Health and diet inequalities: analysis of English constituencies

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Summary

Poor health resulting from our food system is widespread across England. However, much of our current insights on health and the food environment are at a national or local authority level. To support MPs in understanding how national issues impact on their constituencies, constituency level estimates for several diet-related health metrics have been produced to build a picture of what is happening within and between different constituencies. The patterns and trends related to health and diet inequalities have also been explored.

Specifically, 7 metrics are used as a proxy for the state of the nation's diet-related health and our food system:

- Proportion of children in reception and year 6 with **obesity**
- Proportion of children in reception and year 6 with **dental decay**
- Proportion of people over 17 years old with type 2 diabetes
- **Life expectancy** at birth
- Proportion of the population living in areas at high risk of **food insecurity**
- Proportion of food outlets that are **fast food outlets**
- Relative **child poverty**

The analysis shows stark regional inequalities, with constituencies in the North and the Midlands experiencing worse health than those in the South. Furthermore, there is a correlation between constituency deprivation and worse health outcomes, meaning more deprived areas have high rates of poor health.

The findings highlight the need for targeted local interventions to address health and diet inequalities, alongside national level policies that can transform our food system to ensure that everyone, no matter where they live, has access to and can afford healthy and sustainable diets.

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Constituency metrics

Constituency level metrics have been calculated using a previously developed methodology established by London School of Hygiene & Tropical Medicine, which has been adapted to account for the new 2024 constituency boundaries.

The metrics chosen were based on data that is available on health outcomes and drivers. Specifically, the analysis focused on 7 key metrics that provide a proxy for diet and health inequalities across England. Five of these have been newly modelled (obesity, dental decay, diabetes, fast food outlets and food insecurity), and two were already available from other sources.

	Variable used	**year**	**Data source**	**Coverage**	**Missing values** after analysis	**Constituencies covered**
1	Prevalence (%) of obesity in children reception and year 6	2023/24	DHSC data from National Child Measurement Programme 2023/24 School Year[1].	England	4%	521
2	Percentage of children with one or more obvious untreated decayed teeth in reception and year 6	2022	DHSC data from Oral health survey of 5-year-old children in England, 2022[2] and Oral health survey of children in year 6 in England, 2022[3].	England	19% (5years) and 25% (year 6)	438 (R) 401 (y6)
3	Percentage of population living in areas at highest risk of food insecurity	2024	PHE fingertips data for percentage of local authority population living in areas at highest risk of food insecurity, 2024[4]	England	0%	543
4	Percentage of people with type 2 diabetes among those over 17 years old	2023/34	PHE fingertips data on diabetes 2023/24[5]	England	0%	543
6	Fast food outlets as a proportion of food outlets	2023	Data from Ordnance Survey and analysed with the MRC Epidemiology Unit at the University of Cambridge. © Crown copyright and database rights 2024 Ordnance Survey. This product includes data licensed from PointX © Database Right/Copyright (2024) and OS © Crown Copyright (2024). All rights reserved.[6]	England	4.4%	519
7	Life expectancy at birth	2022	ONS data on Life Expectancy[7]	UK	0%	650
8	Proportion of children living in relative poverty AHC	2024	Child poverty action coalition data on relative child poverty AHC 2024[8]	UK	0%	650

[1] NHS, 'National Child Measurement Programme, England, 2023/24 School Year', *NHS*, 2024, https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2023-24-school-year

[2] GOVUK, 'Oral health survey of 5 year old children 2022', *GOVUK*, 2023, https://www.gov.uk/government/statistics/oral-health-survey-of-5-year-old-children-2022#:~:text=The%20results%20of%20the%20oral,experience%20of%20obvious%20dentinal%20decay

[3] GOVUK, 'Oral health survey of children in year 6, 2023', *GOVUK,* 2024, https://www.gov.uk/government/statistics/oral-health-survey-of-children-in-year-6-2023

[4] Fingertips, 'Wider Determinants of Health', *Fingertips*, 2024, https://fingertips.phe.org.uk/profile/wider-determinants/data#page/6/gid/1938133045/pat/6/par/E12000001/ati/501/are/E06000047/iid/93864/age/1/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1

[5] Fingertips, 'Diabetes', *Fingertips*, 2024, https://fingertips.phe.org.uk/profile/diabetes-ft/data#page/9/gid/1938133138/pat/204/par/U00000/ati/7/are/D82060/iid/93214/age/1/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1

[6] The Food Foundation, 'The Broken Plate 2025: Technical Report', The Food Foundation, 2025, https://foodfoundation.org.uk/sites/default/files/2025-01/2.%20Technical%20report%20BP%202025%20%281%29.pdf

[7] ONS, 'Life expectancy for local areas in England, Northern Ireland and Wales: between 2001 to 2003 and 2020 to 2022', *ONS,* 2024, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/lifeexpectancyforlocalareasinenglandnorthernirelandandwalesbetween2001to2003and2020to2022

[8] End Child Poverty, 'Local Child Poverty Statistics 2024', *End Child Poverty,* 2024, https://endchildpoverty.org.uk/child-poverty-2024/

In order to produce estimates for constituency level data, information on how Middle Layer Super Output Areas (MSOAs), Local Authorities (LAs) and constituencies relate to each other in England and Wales[9] was first combined with data containing information on the population in each MSOA in England and Wales[10]. This was done to be able to calculate the proportional split of LAs across constituencies, based on total population numbers[11]. These proportions were then applied to the different metrics while matching LAs with constituencies.

For example, if the prevalence of caries in 5y olds was 25% in one LA, the number of children that that prevalence would represent in that LA was distributed across the constituencies proportionally to their share of that LA. The prevalence of caries in each constituency was then re-calculated (based on the number of 5-year-old children and the number of 5 year old children with caries in each constituency).

