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The Child Dental Health Survey, South Australia 2002

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AUSTRALIAN RESEARCH CENTRE
FOR POPULATION ORAL HEALTH**

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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
SDS	school dental service

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 2001 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. The report also provides selected trends, highlighting differences across the 5-year period 1998 to 2002. However, no formal hypothesis tests have been undertaken and descriptions of differences between years are intended as a guide to the reader rather than as a formal statistical evaluation.

Survey methods

Data for the Child Dental Health Survey were collected during the 2002 calendar year from patients of the South Australian School Dental Service by dental therapists and dentists. Data items were entered into the EXACT computer management information system (MIS) and subsequently extracted in a de-identified form and provided to the Australian Institute of Health and Welfare (AIHW) Dental Statistics and Research Unit (DSRU) for processing and analysis.

Data preparation

Prior to analysis a check was made for missing, erroneous or duplicate data. Erroneous and duplicate data were eliminated from the data set and children with multiple visits in a year were flagged with all but the first case removed from analyses.

Sampling procedure

In South Australian Child Dental Health Surveys prior to 2001, 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. For the current report, data were extracted on all children with examinations in the School Dental Service during the period January to December 2002.

Data analyses

Data were weighted by 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 whose last School Dental Service examination was more recent.

Unit records were further weighted to reflect the Estimated Resident Population (ERP) of 5–14-year-olds according to Statistical Divisions within South Australia as at 30 June 2002, as estimated by the Australian Bureau of Statistics. 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 postcode of residence of each child.

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. Eastern Adelaide, Outer Adelaide, Murray Lands, Eyre and Northern were assigned weights greater than 1 (mean weights = 1.33, 1.32, 1.05, 1.21 and 1.01 respectively) while Northern Adelaide, Southern Adelaide, Western Adelaide, Yorke and Lower North, and South East and were assigned weights lower than 1 (mean weights = 0.97, 0.98, 0.84, 0.87 and 0.72 respectively).

Weights were applied to all statistics computed for Tables 2 to 14. However, months since last visit was not used to weight the data in Tables 10 and 11 because the results included time since last visit. Also regional weights were not applied in Tables 12 and 13. Weighted numbers are rounded to the nearest whole number for ease of interpretation.

The purpose of the weighting protocol was to produce estimates that are representative of the population covered by the School Dental Service for 2002. However, the estimates in this report cannot be applied to children who are not enrolled in the South Australian School Dental Service. Consequently, the results in this report do not represent the complete South Australian child population, but only that portion of the population that is enrolled in the South Australian School Dental Service. In South Australia, approximately 78% and 48% of pre and primary school children and secondary school children 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.

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. 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.

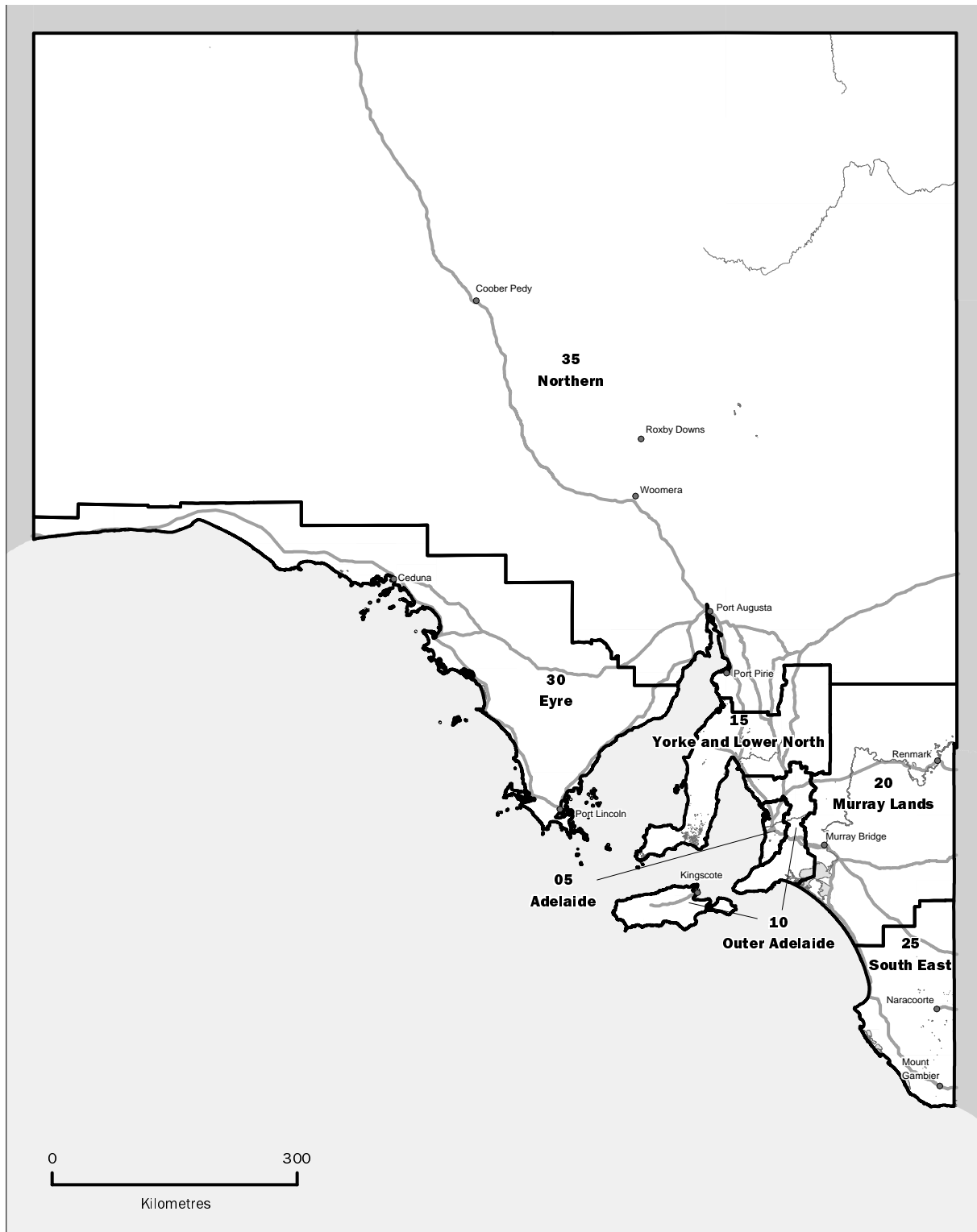


Figure 1: South Australian Statistical Districts (ABS, 2000)

