



# Hywel Dda Health Board Oral Health Profile

## Dental caries in 5 year olds 2007/08 and 2011/12

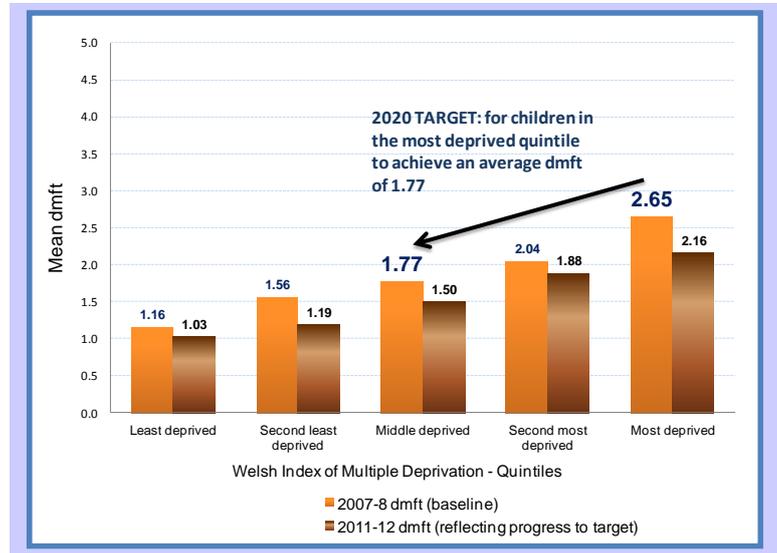
The 2013 Oral Health Profile for Hywel Dda Health Board presents oral health data for school year 1 (approximately 5 years of age) generated from a survey undertaken during the winter of 2011/12 and compares it with the previous survey carried out in 2007/08. This profile focuses on local health board (LHB), unitary authority (UA) and upper super output area (USOA) analyses. For Wales's level data see the "Picture of Oral Health" at the Welsh Oral Health Information Unit (WOHIU) website.

This is the first comparison of data collected via formal written parental consent, as two sets of data are now available incorporating this approach. Before 2007/08 child oral health surveys used passive consent; this methodological change prohibited analysis of trends as data was no longer comparable.

**Figure 1** Average dmft<sup>1</sup> for 5 year olds in 2007/08 and 2011/12 in Wales, by quintiles of the Welsh Index of Multiple Deprivation

### Key messages

- ◆ Preventable decay levels fell in Hywel Dda 5 year olds
- ◆ Carmarthenshire saw improvements in child oral health & has lower experience of decay when compared with all Wales
- ◆ Overall Pembrokeshire and Ceredigion decay levels plateaued, there remains room for improvement



## Progress towards National oral health target

One goal of national oral health policy is to reduce inequalities experienced in children's oral health. Progress towards this goal is assessed by monitoring trends recorded by child oral health surveys. There are Wales's level targets for 5 and 12 year olds. For 5 year olds, the aim is to improve the average dmft and the percentage with caries, for the most deprived fifth as at 2007/08 to match the

<sup>1</sup> The average number of decayed, missing and filled teeth (dmft) is a measure of the decay experience in children. It is therefore the burden of disease which theoretically could have been prevented and thus key data for evaluation of efforts to prevent decay.

caries levels experienced by the middle fifth in 2007/08, by 2020. For the most deprived fifth of 5 year old children in Wales, the average dmft was 2.65 in 2007/08. The national child poverty target for 2020 is to bring this average down to 1.77. In 2011/12 the average dmft for the most deprived fifth was 2.16; half a tooth reduction when compared with 2007/08 and good progress towards the 2020 target (Figure 1).

The results of the Wales 2011/12 survey of 5 year olds suggest that prevalence of dental caries is improving but this needs to be confirmed by reviewing the results of future surveys, the next being scheduled for 2015-16.

These targets are **Welsh targets**; to date there are **no** Health Board targets. But, this oral health profile does give an indication of changes to oral health within Hywel Dda.

## Local Health Boards (LHBs)

### PREVENTABLE DECAY

The sum of decayed, missing and filled teeth is a measure of the decay experience of the average child. It is the burden of disease which theoretically could have been prevented.

Average dmft scores for Welsh local health boards in 2007/08 and 2011/12 are presented in Figure 2. Hywel Dda, Betsi Cadwaladr and Abertawe Bro Morgannwg University health boards experienced statistically significant reductions. In Hywel Dda the averages were 2.0 (95%CI<sup>2</sup> 1.8-2.2) and 1.2 (95%CI: 1.0-1.4) respectively. The 2011/12 Hywel Dda average was statistically lower when compared with the Welsh average for the same year (1.6, 95%CI: 1.5-1.7).

