



# The Child Dental Health Survey, Western Australia 1999

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AIHW Dental Statistics and Research Unit  
The University of Adelaide

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in collaboration with  
Dental Services  
Health Department of Western Australia

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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**

Information listed in the tables of this report includes: the age and sex of children in the sample, their deciduous and permanent caries experience, frequency of fissure sealants, history of school dental service examinations, and regional statistics.

The report also provides a simple summary statement highlighting differences between the 1999 and 1998 data. It is necessary to be cautious in drawing inferences concerning changes between the years. No formal hypothesis tests have been undertaken and descriptions of difference between years are intended as a guide to the reader rather than an evaluation of trends.

## **Source of subjects and sampling**

The data used for this report were collected during the 1999 calendar year from Western Australia School Dental Service patients by dental therapists and dentists. A random sampling procedure was used to select approximately 1 in 11 patients. This was achieved by selecting those children whose birthday was on the 28th, 29th, 30th or 31st day of any month. Consequently, the data constitute a simple random sample.

## **Data preparation**

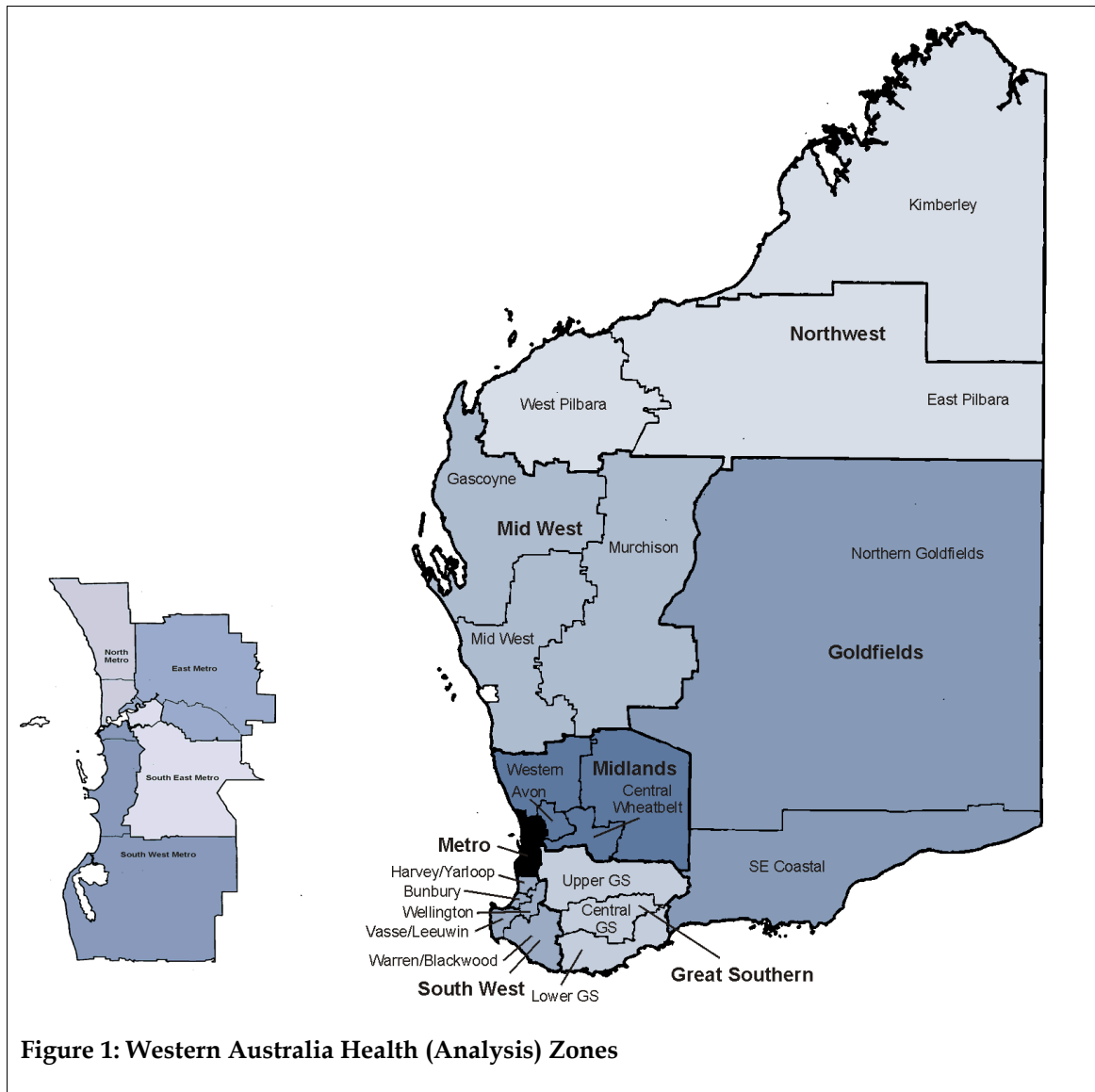
Data were collected on Optical Mark Reader (OMR) forms for scanning by Dental Services WA and then forwarded to the AIHW Dental Statistics and Research Unit (DSRU) for analysis.