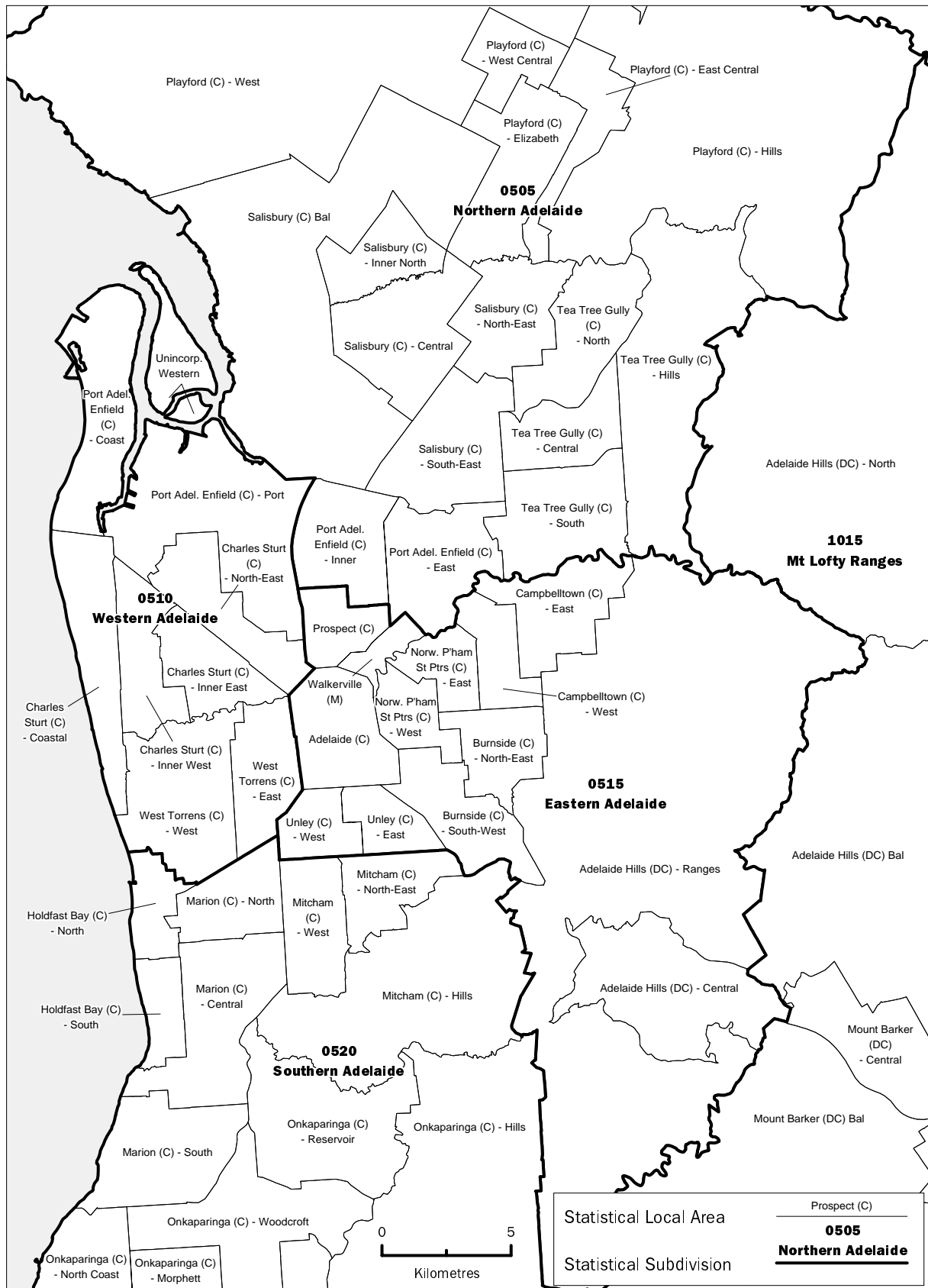
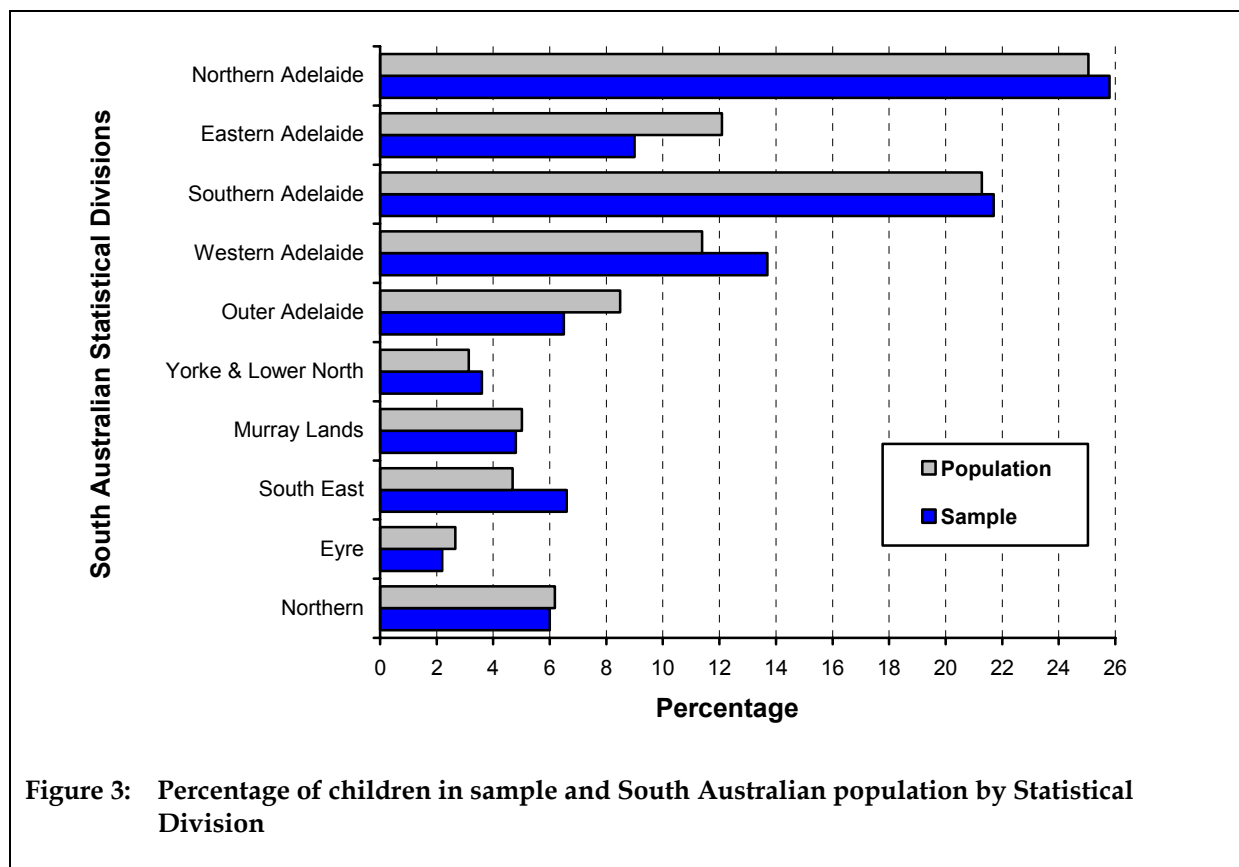


