

National Dental Inspection Programme (NDIP) 2020

Report of the 2020 Detailed Inspection Programme of
Primary 1 Children and the Basic Inspection of
Primary 1 and Primary 7 Children

Publication date: 20 October 2020

This is an Official Statistics publication

Public Health Scotland has authority to produce official statistics on any matter in accordance with [The Official Statistics \(Scotland\) Order 2008](#), [The Official Statistics \(Scotland\) Amendment Order 2019](#) and the [Statistics and Registration Service Act 2007](#).

All official statistics should comply with the UK Statistics Authority's Code of Practice which promotes the production and dissemination of official statistics that inform decision making. They can be formally assessed by the UK Statistics Authority's regulatory arm for National Statistics status.

Find out more about the Code of Practice at:

<https://code.statisticsauthority.gov.uk/>

Find out more about official statistics at:

<https://code.statisticsauthority.gov.uk/working-in-line-with-the-code/>

Contents

Introduction	4
The 2020 National Dental Inspection Programme (NDIP) in school year 2019/20	4
Specific Goals of the Detailed Inspection	6
How many children had a Detailed Inspection?	6
Main points.....	8
Results and Commentary.....	9
What are the obvious decay experience results for the teeth of P1 children in NHS Boards in Scotland?.....	9
What proportion of P1 children in Scotland had no obvious decay experience in 2020? ...	10
What levels of obvious decay experience were seen in P1 children in 2020?	11
How has the dental health of P1 children in Scotland changed over time?	12
What percentage of obvious decay experience in P1 children was treated with fillings? ...	14
What percentage of P1 children had untreated decay?.....	15
Measures of Oral Health Inequalities	16
Is there a continuing link between area-based socio-economic deprivation and poor dental health among P1 children in Scotland?	16
Measures of Inequality of obvious decay experience across P1 children in Scotland	18
Conclusions	20
Glossary.....	21
References.....	24
Acknowledgements	25
List of Tables, Figures and Diagrams	26
Contacts.....	28
Further Information	28
Rate this publication.....	28
Appendices	29
A1 – What are the stages of tooth decay?.....	29
A2 – National training and calibration course	30
A3 – Links/comparisons to other sources of dental health information.....	31
A4 – Results of Care Index at NHS Board level; Detailed Inspection	33

A5 – Results for Health and Social Care Partnerships (HSCP); Detailed Inspection for Primary 1 children in 2020.....	34
A6 – Basic Inspection results	52
A7 – Authors.....	56
A8 – Publication Metadata (including revisions details).....	57
A9 – Early Access details	59
A10 – PHS and Official Statistics	60

Introduction

The 2020 National Dental Inspection Programme (NDIP) in school year 2019/20

The National Dental Inspection Programme (NDIP) is carried out annually with the support and approval of the Scottish Dental Epidemiology Co-ordinating Committee. Its principal aims are to inform parents/carers of the oral health status of their children and, through appropriately anonymised, aggregated data, advise the Scottish Government, NHS Boards and other organisations concerned with children's health of oral disease prevalence at national and local levels. This ensures that reliable oral health information is available for planning initiatives directed towards health improvements.

Two school year groups are involved: i) at entry into Local Authority schools in primary one (P1) and ii) in primary seven (P7) before the move to secondary education. The Inspection Programme has two levels: a Basic Inspection (intended for all P1 and P7 children) and a Detailed Inspection (where a representative sample of either the P1 or the P7 age group is inspected in alternate years).

This year's report focuses on the results of the Detailed Inspection of P1 school children in school year 2019/20 (noted as 2020 throughout the report). Information relating to the Basic Inspection of both P1 and P7 children can be found in [Appendix A6](#) of this report. An Executive Summary of the main findings can be found at <https://beta.isdscotland.org/find-publications-and-data/health-services/primary-care/national-dental-inspection-programme/2020-10-20/>.

It should be noted that the inspection programme was affected by the interruption to the school year by the COVID-19 (Coronavirus) outbreak, in particular when the nation entered the period of 'lockdown' on 23 March 2020. This impacted principally the numbers of children seen as part of the basic inspection, while the detailed inspection numbers were much less affected.

Key Definitions

Detailed Inspection

- A comprehensive assessment of the mouth of each inspected child using a light, mirror and ball-ended probe.
- It involves recording the status of each surface of each tooth in accordance with international dental epidemiological conventions.
- It measures obvious decay into dentine (see below) when seen under school (rather than dental surgery) conditions.
- More information on the different stages of dental decay can be found in [Appendix A1](#).
- Those undertaking the inspections attend (and pass) a training and calibration course prior to the annual inspection process. Details of the course and of the calibration results can be found in [Appendix A2](#).

Obvious Decay (d₃)

- This is when the disease process clinically appears to have penetrated dentine (i.e. the layer below the outer white enamel of the teeth) on a tooth surface.
- This is described internationally as decay at the d₃ level and includes *pulpal decay* (i.e. decay into the deeper dental pulp).
- The definition of decay used here is in accordance with the *British Association for the Study of Community Dentistry* (BASCD) guidelines and international epidemiological conventions, thus allowing comparisons to be made over time and with other countries in Europe and beyond.
- This is a different diagnostic level from that used by many dentists when examining patients in a dental surgery, i.e. for dental check-ups.
- Decay is also known as caries.

Obvious Decay Experience (d₃mft)

- The sum of teeth which have decay into dentine, including teeth with fillings which require further treatment, filled teeth and teeth that are missing (extracted) due to decay. A hierarchy was used to ensure there was no double counting of teeth.
- Thus no obvious decay experience has d₃mft =0.

Care Index

- The percentage of teeth with obvious decay experience in a population that have been treated restoratively (filled).
- This is calculated as follows:

$$\frac{\text{number of filled teeth}}{\text{number of obvious decayed, missing and filled teeth}} \times 100$$

Or simply

$$\frac{ft}{d_3mft} \times 100.$$

Scottish Index of Multiple Deprivation (SIMD)¹

- A tool for measuring the extent of area-based deprivation across Scotland.
- Uses several different aspects of deprivation, combining them into a single index.

Slope Index of Inequality (SII)

- The absolute difference overall in obvious decay experience (d₃mft) score when moving across the socio-economic status (SES) spectrum. It shows the total experience of individuals in the whole population and it is considered to be a consistent indicator with local populations.

Relative Index of Inequality (RII)

- The relative difference in obvious decay experience (d_3mft) when moving across the SES spectrum. This can be calculated by dividing the SII by the mean level of decay in the population.

Significant Caries Index (SiC)²

- Used to bring attention to the individuals with the highest caries values in each population under investigation. The Significant Caries Index is calculated as follows:
 - Individuals are sorted according to their d_3mft values.
 - The third of the population with the highest caries scores is selected.
 - The mean d_3mft for this subgroup is calculated. This value is the SiC Index.

Significant Caries Index 10 (SiC10)

- This is calculated in the same way as SiC but instead of taking the third of the population with the highest mean d_3mft scores, the top tenth is chosen and this tenth of the sample with the most teeth affected by obvious decay experience was calculated.

Scottish Caries Inequality Metric (SCIM10)³

- The area under the curve in relation to the distribution of the tenths of the population by obvious decay experience (d_3mft).

Specific Goals of the Detailed Inspection

- To determine current levels of obvious decay experience nationally and across the NHS Boards.
- To determine the influence of deprivation on the dental health of children in Scotland.

How many children had a Detailed Inspection?

Each NHS Board is required to identify the number of Local Authority (LA) schools needed to obtain a representative sample of a given size from their P1 population. The sample sizes used provide adequate numbers to allow meaningful statistical comparisons between NHS Boards. Whole classes are randomly selected to simplify the process for schools while ensuring that results are representative of the P1 population in Scotland. Due to the strong association between deprivation and caries, all of the main analyses are weighted by the proportions of the population that have been sampled in each of the five categories of SIMD.

Between October 2019 and March 2020, 13,208 children (22.5% of the estimated P1 population) from across Scotland were included in the Detailed Inspection (Table 1). Across the NHS Boards, the percentage of P1 children inspected ranged from 10.3% to 95.0%.

NHS Boards can choose to increase the sample size above minimum requirements to aid local planning needs, and some less populated Boards need to include large proportions to achieve statistically meaningful results.

The average age of the children examined (both girls and boys) was 5.5 years. The range of ages across Scotland was 4.4 – 7.0 years.

Table 1: Estimated Primary 1 population and the number and percentage who received a Detailed Inspection by NHS Board across Scotland in school year 2019-20¹⁻⁴

NHS Board	Estimated Primary 1 (P1) population	Number of P1 children receiving a Detailed Inspection	% of P1 population receiving a Detailed Inspection
Ayrshire & Arran	3,771	1,229	32.6
Borders	1,270	367	28.9
Dumfries & Galloway	1,404	429	30.6
Fife	4,093	420	10.3
Forth Valley	3,261	863	26.5
Grampian	6,373	1,909	30.0
Greater Glasgow & Clyde	12,997	3,304	25.4
Highland	3,165	608	19.2
Lanarkshire	7,424	1,002	13.5
Lothian	9,824	1,526	15.5
Orkney	220	209	95.0
Shetland	285	226	79.3
Tayside	4,372	880	20.1
Western Isles	263	236	89.7
Scotland	58,722	13,208	22.5

Source: PHS NDIP Database

1. Numbers are based on the postcode of the child and not the postcode of the school where the child was inspected.
2. Based on NHS Board boundaries as defined in 2019.
3. Primary 1 population is estimated using an aggregated population lookup file of children aged 5 (2018).
4. The estimated Primary 1 population of Orkney and Western Isles was increased for analytical purposes.

Main points

- Almost three quarters (73.5%) of P1 children had no obvious decay experience in their primary teeth in 2020. This is a large improvement since the National Dental Inspection Programme commenced in 2003 (45%).
- The average number of P1 children's teeth affected by obvious decay experience in 2020 is 1.04. This is large improvement since 2003 when the average number of teeth affected was 2.76.
- Inequalities remain, with only 58.1% of P1 children having no obvious decay experience in the most deprived areas compared with 86.9% in the least deprived areas.
- Note: no obvious decay experience means there are no obvious decayed, missing or filled teeth.

Results and Commentary

Detailed Inspection Results

What are the obvious decay experience results for the teeth of P1 children in NHS Boards in Scotland?

Table 2 provides details of the results for all 14 NHS Boards across Scotland. In this 2020 survey, 26.5% of P1 children in Scotland had obvious decay experience in their primary teeth. For those children, the mean number of affected teeth was 3.94. This ranged across the Boards from 2.94 in children in NHS Shetland to 4.11 in children in NHS Greater Glasgow & Clyde. The number of teeth affected in an individual child varied from one tooth to all 20 teeth.

