Oral health in children:

Hospital based dental extractions in Gloucestershire

The following report provides a snapshot of tooth extraction data in children aged 0-19 years in Gloucestershire.

Using hospital episode statistics (HES) data, this report uses the same methodology as the Office for Health Improvement and Disparities (OHID): https://www.gov.uk/government/publications/analysis-of-tooth-extractions-in-hospital-methods-and-data-quality/methods-for-calculating-numbers-and-rates-of-hospital-tooth-extractions

As this data only looks at hospital activity and does not include data from Community Dental Services, we can only use data to indicate trends and not as a reflection of need.

Data, Analysis and Insights Team

GCC

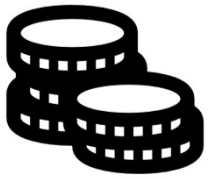
National Context

Extraction of teeth due to decay is the most common reason for hospital admissions for children aged 6 to 10.

- In 2022/23, there was a 17% increase in the number of episodes of caries-related tooth extractions in hospital for 0- to 19-year-olds (a reflection of a continued recovery of hospital services post Covid). In 2023/24, this decreased by 2%.
- The greater availability of data provides local authorities with the opportunity to explore trends in caries-related tooth extraction data.
- The caries-related tooth extraction rate for CYP living in the most deprived communities exceeds x3.5 that of those living in the most affluent communities.

In 2023/24, there were 30,587 episodes of caries-related extractions

This is equivalent to over 10 school buses* full of children each week



The cost of caries-related tooth extractions cost the NHS £45.7m in 2023/24

~60,000 school days are missed each year due to hospital tooth extractions

Despite this, dental decay is entirely preventable.

Notes and caveats

- The data source for these slides is Hospital Episodes Statistics (HES). For information about this data, please visit: https://digital.nhs.uk/services/hospital-episode-statistics.
- The methodology used to extract the data from HES follows the same method used in the OHID Hospital-based tooth extractions in 0- to 19-year-olds analysis.
- The data is only an indicator of trends and only looks at hospital activity. It does not include data from community dental services where tooth extractions can also take place.
- As the data is for Gloucestershire hospital activity - it includes children who live in other counties who have received treatment in Gloucestershire. Conversely, the data does not include Gloucestershire resident children who have travelled over the Gloucestershire border for treatment.
- Inaccuracies may exist in the coding of diagnosis and procedure fields which can distort the data.
- There may be multiple episodes recorded for one patient, and this may be due to the anaesthetic used on the patient; some methods require more than one appointment to complete their treatment. There is no way to identify the anaesthetic type or to identify which patient has been included multiple times. Therefore, the data contains a higher number of finished consultant episodes (FCEs). For Gloucestershire, there are 16 cases where a second episode is recorded and 2 cases where a third episode is recorded.

Definitions:

Recorded dental extraction episodes due to:

- **All reasons**: Hospital admissions for teeth extractions due to any reason (including. teeth impaction, positioning and abnormalities) in children aged 0-19.
- **Decay**: Hospital admissions for teeth extractions where dental caries is the primary reason, in children aged 0-19.

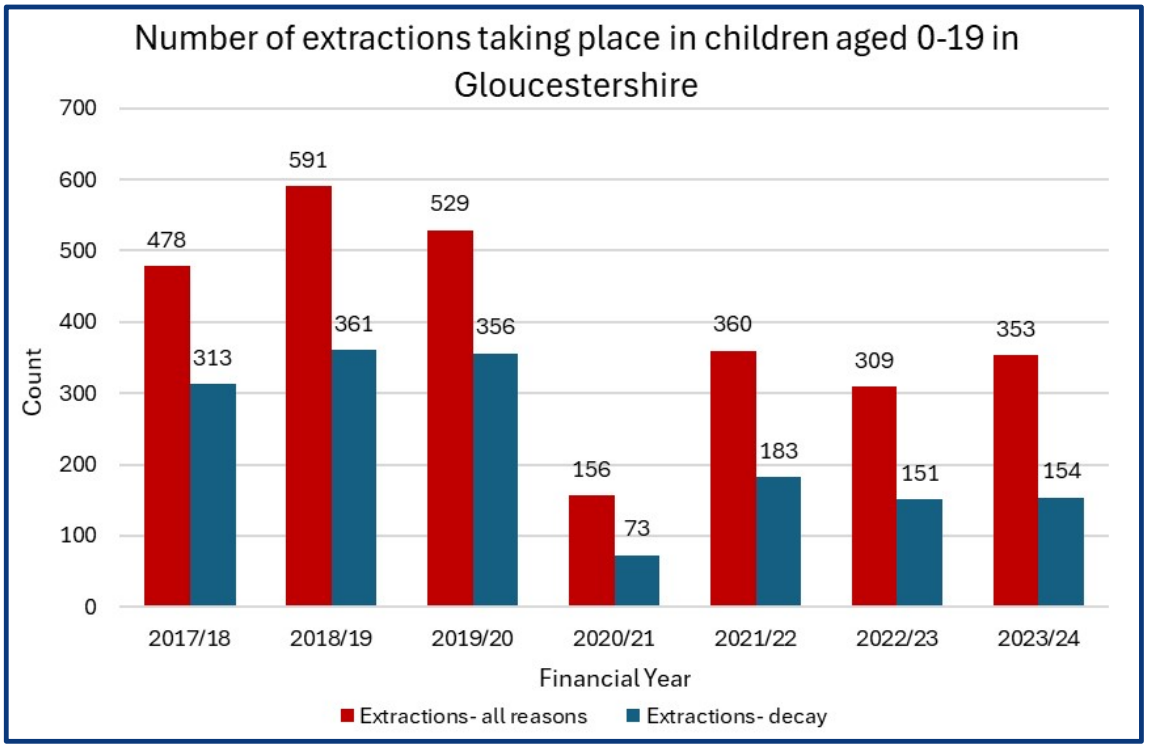
ICD-10- The International Classification of Diseases 10th Revision is a catalogue used to code diseases and medical conditions.

The table on the right gives the ICD-10 diagnosis codes for all the reasons for extractions where more than 5 episodes have occurred, **highlighted in bold are the decay reasons.**

ICD-10 Category	ICD-10 Subcategory
Disorders of tooth development and eruption	K001 Supernumerary teeth
	K003 Mottled teeth
	K004 Disturbances in tooth formation
	K006 Disturbances in tooth eruption
	K008 Other specified disorders of tooth development
	K009 Disorder of tooth development, unspecified
Embedded and impacted teeth	K010 Embedded teeth
	K011 Impacted teeth
Dental caries	K020 Caries limited to enamel
	K021 Caries of dentine
	K025 Caries with pulp exposure
	K028 Other dental caries
	K029 Dental caries, unspecified
Other diseases of hard tissues of teeth	K035 Ankylosis of teeth
Diseases of pulp and periapical tissues	**K040 Pulpitis**
	K046 Periapical abscess with sinus
	K047 Periapical abscess without sinus
Gingivitis and periodontal diseases	K053 Chronic periodontitis
Dentofacial anomalies [including malocclusion]	K071 Anomalies of jaw-cranial base relationship
	K073 Anomalies of tooth position
	K074 Malocclusion, unspecified
Other disorders of teeth and supporting structures	K083 Retained dental root
	K088 Other specified disorders of teeth and supporting structures
	K089 Disorder of teeth and supporting structures, unspecified
Fracture of skull and facial bones	S0250 Fracture of tooth
Dislocation, sprain and strain of joint injuries and ligaments of head	S032 Dislocation of tooth

