

# Time to tackle major differences in levels of tooth decay among children in Britain



## An eightfold gap between the best and the worst

The average 5-year old child living in parts of Britain with the worst dental health record has eight times more teeth affected by decay than the average child living in areas with the best dental health (*Pitts et al 2005*).

Given that tooth decay is a largely preventable condition, the fact that such an enormous difference still exists at the start of the 21st century may seem incredible.

Unfortunately, significant dental health inequalities are a reality. Reducing them remains a major challenge for the NHS.

The differences are not just between one part of the country and another. They also exist between social classes. Children from the poorest backgrounds tend to have much higher rates of tooth decay than those from the most affluent families.

Although there have been general improvements in dental health over the past twenty years, the speed of progress has been disappointing.

For example, as many as 243 out of 311 primary care trusts and health boards in England, Wales

and Scotland failed to achieve the government's target that by 2003 the average five year old child should have no more than one decayed, missing or filled tooth.

Around the same number also failed to achieve the target that by 2003 seventy per cent of children should have had no experience of tooth decay.

Here, in this special briefing, we take a closer look at the statistics and consider what difference it would make if those parts of the UK with the worst children's dental health took advantage of the opportunities created by the Water Act 2003 to adjust the natural fluoride level in their local water supplies to the optimum for dental health.

### Questions to ask about your area

1. How do children's teeth in your area compare with those in the best areas?
2. How big is the difference within your area between the dental health of children from the most affluent communities and those from the most disadvantaged communities?
3. What would be the most effective strategy for improving dental health locally?



