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# The Child Dental Health Surveys Australia, 2005 and 2006

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# Contents

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# Abbreviations

| | |
|---|---|
| ARCPOH | Australian Research Centre for Population Oral Health |
| CDHS | Child Dental Health Survey |
| d | deciduous decayed teeth |
| D | permanent decayed teeth |
| dmft | deciduous decayed, missing (due to decay) and filled teeth |
| DMFT | permanent decayed, missing (due to decay) and filled teeth |
| DSRU | Dental Statistics and Research Unit |
| ERP | estimated resident population |
| f | deciduous filled teeth |
| F | permanent filled teeth |
| m | deciduous teeth missing due to decay |
| M | permanent teeth missing due to decay |
| n | number |
| SD | standard deviation |
| SDS | school dental service |
| $SiC^{10}$ | Significant Caries Index (10%) |

# Places

| | |
|---|---|
| Qld | Queensland |
| WA | Western Australia |
| SA | South Australia |
| Tas | Tasmania |
| ACT | Australian Capital Territory |
| NT | Northern Territory |

# Summary

This report describes the state of oral health of Australian children attending a school dental service (SDS) in 2005 and 2006. The findings are based on analyses of data extracted from the 2005 and 2006 Child Dental Health Surveys (CDHS) for 193,457 children from ages 4 to 15 from most states and territories. Data for New South Wales and Victoria are not reported here; therefore, any comparisons made with data for previous years, or with international data, should be made with caution.

Dental decay remains relatively prevalent among Australian children. It affects the deciduous teeth of more than half of all 6 year old children, with those in this age group having an average of 2 teeth affected by decay. Nearly half of all 12 year olds have their permanent teeth affected by caries, and have an average of 1.2 teeth affected by decay.

However, decay experience is concentrated in a minority of children in both these age groups. While the average 6 year old child had just over 2 teeth affected by caries, the 10% of children this age with the most extensive history of deciduous tooth decay had approximately 8 deciduous teeth affected. This was almost 4 times higher than the national average for this age group.

Among 12 year olds, the 10% of children with the most extensive history of decay in their permanent teeth had an average of almost 5 teeth affected by decay. This is about 4 times higher than the national average for 12 year olds.

# 1 Introduction

The purpose of this report is to describe the patterns of oral health and service provision relating to children's dental health in Australia in the calendar years of 2005 and 2006. This report brings together data collected by some state and territory school dental services (SDSs) on the oral health of children attending those services. It provides policy makers and health planners, as well as academics and interested readers, with a summary of the available data on dental decay among children attending a SDS in Australia. The Indigenous status of respondents is collected by some states and territories; however, these data were of insufficient quality to be analysed and reported on in a way that would contribute to our better understanding of the oral health of Australia's Indigenous children.

The dental health of children receiving care in a state or territory SDS has been monitored since 1977. Between 1977 and 1988, the monitoring was managed centrally by the (then) Commonwealth Department of Health as an evaluation of the Australian School Dental Scheme. In 1989, responsibility for collecting national data was transferred to the Australian Institute of Health and Welfare's Dental Statistics and Research Unit at The University of Adelaide. Monitoring is undertaken there using the Child Dental Health Survey.

## 1.1 What is dental decay (caries)?

Dental caries, otherwise known as dental decay or tooth decay, is one of the most prevalent chronic diseases of people worldwide. In Australia, the most commonly reported chronic medical condition among children aged 0–14 years is asthma; it affects 12% of children in this age group (AIHW 2009). In contrast, by age 6, almost half of Australian children have caries experience (Armfield et al. 2009). Individuals remain susceptible to this disease throughout their lifetime. Dental caries forms through a complex interaction over time between acid-producing bacteria, fermentable carbohydrates and many host factors including teeth and saliva. (Fermentable carbohydrates are sugars and other carbohydrates from food and drink that can be fermented by bacteria.)

Dental caries is characterised by the loss of mineral ions from the tooth (demineralisation), stimulated largely by the presence of bacteria and their by-products (Mount & Hume 2005). Remineralisation occurs when partly dissolved crystals are induced to grow by the redepositing of minerals via saliva. Normally, a balance occurs between the demineralisation and remineralisation of the tooth surface (enamel); however, under some conditions, this balance is upset. The subsequent chronic demineralisation leads to holes or cavities forming in the tooth surface. Cavitation through the outer enamel covering of the tooth into the tissues below allows for a bacterial infection. This may cause considerable pain and require restorations or the removal of the tooth.

Dental decay is believed to affect up to five million people in Australia each year. Among adults, untreated dental decay afflicts approximately one-quarter of all people in any given year (Roberts-Thomson & Do 2007) and can lead to hospital admission (Jamieson & Roberts-Thomson 2008). Among children, dental extractions and restorations are the most common reason for hospital separations, defined as an episode of admitted patient care (AIHW 2006). Although dental decay is associated only rarely with mortality, it is a cause of considerable morbidity (Spencer & Lewis 1988). Consequences of dental decay include pain, problems eating or drinking, loss of sleep, social embarrassment and time lost to work

(Spencer & Lewis 1988). Dental decay resulting in tooth loss impacts on both chewing ability and quality of life (Brennan et al. 2008).

A past history of decay in an individual's teeth is represented by filled or missing teeth due to caries. These teeth have had decay in the past, but no longer have active decay; they can be described as 'affected by decay' or 'affected by caries'. A person with any teeth affected by decay is described as having had 'caries experience' or 'decay experience'. Knowing about the extent of caries experience is useful because individuals with filled teeth will likely require future dental work on those teeth, with fillings replaced over time. Having teeth missing due to caries indicates that timely dental care was not received to restore those teeth before the decay became so extensive that a filling was not feasible. In addition, the accumulation of missing teeth is associated with more oral health impacts and a worse subjective rating of oral health (Gerritsen et al. 2010). A person who has no history of decay or no current decay in teeth present is described as 'caries free'. A person described as having dental decay or untreated decay has at least one tooth that is currently decayed and in need of a restoration (filling).

## 1.2 Classifying the extent of decay

Dental decay occurs along a continuum reflecting the extent of tooth demineralisation. At an early stage, non-cavitated or 'white-spot' lesions are restricted to the outer enamel surface of the tooth. These lesions may be characterised by a loss of normal translucency of the enamel and increased porosity of the surface layer. They are not normally included as an instance of disease experience. However, cavitation that results from the progression of demineralisation through the enamel surface of the tooth into the underlying dentine is counted as an instance of disease experience. It is possible to control the progress of decay at any stage by sealing the cavity and isolating the responsible bacteria from its food source. However, failure to access timely treatment may lead to further damage and the need to remove the tooth.

## 1.3 Risk factors for dental decay

While dental decay is a process of chronic demineralisation of the structure of the tooth, there are several factors that are important in this process. The five factors found to exert the strongest influence on dental caries are:

1. frequency of carbohydrate intake, which allows bacteria in the plaque to produce concentrations of organic acids that can dissolve the tooth
2. accumulation and retention of plaque, a potential breeding ground for acid-producing bacteria
3. frequency of exposure to dietary acids in addition to bacterial acids
4. exposure to fluoride, which helps to control the development of decay
5. natural protective factors, such as saliva, which may help prevent or limit the progress of decay (Mount & Hume 2005).

Plaque, a semi-transparent layer that adheres to the tooth surface, forms on all teeth and contains many pathogenic organisms (bacteria). It can be reduced by tooth brushing or using chemical solutions that kill the bacteria. However, the most significant risk factor for dental

decay is the frequency of exposure to fermentable carbohydrates, such as sugar. This, in turn, is related to the pattern of consumption of certain foods and beverages.

Behavioural risk factors for dental decay relate to the five factors listed above. These include substandard tooth cleaning; poor diet involving high exposure to acidic foodstuffs as well as fermentable carbohydrates such as sugars; and limited exposure to fluoride available in toothpastes, fluoridated public water, or other sources (Mount & Hume 2005).

## 1.4 Dental decay prevention

Over the past three decades, the oral health of Australian children has substantially improved, as evidenced by declines in the prevalence and severity of dental decay (Armfield & Spencer 2008). Systematic exposure to fluorides, together with better nutrition, rising material standards of living and better access to dental care, has reduced the susceptibility of contemporary child populations to infectious diseases affecting the oral cavity. Along with using fluoride in public water supplies and products such as mouthwash, toothpaste and fluoride supplements, some professional techniques are available to prevent caries. These may reduce children's experience of this disease. Preventive methods such as pit and fissure sealants can be applied in SDS clinics and there is a substantial body of research evidence on their effectiveness. For example, systematic reviews have been published for fluoride gel, fluoride varnish, chlorhexidine, pit and fissure sealants and dental health education (Ahovuo-Saloranta et al. 2008).

## 1.5 Measuring dental decay

From the age of around 5 or 6 children start losing their baby or deciduous teeth and these teeth are replaced by their permanent teeth. By the time children are about 12, most have lost all their baby teeth and have all their permanent teeth (except for wisdom teeth, which may erupt several years, even decades, later). Therefore, analyses of dental decay in teenage children report the level of disease in permanent teeth only. In contrast, younger children generally have a mixture of deciduous and permanent teeth (or mixed dentition) from around the age of 5. The convention is to report on these two sets of teeth separately. However, this report will also look at the decay experience for each age group in the combined deciduous and permanent dentition, as this gives a picture of total decay experience for each age group.

The dental health status of sampled children covers the three areas listed below:

1. Deciduous decay experience is recorded as the number of baby teeth that are decayed, missing and filled because of dental decay, and is based on the coding scheme of Palmer et al. (1984). Decay experience is measured by the number of decayed, missing and filled teeth (dmft for deciduous teeth). Decay refers to cavities, usually detected clinically using visual criteria. In some instances, x-rays may be used. Deciduous dmft is calculated for children aged 4 to 10.
2. Permanent decay experience is recorded as the number of adult teeth that are decayed, missing and filled because of dental decay, and is based on the World Health Organization protocol (WHO 1997). Decay experience is measured by the number of decayed, missing and filled teeth (DMFT for permanent teeth). In some instances, x-rays may be used. DMFT is calculated for children aged 5 to 15.

3. Fissure sealants are recorded as the number of teeth, otherwise sound, not restored and not decayed, that have a fissure sealant. This data item was introduced in the Child Dental Health Survey in most states and territories in 1989.
4. While average decay experience for a population provides a good summary statistic, it can hide people within that population who have considerable decay experience. The Significant Caries Index (SiC) was designed to bring attention to those individuals with the highest values in a population (Bratthal 2000; Nishi et al. 2001). The SiC is the average number of decayed, missing and filled teeth of the 30% of the population with the most dental decay experience. A modified index, the $SiC^{10}$, which is the average dmft/DMFT of the 10% of children with the highest dmft/DMFT, is reported here. The $SiC^{10}$ index was calculated from ages 4 to 10 for baby teeth and from ages 6 to 15 for adult teeth.

## 1.6 Data used in this report

The target population for the Child Dental Health Survey is children attending SDSs operated by each of the states and territories. Data are collected from a random sample of children attending these services for some states. Data from South Australia are collected in full enumeration. Results for New South Wales and Victoria are not reported here. Data for children attending services in Victoria for 2005 and 2006 were not made available at the time of preparing this publication. Data for children attending services in New South Wales were not collected in 2005 or 2006. In New South Wales, the SDSs target only schools identified by the New South Wales Department of Education & Communities as being disadvantaged. Children at these schools are screened and enter the SDS only if they require treatment. Therefore, the children who would be in the SDS population in New South Wales will have greater need for treatment than children in New South Wales generally, and children from other jurisdictions. As the child populations of New South Wales and Victoria represent a sizeable proportion of the Australian child population, any comparisons with national estimates for previous years, or with international data, should be made with caution. Caution is needed, too, in drawing inferences among states and territories, as the differences might be the result of differences between states and territories in SDS coverage, level of enrolment, services policy focus, or access to services in rural or remote areas.

In 2006, Queensland had small numbers of children who were sampled in some non-metropolitan regions compared with that for previous years. Consequently, data for Queensland in 2006 were weighted using a slightly different method than that used for other states and territories. Therefore, caution should be taken when interpreting both national estimates and estimates for Queensland for 2006.

A detailed description of data collection and preparation methods for data used in this report can be found in the Appendix.

# 2 The dental health of Australia's children

## 2.1 Children's dental health

### Deciduous teeth

#### Age-specific caries experience

Decay experience in the deciduous teeth is expressed as the average number of decayed, missing and filled teeth (dmft). The averages and standard deviations (SD) for each of these components for children aged from 4 to 10 years are given in Table 2.1 for 2005 and in Table 2.2 for 2006. In 2005, there was a steady decline in the presence of clinically detectable untreated decay with increasing age, from 1.55 teeth per child among 4 year olds to 0.47 teeth per child among 10 year olds. A different pattern was shown by the average number of filled teeth, increasing from 0.23 teeth per child at 4 years of age to 1.43 teeth per child at age 9, before declining to 1.04 teeth per child at age 10. Across all age groups, the number of teeth per child that were missing due to decay was small, with averages ranging from 0.03 to 0.13 teeth per child. The dmft per child increased from 1.84 at 4 years of age to 2.40 at ages 8 and 9, before declining to 1.54 teeth per child for 10 year olds.

A similar pattern was evident in 2006. The average number of decayed, missing (due to decay) and filled teeth (dmft) increased from 1.94 per child at 4 years of age to 2.47 per child at age 6 before declining to 1.24 teeth per child for 10 year olds (Table 2.2).