**Figure 2 Average dmft for 5 year olds, Welsh local health boards, 2007/08 compared with 2011/12**

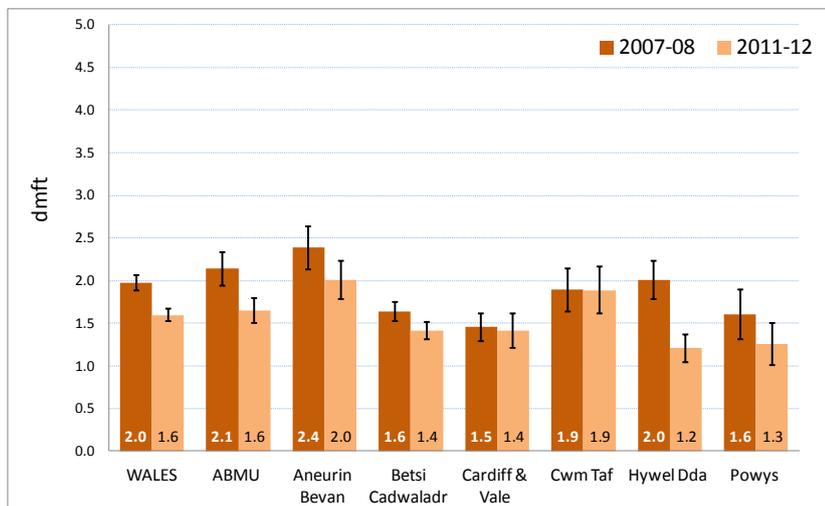
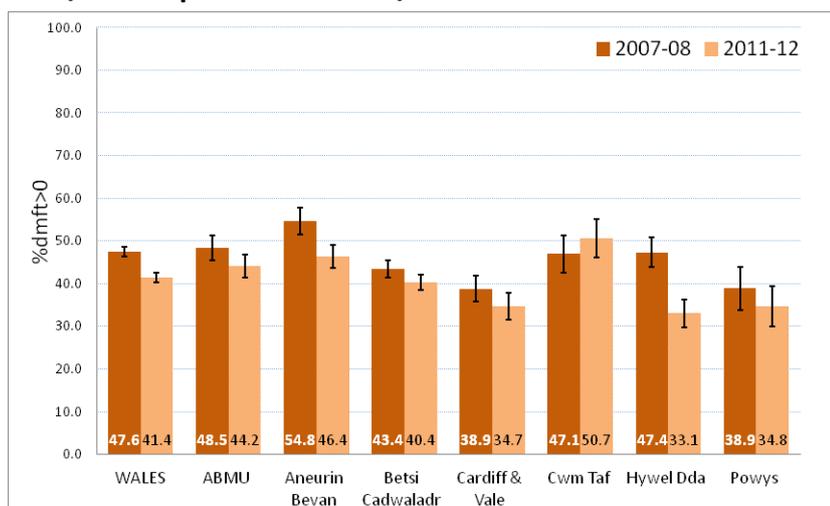


Figure 3 illustrates the proportion of children with at least one decayed tooth (%dmft>0) by LHB in 2007/08 and 2011/12. Although there appears to be a general tendency (except in Cwm Taf) for a reduction in the proportion of children with decay experience, the changes only reach statistical significance in Aneurin Bevan and Hywel Dda LHB areas.

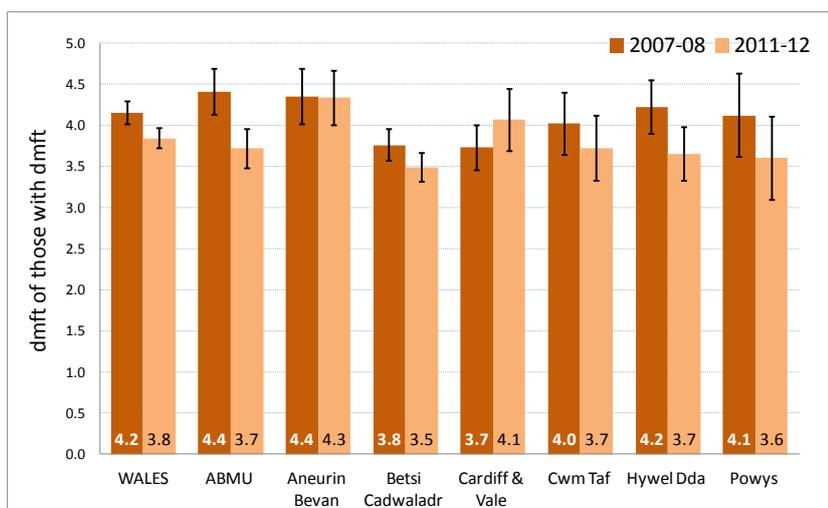
<sup>2</sup> 95%CI represents the 95% lower and upper confidence intervals. A confidence interval constitutes a range of values for a variable of interest, e.g. mean dmft, constructed so that this range has a specified probability of including the true value of the variable. So a 95% confidence interval has a 95% probability of including the true value.

**Figure 3 Percentage of 5 year olds with caries experience (%dmft>0), Welsh local health boards, 2007/08 compared with 2011/12**



There was a 14% reduction in the proportion of children with at least one decayed tooth from 47.4% (95%CI: 44.0%-50.9%) in 2007/08 to 33.1% (95%CI: 29.8%-36.3%) in 2011. Furthermore, the 2011/12 Hywel Dda prevalence was significantly lower than the overall Welsh experience (Figure 3).