# PCTs in England, HBs in Scotland and LHBs in Wales - position in league table

PCT/NHS Board and position in league table		Average decayed, missing and filled teeth per 5-year old	% of 5-year olds free of tooth decay	Ranking <sup>1</sup> of English PCTs for social deprivation (1= least deprived)	% of population supplied with fluoridated water (nv = natural, variable. nvll = natural, variable low levels. vl = variable low)	PCT/NHS Board and position in league table		Average decayed, missing and filled teeth per 5-year old	% of 5-year olds free of tooth decay	Ranking <sup>1</sup> of English PCTs for social deprivation (1= least deprived)	% of population supplied with fluoridated water (nv = natural, variable. nvll = natural, variable low levels. vl = variable low)
1	Maidstone Weald	.47	78.3	48	0	152=	Crawley	1.45	61.6	84	0
2	Suffolk Coastal	.49	82.7	58	nv	152=	Hambleton & Richmondshire	1.45	61.1	51	0
3	Epping Forest	.50	77.8	70	nvll	155	Hounslow	1.46	62.2	168	0
4	Redditch & Bromsgrove	.52	80.5	86	91	155=	Thurrock	1.46	61.7	151	nvll
4=	Cannock Chase	.52	77.8	128	100	157	West Norfolk	1.47	58.5	127	0
6	Burntwood, Lichfield & Tamworth	.53	78.8	98	100	158	Flintshire	1.48	61.0		0
7	Chiltern & S Bucks	.57	81.6	9	0	158=	Bebington & West Wirral	1.48	58.8	97	0
8	East Staffordshire	.58	78.3	120	100	160	Heart of Birmingham	1.50	59.4	272	100
9	Daventry & South Northants	.59	77.0	30	0	160=	Cambridge City	1.50	56.4	81	0
10	Dudley South	.62	76.9	126	61	162	Shetland	1.51	60.8		0
11	Rugby	.64	77.3	73	100	162=	Great Yarmouth	1.51	55.3	188	nv
12	Harlow	.65	74.9	156	nvll	164	Dacorum	1.52	67.0	32	0
13	Colchester	.66	76.3	82	nv	164=	Isle of Wight	1.52	61.0	149	0
13=	Sussex Downs & Weald	.66	71.9	39	0	164=	Eastern Cheshire	1.52	59.1	46	0
15	Horsham & Chancetonbury	.67	78.4	6	0	167	Scarborough, Whitby and Ryedale	1.53	60.7	145	0
15=	West Lincolnshire	.67	76.5	139	100	167=	Warrington	1.53	59.3	134	0
15=	Adur, Aran & Worthing	.67	76.1	99	0	169	Broxtowe & Hucknall	1.54	57.5	124	0
15=	South West Kent	.67	75.1	26	0	170	Wandsworth	1.55	62.8	148	0
19	Guildford & Waverley	.68	79.9	11	0	170=	Bath & North East Somerset	1.55	56.1	60	nv
19=	Brighton & Hove	.68	74.8	179	0	172	Borders	1.61	63.6		0
19=	South Warwickshire	.68	73.9	45	68	173	Gedling	1.64	56.7	105	0
22	North Surrey	.70	72.6	31	0	174	Fife	1.65	57.3		0
23	Surrey Sussex Healthcare NHS Trust	.71	77.4	28	0	175	Telford & Wrekin	1.67	56.7	159	0
24	Bassetlaw	.72	74.0	178	100	176	West Hull	1.68	56.4	262	0
25	Lincolnshire South West	.73	78.2	64	20	176=	Durham & Chester-le-Street	1.68	55.6	138	0
26	Royston, Buntingford & Bishop's Stortford	.74	77.7	2	0	176=	Fylde	1.68	55.4	68	0
26=	Cherwell Vale	.74	72.9	44	0	179	Westminster	1.69	61.9	218	0
28	Central Cheshire	.75	75.7	103	52	179=	Hillingdon	1.69	60.6	118	0
28=	SW Oxfordshire	.75	75.5	10	0	181	North Norfolk	1.70	59.7	109	nv
28=	South West Staffordshire	.75	73.6	56	53	182	East Hampshire	1.72	55.2	102	0
31	South Birmingham	.77	72.1	215	100	182=	South Tyneside	1.72	52.2	228	0
32	Billericay, Brentwood, & Wickford	.79	75.7	27	nvll	184	Eastern Hull	1.74	52.6	257	0
32=	Dudley Beacon & Castle	.79	72.7	196	100	185	Sunderland	1.75	54.9	234	0
34	Mansfield	.80	74.0	225	100	186	Norwich	1.77	58.7	201	0
35	Rushcliffe	.82	72.9	25	0	187	Vale	1.78	56.6		0
36	South Worcestershire	.83	74.1	76	32	187=	Waltham Forest	1.78	56.4	231	0
36=	South Cambridgeshire	.83	72.7	3	nv	187=	North Peterborough	1.78	55.7	184	nv
36=	Eastbourne Downs	.83	71.9	111	0	190	Darlington	1.80	57.7	174	0
36=	Swale	.83	70.1	163	0	190=	South Wiltshire	1.80	56.0	54	0
36=	Medway	.83	69.4	116	0	192	Herefordshire	1.81	58.5	93	0
41	Huntingdonshire	.84	73.3	40	nv	192=	Monmouth	1.81	55.0		0
42	Dartford, Gravesham & Swanley	.85	72.1	106	0	192=	Barking & Dagenham	1.81	52.2	214	0
42=	Solihull	.85	70.4	104	100	195	West Gloucestershire	1.82	55.3	113	0
42=	Walsall	.85	70.0	209	100	195=	Trafford North	1.82	54.2	190	0
45	Wyre Forest	.86	70.2	112	14	197	Kensington & Chelsea	1.83	58.3	158	0
46	St Albans & Harpenden	.87	74.3	14	0	197=	Powys	1.83	51.5		0
46=	North Warwickshire	.87	71.8	137	100	199	Derwentside	1.84	50.4	200	100
48	Wednesbury & West Bromwich	.88	68.0	244	100	200	South Stoke	1.85	56.3	220	0
49	Mid Hampshire	.89	71.5	18	0	200=	Portsmouth City	1.85	52.3	175	0
49=	Central Suffolk	.89	69.6	38	nv	202	City & Hackney	1.86	59.1	266	0