**Table 2.1: Deciduous teeth: decayed, missing and filled teeth, 2005**

| Age (years) | Decayed teeth (dt) | | Missing teeth (mt) | | Filled teeth (ft) | | dmft | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| 4 | 1.55 | 2.46 | 0.06 | 0.41 | 0.23 | 0.87 | 1.84 | 2.77 |
| 5 | 1.33 | 2.52 | 0.08 | 0.64 | 0.34 | 1.27 | 1.74 | 3.05 |
| 6 | 1.44 | 2.83 | 0.13 | 0.93 | 0.70 | 1.94 | 2.27 | 3.85 |
| 7 | 1.18 | 1.97 | 0.12 | 0.68 | 1.08 | 1.87 | 2.38 | 3.05 |
| 8 | 1.02 | 1.84 | 0.09 | 0.67 | 1.29 | 2.08 | 2.40 | 3.10 |
| 9 | 0.92 | 1.73 | 0.05 | 0.44 | 1.43 | 2.23 | 2.40 | 3.11 |
| 10 | 0.47 | 1.07 | 0.03 | 0.27 | 1.04 | 1.89 | 1.54 | 2.40 |

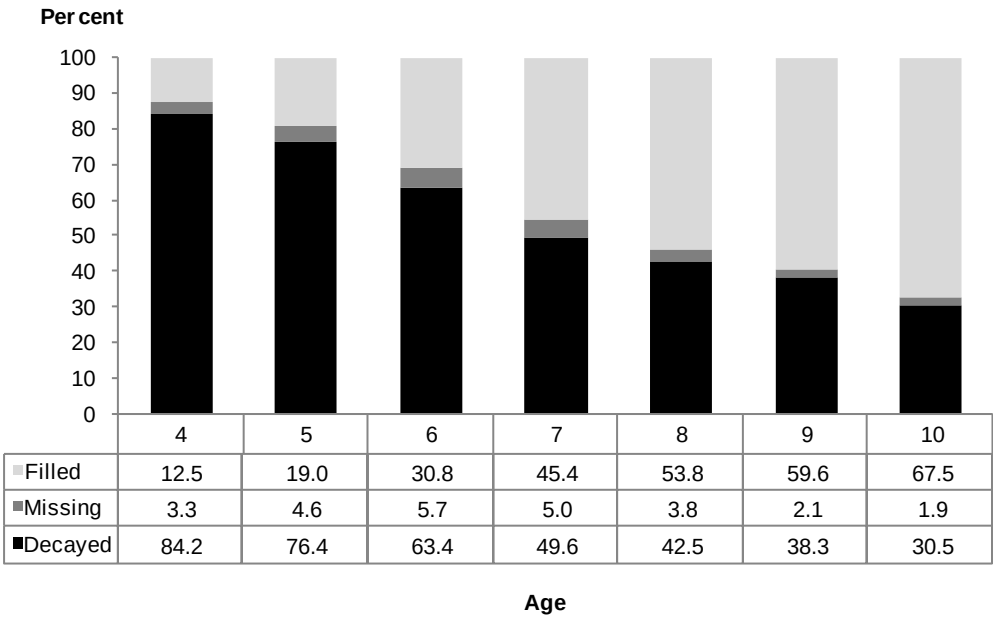
*Note:* The results for 4 year old children in the Australian Capital Territory were excluded from the analysis. Therefore, results for 4 year old children should be interpreted with care, appreciating that they may not be representative of the Australian child population.

**Table 2.2: Deciduous teeth: decayed, missing and filled teeth, 2006**

| Age (years) | Decayed teeth (dt) | | Missing teeth (mt) | | Filled teeth (ft) | | dmft | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| 4 | 1.25 | 1.77 | 0.04 | 0.33 | 0.65 | 1.52 | 1.94 | 2.72 |
| 5 | 1.05 | 1.92 | 0.11 | 0.66 | 0.49 | 1.30 | 1.65 | 2.71 |
| 6 | 1.65 | 2.94 | 0.03 | 0.50 | 0.79 | 1.97 | 2.47 | 3.62 |
| 7 | 0.90 | 1.65 | 0.06 | 0.43 | 1.45 | 2.28 | 2.40 | 2.96 |
| 8 | 0.85 | 1.42 | 0.06 | 0.44 | 1.25 | 1.89 | 2.15 | 2.48 |
| 9 | 0.52 | 1.19 | 0.12 | 0.89 | 1.21 | 1.97 | 1.85 | 2.81 |
| 10 | 0.41 | 0.90 | 0.02 | 0.19 | 0.81 | 1.41 | 1.24 | 1.82 |

The decayed, missing and filled components as a percentage of the dmft index are shown in Figure 2.1 for 2005 and in Figure 2.2 for 2006. In the youngest age groups, the dmft score is composed principally of untreated decay. However, with the accumulation of restorations, or fillings placed over time, the majority of the dmft index from around the age of 7 is represented by the presence of fillings.

Patterns in deciduous caries experience must be interpreted in light of the loss of deciduous teeth, usually between the ages of 6 and 12. The pattern in deciduous caries experience suggests that children enter their school years with moderate caries experience in the deciduous dentition. A large proportion of decay experience is represented by untreated decay (approximately 80% at 4 years of age in 2005, and 65% in 2006). With continued treatment, decay experience becomes predominantly represented by past caries experience treated with restorations. Despite increasing rates of decay and the accumulation of fillings across age groups, the loss of baby teeth results in a reduction in the absolute number of teeth with caries experience, and hence in an increased number of children presenting with no deciduous caries experience.

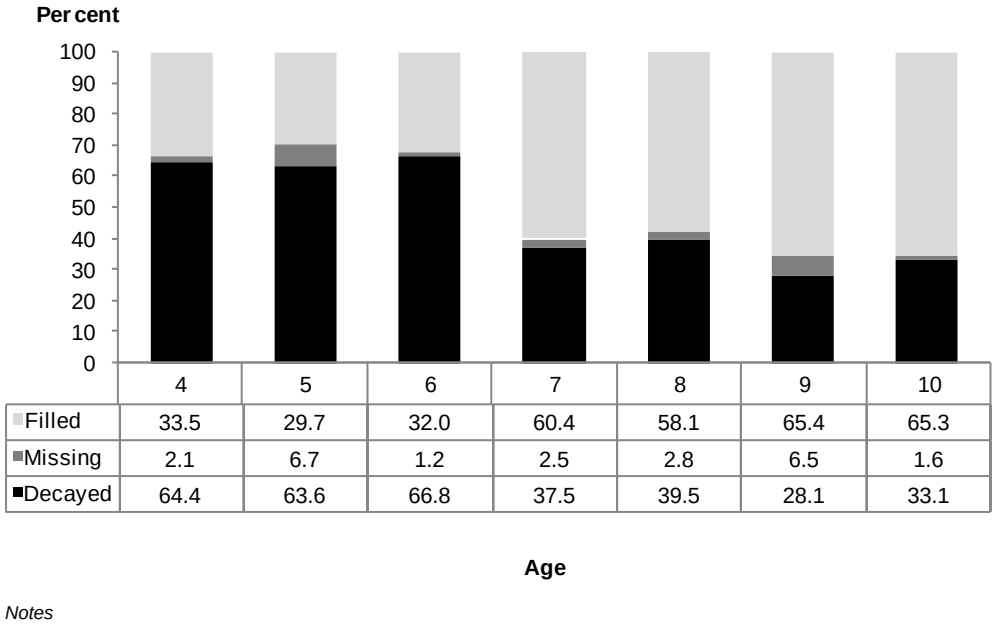



| | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|
| Filled | 12.5 | 19.0 | 30.8 | 45.4 | 53.8 | 59.6 | 67.5 |
| Missing | 3.3 | 4.6 | 5.7 | 5.0 | 3.8 | 2.1 | 1.9 |
| Decayed | 84.2 | 76.4 | 63.4 | 49.6 | 42.5 | 38.3 | 30.5 |

**Age**

*Note:* May not add to 100 due to rounding.

**Figure 2.1: Decayed, missing and filled deciduous teeth as a percentage of dmft index by age, 2005**




| | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|
| Filled | 33.5 | 29.7 | 32.0 | 60.4 | 58.1 | 65.4 | 65.3 |
| Missing | 2.1 | 6.7 | 1.2 | 2.5 | 2.8 | 6.5 | 1.6 |
| Decayed | 64.4 | 63.6 | 66.8 | 37.5 | 39.5 | 28.1 | 33.1 |

**Age**

*Notes*

1. May not add to 100 due to rounding.

2 Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.2: Decayed, missing and filled deciduous teeth as a percentage of dmft index by age, 2006**

The proportion of children with no deciduous caries experience in 2005 steadily declined between the ages of 4 and 9, from 62.9% to 37.5% (Figure 2.4). However, this proportion increased again with half of the children aged 10 showing no deciduous caries experience. This increase is due to the loss of deciduous teeth, leading to an increasing proportion of children with no deciduous teeth and therefore no deciduous decay experience.

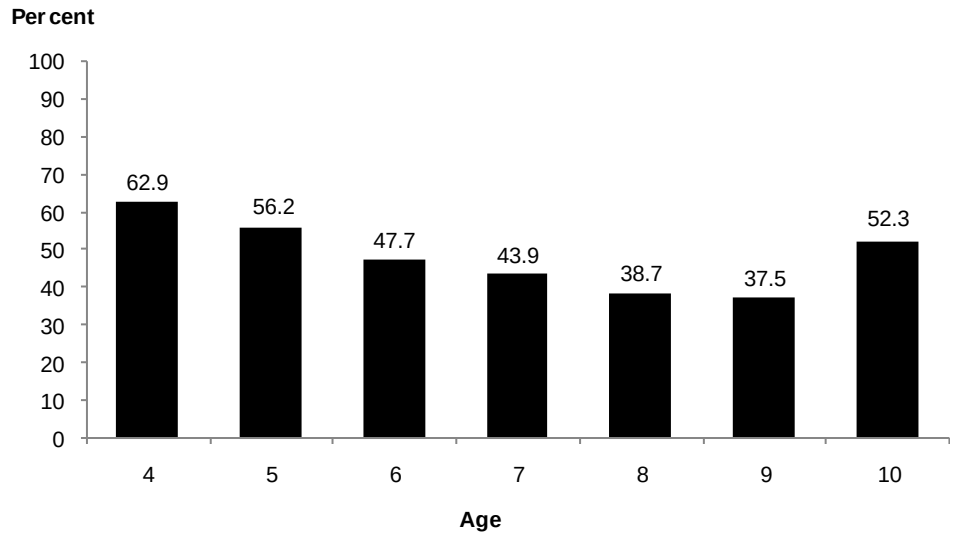
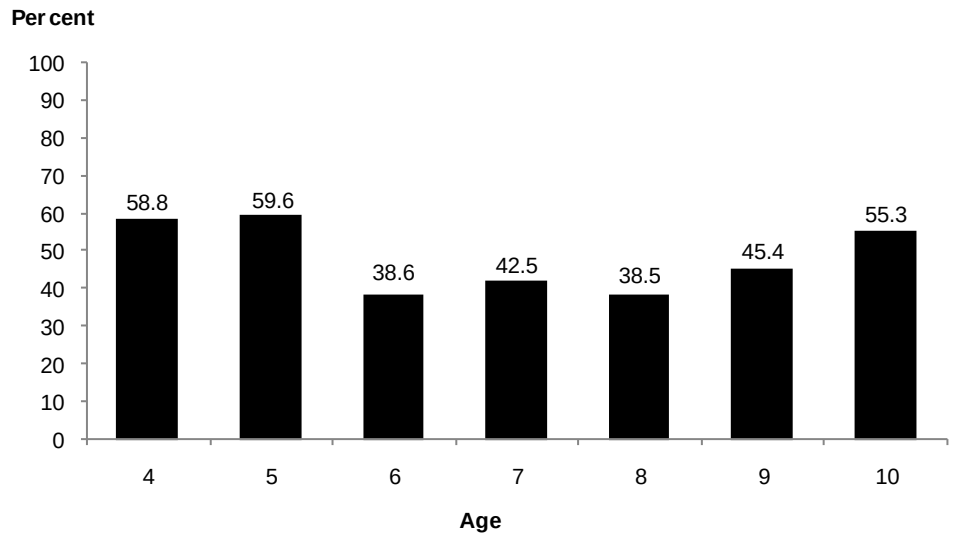



**Figure 2.3: Deciduous dentition: children with no caries experience by age, 2005**

In 2006, the proportion of children with no caries experience was about 60% at ages 4 and 5. This number decreased sharply at age 6 years and fluctuated between ages of 6, 7 and 8 years, increasing again from age 9. The reason for this increase is the exfoliation of deciduous teeth (Figure 2.4).

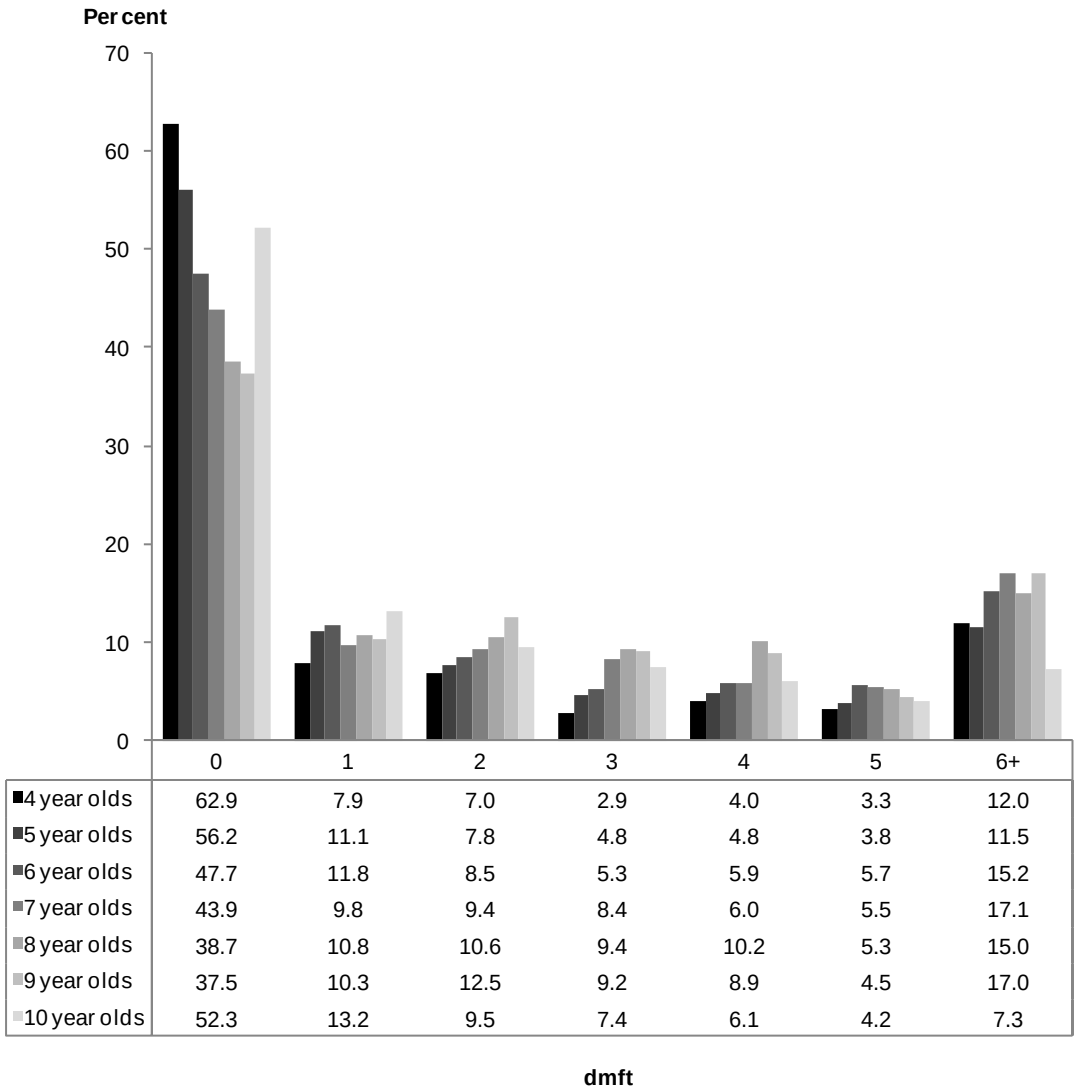



*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.4: Deciduous dentition: children with no caries experience by age, 2006**