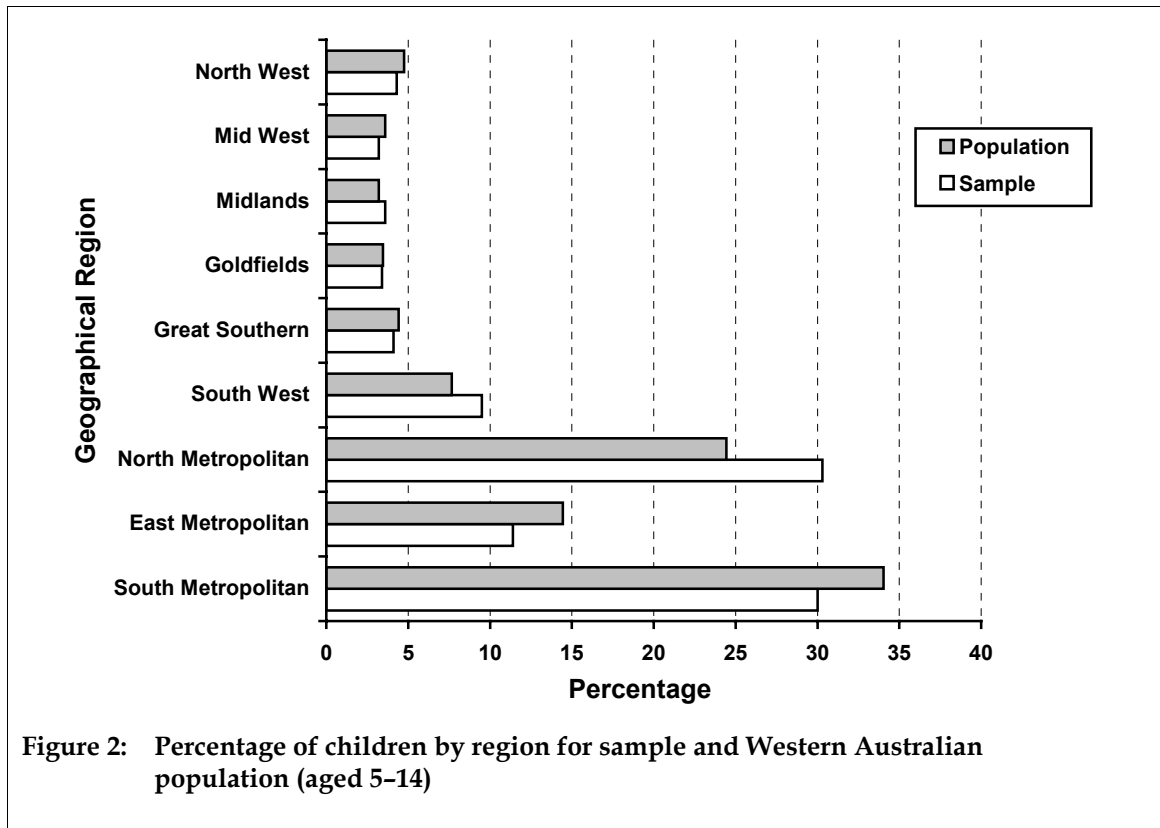
The data were cleaned prior to analysis, both before and after it was received by DSRU, to correct data recording errors. In addition to a visual check of a number of cases with erroneous data, a series of linear regressions of age on deciduous and permanent caries scores revealed numerous outliers with large standardised residuals. A small number of these cases were deleted where it was apparent that they were the result of data recording errors.

## **Data analysis**

All data were weighted for the analyses to more accurately reflect the child population (5-14 years old) in Western Australia for 1999. A map showing the Health (Analysis) Zones of Western Australia is presented in Figure 1. Although the Health Department of Western Australia incorporates 32 individual Health Service areas, larger subdivisions of Western Australia are used for routine analytical purposes, each comprising a number of Health Services. The regions used here include six from rural areas (North West, Mid West, Midlands, Goldfields, Great Southern and South West) and three from metropolitan Perth and surrounds (North Metropolitan, East Metropolitan, and South Metropolitan - for the purpose of this report South East and South West Metropolitan have been combined).

The data were first weighted by months since last visit (which was used due to the under-representation of students on longer recall schedules in the sample). Unit records were further weighted to reflect the Estimated Residential Population (ERP) of 5–14-year-olds according to statistical units within Western Australia as at 30 June 1999 as published by the Australian Bureau of Statistics (1999). Statistical units were mapped to the Health Zones as shown in Figure 1. Assignment of Health Zones 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 Health Zone as a percentage of the total sample and of the Western Australian 5-14-year-old population are shown in Figure 2. While the results of sampling were relatively consistent with ERP by Health Zone, some differences are evident. Table 1 shows that, as a result of weighting, the North West, Mid West, Goldfields, Great Southern, East Metropolitan and South Metropolitan zones were weighted up in the analysis (mean weights = 1.11, 1.13, 1.03, 1.08, 1.26 and 1.13 respectively) while Midlands, South West and North Metropolitan zones were weighted down (mean weights = 0.89, 0.81 and 0.80 respectively). The final unit record weights were applied such that the weighted contribution of each Health (Analysis) Zone was proportional to the percentage represented by that Health Zone in the Western 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 up to and including Table 10 use the weighted distribution of children to derive results. However, months since last visit was not used to weight the data in Tables 9 and 10 because the results included time since last visit. Weighted numbers are rounded to the nearest whole number for ease of interpretation. No weighting is applied to the regional analyses in Tables 11 and 12.

