PUBLIC HEALTH

National Child Measurement Programme (NCMP)

2021/22 | East Riding of Yorkshire

Part of the East Riding of Yorkshire Joint Strategic Needs Assessment (JSNA)

Public Health Intelligence Team

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EAST RIDING OF YORKSHIRE COUNCIL

National Child Measurement Programme (NCMP)

Summary results for the East Riding of Yorkshire | 2021/22

Contents

1. Introduction

1.1. Background

Childhood obesity, with major implications on a variety of health outcomes, is of considerable interest to public health. Evidence shows that most children who are above a healthy weight will grow up to being overweight or obese in adulthood (Guo & Chumlea, 1999; Whitaker, et al., 1997; Freedman, et al., 2001). Obesity has a substantial impact on health and wellbeing where it not only determines risk of chronic disease but also involves social and mental implications (Sutaria, et al., 2019) (Smith, et al., 2020). As behaviours adopted in early years set precedent for later life, it becomes evident that prevention and early intervention are vital to reduce health conditions for both children and young people as well as later in life.

Combined interventions have been shown to provide the most observable impact for preventing and reducing childhood obesity (Brown, et al., 2019). Therefore, the case for partnership working is evident and integration between services will be vital to ensure the best health outcomes.

As part of the system wide approach to reducing childhood obesity, the National Child Measurement Programme provides both a valuable source of local BMI data and an opportunity to engage with schools and families on healthy lifestyles. The National Child Measurement Programme (NCMP) measures the height and weight of children in reception (aged 4 to 5 years) and year 6 (aged 10 to 11 years) to assess, observe and monitor overweight and obesity levels in primary school children. It was established in 2006/07 and this document provides a summary, explanation and exploration of the NCMP results for the school year 2021/22. This document is also one of many components of the East Riding of Yorkshire Joint Strategic Needs Assessment (JSNA).

Childhood obesity is a global, national and local problem and can lead to children developing type 2 diabetes, respiratory problems, high blood pressure and liver disease. National health policy has set targets to reduce the prevalence of overweight and obese children and to maintain a sustained downward trend in the number of children who are above a healthy weight. On a local level, the East Riding of Yorkshire Council is committed to providing and commissioning services to help reduce the prevalence of childhood obesity, reduce health inequalities and ensure a healthy future.

2. Key Points

Healthy weight: most common BMI category

- In 2021/22 the majority of children weighed and measured in the East Riding of Yorkshire during reception year and year 6 were of a healthy weight (75.8% and 61.5% respectively). This equates to more than 3 in 4 reception year children and over 3 in 5 year 6 children (section 4.2).

Overweight and obesity combined: increasing over time

- Over a fifth of reception age (23.8%) and over a third (37.5%) of year 6 children in the East Riding of Yorkshire were overweight or obese in 2021/22.
- While the prevalence of overweight (including obesity) within the East Riding has been lower than the national average over recent years, this advantage has been lost due to more children being above a healthy weight across both reception and year 6 groups (Appendix 9.1.1 and Appendix 9.1.2).
- Particularly, the growth of this combined category is driven by an increasing number of overweight reception year children. Table 4.4.1 illustrates that in 2021/22 it is the reception year pupils in the overweight category that is significantly higher than the national value as shown by the red cell colour.

Obesity: increasing over time among year 6 pupils

- Comparing the obesity prevalence across school years shows that childhood obesity is more than double in year 6 (22.6%) than it is in reception year (10.0%). While the prevalence is relatively stable among reception year children over the years (Figure 5.1.1), the value has increased among year 6 pupils (Figure 4.2.2 and Figure 5.1.2).

Obesity: associated with areas of deprivation and growing inequalities

- There was a higher prevalence of obese children in the 20% most deprived communities. In particular, strong signs of health inequalities in childhood obesity were present among year 6 pupils (Figure 5.4.2) as results showed that obesity is linearly correlated with deprivation.
- Most alarmingly, inequalities relating to childhood obesity in year 6 have grown over time (Figure 5.4.3). Examining the obesity of year 6 pupils from the most and least deprived areas shows that the gap has widened significantly by going from 5.9% (2006/07 – 2008/09) to 13.9% (2019/20-2021/22[1]).