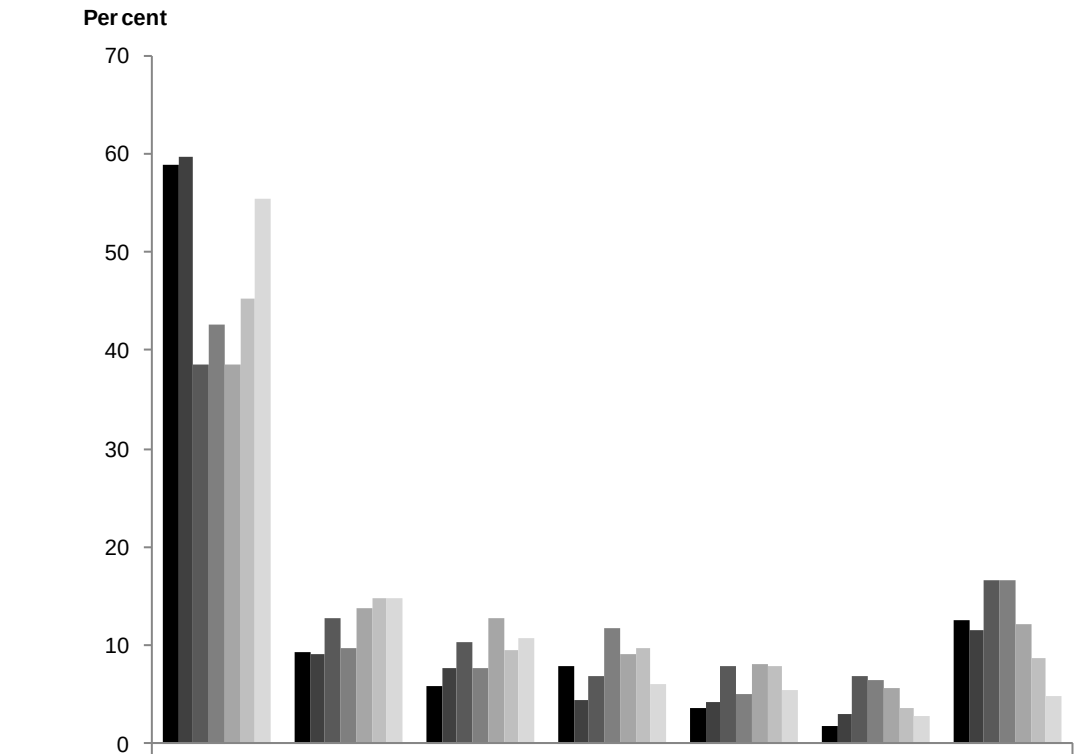
## Distribution of deciduous caries experience by age

While most Australian children had relatively low levels of deciduous decay experience, a minority experienced more decay than others. The distribution of deciduous decay experience by age in 2005 is shown in Figure 2.5. A large proportion of children had no caries experience in their baby teeth (ranging from 37.5% to 62.9%). This proportion decreased across age groups, but increased at age 10 years due to loss of baby teeth. Most children had a dmft score of zero. There were much lower (but relatively similar) percentages of children with dmft scores of 1 or 2 and, again, lower but similar percentages with dmft scores of 3, 4 or 5. Some 17.1% of children experienced a higher level of disease, with a dmft score of 6 or more. A similar pattern was evident in 2006, when between 4.8% and 16.7% of children had 6 or more deciduous teeth affected by decay (Figure 2.6).




| | 0 | 1 | 2 | 3 | 4 | 5 | 6+ |
|---|---|---|---|---|---|---|---|
| 4 year olds | 62.9 | 7.9 | 7.0 | 2.9 | 4.0 | 3.3 | 12.0 |
| 5 year olds | 56.2 | 11.1 | 7.8 | 4.8 | 4.8 | 3.8 | 11.5 |
| 6 year olds | 47.7 | 11.8 | 8.5 | 5.3 | 5.9 | 5.7 | 15.2 |
| 7 year olds | 43.9 | 9.8 | 9.4 | 8.4 | 6.0 | 5.5 | 17.1 |
| 8 year olds | 38.7 | 10.8 | 10.6 | 9.4 | 10.2 | 5.3 | 15.0 |
| 9 year olds | 37.5 | 10.3 | 12.5 | 9.2 | 8.9 | 4.5 | 17.0 |
| 10 year olds | 52.3 | 13.2 | 9.5 | 7.4 | 6.1 | 4.2 | 7.3 |

**Figure 2.5: Distribution of deciduous dmft index by age, 2005**




| | 0 | 1 | 2 | 3 | 4 | 5 | 6+ |
|---|---|---|---|---|---|---|---|
| 4 year olds | 58.8 | 9.4 | 5.9 | 8.0 | 3.6 | 1.8 | 12.5 |
| 5 year olds | 59.6 | 9.2 | 7.7 | 4.5 | 4.3 | 3.0 | 11.6 |
| 6 year olds | 38.6 | 12.9 | 10.4 | 6.8 | 7.9 | 7.0 | 16.5 |
| 7 year olds | 42.5 | 9.7 | 7.6 | 11.8 | 5.1 | 6.6 | 16.7 |
| 8 year olds | 38.5 | 13.9 | 12.7 | 9.1 | 8.2 | 5.6 | 12.1 |
| 9 year olds | 45.3 | 14.8 | 9.6 | 9.8 | 7.9 | 3.7 | 8.8 |
| 10 year olds | 55.3 | 14.8 | 10.7 | 6.2 | 5.4 | 2.8 | 4.8 |

*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.6: Distribution of deciduous dmft index by age, 2006**

## Caries significant index

Figure 2.7 and Figure 2.8 show the SiC[10] index compared with a national average deciduous dmft index for children aged from 4 to 10 years for 2005 and 2006. (See Section 1.5 for a description of the SiC[10] index.)

In 2005, the SiC[10] values for deciduous teeth were between 2 and 4 times higher than the overall mean dmft values (Figure 2.7). This indicates that the majority of decay experience is found in a minority of children.

A similar pattern was observed in 2006, when the SiC[10] values for deciduous teeth were between 3 and 5 times higher than the overall mean dmft values (Figure 2.8).

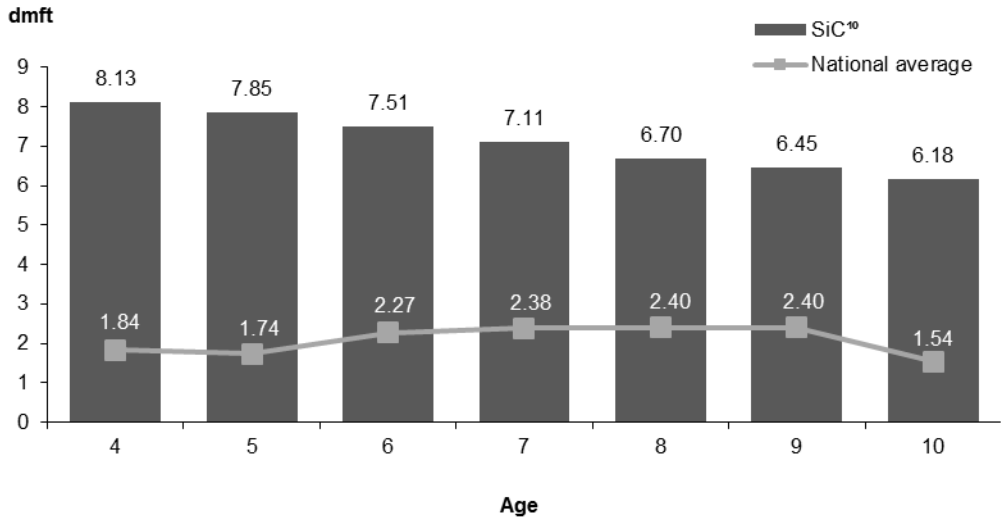
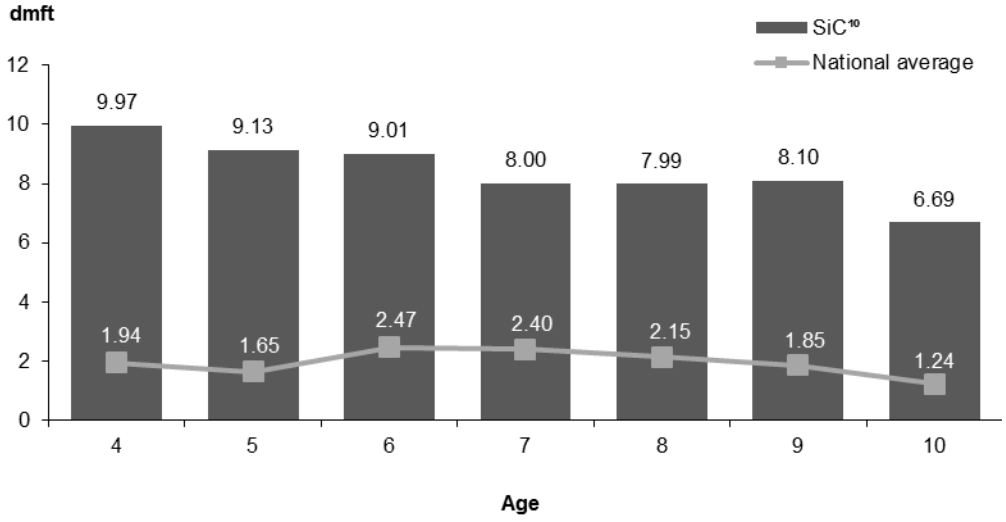



**Figure 2.7: Significant Caries Index (SiC[10]) and average deciduous dmft index, 4–10 year old children by age, 2005**




*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.8: Significant Caries Index (SiC[10]) and average deciduous dmft index, 4–10 year old children by age, 2006**

# Permanent teeth

## Age-specific caries experience in permanent teeth

The mean number of permanent teeth with clinically detected untreated decay was lower, as expected, than the corresponding means for deciduous teeth across the age range of 5–10 years (comparing Tables 2.3 and 2.4 with Tables 2.1 and 2.2). This primarily reflects the low numbers of permanent teeth present at younger ages and the shorter time since the teeth have erupted. This, in turn, reduces the time those teeth are at risk of developing decay. Furthermore, anterior incisor teeth, which are many of the permanent teeth present at younger ages, are less likely to have caries in the younger ages.

In 2005, the mean number of decayed teeth increased from 0.01 at age 5 to 0.83 at age 14. Mean decay scores for permanent teeth increased across age groups and continued to increase among older age groups, even though the number of teeth present stabilises by around age 13. The mean number of missing teeth due to caries was very low for most of the younger ages, but increased slightly from 0.11 teeth at age 13 to 0.20 teeth for 15 year olds. The pattern for filled teeth showed a more consistent increase across the age range, from 0.01 at age 5 to 1.05 for 15 year olds. Mean DMFT scores increased consistently across age groups, from 0.02 at age 5 (when less than 1 permanent tooth on average was present) to 1.99 at age 15 (when all 28 permanent teeth were usually present). The mean DMFT score for 12 year old children was 1.11 in 2005 (Table 2.3).

**Table 2.3: Decayed, missing and filled permanent teeth of children by age, 2005**

| Age (years) | Decayed (D) | | Missing (M) | | Filled (F) | | DMFT | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| 5 | 0.01 | 0.18 | 0.00 | 0.04 | 0.01 | 0.15 | 0.02 | 0.27 |
| 6 | 0.08 | 0.49 | 0.00 | 0.02 | 0.02 | 0.20 | 0.10 | 0.54 |
| 7 | 0.24 | 0.69 | 0.00 | 0.17 | 0.06 | 0.33 | 0.30 | 0.81 |
| 8 | 0.32 | 0.82 | 0.02 | 0.26 | 0.14 | 0.52 | 0.48 | 1.10 |
| 9 | 0.28 | 0.86 | 0.02 | 0.24 | 0.24 | 0.72 | 0.54 | 1.17 |
| 10 | 0.31 | 0.82 | 0.03 | 0.22 | 0.33 | 0.85 | 0.67 | 1.28 |
| 11 | 0.58 | 1.48 | 0.03 | 0.25 | 0.49 | 1.10 | 1.10 | 2.02 |
| 12 | 0.50 | 1.34 | 0.05 | 0.46 | 0.55 | 1.24 | 1.11 | 1.96 |
| 13 | 0.66 | 1.43 | 0.11 | 0.57 | 0.72 | 1.23 | 1.49 | 2.09 |
| 14 | 0.83 | 2.21 | 0.12 | 0.68 | 0.99 | 1.65 | 1.94 | 3.03 |
| 15 | 0.74 | 1.47 | 0.20 | 0.82 | 1.05 | 2.04 | 1.99 | 2.78 |

*Notes*

1. Caution should be exercised in comparing results for children aged 12 years and over with estimates reported for previous years due to changing eligibility criteria for these children over time.
2. The results for children aged 15 years should be interpreted with care, appreciating that they may not be representative of the Australian child population, as a smaller number of this age group receive care in a SDS.

In 2006, the mean number of decayed teeth increased across age groups from 0.02 at age 5 to 0.76 at age 15. The mean number of missing teeth remained consistently low across the age range. However, it started increasing slightly from age 11. Mean DMFT scores increased consistently across age groups, from 0.03 at age 5 to 2.01 at age 15 (Table 2.4).