**Table 1: Sample size and assigned weight by Health Zone**

| Region             | Number Sampled | Weight |
|--------------------|----------------|--------|
| North West         | 787            | 1.11   |
| Mid West           | 583            | 1.13   |
| Midlands           | 664            | 0.89   |
| Goldfields         | 620            | 1.03   |
| Great Southern     | 754            | 1.08   |
| South West         | 1,747          | 0.81   |
| North Metropolitan | 5,582          | 0.80   |
| East Metropolitan  | 2,106          | 1.26   |
| South Metropolitan | 5,528          | 1.13   |
| Missing            | 73             | 1.00   |

The Child Dental Health Survey, Western Australian 1998 excluded children both with no deciduous teeth in the analyses of deciduous caries experience and no permanent teeth in the analyses of permanent caries experience. Because information on number of teeth present was not available for 1999, calculations of deciduous and permanent caries experience for 1999 include children with no deciduous and permanent teeth respectively. This may be expected to underestimate the caries experience in the deciduous dentition of children aged 10 years and over and in the permanent dentition of children aged up to 6 years of age. Differences between 1998 and 1999 for these age groups should therefore be interpreted with due appreciation of the change in caries experience calculations.

Age-specific indices denoted with an asterisk (\*) are those in which the relative standard error exceeds 40% and population estimates of these indices are considered to be statistically unreliable and should be interpreted with due care.

## Demographic composition of the sample

The majority of children in the sample (75.6%) were aged between 5 and 12 years inclusive, with between 1,400 and 1,900 children in each individual age group within this range (see Table 2). However, children aged between 13 and 16 years, and those aged 4 were also represented in substantial numbers. Females and males were represented in similar proportions in most age groups although males were over-represented in the 5-, 9- and 13-year-old age groups, while females were over-represented in the 15-year-old age group.

The small numbers of children aged either less than 4 years or greater than 16 years result in less reliability of computed statistics for those ages. Because of this and the small numbers of these children sampled they have been included in the adjacent age group for the purpose of analyses in this report.

## Changes since 1998

There was an increase of 1,578 children sampled in 1999 compared to 1998.



**Table 2: Demographic composition of the sample**

| Age (years)  | 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            | 2                               | 0            | 2             | 2                             | 0            | 2             |
| 3            | 9                               | 14           | 23            | 10                            | 14           | 24            |
| 4            | 478                             | 468          | 946           | 465                           | 464          | 929           |
| 5            | 908                             | 833          | 1,741         | 849                           | 797          | 1,646         |
| 6            | 890                             | 893          | 1,783         | 858                           | 861          | 1,719         |
| 7            | 888                             | 908          | 1,796         | 889                           | 903          | 1,793         |
| 8            | 957                             | 904          | 1,861         | 952                           | 896          | 1,848         |
| 9            | 921                             | 858          | 1,779         | 904                           | 858          | 1,762         |
| 10           | 895                             | 905          | 1,800         | 898                           | 915          | 1,813         |
| 11           | 877                             | 849          | 1,726         | 883                           | 853          | 1,736         |
| 12           | 727                             | 729          | 1,456         | 740                           | 729          | 1,469         |
| 13           | 613                             | 569          | 1,182         | 641                           | 598          | 1,239         |
| 14           | 494                             | 526          | 1,020         | 525                           | 566          | 1,091         |
| 15           | 400                             | 442          | 842           | 417                           | 463          | 879           |
| 16           | 223                             | 238          | 461           | 228                           | 238          | 466           |
| 17           | 12                              | 11           | 23            | 13                            | 13           | 26            |
| 18           | 2                               | 1            | 3             | 2                             | 1            | 3             |
| <b>Total</b> | <b>9,296</b>                    | <b>9,148</b> | <b>18,444</b> | <b>9,275</b>                  | <b>9,169</b> | <b>18,444</b> |

## **Deciduous teeth: age-specific caries experience**

The mean number of clinically detectable decayed teeth among children aged 5 to 12 years old declined steadily with age, from 1.08 to 0.12 (see Table 3). In contrast, the mean number of filled teeth climbed to a peak for 9-year-olds of 1.02 before declining. In a similar trend, mean dmft increased from 1.16 for the youngest children to 1.56 for 7-year-old children before declining. These findings must be interpreted in view of the exfoliation of deciduous teeth as children grow older. From the age of 10 onwards increasingly higher proportions of children have no deciduous dentition. The number of teeth deemed missing due to caries was low for all age groups.

The percentage of caries experience due to decay (d/dmft) showed an age-associated decline, reducing from 88.0% for children less than 5 years old to 25.2% among 11-year-olds (Table 4). By comparison, the percentage of caries-free children (% dmft = 0) shows a more modest reduction, from 69.6% among children up to 5 years old to 49.2% among 8-year-olds, before increasing to 82.9% for 12-year-olds.