Table 2: Obvious decay experience in primary teeth of P1 children for each NHS Board and Scotland in 2020¹⁻⁴

NHS Board	% with no obvious decay experience in primary teeth	Mean number of:				
		decayed, missing and filled teeth (d ₃ mft)	decayed teeth (d ₃ t)	missing teeth (mt)	filled teeth (ft)	decayed, missing and filled teeth for those with obvious decay experience (d ₃ mft>0)
Ayrshire & Arran	71.5	1.09	0.58	0.39	0.11	3.82
Borders	79.3	0.79	0.51	0.13	0.15	3.87
Dumfries & Galloway	81.7	0.70	0.59	0.00	0.11	3.80
Fife	73.7	0.99	0.55	0.29	0.15	3.77
Forth Valley	73.9	1.07	0.72	0.25	0.10	4.05
Grampian	75.8	0.98	0.64	0.18	0.16	3.95
Greater Glasgow & Clyde	68.7	1.28	0.84	0.23	0.21	4.11
Highland	77.7	0.74	0.49	0.13	0.13	3.39
Lanarkshire	72.0	1.14	0.71	0.29	0.13	4.04
Lothian	75.5	0.95	0.65	0.17	0.12	3.91
Orkney	84.6	0.50	0.34	0.05	0.11	3.23
Shetland	84.4	0.46	0.32	0.02	0.12	2.94
Tayside	73.4	1.05	0.63	0.27	0.15	3.98
Western Isles	73.4	0.96	0.66	0.02	0.27	3.60
Scotland	73.5	1.04	0.67	0.22	0.16	3.94

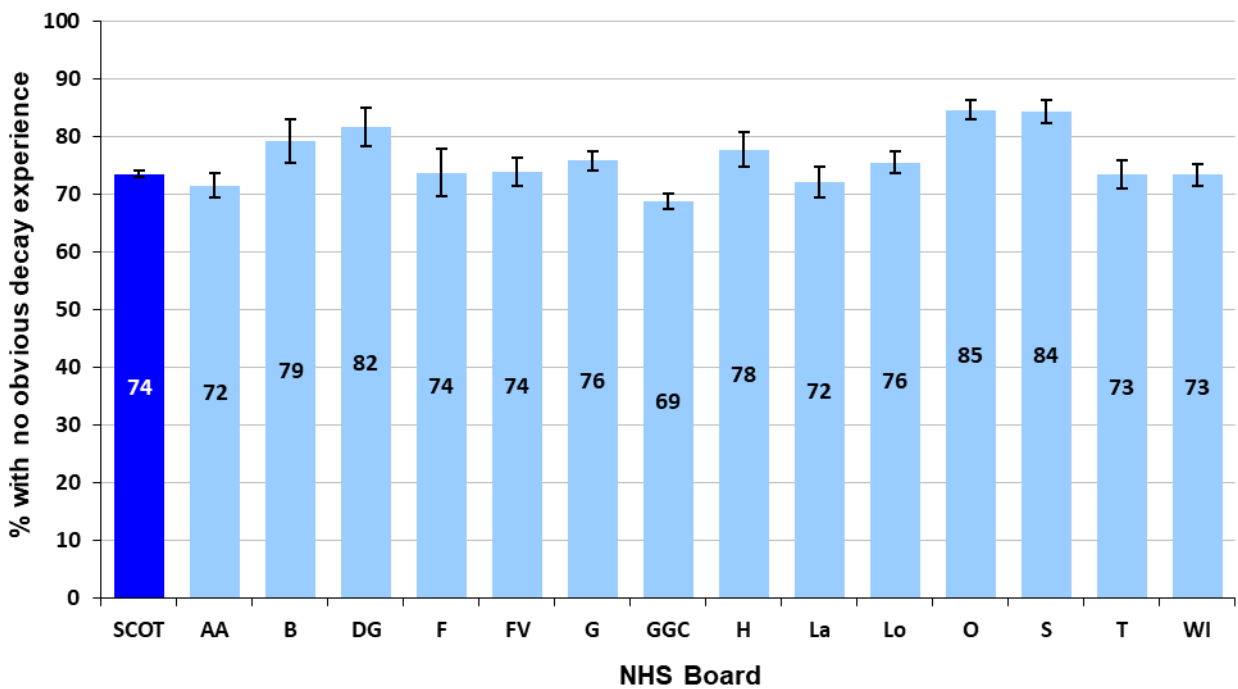
Source: PHS NDIP Database

1. Numbers are based on the postcode of the child's home address and not the postcode of the school where the child was inspected.
2. Based on NHS Board boundaries as defined in 2019.
3. There may be some rounding issues.
4. The definitions of d₃mft, dt, mt, ft and d₃mft>0 can be found in the Glossary.

What proportion of P1 children in Scotland had no obvious decay experience in 2020?

In Scotland, 73.5% of P1 children fell into this category, with a range from 68.7% in NHS Greater Glasgow & Clyde up to 84.6% in NHS Orkney (Figure 1).

Figure 1: Percentage of P1 children in Scotland with no obvious decay experience in 2020; by NHS Board¹⁻³



AA	B	DG	F	FV	G	GGC
AYRSHIRE & ARRAN	BORDERS	DUMFRIES & GALLOWAY	FIFE	FORTH VALLEY	GRAMPIAN	GREATER GLASGOW & CLYDE
H	LA	Lo	O	S	T	WI
HIGHLAND	LANARKSHIRE	LOTHIAN	ORKNEY	SHETLAND	TAYSIDE	WESTERN ISLES

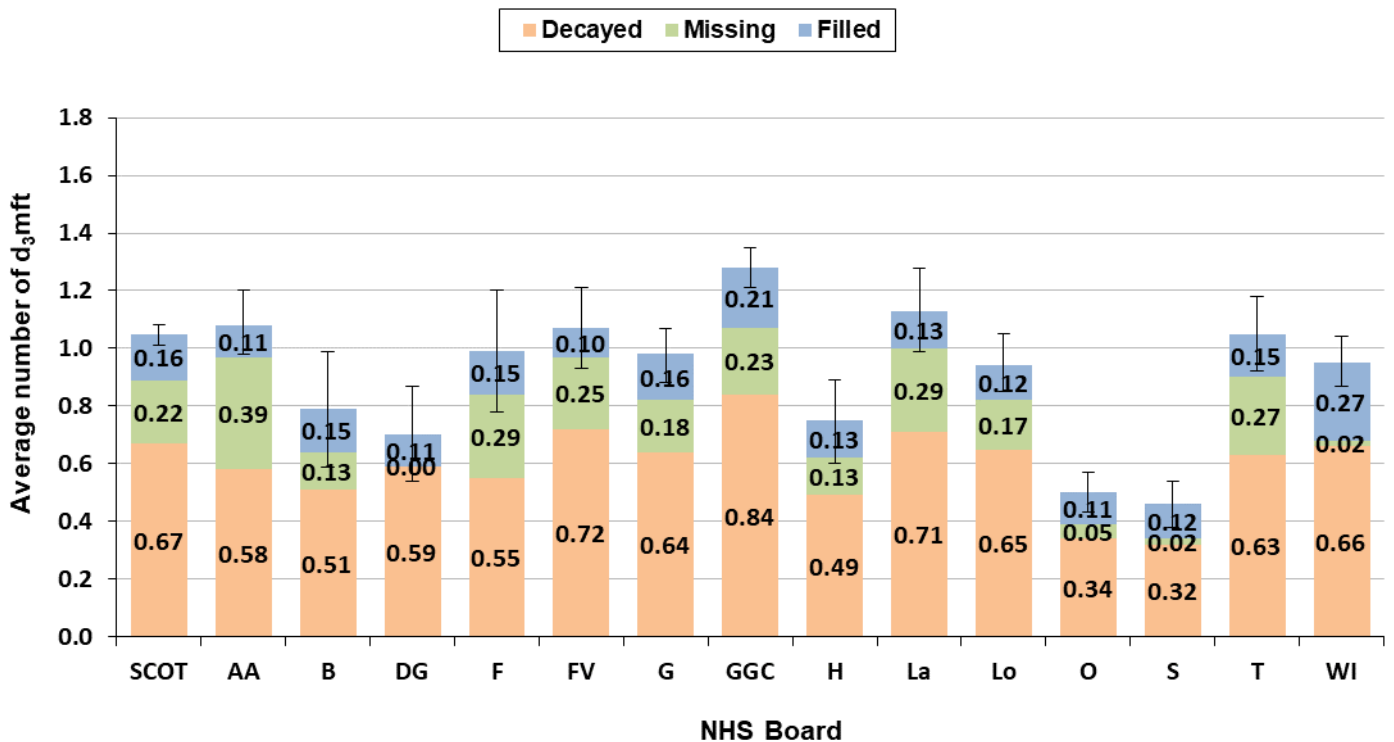
Source: PHS NDIP Database

1. No obvious decay experience is when $d_3mft=0$.
2. Numbers are based on the postcode of the child and not the postcode of the school where the child was inspected.
3. Based on NHS Board boundaries as defined in 2019.

What levels of obvious decay experience were seen in P1 children in 2020?

The average number of obvious decayed, missing and filled teeth (d₃mft) across all P1 children inspected in Scotland was 1.04. This ranged from 0.46 in NHS Shetland to 1.28 in NHS Greater Glasgow & Clyde (Figure 2).

Figure 2: Mean number of obvious decayed, missing and filled primary teeth (d₃mft) of P1 children in 2020 in Scotland; by NHS Board¹⁻³



AA	B	DG	F	FV	G	GGC
AYRSHIRE & ARRAN	BORDERS	DUMFRIES & GALLOWAY	FIFE	FORTH VALLEY	GRAMPIAN	GREATER GLASGOW & CLYDE
H	LA	Lo	O	S	T	WI
HIGHLAND	LANARKSHIRE	LOTHIAN	ORKNEY	SHETLAND	TAYSIDE	WESTERN ISLES

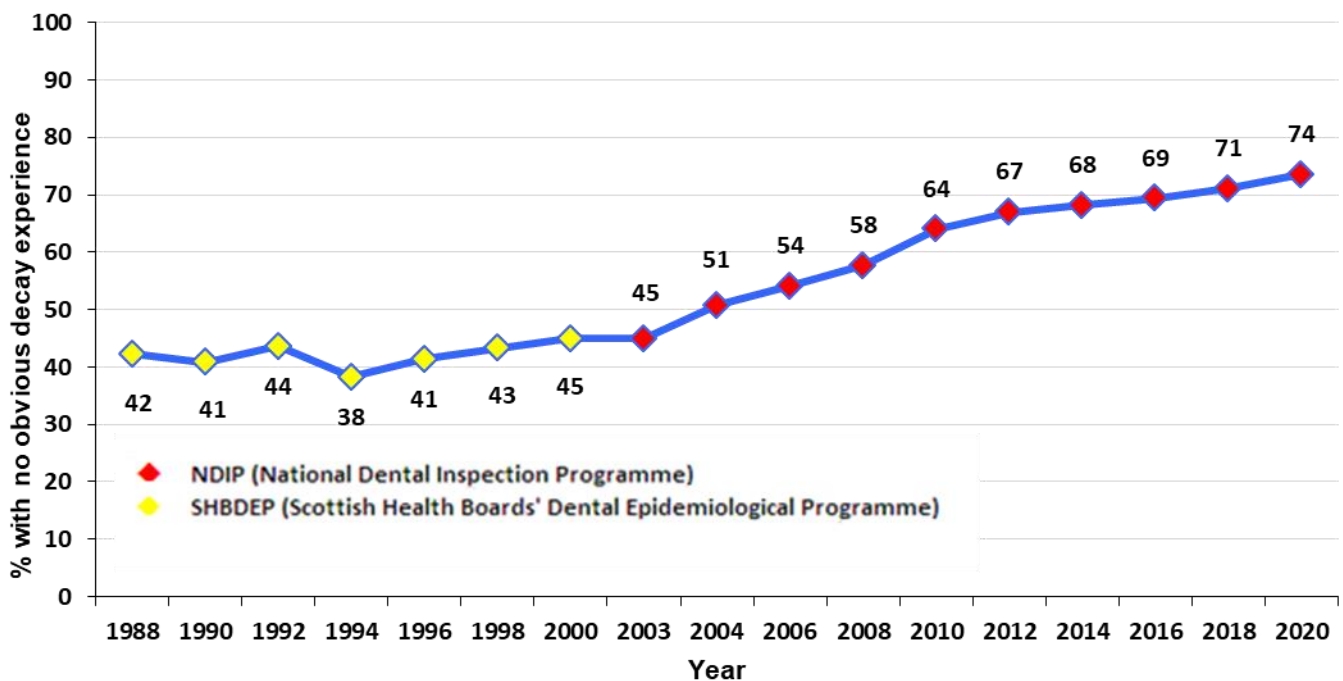
Source: PHS NDIP Database

1. Numbers are based on the postcode of the child and not the postcode of the school where the child was inspected.
2. Based on NHS Board boundaries as defined in 2019.