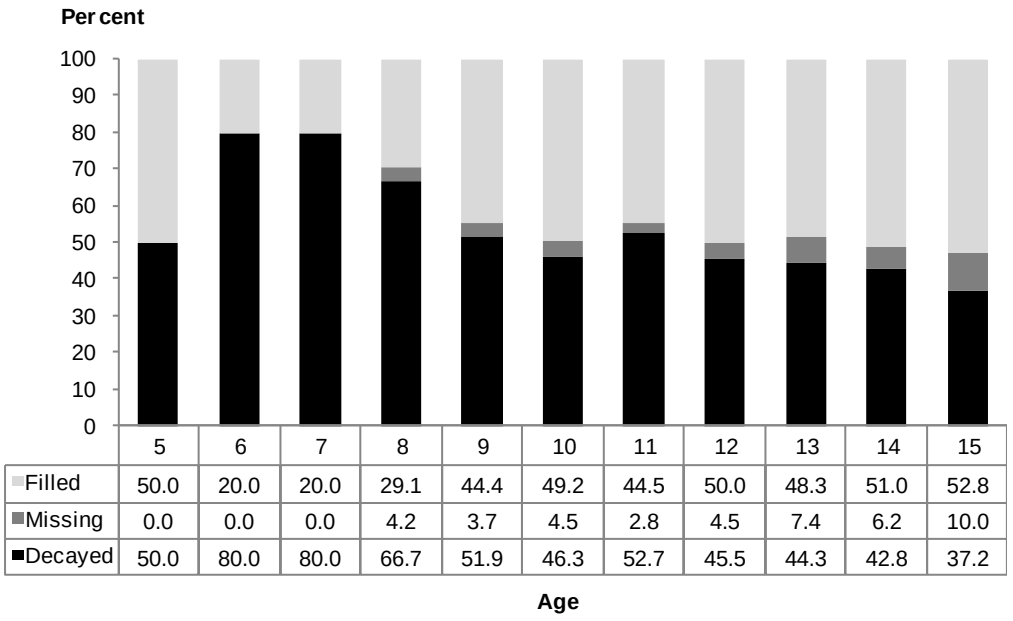
**Table 2.4: Decayed, missing and filled permanent teeth of children by age, 2006**

| Age (years) | Decayed (D) | | Missing (M) | | Filled (F) | | DMFT | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| 5 | 0.02 | 0.16 | 0.00 | 0.04 | 0.01 | 0.33 | 0.03 | 0.40 |
| 6 | 0.09 | 0.44 | 0.00 | 0.07 | 0.05 | 0.35 | 0.15 | 0.64 |
| 7 | 0.33 | 0.85 | 0.00 | 0.04 | 0.13 | 0.5 | 0.47 | 1.11 |
| 8 | 0.24 | 0.68 | 0.01 | 0.12 | 0.13 | 0.49 | 0.38 | 0.87 |
| 9 | 0.21 | 0.70 | 0.01 | 1.55 | 0.27 | 0.87 | 0.49 | 1.89 |
| 10 | 0.23 | 0.64 | 0.05 | 0.31 | 0.31 | 0.82 | 0.60 | 1.13 |
| 11 | 0.44 | 1.02 | 0.07 | 0.44 | 0.69 | 1.32 | 1.20 | 1.96 |
| 12 | 0.58 | 1.44 | 0.06 | 0.61 | 0.61 | 1.34 | 1.24 | 2.23 |
| 13 | 0.53 | 1.13 | 0.07 | 0.67 | 0.63 | 1.10 | 1.23 | 1.85 |
| 14 | 0.59 | 1.41 | 0.08 | 0.57 | 1.07 | 1.69 | 1.73 | 2.66 |
| 15 | 0.76 | 1.44 | 0.11 | 0.74 | 1.14 | 1.45 | 2.01 | 2.50 |

*Notes*

1. Caution should be exercised in comparing results for children aged 12 years and over with estimates reported for previous years due to changing eligibility criteria for these children over time.
2. The results for children aged 15 years should be interpreted with care, appreciating that they may not be representative of the Australian child population, as a smaller number of this age group receive care in a SDS.
3. Data for 2006 is based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

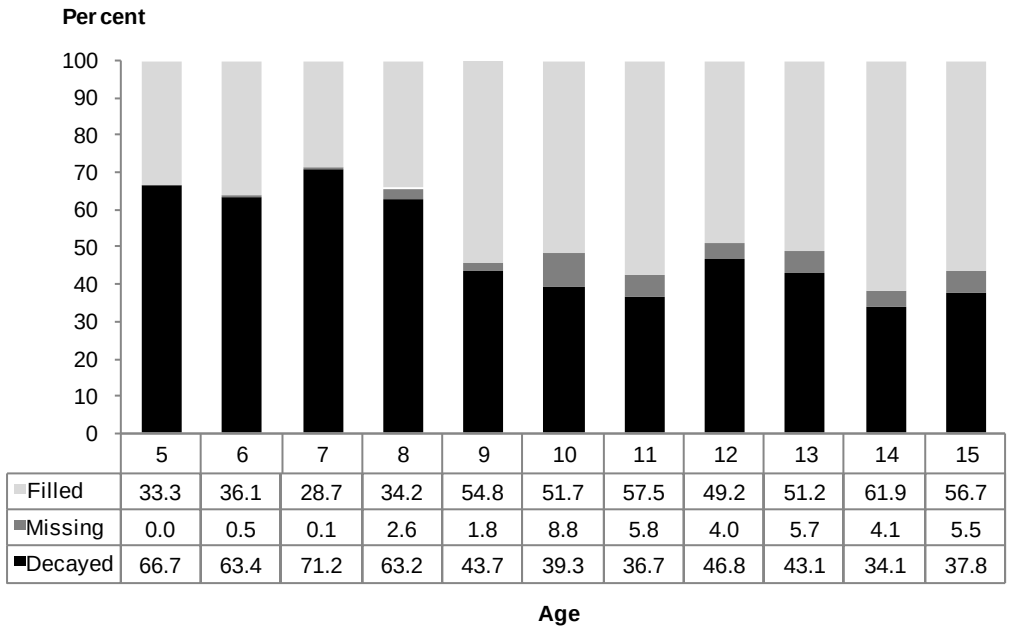
The mean number of decayed, missing and filled permanent teeth expressed as percentages of the DMFT index is shown in Figure 2.9. The pattern is similar to that for deciduous teeth. Up to the age of 9, the DMFT score is primarily represented by the presence of untreated decay (D). By the age of 12, however, more than 50% of the DMFT score was attributable to filled teeth. This indicates that a higher proportion of teeth affected by caries has been treated at this age.




| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Filled | 50.0 | 20.0 | 20.0 | 29.1 | 44.4 | 49.2 | 44.5 | 50.0 | 48.3 | 51.0 | 52.8 |
| Missing | 0.0 | 0.0 | 0.0 | 4.2 | 3.7 | 4.5 | 2.8 | 4.5 | 7.4 | 6.2 | 10.0 |
| Decayed | 50.0 | 80.0 | 80.0 | 66.7 | 51.9 | 46.3 | 52.7 | 45.5 | 44.3 | 42.8 | 37.2 |

**Figure 2.9: Decayed, missing and filled permanent teeth as percentage of DMFT index by age, 2005**

Figure 2.10 shows the mean number of decayed, missing and filled permanent teeth expressed as percentages of the DMFT index in 2006. Up to the age of 8, the main component of the score was presented by untreated decay. From age 9, due to the accumulation of fillings, more than 50% of the DMFT score was attributable to filled teeth. The missing teeth component was low across the younger age groups but started increasing from age 10.




| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Filled | 33.3 | 36.1 | 28.7 | 34.2 | 54.8 | 51.7 | 57.5 | 49.2 | 51.2 | 61.9 | 56.7 |
| Missing | 0.0 | 0.5 | 0.1 | 2.6 | 1.8 | 8.8 | 5.8 | 4.0 | 5.7 | 4.1 | 5.5 |
| Decayed | 66.7 | 63.4 | 71.2 | 63.2 | 43.7 | 39.3 | 36.7 | 46.8 | 43.1 | 34.1 | 37.8 |

*Notes*

1. May not add to 100 due to rounding.
2. Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.10: Decayed, missing and filled permanent teeth as percentage of DMFT index by age, 2006**

Figure 2.11 and Figure 2.12 show that the proportion of children with permanent teeth affected by caries increases across age groups. This reflects the increasing time that teeth are at risk of developing decay. Less than 20% of children aged 5, 6 and 7 years in 2005 had permanent tooth caries experience. But this figure increased consistently across age groups and, by the end of the primary school years, over 45% of 12 year old children had caries experience in the permanent dentition (Figure 2.11). By age 15 years, nearly 60% of children presented with some caries experience in their permanent teeth.

The pattern for 2006 is similar to that for 2005, with an increasing proportion of children with permanent teeth affected by caries by age (Figure 2.12). In 2006, just over 21% of children had caries experience by the age of 7. By age 15, almost 60% of children had some caries experience in their permanent teeth.

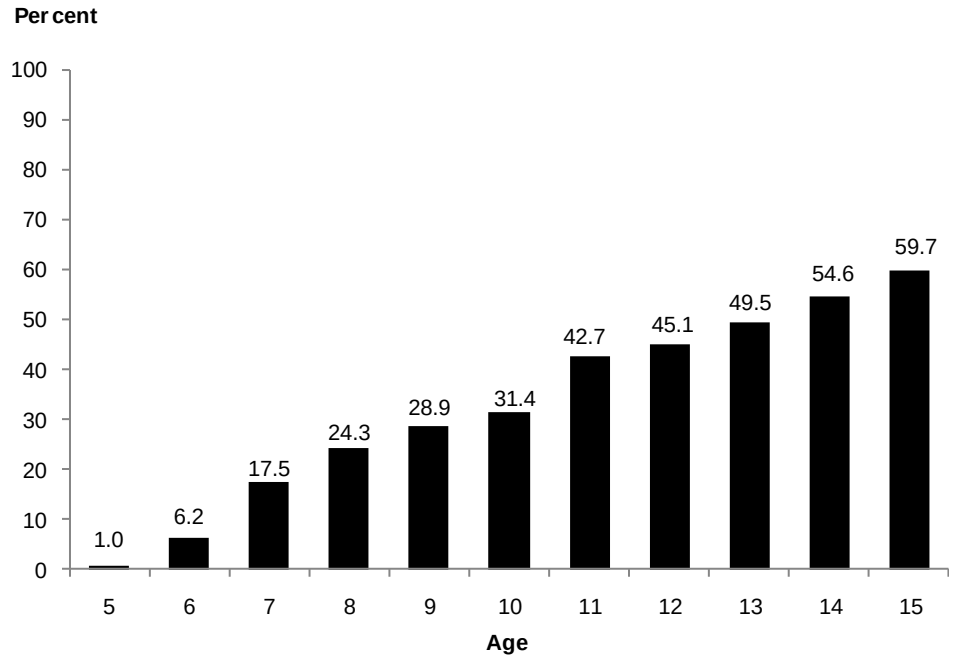
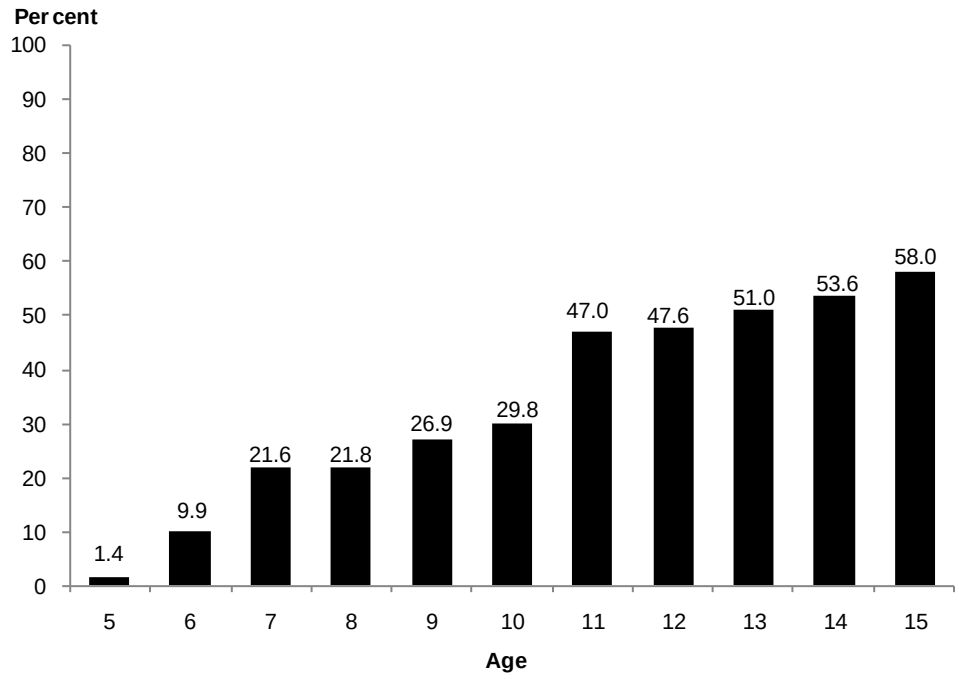



**Figure 2.11: Permanent teeth: children with DMFT>0 by age, 2005**

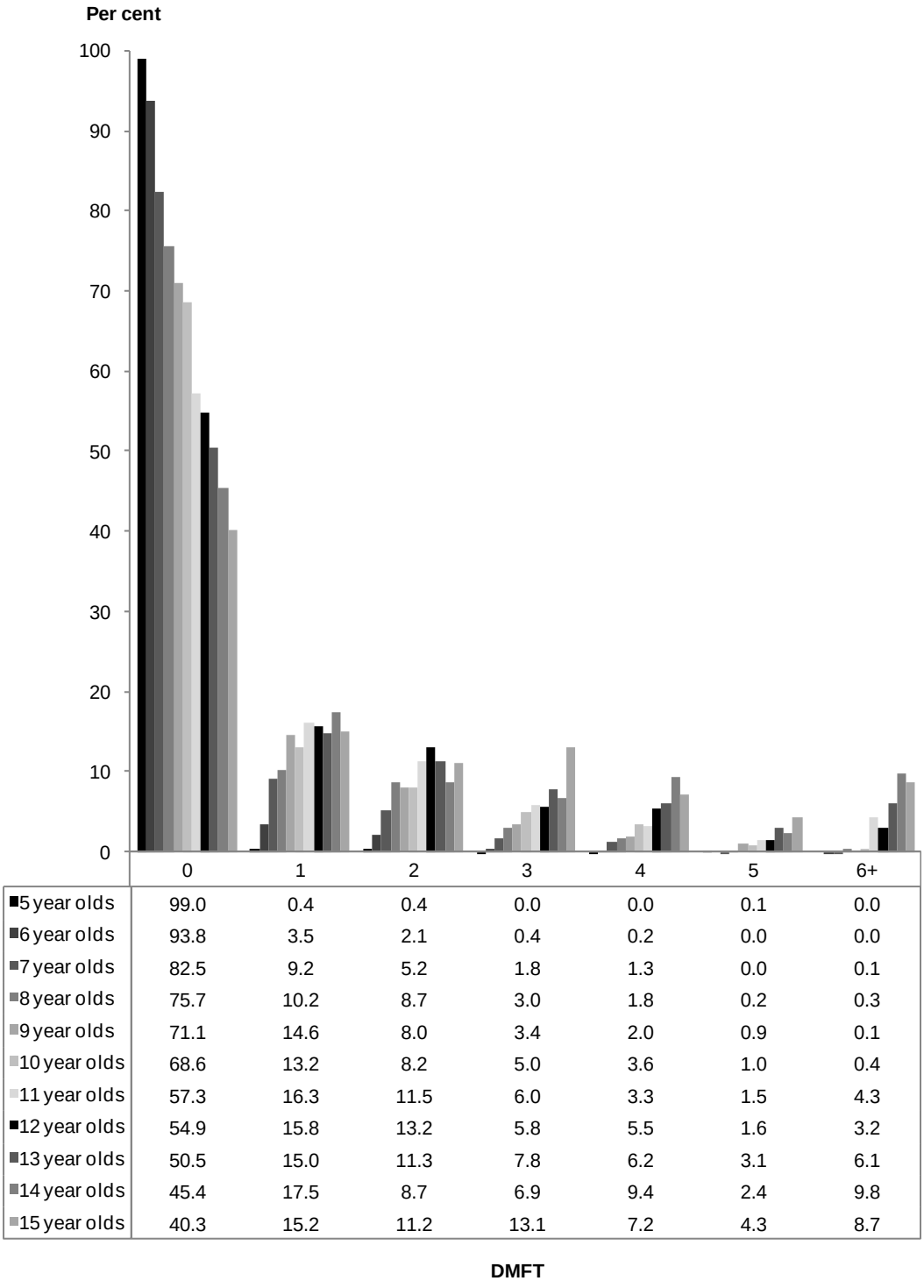



*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.12: Permanent teeth: children with DMFT>0 by age, 2006**