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

| Age | Children<br><i>n</i> | Decayed (d) |      | Missing (m) |      | Filled (f) |      | dmft |      |
|-----|----------------------|-------------|------|-------------|------|------------|------|------|------|
|     |                      | mean        | SD   | mean        | SD   | mean       | SD   | mean | SD   |
| ≤4  | 954                  | 0.99        | 2.25 | 0.04        | 0.42 | 0.13       | 0.82 | 1.16 | 2.51 |
| 5   | 1,646                | 1.08        | 2.18 | 0.03        | 0.40 | 0.36       | 1.13 | 1.47 | 2.58 |
| 6   | 1,719                | 0.78        | 1.64 | 0.02        | 0.28 | 0.65       | 1.48 | 1.45 | 2.42 |
| 7   | 1,793                | 0.68        | 1.37 | 0.02        | 0.25 | 0.86       | 1.64 | 1.56 | 2.33 |
| 8   | 1,848                | 0.54        | 1.15 | 0.01        | 0.16 | 0.99       | 1.70 | 1.54 | 2.14 |
| 9   | 1,762                | 0.48        | 1.03 | 0.01        | 0.14 | 1.02       | 1.65 | 1.50 | 2.03 |
| 10  | 1,813                | 0.31        | 0.76 | 0.00        | 0.04 | 0.84       | 1.42 | 1.16 | 1.72 |
| 11  | 1,736                | 0.20        | 0.71 | 0.00        | 0.04 | 0.55       | 1.09 | 0.75 | 1.39 |
| 12  | 1,469                | 0.12        | 0.52 | 0.00        | 0.02 | 0.27       | 0.85 | 0.39 | 1.11 |

**Table 4: Deciduous teeth – caries experience indices by age**

| Age | d/dmft   |      | dmft = 0 |      |
|-----|----------|------|----------|------|
|     | <i>n</i> | %    | <i>n</i> | %    |
| ≤4  | 290      | 88.0 | 954      | 69.6 |
| 5   | 660      | 74.6 | 1,646    | 59.9 |
| 6   | 730      | 55.7 | 1,719    | 57.5 |
| 7   | 843      | 47.1 | 1,793    | 53.0 |
| 8   | 938      | 38.5 | 1,848    | 49.2 |
| 9   | 888      | 34.5 | 1,762    | 49.6 |
| 10  | 809      | 31.0 | 1,813    | 55.4 |
| 11  | 579      | 25.2 | 1,736    | 66.7 |
| 12  | 251      | 31.9 | 1,469    | 82.9 |

### Changes since 1998

Between 1998 and 1999 there were inconsistent changes in clinically decayed teeth. Decreases in caries scores for 10- and 12-year-olds as well as considerable reductions in the mean number of filled teeth for children aged between 9 and 12 resulted in lower dmft scores in 1999 than in 1998 for 9–12-year-olds. In addition, the percentage of children with dmft = 0 also increased for children aged between 9 and 12. It should be noted however, that at least some of this change is a result of including children with no deciduous teeth in the analysis in 1999, effectively giving these children a score of zero and therefore underestimating caries experience among those children in the older age groups with deciduous teeth remaining.

## Permanent teeth: age-specific caries experience

Clinically detectable decay in the permanent dentition generally increased with increasing age (Table 5). As in the deciduous dentition, permanent teeth judged as missing due to caries were few although relatively high among the older children sampled. The mean number of filled teeth rose steadily with increasing age, and from the age of 10 exceeded the mean number of decayed teeth across each age group. The mean DMFT also increased consistently across age groups, from 0.02 for children aged 5 years to 2.03 for children aged 16 years and older. The mean DMFT score for 12-year-old children was 0.75.

The percentage of DMFT due to decay (D/DMFT) and the percentage with no evidence of caries experience (DMFT = 0) both declined across age groups (Table 6). More than 60% of children in all age groups up to 13 years of age were caries free in their permanent dentition.

### Changes since 1998

Similar to changes in the deciduous dentition, the mean number of filled teeth decreased considerably for several age groups between 1998 and 1999, and was most notable for children aged between 12 and 15. However, increases in clinically detectable decay for 14- and 15-year-olds meant that, for children aged between 12 and 15, changes in DMFT scores among the older children were not large with small increases for 13- and 15-year-olds but an increase for children aged 16 years and older. Reflecting these trends, the percentage of DMFT scores expressed as clinically detectable decay remained relatively unchanged for most age groups. The percentage of children with DMFT = 0 was generally stable between 1998 and 1999, although there were small increases for children aged 8, 13, 15 and 16+ years.

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

| Age | Children<br><i>n</i> | Decayed (D) |      | Missing (M) |       | Filled (F) |       | DMFT |      |
|-----|----------------------|-------------|------|-------------|-------|------------|-------|------|------|
|     |                      | mean        | SD   | mean        | SD    | mean       | SD    | mean | SD   |
| 5   | 1,646                | 0.02        | 0.20 | –           | –     | 0.00       | 0.03* | 0.02 | 0.21 |
| 6   | 1,719                | 0.06        | 0.33 | 0.00        | 0.03* | 0.00       | 0.08* | 0.07 | 0.35 |
| 7   | 1,793                | 0.14        | 0.51 | 0.00        | 0.08* | 0.04       | 0.31  | 0.19 | 0.62 |
| 8   | 1,848                | 0.17        | 0.55 | 0.02        | 0.18  | 0.08       | 0.37  | 0.26 | 0.71 |
| 9   | 1,762                | 0.19        | 0.62 | 0.03        | 0.24  | 0.18       | 0.57  | 0.40 | 0.90 |
| 10  | 1,813                | 0.20        | 0.66 | 0.04        | 0.27  | 0.28       | 0.70  | 0.52 | 1.04 |
| 11  | 1,736                | 0.25        | 0.69 | 0.05        | 0.31  | 0.34       | 0.80  | 0.64 | 1.14 |
| 12  | 1,469                | 0.28        | 0.76 | 0.08        | 0.45  | 0.38       | 0.90  | 0.75 | 1.37 |
| 13  | 1,239                | 0.37        | 1.16 | 0.08        | 0.46  | 0.47       | 1.07  | 0.92 | 1.71 |
| 14  | 1,091                | 0.48        | 1.83 | 0.11        | 0.54  | 0.70       | 1.40  | 1.30 | 2.38 |
| 15  | 879                  | 0.46        | 1.49 | 0.17        | 0.89  | 0.84       | 1.56  | 1.47 | 2.41 |
| ≥16 | 495                  | 0.54        | 1.80 | 0.17        | 0.84  | 1.32       | 2.05  | 2.03 | 3.02 |