Number of extractions taking place in children aged 19 and under

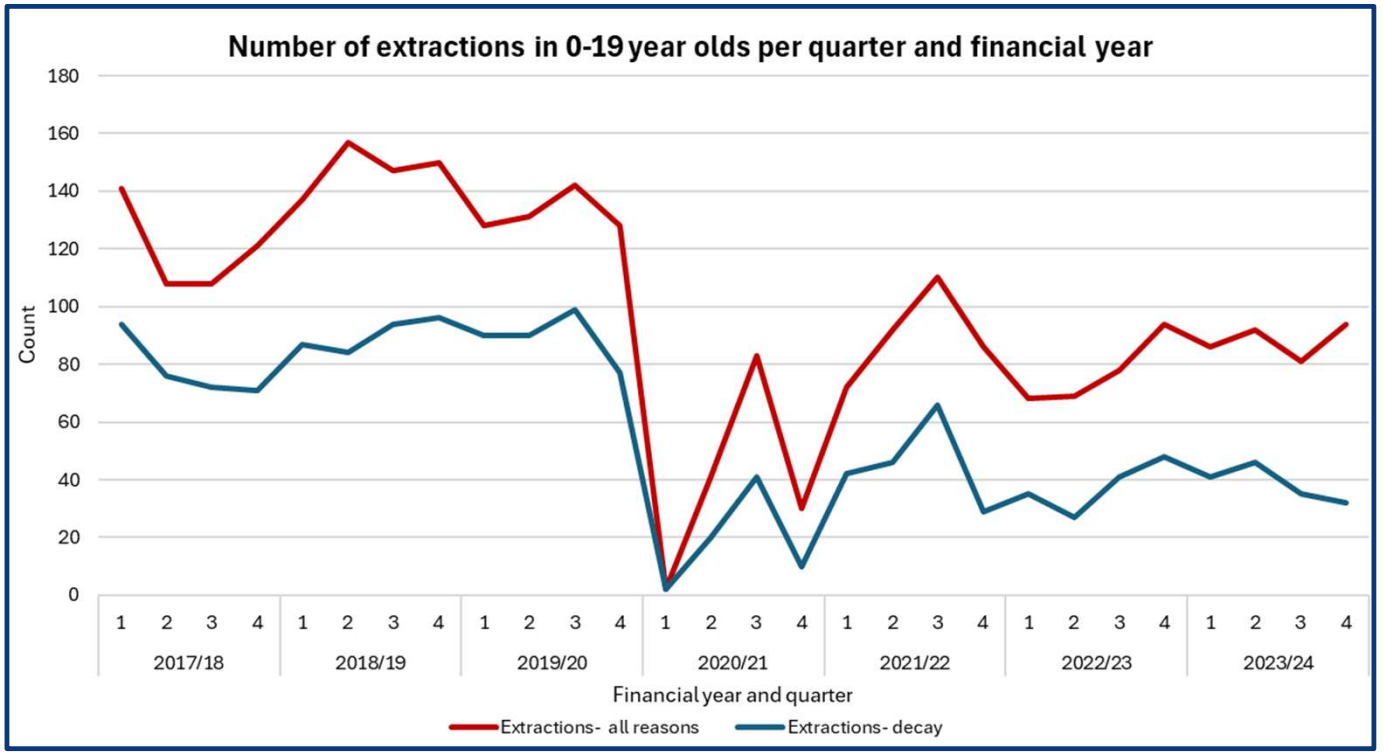
- There was **2,776** all reason extraction episodes occurring between April 2017 and March 2024.
- There was **1,591** extraction episodes for decay between April 2017 and March 2024.
- The percentage of all extraction episodes where decay was the primary reason ranged from **47%** to **67%.**



Data source: Hospital Episode Statistics

Number of extractions by financial year and quarter

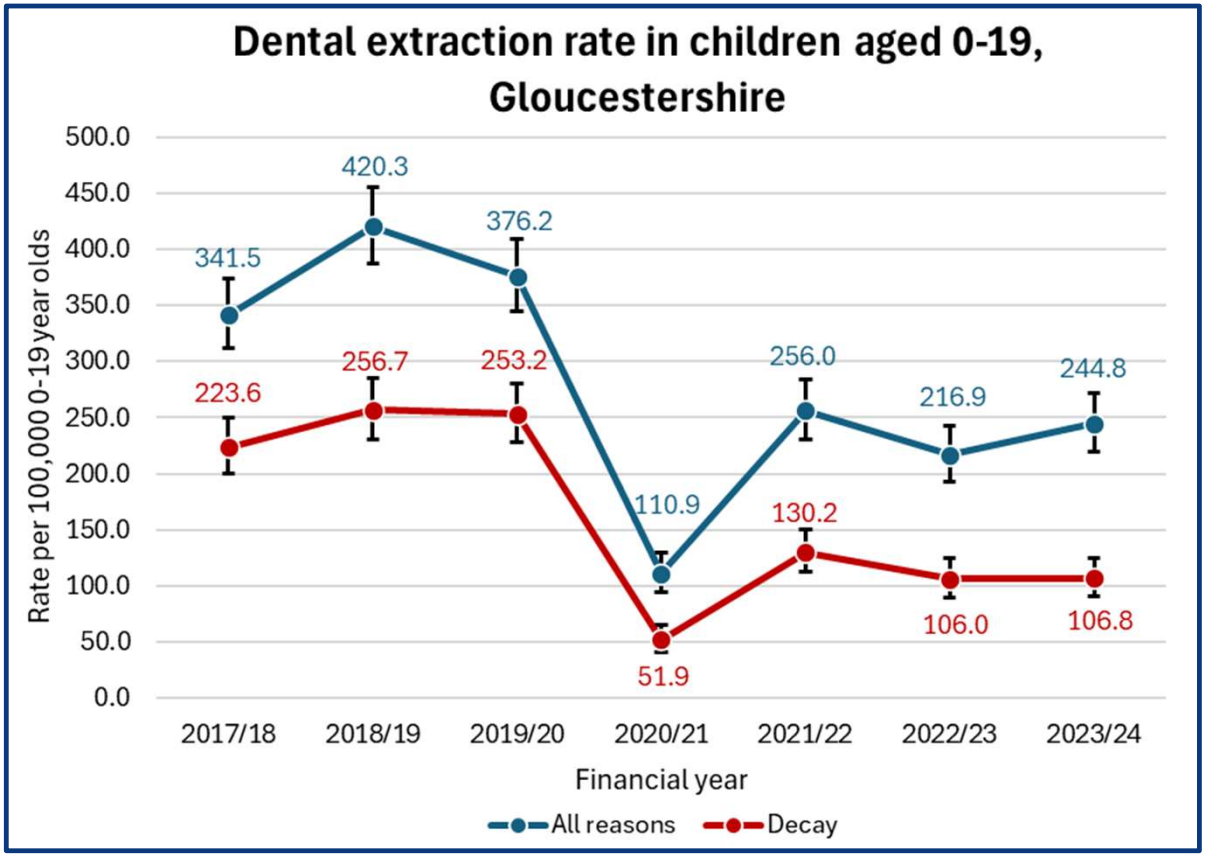
- The **impact of COVID** is clearly marked by the **steep decline** in extractions.
- The number of tooth extraction procedures are still lower than pre-pandemic levels.