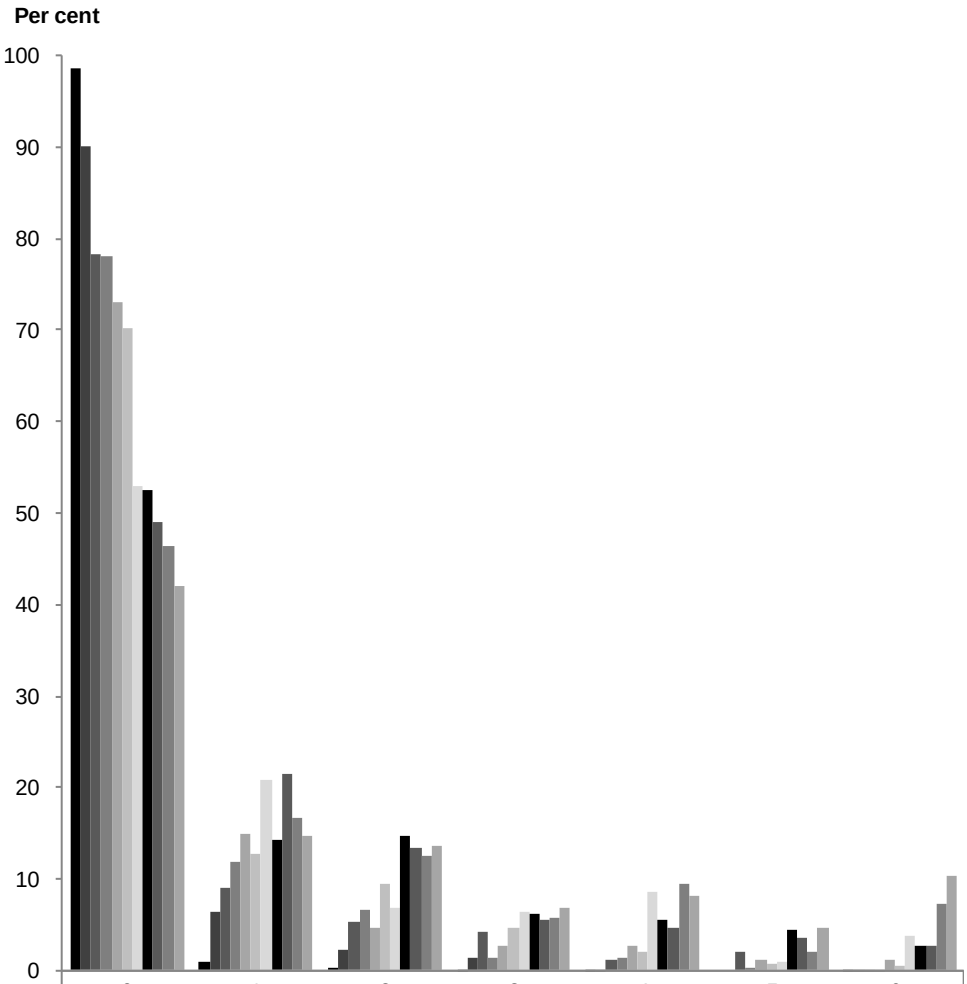
## Distribution of permanent caries experience by age

The distribution of DMFT for Australian children aged between 5 and 15 is shown in Figures 2.13 and 2.14 for 2005 and 2006, respectively. As well as showing that the proportion of children who did not have tooth decay was lower across older ages, Figures 2.13 and 2.14 show that the proportion of children with each DMFT score typically is higher at older ages. The proportion of children who had 6 or more teeth affected by decay increased from age 11 in both 2005 and 2006. Among children aged 15 years, 40% (2005) and 42% (2006) were caries free in their permanent dentition. In 2005, 8.7% of 15 years olds had at least 6 teeth affected by decay. This number was slightly higher in 2006, at 10.3%.




| | 0 | 1 | 2 | 3 | 4 | 5 | 6+ |
|---|---|---|---|---|---|---|---|
| 5 year olds | 99.0 | 0.4 | 0.4 | 0.0 | 0.0 | 0.1 | 0.0 |
| 6 year olds | 93.8 | 3.5 | 2.1 | 0.4 | 0.2 | 0.0 | 0.0 |
| 7 year olds | 82.5 | 9.2 | 5.2 | 1.8 | 1.3 | 0.0 | 0.1 |
| 8 year olds | 75.7 | 10.2 | 8.7 | 3.0 | 1.8 | 0.2 | 0.3 |
| 9 year olds | 71.1 | 14.6 | 8.0 | 3.4 | 2.0 | 0.9 | 0.1 |
| 10 year olds | 68.6 | 13.2 | 8.2 | 5.0 | 3.6 | 1.0 | 0.4 |
| 11 year olds | 57.3 | 16.3 | 11.5 | 6.0 | 3.3 | 1.5 | 4.3 |
| 12 year olds | 54.9 | 15.8 | 13.2 | 5.8 | 5.5 | 1.6 | 3.2 |
| 13 year olds | 50.5 | 15.0 | 11.3 | 7.8 | 6.2 | 3.1 | 6.1 |
| 14 year olds | 45.4 | 17.5 | 8.7 | 6.9 | 9.4 | 2.4 | 9.8 |
| 15 year olds | 40.3 | 15.2 | 11.2 | 13.1 | 7.2 | 4.3 | 8.7 |

**Figure 2.13: Distribution of permanent DMFT index for children, 2005**




| | 0 | 1 | 2 | 3 | 4 | 5 | 6+ |
|---|---|---|---|---|---|---|---|
| 5 year olds | 98.7 | 0.9 | 0.2 | 0.0 | 0.1 | 0.0 | 0.1 |
| 6 year olds | 90.2 | 6.4 | 2.1 | 1.2 | 0.0 | 0.0 | 0.0 |
| 7 year olds | 78.4 | 8.9 | 5.4 | 4.1 | 1.2 | 2.0 | 0.0 |
| 8 year olds | 78.2 | 12.0 | 6.6 | 1.3 | 1.4 | 0.4 | 0.1 |
| 9 year olds | 73.2 | 14.9 | 4.5 | 2.6 | 2.7 | 1.1 | 1.0 |
| 10 year olds | 70.2 | 12.8 | 9.5 | 4.5 | 1.9 | 0.6 | 0.5 |
| 11 year olds | 53.0 | 20.7 | 6.8 | 6.4 | 8.5 | 1.0 | 3.6 |
| 12 year old | 52.4 | 14.2 | 14.6 | 6.1 | 5.5 | 4.4 | 2.7 |
| 13 year olds | 49.0 | 21.4 | 13.4 | 5.6 | 4.5 | 3.5 | 2.5 |
| 14 year olds | 46.4 | 16.7 | 12.5 | 5.8 | 9.4 | 2.0 | 7.3 |
| 15 year olds | 42.0 | 14.7 | 13.6 | 6.8 | 8.1 | 4.5 | 10.3 |

**DMFT**

*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.14: Distribution of permanent DMFT index for children, 2006**

## Caries significant index

Figures 2.15 and 2.16 show the SiC[10] index and compare it with an average permanent DMFT index for children aged 6 to 15 for 2005 and 2006.

Between the ages of 6 and 15, the SiC[10] values for permanent teeth were between 3 and 6 times higher than the overall mean DMFT values. The SiC[10] increased from 1.71 DMFT per child for 7 year olds to 7.44 DMFT per child for 15 year olds in 2005 (Figure 2.15).

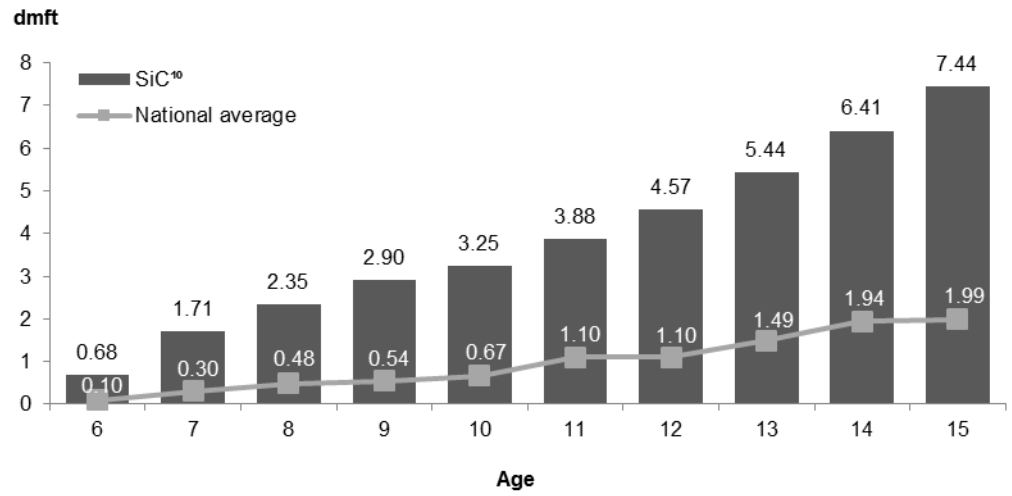
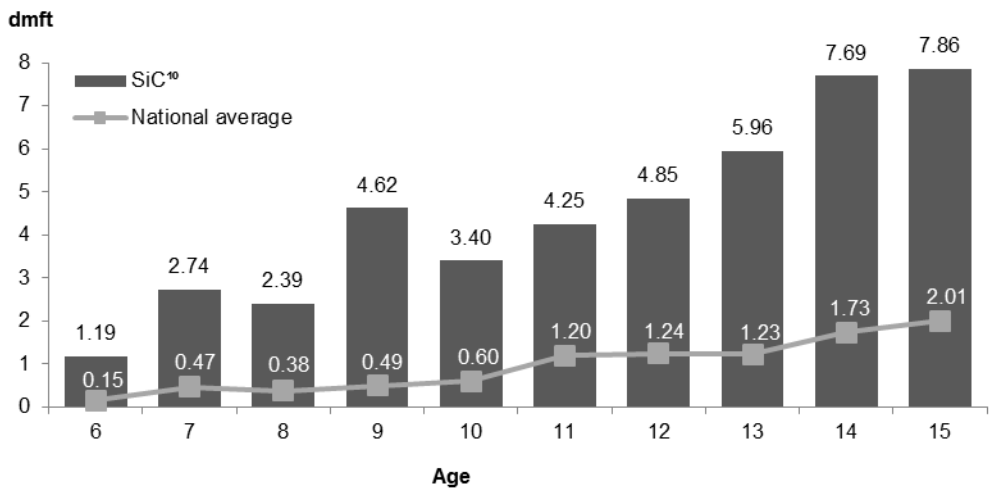



**Figure 2.15: Significant Caries Index (SiC[10]) and average permanent DMFT for children aged 6 to 15 years, 2005**

A similar pattern was observed in the data for 2006. The SiC[10] values for permanent teeth were between 3 and almost 10 times greater than the overall mean DMFT values. The SiC[10] increased from 2.74 DMFT per child for 7 year olds to 7.86 DMFT per child for 15 year olds.




*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.16: Significant Caries Index (SiC[10]) and average permanent DMFT for children aged 6 to 15 years, 2006**

# All teeth

## All teeth: age-specific caries experience

Combined components of decay experience for both the deciduous and permanent teeth for 2005 and 2006 are shown in Tables 2.5 and 2.6. The data indicate the total amount of disease among Australian children receiving care within a SDS. Note that these tables present data for children aged 5 to 12 only, as these are the ages between which both deciduous and permanent teeth are likely to be present at the same time.

In 2005, untreated decay (in 1 or more teeth) was present in the combined deciduous and permanent teeth of between 31.4% (12 year olds) and 48.4% (9 year olds) of children aged 5 to 12 years. The highest prevalence of untreated decay was observed among children aged 8 and 9 (48.1% and 48.4%, respectively). The greatest extent of untreated decay (5 or more teeth with untreated decay) occurred in the youngest age groups (10.5% of 5 year olds and 11.7% of 6 year olds) compared with older age groups (less than 7% from age 9). The largest contribution to decay experience among younger children (aged 5 to 10) came from deciduous teeth. Teeth missing due to decay were relatively uncommon among children aged 5 to 11. The proportion of children with no fillings and no decay experience showed a bimodal distribution among age groups. This was due to loss of baby teeth and the subsequent eruption of the permanent teeth. Between 30.0% and 56.0% of children in any age group had no decay experience in either their deciduous or permanent teeth (Table 2.5).

A similar pattern occurred in 2006, but the bimodal distribution is not as clear as in 2005 (Table 2.6).

**Table 2.5: All teeth: age-specific caries experience, 2005**

| | | Children with caries experience by total decayed, total missing, total filled and total DMFT (per cent) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Age (years) | No. of children[a] | D+d[b]=0 | D+d[b]=1 | D+d[b]=2 | D+d[b]=3 | D+d[b]=4 | D+d[b]=5+ | M+m=0[c] | F+f=0[d] | Dmft+ DMFT=0[e] |
| 5 | 11,385 | 61.7 | 10.3 | 8.2 | 4.9 | 4.4 | 10.5 | 97.1 | 87.7 | 56.0 |
| 6 | 15,298 | 54.4 | 13.2 | 10.1 | 5.5 | 5.2 | 11.7 | 94.9 | 75.8 | 46.0 |
| 7 | 10,685 | 52.7 | 14.1 | 10.9 | 7.6 | 5.1 | 9.5 | 94.4 | 62.3 | 40.3 |
| 8 | 11,190 | 51.9 | 16.4 | 11.3 | 7.7 | 4.1 | 8.7 | 94.0 | 52.7 | 33.3 |
| 9 | 12,280 | 51.6 | 19.6 | 10.7 | 7.5 | 3.6 | 7.1 | 95.5 | 45.8 | 30.0 |
| 10 | 11,037 | 64.1 | 15.6 | 9.0 | 5.3 | 3.7 | 2.3 | 96.1 | 53.6 | 38.9 |
| 11 | 11,464 | 63.8 | 15.9 | 6.6 | 4.5 | 4.5 | 4.7 | 96.8 | 55.6 | 41.9 |
| 12 | 12,254 | 68.6 | 15.5 | 7.2 | 3.6 | 2.8 | 2.2 | 95.4 | 61.7 | 45.9 |

(a) Weighted to estimated resident population (ERP) — estimates rounded to nearest whole number.