51	Havering	.90	72.2	85	0	203	Forth Valley	1.87	55.9		0
51=	South Peterborough	.90	71.9	107	nv	204	Rotherham	1.89	52.0	198	0
51=	Bedfordshire Heartlands	.90	69.9	37	22	205	Hammersmith & Fulham	1.90	56.2	192	0
54	Wokingham	.91	75.6	1	0	206	Harrow	1.91	56.1	72	0
55	Chesterfield	.93	69.0	187	0	207	Airedale	1.92	56.5	144	0
55=	Oldbury & Smethwick	.93	68.7	248	100	207=	North Bradford	1.92	49.0	180	0
57	Bromley	.94	72.7	69	0	209	Tayside	1.93	56.7		0
57=	Eastleigh & Test Valley South	.94	70.0	19	0	209=	Ayrshire & Arran	1.93	52.0		0
57=	Mid Sussex	.94	68.5	4	0	211	North Somerset	1.94	47.1	78	0
60	Greater Derby	.95	71.4	161	0	212	Oxford City	1.95	55.8	121	0
61	Ashford, Canterbury & Coastal, Shepway & East Kent Coastal	.96	70.8	131	0	212=	Islington	1.95	55.3	264	0
61=	Wolverhampton City	.96	69.4	223	100	214	Luton	1.96	53.2	169	0
63	Aylesbury	.97	70.7	17	0	215	Chorley & South Ribble	1.97	50.9	90	0
63=	Uttlesford	.97	70.0	8	nvll	216	Grampian	1.98	56.9		1
65	Rowley Regis & Tipton	.98	67.4	242	100	217	Southampton City	1.99	52.5	172	0
66	SE Oxfordshire	.99	65.3	12	0	217=	Bridgend	1.99	51.4		0
67	East Elmbridge & Mid Surrey	1.00	73.3	7	0	219	Birkenhead & Wallasey	2.00	48.3	254	0
67=	New Forest	1.00	70.1	41	0	220	North Tees	2.01	49.0	185	0
69	Wycombe	1.01	72.5	43	0	221	St Helens	2.02	50.7	222	0
70	Bexhill & Rother	1.03	71.2	101	0	222	West Lancashire	2.03	52.0	150	0
70=	Coventry City	1.03	68.7	197	85	223	Leeds North East	2.04	54.3	136	0
70=	Hertsmere	1.03	67.5	59	0	223=	Morecambe Bay	2.04	53.7	157	0
73	South Norfolk	1.04	69.6	61	nv	225	Sheffield South East	2.05	52.0	240	0
73=	Blackwater Valley & Hart	1.04	69.4	13	0	225=	Oldham	2.05	51.3	213	0
73=	Bracknell	1.04	68.4	22	0	227	Camden	2.06	53.4	238	0
73=	North Birmingham	1.04	67.1	165	100	227=	Pembrokeshire	2.06	53.1		0
77	NE Oxfordshire	1.05	72.5	16	0	227=	Ashton, Leigh & Wigan	2.06	50.6	208	0
77=	North Eastern Derbyshire	1.05	66.9	173	nv	230	Central Derby	2.07	52.3	265	0
79	Haringey Teaching	1.06	70.3	251	0	230=	Barnet	2.07	51.7	100	0
79=	North Hampshire	1.06	67.3	23	0	232	Dumfries & Galloway	2.08	52.5		0
79=	Hartlepool	1.06	66.6	250	100	233	Wyre	2.09	52.5	119	0
82	Surrey Heath and Woking Area	1.07	68.7	5	0	233=	Orkney	2.09	50.3		0
83	Sutton and Merton	1.08	67.6	77	0	235	Eden Valley	2.11	55.0	87	0
84	Redbridge	1.09	72.6	132	nv	235=	South Liverpool	2.11	51.8	255	0
84=	Melton Rutland and Harborough	1.09	68.4	20	0	235=	Leeds North West	2.11	51.0	152	0
86	Northamptonshire Heartlands	1.10	67.0	110	0	235=	South Sefton	2.11	50.0	221	0
86=	Cheltenham & Tewkesbury	1.10	66.6	66	0	235=	Denbighshire	2.11	49.2		0
88	Broadland	1.11	69.5	33	nv	240	West Wiltshire	2.12	50.6	57	0
89	Amber Valley	1.12	68.7	130	0	240=	Leicester City West	2.12	50.0	252	0
89=	Welwyn Hatfield	1.12	64.2	65	0	242	Easington	2.14	47.1	261	50
91	Cheshire West	1.13	68.9	91	3	242=	Doncaster East	2.14	46.9	177	0
91=	High Peak & Dales	1.13	66.9	71	0	244	Eastern Leicesters	2.15	49.8	211	0
93	Richmond and Twickenham	1.15	71.9	35	0	244=	Doncaster Central	2.15	48.9	247	0
93=	Lewisham	1.15	71.5	203	0	246	North Stoke	2.16	47.4	249	0
93=	Sheffield South West	1.15	69.5	122	0	246=	Sedgefield	2.16	46.5	206	0
93=	South East Hertfordshire	1.15	68.1	47	0	248	Halton	2.18	49.8	236	0
93=	Western Sussex	1.15	68.0	62	0	249	Ceredigion	2.19	51.8		0
93=	Derbyshire Dales & South Derbyshire	1.15	66.3	79	20	250	Carlisle & District	2.21	50.2	162	0
93=	Lambeth	1.15	65.3	233	0	250=	Cardiff	2.21	48.0		0
100	Waveney	1.16	65.9	155	nv	252	Conwy	2.22	49.8		0
100=	Northumberland	1.16	65.2	160	33	252=	South Manchester	2.22	48.7	259	0
100=	Charnwood & North West Leicestershire	1.16	64.9	74	0	252=	Bristol North	2.22	47.6	189	0
103	Dorset	1.17	70.5	96	0	255	Wakefield West	2.25	46.4	167	0
103=	Suffolk West	1.17	68.6	52	nv	255=	Doncaster West	2.25	45.0	243	0
105	Craven Harrogate & Rural	1.18	66.2	49	0	257	Ealing	2.26	53.3	170	0
105=	Erewash	1.18	65.5	133	0	258	Hyndburn & Ribble Valley	2.28	50.5	164	0
107	Cotswold & Vale	1.19	67.2	34	0	258=	Burnley, Pendle & Rossendale	2.28	50.0	199	0
107=	Fareham & Gosport	1.19	63.5	50	0	258=	Calderdale	2.28	47.4	176	0
107=	South Huddersfield	1.19	63.2	83	0	261	Bristol South & West	2.29	49.1	191	0
107=	Greenwich	1.19	63.0	216	0	261=	North Liverpool	2.29	46.3	273	0
111	Newark	1.20	67.0	140	0	263	Durham Dales	2.30	46.6	194	0
111=	Staffordshire Moorlands	1.20	63.5	115	0	264	Lothian	2.31	49.8		0
111=	Gateshead	1.20	62.6	230	100	265	Brent	2.32	51.4	182	0
114	Enfield	1.21	66.9	166	0	265=	Tower Hamlets	2.32	50.6	267	0
						267	South, West Bradford	2.33	49.7	219	0