**Figure 4 Average dmft of those with caries experience for 5 year olds, Welsh local health boards, 2007/08 compared with 2011/12**



The average number of decayed, missing and filled teeth among the children with at least one decayed/missing/filled tooth is shown in Figure 4. There is a general tendency for a reduction in the mean scores; the only change shown which reaches statistical significance is in ABMU where the averages for 2007/08 and 2011/12 were 4.4 (95%CI: 4.1-4.7) and 3.7 (95%CI: 3.5-4.0) respectively.

### ACTIVE DECAY

The decayed teeth (dt) component of total experience of decay (dmft) measures active decay. This puts the child at risk of pain, infection and suggests risk of decay of permanent successor teeth. In the past it has been called untreated disease.

The concept of treating all decay in deciduous teeth by providing fillings or extractions is being questioned and researched. Children with decay need to reduce the consumption of sugar in their diets, carry out supervised toothbrushing with fluoride toothpaste and have regular application of fluoride varnish by dental professionals, as opposed to operative dental procedures. Thus dt data is now regarded as a marker for children/families who need support in managing this chronic dental disease.

Only Betsi Cadwaladr and Hywel Dda showed statistically significant reductions in average dt scores between 2007/08 and 2011/12 (Figure 5). Hywel Dda experienced a reduction in average dt representing over 2/3rds of a tooth, falling from 1.5 (95%CI: 1.4-1.7) in 2007/08 to 0.8 (95%CI: 0.7-0.9) in 2011/12. In 2011/12 average dt ranged from 0.8 in Hywel Dda to 1.5 in Aneurin Bevan LHB.

**Figure 5 Average dt for 5 year olds, Welsh local health boards, 2007/08 compared with 2011/12**

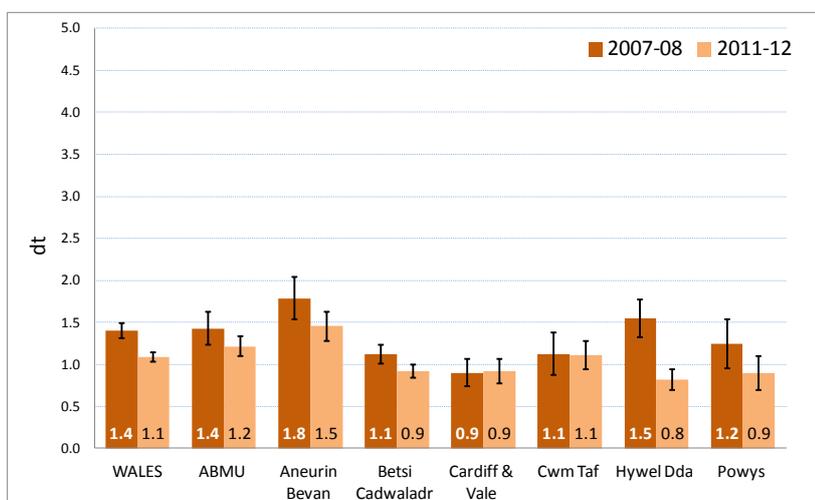
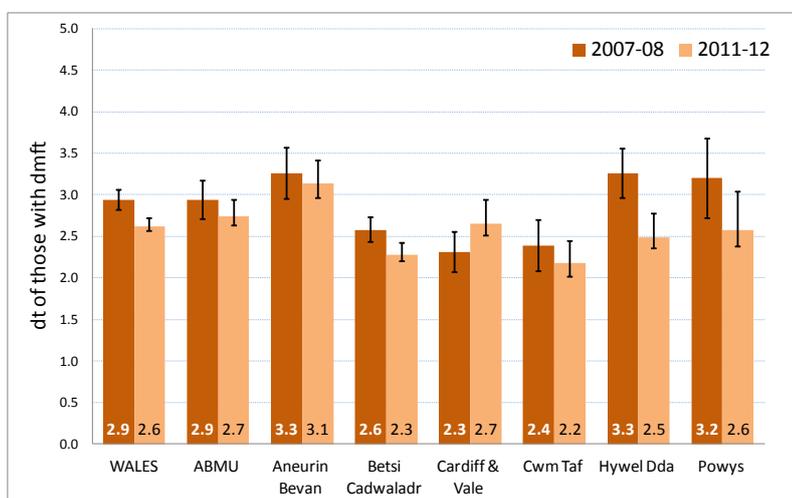


Figure 6 shows changes in average dt for those children with decay experience between the 2 survey years by health board. Only Hywel Dda and Betsi Cadwaladr experienced a statistically significant reduction. Hywel Dda experienced a reduction in average dt for those children with decay representing over 2/3rds of a tooth, falling from 3.3 (95%CI: 3.0-3.6) in 2007/08 to 2.5 (95%CI: 2.2-2.8) in 2011/12. In 2011/12 the averages ranged from 2.2 in Cwm Taf to 3.1 in Aneurin Bevan.