\* relative standard error ≥ 40%

**Table 6: Permanent dentition – caries experience indices by age**

| Age | D/DMFT   |      | DMFT = 0 |      |
|-----|----------|------|----------|------|
|     | <i>n</i> | %    | <i>n</i> | %    |
| 5   | 17       | 95.4 | 1,646    | 99.0 |
| 6   | 77       | 92.4 | 1,719    | 95.5 |
| 7   | 211      | 76.3 | 1,793    | 88.2 |
| 8   | 298      | 63.8 | 1,848    | 83.9 |
| 9   | 396      | 47.1 | 1,762    | 77.5 |
| 10  | 520      | 37.7 | 1,813    | 71.3 |
| 11  | 572      | 39.7 | 1,736    | 67.0 |
| 12  | 518      | 38.5 | 1,469    | 64.7 |
| 13  | 496      | 41.3 | 1,239    | 60.0 |
| 14  | 523      | 31.3 | 1,091    | 52.1 |
| 15  | 441      | 29.9 | 879      | 49.8 |
| ≥16 | 277      | 25.2 | 495      | 44.0 |

### All teeth: age-specific experience

Untreated clinically detectable caries in the combined deciduous and permanent dentitions existed for between 22.7% and 35.2% of children in all age ranges (see Table 7). The greatest likelihood of untreated decay occurred for 7-year-olds. The most extensive levels of untreated decay (4 or more deciduous or permanent teeth) occurred in the younger age groups, with more than 5% of children aged 7 years or less being affected to this extent.

While no more than 5% of children aged 5 to 12 years had at least one deciduous or permanent tooth missing due to caries, much larger percentages presented with fillings, for which there is a consistent age-associated increase in children up to 9 years of age (45.1% with 1 or more fillings) followed by a decline to age 13 (37.5%) and a subsequent increase into the oldest age group sampled (46.2%). There was also an increase in the percentage of children with some caries experience in the combined deciduous and permanent dentition, from 30.4% for children aged up to 4 years old to 57.6% at age 9. From the age of 9 there was an increase in the percentage of children with  $dmft+DMFT = 0$  to age 13, with a subsequent decline in percentages into the oldest age groups sampled.

### Changes since 1998

There were few appreciable changes in combined-dentition decay experience between 1998 and 1999. However, consistent with the observed decrease in the mean number of fillings in both the deciduous and permanent dentition, there were increases in the percentage  $f+F = 0$  for children aged 9, 10, 13 and 15. These changes were also evidenced in an increase in the percentage of children with  $dmft+DMFT = 0$  in some age groups.

**Table 7: All teeth – age-specific caries experience**

| Age | Children<br><i>n</i> | d+D = |      |      |     |      |     | m+M = 0 | f+F = 0 | dmft+<br>DMFT = 0 |
|-----|----------------------|-------|------|------|-----|------|-----|---------|---------|-------------------|
|     |                      | 0     | 1    | 2    | 3   | 4    | 5+  |         |         |                   |
|     |                      | %     | %    | %    | %   | %    | %   | %       | %       |                   |
| ≤4  | 954                  | 71.7  | 9.6  | 5.1  | 3.2 | 3.3  | 7.1 | 98.7    | 95.7    | 69.6              |
| 5   | 1,646                | 65.1  | 11.5 | 8.0  | 4.7 | 3.4  | 7.4 | 98.9    | 85.8    | 59.5              |
| 6   | 1,719                | 66.9  | 12.5 | 9.3  | 4.8 | 2.6  | 4.0 | 99.1    | 74.4    | 55.9              |
| 7   | 1,793                | 64.8  | 14.2 | 10.3 | 5.0 | 2.3  | 3.3 | 98.8    | 66.1    | 49.3              |
| 8   | 1,848                | 65.3  | 17.1 | 9.8  | 3.5 | 2.3  | 2.0 | 98.1    | 59.9    | 44.7              |
| 9   | 1,762                | 67.3  | 15.3 | 10.0 | 3.5 | 1.9  | 2.0 | 97.7    | 54.9    | 42.4              |
| 10  | 1,813                | 70.6  | 17.2 | 7.6  | 1.9 | 1.5  | 1.2 | 97.2    | 56.3    | 43.6              |
| 11  | 1,736                | 74.4  | 16.1 | 5.3  | 1.7 | 0.9  | 1.6 | 96.7    | 58.6    | 46.1              |
| 12  | 1,469                | 76.0  | 14.8 | 5.2  | 2.4 | 0.8  | 0.8 | 95.8    | 68.9    | 55.1              |
| 13  | 1,239                | 76.1  | 15.7 | 4.7  | 1.5 | 1.0  | 0.8 | 95.6    | 72.5    | 56.5              |
| 14  | 1,091                | 77.3  | 12.4 | 5.8  | 1.9 | 0.4* | 2.1 | 94.1    | 65.7    | 49.7              |
| 15  | 879                  | 75.6  | 13.7 | 6.4  | 2.0 | 0.6* | 1.8 | 93.8    | 63.3    | 47.4              |
| ≥16 | 495                  | 74.3  | 14.8 | 5.7  | 2.2 | 0.5* | 2.4 | 94.6    | 53.8    | 42.2              |