Figure 2: Subdivisions of Adelaide Statistical Division (ABS, 2000)



Demographic composition of the sample

Table 1 lists in the left-hand column the unweighted number of children sampled according to their age. The majority of children were aged 4 years or more with the largest numbers of children in the range 5 to 12 years (67.2%).

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 (e.g., less than 5) 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. There was little change in the age distribution for male or female children as a result of weighting.

Table 1: 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>
1	51	50	101	50	57	106
2	500	483	983	497	475	972
3	1,447	1,511	2,958	1,413	1,485	2,898
4	2,776	2,644	5,420	2,712	2,562	5,274
5	4,025	3,863	7,888	3,974	3,778	7,751
6	3,897	3,973	7,870	3,776	3,846	7,622
7	4,168	3,981	8,149	4,075	3,880	7,955
8	4,144	4,048	8,192	4,047	3,964	8,011
9	3,980	3,937	7,917	3,921	3,910	7,831
10	4,001	3,802	7,803	3,972	3,750	7,722
11	3,820	3,590	7,410	3,803	3,610	7,413
12	3,527	3,400	6,927	3,595	3,515	7,109
13	2,746	2,466	5,212	2,774	2,484	5,258
14	2,363	2,288	4,651	2,499	2,338	4,837
15	2,003	1,905	3,908	2,156	2,030	4,186
16	1,656	1,691	3,347	1,749	1,808	3,558
17	1,330	1,399	2,729	1,471	1,477	2,948
Total	46,434	45,031	91,465	46,482	44,969	91,452

Deciduous teeth

For children between 4 and 12 years of age, the mean number of clinically decayed teeth ranged from a high of 0.97 among children aged 4 to a low of 0.24 teeth among children aged 12 years (see Table 2). 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 8 and 9 before declining as a result of the exfoliation of deciduous teeth. The mean number of decayed, missing and filled teeth (dmft), generally increased with age to peak at 1.90 for 8-year-old children before declining to 0.77 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 treatment needs are being met. This is presented in Table 3 as the mean of individual children's d/dmft index. The percentage of caries experience represented as untreated decay (d/dmft) showed a strong age-associated decline, reducing from 87.4% among the youngest children to 30.8% for children aged 12 years. 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.

The percentage of children free of clinically detectable caries experience (% dmft = 0) also showed a general age-associated reduction from 74.5% of children up to the age of 3 years to 45.8% among 9-year-olds before increasing to 63.8% for 12-year-olds (Table 3).

Table 2: 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	SD	
≤3	3,985	19.46	0.87	2.11	0.04	0.39	0.12	0.78	1.03	2.36	
4	5,288	19.82	0.97	2.11	0.06	0.52	0.30	1.20	1.33	2.66	
5	7,775	19.42	0.92	1.92	0.08	0.63	0.51	1.43	1.51	2.69	
6	7,633	17.36	0.86	1.70	0.07	0.49	0.80	1.64	1.73	2.66	
7	7,972	14.39	0.74	1.40	0.07	0.44	1.03	1.81	1.84	2.57	
8	8,022	12.35	0.65	1.23	0.07	0.42	1.19	1.88	1.90	2.46	
9	7,760	10.74	0.56	1.09	0.05	0.31	1.19	1.79	1.80	2.29	
10	7,172	8.60	0.48	1.00	0.03	0.26	0.96	1.56	1.48	2.01	
11	5,645	6.32	0.32	0.78	0.02	0.16	0.71	1.27	1.05	1.62	
12	3,713	4.64	0.24	0.66	0.01	0.17	0.52	1.04	0.77	1.37	

Table 3: Deciduous dentition – caries experience indices by age

Age	Teeth present	Mean d/dmft index		dmft = 0	
	<i>n</i>	<i>n</i>	%	<i>n</i>	%
≤3	19.46	1,016	87.4	3,985	74.5
4	19.82	1,758	77.8	5,288	66.8
5	19.42	3,089	66.6	7,775	60.3
6	17.36	3,545	53.4	7,633	53.6
7	14.39	3,982	44.8	7,972	50.1
8	12.35	4,306	39.0	8,022	46.3
9	10.74	4,208	34.7	7,760	45.8
10	8.60	3,650	35.3	7,172	49.1
11	6.32	2,431	32.6	5,645	56.9
12	4.64	1,345	30.8	3,713	63.8

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 mean d/dmft index, the d/dmft ratio refers to the proportion of teeth with caries in the population. The ratio for 6-year-olds indicated that, among 100 teeth with caries experience among 6-year-olds, 49.7% had untreated decay. The d/dmft ratio showed a similar pattern to that of the mean dmft index, with the percentage d/dmft reducing across increasingly older age groups, declining from 84.5% for the youngest children to 30.5% among 11-year-olds. The percentage of dmft accounted for by filled teeth showed the opposite trend, increasing from 11.7% for children aged up to including 3 years old to 67.6% for 11-year-olds.

