
11	281	75.4	15.1	4.7	0.6*	1.0*	0.3	98.4	67.6	55.0
12	320	73.9	19.5	3.7	0.5*	1.2*	0.2	98.4	75.3	56.5
13	293	74.1	15.6	6.7	0.7*	0.0	3.0	98.4	77.5	62.3
14	223	80.0	12.4	4.8	0.7*	0.9*	0.6	97.4	66.3	56.6
15	196	73.0	14.7	6.3	3.4	0.9*	2.3	100.0	66.3	48.5
16	150	77.3	14.0	4.3	0.5*	0.5*	0.0	100.0	65.6	54.4
≥17	128	82.0	5.9	5.5	0.7*	1.3*	4.8	99.5	57.8	53.8

* relative standard error ≥ 40%

Participants across all ages had few deciduous or permanent teeth missing due to caries ($m+M = 0$). The distribution of the percentage of children with no fillings shows a bimodal distribution, the lowest points being for students aged 10 years and 17+ years. The decrease in the percentage $f+F = 0$ to the age of 10 is most likely a result of the exfoliation of filled deciduous teeth and the time lag before the filling of permanent teeth. The percentage of students with neither deciduous or permanent caries experience ($dmft+DMFT = 0$) also declined in the middle age ranges (8 to 10 years). There was evidence of a beginning of a decline in both $f+F = 0$ and $dmf+DMF = 0$ for students aged 15 years old and over.

Changes since 1998

Between 1998 and 1999 there were decreases in the percentages of students with $d+D = 0$ across several ages with the only increase being for 4-year-olds. There were, however, increases in the percentages of several age groups presenting without fillings. There was no clear trend in the percentages of students with $dmft+DMFT = 0$ across age groups with some groups showing an increased percentage and some a decreased percentage between 1998 and 1999.

Fissure sealants

As can be seen in Table 10, the mean number of fissure sealants increased in a relatively consistent fashion with the increasing age of the participants, although there were apparent steps to 10–11-year-olds, 12–13-year-olds and 14–15-year-olds. There was a mean of 1.23 sealants per child among 12-year-olds. Except for 6-year-olds, the prevalence of fissure sealants among those without permanent caries experience ($DMFT = 0$) was consistently less than among those with some permanent caries experience ($DMFT = 1+$). For children over the age of 6, the percentage of students with fissure sealants was between 46.4% (11-year-olds) and 251.1% (7-year-olds) greater for students with some caries experience compared to those with no caries experience. This suggests that fissure sealants were being used preferentially in students with past caries experience.

Changes since 1998

Between the years of 1998 and 1999 there were reductions across almost all age groups in the average number of fissure sealants. These changes were due primarily to a decrease in fissure sealants among those children with no caries experience, although reductions were also apparent for five age groups who had a $DMFT$ score of 1 or more.

Table 10: Fissure sealants by age

Age	Children			Children with DMFT = 0		Children with DMFT = 1+	
	<i>n</i>	mean	SD	<i>n</i>	%	<i>n</i>	%
6	254	0.02*	0.26*	246	0.6	8	0.0
7	257	0.12	0.54	236	4.5	21	15.8
8	272	0.41	0.99	233	15.5	39	34.8
9	259	0.66	1.22	214	22.2	45	52.7
10	275	0.98	1.40	216	34.8	59	61.3
11	281	0.94	1.39	215	33.2	66	48.6
12	320	1.23	1.60	218	37.6	102	69.1
13	293	1.21	1.75	197	38.4	96	57.4
14	223	1.67	2.08	129	38.2	94	75.5
15	196	1.74	2.19	100	41.9	96	67.3
16	150	2.11	2.25	82	51.3	68	75.8
≥17	128	2.07	2.58	69	37.8	59	76.2

* relative standard error ≥ 40%

School Dental Service examinations

Table 11 shows that an overwhelming majority of the students had previously been examined within the School Dental Service. The youngest children were the least likely to have had a previous examination. However, by 7 years of age more than 90% of students were found to have had a prior examination.

Table 12 refers to the period of time since the previous School Dental Service examination among children with a previous record of examination. There was a distinct age-related pattern with younger children more likely than older children to have received a previous examination within the last 12 months. This is reflected in the mean time since last visit that increased linearly with age, from 12.77 months for the youngest group to 19.63 months for 16-year-olds. Between 52.9% and 79.6% of children in any age group had received their previous School Dental Service examination between 1 and 2 years previously.

Changes since 1998

The percentage of children having had a previous examination within a 12-month period decreased between 1998 and 1999 for a number of age groups. In line with this, there was an increase for several age groups in the percentage of students having received an examination between 1 and 2 years previously.

The impact of these results is seen in an increase in the mean time since last visit across 12 of the 15 age groups, with the largest increase being from 17.09 to 18.25 months (6.8%) for 12-year-olds.