114= Hinckley & Bosworth	1.21	66.4	42	0	267= North Sheffield	2.33	49.0	256	0
114= East Yorkshire	1.21	65.5	63	0	269 Huddersfield Central	2.34	45.1	212	0
114= Croydon	1.21	65.2	143	0	270 Blackpool	2.38	49.6	232	0
114= Bedford	1.21	64.7	114	100	270= South Tees	2.38	47.6	246	0
114= Kennet & North Wilts	1.21	63.6	29	0	272 Gwynedd	2.43	47.2		0
120 Southport & Formby	1.22	63.9	117	0	273 Slough	2.44	50.6	147	0
120= Trafford South	1.22	63.2	80	0	273= Heywood & Middleton	2.44	40.0	241	0
122 Milton Keynes	1.23	60.9	89	0	275 Highland	2.45	52.5		0
123 Windsor, Ascot & Maidenhead	1.24	70.0	15	0	275= Salford	2.45	46.7	253	0
123= South Gloucestershire	1.24	57.7	36	0	277 Reading	2.47	50.0	92	0
125 Northampton	1.25	64.0	135	0	278 Newham	2.49	49.7	258	0
126 East Cambridgeshire & Fenland	1.26	67.6	94	nv	279 Swansea	2.50	44.8		0
126= Newcastle	1.26	60.1	237	100	280 Tameside & Glossop	2.51	47.6	195	0
128 Selby & York	1.27	66.9	75	0	281 Nottingham City	2.55	42.3	260	0
129 Ellesmere Port & Neston	1.28	63.2	142	0	281= South Leeds	2.55	41.6	229	0
129= North Tyneside	1.28	62.4	183	50 + 50 vl	283 Anglesey	2.56	44.4		0
131 North Hertfordshire & Stevenage	1.29	65.5	67	0	284 Torfaen	2.57	41.7		0
131= Swindon	1.29	63.7	108	0	285 Leeds West	2.58	42.9	204	0
133 South Leicestershire	1.30	66.1	24	0	286 Newport	2.61	41.6		0
133= Shropshire County	1.30	63.3	88	8	287 Neath & Port Talbot	2.62	41.9		0
133= Newbury	1.30	62.6	21	0	288 Central Liverpool	2.66	45.7	271	0
133= Ashfield	1.30	62.0	202	100	288= Barnsley	2.66	39.0	227	0
137 Hastings & St Leonards	1.31	57.4	217	0	290 Argyll & Clyde	2.77	46.8		0
138 Kingston	1.33	65.9	53	0	291 Carmarthenshire	2.82	42.1		0
138= Sheffield West	1.33	64.2	125	0	292 Wrexham	2.83	38.4		0
140 Yorkshire Wolds & Coast	1.36	65.1	129	0	293 Rochdale	2.85	42.2	226	0
140= East Lincolnshire	1.36	62.9	154	0	294 Lanarkshire	2.87	47.4		0
140= Ipswich	1.36	61.4	146	nv	295 Western Isles	2.89	41.8		0
140= North East Lincolnshire	1.36	60.6	207	15	296 East Leeds	2.91	39.2	239	0
144 Watford & Three Rivers	1.38	63.9	55	0	297 North Manchester	2.92	39.8	274	0
144= Southwark	1.38	60.1	245	0	298 Central Manchester	2.96	38.2	269	0
146 Newcastle-under-Lyme	1.40	62.8	141	0	298= Eastern Wakefield	2.96	35.5	235	0
146= Somerset Coast, Mendip, Taunton Deane & South Somerset	1.40	58.5	95	0	300 Bury	3.05	40.5	171	0
148 Basildon	1.41	61.9	193	nvll	300= Rhondda Cynon Taff	3.05	35.5		0
149 North Lincolnshire	1.42	57.2	153	75	302 Greater Glasgow	3.08	42.0		0
149= East Birmingham	1.42	55.4	263	100	303 Blackburn with Darwen	3.12	38.5	224	0
151 West Cumbria	1.44	59.3	181	100	304 Bradford City	3.13	36.2	270	0
152 Stockport	1.45	62.8	123	0	305 Knowsley	3.14	35.5	268	0
					306 Caerphilly	3.20	31.9		0
					307 Bolton	3.23	39.4	210	0
					308 Preston	3.30	30.2	186	0
					309 Blaenau Gwent	3.49	29.8		0
					310 North Kirklees	3.69	30.1	205	0
					311 Merthyr	3.73	28.2		0