Data source: Hospital Episode Statistics

Tooth extraction rate *Unstandardised rates

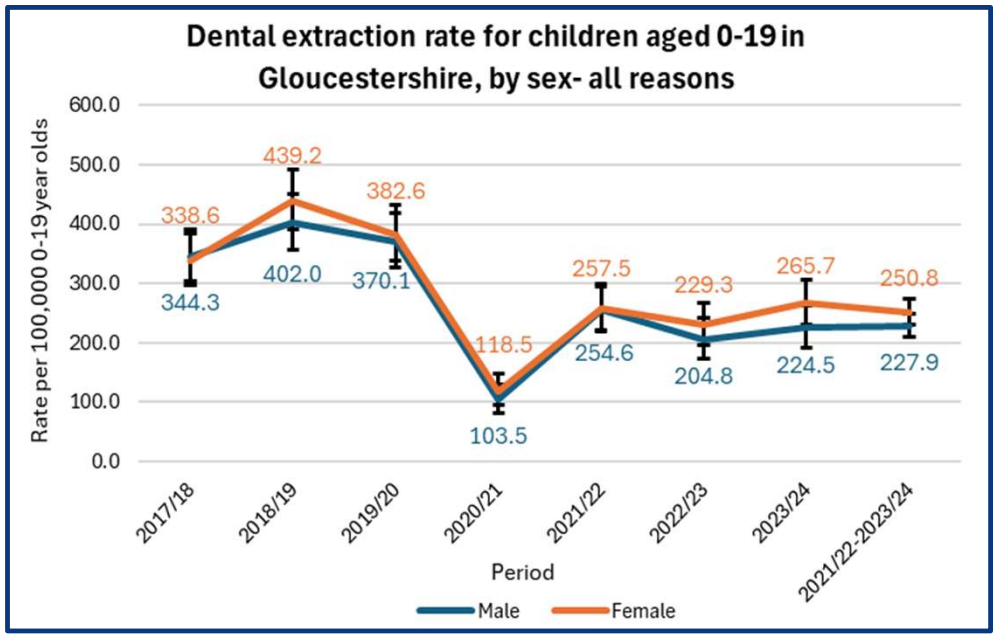
- In 2023/24, the rate of all reason extractions was **244.8** per 100,000 population and the rate for decay extractions was **106.8** per 100,000.
- There was a **significant decrease** in the extraction rates between 2019/20 and 2020/21, attributed to the COVID-19 pandemic.
- There was a **significant increase** in extractions between 2020/21 and 2021/22 and then a steady trend. The rate of extractions **remains significantly below** the years preceding covid.

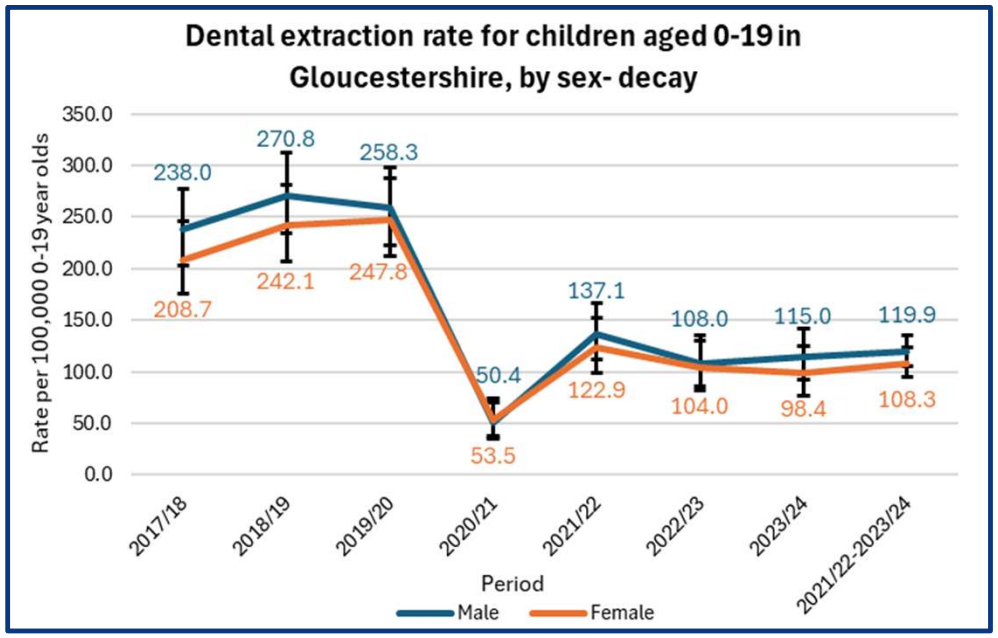


Data sources: Hospital Episode Statistics, ONS Mid-year Population Estimates

Teeth extraction episodes by sex

There were **no significant sex differences** in the rate of children who had teeth extractions for all reasons and for decay.

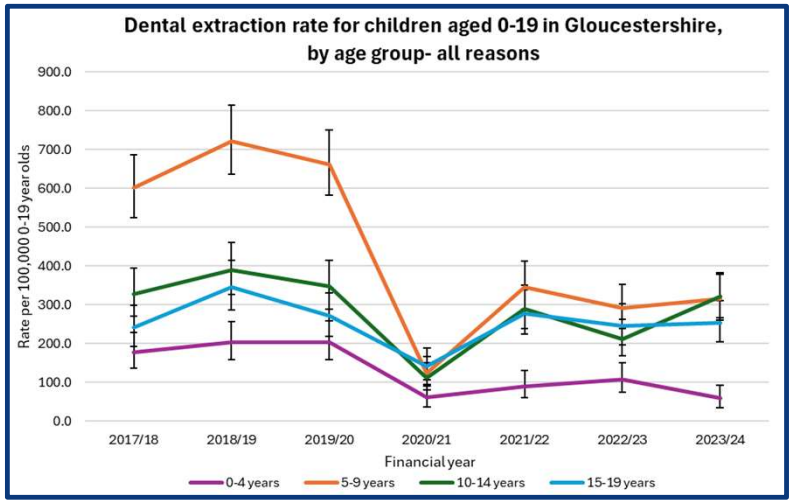




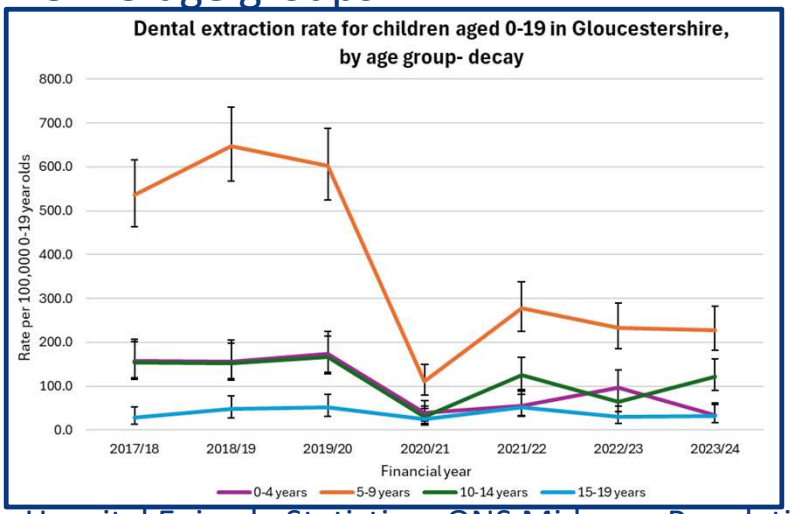
Data sources: Hospital Episode Statistics, , ONS Mid-year Population Estimates

Teeth extraction episodes by age group

Before 2020/21, **children aged 5-9** had a **significantly higher** rate of all reason tooth extraction episodes compared to the other age groups. Since 2020/21, the rate among **children aged 0-4** has been **significantly lower** than the **other age groups**, among which **no significant differences** exist.



In all years, **children aged 5-9** have consistently experienced **significantly higher** rates of tooth extractions for decay compared to other age groups. The rates for the **other age groups** have **fluctuated** over time. In 2023/24, the **10–14 age group** had a **significantly higher** rate of extractions than both the 0–4 and 15–19 age groups.