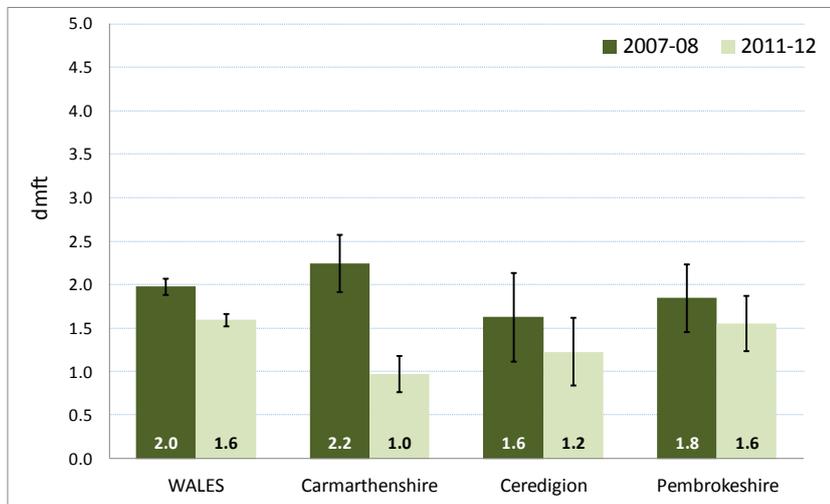
**Figure 6 Average dt of those with any experience of caries (dmft) for 5 year olds, Welsh local health boards, 2007/08 compared with 2011/12**



## Unitary Authorities (UAs)

### PREVENTABLE DECAY

**Figure 7 Average dmft for 5 year olds, in unitary authorities within Hywel Dda Health Board, 2007/08 compared with 2011/12**



Between 2007/08 and 2011/12 there was a statistically significant reduction in average dmft for Wales, the values were 2.0 (95%CI: 1.9-2.1) and 1.6 (95%CI: 1.5-1.7) respectively.

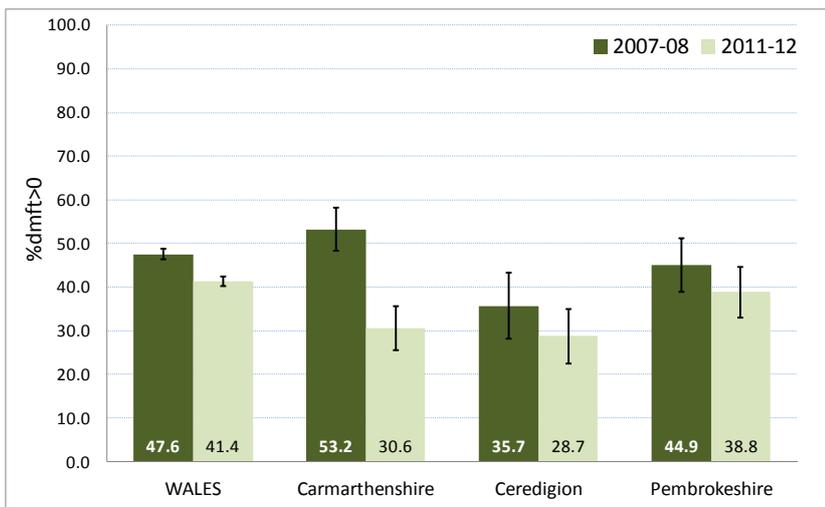
During 2007/08 average dmft values for all 3 Hywel Dda unitary authorities were within the average range when compared with the Welsh average for that same year.

For Carmarthenshire UA there was a statistically significant reduction in average dmft between 2007/08 and 2011/12, from 2.2 to 1.0. Furthermore, the average dmft for the UA in 2011/12 (1.0 - 95%CI: 0.8 -1.2) was statistically lower than the Welsh average for the same year (Figure 7).

There were reductions in the average dmft for Ceredigion (2007/08: 1.6—2011/12: 1.2) and Pembrokeshire (2007/08: 1.8—2011/12: 1.6) between the survey years. But, neither of these changes were statistically significant. Furthermore, the average dmft for these two unitary authorities were within average range when compared with Wales at both time points (Figure 7).

For Wales there was a significant reduction in the proportion of 5 year olds with decay (%dmft>0) between 2007/08 and 2011/12, the values were 47.6% (95%CI: 46.4%-48.7%) and 41.4% (95%CI: 40.3%-42.5%) respectively. It is encouraging that more children have no obvious decay experience by age 5 (Figure 8).