## Checking on the dental health of five year olds in your area

In the left hand column, each PCT in England, LHB in Wales and NHS Board in Scotland is ranked from 1st to 311th according to the average number of decayed, missing and filled teeth per 5-year old child in its locality.

The second column shows the average number of decayed, missing and filled teeth per child. Five year olds in the best, Maidstone Weald PCT, have on average only 0.47 of a tooth affected, while in the worst, Merthyr LHB, five year olds suffer, on average, 3.73 affected teeth.

The third column shows the percentage of children who have never experienced tooth decay during their lives. In the best, Suffolk Coastal PCT, almost 83% of five year olds have no decayed, missing or filled teeth, while in the

worst, Merthyr LHB (again), less than 30% of five year olds are fortunate enough to have no decayed, missing or filled teeth.

The fourth column ranks PCTs (England only) according to their relative affluence or social deprivation. The least socially deprived (or most affluent) PCT is Wokingham (ranked 1). The most socially deprived PCT is North Manchester (ranked 274).

The right hand column indicates the percentage of people supplied with fluoridated water. In addition, it indicates those parts of the country where the natural content of fluoride - though not at the optimum level - is high enough to make a difference.

## Calculation of social deprivation ranking of PCTs

<sup>1</sup> Deprivation ranking data is presented for England only. The ranking was derived from the Primary Care Trust level Index of Multiple Deprivation 2004 (PCT level IMD2004) scores. However, because PCT level IMD2004 was based on PCT boundaries as they existed on 31/12/2002, a small number of PCTs listed in the dental survey report did not have a matching IMD 2004 score. For those PCTs a population-

weighted mean of the IMD 2004 score was calculated to facilitate ranking. Unfortunately, deprivation indices used in Scotland and Wales are not directly comparable with the IMD used in England. It was not therefore possible in this briefing to rank the deprivation scores for the Scottish Health Boards or the Local Health Boards in Wales.