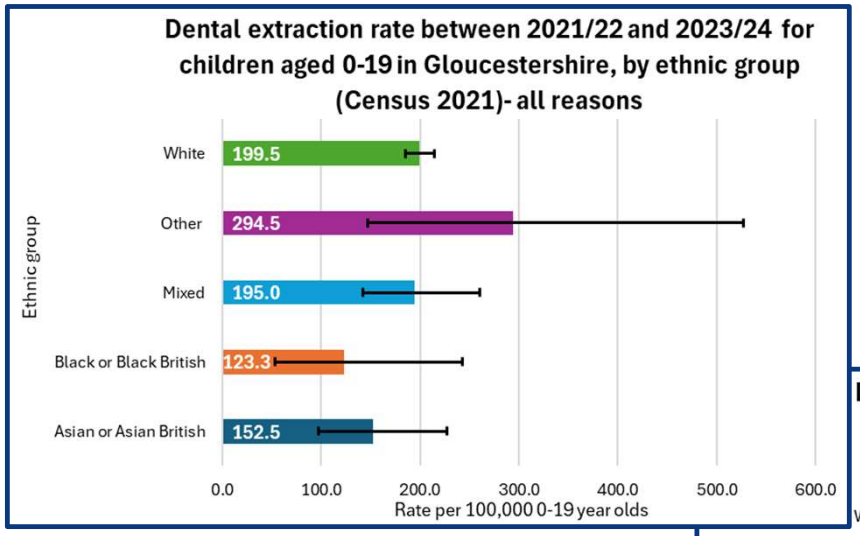


Data sources: Hospital Episode Statistics , ONS Mid-year Population Estimates

Tooth extractions by ethnicity- rate

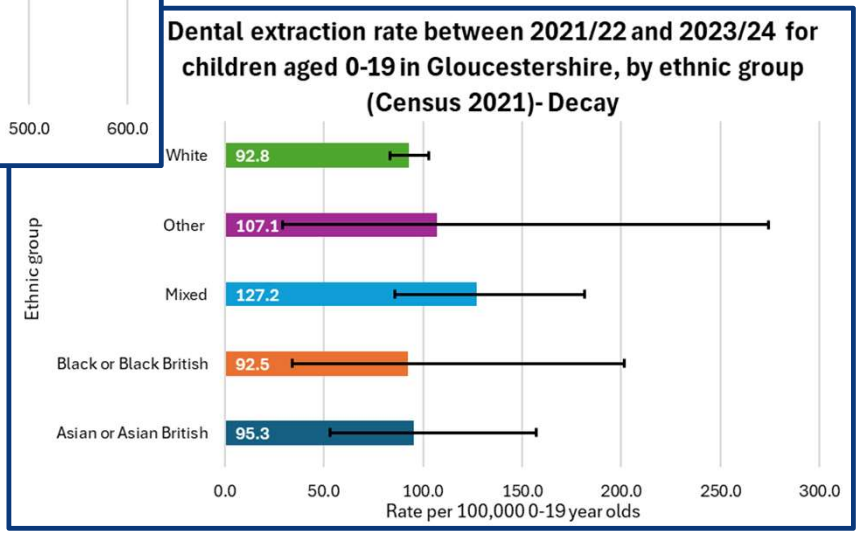
Where ethnicity is recorded, between 2021/22 to 2023/24, there were **no significant differences** in tooth extraction rates among children of different ethnicities, whether for all reasons or specifically for decay.

However, we need to be cautious when using this data due to the high number of cases without a recorded ethnicity, which isn't included in this analysis.



191/1022 (19%) all reason episodes where ethnicity is unknown.

88/488 (19%) decay episodes where ethnicity is unknown.



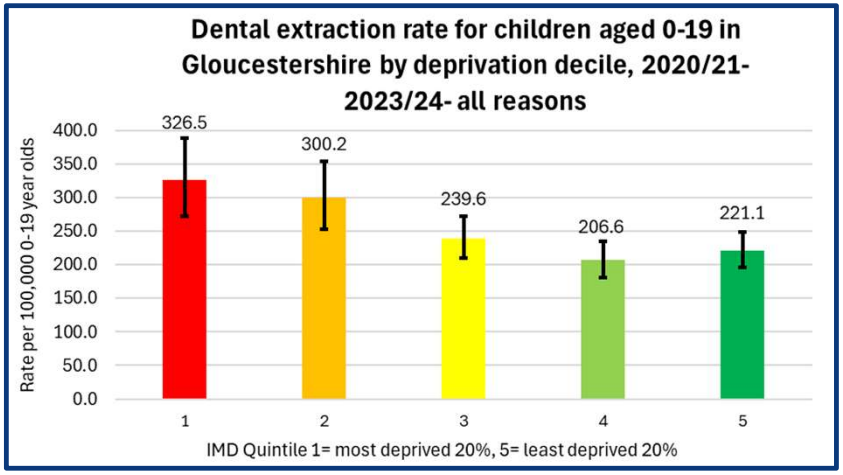
Data sources: Hospital Episode Statistics, ONS Census

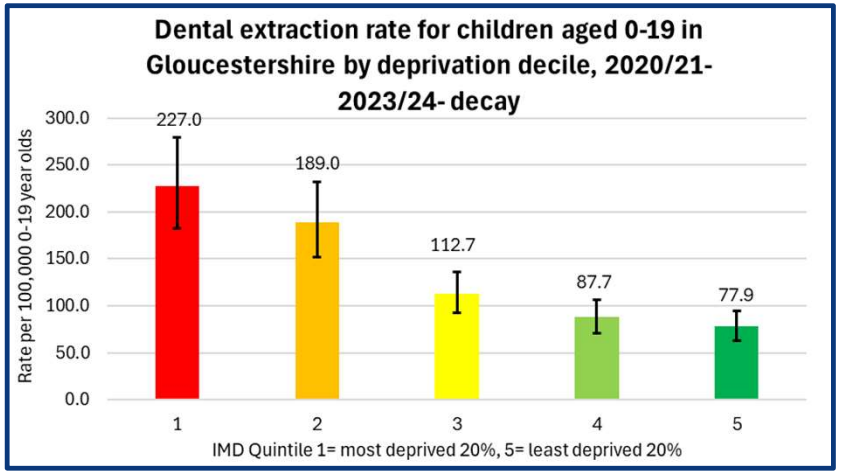
Teeth extractions by deprivation

There is a clear link between deprivation and the rate of tooth extractions.

Children living in the **most deprived quintile nationally (1)** had a **significantly higher** rate of tooth extractions for all reasons compared to children living in **quintiles 3-5**. Children living in **quintile 2** also had a **significantly higher** rate of extractions than **quintiles 4 and 5**.

Children living in the national deprivation **quintiles 1 and 2** had **significantly higher** rates of decay-related tooth extractions compared to those living in the less deprived **quintiles 3-5**.





Data sources: Hospital Episode Statistics, MHCLG English Indices of Deprivation, ONS Mid-year Population Estimates

Episodes with multiple tooth extractions

A high proportion of procedures involved multiple teeth extractions in one episode:

- **65.3-73.3%** of procedures for all reasons
- **81.4-90.4%** of procedures for decay

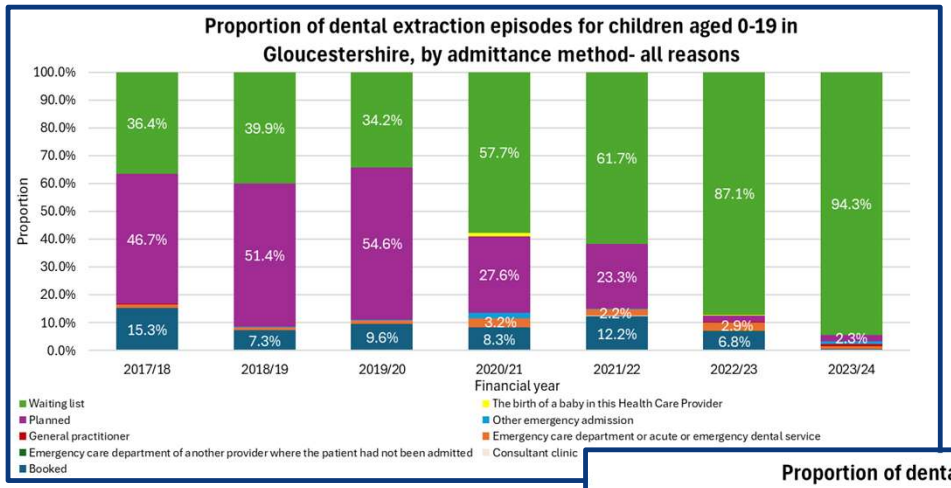
* Episodes with multiple tooth extraction episodes were identified using the operation codes, there is a chance that inconsistent codes have been assigned to the data.