Underweight: stable and lower than national averages

- In 2021/22, the quantity of underweight children in both year groups were significantly lower (i.e. better) when compared to the national averages. Over the recent years, excluding 2019/20 and 2020/21 due to COVID-19, the prevalence of underweight children had been relatively stable in the local authority and has been either lower or very similar to the national average (Figure 6.1.1 and Figure 6.1.2).
- No observable correlation was identified between the prevalence of underweight children and deprivation within the East Riding.

[1] The value for 2019/20 – 2021/22 omits information for the 2020/21 school year due to impacts of COVID-19.

3. Recommendations

More focus needs to be given to the health and wellbeing of our families, with children and young people. A system wide, holistic approach that considers health in all policies, processes and reviews would benefit families including children and young people to have greater opportunities to improve their health and wellbeing.

Funding for children and young people is limited, meaning interventions such as mental health support or weight management are difficult to access. A more joined up approach across the system may alleviate some of these challenges and see great benefits to the child and their family across several life aspects they may need support with.

It is also recommended that we consider improving the support available to families from a younger age to increase the education regarding children's nutrition as soon as they start experimenting with food, aiming to build confidence in parents regarding a balanced diet and knowledge of what is required at each developmental stage of their child.

This document clearly outlines that there is a large increase in weight between reception and year 6 children, however, the causes of this increase are not apparent. Furthermore, the trajectory of this increase from year 6 children as they progress into teenagers and young adults is also another area for additional examination, as there is no longer any tracking of weight past year 6. It is recommended that additional exploration may be useful to aid the understanding of primary aged children and their behaviours. As such, consideration for an additional measurement and support through secondary school may be recommended.

3.1. Childhood obesity interventions and programmes

Childhood obesity research presents valuable evidence for effective interventions and programmes to promote healthier lifestyles. While there are multiple systematic reviews and other studies on the topic, a Cochrane Review, a systematic review completed by a Cochrane Review Group, was primarily relied on for evidence relating to effective intervention towards childhood obesity.

This Cochrane review (Brown, et al., 2019) on interventions for preventing childhood obesity showed that differing interventions at reception and year 6 settings could have positive impacts on obesity. Combined interventions consisting of dietary and physical activity components were considered to reduce BMI among younger children (0 to 5 years), while purely physical activity-based interventions were deemed more effective for older children and adolescents.

While the application of findings on the topic is limited due to the use of studies from countries outside the United Kingdom and short-term studies, the review does provide grounds for wide community-level interventions to address childhood obesity. Promising strategies and policies for policy makers have been identified which include educational, environmental (school, home and community-based) and implemented approaches. Overall, multiple overviews and syntheses on the topic show that combined interventions, primarily those addressing diet and physical activity simultaneously, show the most promise (Psaltopoulou, et al., 2019).