# How fluoridation cuts the link between social deprivation and tooth decay

The league table on pages 2, 3 and 4 confirms what might ordinarily be expected when comparing the teeth of children in different parts of the UK.

Broadly speaking, the areas with the highest rates of tooth decay tend to be those which, in relative terms, have the highest levels of social deprivation.

It is no surprise, therefore, to find places such as Knowsley, Bradford, Central Manchester, North Manchester, East Leeds and Central Liverpool at the bottom of the league for dental health. Their populations are all amongst the least affluent in England.

On the other hand, there are a number of areas in the top quarter of the table that are bucking this trend. For example, South

Birmingham's population is the 215th most socially deprived in England - but the PCT is ranked 31st for children's dental health.

Other areas with relatively high levels of social deprivation and relatively good dental health include Mansfield, Walsall, Wednesbury & West Bromwich, Oldbury & Smethwick, Wolverhampton City and Rowley Regis & Tipton. All these areas are supplied with fluoridated water.

The way in which fluoridation cuts the normal link between social deprivation and tooth decay is illustrated graphically in the chart on this page.

The red triangles signify PCTs in England whose water supplies are not fluoridated. The green squares signify PCTs whose water supplies

are fluoridated.

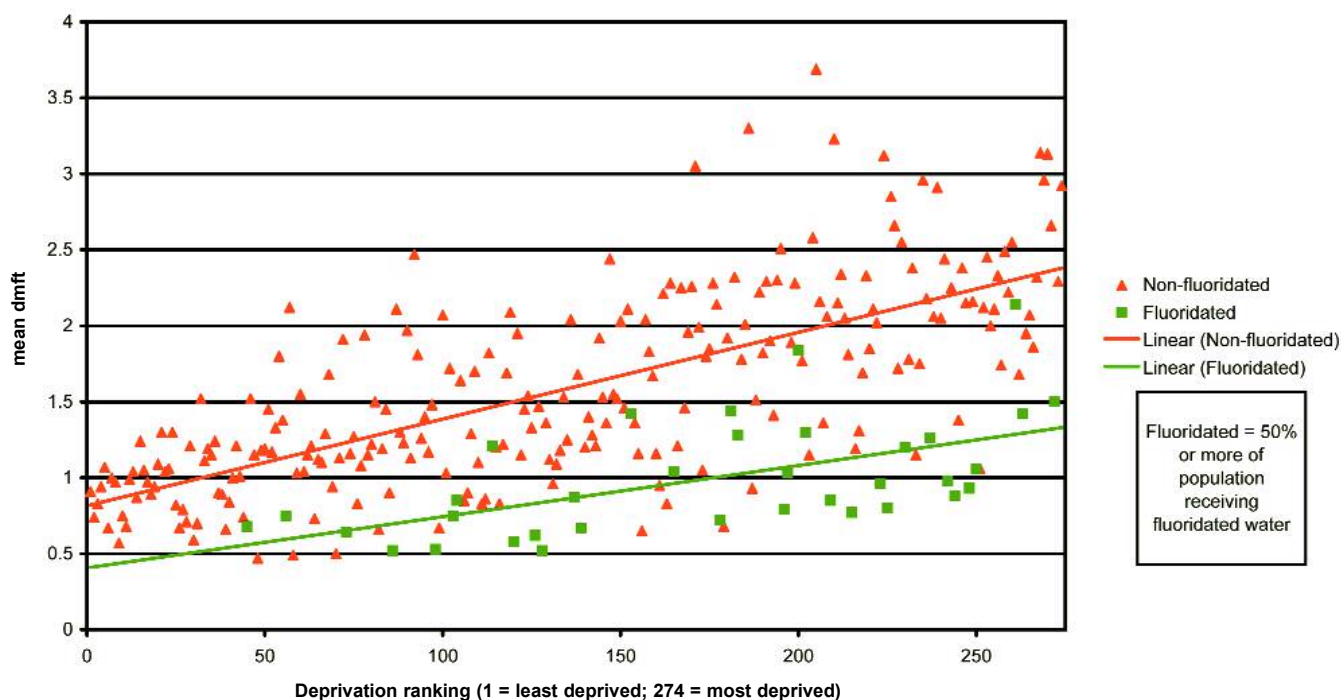
There are 274 PCTs in total. The least socially deprived (or most affluent) PCTs are on the extreme left of the chart.