This method was applied to all metrics in the first instance. Additional adjustments were made for some of the metrics based on the data available to reduce missing values:

- Tooth decay: There was a number of missing data points for tooth decay (dental caries). To reduce the number of data gaps we identified those constituencies which fall under 2 LAs but where data was only available for 1 LA (resulting in NA entry). In these 20 constituencies we applied the data from the 1 LA where data was available to the entire constituency.

- Diabetes: The data used was reported at General Practitioner (GP)-level rather than LA level. This data was first linked to a data file containing information on how GP-practices relate to constituencies (i.e. which constituency that GPs belong to)[12]. The average prevalence of diabetes across the GPs within each constituency was then calculated for each constituency

Overall, the data available allowed modelling of a full set of metrics across 70% of England constituencies. Data for the risk of food insecurity, diabetes, child poverty and life expectancy was available for all constituencies.

[9] ONS Geography, 'MSOA (2021) to Westminster Parliamentary Constituencies (July 2024) Best Fit Lookup in EW', *ONS Geography,* 2024, https://geoportal.statistics.gov.uk/datasets/098360c460dd41beacbdfad83bc4fea2_0/explore

[10] ONS, 'Middle layer Super Output Area population estimates (supporting information)', *ONS*, 2024, https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/middlesuperoutputareamidyearpopulationestimates

[11] For the metrices involving children (overweight and/obesity and dental caries), the proportional split was based on the share of children i the relevant age group (e.g. children 5y) in each constituency relative to the total number of children the same age group. This was done to account for differences in demographics between different constituencies.

[12] House of Commons Library, 'Constituency data: GPs and GP practices', *House of Commons Library,* 2025, https://commonslibrary.parliament.uk/constituency-data-gps-and-gp-practices/

Data points available (max. 9)	Number of English constituencies with data	Proportion of constituencies in England
5	8	1%
6	16	3%
7	97	18%
8	41	8%
9	381	70%

Additional data has also been collected for child poverty and life expectancy at birth across the devolved nations.. Data on Free School Meals uptake was also modelled, but due to large data gaps has not been included in the analysis.

Constituency rankings

Each constituency was given a ranking(s):

1. per metric for which it had data
2. an overall ranking.

1. Metric ranking

Each constituency was given a ranking per metric for which they had data available. The lower the ranking, the poorer performance on the metric. Where constituencies had duplicate ranking, they were allocated the same ranking, and then the following ranking number skipped. E.g. 1, 2, 2, 4.

2. Overall ranking

Constituencies were also given an overall ranking. This was calculated in a way that took into account any data gaps for constituencies without full data across using the following method:

- Metric rankings were converted into a percentile ranking form 0-1, allowing direct comparison between them
- For each constituency, its percentile ranking was totalled across all metrics, then divided by the number of metrics for which it had data available. This gave an 'average metric rank'.
- The 'average metric rank' was then used to determine the 'overall rank' by ordering it by lowest to highest score and then allocating them an overall rank from 1 up to 543 (the number of English constituencies).

Regional analysis

For each of the metrics the average figure across the constituencies within each region was calculated. The restructuring of constituencies in 2024 means those in England have similar numbers of constituents and therefore a decision was made that it would be sufficiently accurate to average across the constituencies in this way and assume equal weighting. The averages have been calculated based on available data – in some cases there are data gaps in some regions. The average figures for dental decay in Yorkshire and the South East have been removed due to limited data available in each of these areas.

Averages per region

	Obesity R %	Obesity Y6 %	Dental caries R %	Dental caries Y6 %	Type 2 diabetes 17+ %	Life expectancy years	Popln living in areas at high risk of	Child Poverty %	Proportion food outlets that are fast food %

							food insecurity %		
East Midlands	9.6	21.8	19.5	8.7	8.3	80.8	21.0	29.6	28.2
East of England	8.4	19.7	16.8	7.6	7.7	82.0	11.9	23.6	25.4
London	9.7	23.8	23.8	7.8	7.5	82.2	15.2	34.5	24.4
North East	10.8	24.5	20.1	9.2	8.8	79.5	35.8	31.2	32.0
North West	10.1	23.2	28.8	12.8	8.1	79.6	31.1	34.3	30.7
South East	8.5	18.7	-	-	7.2	82.4	7.5	24.9	23.6
South West	8.7	18.9	16.8	8.5	7.4	81.9	7.5	26.6	22.3
West Midlands	10.7	23.8	20.1	12.4	8.6	80.6	32.1	35.2	27.0
Yorkshire And The Humber	10.8	23.9	-	-	8.3	80.0	31.7	33.7	31.1

Rank per region

	Obesity R %	Obesity Y6 %	Dental caries R %	Dental caries Y6 %	Type 2 diabetes 17+ %	Life expectancy years	Popln living in areas at high risk of food insecurity %	Child Poverty %	Proportion food outlets that are fast food %
East Midlands	6	6	5	4	4	5	5	6	4
East of England	9	7	6	7	6	7	7	9	6
London	5	4	2	6	7	8	6	2	7
North East	1	1	3	3	1	1	1	5	1
North West	4	5	1	1	5	2	4	3	3
South East	8	9	-	-	9	9	9	8	8
South West	7	8	7	5	8	6	8	7	9
West Midlands	3	3	4	2	2	4	2	1	5
Yorkshire And The Humber	2	2	-	-	3	3	3	4	2