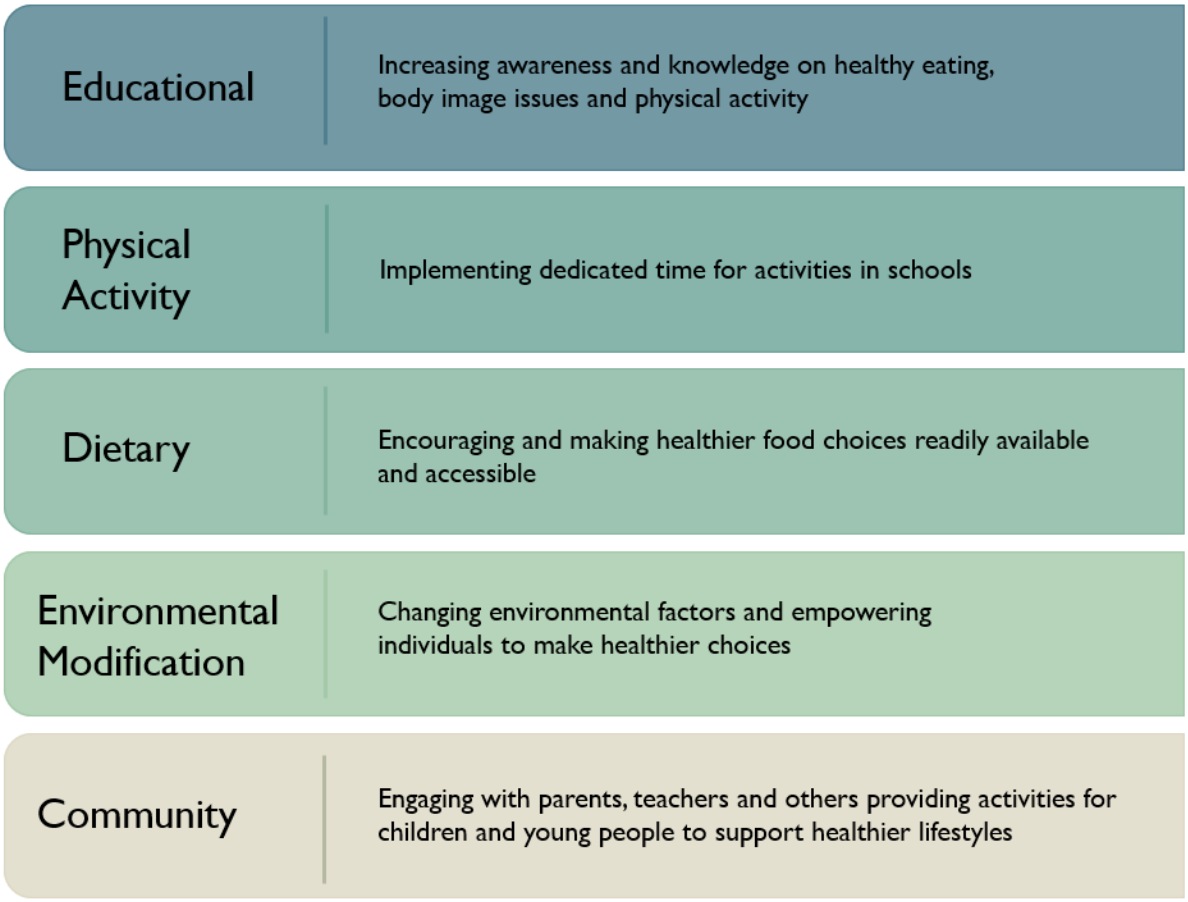

Figure 3.1.1. Types of interventions for childhood obesity prevention and reduction.

When planning and commissioning interventions, it can be useful to note that the effectiveness of childhood obesity interventions can vary by contextual and individual factors. A recent study (Ijaz, et al., 2021) suggests that contextual factors, such as sex, parental education or socioeconomic status, influence the effectiveness of a given programme may be. In line with other studies (Breheny, et al., 2005) (Brown, et al., 2016) girls were found to benefit more from childhood obesity interventions and social norms were cited as a key factor. However, other reviews (Bambra, et al., 2015) have conversely suggested that obesity management interventions do not widen health inequalities.

3.2. Socioeconomic inequalities and childhood obesity

Several studies on childhood health have found that socioeconomic inequalities influence both the prevalence of childhood obesity and the engagement with preventative interventions. A systematic review of childhood obesity in the UK (El-Sayed, et al., 2012) found that socioeconomic position, as indicated through deprivation measures, and childhood obesity are associated, such that more deprived areas show greater prevalence of obesity. Findings of this review were also in line with reports from the National Obesity Observatory.

4. Summary statistics for 2021/22

4.1. Participation rates in East Riding schools

During 2021/22, there were 3,205 reception year children and 3,440 year 6 children measured within East Riding schools as part of the NCMP programme. This equated to overall participation rates of 98.0% for reception year (20th highest out of 152 unitary local authorities) and 95.4% for year 6 (40th highest). The East Riding rates were higher than the England average participation rates of 92.8% and 91.9% for reception year and year 6 respectively.

Unlike the paragraph above, which summarised the number of children weighed and measured in East Riding schools whether or not they were East Riding residents, the rest of the document is specifically about children who reside within the East Riding of Yorkshire boundary. The total number of East Riding resident children weighed and measured were 3,018 in reception year and 3,344 in year 6.

4.2. Population BMI category: numbers and prevalence within the East Riding

The breakdown of pupils residing within the local authority according to BMI categories for 2021/22 are shown in Figure 4.2.1 below.