The mean number of deciduous tooth surfaces with caries experience (dmfs) was approximately 65–75% higher than mean dmft when looking at the tooth level among the key 5–10-year-old age groups (see Table 4). There were approximately 35–45% more surfaces with clinically detectable decay than there were teeth with clinically detectable decay. General trends are similar to those indicated in analyses at the tooth level. Mean dmfs peaked at 3.32 for 8-year-olds.

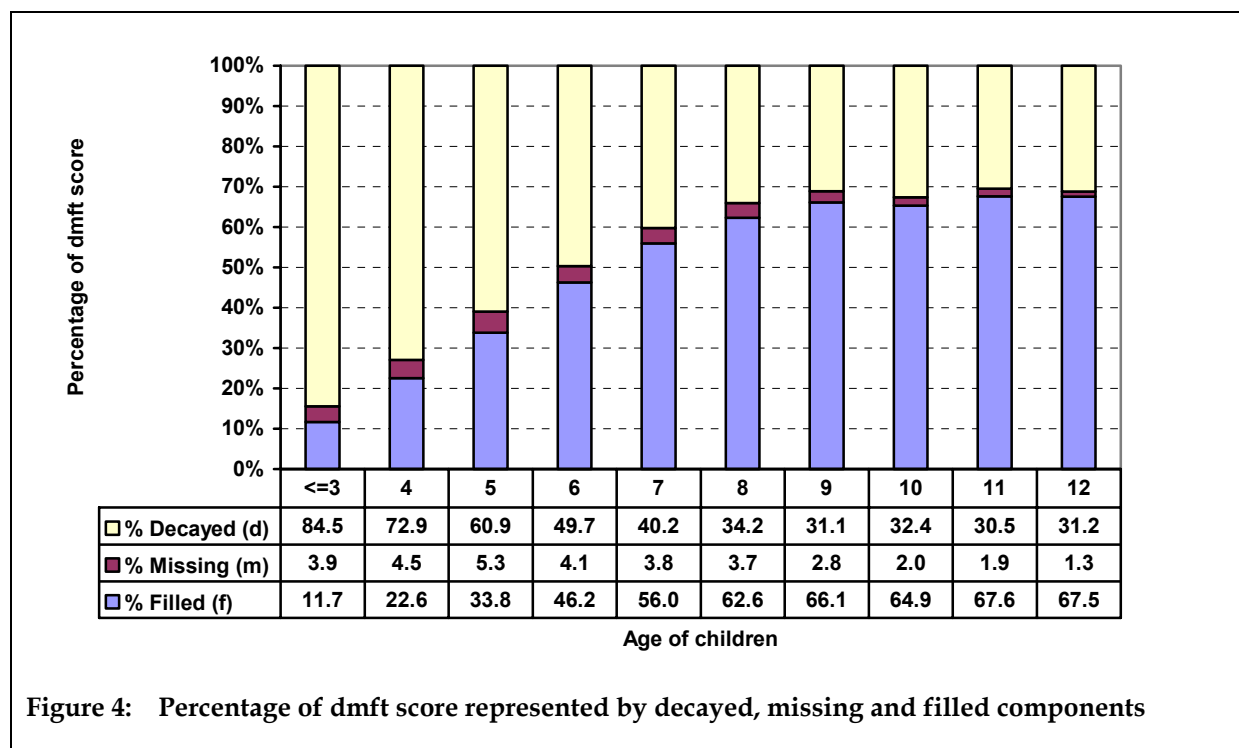


Figure 4: Percentage of dmft score represented by decayed, missing and filled components

Table 4: Deciduous dentition – surface level caries experience by age

Age	Children <i>n</i>	Decayed (d)		Missing (m)		Filled (f)		dmfs	
		mean	SD	mean	SD	mean	SD	mean	SD
≤3	3,985	1.33	3.89	0.16	1.62	0.20	1.45	1.70	4.70
4	5,288	1.39	3.64	0.27	2.23	0.51	2.34	2.16	5.39
5	7,775	1.32	3.29	0.36	2.78	0.88	2.82	2.56	5.80
6	7,633	1.23	2.90	0.32	2.19	1.38	3.25	2.92	5.48
7	7,972	1.03	2.24	0.31	2.04	1.81	3.55	3.14	5.25
8	8,022	0.90	1.98	0.32	2.02	2.10	3.68	3.32	5.10
9	7,760	0.78	1.73	0.23	1.50	2.07	3.44	3.08	4.55
10	7,172	0.64	1.46	0.15	1.28	1.68	3.01	2.47	3.89
11	5,645	0.42	1.09	0.09	0.78	1.22	2.37	1.73	2.99
12	3,713	0.32	0.97	0.06	0.80	0.95	2.14	1.32	2.74

Permanent teeth

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 5). 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 0.54 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 5 to 1.57 for children aged 17 years. The mean DMFT increased with age from a low of 0.02 for 5-year-olds to a high of 2.16 for the oldest age group. The mean DMFT for 12-year-olds was 0.84.

The mean D/DMFT index declined with age, reducing from 85.5% for 6-year-olds to 26.7% for children aged 17 years (Table 6). Approximately 40% 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, reducing from 98.4% for 5-year-olds to 38.4% for 17-year-olds. Approximately 62% of 12-year-old children had a DMFT = 0.