(b) Proportion of children with total number of untreated decayed teeth in both deciduous and permanent dentition.

(c) Proportion of children with no missing teeth due to decay in both deciduous and permanent dentition.

(d) Proportion of children with no filled teeth present in both deciduous and permanent dentition.

(e) Proportion of children with no untreated decay, missing or filled teeth present in both deciduous and permanent dentition.

**Table 2.6: All teeth: age-specific caries experience, 2006**

| Age (years) | No. of children[a] | Children with caries experience by total decayed, total missing, total filled and total DMFT (per cent) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | D+d[b]=0 | D+d[b]=1 | D+d[b]=2 | D+d[b]=3 | D+d[b]=4 | D+d[b]=5+ | M+m=0[c] | F+f=0[d] | Dmft+ DMFT=0[e] |
| 5 | 6,709 | 66.0 | 12.4 | 7.0 | 3.5 | 3.2 | 7.8 | 95.7 | 84.2 | 59.0 |
| 6 | 13,999 | 48.6 | 13.2 | 12.6 | 6.6 | 5.5 | 13.6 | 98.4 | 66.9 | 37.0 |
| 7 | 9,552 | 56.8 | 15.0 | 7.6 | 9.3 | 5.3 | 6.1 | 96.2 | 54.7 | 38.4 |
| 8 | 8,849 | 52.6 | 21.8 | 10.8 | 5.0 | 5.8 | 4.0 | 96.5 | 54.4 | 33.0 |
| 9 | 10,244 | 65.5 | 17.5 | 6.5 | 5.4 | 2.3 | 2.8 | 95.5 | 50.2 | 38.0 |
| 10 | 7,984 | 65.8 | 19.3 | 7.8 | 3.6 | 1.5 | 2.0 | 97.3 | 57.3 | 41.0 |
| 11 | 9,050 | 63.2 | 17.1 | 12.6 | 5.2 | 1.0 | 1.0 | 93.8 | 50.3 | 37.4 |
| 12 | 12,200 | 63.2 | 19.6 | 12.2 | 1.5 | 0.8 | 2.7 | 97.3 | 60.0 | 46.0 |

(a) Weighted to estimated resident population (ERP) — estimates rounded to nearest whole number.

(b) Proportion of children with total number of untreated decayed teeth in both deciduous and permanent dentition.

(c) Proportion of children with no missing teeth due to decay in both deciduous and permanent dentition.

(d) Proportion of children with no filled teeth present in both deciduous and permanent dentition.

(e) Proportion of children with no untreated decay, missing or filled teeth present in both deciduous and permanent dentition.

*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

# 2.2 Dental decay by state and territory

## 5 and 6 year old dmft by state and territory

Children aged 5 and 6 represent a standard age group for reporting on caries experience in the deciduous dentition (WHO 1997). Moreover, this is the age at which many children make their first visit to a SDS, and represents the dental health status of children new to these services.

As shown in Table 2.7, in 2005, Western Australia had the lowest level of deciduous decay experience among children aged 5 and 6, and Queensland and the Northern Territory had the highest dmft (1.53, 2.24 and 2.74 per child, respectively). The level of untreated decay was lowest in the Australian Capital Territory and highest in the Northern Territory (0.82 and 1.98 per child, respectively). The number of filled teeth also varied from 0.38 teeth per child in Tasmania to 0.69 teeth per child in South Australia.

Table 2.8 presents the dmft index for states and territories in 2006. The Australian Capital Territory had the lowest mean number of deciduous teeth with decay experience among children aged 5 and 6 (1.50 per child) and, again, the Northern Territory and Queensland had the highest mean dmft (2.49 and 2.53 per child, respectively). Queensland and the Northern Territory also had the highest number of teeth with untreated decay (1.72 and 1.70, respectively) and the highest number of filled teeth (0.78 and 0.74, respectively).

In assessing these differences, it should be noted that there are historical differences in decay experience. As well, there are marked variations in both sociodemographic characteristics and coverage by water fluoridation among these jurisdictions. There are also differences in the organisation and delivery of services between different states and territories. (See the Appendix and Section 1.6 for further information.)

**Table 2.7: Deciduous teeth: dmft scores for children aged 5 and 6 years by state and territory, 2005**

| State/ territory | n (weighted) | Decayed (d) | | Missing (m) | | Filled (f) | | dmft | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Qld | 16,360 | 1.56 | 8.70 | 0.13 | 2.68 | 0.55 | 5.08 | 2.24 | 11.31 |
| WA | 4,930 | 1.04 | 2.60 | 0.05 | 0.55 | 0.44 | 1.66 | 1.53 | 3.25 |
| SA | 3,052 | 1.06 | 0.97 | 0.12 | 0.35 | 0.69 | 0.81 | 1.87 | 1.43 |
| Tas | 966 | 1.32 | 5.87 | 0.10 | 2.25 | 0.38 | 2.88 | 1.80 | 7.05 |
| ACT | 756 | 0.82 | 1.20 | 0.03 | 0.15 | 0.64 | 1.05 | 1.63 | 1.71 |
| NT | 618 | 1.98 | 2.37 | 0.10 | 0.55 | 0.66 | 1.30 | 2.74 | 2.82 |
| **Australia** | **26,683*** | **1.39** | **2.69** | **0.11** | **0.79** | **0.55** | **1.63** | **2.03** | **3.45** |

*Notes*

1. Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.
2. Totals may not equal sum of parts due to rounding.

**Table 2.8: Deciduous teeth: dmft scores for children aged 5 and 6 years by state and territory, 2006**

| State/ territory | n (weighted) | Decayed (d) | | Missing (m) | | Filled (f) | | dmft | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Qld | 12,002 | 1.72 | 11.40 | 0.04 | 1.39 | 0.78 | 7.36 | 2.53 | 13.76 |
| WA | 4,562 | 1.05 | 2.84 | 0.07 | 0.93 | 0.54 | 1.97 | 1.65 | 4.06 |
| SA | 2,586 | 1.05 | 0.92 | 0.13 | 0.39 | 0.66 | 0.75 | 1.83 | 1.36 |
| Tas | 524 | 1.31 | 5.02 | 0.12 | 2.22 | 0.40 | 2.60 | 1.83 | 5.99 |
| ACT | 521 | 0.85 | 1.62 | 0.03 | 0.40 | 0.62 | 1.26 | 1.50 | 2.37 |
| NT | 513 | 1.70 | 1.96 | 0.06 | 0.31 | 0.74 | 1.32 | 2.49 | 2.50 |
| **Australia** | **20,708** | **1.45** | **2.51** | **0.06** | **0.59** | **0.69** | **1.68** | **2.21** | **3.24** |

*Notes*

1. Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.
2. Totals may not equal sum of parts due to rounding.

While less than half of children aged 5 and 6 nationally had caries experience, the amount of accumulated disease (mean dmft) was variable across states and territories. The proportion with caries experience ranged from lows of 41.7% in the Australian Capital Territory and 41.8% in Western Australia to a high of 57.3% in the Northern Territory (Figure 2.17).

A similar pattern is evident in 2006. The Australian Capital Territory again had the lowest proportion of children aged 5 and 6 with caries experience in baby teeth (38.4%), and Queensland had the highest (62.6%) (Figure 2.18).

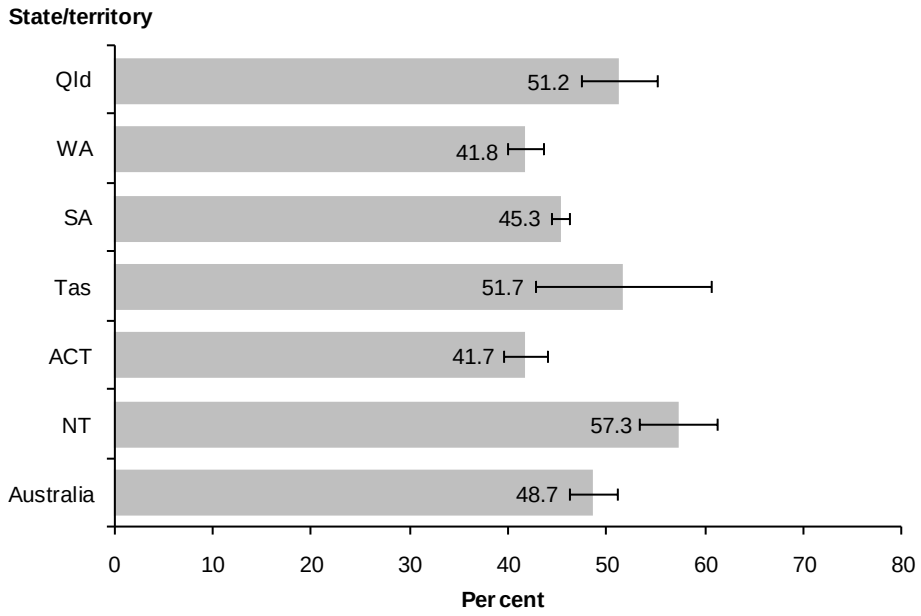
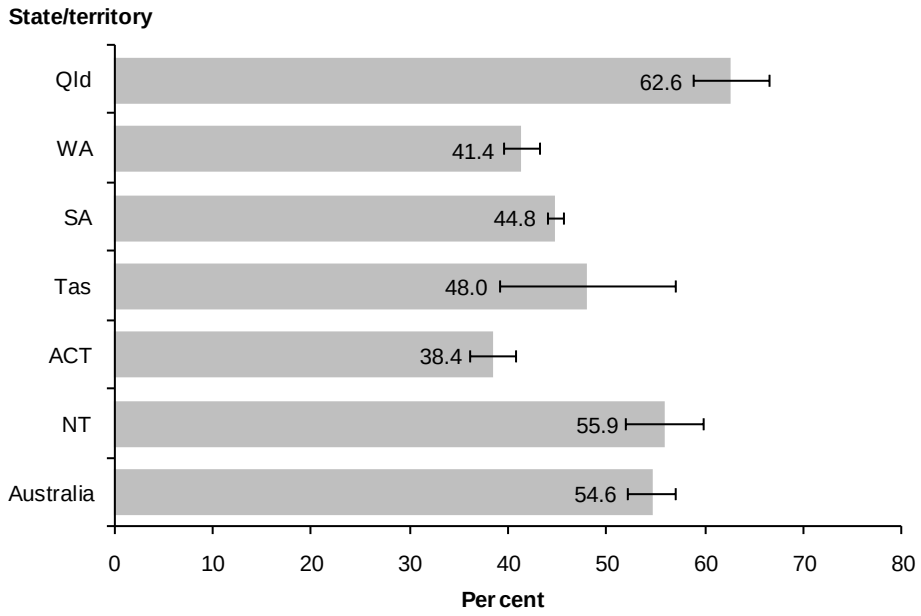



**Figure 2.17: Deciduous teeth: proportion of children aged 5 and 6 years with dmft>0, by state and territory, 2005**




*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.18: Deciduous teeth: proportion of children aged 5 and 6 years with dmft>0, by state and territory, 2006**

## 12 year old DMFT by state and territory

There was variation in mean DMFT scores between states and territories in 2005 (Table 2.9). The highest average DMFT scores in 12 year olds (1.20 per child in Queensland, 1.22 in the Northern Territory and 1.24 per child in Tasmania) were about 40% higher than the lowest DMFT score (0.88 per child in Western Australia).

In 2006, Queensland had the highest mean DMFT score (1.44 per child), which was comprised of the highest number of teeth with untreated decay and with filled teeth (0.70 and 0.70, respectively). Western Australia and the Australian Capital Territory had the lowest mean DMFT scores (0.82 and 0.89 per child, respectively) and the lowest scores for teeth with untreated decay (0.33 and 0.25, respectively) (Table 2.10).

**Table 2.9: Permanent teeth: DMFT scores for 12 year old children by state and territory, 2005**

| | | Decayed (D) | | Missing (M) | | Filled (F) | | DMFT | |
|---|---|---|---|---|---|---|---|---|---|
| State/territory | n (weighted) | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Qld | 7,430 | 0.57 | 4.14 | 0.05 | 1.30 | 0.58 | 3.59 | 1.20 | 5.85 |
| WA | 2,368 | 0.31 | 0.97 | 0.09 | 0.60 | 0.49 | 1.31 | 0.88 | 1.88 |
| SA | 1,456 | 0.40 | 0.48 | 0.02 | 0.12 | 0.55 | 0.51 | 0.97 | 0.75 |
| Tas | 444 | 0.57 | 2.80 | 0.07 | 1.25 | 0.59 | 2.77 | 1.24 | 3.88 |
| ACT | 291 | 0.33 | 0.55 | 0.05 | 0.23 | 0.68 | 0.78 | 1.06 | 1.18 |
| NT | 271 | 0.86 | 1.79 | 0.04 | 0.21 | 0.32 | 0.78 | 1.22 | 1.96 |
| **Australia** | **12,260** | **0.50** | **1.34** | **0.05** | **0.46** | **0.55** | **1.24** | **1.11** | **1.96** |

*Notes*

1. Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.
2. Individual state estimates of the number of children are rounded to the nearest whole number. The estimate of weighted number of children differs from that in Table 2.5 due to rounding of state estimates before summing for the national estimate.
3. Total DMFT may not equal sum of parts due to rounding.

**Table 2.10: Permanent teeth: DMFT scores for 12 year old children by state and territory, 2006**

| | | Decayed (D) | | Missing (M) | | Filled (F) | | DMFT | |
|---|---|---|---|---|---|---|---|---|---|
| State/territory | n (weighted) | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Qld | 7,730 | 0.70 | 6.36 | 0.04 | 2.23 | 0.70 | 5.96 | 1.44 | 9.96 |
| WA | 2,220 | 0.33 | 1.39 | 0.09 | 0.89 | 0.40 | 1.21 | 0.82 | 2.1 |
| SA | 1,260 | 0.39 | 0.46 | 0.02 | 0.12 | 0.53 | 0.49 | 0.94 | 0.71 |
| Tas | 434 | 0.65 | 3.06 | 0.08 | 2.67 | 0.41 | 2.34 | 1.13 | 4.49 |
| ACT | 386 | 0.25 | 0.64 | 0.03 | 0.23 | 0.61 | 0.99 | 0.89 | 1.21 |
| NT | 170 | 0.67 | 1.50 | 0.06 | 0.30 | 0.32 | 0.77 | 1.05 | 1.74 |
| **Australia** | **12,200** | **0.58** | **1.44** | **0.06** | **0.61** | **0.61** | **1.34** | **1.24** | **2.23** |

*Notes*

1. Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.
2. Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)
3. Total DMFT may not equal sum of parts due to rounding.