So for example, the 50 least deprived are represented by triangles or squares between the figure 0 and 50 along the bottom of the chart.

The most socially deprived are on the extreme right - represented by triangles and squares between 250 and 274.

What it shows is that, with few exceptions, children living in relatively socially deprived PCTs whose water supplies are fluoridated have fewer decayed, missing or filled teeth than children from similar PCTs whose water supplies are not fluoridated.

## Relationship between tooth decay and deprivation in fluoridated and non-fluoridated Primary Care Trusts in England



# The difference that fluoridation makes

## Fewer children's teeth affected by decay

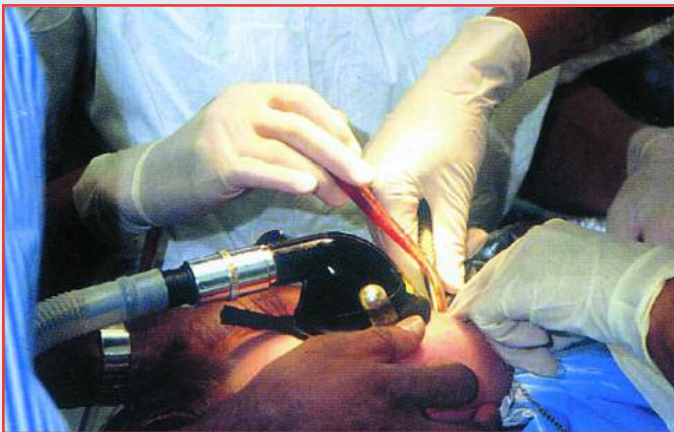
A report published in 2000 by the NHS Centre for Reviews and Dissemination based at the University of York, where a team of researchers systematically reviewed previously conducted studies into the effects of water fluoridation, found that **on average children in fluoridated areas have 2.2 fewer teeth decayed than those in non-fluoridated areas.**



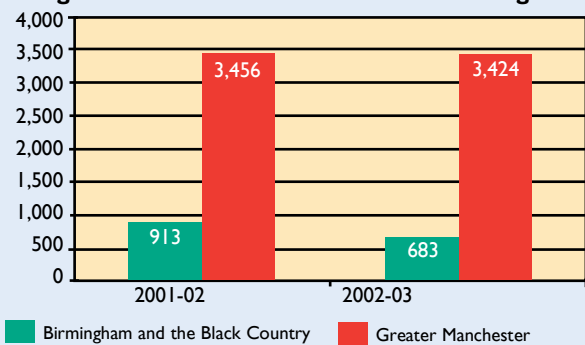
## More children free from decay

The University of York team found that **on average there are 15 per cent more children free from tooth decay in fluoridated areas than in non-fluoridated ones.** It also found that there is evidence from studies of the number of decayed, missing and filled teeth that water fluoridation reduces the inequalities in dental health across social classes.

## Less need for extractions under general anaesthetic



Number of tooth extractions carried out under general anaesthetic in children under age 10



No matter how much care dentists take to put their patients at ease, having to attend hospital for teeth to be extracted under a general anaesthetic is often a frightening and unpleasant experience for a young child. It can also be upsetting and inconvenient for their parents.

The bar chart (above right) contrasts the number of general anaesthetics for tooth extractions

that are given each year to children under 10 years old in Greater Manchester, where water supplies are not fluoridated, with the number of anaesthetics given to children in Birmingham and the Black Country, where 97 per cent of the population receives fluoridated water.

The difference between the numbers of general anaesthetics administered for dental treatment is

shocking. Although the overall population sizes of the two areas are similar (Birmingham and the Black Country 2.3 million; Greater Manchester 2.5 million), five times more general anaesthetics were given to Greater Manchester children than to children in Birmingham and the Black Country in 2002/03 (the latest year for which figures are available).

## Further information

**Further copies of this briefing, as well as more detailed information about fluoridation, may be obtained from: The British Fluoridation Society, Ward 4, Booth Hall Children's Hospital, Charlestown Road, Manchester M9 7AA. Tel/Fax: 0161-918 5223 email: [bfs@bfsweb.org](mailto:bfs@bfsweb.org) Website: [www.bfsweb.org](http://www.bfsweb.org)**

## References

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