Table 5: Permanent 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	SD
5	2,290	3.52	0.02	0.17	0.00	0.02*	0.00	0.06*	0.02	0.18
6	6,301	5.58	0.07	0.36	0.00	0.12*	0.01	0.17	0.09	0.42
7	7,854	8.74	0.14	0.50	0.00	0.10*	0.07	0.37	0.21	0.64
8	8,018	11.16	0.17	0.54	0.00	0.14	0.19	0.63	0.37	0.85
9	7,843	13.13	0.17	0.53	0.00	0.09	0.29	0.78	0.47	0.97
10	7,735	16.21	0.18	0.56	0.01	0.14	0.35	0.86	0.54	1.06
11	7,421	20.40	0.23	0.68	0.01	0.12	0.39	0.90	0.63	1.18
12	7,115	24.13	0.31	0.83	0.01	0.19	0.52	1.10	0.84	1.47
13	5,268	26.24	0.40	0.92	0.02	0.24	0.65	1.29	1.07	1.70
14	4,849	27.14	0.47	1.10	0.03	0.27	0.92	1.56	1.42	2.02
15	4,191	27.36	0.54	1.24	0.04	0.32	1.12	1.79	1.70	2.35
16	3,564	27.53	0.50	1.21	0.06	0.43	1.34	2.13	1.90	2.60
17	2,953	27.74	0.53	1.29	0.06	0.42	1.57	2.29	2.16	2.79

* relative standard error \geq 40%

Table 6: Permanent dentition – caries experience indices by age

Age	Teeth present		Mean D/DMFT Index		DMFT = 0	
	<i>n</i>	<i>n</i>	%	<i>n</i>	%	
5	3.52	37	81.8	2,290	98.4	
6	5.58	370	85.5	6,301	94.1	
7	8.74	1,003	72.5	7,854	87.2	
8	11.16	1,643	52.8	8,018	79.5	
9	13.13	1,940	41.5	7,843	75.3	
10	16.21	2,156	36.6	7,735	72.1	
11	20.40	2,292	39.1	7,421	69.1	
12	24.13	2,693	38.9	7,115	62.1	
13	26.24	2,291	39.6	5,268	56.5	
14	27.14	2,546	34.0	4,849	47.5	
15	27.36	2,301	32.3	4,191	45.1	
16	27.53	2,082	27.3	3,564	41.6	
17	27.74	1,821	26.7	2,953	38.4	

The D/DMFT ratio, which refers to the proportion of teeth with caries experience having untreated decay, showed a similar trend to the mean D/DMFT index, declining from 100.0% for 5-year-olds to 24.5% for children aged 17 years (Figure 5). Both the D/DMFT and F/DMFT ratios stayed relatively constant between the ages of 9 and 15.

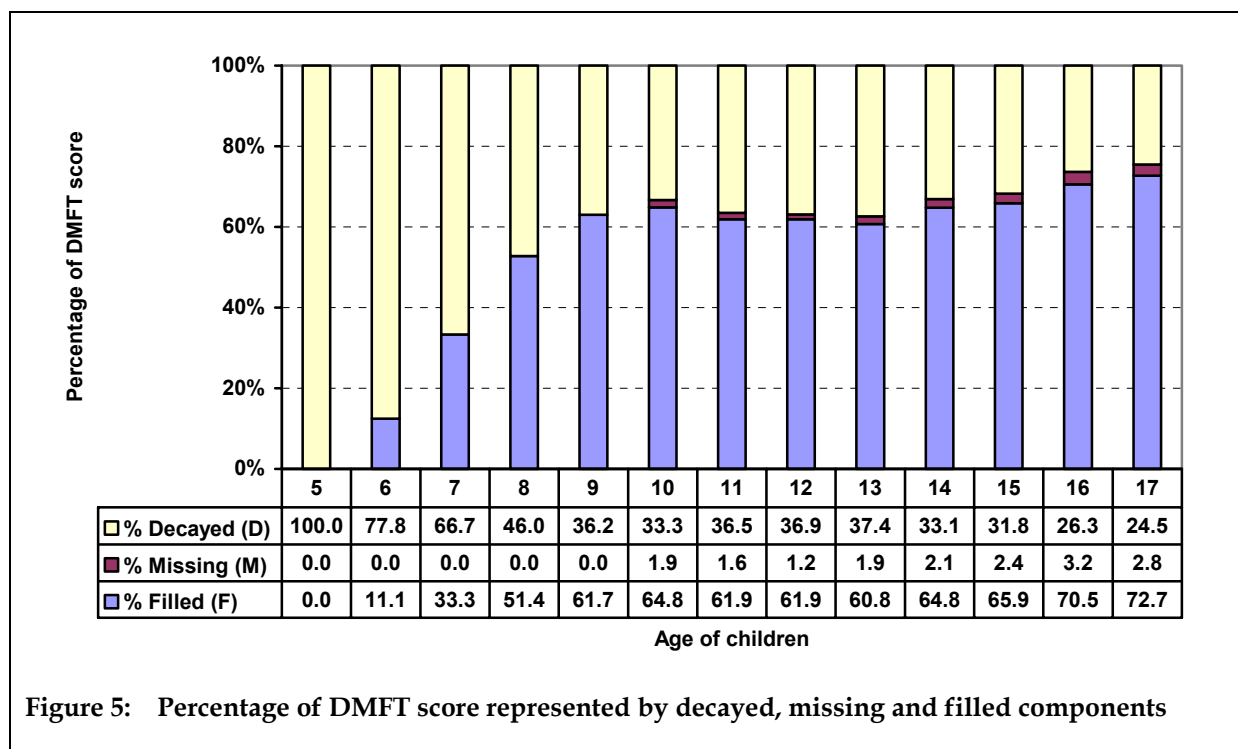


Figure 5: Percentage of DMFT score represented by decayed, missing and filled components

The mean number of permanent tooth surfaces with caries experience (DMFS) was approximately 25–35% greater than mean DMFT (see Table 7). There were approximately 10–20% more clinically decayed surfaces than there were clinically detectable decayed teeth. The mean DMFS for 12-year-old children was 1.10.