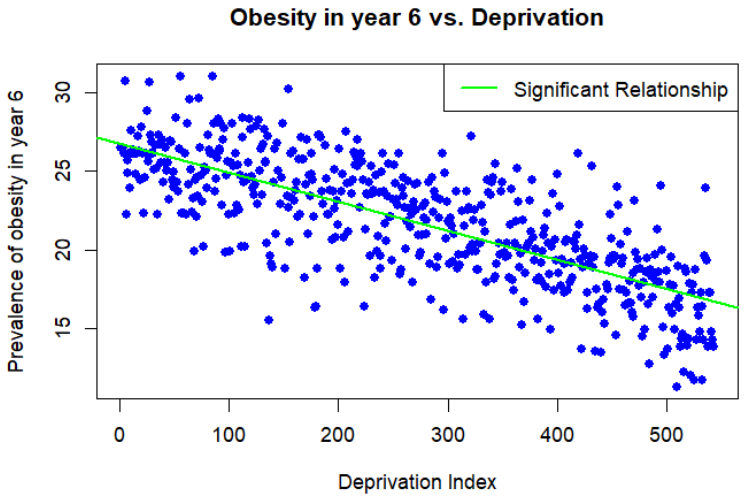
Analysis by deprivation

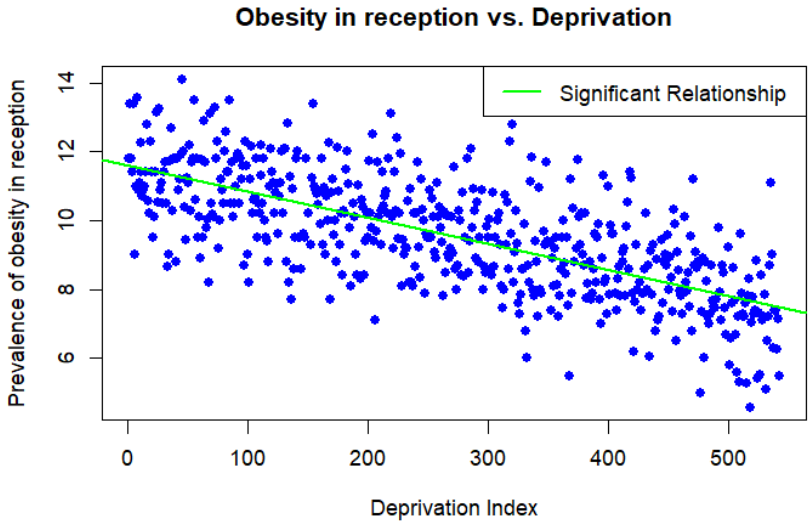
For each of the metrics, the average figure for each IMD[13] quintile was also calculated. In all cases, the more deprived constituencies came out worse than the least deprived. In addition to the risk of living in an area with high risk of food insecurity, where the risk is double for the most deprived constituencies, the difference between the most and least deprived is particularly stark for dental caries in year 6 and child poverty, where the rates are 50% higher in the most deprived constituencies compared to the least deprived.

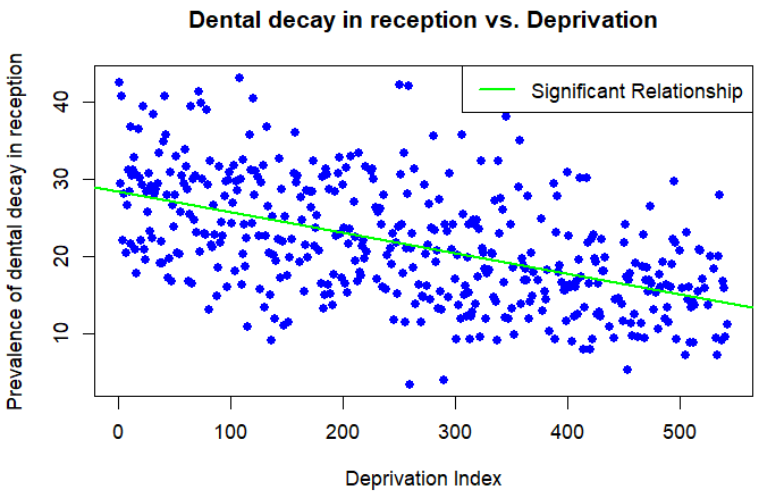
[13] https://commonslibrary.parliament.uk/constituency-data-indices-of-deprivation/

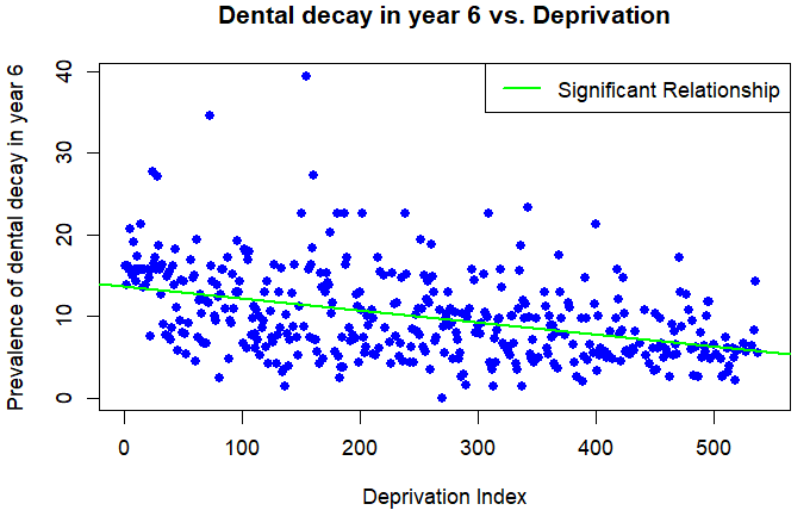
	Obesity R %	Obesity Y6 %	Dental caries R %	Dental caries Y6 %	Type 2 diabetes 17+ %	Life expectancy years	Popln living in areas at high risk of food insecurity %	Child Poverty %	Proportion food outlets that are fast food %
IMD 1	11.1	25.4	27.4	13.5	8.9	78.7	42.2	41.0	31.3
IMD 2	10.4	23.9	23.5	10.5	8.4	80.4	25.8	35.4	28.0
IMD 3	9.6	21.9	20.9	9.2	7.9	81.4	17.2	29.9	26.1
IMD 4	8.8	20.0	18.4	8.3	7.4	82.3	8.7	25.5	24.6
IMD 5	7.8	17.2	15.5	6.8	6.7	83.3	4.9	19.0	23.3