How has the dental health of P1 children in Scotland changed over time?

Figure 3 shows a sharp improvement from 2003 to 2012, rising from 45% to 67% of P1 children free from obvious decay. Since 2014 a more gradual improvement in the oral health of P1 children in Scotland has been evident, with 74% having no obvious decay experience in 2020.

Figure 3: Trends in the percentage of P1 children with no obvious decay experience in Scotland; 1988-2020¹

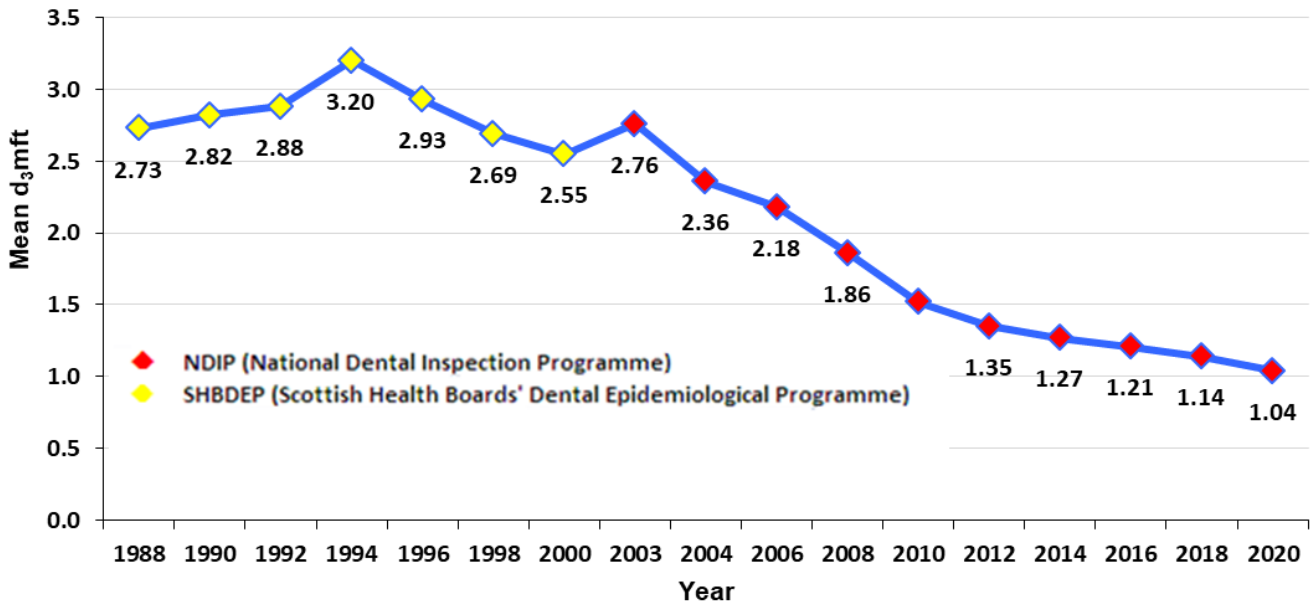


Sources: PHS NDIP Database, SHBDEP

1. The distance between each point does not represent an equal period of time as the results have not been published consistently over the years.

Similarly, there has been a continuing decline (improvement) in the mean number of decayed, missing and filled primary teeth for the P1 population as a whole (Figure 4). In the subgroup of children with obvious decay experience (Figure 5), the mean number of decayed, missing and filled teeth is 3.94 – which is a significant number of teeth affected by decay.

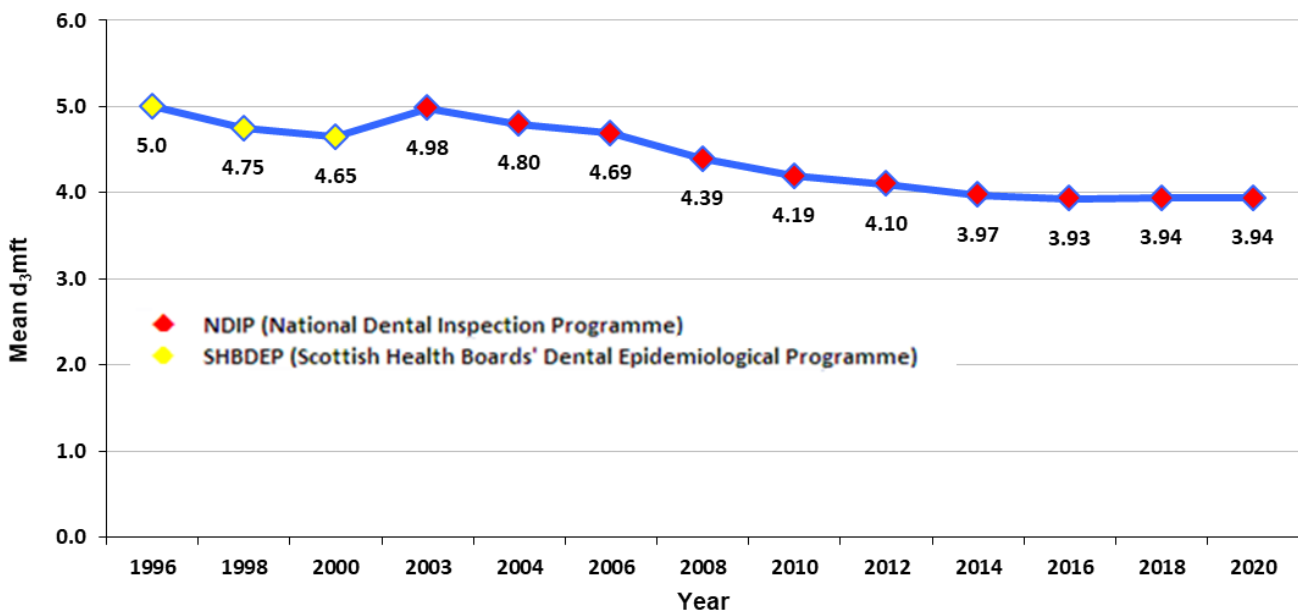
Figure 4: Mean number of decayed, missing and filled primary teeth (d₃mft) in the P1 population in Scotland; 1988-2020¹



Sources: PHS NDIP Database, SHBDEP

1. The distance between each point does not represent an equal period of time as the results have not been published consistently over the years.

Figure 5: Mean number of decayed, missing and filled primary teeth in P1 children with obvious decay experience (i.e. in those with d₃mft>0) in Scotland; 1996-2020^{1,2}



Sources: PHS NDIP Database, SHBDEP

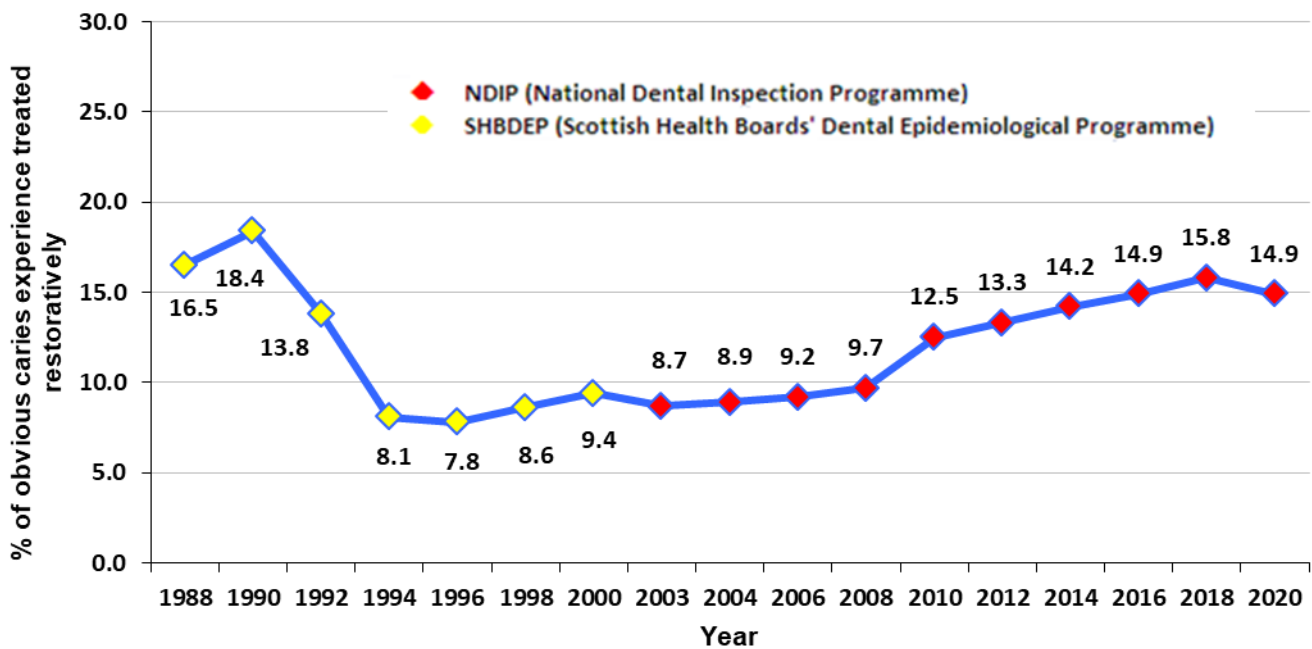
1. The distance between each point does not represent an equal period of time as the results have not been published consistently over the years.

2. This measure was not calculated prior to 1996.

What percentage of obvious decay experience in P1 children was treated with fillings?

Figure 6 shows the Care Index for the last 16 surveys. In the 2020 survey, 14.9% of teeth with obvious decay experience had been filled. This ranged from 9.8% to 28.2% among the 14 NHS Boards. These results can be found in [Appendix A4](#) (Table A4.1).