\* relative standard error ≥ 40%

## Fissure sealants: age-specific experience

The age-specific experience with fissure sealants is shown in Table 8. The mean number increased with age, ranging from 0.03 for 6-year-olds to 0.25 for 14-year-olds. There is some evidence of preferential use of fissure sealants among those with caries experience, indicated by the percentage of children with fissure sealants among those with caries experience compared to those with no caries experience. However, the percentages of children with fissure sealants by caries status do not differ appreciably.

**Table 8: Fissure sealants – age-specific experience**

| Age | Children<br><i>n</i> | Sealants<br>mean<br>SD | Children with sealants |     |          |      |
|-----|----------------------|------------------------|------------------------|-----|----------|------|
|     |                      |                        | DMFT = 0               |     | DMFT ≥ 1 |      |
|     |                      |                        | <i>n</i>               | %   | <i>n</i> | %    |
| 6   | 1,783                | 0.03<br>0.28           | 1,704                  | 1.0 | 79       | 2.5  |
| 7   | 1,796                | 0.14<br>0.68           | 1,585                  | 5.2 | 211      | 8.5  |
| 8   | 1,861                | 0.21<br>0.82           | 1,556                  | 8.0 | 305      | 12.8 |
| 9   | 1,779                | 0.18<br>0.76           | 1,365                  | 7.3 | 414      | 9.7  |
| 10  | 1,800                | 0.17<br>0.75           | 1,276                  | 6.5 | 524      | 11.3 |
| 11  | 1,726                | 0.16<br>0.65           | 1,128                  | 8.2 | 598      | 8.0  |
| 12  | 1,456                | 0.16<br>0.69           | 936                    | 7.1 | 520      | 10.8 |
| 13  | 1,182                | 0.24<br>0.90           | 700                    | 8.0 | 482      | 14.3 |
| 14  | 1,020                | 0.25<br>0.95           | 528                    | 7.5 | 492      | 14.2 |
| 15  | 842                  | 0.20<br>0.72           | 416                    | 7.5 | 426      | 14.1 |
| ≥16 | 487                  | 0.20<br>0.69           | 214                    | 7.9 | 273      | 13.2 |

## Changes since 1998

The mean number of fissure sealants in 1999 was considerably lower than that observed in 1998 for most age groups, with the extent of these decreases being moderate to large for children aged between 9 and 16+. However, despite the decrease in mean number of fissure sealants present, there was only a small decline in the percentage of children with fissure sealants between 1998 and 1999. The reduction was most apparent for children with no caries experience (DMFT = 0), occurring for 6 of the 11 age groups.

## School Dental Service examinations

Table 9 demonstrates that the majority (at least 82%) of children 6 years of age or older had previously received examinations within the School Dental Service. A number of children in each age group were recorded as either having their first examination but were given a date of last examination or as not having their first examination but did not have a last examination date recorded. These children were not classified as either having had a previous examination or as having their first examination, and were not included in the results presented in Table 10.

Of those children known to have had a previous examination the majority had been 13–18 months previously (Table 10). A considerable minority of children also had their last examination 7–12 months previously. Few children had had their previous examination either less than 6 months or more than 18 months previously. The mean time since last visit increased slightly with age, ranging from 12.42 for 5-year-olds to 15.33 for children aged 14.

**Table 9: School Dental Service examinations – age-specific distribution**

| Age | Children examined<br><i>n</i> | Previous examination in School Dental Service |         |             |
|-----|-------------------------------|---|---------|-------------|
|     |                               | Yes<br>%                                      | No<br>% | Unsure<br>% |
| ≤4  | 969                           | 3.4   | 93.4    | 3.2         |
| 5   | 1,746                         | 35.6  | 58.8    | 5.6         |
| 6   | 1,782                         | 82.4  | 10.3    | 7.3         |
| 7   | 1,798                         | 85.0  | 6.3     | 8.6         |
| 8   | 1,848                         | 88.1  | 4.4     | 7.6         |
| 9   | 1,755                         | 88.9  | 4.2     | 6.9         |
| 10  | 1,793                         | 88.6  | 3.1     | 8.4         |
| 11  | 1,722                         | 88.9  | 3.1     | 8.1         |
| 12  | 1,451                         | 90.0  | 2.0     | 8.0         |
| 13  | 1,182                         | 90.8  | 1.4     | 7.9         |
| 14  | 1,029                         | 89.6  | 1.9     | 8.4         |
| 15  | 851                           | 89.1  | 3.1     | 7.8         |
| ≥16 | 491                           | 88.9  | 3.3     | 7.8         |