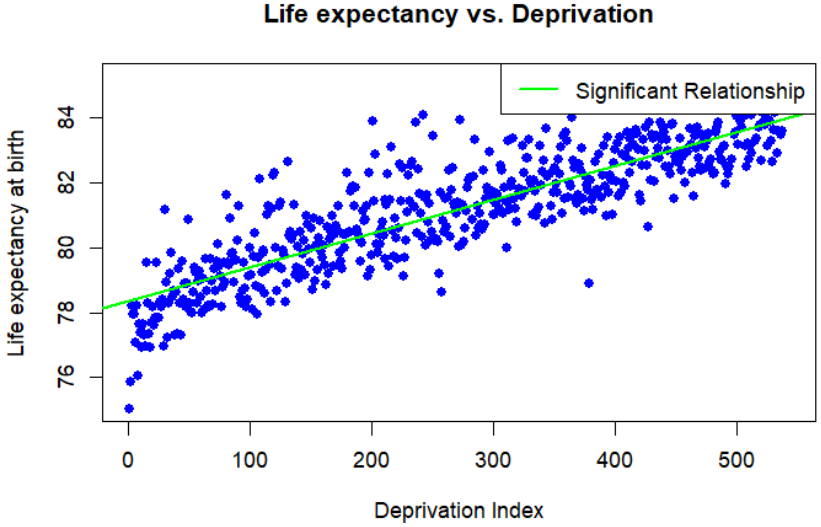
Furthermore, a number of metrics have been plotted against IMD, showing a significant correlation between worst health outcomes and level of deprivation.






Dental decay in reception vs. Deprivation
Significant Relationship
Prevalence of dental decay in reception
10
20
30
40
0
100
200
300
400
500
Deprivation Index

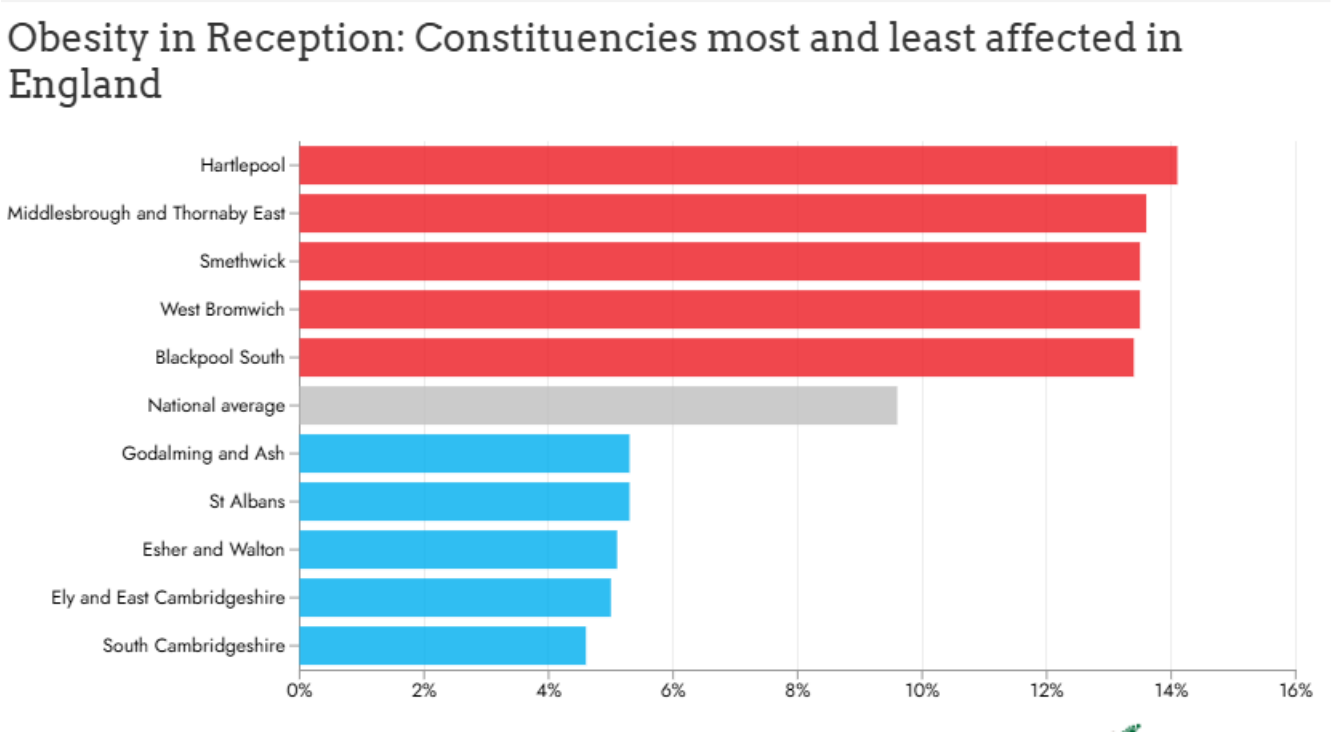

Dental decay in year 6 vs. Deprivation
Significant Relationship
Prevalence of dental decay in year 6
0
10
20
30
40
0
100
200
300
400
500
Deprivation Index


Life expectancy vs. Deprivation
Significant Relationship
Life expectancy at birth
76
78
80
82
84
0
100
200
300
400
500
Deprivation Index