Figure 6: Care Index for P1 children in Scotland; 1988-2020^{1,2}



Sources: PHS NDIP Database, SHBDEP

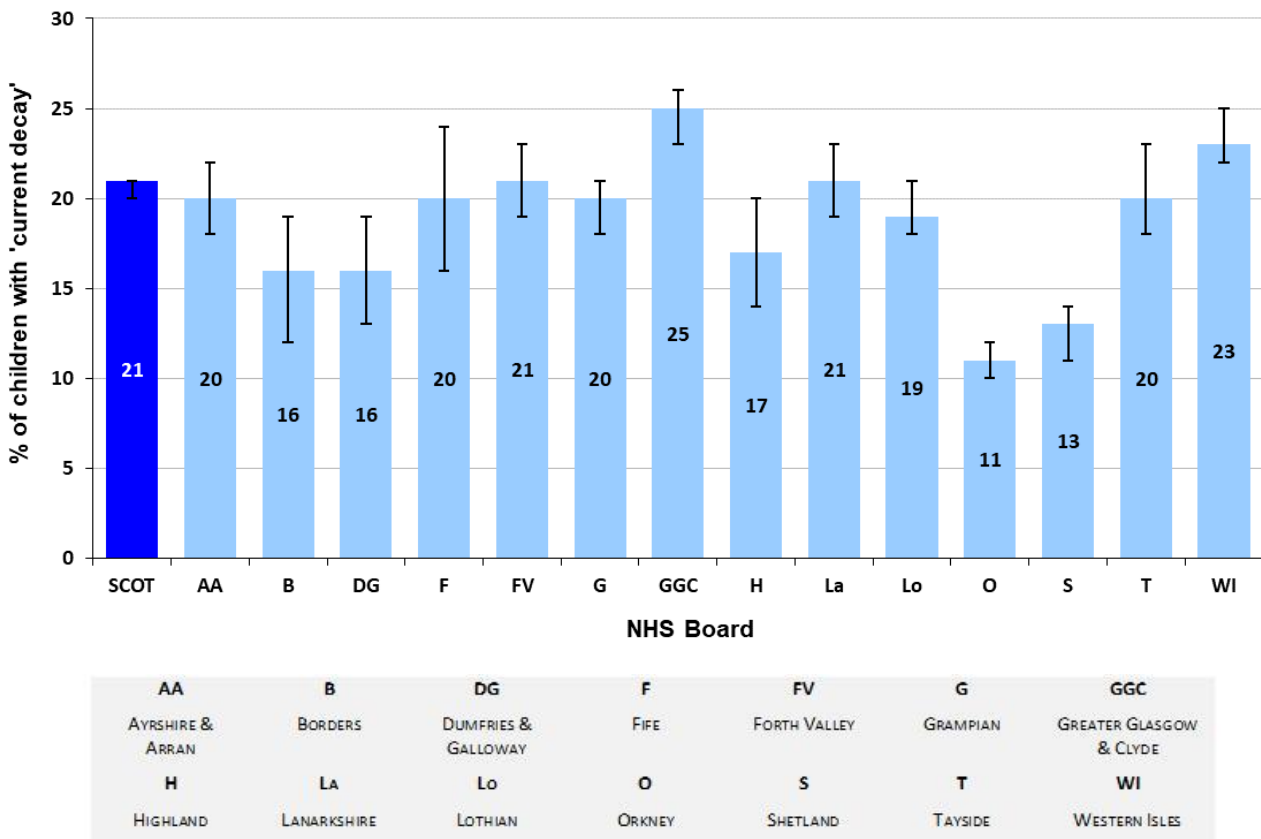
1. Care Index = $\frac{\text{number of filled teeth}}{\text{number of teeth with obvious decay experience}} \times 100$

2. The distance between each point does not represent an equal period of time as the results have not been published consistently over the years.

What percentage of P1 children had untreated decay?

In Scotland, 21% of P1 children had untreated decay ($d_{3t} > 0$), with a range from 11% in NHS Orkney to 25% in NHS Greater Glasgow & Clyde. Figure 7 shows the percentages and 95% confidence intervals of P1 children with untreated decay.

Figure 7: Percentage of P1 children in Scotland with untreated decay; by NHS Board in 2020¹⁻³



Source: PHS NDIP Database

1. Numbers are based on the postcode of the child and not the postcode of the school where the child was inspected.
2. Based on NHS Board boundaries as defined in 2019.
3. Current decay is when $d_{3t} > 0$ as per BASCD.

Measures of Oral Health Inequalities

Health inequalities can be measured and reported using simple or complex methods.

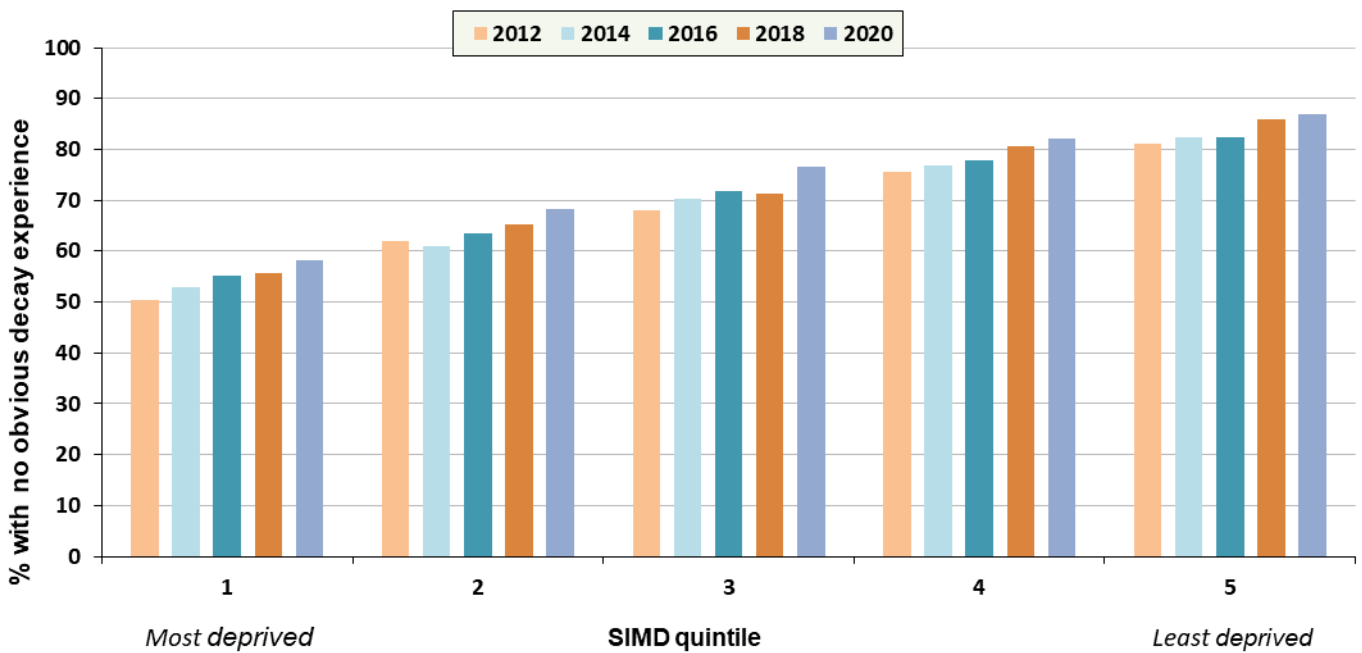
- The simple methods compare only two groups on a socio-economic scale, usually the most and least disadvantaged.
- The complex methods look across the whole social gradient, rather than solely at the most and least disadvantaged groups (e.g. Slope Index of Inequality (SII)).

Is there a continuing link between area-based socio-economic deprivation and poor dental health among P1 children in Scotland?

The main SIMD classification used here is based on quintiles of deprivation, where quintile SIMD 1 is the most deprived and quintile SIMD 5 is the least deprived.

The absolute inequality between SIMD 1 and SIMD 5 has decreased to 28.8%, a 1.3 percentage point decrease (i.e. improvement) since 2018, with 58.1% of P1 children in the most deprived area showing no obvious decay experience, compared with 86.9% of P1 children in the least deprived area (Figure 8 and Table 3).

Figure 8: Change in the percentage of P1 children in Scotland with no obvious decay experience; by SIMD quintile^{1,2}



Source: PHS NDIP Database

1. No obvious decay experience is when $d_3mft=0$.

2. Scotland level SIMD has been used, subject to availability as follows: 2010 & 2012 - SIMD 2009; 2014 & 2016 - SIMD 2012; 2018 - SIMD 2016, 2020 - SIMD 2020.

Table 3: Percentage of P1 children in Scotland with no obvious decay experience; by SIMD quintile^{1,2}

Year	SIMD quintile				
	1	2	3	4	5
2008	42.2	52.2	58.6	67.7	73.1
2010	46.5	58.5	64.5	73.7	78.7
2012	50.5	62.1	68.1	75.5	81.2
2014	52.9	61.1	70.4	76.9	82.5
2016	55.3	63.6	71.8	77.8	82.4
2018	55.8	65.2	71.2	80.7	85.9
2020	58.1	68.4	76.5	82.1	86.9

Similarly, there is an inequality gap in the average number of teeth with obvious decay experience (d₃mft). This was 0.40 in the least deprived quintile, SIMD 5, compared with 1.78 in the most deprived quintile, SIMD 1 (Table 4).

Table 4: Mean number of decayed, missing and filled primary teeth (d₃mft) in P1 children by SIMD quintile; 2010-2020¹

Year	SIMD 1 (most deprived)	SIMD 2	SIMD 3	SIMD 4	SIMD 5 (least deprived)
2010	2.61	1.76	1.39	0.99	0.64
2012	2.42	1.57	1.19	0.85	0.55
2014	2.14	1.61	1.13	0.76	0.56
2016	1.99	1.48	1.07	0.75	0.54
2018	1.92	1.45	1.08	0.64	0.45
2020	1.78	1.34	0.87	0.63	0.40

Source: PHS NDIP Database

1. Scotland level SIMD has been used, subject to availability as follows: 2010 & 2012 - SIMD 2009; 2014 & 2016 - SIMD 2012; 2018 - SIMD 2016; 2020 - SIMD 2020

As with the SIMD quintiles, there is a clear difference in dental health among P1 children in the different SIMD deciles (Table 5). The SIMD decile classification has 10 divisions of deprivation from decile 1 (most deprived) to decile 10 (least deprived).

The most deprived decile (SIMD 1) showed an increase of 2.1 percentage points, free from obvious decay experience in 2020. Whereas there was a decrease of 0.1 percentage points in the least deprived decile (SIMD 10), when compared to 2018.

The absolute inequality between the most and least deprived deciles has decreased to 30.7%, a 2.2 percentage point decrease since 2018.

[Figure 9](#) is available in the publication appended graphs (Change in the percentage of P1 children in Scotland with no obvious decay experience; by SIMD decile.)

Table 5: Percentage of P1 children in Scotland with no obvious decay experience; by SIMD decile^{1,2}

SIMD decile	Year						
	2008	2010	2012	2014	2016	2018	2020
1	40.1	45.0	48.7	49.7	53.3	55.3	57.4
2	44.7	48.3	52.6	56.8	57.3	56.2	59.1
3	50.2	56.4	59.7	58.0	61.9	61.5	66.5
4	54.6	60.7	64.3	64.0	65.2	69.2	70.4
5	54.4	63.0	67.1	67.8	70.1	71.2	75.9
6	63.3	66.0	68.9	73.2	73.5	71.1	77.0
7	65.8	72.2	75.7	76.7	75.9	79.4	80.4
8	69.4	74.9	75.3	77.1	79.8	81.8	83.9
9	70.9	76.1	78.5	82.3	81.0	83.1	86.0
10	75.1	81.5	84.5	82.8	84.0	88.2	88.1

Source: PHS NDIP Database

1. No obvious decay experience is when $d_3mft=0$.

2. Scotland level SIMD has been used, subject to availability as follows: 2008 - SIMD 2006; 2010 & 2012 - SIMD 2009; 2014 & 2016 - SIMD 2012; 2018 - SIMD 2016, 2020 – SIMD 2020.

Measures of Inequality of obvious decay experience across P1 children in Scotland

The value for the Slope Index of Inequality (SII) in 2020 was 1.76, which is an improvement since 2010 (Table 6). The three non-SES-based measures of dental health inequalities shown in Table 6 (SiC, SiC10, SCIM10) show overall improvements since 2010.

Table 6: Inequality measures in teeth of P1 children in Scotland; 2010-2020

Year	Slope Index of Inequality (SII)	Relative Index of Inequality (RII)	Significant Caries (SiC) Index	Significant Caries 10 (SiC10)	Scottish Caries Inequality Metric (SCIM10)
2010	2.42	1.58	4.50	8.52	11.07
2012	2.25	1.63	4.13	7.97	9.80
2014	1.99	1.61	3.72	7.64	8.57
2016	1.84	1.54	3.59	7.48	8.22
2018	1.93	1.71	3.38	7.32	7.61
2020	1.76	1.70	3.11	7.12	6.80

Source: PHS NDIP Database

Results from the detailed inspection for the Health and Social Care Partnerships are given in [Appendix A5](#).