**Table 10: School Dental Service examinations – time since last visit**

| Age | Children | Months since last visit |      |       |       |      | mean   | SD    |
|-----|----------|-------------------------|------|-------|-------|------|--------|-------|
|     |          | 0–6                     | 7–12 | 13–18 | 19–24 | 25+  |        |       |
|     | <i>n</i> | %                       | %    | %     | %     | %    |        |       |
| ≤4  | 33       | 12.1*                   | 39.1 | 42.0  | 6.9*  | 0.0  | 11.80* | 5.20* |
| 5   | 621      | 3.9                     | 47.5 | 47.3  | 0.9   | 0.4* | 12.42  | 2.97  |
| 6   | 1,467    | 2.2                     | 32.2 | 58.5  | 6.3   | 0.7  | 13.81  | 3.54  |
| 7   | 1,529    | 1.5                     | 31.6 | 56.6  | 7.2   | 3.1  | 14.37  | 4.08  |
| 8   | 1,628    | 1.9                     | 31.9 | 56.8  | 7.1   | 2.3  | 14.38  | 4.24  |
| 9   | 1,561    | 2.0                     | 29.7 | 57.7  | 7.4   | 3.3  | 14.51  | 4.61  |
| 10  | 1,588    | 2.3                     | 28.8 | 57.3  | 7.7   | 3.8  | 14.61  | 4.57  |
| 11  | 1,530    | 1.7                     | 25.6 | 63.8  | 6.0   | 2.9  | 14.64  | 4.07  |
| 12  | 1,305    | 1.8                     | 24.7 | 63.8  | 7.7   | 2.0  | 14.64  | 3.94  |
| 13  | 1,073    | 2.0                     | 20.2 | 63.4  | 10.3  | 4.2  | 15.22  | 4.59  |
| 14  | 923      | 1.3                     | 22.7 | 61.5  | 9.9   | 4.5  | 15.33  | 4.71  |
| 15  | 758      | 1.4                     | 26.9 | 59.3  | 7.8   | 4.6  | 14.96  | 4.99  |
| ≥16 | 437      | 1.4                     | 34.9 | 53.5  | 6.4   | 3.9  | 14.50  | 4.73  |

\* relative standard error ≥ 40%

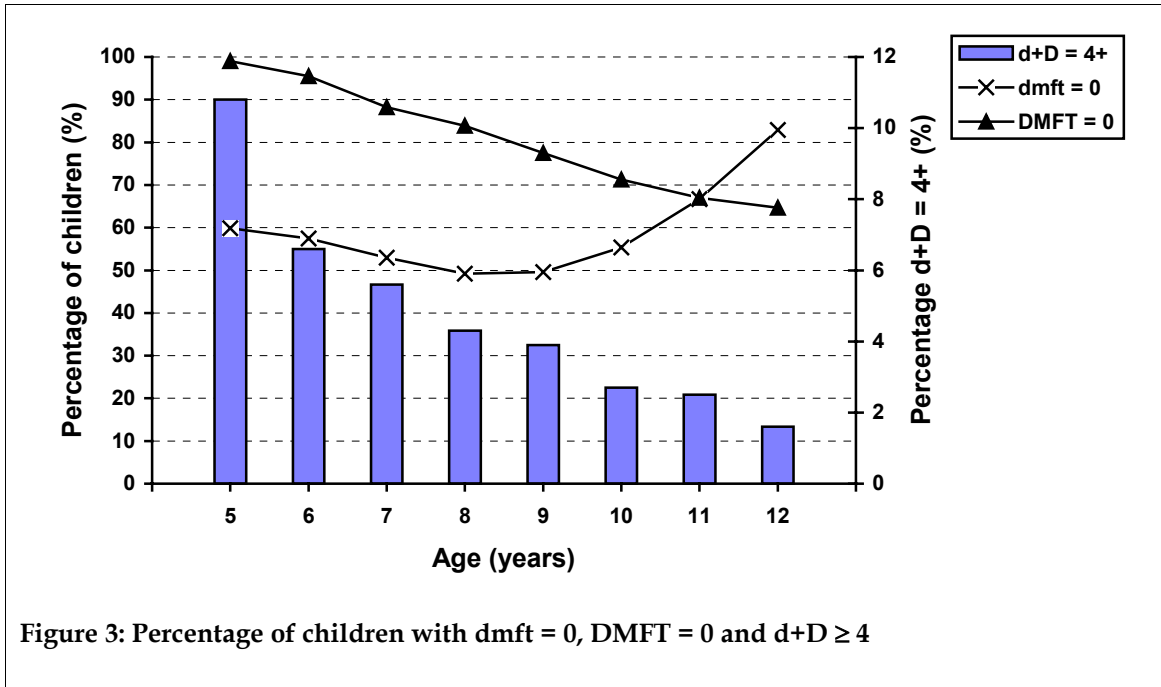
### Changes since 1998

There was a general increase between 1998 and 1999 in the frequency of known first examinations, this being a result of a considerable decrease in the percentage of children with an unknown last examination status.

There was a decrease across almost all ages in the percentage of children having had their last School Dental Service examination 7–12 months previously, with a resultant increase in the mean number of months since last visit for most age groups.

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

Figure 3 presents data contained in Tables 4, 6 and 7 to summarise the extent of dental health (represented by percentage with no caries experience) and the extent of more extensive clinically detectable untreated decay.