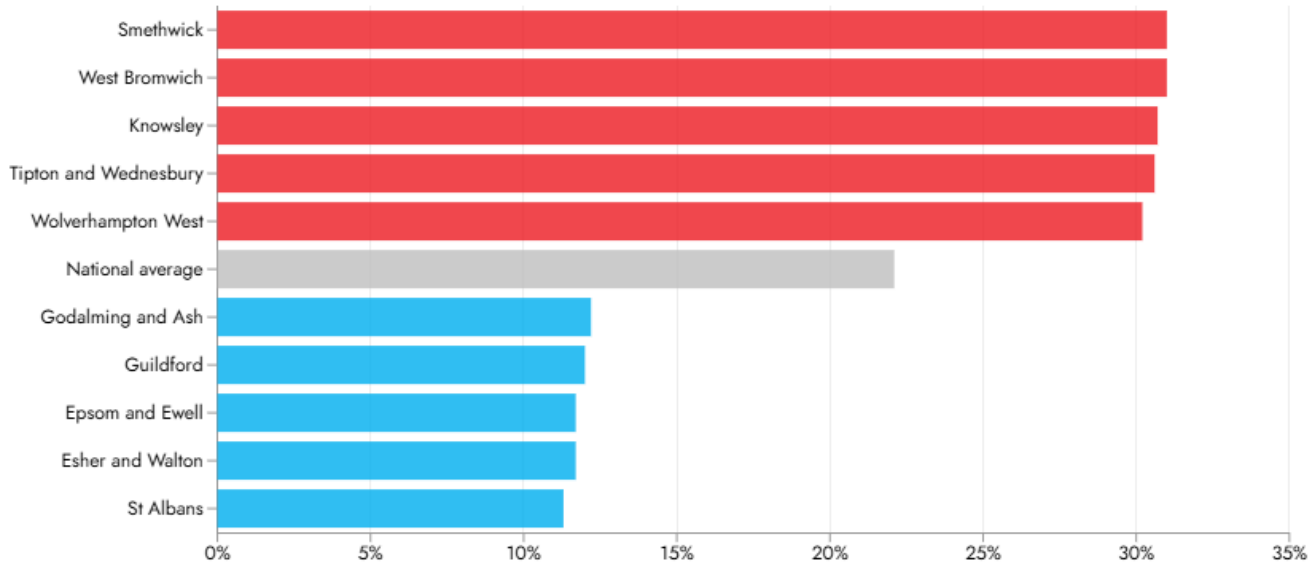
Trends and patterns across the metrics

Child obesity

- Across England, 1 in 10 children in reception are living with obesity, rising to 1 in 5 for children in year 6
- In the worst affected constituencies, as many as 1 in 3 Year 6 children have, compared to 1 in 8 in the least affected.
- Obesity in children is twice as likely in most deprived constituency (Liverpool Riverside) compared to the least deprived constituency (Wokingham) (6% vs 12% in reception and 14% vs 27% in year 6)
- Northern constituencies are affected by obesity to a greater extent than Southern constituencies. A child in year 6 living in the North East of England is nearly a third more likely to be living with obesity than a child living in the South East.



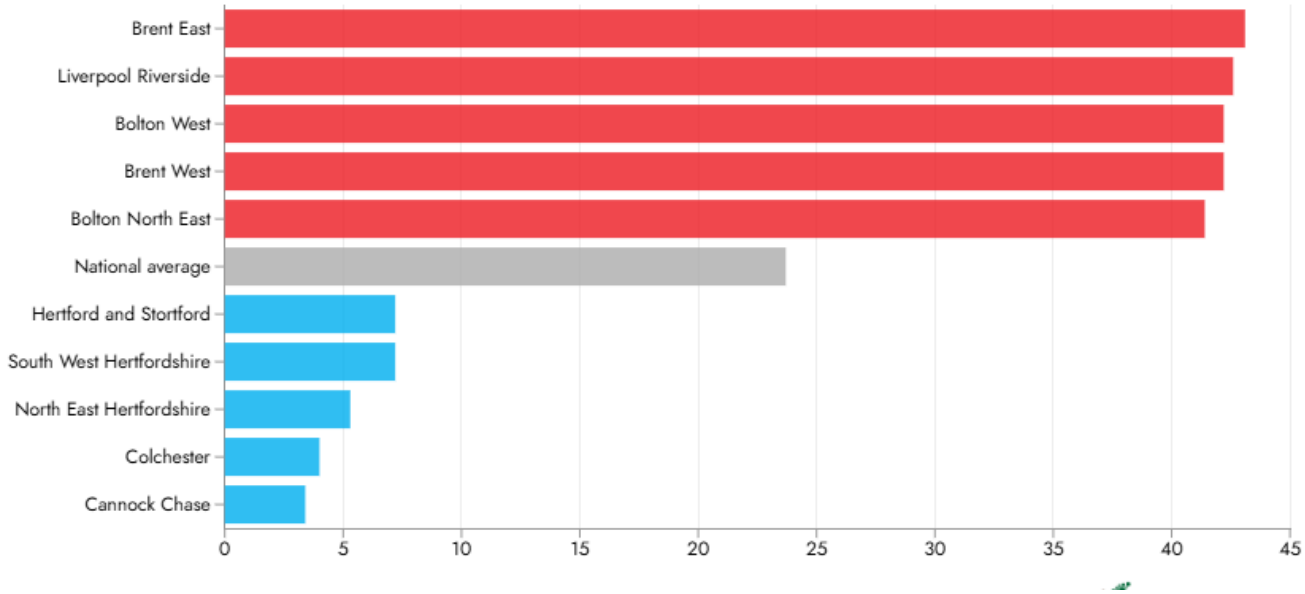
Obesity in Year 6: Constituencies most and least affected in England