A summary of the Basic Inspection results for all P1 and P7 children are given in [Appendix A6](#).

Results of the Basic Inspection for Additional Support Needs (ASN) P1 and P7 children, in terms of numbers inspected, are given in [Appendix A6](#) (Table A6.3).

Conclusions

- The oral health of P1 children in Scotland continues to show improvement over time. Considerably improvement has occurred since the early 2000s when the National Dental Inspection Programme started.
- Clear oral health inequalities remain, and this needs to be the focus of oral health improvement activity as the Childsmile Programme⁴ adapts to the COVID-19 situation and remobilises gradually across the NHS Boards.

Glossary

BASCD	British Association for the Study of Community Dentistry
Basic Inspection	Simple assessment of the mouth of the child using a light, mirror and ball-ended probe. The dental status of each child is assigned to one of three categories, depending on the level of dental health and treatment need observed. Refer to Appendix A6 for further information.
Care Index	Percentage of obvious decay experience that has been treated restoratively; expressed as number of filled teeth divided by number of obvious decayed, missing and filled teeth, multiplied by 100 [(ft/d ₃ mft)x100].
Childsmile	National oral health improvement programme for children in Scotland.
Deprivation decile	This SIMD classification is based on deciles of deprivation (and is often used for greater depth of geographical analysis): decile 1 is the most deprived and decile 10 is the least deprived.
Deprivation quintile	This SIMD classification is based on quintiles of deprivation: quintile 1 is the most deprived and quintile 5 is the least deprived.
Detailed Inspection	Comprehensive assessment of the mouth of the child using a light, mirror and ball-ended probe. The status of each surface of each tooth is recorded in accordance with international epidemiological conventions.
d ₃ mft	Obvious decay experience in primary teeth, as noted above; includes both missing teeth (extracted due to decay) and filled teeth.
d ₃ mft >0	(Any) amount of decay experience in primary teeth.
d ₃ t	Obvious decayed primary teeth.
ft	Filled primary teeth
LA	Local Authority
mt	Missing primary teeth
NHS Board abbreviations	AA: Ayrshire & Arran B: Borders DG: Dumfries & Galloway F: Fife FV: Forth Valley

G: Grampian

GGC: Greater Glasgow & Clyde

H: Highland

La: Lanarkshire

Lo: Lothian

O: Orkney

S: Shetland

T: Tayside

WI: Western Isles

SCOT: Scotland

Obvious decay	Disease process that clinically appears to have penetrated dentine (the layer below the outer white enamel of the teeth). This is described internationally as decay at the d_3 level and includes pulpal decay (i.e. decay into the deeper pulp).
SCIM10	Scottish Caries Inequality Metric. The area under the curve in relation to the distribution of the tenths of the population by obvious decay experience (d_3mft).
SES	Socio-economic status.
SiC	Significant Caries Index. This is used in order to bring attention to the individuals with the highest caries values in each population under investigation.
SiC10	Significant Caries 10. The mean d_3mft for the tenth of the sample with the most teeth affected by caries experience.
SII	Slope Index of Inequality. One of the recommended tests of complex inequality, as it reflects the entire SES distribution and weights for the population share in the respective groups. SII may be interpreted as the absolute difference overall in d_3mft score when moving across the SES spectrum and is indicative of the total experience of individuals in the whole population.
RII	Relative Index of Inequality. One of the recommended tests of complex inequality, as it reflects the entire SES distribution and weights for the population share in the respective groups. RII can be interpreted as the relative difference overall in d_3mft when moving across the SES spectrum. It can be calculated by dividing the SII by the mean level of decay in the population.

SIMD

Scottish Index of Multiple Deprivation Classification, identifying small area concentrations of multiple deprivation presented at data zone level and based on postcode unit information. Seven domains (income, employment, education, housing, health, crime and geographical access) are combined into an overall index to rank relative multiple deprivation in all geographical areas throughout Scotland.

Several different versions of the SIMD are used across the annual reports. In 2008, the 2006 SIMD was used; in 2010 & 2012, the 2009 SIMD was used; in 2014 and 2016, the 2012 SIMD, in 2018 the 2016 SIMD and in 2020, the 2020 SIMD. For all of these indices, the most deprived quintile (or decile) is shown by SIMD 1; and the least deprived quintile (or decile) shown by SIMD 5 or SIMD 10.

There were SIMD releases in 2004, 2006, 2009, 2012, 2016 and 2020. The most appropriate SIMD release has been used for each year of data as illustrated in the following table.

Data for Years	Index and release
2000, 2001, 2002, 2003	SIMD 2004
2004, 2005, 2006	SIMD 2006
2007, 2008, 2009	SIMD 2009
2010, 2011, 2012, 2013, 2014, 2015, 2016	SIMD 2012
2018	SIMD 2016
2020	SIMD 2020

Please note that following the release of SIMD 2009, PHS changed its ordering of quintiles to fit with the method used by the Scottish Government. The method is now:

- Quintile 1 = MOST deprived
- Quintile 5 = LEAST deprived

This applies to all data analysed by SIMD 2009, SIMD 2012, SIMD 2016 and SIMD 2020.

References

1. Scottish Index of Multiple Deprivation 2020, www.scotland.gov.uk/topics/statistics/SIMD.
2. Bratthall D. Introducing the Significant Caries Index together with a proposal for a new global oral health goal for 12-year-olds. *International Dental Journal*, 2000; 50: 378-384
<https://onlinelibrary.wiley.com/doi/10.1111/j.1875-595X.2000.tb00572.x>.
3. Blair YI, McMahon AD Macpherson LMD. Comparison and Relative Utility of Inequality Measurements: As Applied to Scotland's Child Dental Health *PLOSOne*, 2013,
plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0058593.
4. Childsmile – The national child oral health improvement programme for Scotland,
child-smile.org.uk.
5. Mitropoulos C, Pitts NB, Deery C. BASCD Trainers pack for caries prevalence studies, 1992/93. Dundee: University of Dundee, 1992.
6. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*, 1977; 33: 159-174,
<https://www.jstor.org/stable/2529310?seq=1>.

Acknowledgements

The National Dental Inspection Programme would not have been possible without the efforts of many people throughout Scotland who worked together to ensure its success.

The Programme is indebted to:

- The participating schools, the children and their parents/carers.
- The head teachers, staff and children in the Edinburgh, Glasgow, Stirling and Perth schools where the training and calibration exercises were conducted:
 - Castleview Primary School, Edinburgh (head teacher, Ms. Lindsey Watt)
 - St Rose of Lima Primary School, Glasgow (head teacher, Miss Kathleen Shiels)
 - Riverside Primary School, Stirling (head teacher, Mrs. Michelle MacPhee)
 - Inchview Primary School, Perth (head teacher, Mrs. Margaret Donaghy)
- Staff at NHS Forth Valley, NHS Greater Glasgow & Clyde, NHS Lothian and NHS Tayside, for organising the training and calibration courses and Professor Nicola Innes from the University of Dundee.
- Local Education Authorities of Scotland.
- NHS Boards in Scotland.
- Public Dental Service staff who conducted the inspections.
- PHS and the Community Oral Health Section, University of Glasgow Dental School, for the analysis of the results and publication of the report.
- Consultants in Dental Public Health and Chief Administrative Dental Officers Group.
- The Scottish Public Dental Service Leadership Group.

List of Tables, Figures and Diagrams

Table No.	Name	Time period	File & size
Table 1	Estimated Primary 1 population and the number and percentage who received a Detailed Inspection by NHS Board across Scotland.	School year 2019/20	Excel [11KB]
Table 2	Obvious decay experience in primary teeth of P1 children for each NHS Board and Scotland.	School year 2019/20	Excel [12KB]
Table 3	Percentage of P1 children in Scotland with no obvious decay experience; by SIMD quintile.	2008-2020	Excel [31KB]
Table 4	Mean number of decayed, missing and filled primary teeth (d₃mft) in P1 children by SIMD quintile, 2010-2020.	2010-2020	Excel [11KB]
Table 5	Percentage of P1 children in Scotland with no obvious decay experience; by SIMD decile.	2008-2020	Excel [31KB]
Table 6	Inequality measures in teeth of P1 children in Scotland in 2020.	2010-2020	Excel [11KB]
A3.1	Is NDIP comparable with other UK data?	N/A	Excel [11KB]
A4.1	Care Index for P1 children in Scotland; by NHS Board.	School year 2019/20	Excel [17KB]
A5.1-A5.8	Detailed results at Health & Social Care Partnership (HSCP) level.	School year 2019/20	Excel [37KB]
A6.1	Basic Inspection - Primary 1 children inspected by NHS Boards.	School year 2019/20	Excel [13KB]
A6.2	Basic Inspection - Primary 7 children inspected by NHS Boards.	School year 2019/20	Excel [13KB]
A6.3	Basic Inspection - Primary 1 & 7 ASN children inspected by NHS Boards.	School year 2019/20	Excel [10KB]

Figure No.	Name	Time period	File & size
Figure 1	Percentage of P1 children in Scotland with no obvious decay experience in 2020; by NHS Board.	School year 2019/20	Excel [33KB]

Figure 2	Mean number of obvious decayed, missing and filled primary teeth (d₃mft) of P1 children in Scotland and by NHS Board.	School year 2019/20	Excel [36KB]
Figure 3	Trends in the percentage of P1 children with no obvious decay experience in Scotland.	1988-2020	Excel [44KB]
Figure 4	Mean number of decayed, missing and filled primary teeth (d₃mft) in the P1 population in Scotland.	1988-2020	Excel [49KB]
Figure 5	Mean number of decayed, missing and filled primary teeth in those children with decay experience (d₃mft>0).	2006-2020	Excel [42KB]
Figure 6	Care Index for P1 children in Scotland.	1988-2020	Excel [49KB]
Figure 7	Percentage of P1 children in Scotland with untreated decay; by NHS Board.	School year 2019/20	Excel [24KB]
Figure 8	Change in the percentage of P1 children in Scotland with no obvious decay experience; by SIMD quintile.	2008-2020	Excel [30KB]
Figure 9	Change in the percentage of P1 children in Scotland with no obvious decay experience; by SIMD decile.	2010-2020	Excel [31KB]

Diagram No.	Name	Time period	File & size
1	The various stages of tooth decay.	n/a	Excel [277KB]

Contacts

Caroline Buchanan, Information Analyst

Public Health Scotland

Phone: 0131 275 6057

Email: phs.dental-info@phs.scot

Chris Watling, Senior Information Analyst

Public Health Scotland

Phone: 0131 275 6292

Email: phs.dental-info@phs.scot

Ahmed Mahmoud, Principal Information Analyst

Public Health Scotland

Phone: 0131 275 7555

Email: phs.dental-info@phs.scot

Lorna M D Macpherson, Professor of Dental Public Health

University of Glasgow Dental School

Phone: 0141 211 9751

Email: Lorna.Macpherson@glasgow.ac.uk

Further Information

Further information and data for this publication are available from the [publication page](#) on our website.

The next release of this publication will be 18 October 2022.