Table 11: School Dental Service examinations by age

Age (years)	Children	Previous examination in School Dental Service		
		Yes	No	Unknown
	<i>n</i>	%	%	%
≤3	88	27.5	72.5	0.0
4	147	41.3	57.8	1.0*
5	243	56.4	40.9	2.7
6	261	78.9	18.4	2.8
7	263	90.6	6.7	2.7
8	267	92.2	4.4	3.4
9	246	94.4	3.3	2.3*
10	256	95.2	2.4	2.4
11	250	97.5	1.6*	0.9*
12	309	97.9	1.4*	0.7*
13	311	98.8	0.7*	0.5*
14	240	96.8	1.8*	1.5*
15	207	98.0	0.7*	1.2*
16	157	97.7	1.5*	0.8*
≥17	139	100.0	0.0	0.0

* relative standard error ≥ 40%

Table 12: Time since last School Dental Service examination by age

Age	Students						Months since last examination	
		0-6 months	7-12 months	13-18 months	19-24 months	25+ months	mean	SD
	<i>n</i>	%	%	%	%	%		
≤3	24	14.7*	29.0	41.5	11.4*	3.4*	12.77*	5.78*
4	61	14.9	28.2	42.6	12.3	2.0*	13.20	5.53*
5	137	4.5	26.1	46.5	18.3	4.7	14.98	5.82
6	206	2.5*	17.1	58.0	17.6	4.8	15.77	4.67
7	238	1.8*	17.8	57.9	15.5	7.1	16.09	5.66
8	246	3.6	15.7	53.4	21.7	5.6	16.44	5.38
9	232	1.5*	19.5	46.9	21.7	10.4	17.35	7.32
10	243	0.9*	14.8	55.6	19.3	9.4	17.40	6.60
11	244	1.6*	8.1	56.1	20.4	13.8	18.52	7.28
12	302	1.3*	8.1	56.1	23.5	11.1	18.25	6.33
13	308	0.7*	9.1	51.2	27.0	12.0	18.32	6.56
14	233	1.4*	9.9	51.1	24.6	13.0	18.72	7.63
15	203	0.8*	13.2	38.3	31.8	16.0	19.27	7.79
16	153	2.0*	9.6	45.0	29.5	13.8	19.65	9.28
≥17	139	1.5*	16.3	43.6	25.4	13.3	18.71	8.74

* relative standard error ≥ 40%

Summary of dental disease

Figure 4 presents data contained in Tables 4, 7 and 9 to summarise the extent of dental disease present in the sample for 1999.