### Caries experience by geographical location

Table 11 presents deciduous caries experience data for each of the Health (Analysis) Zones used in this report. Considerable variation can be seen in caries experience for the selected 5-6-year-old age group across geographical areas. Among these children, mean decay scores in the deciduous dentition ranged from 0.66 in North Metropolitan to 1.92 in the North West zone. The mean number of teeth missing due to caries was highest in the Goldfields zone, while the mean number of filled teeth was highest in the Great Southern, South West and Mid West Heath Zones, the lowest being in the North Metropolitan zone. Mean dmft scores were highest in the North West (mean = 2.53) and lowest in the North Metropolitan (mean = 1.07) zone. Consistent with these findings the percentage of children with dmft = 0 was highest in North Metropolitan (66.0%) and lowest in the South West (43.9%) and North West (40.9%) zones.



**Table 11: Deciduous caries experience for 5-6-year-old children by Health (Analysis) Zone**

|                    | Children | Decayed (d) |      | Missing (m) |      | Filled (f) |      | dmft |      | dmft = 0 |
|--------------------|----------|-------------|------|-------------|------|------------|------|------|------|----------|
|                    | <i>n</i> | mean        | SD   | mean        | SD   | mean       | SD   | mean | SD   | %        |
| North West         | 159      | 1.92        | 2.79 | 0.01        | 0.16 | 0.60       | 1.27 | 2.53 | 3.05 | 40.9     |
| Mid West           | 117      | 1.19        | 2.05 | 0.03        | 0.21 | 0.79       | 1.53 | 2.01 | 2.88 | 49.6     |
| Midlands           | 117      | 0.84        | 1.64 | 0.00        | 0.00 | 0.69       | 1.63 | 1.53 | 2.49 | 59.0     |
| Goldfields         | 146      | 1.18        | 2.23 | 0.06        | 0.74 | 0.55       | 1.51 | 1.79 | 2.89 | 56.2     |
| Great Southern     | 133      | 1.29        | 2.56 | 0.00        | 0.00 | 0.82       | 1.55 | 2.11 | 3.14 | 46.6     |
| South West         | 335      | 1.27        | 2.15 | 0.04        | 0.35 | 0.81       | 1.72 | 2.11 | 2.89 | 43.9     |
| North Metropolitan | 1,034    | 0.66        | 1.61 | 0.01        | 0.17 | 0.39       | 1.17 | 1.07 | 2.12 | 66.0     |
| East Metropolitan  | 411      | 0.88        | 1.78 | 0.05        | 0.56 | 0.65       | 1.58 | 1.58 | 2.62 | 56.4     |
| South Metropolitan | 1,060    | 0.82        | 1.75 | 0.02        | 0.35 | 0.48       | 1.26 | 1.33 | 2.31 | 59.6     |

The mean number of clinically detectable decayed teeth in 12-year-olds (see Table 12) was also highest in the North West Health Zone, however, contrary to trends in the deciduous dentition, mean scores were lowest in the Mid West zone. The mean number of filled teeth was highest in the South Metropolitan zone (mean = 0.47) and lowest in the Midlands zone (mean = 0.20) while DMFT scores were highest in North West and lowest in Midlands. Almost 70% of 12-year-olds in Midlands had no history of caries experience in their permanent dentition, while only 54.0% of 12-year-old children in the North West zone had a DMFT score of zero.

**Table 12: Permanent caries experience for 12-year-old children by Health (Analysis) Zone**

|                    | Children | Decayed (D) |      | Missing (M) |      | Filled (F) |      | DMFT |      | DMFT = 0 |
|--------------------|----------|-------------|------|-------------|------|------------|------|------|------|----------|
|                    | <i>n</i> | mean        | SD   | mean        | SD   | mean       | SD   | mean | SD   | %        |
| North West         | 50       | 0.90        | 1.83 | 0.16        | 0.71 | 0.26       | 0.78 | 1.32 | 1.96 | 54.0     |
| Mid West           | 42       | 0.19        | 0.55 | 0.05        | 0.22 | 0.45       | 0.83 | 0.69 | 1.18 | 64.3     |
| Midlands           | 55       | 0.38        | 0.73 | 0.04        | 0.19 | 0.20       | 1.10 | 0.62 | 1.64 | 69.1     |
| Goldfields         | 44       | 0.30        | 0.67 | 0.14        | 0.63 | 0.25       | 0.69 | 0.68 | 1.20 | 63.6     |
| Great Southern     | 54       | 0.22        | 0.57 | 0.26        | 1.01 | 0.31       | 0.91 | 0.80 | 1.71 | 66.7     |
| South West         | 135      | 0.33        | 0.84 | 0.06        | 0.27 | 0.34       | 0.74 | 0.73 | 1.28 | 65.9     |
| North Metropolitan | 457      | 0.25        | 0.63 | 0.07        | 0.46 | 0.39       | 0.91 | 0.72 | 1.29 | 66.7     |
| East Metropolitan  | 163      | 0.21        | 0.61 | 0.09        | 0.49 | 0.44       | 0.98 | 0.75 | 1.32 | 64.4     |
| South Metropolitan | 452      | 0.28        | 0.74 | 0.06        | 0.34 | 0.47       | 0.97 | 0.81 | 1.42 | 61.3     |