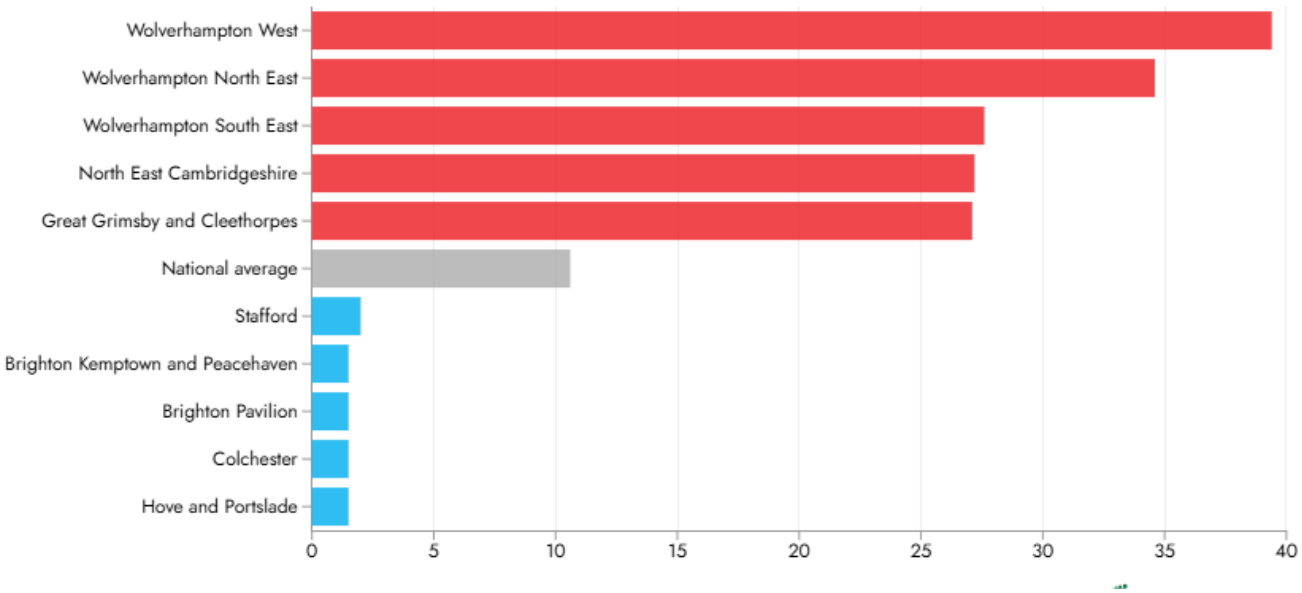
Child dental decay

- In England, 1 in 4 children in reception have dental decay
- Tooth decay at age 5 is nearly 4 times higher in the most deprived constituency (Liverpool Riverside) compared to the least deprived constituency (Wokingham) (11% vs 43%)
- 1 in 3 reception aged children from the North West have dental decay, compared to 1 in 6 in the South West.

Dental decay in Reception: Constituencies most and least affected in England



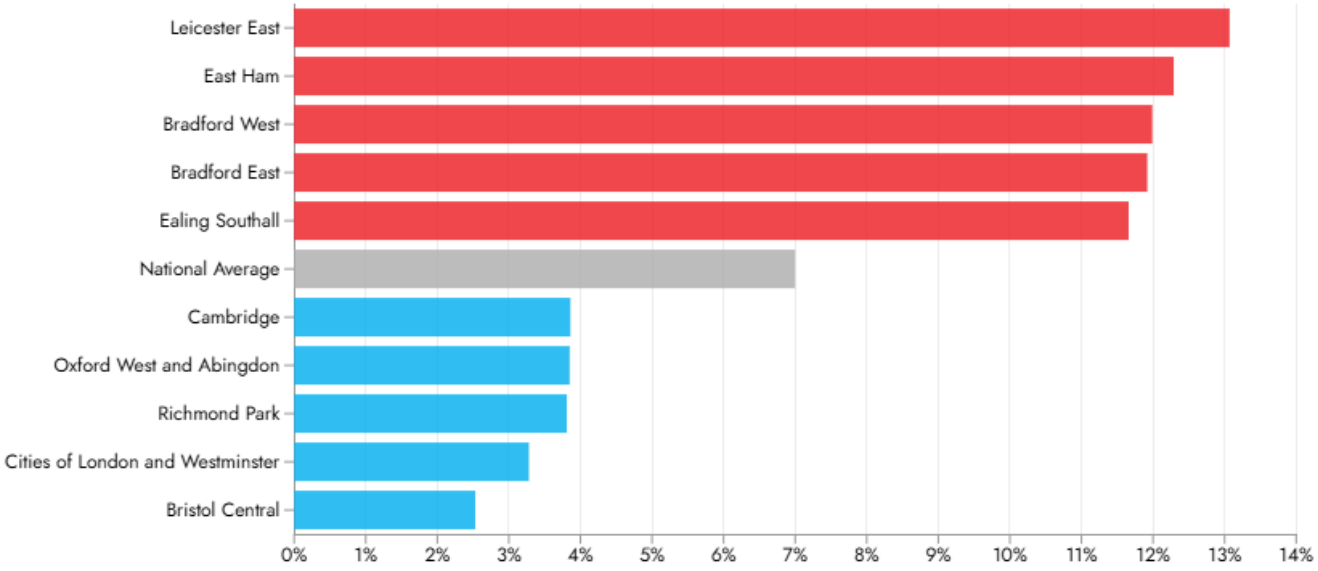
Dental decay in Year 6: Constituencies most and least affected in England