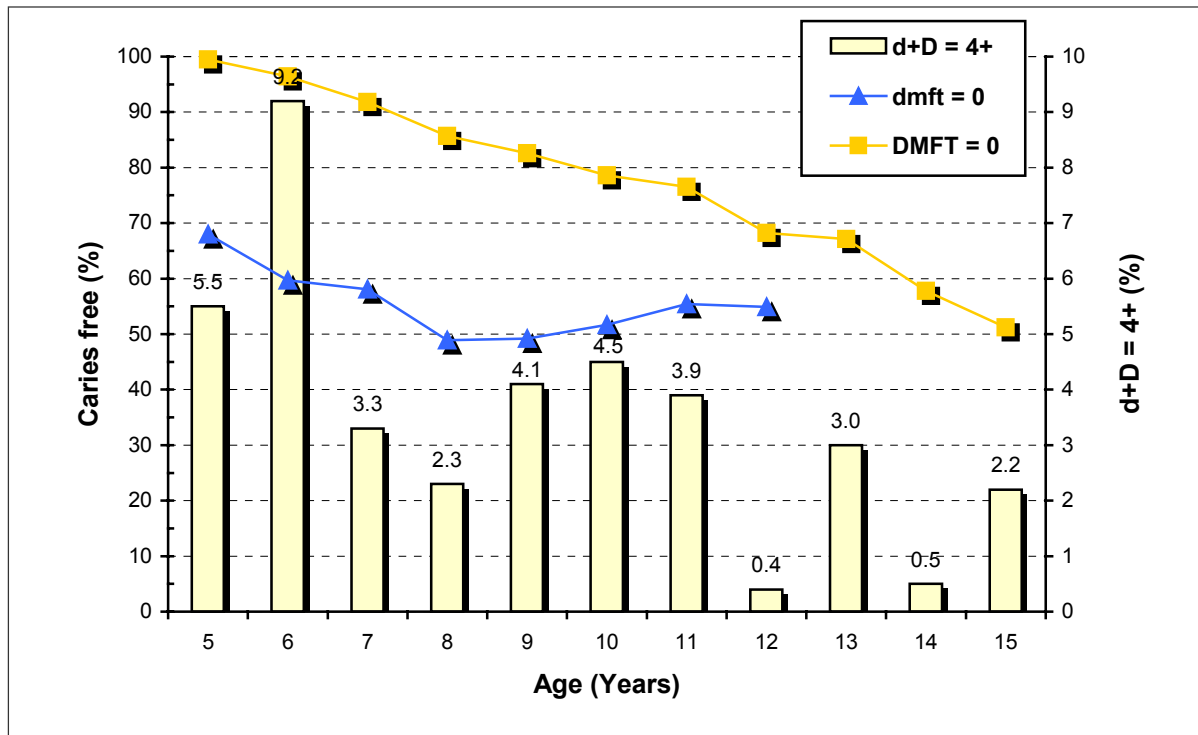


Figure 4: Percentage of children with dmft = 0, DMFT = 0 and d+D = 4+

Caries experience by geographical location

Table 13 presents caries experience data for each of the Statistical Divisions and Subdivisions used in this report. Considerable variation can be seen in caries experience for both selected age groups across geographical areas. Among 5- and 6-year-old children, mean decay scores in the deciduous dentition ranged from 0.50 in Yorke and Lower North to 2.60 in Eyre. It should be noted, however, that the sampled number of children from both these areas is very small and may therefore not accurately represent the population of children these areas. Excluding these areas, decay scores are lowest in Eastern, Southern and Western Adelaide (0.54, 0.56 and 0.57 respectively) and highest in Outer Adelaide (1.30). The mean number of filled teeth was lowest in Western Adelaide (0.34) and highest in South East (1.17). Mean dmft scores were also lowest in Western Adelaide (0.92) and highest in the South East region (2.40). The percentage of children with dmft = 0 was highest in Southern Adelaide (71.8%) and lowest in Outer Adelaide (37.0%).

Table 13: Deciduous caries experience for 5–6-year-old children by region

	Children	Decayed (d)		Missing (m)		Filled (f)		dmft		dmft = 0
	<i>n</i>	mean	SD	mean	SD	mean	SD	mean	SD	%
Adelaide (Northern)	135	0.82	1.72	0.00	0.00	0.71	1.62	1.53	2.61	60.7
Adelaide (Eastern)	70	0.54	1.42	0.09	0.59	0.59	1.66	1.22	2.46	67.4
Adelaide (Southern)	116	0.56	1.62	0.04	0.29	0.39	1.09	0.99	2.15	71.8
Adelaide (Western)	64	0.57	1.25	0.00	0.00	0.34	1.13	0.92	1.71	66.7
Outer Adelaide	40	1.30	1.63	0.11	0.57	0.70	1.55	2.11	2.62	37.0
Yorke & Lower North	5	0.50	0.96	0.00	0.00	1.25	1.44	1.75	1.98	50.0
Murray Lands	19	1.00	1.82	0.04	0.21	0.91	1.66	1.96	2.91	56.5
South East	20	1.13	1.75	0.10	0.41	1.17	2.26	2.40	3.86	50.0
Eyre	8	2.60	2.45	0.00	0.00	1.70	1.73	4.30	3.58	10.0
Northern	22	0.74	1.32	0.00	0.00	0.95	2.03	1.68	2.42	57.9

Among 12-year-old children (Table 14), the Yorke and Lower North region had the highest mean decay score (0.89) while the four regions from metropolitan Adelaide had the lowest scores. A similar result can be seen for filled teeth, again with the highest mean score in the Yorke and Lower North region (0.78) and the lowest score in Eastern Adelaide (0.11). Yorke and Lower North also had the highest mean DMFT score (1.67) and the lowest percentage of children with DMFT = 0 (44.4%). The lowest mean DMFT score among 12-year-olds was in Eastern Adelaide (mean = 0.25) which also had the highest percentage of children with DMFT = 0 (81.8%)

Table 14: Permanent caries experience for 12-year-old children by region

	Children	Decayed (D)		Missing (M)		Filled (F)		DMFT		DMFT = 0
	<i>n</i>	mean	SD	mean	SD	mean	SD	mean	SD	%
Adelaide (Northern)	139	0.15	0.48	0.01	0.09	0.27	0.64	0.43	0.86	74.8
Adelaide (Eastern)	67	0.14	0.41	0.00	0.00	0.11	0.49	0.25	0.61	81.8
Adelaide (Southern)	129	0.13	0.39	0.01	0.08	0.26	0.72	0.39	0.84	75.9
Adelaide (Western)	56	0.16	0.37	0.03	0.16	0.32	0.68	0.50	0.87	69.7
Outer Adelaide	54	0.36	0.64	0.00	0.00	0.19	0.62	0.56	1.08	69.4
Yorke & Lower North	12	0.89	1.51	0.00	0.00	0.78	1.18	1.67	2.03	44.4
Murray Lands	26	0.23	0.62	0.03	0.18	0.45	0.89	0.71	1.25	67.7
South East	24	0.31	0.68	0.00	0.00	0.40	0.89	0.71	1.11	62.9
Eyre	13	0.76	1.36	0.00	0.00	0.29	0.59	1.06	1.36	52.9
Northern	37	0.25	0.44	0.03	0.18	0.53	1.10	0.81	1.35	56.2