	All reasons		Decay	
Financial year	Procedures with multiple teeth extracted	Proportion of total procedures	Procedures with multiple teeth extracted	Proportion of total procedures
2017/18	333	69.7%	281	89.8%
2018/19	408	69.0%	320	88.6%
2019/20	388	73.3%	322	90.4%
2020/21	109	69.9%	64	87.7%
2021/22	235	65.3%	149	81.4%
2022/23	203	65.7%	129	85.4%
2023/24	232	65.7%	131	85.1%

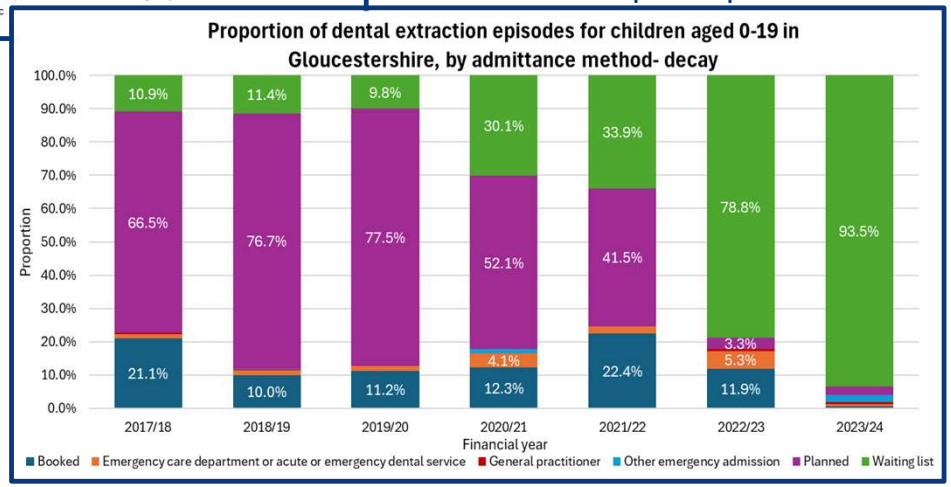
Data source: Hospital Episode Statistics

Admittance method for procedures

- Since the pandemic, there has been an **increasing proportion** of admittances coded as **waiting list.**
- The next highest admittance method was **planned**, and in 2023/24 it accounted for around **2%** of admittances.
- Emergency admissions account for a very small number of admissions (<10 a year)