**Figure 8 Percentage of 5 year olds with caries experience (%dmft>0) in unitary authorities within Hywel Dda Health Board, 2007-8 compared with 2011/12**

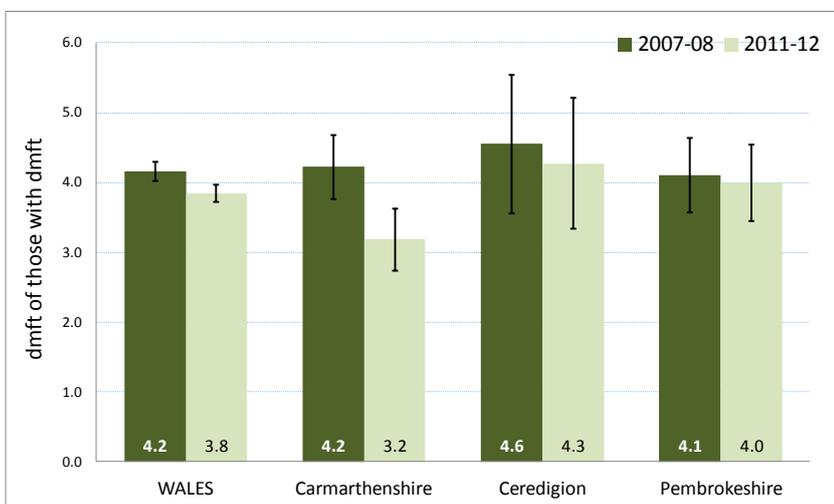


The %dmft>0 for Carmarthenshire fell by over 20% between 2007/08 and 2011/12, from 53.2% (95%CI: 48.2%-58.1%) to 30.6% (95%CI: 25.5%-35.6). This was a statistically significant change. The 2011/12 %dmft>0 for the UA was statistically lower than the Wales percentage for the same survey. Whilst this is indicative of improvements in child oral health in the area, caution needs to be applied as there is potential for survey methodological errors—so we need to wait till the next survey (2015/16) to confirm this trend (Figure 8).

The %dmft>0 for Ceredigion for both surveys was statistically lower than the Welsh percentage at the corresponding time points. The %dmft>0 for the UA fell between 2007/08 and 2011/12 from 35.7% (95%CI: 28.1% -43.2%) to 28.7% (95%CI: 22.5%-35.0%) but this was not a statistically significant change.

The %dmft>0 for Pembrokeshire for both surveys was within average range when compared with the Welsh percentage. The %dmft>0 for the UA fell between 2007/08 and 2011/12 from 44.9% (95%CI: 38.8% -51.1%) to 38.8% (95%CI: 33.0%-44.6%) but this was not statistically significant (Figure 8).

**Figure 9 Average dmft of those with caries experience for 5 year olds, in unitary authorities within Hywel Dda Health Board, 2007/08 compared with 2011/12**



Looking only at those children who have at least one decayed, missing or filled tooth illustrates the stark differences between children with decay and those without. The average dmft for a child with dmft is shown in Figure 9. For Wales overall, the reduction from 4.2 in 2007/08 (95% LCI 4.0 – 95% UCI 4.3) to 3.8 in 2011/12 (95%LCI 3.7 – 95% UCI 4.0) does suggest an improving position.

In Carmarthenshire there was a significant reduction in the average dmft of those with dmft between 2007/08 (4.2, 95%CI: 3.8-4.7) and 2011/12 (3.2, 95%CI: 2.7-3.6). Also, the average dmft of those with dmft for the UA in 2011/12 was statistically lower than the Welsh average for the same year.

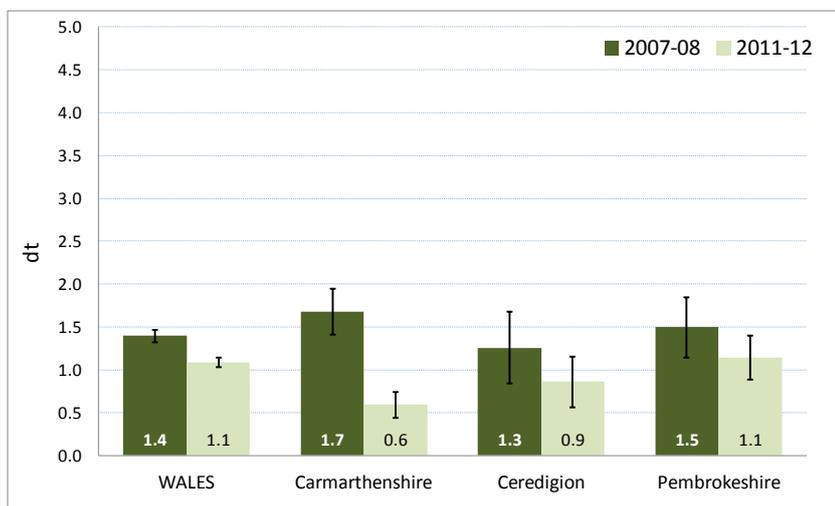
There were small reductions in the average dmft of those with dmft for Ceredigion (2007/08: 4.6 - 2011/12: 4.3) and Pembrokeshire (2007/08: 4.1 – 2011/12: 4.0) between the survey years. But, neither of these changes were statistically significant. Furthermore, the average dmft for those with dmft for these two unitary authorities were within average range when compared with Wales at both time points (Figure 9).

### ACTIVE DECAY

Between 2007/08 and 2011/12 there was a statistically significant reduction in average dt for Wales, the values were 1.4 (95%CI: 1.3-1.5) and 1.08 (95%CI: 1.0-1.1) respectively (Figure 10).