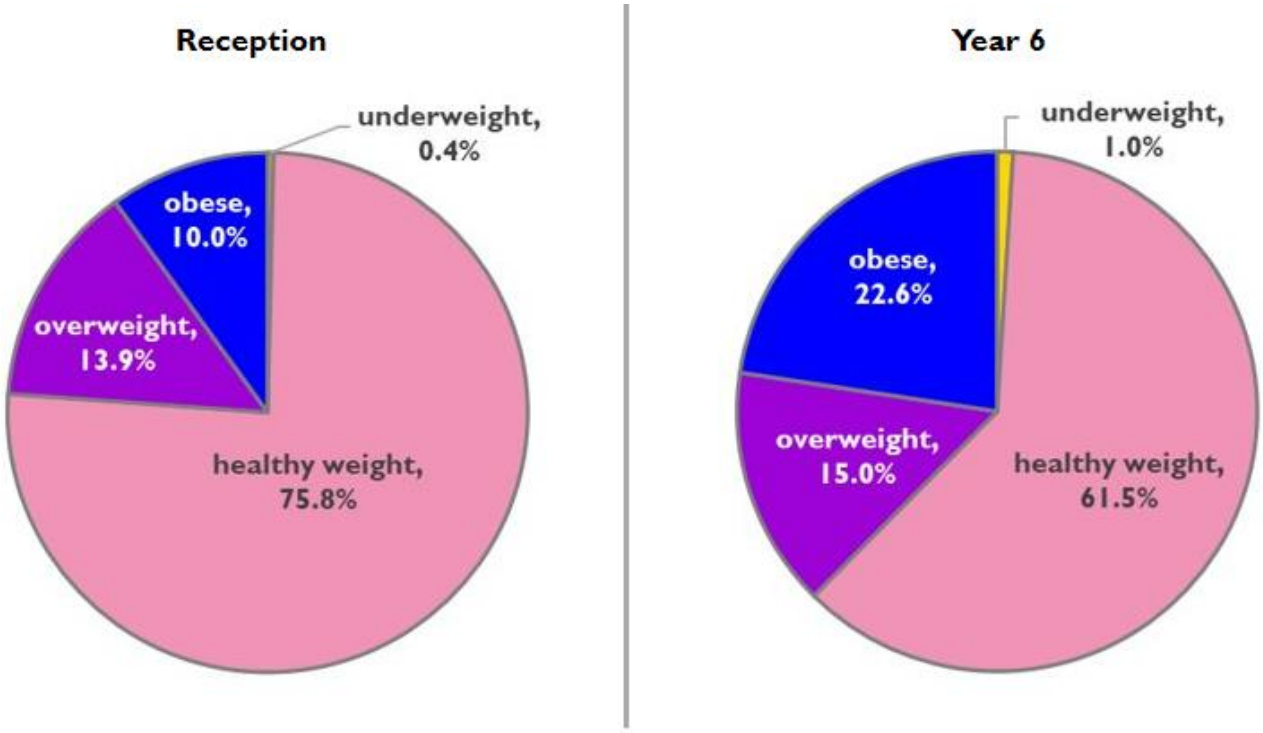

Figure 4.2.1. BMI categories for East Riding pupils in 2021/22 by school year.

The points below provide general information regarding the prevalence and numbers of children within each of the other categories in 2021/22. In both year groups, most pupils are overwhelmingly of a healthy weight.

Underweight

- The East Riding prevalence for underweight children in reception year and year 6 was 0.4% (n=11) and 1.0% (n=33) respectively.

Overweight

- East Riding children in the overweight category numbered 419 in reception year and 500 year 6, giving a prevalence of 13.9% and 15.0% respectively.

Obese

- A tenth (10.0%, n=301) of East Riding reception year children and 15.0% (n=756) of year 6 children were categorised as obese.

However, as seen in recent years (Figure 4.2.2) the prevalence of obesity in year 6 (22.6%, n=756) is over twice that of reception year children (10.0%, n=301). Although these are two different cohorts of pupils, due to similar patterns being observed in previous years, this may suggest that pupils are particularly prone to exceeding a healthy weight within this period.