As with the variation in mean DMFT, Tasmania had the highest proportion of 12 year old children with caries experience in the permanent teeth in 2005 (53.4%). It was followed by Queensland (46.7%). Western Australia had the lowest proportion, with only 39.5% of 12 year olds having caries experience (Figure 2.19).

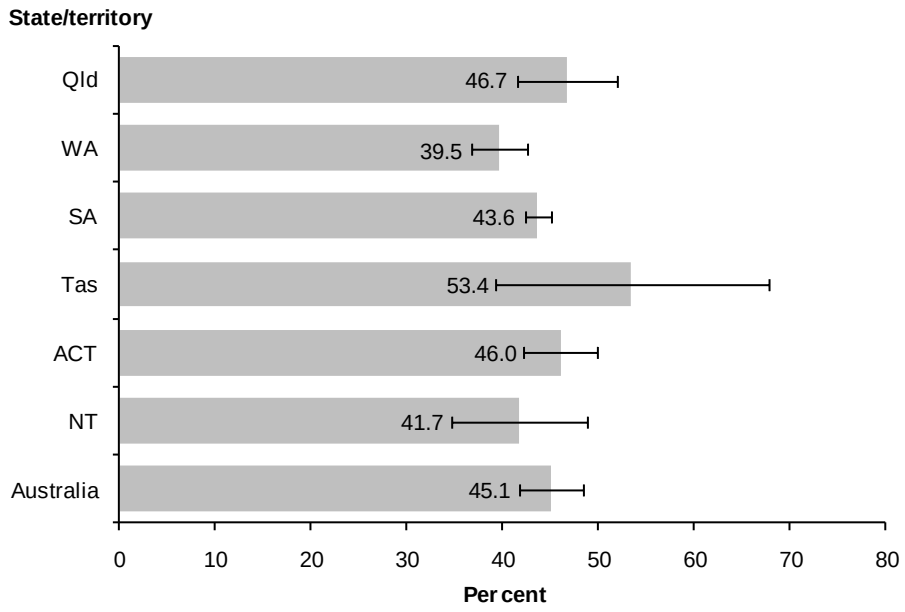
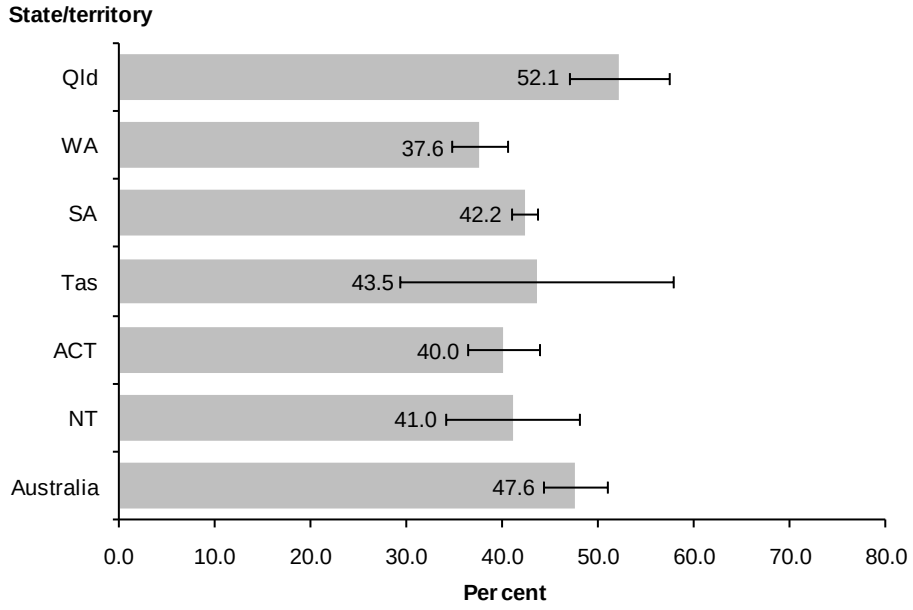



**Figure 2.19: Permanent teeth: proportion of 12 year old children with any tooth decay, missing or filled teeth, by state and territory, 2005**

There was a similar variation in the proportion of children with caries experience between states and territories in 2006 (Figure 2.20). Queensland, once again, was among the states with the highest prevalence of caries (52.1%), followed by Tasmania (43.5%). As in 2005, Western Australia had the lowest proportion of children with DMFT>0, with only 37.6% of 12 year olds having caries experience.




*Note:* Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

**Figure 2.20: Permanent teeth: proportion of 12 year old children with any tooth decay, missing or filled teeth, by state and territory, 2006**

## Combined deciduous and permanent teeth decay by state and territory

Combined components of decay experience for both the deciduous and permanent teeth for 2005 and 2006 by states and territories are shown in Tables 2.11 and 2.12. There are differences in the proportion of children with 5 or more decayed teeth (either deciduous or permanent) between states and territories. The Northern Territory and Queensland had the highest proportions of children overall with untreated decay in both 2005 and 2006. The Australian Capital Territory and Western Australia had the lowest proportions.

**Table 2.11: Combined deciduous and permanent teeth: decay experience for children aged from 5 to 12 years by state and territory, 2005**

| State/ territory | No. of children[a] | Children with caries experience by total decayed, total missing, total filled and total DMFT (per cent) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | D+d[b]=0 | D+d[b]=1 | D+d[b]=2 | D+d[b]=3 | D+d[b]=4 | D+d[b]=5+ | M+m=0[c] | F+f=0[d] | Dmft+ DMFT=0[e] |
| Qld | 52,443 | 53.6 | 15.0 | 9.4 | 6.8 | 5.3 | 9.7 | 94.8 | 60.6 | 38.6 |
| WA | 20,697 | 68.1 | 14.8 | 8.0 | 3.6 | 2.3 | 3.2 | 97.0 | 65.2 | 47.9 |
| SA | 12,434 | 62.7 | 15.6 | 9.5 | 5.1 | 2.9 | 4.1 | 95.2 | 61.0 | 43.7 |
| Tas | 4,270 | 58.1 | 14.8 | 11.9 | 6.9 | 3.5 | 4.7 | 97.7 | 72.8 | 44.2 |
| ACT | 2,972 | 68.5 | 14.3 | 8.0 | 3.8 | 2.3 | 3.1 | 96.8 | 59.6 | 45.3 |
| NT | 2,766 | 50.2 | 15.7 | 11.6 | 6.0 | 5.0 | 11.5 | 95.2 | 67.4 | 37.0 |
| **Australia** | **95,582** | **58.5** | **15.0** | **9.3** | **5.8** | **4.2** | **7.2** | **95.5** | **62.3** | **41.7** |

(a) Weighted to estimated resident population (ERP) — estimates rounded to nearest whole number.

(b) Proportion of children with total number of untreated decayed teeth in both deciduous and permanent dentition.

(c) Proportion of children with no missing teeth due to decay in both deciduous and permanent dentition.

(d) Proportion of children with no filled teeth present in both deciduous and permanent dentition.

(e) Proportion of children with no untreated decay, missing or filled teeth present in both deciduous and permanent dentition.

*Note:* Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.

**Table 2.12: Combined deciduous and permanent teeth: decay experience for children aged from 5 to 12 years, by state and territory, 2006**

| State/ territory | No. of children[a] | Children with caries experience by total decayed, total missing, total filled and total DMFT (per cent) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | D+d[b]=0 | D+d[b]=1 | D+d[b]=2 | D+d[b]=3 | D+d[b]=4 | D+d[b]=5+ | M+m=0[c] | F+f=0[d] | Dmft+ DMFT=0[e] |
| Qld | 42,155 | 54.6 | 18.4 | 11.2 | 5.8 | 3.7 | 6.3 | 96.5 | 55.1 | 36.0 |
| WA | 18,369 | 67.7 | 15.0 | 7.8 | 3.6 | 2.3 | 3.7 | 97.1 | 65.5 | 48.3 |
| SA | 10,793 | 63.3 | 15.5 | 9.2 | 4.9 | 3.0 | 4.1 | 95.0 | 61.6 | 43.9 |
| Tas | 2,761 | 58.6 | 14.7 | 10.1 | 6.1 | 3.2 | 7.4 | 97.3 | 67.3 | 42.9 |
| ACT | 2,343 | 70.5 | 13.3 | 6.3 | 4.0 | 2.4 | 3.4 | 96.1 | 60.9 | 46.7 |
| NT | 2,130 | 52.9 | 18.3 | 11.5 | 5.4 | 4.3 | 7.6 | 97.1 | 66.4 | 38.2 |
| **Australia** | **78,551** | **59.4** | **16.9** | **10.0** | **5.1** | **3.2** | **5.4** | **96.5** | **59.4** | **40.6** |

(a) Weighted to estimated resident population (ERP) — estimates rounded to nearest whole number.

(b) Proportion of children with total number of untreated decayed teeth in both deciduous and permanent dentition.

(c) Proportion of children with no missing teeth due to decay in both deciduous and permanent dentition.

(d) Proportion of children with no filled teeth present in both deciduous and permanent dentition.

(e) Proportion of children with no untreated decay, missing or filled teeth present in both deciduous and permanent dentition.

*Notes*

1. Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.

2. Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

## 2.3 Fissure sealants

A clinical preventive practice that is both common and effective in halting the development of active decay in permanent teeth is to seal or cover the pits and fissures of teeth (normally molars) with a resin or glass-ionomer (cement) material (Rozier 2001). This prevents the future build-up of plaque and bacteria in the more decay-susceptible tooth grooves.

The mean number of fissure sealants present in permanent teeth increased across age groups (Tables 2.13 and 2.14), and was almost 1 tooth per child for children aged 14 or 15 years.

Children aged from 6 to 15 with permanent decay experience were more likely to have a fissure sealant than were children with no permanent decay experience at every age. This can be interpreted as a tendency towards the provision of fissure sealants to children deemed to have a greater likelihood of developing dental decay.

**Table 2.13: Fissure sealant age-specific experience, 2005**

| | All children | | Children with fissure sealant among children with DMFT=0 (per cent) | Children with fissure sealant among children with DMFT>0 (per cent) |
|---|---|---|---|---|
| Age (years) | Mean | SD | | |
| 6 | 0.08 | 0.61 | 2.7 | 11.2 |
| 7 | 0.30 | 1.00 | 8.5 | 19.3 |
| 8 | 0.50 | 1.25 | 16.2 | 21.4 |
| 9 | 0.61 | 1.43 | 19.9 | 30.8 |
| 10 | 0.56 | 1.26 | 19.1 | 29.0 |
| 11 | 0.59 | 1.34 | 18.5 | 30.4 |
| 12 | 0.62 | 1.50 | 22.2 | 28.2 |
| 13 | 0.72 | 1.38 | 18.8 | 33.2 |
| 14 | 0.92 | 1.84 | 29.6 | 31.2 |
| 15 | 0.93 | 1.86 | 18.9 | 35.1 |

*Notes*

1. Fissure sealable teeth are not present in the mouth until the age of 6.
2. Caution should be exercised in comparing results for children aged 12 and over with estimates reported for previous years due to changing eligibility criteria for these children over time.
3. The results for children aged 15 should be interpreted with care, appreciating that they may not be representative of the Australian child population, as a smaller number of this age group receive care in a SDS.

**Table 2.14: Fissure sealant age-specific experience, 2006**

| Age (years) | All children | | Children with fissure sealant among children with DMFT=0 (per cent) | Children with fissure sealant among children with DMFT>0 (per cent) |
|---|---|---|---|---|
| | Mean | SD | | |
| 6 | 0.16 | 0.83 | 3.5 | 36.3 |
| 7 | 0.29 | 0.94 | 7.6 | 25.1 |
| 8 | 0.57 | 1.31 | 17.9 | 21.2 |
| 9 | 0.57 | 1.31 | 17.0 | 29.4 |
| 10 | 0.58 | 1.17 | 19.7 | 28.1 |
| 11 | 0.60 | 1.33 | 18.9 | 31.2 |
| 12 | 0.57 | 1.47 | 15.7 | 38.7 |
| 13 | 0.88 | 1.42 | 24.2 | 43.8 |
| 14 | 1.08 | 2.03 | 27.8 | 32.4 |
| 15 | 0.67 | 1.36 | 15.8 | 28.3 |

*Notes*

1. Fissure sealable teeth are not present in the mouth until the age of 6 years.
2. Caution should be exercised in comparing results for children aged 12 years and over with estimates reported for previous years due to changing eligibility criteria for these children over time.
3. The results for children aged 15 years should be interpreted with care, appreciating that they may not be representative of the Australian child population, as a smaller number of this age group receive care in a SDS.
4. Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

# 3 National summary

Consistent with previous Child Dental Health Survey reports, weighted to estimated resident population (ERP) data were used to summarise data from all children aged between 5 and 12 in those jurisdictions that provided data (Tables 3.1 and 3.2).

Queensland and the Northern Territory had the highest levels of decay experience for deciduous teeth. The average dmft per child in Queensland was 2.07, and 49.9% of children had no deciduous caries experience in 2005. In 2006, the mean dmft per child in Queensland was 1.74, and 51.1% of children had no deciduous decay experience. In the Northern Territory, the average dmft per child was 2.06, and 47.7% of children had no caries experience in 2005. In 2006, the mean dmft per child in the Northern Territory was 1.84, and 47.7% of children had no caries experience. This continues an existing pattern in which Queensland and the Northern Territory were two of the three states/territories that experienced the highest level of disease in deciduous dentition across the 1990s (Armfield et al. 2003). Children in Tasmania and Western Australia had the least deciduous decay experience, with an average dmft per child of 1.29 and 1.31 (respectively). Tasmania and Western Australia also reported the highest number of children with no caries experience in deciduous dentition in 2005 (57.7% and 58.3%, respectively) and reported a similar pattern for 2006. This finding is consistent with previous reports (Armfield et al. 2009).

The highest levels of permanent decay experience were also found in Queensland, with an average DMFT per child of 0.62, and 73.1% of children had no caries experience in 2005. In 2006, the average DMFT per child was 0.77, and 68.9% of children had no caries experience. The lowest levels of permanent decay experience were seen in Western Australia, where the average DMFT per child was 0.38, and 80.3% of children had no caries experience in 2005. In 2006, the average DMFT per child in Western Australia was 0.39, and 80.5% of children had no caries experience.

**Table 3.1: Decay experience of children aged 5 to 12 years, by state and territory, 2005**

| State/ territory | Number of children (unweighted) | dmft | | Children with dmft=0[(a)] (per cent) | DMFT | | Children with DMFT=0[(b)] (per cent) | Children with d+D=0[(c)] (per cent) |
|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | | Mean | SD | | |
| Qld | 3,784 | 2.07 | 11.00 | 49.9 | 0.62 | 5.01 | 73.1 | 53.6 |
| WA | 11,966 | 1.31 | 2.80 | 58.3 | 0.38 | 1.23 | 80.3 | 68.1 |
| SA | 52,190 | 1.66 | 1.23 | 53.7 | 0.42 | 0.47 | 78.2 | 62.7 |
| Tas | 641 | 1.29 | 5.5 | 57.7 | 0.55 | 3.28 | 76.9 | 58.1 |
| ACT | 6,858 | 1.52 | 1.56 | 55.5 | 0.39 | 0.65 | 79.8 | 68.5 |
| NT | 3,905 | 2.06 | 2.47 | 47.7 | 0.48 | 1.06 | 78.1 | 50.3 |
| **Australia** | **79,344** | **1.80** | **2.97** | **52.7** | **0.53** | **1.33** | **75.9** | **58.5** |

(a) Proportion of children with no caries experience in baby teeth.