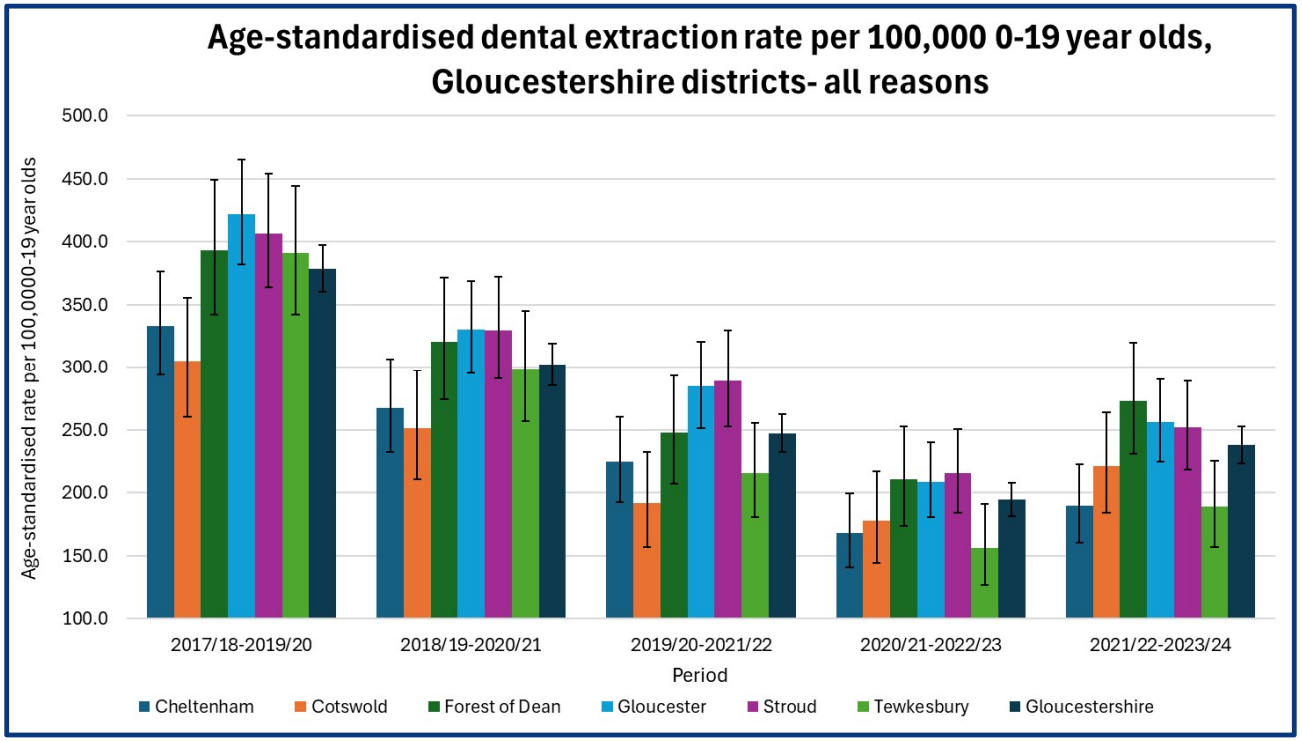


Data source: Hospital Episode Statistics



Extractions by district- age-standardised rate per 100,000- all reasons

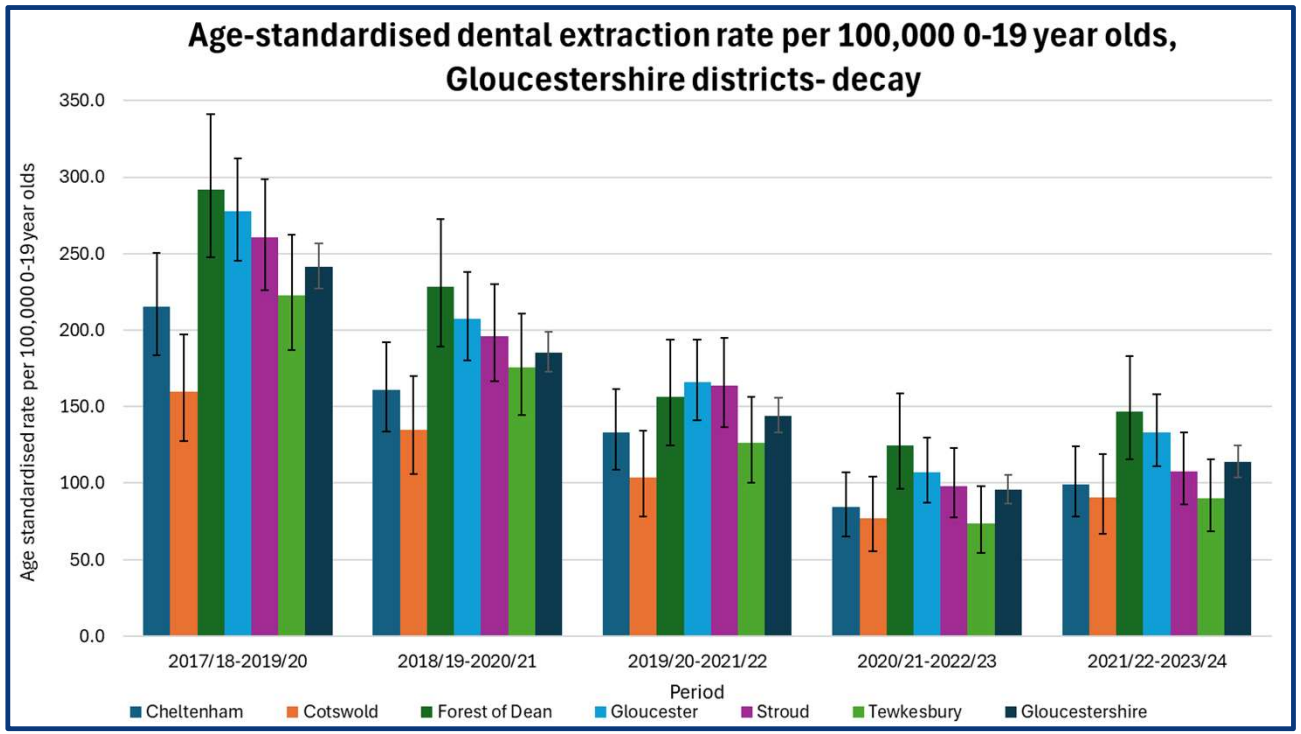
- In 2021/22 to 2023/24, **Forest of Dean** had the **highest rate** of age-standardised admissions, with **272.7** extractions per 100,000 population.
- However, the rate was **only statistically significantly higher** than **Cheltenham** and **Tewkesbury.**
- Whilst there has been some fluctuation in the high to low order of district rates. **Forest of Dean, Gloucester and Stroud** consistently stand out as having the **highest all reason extraction rate** in each period.



Data sources: Hospital Episode Statistics, ONS Mid-year Population Estimates

Extractions by district- age-standardised rate per 100,000- decay

- In 2021/22 to 2023/24, **Forest of Dean** had the **highest rate** of age-standardised admissions, with **146.6** extractions per 100,000 population.
- However, the rate was **only statistically significantly higher** than **Tewkesbury.**
- Whilst there has been some fluctuation in the high to low order of district rates. **Forest of Dean, Gloucester and Stroud** consistently stand out as having the **highest decay extraction rate** in each period.



Data sources: Hospital Episode Statistics, ONS Mid-year Population Estimates

MSOA rates 2021/22 to 2023/24- all extractions

Dental extraction rate per 100,000 children aged 0-19

Top 10 LSOAs with the **highest** dental extraction rates

MSOA Name	District	Dental extraction highest rates
Cinderford	Forest of Dean	454.8
Fairford and Lechdale	Cotswold	395.3
Mitcheldean, Drybrook and Ruardean	Forest of Dean	367.1
Rodborough and Thrupp	Stroud	359.2
Tredworth	Gloucester	358.4
Coleford	Forest of Dean	351.3
Matson and Robinswood	Gloucester	349.0
Wootton-under-edge and Kingsford	Stroud	340.1
Quedgeley North	Gloucester	336.2
Minchinhampton and Amberley	Stroud	331.5

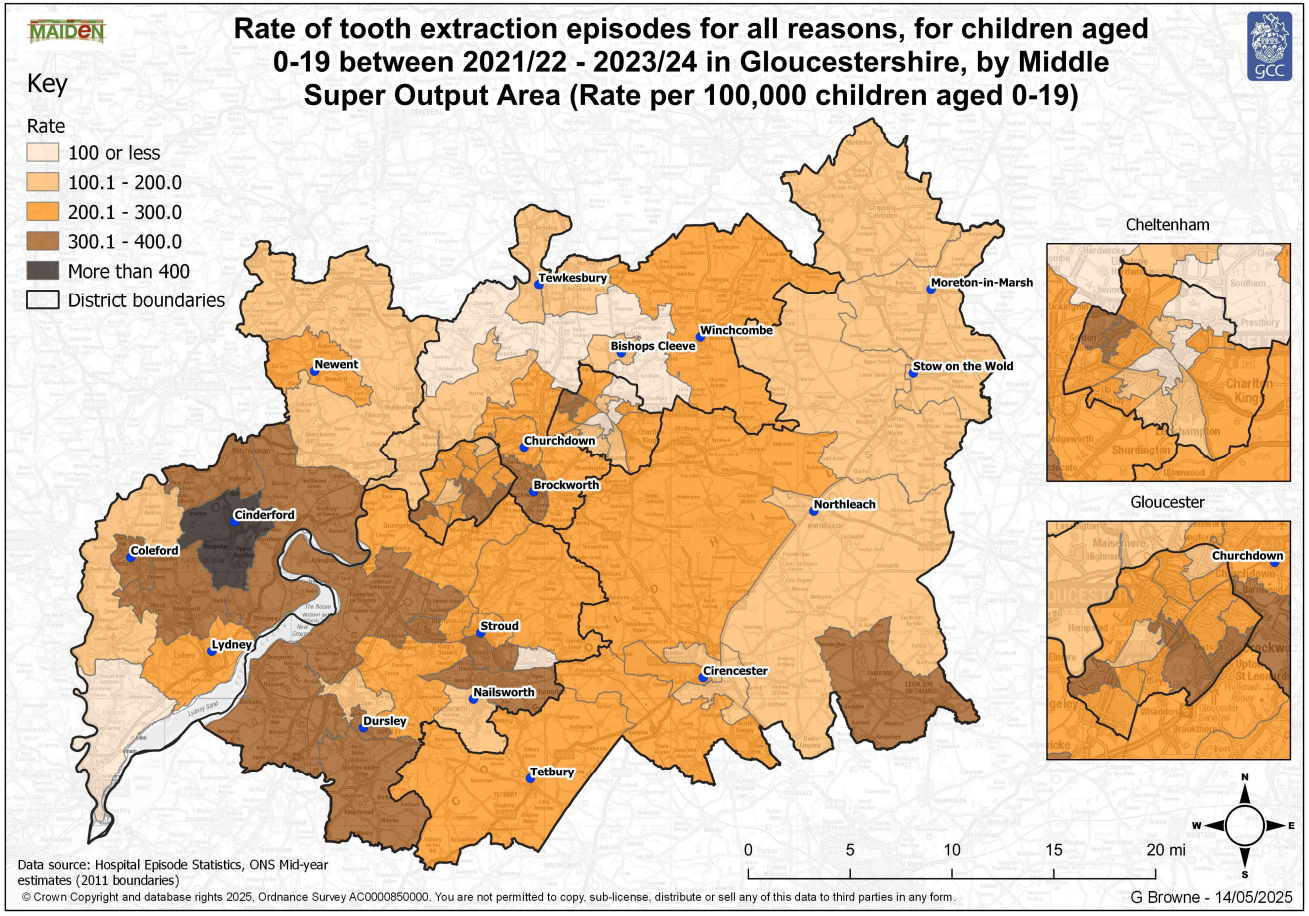
Top 10 LSOAs with the **lowest** dental extraction rates

MSOA Name	District	Dental extraction lowest rates
Chalford and Bussage	Stroud	50.1
Tidenham and Woolaston	Forest of Dean	59.9
Lansdown and Montpellier	Cheltenham	65.6
Cleeve Hill, Gotherington and Apperley	Tewkesbury	87.8
Pittville and Fairview	Cheltenham	95.5
Prestbury and Racecourse	Cheltenham	96.0
Leckhampton	Cheltenham	104.1
Highnam,Longford and Norton	Tewkesbury	107.0
Bishop's Cleeve	Tewkesbury	117.9
Charlton Park	Cheltenham	121.7