Diabetes in 17+ year olds

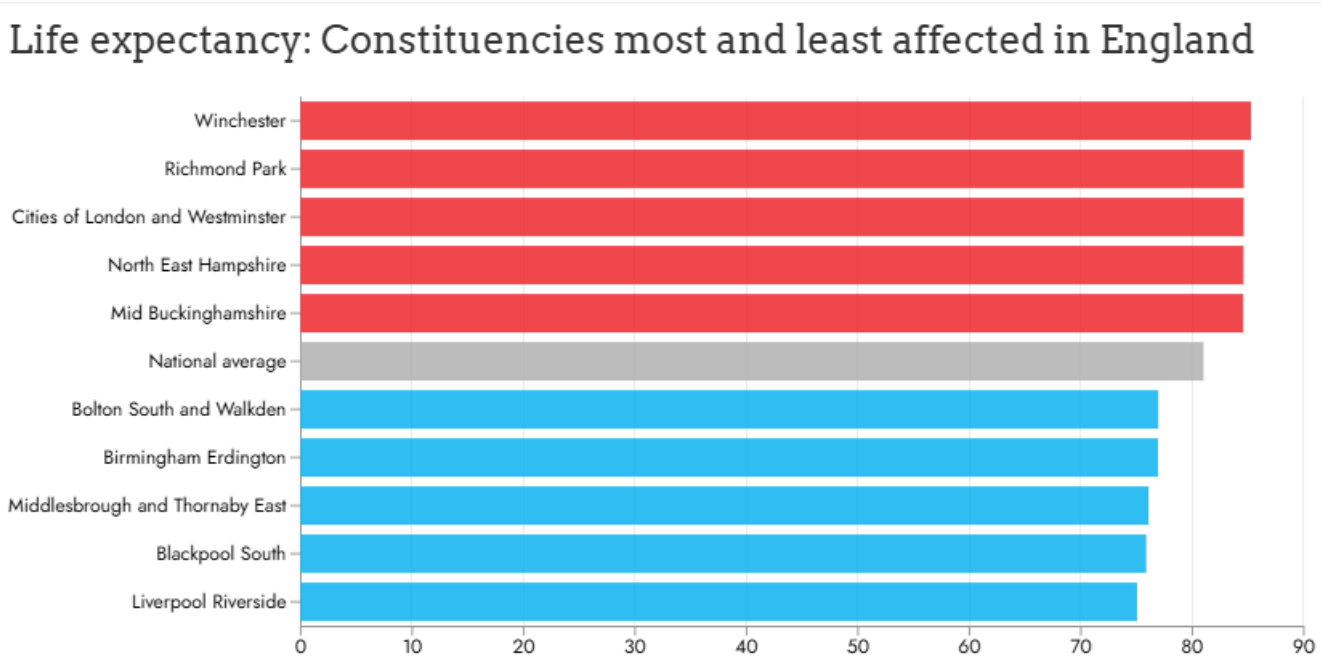
- Nearly 1 in 12 people across England have been diagnosed with type 2 diabetes
- The number of people with type 2 diabetes is 5 times higher in the worst affected constituency (1 in 8 people) compared to the least (1 in 40 people)

Type 2 diabetes: Constituencies most and least affected in England



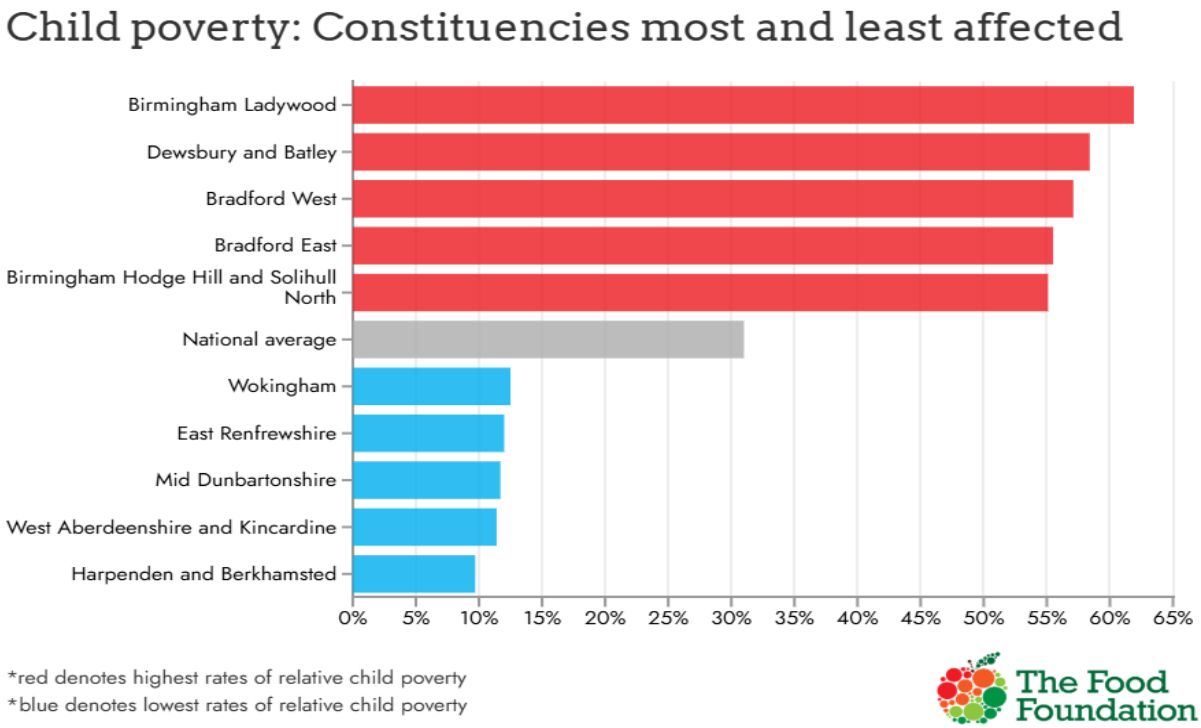
Life expectancy at birth

- The average life expectancy across the UK is 81 years
- Life expectancy is strongly linked to deprivation, with 9 years difference between the most and least deprived constituency.