In terms of trends over time, the figure below also shows that obesity among reception year children has remained stable (9.2% in 2006/07 and 10.0% in 2021/22). Conversely, obesity among year 6 pupils has increased significantly (15.7% in 2006/07 and 22.6% in 2021/22).

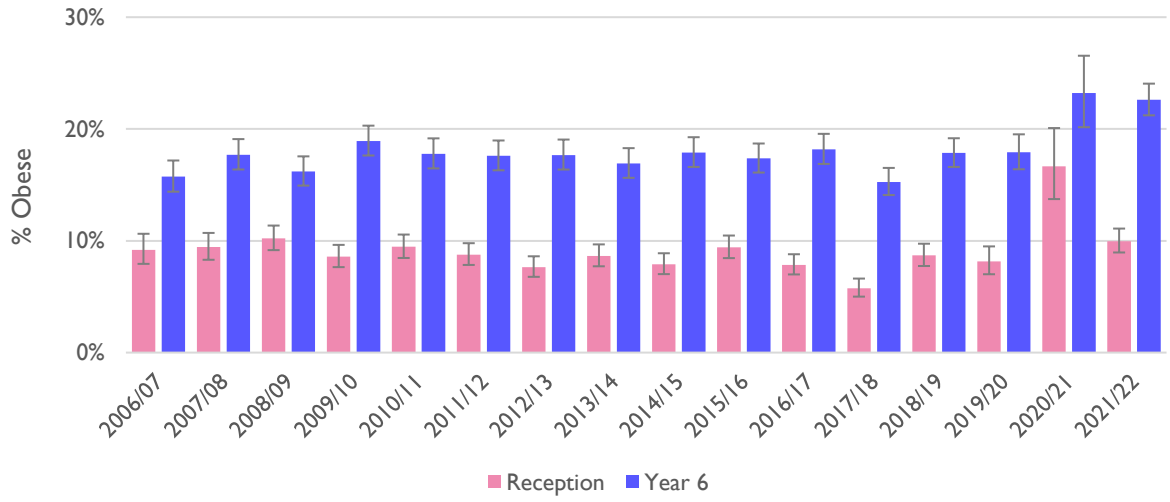

Figure 4.2.2. Obesity prevalence among year 6 and reception pupils across academic years.

4.3. Prevalence of each population BMI category by sex

Nationally the prevalence of obesity was significantly higher in boys, compared to girls for both reception year and year 6 in 2021/22 (Figure 4.3.1). Across England, 10.3% of reception year boys were obese, compared to the girls' prevalence of 9.9%. In year 6, the gap grew to 26.4% and 20.4% for boys and girls respectively. In the East Riding, whilst the obesity prevalence among boys was higher than girls for both school years, this was only a significant difference among year 6 pupils.