Data sources: Hospital Episode Statistics ONS Mid-year Population Estimates

* MSOAs are census areas made up of between 2,000 and 6,000 households or between 5,000 and 15,000 people

All reasons extractions map, MSOA



MSOA rates 2021/22 to 2023/24- decay

Dental extraction rate per 100,000 children aged 0-19

Top 10 LSOAs with the **highest** dental extraction rates

MSOA Name	District	Decay dental extraction highest rates
Cinderford	Forest of Dean	299.2
Tredworth	Gloucester	258.1
Arle and Hester's Way	Cheltenham	238.8
Matson and Robinswood	Gloucester	232.7
Coleford	Forest of Dean	219.6
Springbank	Cheltenham	204.0
Mitcheldean, Drybrook and Ruardean	Forest of Dean	193.2
Oakley	Cheltenham	191.8
Dursley	Stroud	188.1
Alstone and St.Mark's	Cheltenham	170.0

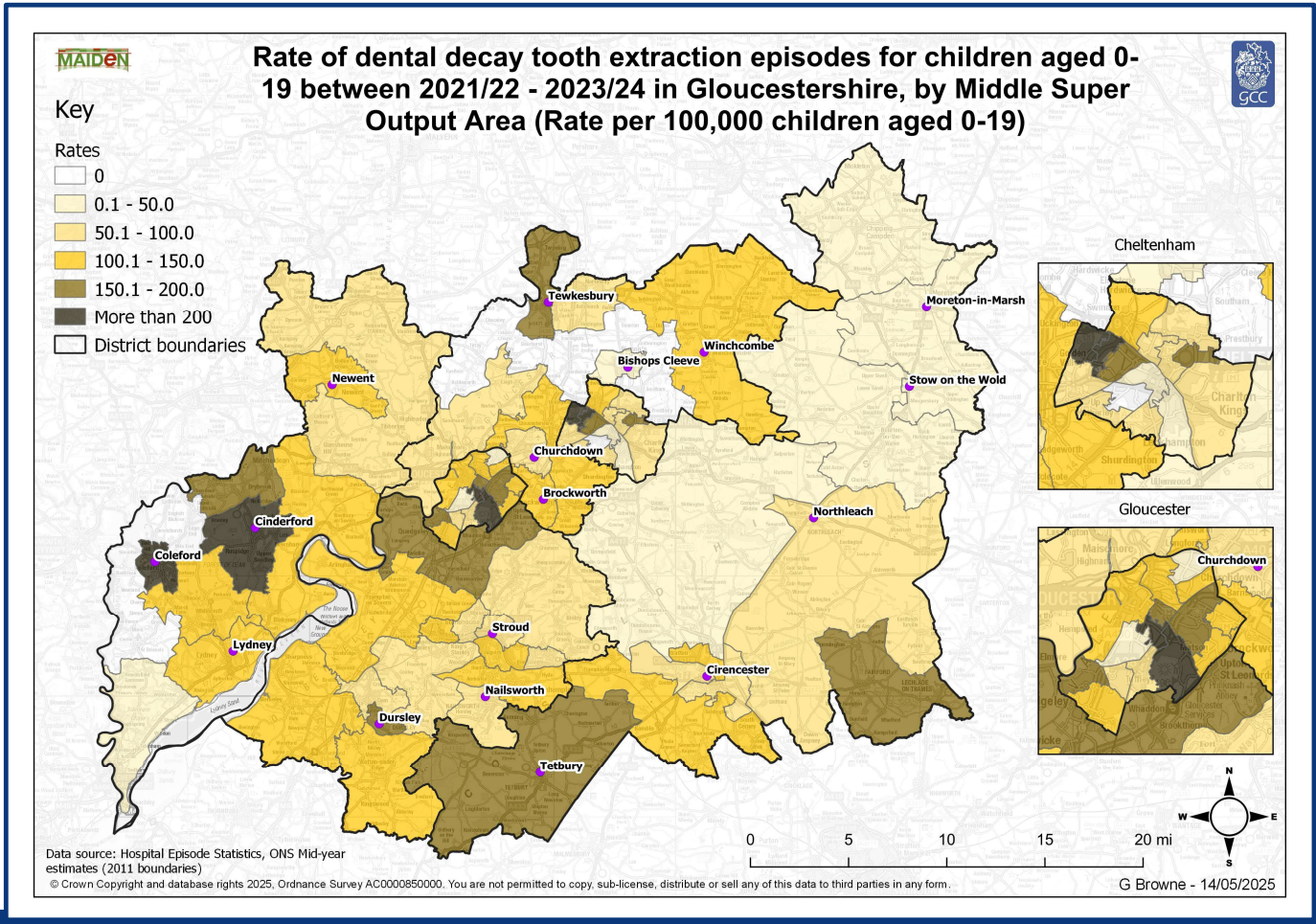
Top 10 LSOAs with the **lowest** dental extraction rates

MSOA Name	District	Decay dental extraction lowest rates
The Park and Warden Hill	Cheltenham	0.0
Lydbrook, Newland and St.Briavels	Forest of Dean	0.0
Cleeve Hill, Gotherington and Apperley	Tewkesbury	0.0
Tidenham and Woolaston	Forest of Dean	20.0
Longlevens	Gloucester	20.2
Charlton Park	Cheltenham	24.3
Lansdown and Montpellier	Cheltenham	32.8
Moreton and Stow-on-the-Wold	Cotswold	37.4
Bishop's Cleeve	Tewkesbury	42.1
Willersley, Chipping Campden and Blockley	Cotswold	42.4

Data sources: Hospital Episode Statistics ONS Mid-year Population Estimates

* MSOAs are census areas made up of between 2,000 and 6,000 households or between 5,000 and 15,000 people

Tooth decay extractions map, MSOA



LSOA rates 2021/22 to 2023/24- all reasons

Dental extraction rate per 100,000 children aged 0-19

In the ten LSOAs with the highest rates of all reason extractions, there were between **572.4** and **1104.3** extraction episodes per 100,000 children aged 0-19.