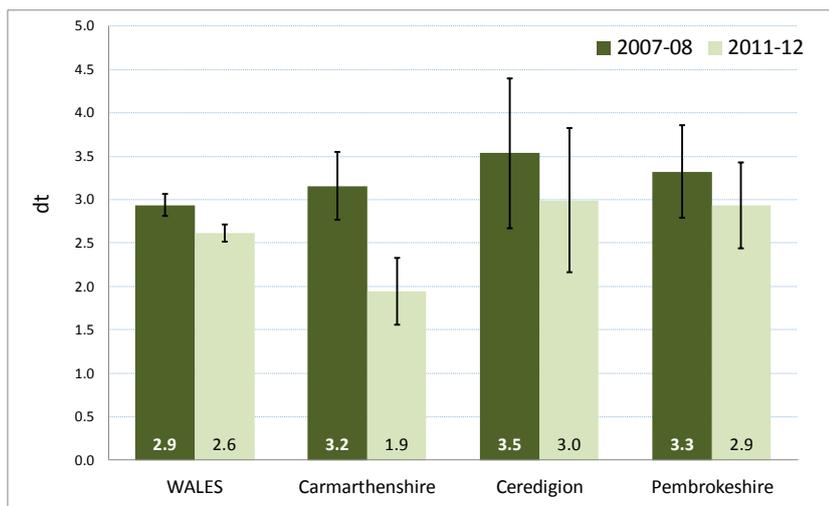
For Carmarthenshire UA there was a statistically significant reduction in average dt between 2007/08 and 2011/12, from 1.7 to 0.6. Furthermore, the average dt for the UA in 2011/12 (0.6 - 95%CI: 0.4 – 0.7) was statistically lower than the Welsh average for the same year (Figure 10).

**Figure 10 Average dt for 5 year olds, in unitary authorities within Hywel Dda Health Board, 2007/08 compared with 2011/12**



There were small reductions in the average dt for Ceredigion (2007/08: 1.3 – 2011/12: 0.9) and Pembrokeshire (2007/08: 1.5 - 2011/12: 1.1) between the survey years; neither of these changes were statistically significant. Furthermore, the average dt for these two unitary authorities were with average range when compared with Wales at both time points (Figure 10).

**Figure 11 Average dt of those with any experience of caries (dmft) for 5 year olds, in unitary authorities within Hywel Dda Health Board, 2007/08 compared with 2011/12**



The average dt of children who have at least one decayed, missing or filled tooth for Wales fell between 2007/08 and 2011/12 from 2.9 (95%CI 2.8-3.1) to 2.6 (95% CI 2.5-2.7). This statistically significant improvement represented a reduction of almost 1/3rd of a tooth.

For Carmarthenshire UA there was a statistically significant reduction in average dt of those with dmft between 2007/08 and 2011/12, from 3.2 to 1.9.

Furthermore, the average dt for those with dmft for the UA in 2011/12 (1.9 - 95%CI: 1.6 –2.3) was statistically lower than the Welsh average for the same year (Figure 11).

There were reductions in the average dt of those with dmft for Ceredigion (2007/08: 3.5 - 2011/12: 3.0) and Pembrokeshire (2007/08: 3.3 - 2011/12: 2.9) between the survey years. But, neither of these changes were statistically significant. Furthermore, the average dt of those with dmft for these two unitary authorities were within average range when compared with Wales at both time points (Figure 11).