Table 7: Permanent dentition – surface level caries experience by age

Age	Children	Decayed (D)		Missing (M)		Filled (F)		DMFS	
	<i>n</i>	mean	SD	mean	SD	mean	SD	mean	SD
5	2,290	0.02	0.18	0.00	0.10	0.00	0.08	0.03	0.22
6	6,301	0.08	0.46	0.01*	0.57	0.02	0.26	0.12	0.78
7	7,854	0.16	0.59	0.01*	0.48	0.09	0.57	0.26	0.98
8	8,018	0.21	0.71	0.02	0.64	0.25	0.90	0.47	1.34
9	7,843	0.20	0.64	0.02	0.42	0.38	1.09	0.60	1.40
10	7,735	0.20	0.70	0.04	0.71	0.45	1.18	0.69	1.60
11	7,421	0.26	0.85	0.04	0.61	0.50	1.20	0.80	1.69
12	7,115	0.35	1.06	0.07	0.93	0.68	1.50	1.10	2.25
13	5,268	0.45	1.14	0.10	1.18	0.84	1.78	1.39	2.58
14	4,849	0.55	1.48	0.15	1.36	1.21	2.17	1.91	3.17
15	4,191	0.64	1.64	0.19	1.62	1.50	2.57	2.33	3.79
16	3,564	0.58	1.61	0.27	2.11	1.79	3.12	2.64	4.33
17	2,953	0.63	1.75	0.28	2.07	2.10	3.31	3.01	4.75

* relative standard error \geq 40%

All teeth

The percentage of children with at least one instance of untreated clinically observable decay in the combined deciduous and permanent dentition ranged from 23.2% of children up to age 3 to 38.4% of children aged 8 years (Table 8). Relatively few children had in excess of 4 clinically detectable decayed teeth with the highest percentages being in the youngest age groups.

Participants across all ages had few deciduous or permanent teeth missing due to caries ($m+M = 0$). The percentage of children with no fillings shows a bimodal distribution, the lowest points being for children aged 9 years and those aged 17 years. The decrease in the percentage $f+F = 0$ to the age of 9 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 children with neither deciduous or permanent caries experience ($dmft+DMFT = 0$) also declined in the middle age ranges (being 39.0% at age 9), increased to 52.3% for 12-year-olds and declined again for the older children.

Table 8: All teeth – caries experience by age

Age	Children <i>n</i>	d+D =						m+M = 0	f+F = 0	dmft+ DMFT = 0
		0	1	2	3	4	5+			
≤3	3,992	76.8	5.4	4.7	3.2	3.3	6.6	98.7	96.2	74.4
4	5,294	71.1	8.5	6.3	3.7	3.4	7.0	97.9	90.2	66.7
5	7,779	68.2	10.9	7.5	4.5	2.9	5.9	97.4	82.2	60.2
6	7,635	64.6	13.5	9.0	4.8	3.1	5.0	96.6	71.2	52.1
7	7,975	61.9	15.5	10.4	5.4	3.1	3.6	96.4	63.4	46.3
8	8,032	61.6	17.4	10.5	4.7	2.8	3.1	95.7	56.1	40.8
9	7,850	64.3	17.3	9.2	4.6	2.1	2.5	96.6	51.3	39.0
10	7,738	67.6	16.6	8.5	3.7	1.9	1.8	97.6	54.3	41.6
11	7,426	73.2	15.4	6.2	2.7	1.5	1.0	98.4	61.0	48.9
12	7,121	75.1	14.6	6.0	2.5	0.8	1.0	98.7	64.5	52.3
13	5,268	74.4	14.2	6.7	2.7	1.2	0.8	98.6	65.7	52.0
14	4,850	73.7	14.9	6.1	2.5	1.3	1.5	98.2	57.6	45.8
15	4,193	72.4	14.8	7.0	2.2	1.5	2.0	98.0	55.7	44.5
16	3,564	74.9	13.4	6.5	2.4	1.2	1.7	97.9	51.4	41.2
17	2,953	73.3	15.3	5.6	2.4	1.5	1.9	97.4	47.9	37.9

Fissure sealants

As can be seen in Table 9, the mean number of fissure sealants increased in a relatively consistent fashion with the increasing age of the children. There was a mean of 0.97 sealants per child among 12-year-olds however by age 16 children had more than 2 sealants each on average. For all age groups the prevalence of fissure sealants among those without permanent caries experience (DMFT = 0) was considerably less than among those with some permanent caries experience (DMFT = 1+). This suggests that fissure sealants were being used preferentially in students with past caries experience.

Table 9: 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	7,635	0.02	0.25	7,264	0.7	372	6.9
7	7,975	0.11	0.55	6,973	3.9	1,003	14.3
8	8,032	0.30	0.88	6,389	9.6	1,643	25.2
9	7,850	0.47	1.08	5,911	15.9	1,940	31.5
10	7,738	0.65	1.23	5,582	21.3	2,156	40.7
11	7,426	0.77	1.33	5,134	26.1	2,292	42.5
12	7,121	0.97	1.49	4,427	30.5	2,693	49.7
13	5,268	1.19	1.68	2,977	35.1	2,291	54.2
14	4,850	1.41	1.91	2,304	38.8	2,546	57.8
15	4,193	1.66	2.13	1,892	40.7	2,301	61.3
16	3,564	2.02	2.33	1,482	45.5	2,082	66.5
17	2,953	2.13	2.44	1,133	48.8	1,821	64.8

School Dental Service examinations

Due to the adoption of the EXACT computer management information system, information on previous dental visits was not available for most children in the South Australian SDS for 2002. Information on last examination was only obtained for between 7% and 26% of any given age group (Table 10).

Table 11 refers to the period of time since the previous School Dental Service examination among the 7–26% of children with a recorded date of last examination. There was an 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 relatively consistently with age, from 10.7 months for the youngest group to over 20 months for children aged 15 years or older.