(b) Proportion of children with no caries experience in adult teeth.

(c) Proportion of children with no untreated decayed teeth in both baby and adult teeth.

*Note:* Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.

**Table 3.2: Decay experience of children aged 5 to 12 years, by state and territory, 2006**

| State/ territory | Number of children (unweighted) | dmft | | Children with dmft=0[(a)] (per cent) | DMFT | | Children with DMFT=0[(b)] (per cent)[)] | Children with d+D=0[(c)] (per cent) |
|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | | Mean | SD | | |
| Qld | 2,712 | 1.74 | 9.93 | 51.1 | 0.77 | 6.22 | 68.9 | 54.6 |
| WA | 10,617 | 1.38 | 3.12 | 58.0 | 0.38 | 1.43 | 80.5 | 67.6 |
| SA | 48,177 | 1.66 | 1.19 | 53.5 | 0.39 | 0.45 | 79.2 | 63.3 |
| Tas | 455 | 1.60 | 6.13 | 55.7 | 0.58 | 2.94 | 73.7 | 58.6 |
| ACT | 3,089 | 1.39 | 2.02 | 59.0 | 0.45 | 0.88 | 77.3 | 70.5 |
| NT | 3,245 | 1.84 | 2.15 | 47.7 | 0.45 | 0.94 | 78.0 | 52.9 |
| **Australia** | **68,295** | **1.63** | **2.67** | **53.3** | **0.6** | **1.47** | **73.7** | **59.4** |

(a) Proportion of children with no caries experience in baby teeth.

(b) Proportion of children with no caries experience in adult teeth.

(c) Proportion of children with no untreated decayed teeth in both baby and adult teeth.

*Notes*

1. Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.

2. Data for 2006 are based on small numbers in some non-metropolitan areas. (See Appendix for further information.)

# Appendix: Description of survey methods

## Source of subjects

Data for this report were derived from the annual Child Dental Health Surveys (CDHS) conducted in 2005 and 2006. The CDHS is an ongoing national surveillance survey which monitors the dental health of children enrolled in school and community dental services operated by the health departments or authorities of Australia's six state and two territory governments. In all jurisdictions, children from both public and private schools are eligible to attend a school dental service (SDS). The care typically provided by a SDS includes dental examinations, preventive services and restorative treatment as required. However, there are some variations among state and territory programs with respect to priority age groups and the nature of services. For example, in some jurisdictions, caries risk assessment is used to determine recall interval and preventive treatment. This does not apply for other jurisdictions. Consequently, there are variations in the extent of enrolments in the SDS of each state and territory, with some jurisdictions serving more than 80% of primary school children and others serving smaller proportions. Also, it should be noted that there are historical differences in decay experience, as well as marked variations in demography and in the level of fluoridation between these jurisdictions.

In this combined 2005 and 2006 report, results from Victoria are excluded due to lack of access to the data for both years. New South Wales results were excluded from the data collection in these two years as the sample was not representative. Children are seen in the New South Wales public dental service only if they have been identified as having treatment needs such as having decay. This means that the dental health of these children does not represent the dental health of the entire child population of New South Wales, many of whom do not have treatment needs.

In 2006, Queensland had small numbers of children who were sampled in some non-metropolitan regions. Consequently, data for Queensland in 2006 were weighted using a slightly different method. Therefore, caution should be taken when interpreting results for 2006.

## Sampling

The data for the CDHS are derived from routine examinations of children enrolled in a SDS. In some states, at the time of examination, children are sampled at random by selecting those born on specific days of the month, or by using some other systematic sampling procedure.

Different sampling ratios are used across the states and territories according to the scheme presented in Table A1. National data for the CDHS therefore constitute a stratified random sample of children attending a SDS. Children not enrolled with a SDS are not represented in the sample.

**Table A1: Sampling ratios for Australian states and territories, 2005 and 2006**

| State/territory | Sampling ratio[(a)] | Days of birth |
|---|---|---|
| Queensland | | |
| Gold Coast | 1:1 | Any |
| Other Queensland | 1:15 | 1st and 6th |
| Western Australia | 1:8.5 | 28th, 29th, 30th, 31st |
| South Australia | 1:1 | Any |
| Tasmania | 1:2.5 | Systematic |
| Australian Capital Territory | 1:2.5 | 1st to 16th |
| Northern Territory | | |
| Darwin | 1:1.9 | 1st to 16th |
| Other Northern Territory | 1:1 | Any |

(a) Sampling ratios are approximate only.

*Note:* Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.

Stratification aims to provide similar numbers of children from each state and territory. However, due to full enumeration in South Australia, the number of children sampled is considerably larger than for the other states and territories. In addition, differences in administration and local data requirements of the services have created some variation among the other states and territories in the number of children sampled.

# Data items

Data items in the CDHS were collected at the time of routine clinical examinations conducted by dental therapists and dentists. The recorded characteristics of sampled children include some demographic information, including the child's age and sex.

The country of birth and Indigenous status of both child and mother are considered to be two items important to a health monitoring survey (Health Targets and Implementation Committee 1988). Both items were obtained from information on the patient's treatment card or medical history. However, due to the increasingly limited recording of this information within clinics, they were not included in this report.

Data were weighted so that individual age groups contributed in proportion to their presence in the population of state/territories to the determination of the oral health indices (that is, the dmft and DMFT). The purpose of this weighting is to adjust among states and territories for possible differences in the proportion of specific age groups. This is important because of the age-relatedness of most dental decay measures. It allows for an easy comparison of the oral health of children visiting a SDS across states and territories.

The application of diagnostic criteria employed in this data collection was based on the clinical judgement of the examining dental therapist or dentist. They followed written criteria for the data items described above; however, there were no formal sessions of calibration or instruction in diagnosis undertaken for the purpose of the survey. Neither were there repeat examinations for the purpose of assessing inter- or intra-examiner reliability.

Data were cleaned to exclude cases with logical inconsistencies and implausible values. This resulted in the removal of 15 cases aged 5 to 9 years, mainly due to implausibly high numbers of missing permanent teeth being reported for these cases.

# Weighting of data and data analysis

National data contained in this publication consist of counts, averages or means, standard deviations (SD) and percentages that have been weighted to represent the relevant state- and territory-specific populations of children aged from 4 to 15. Children aged 3 or younger and 16 or older were excluded from this sample as the small numbers receiving care in those age groups across Australia result in wide variance of computed statistics for those ages. Furthermore, these children are outside the main SDS target group.

Where computed state or territory age-specific indices resulted in a relative standard error exceeding 40%, the age group for that jurisdiction was excluded from the analysis. As a result, 4 year old children from the Australian Capital Territory were excluded from the analyses in 2005. It should be noted that some other jurisdictions sampled relatively few children from the youngest and oldest age groups. Hence, results for 4 year old and 15 year old children should be interpreted with care, appreciating that they may not be representative of the Australian child population.

The weighting procedure used in this report is necessary since the Australian sample does not contain representative percentages of children from each state and territory. Unweighted estimates would result in over-representation of children from South Australia or from less populous states or territories, and under-representation of those from more populous jurisdictions, particularly from Queensland. The relative sample sizes and population estimates by state and territory as a percentage of the total sample and of the Australian population (4–15 years of age) are shown in Figure A1.

The weighting method is based on standard procedures for weighting stratified samples using external data sources (Foreman 1991) and follows the same procedure as previous Child Dental Health Surveys. State and territory estimates (ABS 2003) of the 2005–06 estimated resident population (ERP) within ages were used to provide numerators for weights that are divided by the age-specific number of cases in the samples from respective states and territories. Hence, observations from more populous states achieved relatively greater weight. The stratum-specific weights were further divided by the national ERP and total sample size to achieve numerical equivalence between the weighted sample and the original number of processed records.

Within the states and territories, data were also weighted according to region and time since the last dental examination. This is consistent with statistical analyses presented in state- and territory-specific AIHW DSRU reports. In 2005 and 2006, data for Western Australia, South Australia, Tasmania, the Australian Capital Territory and the Northern Territory were weighted on the basis of area of sampling and sampling fraction so as to give a more representative result for that state or territory. This also applied to Queensland in 2005. However, in Queensland in 2006, small numbers of children were sampled in some non-metropolitan regions. Consequently, data for Queensland for 2006 were weighted by metropolitan/non-metropolitan location. Data within Queensland, Western Australia, Tasmania, the Australian Capital Territory, the Northern Territory and South Australia were also weighted by time since the last dental examination so that children on longer recall intervals, who often had better oral health, were not under-represented in the analysis.

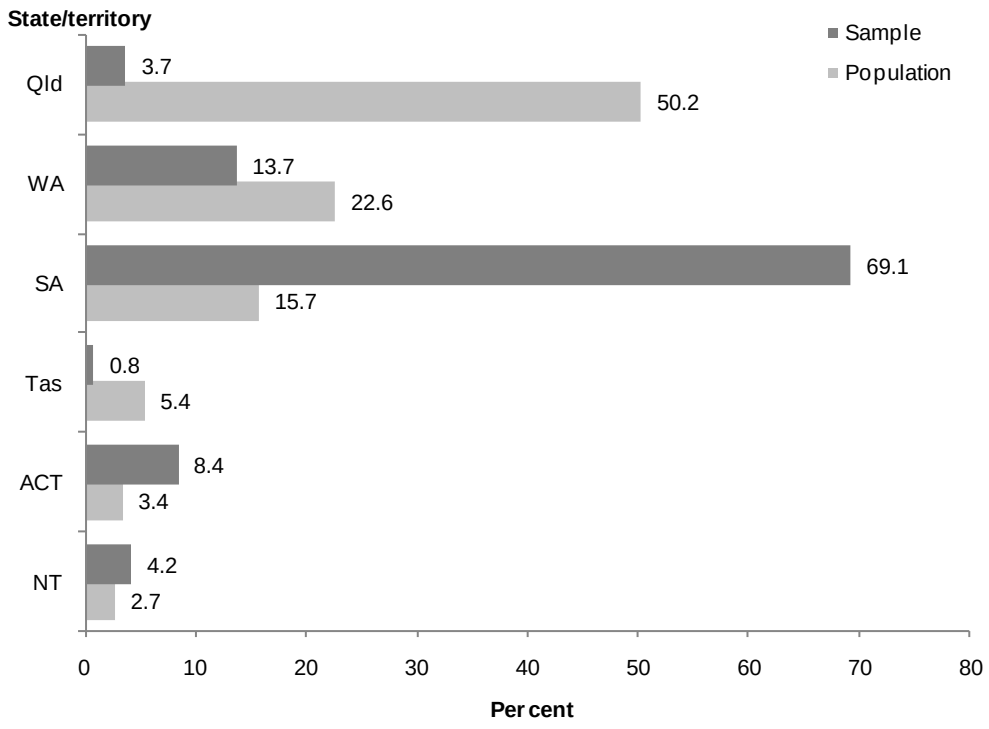



**Figure A1: Percentage of children by state and territory for sample and for state and territory population, 2005 and 2006**

The weighting protocol aimed to produce estimates that were representative of the population covered by a SDS in 2005 and 2006. However, the estimates in this report cannot be applied to children who are not enrolled in a SDS. Consequently, the results in this report do not represent the complete Australian child population, but only that portion of the population that is enrolled in a SDS. Enrolment across Australia varies, but in all states and territories is higher for children in primary school than in secondary school. Hence, in this report, estimates for primary school children may not differ substantially from those that would be obtained if all children in the country were surveyed; in contrast, estimates for secondary school children may vary from those obtained if all children in the country were surveyed.

It is necessary to be cautious in drawing inferences from age-related trends, particularly among those children aged 12 or older. In most states and territories, access to a SDS for older children tends to be more restricted than for younger children. Often the older children must meet special eligibility criteria. Consequently, they may be less representative of their respective age groups within the Australian population than is the case for younger children.

Indices of decay experience were calculated from data collected over a full 12-month period in each calendar year. Where children received more than one examination during this period, the information derived from examinations other than the first has been excluded except for South Australia and the Australian Capital Territory where electronic patient records were used. For South Australia in both 2005 and 2006, and the Australian Capital Territory in 2006, where children received more than one examination during this period, data from the last examination of the year was extracted. Age-standardised statistics are based on the simple rolling together of weighted data for all relevant age groups. The

decayed, missing and filled teeth are presented by mean and standard deviation (SD). The prevalence of caries is also presented for each state and territory, and for Australia.

# Number in sample

There were a total of 193,457 children aged between 4 and 15 years surveyed for the 2005 and 2006 calendar years. The numbers of children sampled in 2005 and 2006 were 103,072 and 90,385 respectively. The effects of the statistical weighting procedure are shown in Tables A2 and A3. The relatively large numbers of children sampled from South Australia received substantially lower weightings compared with other states and territories. Therefore, the weighted numbers of children, which were used for estimates listed in tables and figures, represent smaller numbers of children from this jurisdiction. Consequently, the national sample was numerically representative of the relative populations of states and territories rather than the number of sampled children.

**Table A2: Number in sample by state and territory, 2005**

| State/territory | Number of children sampled | Weight | Weighted number of children[(a)] |
|---|---|---|---|
| Qld | 4,222 | 14.4 | 60,604 |
| WA | 15,221 | 1.8 | 26,752 |
| SA | 69,710 | 0.2 | 16,851 |
| Tas | 859 | 6.9 | 5,920 |
| ACT | 8,522 | 0.4 | 3,693 |
| NT | 4,538 | 0.7 | 3,176 |
| **Total** | **103,072** | **1.1** | **116,997** |

(a) Weighted number rounded to nearest whole number.

*Note:* Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.

**Table A3: Number in sample by state and territory, 2006**

| State/territory | Number of children sampled | Weight | Weighted number of children[(a)] |
|---|---|---|---|
| Qld | 3,035 | 16.0 | 48,469 |
| WA | 13,436 | 1.8 | 23,610 |
| SA | 65,202 | 0.2 | 14,812 |
| Tas | 634 | 6.2 | 3,938 |
| ACT | 4,103 | 0.8 | 3,106 |
| NT | 3,975 | 0.7 | 2,632 |
| **Total** | **90,385** | **1.1** | **96,568** |

(a) Weighted number rounded to nearest whole number.

*Note:* Results from Victoria are excluded due to lack of access to the data. New South Wales was excluded from the data collection in these two years due to a lack of representativeness of the sample.

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