# Upper Super Output Areas (USOAs<sup>3</sup>)

Figure 12 Average dmft for 5 year olds in Hywel Dda USOAs, as at 2011/12

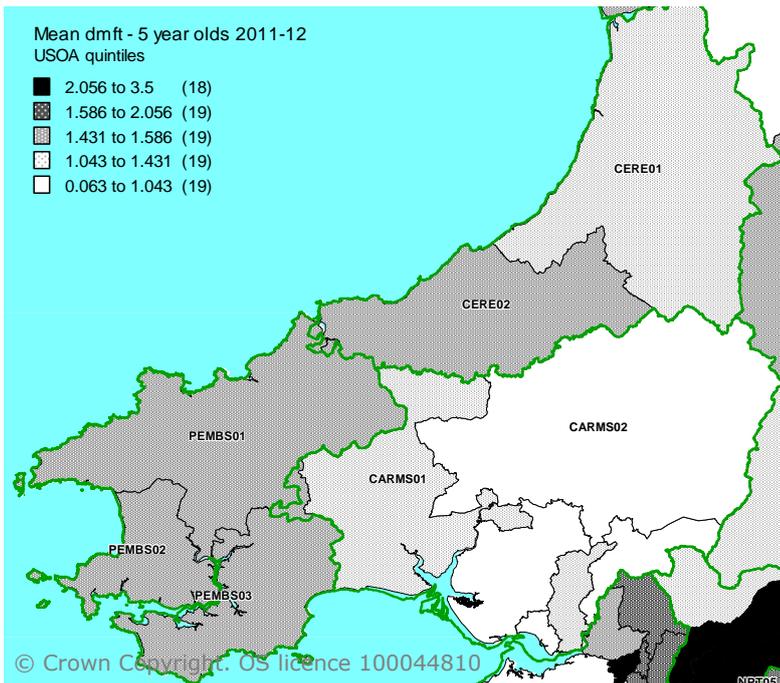
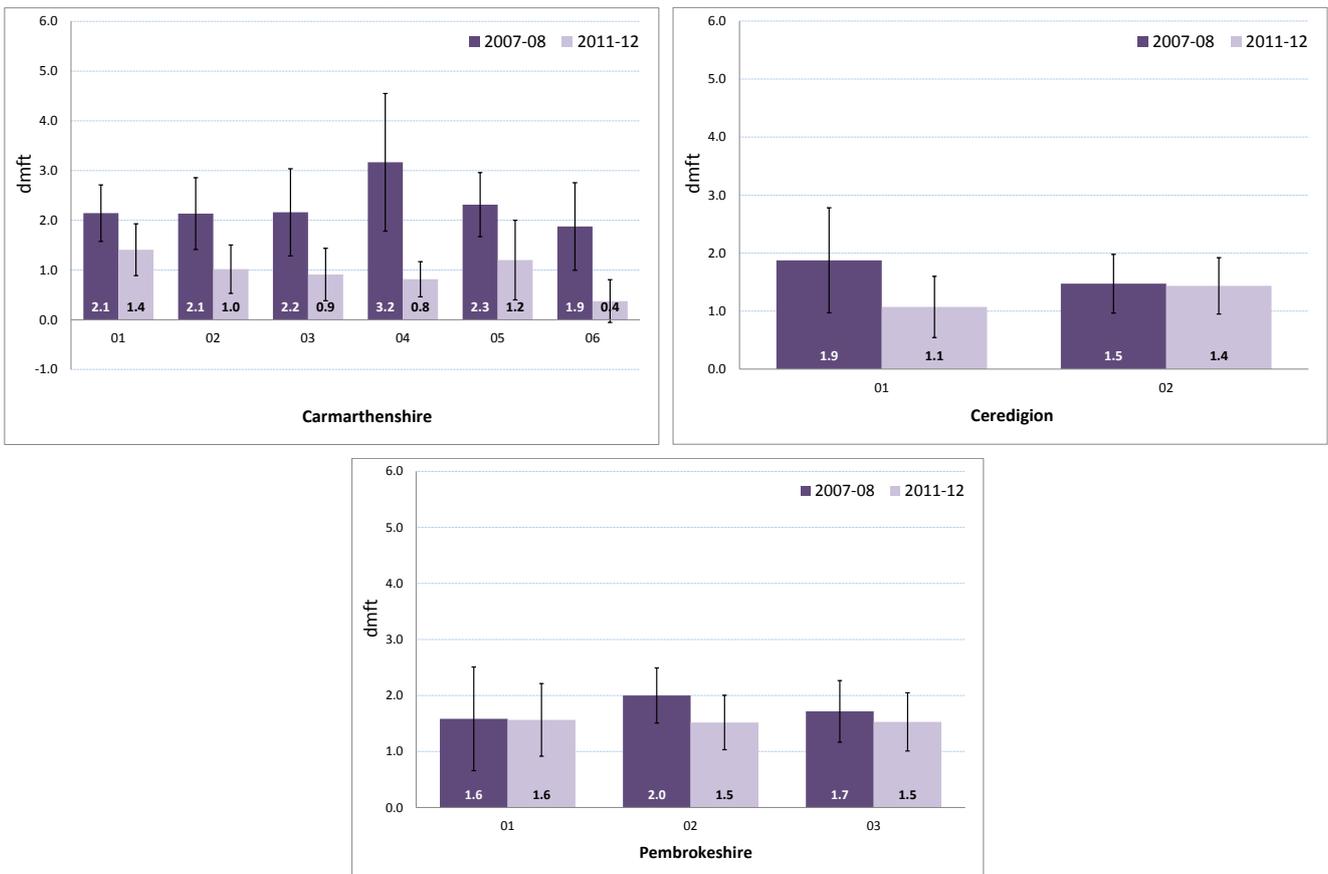


Figure 13 Average dmft for 5 year olds, for USOAs within Carmarthenshire, Ceredigion and Pembrokeshire 2007/08 compared with 2011/12



<sup>3</sup> USOAs constitute a statistical geography produced by the Data Unit Wales, based on a set of Super Output Areas produced by the Office for National Statistics. USOAs have been designed to provide a geography of a similar population size that is more detailed than local authority but still large enough to allow a wide range of statistics to be produced, with each of the 94 USOAs in Wales having an average population of 32,000 people.

Super Output Areas (SOAs) were designed to improve the reporting of small area statistics and are built up from groups of Output Areas. There are 3 categories of SOAs, i.e. lower, middle and upper. There are 94 Upper Super Output Areas (USOAs) in Wales (average population approx. 32,000).

Figure 12 presents a map of the average dmft for 5 year olds in 2011/12 for the USOAs in Hywel Dda. Figure 13 highlights the changes in average dmft for these USOAs between 2007/08 and 2011/12.