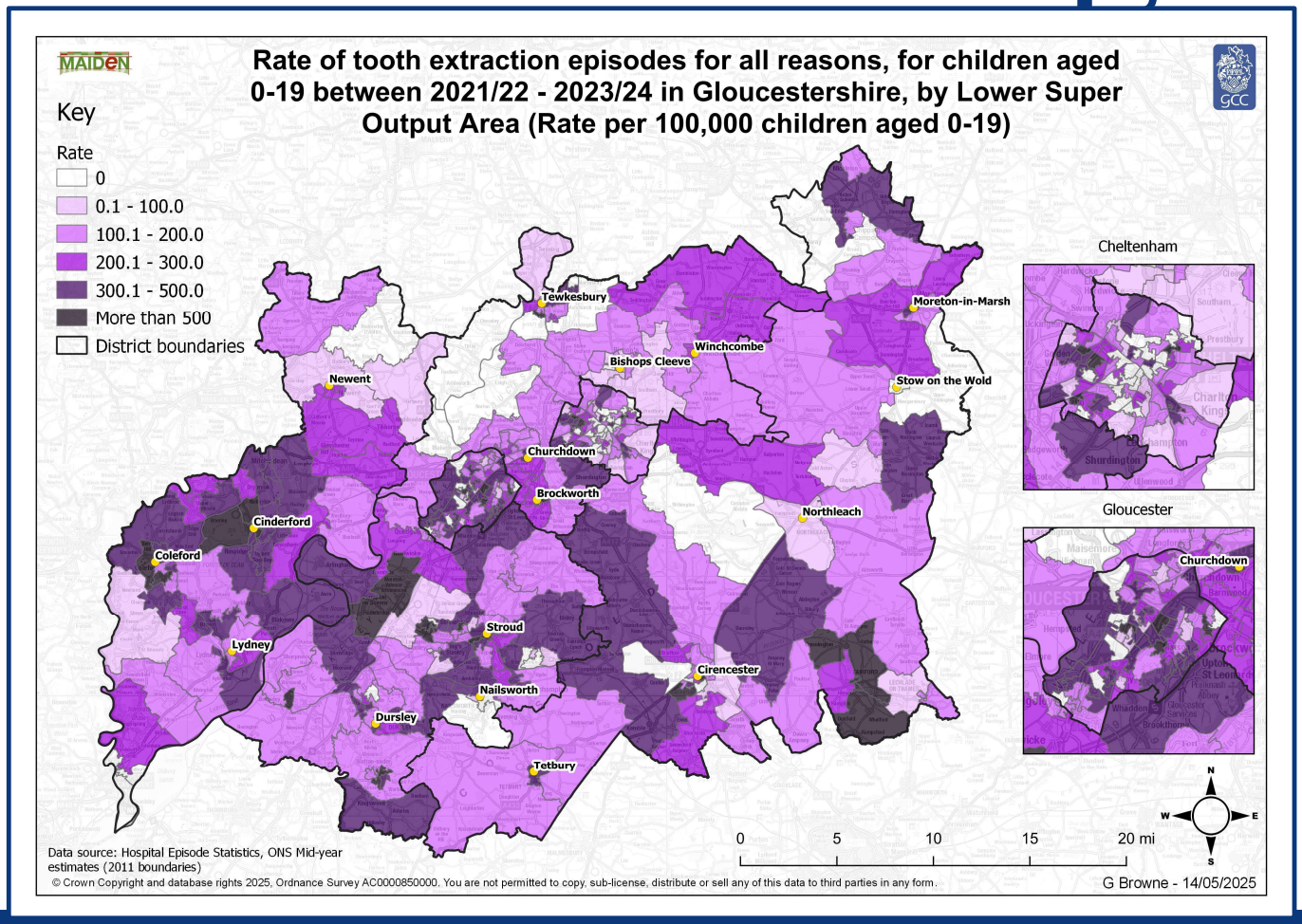
Top 10 LSOAs with the **highest** dental extraction rates

LSOA Name	District	All reasons extraction rate
Up Hatherley 2	Cheltenham	1104.3
Brockworth East	Tewkesbury	836.8
Wotton-Under-Edge 3	Stroud	742.8
Hucclecote 3	Gloucester	696.4
Fairford North	Cotswold	686.5
Coln Valley	Cotswold	651.8
Berkeley 3	Stroud	626.1
Moreland 3	Gloucester	600.9
Lechlade, Kempsford And Fairford South 3	Cotswold	583.9
Coleford 2	Forest of Dean	572.4

Data sources: Hospital Episode Statistics ONS Mid-year Population Estimates

* LSOAs are census areas made up of between 400 and 1,200 households or between 1,000 and 3,000 people.

All reasons extractions map, LSOA



LSOA rates 2021/22 to 2023/24- decay

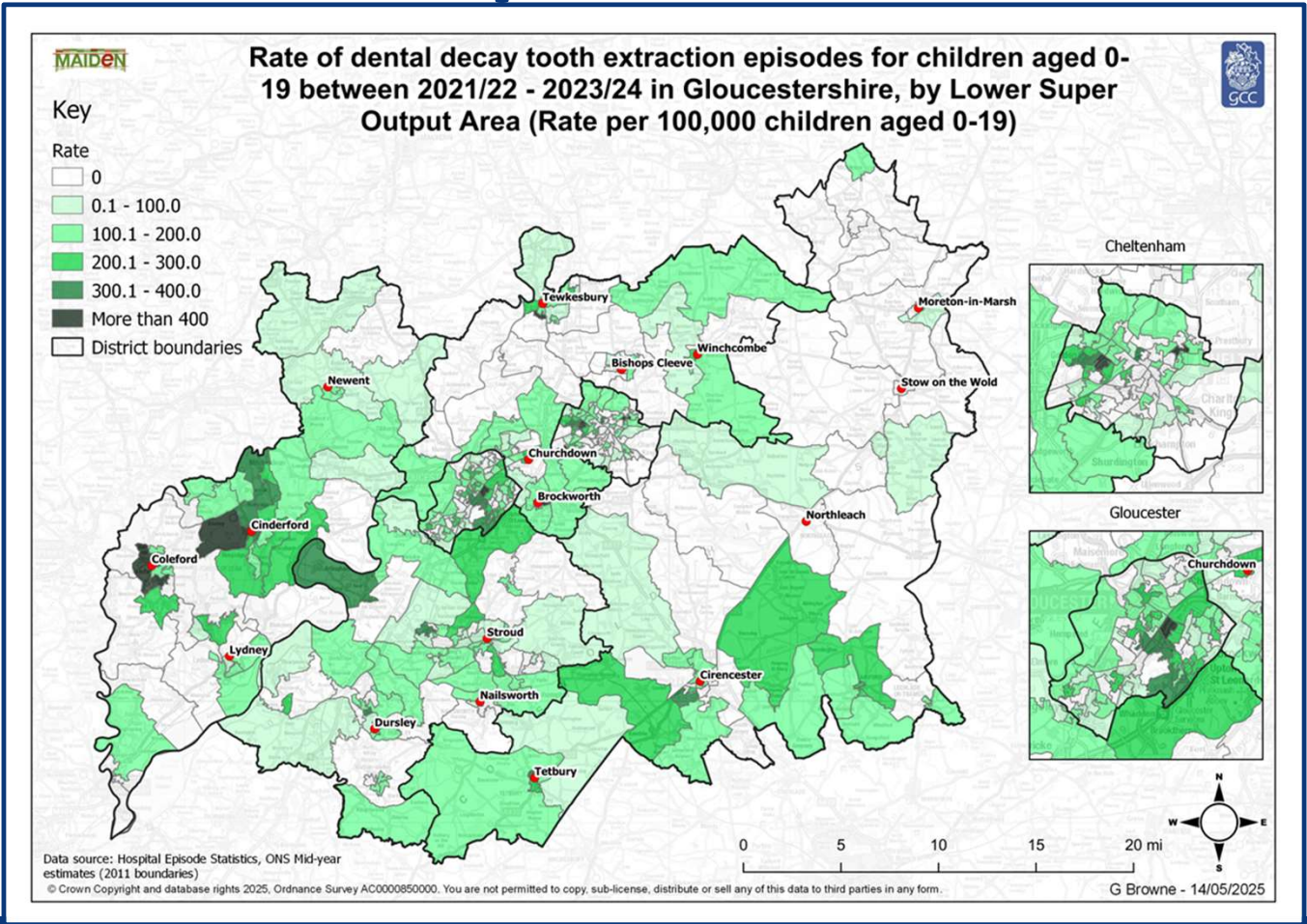
Dental extraction rate per 100,000 children aged 0-19

In the ten LSOAs with the highest rates of dental-decay related extractions, there were between **391.8** and **548.9** extraction episodes per 100,000 children aged 0-19.

Top 10 LSOAs with the **highest** dental extraction rates

LSOA Name	District	Decay extraction rate
Cinderford West 1	Forest of Dean	548.9
Tewkesbury South 2	Tewkesbury	531.9
St Mark's 3	Cheltenham	469.9
Coleford 4	Forest of Dean	464.7
Cinderford East 2	Forest of Dean	444.8
Coney Hill 1	Gloucester	440.5
Oakley 1	Cheltenham	422.3
Brockworth East	Tewkesbury	418.4
Coleford 2	Forest of Dean	408.8
Dursley 4	Stroud	391.8

Data sources: Hospital Episode Statistics ONS Mid-year Population Estimates

* LSOAs are census areas made up of between 400 and 1,200 households or between 1,000 and 3,000 people.

Teeth extractions map, LSOA