Rate this publication

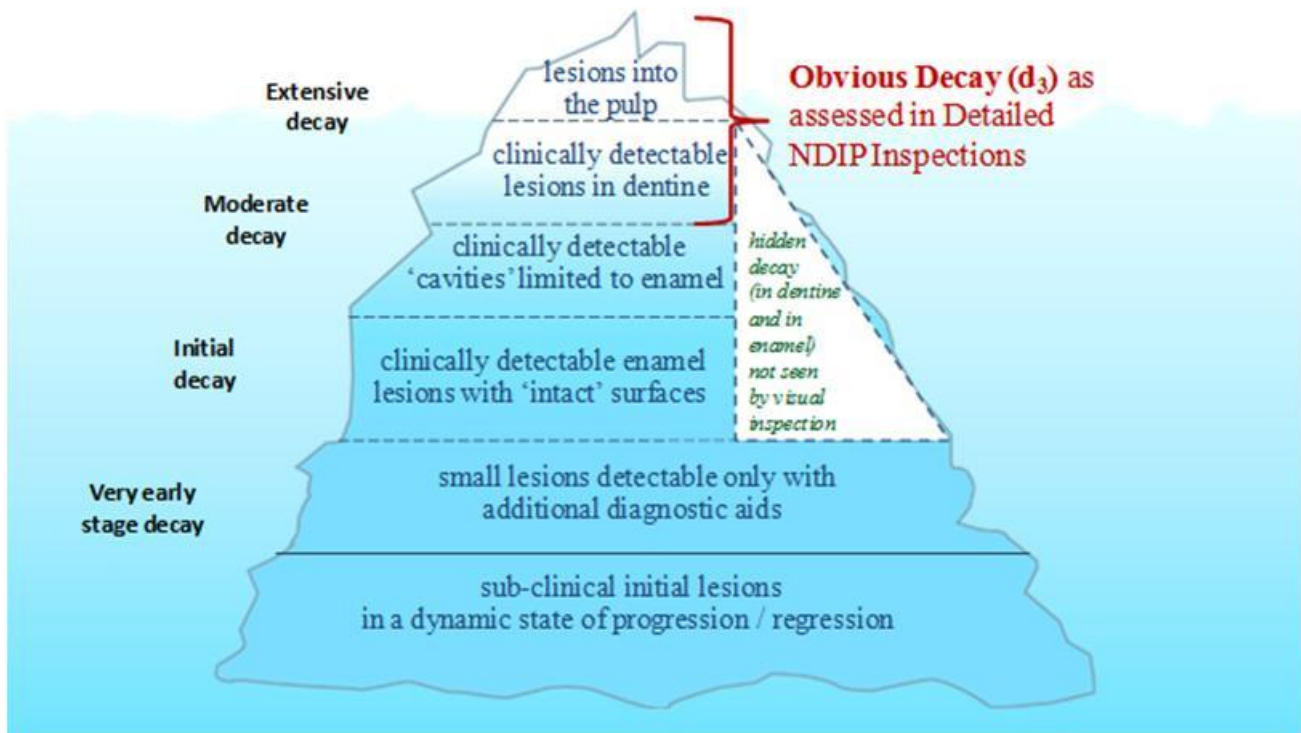
Let us know what you think about this publication via the link at the bottom of this [publication page](#) on the PHS website.

Appendices

A1 – What are the stages of tooth decay?

Dentists use specific professional terms to identify the different stages of tooth decay. However, simpler terms are provided in Diagram 1 below to help illustrate the various stages of tooth decay. The early stages of decay occur at a sub-clinical level and cannot be detected by the naked eye. As decay progresses it can be detected visually, first on the outer surface of the tooth (enamel layer) and then, with further progression, the lesion is clinically detectable in the dentine layer under the enamel. It is decay which has reached this stage that is recorded by the dental inspectors undertaking the NDIP inspections.

Diagram 1: The various stages of tooth decay



A2 – National training and calibration course

The training and calibration course for the Detailed NDIP survey of P1 children in Scotland was organised and held in NHS Greater Glasgow & Clyde, NHS Tayside, NHS Forth Valley and NHS Lothian in October and November 2019.

Mandatory training and calibration were run over four separate courses to accommodate the 53 inspection teams (dentist/dental therapist and dental nurse) who attended from all 14 NHS Boards.

Training involved sessions on inspection procedures, tooth/surface codes and diagnostic criteria based on the British Association for the Study of Community Dentistry (BASCD) Trainers' Pack⁵. Clinical training sessions were then undertaken on schoolchildren, and were followed by the calibration sessions on a further group of P1 children. Calibration sessions involved each inspection team examining the same children. The number of children on each course ranged from 11 to 12.

Analyses were undertaken by the Community Oral Health research group, University of Glasgow Dental School, supported by colleagues in NHS Fife and Public Health Scotland. Inter-examiner agreement was assessed using the percentage agreement and Kappa statistic assessed at the patient level on d₃mft and separately for d₃t, mt, and ft components.

Cohen Kappa estimates agreement, which is considered⁶:

- *poor* if $\text{Kappa} \leq 0.20$
- *fair* if $0.21 \leq \text{Kappa} \leq 0.40$
- *moderate* if $0.41 \leq \text{Kappa} \leq 0.60$
- *substantial* if $0.61 \leq \text{Kappa} \leq 0.80$
- *good* if $\text{Kappa} > 0.80$

Of the 53 inspection teams trained, only one team did not calibrate. The 52 inspection teams calibrated with percentage agreements ranging from 91% to 100%, and the Kappa estimates for d₃mft scores at the patient level did not drop below the level of substantial agreement.

A3 – Links/comparisons to other sources of dental health information

The sources below offer information related to dental services and dental health. Most of these sources are external to PHS and we cannot guarantee the content or accessibility of these external web sites.

[Childsmile](#) - improving the oral health of children in Scotland.

Dental data in Scotland

PHS publishes

- Information relating to the [general dental service workforce](#) in Scotland.
- An annual [NHS Adult & Child Fees and Treatments](#) report providing information on GDS fees paid to dentists and on treatments provided to children and adults.
- A biannual [NHS Registration and Participation](#) report providing information on NHS General Dental Services (GDS) registrations and participation (contact with GDS).

The 2017 [Scottish Health Survey](#) covers dental health topics such as dental health problems and trends in prevalence of natural teeth.

The 2018 [Scottish Adult Oral Health Survey](#) provides analyses of oral health factors and demographic measures for adults.

Table A3.1: Is NDIP Comparable with other UK dental data?

Country	Comparable to NDIP?	Available	Links
England	No – consent affects participation rates of children with and without decay	Yes	Public Health England produced a report on the prevalence and severity of dental decay of five-year old children in 2017.
Northern Ireland	-	No	-
Wales	No – consent affects participation rates of children with and without decay	Yes	Cardiff University and the Welsh Oral Health Information Unit produce annual reports .

As stated, the results from these reports are not directly comparable with the NDIP report.

The Office for National Statistics' (ONS) has carried out a [Dental Health Survey of Children and Young People](#) every ten years since 1973. The study provides information to underpin dental health care for children in England, Wales and Northern Ireland. The information collected helps the NHS to understand how the dental health of each generation of children is changing. It is used in the planning of dental care services for the future.

Please note that if you want to compare deprivation levels in Scotland and England, the Scottish Index of Multiple Deprivation (SIMD) is not directly comparable with the Index of Multiple Deprivation used in England.

A4 – Results of Care Index at NHS Board level; Detailed Inspection

Table A4.1 displays the Care Index from the 2020 survey for all 14 NHS Boards. This ranged from 9.8% in NHS Forth Valley to 28.2% in NHS Western Isles.

Table A4.1: Care Index for P1 children in Scotland; by NHS Board¹⁻³

NHS Board	% of teeth with obvious caries experience treated restoratively
Ayrshire & Arran	10.5
Borders	16.6
Dumfries & Galloway	16.5
Fife	15.7
Forth Valley	9.8
Grampian	16.6
Greater Glasgow & Clyde	16.1
Highland	17.3
Lanarkshire	12.2
Lothian	13.3
Orkney	23.0
Shetland	26.4
Tayside	14.3
Western Isles	28.2
Scotland	14.9

Source: PHS NDIP Database

1. Care Index = $\frac{\text{number of filled teeth}}{\text{number of teeth with obvious decay experience}} \times 100$.

2. Numbers are based on the postcode of the child and not the postcode of the school where the child was inspected.

3. Based on NHS Board boundaries as defined in 2019.

A5 – Results for Health and Social Care Partnerships (HSCP); Detailed Inspection for Primary 1 children in 2020

Tables A5.1 - A5.8 show the 2020 Detailed NDIP results for Health and Social Care Partnerships for the eight NHS Boards which included the minimum target sample of 250 children in each HSCP. Clackmannanshire & Stirling and East Lothian's figures have been suppressed as they did not meet the minimum target sample.

The following variables are given:

- Mean age
- Weighted % no obvious decay experience
- Weighted mean d_{3mft}
- Weighted mean d_{3t}
- Weighted mean mt
- Weighted mean ft
- Mean d_{3mft} for children with $d_{3mft} > 0$

Results for the HSCPs are weighted by population deprivation categories specific to each NHS Board. This is different to the deprivation categorisation used in the main report which is SIMD 2020 based on the whole of Scotland. As such the deprivation results for the HSCPs are not directly comparable with those in the main report.

The HSCPs are weighted by NHS Board deprivation categories so as to allow fair comparison within the NHS Board area. This is only applicable to NHS Boards with more than one HSCP, and therefore NHS Boards with only one HSCP are not reported, namely NHS Borders, NHS Dumfries & Galloway, NHS Fife, NHS Orkney, NHS Shetland and NHS Western Isles.

Table A5.1: NHS Ayrshire & Arran: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
East Ayrshire	446	5.4	0.3	4.8	6.2
North Ayrshire	449	5.4	0.3	4.7	6.3
South Ayrshire	334	5.5	0.3	4.8	6.3

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
East Ayrshire	69.9	66.4	73.3
North Ayrshire	69.2	65.7	72.7
South Ayrshire	77.6	73.6	81.6

HSCP name	Weighted mean d _{3mft}		
	Mean d _{3mft}	Lower 95% CL	Upper 95% CL
East Ayrshire	1.2	1.0	1.3
North Ayrshire	1.1	0.9	1.3
South Ayrshire	1.0	0.7	1.2

HSCP name	Weighted mean d _{3t}		
	Mean d _{3t}	Lower 95% CL	Upper 95% CL
East Ayrshire	0.7	0.6	0.8
North Ayrshire	0.5	0.4	0.5
South Ayrshire	0.5	0.4	0.7

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
East Ayrshire	0.3	0.2	0.5
North Ayrshire	0.5	0.3	0.7
South Ayrshire	0.3	0.2	0.5

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
East Ayrshire	0.1	0.1	0.1
North Ayrshire	0.1	0.1	0.2
South Ayrshire	0.1	0.1	0.2

HSCP name	No. of children with obvious decay experience	Mean d ₃ mft for children with obvious decay experience (d ₃ mft >0)		
		Mean	Lower 95% CL	Upper 95% CL
East Ayrshire	136	3.8	3.3	4.3
North Ayrshire	138	3.5	3.0	4.1
South Ayrshire	85	4.4	3.6	5.1

Table A5.2: NHS Forth Valley: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
Clackmannanshire and Stirling	227	*	*	*	*
Falkirk	636	5.5	0.3	4.9	6.4

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
Clackmannanshire and Stirling	*	*	*
Falkirk	75.4	72.6	78.1

HSCP name	Weighted mean d ₃ mft		
	Mean d ₃ mft	Lower 95% CL	Upper 95% CL
Clackmannanshire and Stirling	*	*	*
Falkirk	1.0	0.8	1.1

HSCP name	Weighted mean d ₃ t		
	Mean dt	Lower 95% CL	Upper 95% CL
Clackmannanshire and Stirling	*	*	*
Falkirk	0.6	0.5	0.7

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
Clackmannanshire and Stirling	*	*	*
Falkirk	0.3	0.2	0.4

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
Clackmannanshire and Stirling	*	*	*
Falkirk	0.1	0.1	0.1

HSCP name	No. of children with obvious decay experience	Mean d ₃ mft for children with obvious decay experience (d ₃ mft >0)		
		Mean	Lower 95% CL	Upper 95% CL
Clackmannanshire and Stirling	*	*	*	*
Falkirk	148	3.8	3.3	4.3