Table 10: School Dental Service examinations by age

Age (years)	Children	Previous examination in School Dental Service	
		Yes	Unknown
	<i>n</i>	%	%
≤3	4,104	7.1	92.9
4	5,500	11.7	88.3
5	8,076	16.1	83.9
6	8,036	24.3	75.7
7	8,347	26.2	73.8
8	8,358	26.4	73.6
9	8,098	26.3	73.7
10	7,922	25.6	74.4
11	7,527	24.7	75.3
12	7,024	26.0	74.0
13	5,292	26.1	73.9
14	4,730	24.3	75.7
15	3,970	22.7	77.3
16	3,405	21.6	78.4
17	2,804	24.1	75.9

Table 11: Time since last School Dental Service examination by age

Age	Children	Time since last examination					Months since last examination	
		0–6 months	7–12 months	13–18 months	19–24 months	25+ months	mean	SD
	<i>n</i>	%	%	%	%	%		
≤3	306	23.0	38.1	35.9	2.7	0.3	10.7	6.3
4	671	15.3	32.0	43.1	9.0	0.6	12.2	5.5
5	1,353	13.8	29.8	48.0	7.5	0.8	12.6	5.6
6	2,025	14.1	31.3	46.6	6.5	1.5	12.6	6.2
7	2,278	16.1	29.7	43.7	7.7	2.8	12.9	7.8
8	2,298	15.9	29.4	45.2	6.1	3.4	13.3	9.3
9	2,220	17.2	28.4	44.5	6.4	3.6	13.7	11.2
10	2,120	16.9	26.4	45.7	7.8	3.2	13.8	11.3
11	1,951	17.2	25.2	45.8	8.2	3.6	14.4	13.7
12	1,909	17.3	24.5	43.9	9.5	4.7	16.1	19.1
13	1,442	15.2	24.1	47.8	9.7	3.2	15.3	16.9
14	1,200	14.3	25.0	44.4	11.4	4.9	17.5	22.4
15	938	12.2	21.1	45.9	14.7	6.2	20.3	27.9
16	766	12.6	21.4	45.8	14.4	5.8	20.2	28.8
17	705	11.5	22.3	45.8	14.9	5.4	20.2	30.1

Caries experience by geographical location

Tables 12 and 13 present 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 number of decayed teeth in the deciduous dentition ranged from 0.59 in Eastern Adelaide to 2.00 in Eyre (Table 12). The mean number of filled teeth was lowest in Eastern Adelaide (0.43) and highest in Murray Lands (1.17). Mean dmft was lowest in Eastern Adelaide (1.04) and highest in the Murray Lands region (2.74). The percentage of children with dmft = 0 was highest in Eastern Adelaide (66.3%) and lowest in the Murray Lands (39.5%) and Eyre (40.2%) regions.

Table 12: 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)	4,124	0.89	1.83	0.12	0.72	0.63	1.49	1.65	2.75	56.1
Adelaide (Eastern)	1,389	0.59	1.38	0.03	0.31	0.43	1.27	1.04	2.08	66.3
Adelaide (Southern)	3,333	0.68	1.49	0.04	0.37	0.56	1.41	1.28	2.30	62.5
Adelaide (Western)	2,050	0.88	1.89	0.10	0.75	0.66	1.60	1.65	2.84	59.7
Outer Adelaide	927	0.87	1.74	0.06	0.45	0.66	1.56	1.60	2.56	55.4
Yorke & Lower North	492	1.09	1.87	0.14	0.77	1.00	2.00	2.24	3.11	48.4
Murray Lands	757	1.44	2.37	0.13	0.95	1.17	2.06	2.74	3.31	39.5
South East	996	0.98	1.78	0.04	0.43	0.91	1.79	1.94	2.82	50.9
Eyre	384	2.00	2.92	0.01	0.17	0.53	1.16	2.55	3.29	40.2
Northern	957	1.05	1.85	0.08	0.51	0.76	1.67	1.89	2.80	51.5

Among 12-year-old children the York and Lower North, Murray Lands and Northern regions had the highest mean number of decayed teeth in the permanent dentition (0.46, 0.44 and 0.43 respectively) while the Southern Adelaide (mean = 0.23) and Northern Adelaide (mean = 0.27) regions had the lowest (Table 13). The highest mean number of filled permanent teeth was observed for Outer Adelaide (0.68) and the lowest score in the Southern Adelaide (0.37) and Western Adelaide (0.40) regions. Outer Adelaide had the highest mean DMFT score (1.08) while Murray Lands had the lowest percentages of children with DMFT = 0 (54.9%). The lowest mean DMFT score among 12-year-olds was in the Southern Adelaide region (mean = 0.61) which also had the highest percentage of children with DMFT = 0 (68.9%).

Table 13: 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)	1,834	0.27	0.67	0.02	0.24	0.64	1.30	0.92	1.54	60.7
Adelaide (Eastern)	677	0.33	0.90	0.02	0.24	0.49	1.01	0.84	1.41	60.6
Adelaide (Southern)	1,569	0.23	0.67	0.01	0.13	0.37	0.85	0.61	1.18	68.9
Adelaide (Western)	939	0.30	0.89	0.02	0.23	0.40	0.86	0.72	1.36	65.6
Outer Adelaide	467	0.39	0.94	0.01	0.20	0.68	1.34	1.08	1.75	56.1
Yorke & Lower North	262	0.46	0.97	0.00	0.06	0.46	1.02	0.92	1.52	62.0
Murray Lands	341	0.44	1.04	0.01	0.12	0.59	1.14	1.04	1.57	54.9
South East	448	0.34	0.89	0.00	0.09	0.62	1.21	0.97	1.58	58.2
Eyre	161	0.34	0.80	0.00	0.00	0.52	0.96	0.86	1.35	59.7
Northern	399	0.43	1.16	0.01	0.07	0.52	1.07	0.95	1.66	60.9

Caries experience by sex, indigenous status, insurance and card-holder status, risk status and country of birth

Caries experience for both 5–6-year-old children and 12-year-old children is presented by sex of the child, Indigenous status, insurance status, card-holder type, risk status and the child's country of birth in Table 14. In the deciduous dentition, males had a dmft score 10.4% higher than females, while the opposite trend occurred in the permanent dentition with females having higher caries experience (11.3% higher DMFT) than males in the corresponding 12-year-old age group.

Indigenous children were deemed to comprise children who were identified as being of Aboriginal, Torres Strait Islander or South Sea Islander descent. These children had considerably more caries experience than non-Indigenous children, being 92.5% greater among 5–6-year-olds and 63.1% greater for 12-year-olds.

Children covered by a health care card or pensioner card had higher caries experience in both the deciduous and permanent dentition than did children without cover. A similar finding was observed in relation to insurance status, with 5–6-year-old children with no private dental insurance having 61.8% more deciduous caries experience than children with insurance, with the difference being 38.1% for permanent caries experience among 12-year-olds.