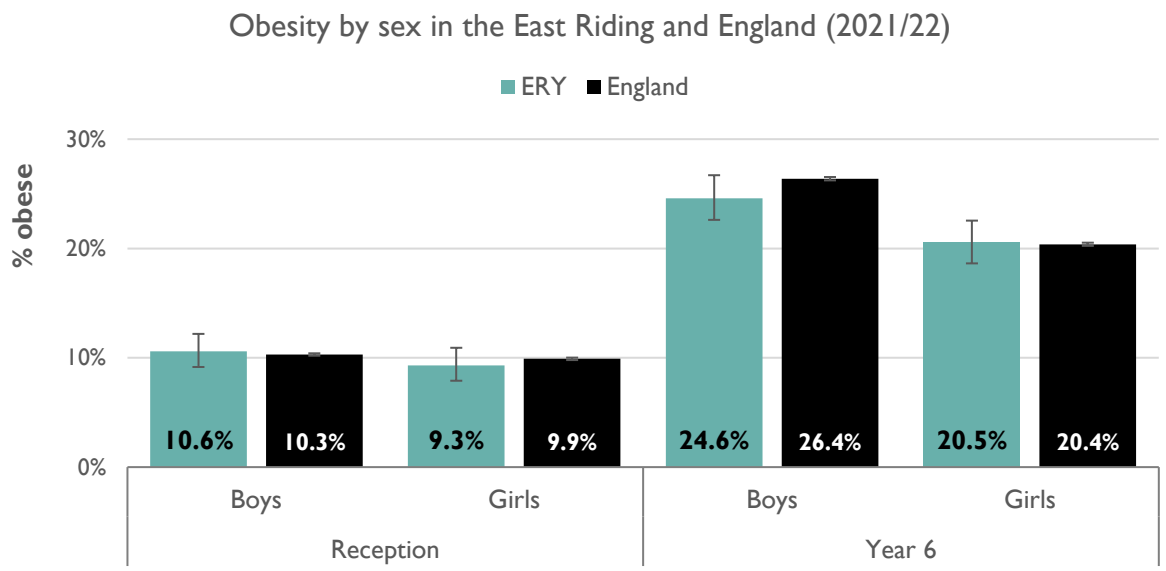

Figure 4.3.1. Prevalence of obesity by sex in 2021/22 showing the national and local authority values.

Figure 4.3.2 illustrates the prevalence of each BMI category by sex for East Riding pupils during 2021/22. In reception year boys recorded a higher prevalence for both overweight and obesity and a lower healthy weight compared to girls (74.1% compared to 77.7%) though these differences were not statistically significant.

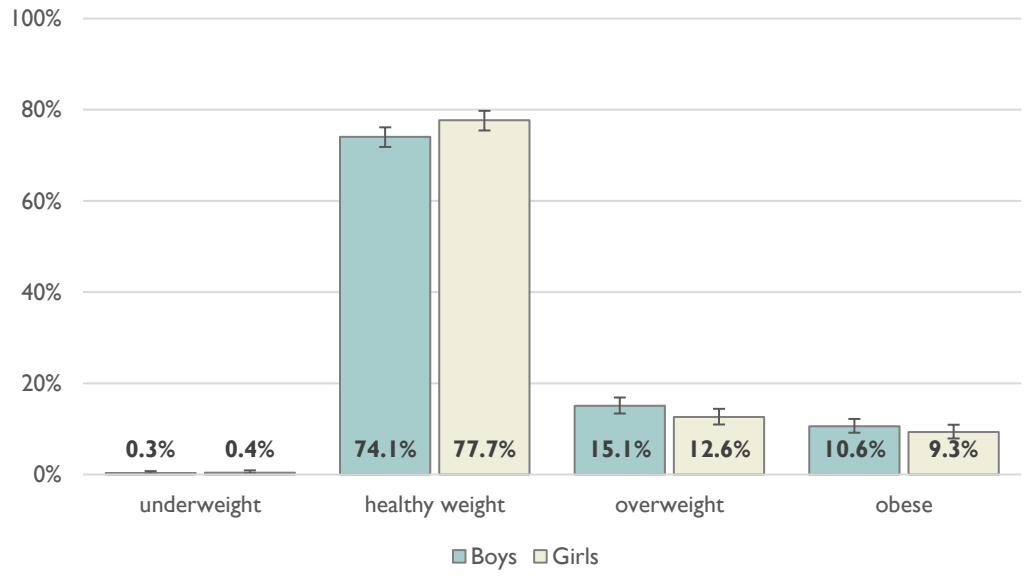

Figure 4.3.2.Reception: prevalence of BMI categories by sex across East Riding in 2021/22.

Conversely, by year 6 differences in the obesity prevalence by gender became more significant. In year 6 the boys' prevalence of obesity exceeded that of girls (24.6% compared to 20.5%) in a way that is statistically significant.