Table A5.3: NHS Grampian: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
Aberdeen City	618	5.5	0.3	4.8	6.8
Aberdeenshire	776	5.6	0.3	4.9	6.4
Moray	515	5.5	0.3	4.7	6.3

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
Aberdeen City	70.6	67.5	73.8
Aberdeenshire	76.8	74.1	79.5
Moray	81.1	78.7	83.5

HSCP name	Weighted mean d _{3mft}		
	Mean d _{3mft}	Lower 95% CL	Upper 95% CL
Aberdeen City	1.4	1.2	1.6
Aberdeenshire	0.9	0.7	1.0
Moray	0.6	0.5	0.7

HSCP name	Weighted mean d _{3t}		
	Mean dt	Lower 95% CL	Upper 95% CL
Aberdeen City	0.9	0.8	1.1
Aberdeenshire	0.5	0.4	0.6
Moray	0.4	0.3	0.5

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
Aberdeen City	0.3	0.2	0.4
Aberdeenshire	0.2	0.1	0.3
Moray	0.1	0.0	0.1

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
Aberdeen City	0.2	0.1	0.3
Aberdeenshire	0.1	0.1	0.2
Moray	0.1	0.1	0.1

HSCP name	No. of children with obvious decay experience	Mean d ₃ mft for children with obvious decay experience (d ₃ mft >0)		
		Mean	Lower 95% CL	Upper 95% CL
Aberdeen City	168	4.8	4.2	5.3
Aberdeenshire	168	3.6	3.2	4.0
Moray	97	3.1	2.6	3.7

Table A5.4: NHS Greater Glasgow & Clyde: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
East Dunbartonshire	296	5.6	0.3	5.0	6.5
East Renfrewshire	479	5.5	0.3	4.9	6.3
Glasgow City	1203	5.5	0.3	4.6	6.9
Inverclyde	449	5.5	0.3	4.8	6.4
Renfrewshire	440	5.5	0.3	4.9	6.7
West Dunbartonshire	437	5.5	0.3	4.4	6.2

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
East Dunbartonshire	86.0	82.3	89.8
East Renfrewshire	80.5	77.8	83.2
Glasgow City	60.1	57.6	62.7
Inverclyde	72.5	70.0	75.1
Renfrewshire	70.5	66.8	74.1
West Dunbartonshire	67.2	63.6	70.7

HSCP name	Weighted mean d _{3mft}		
	Mean d _{3mft}	Lower 95% CL	Upper 95% CL
East Dunbartonshire	0.5	0.4	0.7
East Renfrewshire	0.7	0.6	0.8
Glasgow City	1.8	1.7	2.0
Inverclyde	1.0	0.9	1.2
Renfrewshire	1.0	0.8	1.1
West Dunbartonshire	1.1	0.9	1.3

HSCP name	Weighted mean d _{3t}		
	Mean dt	Lower 95% CL	Upper 95% CL
East Dunbartonshire	0.3	0.2	0.4
East Renfrewshire	0.6	0.5	0.7
Glasgow City	1.2	1.1	1.4
Inverclyde	0.5	0.5	0.6
Renfrewshire	0.6	0.4	0.7
West Dunbartonshire	0.8	0.7	0.9

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
East Dunbartonshire	0.1	0.0	0.2
East Renfrewshire	0.0	0.0	0.1
Glasgow City	0.3	0.3	0.4
Inverclyde	0.2	0.1	0.3
Renfrewshire	0.2	0.1	0.3
West Dunbartonshire	0.2	0.1	0.3

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
East Dunbartonshire	0.1	0.0	0.1
East Renfrewshire	0.1	0.1	0.1
Glasgow City	0.3	0.2	0.3
Inverclyde	0.3	0.2	0.3
Renfrewshire	0.2	0.2	0.3
West Dunbartonshire	0.1	0.1	0.1

HSCP name	No. of children with obvious decay experience	Mean d_3mft for children with obvious decay experience ($d_3mft > 0$)		
		Mean	Lower 95% CL	Upper 95% CL
East Dunbartonshire	42	3.8	3.0	4.7
East Renfrewshire	103	4.0	3.4	4.6
Glasgow City	502	4.7	4.4	5.0
Inverclyde	130	3.8	3.2	4.3
Renfrewshire	131	3.3	2.9	3.6
West Dunbartonshire	143	3.4	2.9	3.8

Table A5.5: NHS Highland: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
Argyll & Bute	301	5.5	0.3	4.9	6.3
Highland	307	5.6	0.3	4.5	6.3

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
Argyll & Bute	82.7	79.6	85.9
Highland	72.5	67.7	77.3

HSCP name	Weighted mean d _{3mft}		
	Mean d _{3mft}	Lower 95% CL	Upper 95% CL
Argyll & Bute	0.5	0.4	0.6
Highland	1.0	0.8	1.3

HSCP name	Weighted mean d _{3t}		
	Mean dt	Lower 95% CL	Upper 95% CL
Argyll & Bute	0.3	0.2	0.4
Highland	0.7	0.5	0.9

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
Argyll & Bute	0.0	0.0	0.1
Highland	0.2	0.1	0.4

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
Argyll & Bute	0.1	0.1	0.2
Highland	0.1	0.1	0.2

HSCP name	No. of children with obvious decay experience	Mean d_{3mft} for children with obvious decay experience ($d_{3mft} > 0$)		
		Mean	Lower 95% CL	Upper 95% CL
Argyll & Bute	60	2.8	2.2	3.4
Highland	90	3.8	3.0	4.5

Table A5.6: NHS Lanarkshire: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
North Lanarkshire	497	5.5	0.3	4.8	6.1
South Lanarkshire	505	5.5	0.3	4.8	6.5

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
North Lanarkshire	72.4	68.7	76.1
South Lanarkshire	72.0	68.2	75.8

HSCP name	Weighted mean d ₃ mft		
	Mean d ₃ mft	Lower 95% CL	Upper 95% CL
North Lanarkshire	1.1	0.9	1.3
South Lanarkshire	1.2	1.0	1.4

HSCP name	Weighted mean d ₃ t		
	Mean dt	Lower 95% CL	Upper 95% CL
North Lanarkshire	0.7	0.5	0.8
South Lanarkshire	0.8	0.6	0.9

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
North Lanarkshire	0.3	0.2	0.4
South Lanarkshire	0.3	0.1	0.4

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
North Lanarkshire	0.1	0.1	0.1
South Lanarkshire	0.2	0.1	0.2

HSCP name	No. of children with obvious decay experience	Mean d_3mft for children with obvious decay experience ($d_3mft > 0$)		
		Mean	Lower 95% CL	Upper 95% CL
North Lanarkshire	128	4.0	3.5	4.5
South Lanarkshire	127	4.1	3.5	4.6

Table A5.7: NHS Lothian: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
East Lothian	213	*	*	*	*
Edinburgh	699	5.5	0.3	4.8	6.3
Midlothian	320	5.5	0.3	4.8	6.3
West Lothian	294	5.5	0.3	4.8	6.2

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
East Lothian	*	*	*
Edinburgh	77.2	74.3	80.0
Midlothian	74.3	70.3	78.4
West Lothian	71.3	66.5	76.0

HSCP name	Weighted mean d _{3mft}		
	Mean d _{3mft}	Lower 95% CL	Upper 95% CL
East Lothian	*	*	*
Edinburgh	0.9	0.8	1.1
Midlothian	0.8	0.7	1.0
West Lothian	1.3	1.0	1.6

HSCP name	Weighted mean d _{3t}		
	Mean dt	Lower 95% CL	Upper 95% CL
East Lothian	*	*	*
Edinburgh	0.6	0.5	0.7
Midlothian	0.6	0.4	0.7
West Lothian	0.9	0.7	1.2

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
East Lothian	*	*	*
Edinburgh	0.2	0.1	0.3
Midlothian	0.1	0.1	0.2
West Lothian	0.3	0.1	0.4

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
East Lothian	*	*	*
Edinburgh	0.1	0.1	0.2
Midlothian	0.1	0.1	0.2
West Lothian	0.1	0.1	0.1

HSCP name	No. of children with obvious decay experience	Mean d ₃ mft for children with obvious decay experience (d ₃ mft >0)		
		Mean	Lower 95% CL	Upper 95% CL
East Lothian	*	*	*	*
Edinburgh	156	4.0	3.5	4.6
Midlothian	82	3.3	2.7	3.8
West Lothian	83	4.4	3.7	5.1

Table A5.8: NHS Tayside: Health and Social Care Partnership results

HSCP name	No. of children	Mean age			
		Mean	Std dev	Minimum	Maximum
Angus	290	5.6	0.3	4.7	6.4
Dundee	293	5.6	0.3	4.9	6.5
Perth & Kinross	297	5.6	0.3	4.8	6.5

HSCP name	Weighted % no obvious decay experience		
	%	Lower 95% CL	Upper 95% CL
Angus	77.9	73.8	82.0
Dundee	65.9	60.8	71.0
Perth & Kinross	79.4	75.4	83.3

HSCP name	Weighted mean d _{3mft}		
	Mean d _{3mft}	Lower 95% CL	Upper 95% CL
Angus	0.7	0.6	0.9
Dundee	1.4	1.1	1.7
Perth & Kinross	0.8	0.6	1.0

HSCP name	Weighted mean d _{3t}		
	Mean dt	Lower 95% CL	Upper 95% CL
Angus	0.5	0.3	0.6
Dundee	0.9	0.7	1.1
Perth & Kinross	0.4	0.3	0.6

HSCP name	Weighted mean mt		
	Mean mt	Lower 95% CL	Upper 95% CL
Angus	0.1	0.1	0.2
Dundee	0.3	0.1	0.4
Perth & Kinross	0.3	0.2	0.4

HSCP name	Weighted mean ft		
	Mean ft	Lower 95% CL	Upper 95% CL
Angus	0.1	0.1	0.2
Dundee	0.2	0.1	0.3
Perth & Kinross	0.1	0.0	0.1

HSCP name	No. of children with obvious decay experience	Mean d ₃ mft for children with obvious decay experience (d ₃ mft >0)		
		Mean	Lower 95% CL	Upper 95% CL
Angus	68	3.4	2.8	4.1
Dundee	100	4.2	3.6	4.8
Perth & Kinross	75	4.2	3.4	5.0

The results are weighted by population SIMD 2020 categories, specific to each NHS Board. This is different to the SIMD 2020 used in the main report which used SIMD 2020 categories for Scotland as a whole. As such they are not directly comparable.

A6 – Basic Inspection results

What does the NDIP Basic Inspection consist of?

The *Basic Inspection* involves a simple assessment of the mouth of the child using a light, mirror and ball-ended probe. The dental status of each child is then categorised into three groups, depending on the level of dental health and treatment need observed, and parents/carers are advised of this by letter. The information in the letter explains the state of dental health observed in the mouth of the child at the time of the inspection.

The letter types are as follows:

- Letter A - should arrange to see the dentist as soon as possible, if the child has not had a recent appointment, on account of severe decay or abscess.
- Letter B - should arrange to see the dentist in the near future, if the child has not had a recent appointment, on account of evidence of current or previous decay.
- Letter C - no obvious decay experience but should continue to see the family dentist on a regular basis.

The results of the *Basic Inspection* are then anonymised and aggregated. They are used to monitor the impact of local and national NHS oral health improvement programmes and assist in the development of local dental services.

Primary 1 Basic Data Scotland; 2020

During 2019/20, all P1 classes of Scottish Local Authority schools were invited to participate in the Programme. The Basic Inspections were conducted in primary schools in all NHS Board areas, and overall 37,257 P1 children were inspected (Table A6.1). This represents 63% of P1 children who attended mainstream Local Authority schools. Parents/carers were advised by letter of the oral health of their child.