Relative Child Poverty

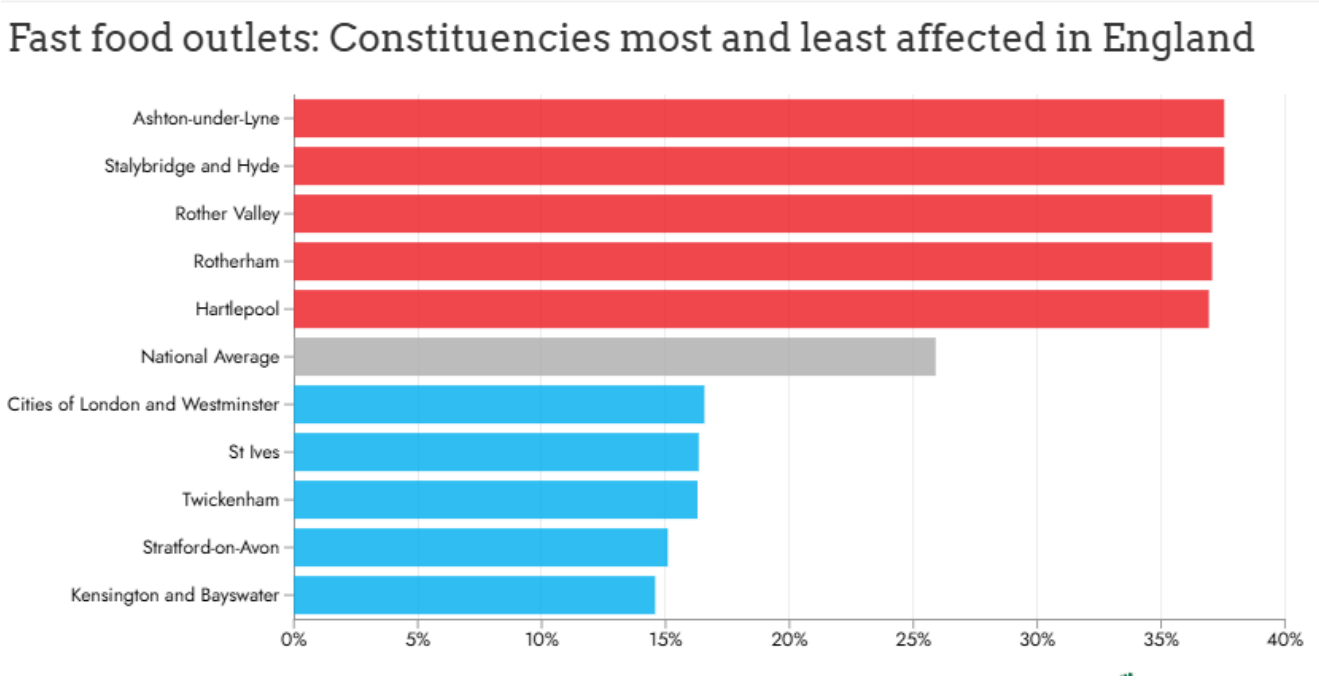
- 1 in 3 children in the UK live in poverty
- More than 6 in 10 children live in poverty in the worst affected constituency, compared to 1 in 10 in the least.



Proportion of food outlets that are fast food

- 1 in 4 food outlets are fast food outlets, rising to 1 in 3 in the most deprived areas.
- In the North East, 32% of food outlets are fast food outlets compared to 22% in the South

West.



Proportion of the population living in areas at high risk of food insecurity[14]

- More than two third of the population live in areas at high risk of food insecurity in the worst affected constituencies

While living in areas at high risk of food insecurity does not immediately mean individual households are food insecure, the risk is higher.. Similarly, living in an area of lower risk does not mean food insecurity is absent at a household or individual level. For more on household food insecurity, see The Food Foundation's tracking at: https://foodfoundation.org.uk/initiatives/food-insecurity-tracking.

Correlations between metrics

The number of constituencies that consistently performed poorly across all metrics was also explored. No constituencies were found to consistently appear in the worst 10% across the metrics. Nine constituencies fall in the bottom 25% across all metrics. Of these, 5 are in Yorkshire and The Humber, 3 are in the North West and 1 is in the West Midlands.

Rank	Region	Constituency
2	Yorkshire And The Humber	Bradford West
4	Yorkshire And The Humber	Bradford East
6	West Midlands	Stoke-on-Trent Central
9	Yorkshire And The Humber	Bradford South

[14] This metric refers to risk of living In an area within a constituency that Is considered high risk of food Insecurity. This differs from household food Insecurity which measures a households experience of food Insecurity

14	North West	Oldham West, Chadderton and Royton
15	North West	Blackpool South
16	Yorkshire And The Humber	Barnsley South
27	Yorkshire And The Humber	Doncaster North
37	North West	Oldham East and Saddleworth

Conclusion

Overall, stark health and diet inequalities exist across England. Constituencies across Yorkshire and The Humber, North East, North West and West Midlands frequently fare worse, compared to East of England, East Midlands, South West and South East. There is also a strong correlation between poor health outcomes and deprivation. The findings highlight the need for targeted local interventions to address diet and health inequalities that exist geographically, as well as socio-economically. This should also be alongside national level policies that can transform our food system to ensure that everyone, no matter where they live, has access to and can afford health and sustainable diets.

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