There are six USOAs in Carmarthenshire, the dmft in 2011/12 ranged from 0.4 in Carmarthenshire 06 to 1.4 in Carmarthenshire 01. There were notable reductions in the average dmft for all Carmarthenshire USOAs (Figure 13). The reductions for Carmarthenshire 04 which encompasses Bury Port (2007/08 mean dmft 3.2, 95%CI: 1.8-4.6 — 2011/12 mean dmft 0.8, 95%CI: 0.5-1.2) and Carmarthenshire 06 whose main town is Llanelli (2007/08 mean dmft 1.9, 95%CI: 1.0-2.8 — 2011/12 mean dmft 0.4, 95%CI: -0.1-0.8) were statistically significant. As mentioned earlier, there is potential for survey methodological errors, so we need to wait till the next survey (2015/16) to confirm this trend.

There are only two USOAs in Ceredigion, the average dmft for Ceredigion 01 which includes Aberystwyth and Ceredigion 02 which incorporates New Quay in 2011/12 were 1.1 and 1.4 respectively (Figure 13). Ceredigion 01 experienced a notable reduction in average dmft between 2007/08 and 2011/12, however this was not a statistically significant change — a function of the smaller numbers of children taking part in the survey at this geographical boundary level (Figure 13).

The range in dmft experienced by the three USOAs in Pembrokeshire was very similar in 2011/12, it ranged from 1.5 in Pembrokeshire 02 and 03 to 1.6 in Pembrokeshire 01 (Figure 13). The changes experienced by the Pembrokeshire USOAs between the two survey years were small and not statistically significant (Figure 13).

## Inequalities in oral health, Wales and Hywel Dda

**Table 1: Mean dmft & %dmft>0 for 5 year olds by quintiles of deprivation index, for Wales and Hywel Dda Health Board**

	5 year olds 2011-12				5 year olds 2007-08			
	WALES		Hywel Dda		WALES		Hywel Dda	
	mean dmft	%dmft>0	mean dmft	%dmft>0	mean dmft	%dmft>0	mean dmft	%dmft>0
Least deprived	1.0	31.3	0.8	22.5	1.2	34.5	1.5	34.6
Second least deprived	1.2	32.8	1.2	33.0	1.6	41.3	1.9	48.2
Middle deprived	1.5	41.4	1.1	31.9	1.8	44.1	2.1	47.2
second most deprived	1.9	48.3	1.6	42.9	2.0	49.2	1.9	47.2
Most deprived	2.2	51.5	1.5	34.9	2.7	57.6	2.5	52.9
All within area	1.6	41.4	1.2	33.1	2.0	47.6	2.0	47.4
Ratio - most deprived:middle deprived	1.4	1.2	1.4	1.1	1.5	1.3	1.2	1.1

Although children's oral health has improved on average, inequalities remain. Caries, like many other diseases increases with social deprivation. In Wales, we have the child poverty targets to monitor inequalities in oral health.

As outlined on page 1, the overall aim is to improve the average dmft and the % with caries for the most deprived fifth so that by 2020 they match caries levels experienced by the middle fifth, when the baseline was set in 2007/08. Children from more deprived areas within Hywel Dda have experienced little change in caries experience relative to the less deprived groups. The ratio of the most deprived : middle deprived for average dmft has increased slightly whereas the ratio for the %dmft>0 has remained about the same (Table 1) – inequalities for Hywel Dda are not improving.

Furthermore, the average dmft and the %dmft>0 for the most deprived fifth in Hywel Dda in 2011/12 were 2.0 and 47.4% — there is considerable room for improvement if these are to meet the Wales targets for 2020, which are 1.77 and 44.1% respectively. It is important to note that the targets are all Wales targets—we do not have health board targets—but we can use them locally as a guide.

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## USEFUL WEBSITES

Welsh Oral Health Information Unit	<a href="http://www.cardiff.ac.uk/dentl/research/themes/appliedclinicalresearch/epidemiology/oralhealth/index.html">http://www.cardiff.ac.uk/dentl/research/themes/appliedclinicalresearch/epidemiology/oralhealth/index.html</a>
PHW observatory	<a href="http://www.wales.nhs.uk/sitesplus/922/home">http://www.wales.nhs.uk/sitesplus/922/home</a>
British Association for the Study of Community Dentistry	<a href="http://www.bascd.org/">http://www.bascd.org/</a>
Designed to Smile	<a href="http://www.designedtosmile.co.uk/">http://www.designedtosmile.co.uk/</a>
Child Dental Health survey data	<a href="http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsandstatistics/Bulletins/Chiefdentallofficersbulletin/Browsable/DH_4860753">http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsandstatistics/Bulletins/Chiefdentallofficersbulletin/Browsable/DH_4860753</a>
Adult Dental Health survey data	<a href="http://www.hscic.gov.uk/pubs/dentalsurveyfullreport09">http://www.hscic.gov.uk/pubs/dentalsurveyfullreport09</a>
Health Maps Wales	<a href="http://www.infoandstats.wales.nhs.uk/page.cfm?orgid=869&amp;pid=40976">http://www.infoandstats.wales.nhs.uk/page.cfm?orgid=869&amp;pid=40976</a>