The South Australian SDS assigns risk status to children within the service and this is related to designated recall intervals for dental examinations. Considerable differences in disease experience existed between children assigned to low, medium or high risk.

Considerable differences are evident in the caries experience of children born in different regions of the world. For 5–6-year-olds caries experience was lowest for children from Northern America, with children born in Australia having the fourth lowest caries experience. The highest mean dmft occurred for children born in South-East Asia, Southern and Eastern Europe, North Africa and Middle East, and North-East Asia. The highest 12-year-old DMFT occurred for Southern and Eastern Europe, South-East Asia and, Sub-Saharan Africa.

In the deciduous dentition, mean dmft of those children born in Asia (mean = 3.89) was approximately 2.5 times higher than that of children born in Australia (mean = 1.61). Among 12-year-olds the mean DMFT score of children born in Southern and Eastern Europe (mean = 1.92) was approximately 2.3 times higher than the caries experience of children born in Australia (mean = 0.84).

Table 14: 5–6-year-old dmft and 12-year-old DMFT by sex, indigenous status, insurance and card-holder status, risk status and country of birth (unweighted)

Age	5-6-year-old dmft			12-year-old DMFT		
	<i>n</i>	mean	SD	<i>n</i>	mean	SD
Sex						
Male	7,750	1.70	2.74	3,595	0.80	1.39
Female	7,624	1.54	2.61	3,515	0.89	1.54
Indigenous status						
Non-Indigenous	11,661	1.60	2.68	5,717	0.84	1.45
Indigenous	299	3.08	3.37	135	1.37	2.05
Unspecified	3,455	1.57	2.59	1,268	0.80	1.44
Dental insurance status						
No insurance	7,979	1.65	2.69	3,315	0.87	1.50
Insurance	1,991	1.02	2.00	957	0.63	1.18
Not specified	5,445	1.79	1.86	2,848	0.89	1.50
Card status						
Non Card Holder	13,963	1.58	2.64	6,044	0.82	1.44
Health Care Card	840	2.05	3.10	600	0.91	1.58
Pensioner Card	610	2.00	3.01	474	1.04	1.61
Risk						
Low	2,555	0.09	0.47	2,547	0.26	0.72
Medium	8,780	0.67	1.34	3,804	0.92	1.37
High	3,938	4.73	3.25	728	2.50	2.30
Unspecified	142	1.48	2.60	42	0.45	0.88
Country of Birth						
Australia	12,034	1.61	2.65	5,811	0.84	1.45
New Zealand and Other Oceania	51	2.35	3.71	21	1.06	1.67
North-West Europe	78	1.49	2.50	54	1.05	1.51
Southern and Eastern Europe	57	4.36	4.39	72	1.92	2.35
North Africa and Middle East	35	3.97	3.54	24	1.13	1.50
South-East Asia	64	5.14	4.85	40	1.71	1.78
North-East Asia	27	3.01	3.71	18	0.73	1.33
Southern and Central Asia	31	2.08	3.40	15	0.95	1.75
Northern America	17	0.22	0.74	9	0.00	0.00
Other Americas	5	1.57	3.64	7	0.12	0.34
Sub-Saharan Africa	37	2.52	3.17	21	1.45	2.01
Not Known	2,965	1.49	2.56	1,019	0.75	1.40

Selected trends, 1998–2002

Presented below is a table and a series of figures of selected 5-year trends for the period 1998–2002. Trends are provided for sample size, deciduous and permanent caries experience, and fissure sealants. The South Australian sample size had increased appreciably across the 5-year period, due to the introduction of computerised recording of school dental service examinations in early 2001. From this time data was made available on every child receiving a dental examination within a year

Table 15: Sample size and percentage of total sample by region, 1998–2002

Region	1998		1999		2000		2001		2002	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Adelaide (Northern)	855	23.6	689	20.4	720	20.5	16142	25.7	23777	25.9
Adelaide (Eastern)	278	7.7	262	7.8	242	6.9	5818	9.3	8265	9.0
Adelaide (Southern)	966	26.7	891	26.4	817	23.2	14938	23.8	19948	21.8
Adelaide (Western)	430	11.9	515	15.3	440	12.5	8000	12.7	12500	13.6
Outer Adelaide	189	5.2	190	5.6	228	6.5	3971	6.3	5959	6.5
Yorke & Lower North	138	3.8	80	2.4	78	2.2	2057	3.3	3274	3.6
Murray Lands	210	5.8	199	5.9	99	2.8	2954	4.7	4367	4.8
South East	136	3.8	241	7.1	185	5.3	4435	7.1	5991	6.5
Eyre	188	5.2	116	3.4	92	2.6	771	1.2	2038	2.2
Northern	227	6.3	189	5.6	618	17.6	3756	6.0	5530	6.0
<i>Total</i>	<i>3617</i>	<i>100.0</i>	<i>3372</i>	<i>100.0</i>	<i>3519</i>	<i>100.0</i>	<i>62842</i>	<i>100.0</i>	<i>91649</i>	<i>100.0</i>

Trends across the period 1998–2002 are complicated by the change over from a random sample of relatively low numbers of children using optical mark reader forms to full enumeration using children’s clinical records. Any interpretation across this period must therefore be cautious.

Trends in the number of decayed, missing and filled deciduous teeth across 1998–2002 indicate an increase in disease experience (Figures 6–9). The apparent increase in caries experience between 2000 and 2001 suggest an underreporting of disease experience with the OMR form based random sampling methodology used up to 2000.

Increases in the mean number of decayed, missing and filled permanent teeth across the period 1998–2002 are more pronounced than changes observed in the deciduous dentition (Figures 11–13). The increases are larger for older children than for younger children.

In the combined deciduous and permanent dentitions there have been reductions in the percentages of children with no decayed, no missing and no filled teeth between 1998 and 2002 (Figures 15, 17 and 18). For many age groups, the highest percentages of children with no caries experience were in the year 2000.

In general, the mean number of fissure sealed teeth across age groups decreased between 1998 and 2000, increased with the change of sampling methodology in 2001, but then decreased again in 2002 (Figure 19).