Table A6.1: Primary 1 children inspected by NHS Boards during school year 2019/20; Basic Inspection¹⁻⁷

NHS Board	Estimated total no. of P1 children in Local Authority Schools	Total no. of P1 children inspected	Percentage (%) of P1 children inspected	Percentage (%) of A letters issued	Percentage (%) of B letters issued	Percentage (%) of C letters issued
Ayrshire & Arran	3,771	2,453	65.05	7.09	22.67	70.24
Borders	1,270	817	64.33	9.67	13.34	76.99
Dumfries & Galloway	1,404	1,251	89.10	6.39	18.94	74.66
Fife	4,093	2,426	59.27	3.42	23.41	73.17
Forth Valley	3,261	1,909	58.54	4.87	18.75	76.38
Grampian	6,373	4,089	64.16	8.27	16.09	75.64
Greater Glasgow & Clyde	12,997	8,425	64.82	9.08	25.00	65.92
Highland	3,165	1,377	43.51	6.03	16.78	77.20
Lanarkshire	7,424	5,741	77.33	6.32	21.04	72.64
Lothian	9,824	4,828	49.14	5.14	18.91	75.95
Orkney	215	187	86.98	2.67	12.30	85.03
Shetland	285	226	79.30	1.77	15.93	82.30
Tayside	4,372	3,304	75.57	4.81	22.40	72.79
Western Isles	258	224	86.82	1.34	24.11	74.55
Scotland	58,712	37,257	63.46	6.65	20.93	72.42

Source: PHS NDIP Database

1. Numbers are based on the postcode of the child's home address and not the postcode of the school where the child was inspected.
2. Based on NHS Board boundaries as defined in 2019.
3. The population of Primary 1 pupils is based on the NRS mid-year population estimate for children aged 5 (2018).
4. Children with a missing postcode, had an exam but did not receive a letter, or did not have an exam, were removed before analysis. This accumulated to 4,175 children. Repeat examinations were also omitted.
5. Letter A - should arrange to see the dentist as soon as possible, if the child has not had a recent appointment, on account of severe decay or abscess.
6. Letter B - should arrange to see the dentist in the near future, if the child has not had a recent appointment, on account of evidence of current or previous decay.
7. Letter C - no obvious decay experience but should continue to see the family dentist on a regular basis.

Primary 7 Basic Data Scotland; 2020

During 2019/20, all P7 classes of Scottish Local Authority schools were invited to participate in the Programme. The Basic Inspections were conducted in primary schools in all NHS Board areas, and overall 38,224 P7 children were inspected (Table A6.2). This represents 66% of P7 children who attended mainstream Local Authority schools. Parents/carers were advised by letter of the oral health of their child.

Table A6.2: Primary 7 children inspected by NHS Boards during school year 2019/20; Basic Inspection¹⁻⁷

NHS Board	2018 mid-year population estimate of P7 children in Local Authority schools	Total no. of P7 children inspected	Percentage (%) of P7 children inspected	Percentage (%) of A letters issued	Percentage (%) of B letters issued	Percentage (%) of C letters issued
Ayrshire & Arran	4,048	2,610	64.48	2.18	29.39	68.43
Borders	1,226	899	73.33	0.78	16.46	82.76
Dumfries & Galloway	1,620	1,356	83.70	3.02	21.17	75.81
Fife	4,063	2,606	64.14	1.11	23.98	74.90
Forth Valley	3,515	2,004	57.01	1.80	24.30	73.90
Grampian	6,234	4,135	66.33	1.45	21.06	77.48
Greater Glasgow & Clyde	11,986	8,463	70.61	2.68	27.15	70.16
Highland	3,435	1,478	43.03	0.95	15.49	83.56
Lanarkshire	7,653	5,864	76.62	2.11	22.95	74.93
Lothian	9,330	4,636	49.69	1.06	19.41	79.53
Orkney	255	222	87.06	0.00	11.71	88.29
Shetland	283	243	85.87	1.23	10.70	88.07
Tayside	4,278	3,445	80.53	1.13	24.06	74.80
Western Isles	314	263	83.76	0.00	17.87	82.13
Scotland	58,240	38,224	65.63	1.79	23.25	74.96

Source: PHS NDIP Database

1. Numbers are based on the postcode of the child and not the postcode of the school where the child was inspected.
2. Based on NHS Board boundaries as defined in 2019.
3. The population of Primary 7 pupils is based on the NRS mid-year population estimate for children aged 11 (2018).
4. Children with a missing postcode, had an exam but did not receive a letter, or did not have an exam, were removed before analysis. This accumulated to 4,533 children. Repeat examinations were also omitted.
5. Letter A - should arrange to see the dentist as soon as possible, if the child has not had a recent appointment, on account of severe decay or abscess.
6. Letter B - should arrange to see the dentist in the near future, if the child has not had a recent appointment, on account of evidence of current or previous decay.
7. Letter C - no obvious decay experience but should continue to see the family dentist on a regular basis.

Number of children with Additional Support Needs in Primary 1 and Primary 7 (attending Special Schools or Units/Classes) who received a Basic Inspection in Scotland; 2020

Table A6.3: Numbers of children with Additional Support Needs (ASN)¹ in Primary 1 and Primary 7 receiving a Basic Inspection (2020), and numbers of Special Schools or Unit/Classes they attended

NHS Board	Total no. of P1 children inspected	No. of Special Schools or Unit/Classes for children with ASN (P1)	Total no. of P7 children inspected	No. of Special Schools or Unit/Classes for children with ASN (P7)
Scotland	66	15	65	13

Source: PHS NDIP Database

1. ASN – Additional Support Needs children, identified by NHS Boards as attending Special Schools or Units.

Children with Additional Support Needs (ASN) who attended Special Schools or Units/Classes and were within the expected age range for P1 and P7 children are included within the NDIP Basic Programme. The results of these inspections are included within the overall P1 and P7 Basic Inspection results above (Tables A6.1 and A6.2). Table A6.3 shows figures for the Additional Support Needs (ASN) children seen within the NDIP Basic Programme regardless of age. Please note that these numbers are lower than in previous years as a result of the interruption of the inspection programme due to COVID-19.

Note: Many children identified as having ASN within the pupil census are in mainstream schools / mainstream classes and are thus already included.

A data linkage research project is underway to identify whether children identified as having ASN (in both mainstream schools and classes as well as in Special Schools and Unit/Classes) have different dental health needs than the general child population.

A7 – Authors

This report, which is published by PHS on behalf of the Scottish Dental Epidemiology Coordinating Committee, has been prepared by the NDIP Report Writing Group, whose membership is as follows:

L M D Macpherson (Glasgow Dental School, University of Glasgow and NHS Greater Glasgow and Clyde)

D I Conway (Glasgow Dental School, University of Glasgow and Public Health Scotland)

A D McMahon (Glasgow Dental School, University of Glasgow and Public Health Scotland)

C Watling (Public Health Scotland)

A. Mahmoud (Public Health Scotland)

E J O’Keefe (NHS Fife)

A Trainer (Public Health Scotland)

J Iloya (NHS Grampian)

N McGoldrick (NHS Fife)

A8 – Publication Metadata (including revisions details)

Metadata Indicator	Description
Publication title	National Dental Inspection Programme (NDIP) 2020.
Description	This report presents the results of the programme of children's dental inspections carried out in Scotland during school year 2019/20.
Theme	Dental care.
Topic	Children's dental health.
Format	PDF.
Data source(s)	2008/09, 2010/11, 2012/13, 2014/15, 2016/17, 2017/18, 2018/19 and 2019/20 National Dental Inspection Programme databases.
Date that data are acquired	Various dates during school year 2019/20.
Release date	20 October 2020
Frequency	Annual.
Timeframe of data	School year ending June 2020; four months in arrears.
Continuity of data	Reports annually.
Revisions statement	These data are not subject to planned major revisions. However, PHS aims to continually improve the interpretation of the data and therefore analysis methods are regularly reviewed and may be updated in future.
Revisions to this publication	None.
Concepts and definitions	See Glossary, Appendix and References.
Relevance and key uses of the statistics	The principal aims of the National Dental Inspection Programme (NDIP) are to inform parents/carers of the oral health status of their children and, through appropriately anonymised, aggregated data, advise the Scottish Government, NHS Boards and other organisations concerned with children's health of oral disease prevalence at national and local levels.
Accuracy	These data are regarded as highly accurate as per the Kappa estimates agreement in Appendix A2 .
Completeness	These data are regarded as suitably complete. The Detailed inspection was carried out on 13,208 children, over 22.5% of the estimated P1 children from Local Authority Schools across Scotland. The Basic inspection saw 63% of P1's and 66% of P7's inspected.
Comparability	Each annual NDIP report has two levels: a Basic Inspection (intended for all P1 and P7 children) and a Detailed Inspection (where a representative sample of either the P1 or the P7 age group is inspected in alternate years).
Accessibility	It is the policy of PHS to make its web sites and products accessible according to published guidelines .

Coherence and clarity	Tables and charts are accessible via the PHS website .
Value type and unit of measurement	Various dental/epidemiological and demographic units of measurement.
Disclosure	The PHS Statistical Disclosure Protocol is followed.
Official Statistics designation	Official Statistics.
UK Statistics Authority Assessment	Not assessed at this time.
Last published	23 October 2018 (2019 report covered Primary 7 children).
Next published	25 October 2022 (2021 report will cover Primary 7 children).
Date of first publication	31 st December 2003 (revised 3 rd March 2008).
Help email	phs.dental-info@phs.scot
Date form completed	23/06/2020

A9 – Early Access details

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", PHS is obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access and, separately, those receiving extended Pre-Release Access. Early Access endeavours to strengthen quality assurance across the content of the report by way of a report writing group; members listed in table below:

Early Access Job Title	Early Access Contact Name	Early Access Email Address	Early Access Reason
Professor of Dental Public Health	L M D Macpherson	Lorna.Macpherson@glasgow.ac.uk	Members of Publication Writing Group
Consultant in Dental Public Health	E J O'Keefe	Emmaoakeefe@nhs.net	
Consultant in Dental Public Health	J Iloya	jiloya@nhs.net	
Specialty Registrar in Dental Public Health	N McGoldrick	niallmcgoldrick@nhs.net	

Standard Pre-Release Access:

Scottish Government Health Department

NHS Board Chief Executives

NHS Board Communication leads

Early Access for Management Information

These statistics will also have been made available to those who needed access to 'management information', ie as part of the delivery of health and care.

A10 – PHS and Official Statistics

About Public Health Scotland (PHS)

PHS is a knowledge-based and intelligence driven organisation with a critical reliance on data and information to enable it to be an independent voice for the public's health, leading collaboratively and effectively across the Scottish public health system, accountable at local and national levels, and providing leadership and focus for achieving better health and wellbeing outcomes for the population. Our statistics comply with the [Code of Practice for Statistics](#) in terms of trustworthiness, high quality and public value. This also means that we keep data secure at all stages, through collection, processing, analysis and output production, and adhere to the ['five safes'](#).

Official Statistics

Public Health Scotland (PHS) formally known as Information Services Division (ISD) is the principal and authoritative source of statistics on health and care services in Scotland. PHS is designated by legislation as a producer of 'Official Statistics'. Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Official Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within PHS.

PHS's statistical publications are currently classified as one of the following:

- National Statistics (i.e. assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (i.e. legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (i.e. still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

Further information on PHS's statistics, including compliance with the Code of Practice for Official Statistics, and on the UK Statistics Authority, is available on the [PHS website](#).