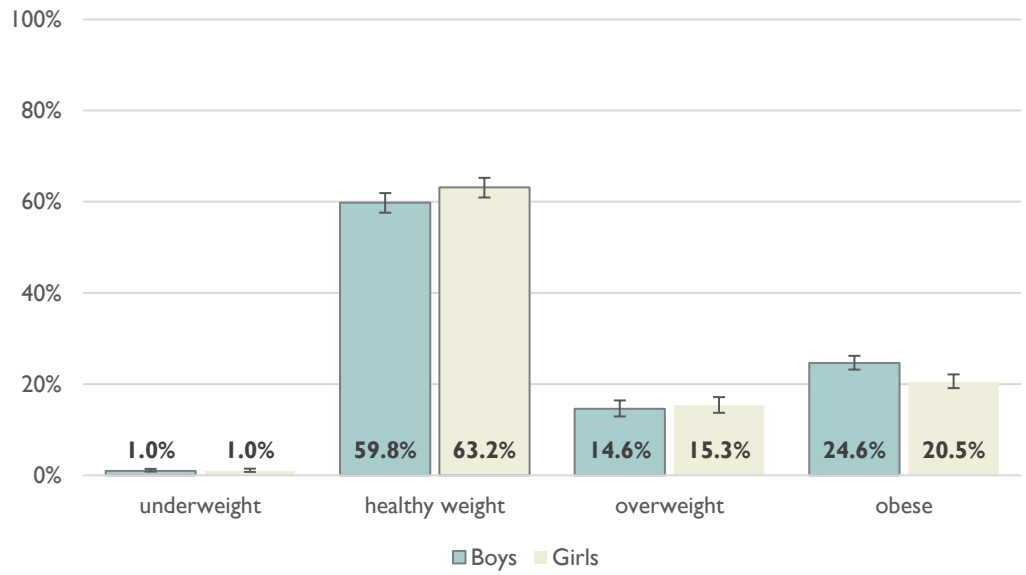

Figure 4.3.3. Year 6: prevalence of BMI categories by sex across East Riding in 2021/22.

4.4. Prevalence of each population BMI category, a comparison with region and England

Table 4.4.1 provides a comparative summary for each BMI category. The coloured cells in the table indicate statistical differences between the East Riding and England. Most of the table cells are coloured amber, indicating that no statistically significant differences were experienced in the East Riding compared to national BMI categories. The exceptions to this shown by the green cells indicate that the prevalence of underweight children in the East Riding is significantly lower across both year groups. Conversely, the prevalence of overweight reception age children in the local authority is significantly higher than the national average.

In 2021/22, the East Riding prevalence of underweight children was found to be significantly lower (i.e. more favourable) in both school years when compared to England.

Key points from the table include:

- The underweight prevalence in both reception year (0.3%) and year 6 (1.1%) were significantly lower than the England averages (1.2% and 1.5% respectively).
- The proportion of children at a healthy weight within the East Riding was similar to that observed across England in both reception year and year 6.
- The East Riding prevalence of overweight children was greater than what was observed across England, particularly for reception year children where the difference was statistically significant (13.8% versus 12.1%) while for year 6 pupils the difference was not statistically significant (15.0% versus 14.3%).
- Proportions of obese children in both year groups were similar to levels observed across England.

Table 4.4.1. NCMP summary statistics for 2021/22 across England, Yorkshire and the Humber and the East Riding.

	Reception			Year 6		
BMI Category	**ERY**	**Y&H**	**England**	**ERY**	**Y&H**	**England**
Underweight	0.3%	1.1%	1.2%	1.1%	1.4%	1.5%
Healthy weight	75.7%	75.1%	76.5%	61.5%	59.4%	60.8%
Overweight	13.8%	12.8%	12.1%	15.0%	14.3%	14.3%
Obese	10.0%	11.0%	10.1%	22.7%	24.9%	23.4%

	Reception			Year 6		
Other categories	**ERY**	**Y&H**	**England**	**ERY**	**Y&H**	**England**
Severely obese	2.5%	3.2%	2.9%	5.0%	6.4%	5.8%
Overweight and obese combined	23.8%	23.7%	22.3%	37.5%	39.2%	37.8%

Significantly better than England | Similar to England | Significantly worse than England

5. BMI Category – Obese

5.1. Past trends of obesity with the East Riding, compared to England

The prevalence of obesity between 2006/07 and 2021/22 is shown for both reception year and year 6 in Figure 5.1.1 and Figure 5.1.2 using national NCMP data from OHID Fingertips. These figures compare the East Riding prevalence against the England average (black line and black circular markers) for the duration of this period. The East Riding markers are coloured according to their statistical significance in relation to national values. Due to the absence of a red marker, the charts below indicate that the East Riding has not had a significantly higher prevalence of obesity compared to England.

When interpreting trends over time, please note low participation rates in 2019/20 and the omission of NCMP data in 2020/21 due to COVID-19. For more information on the effects of the COVID-19 response on NCMP data collection, please refer to the NCMP data quality statement.

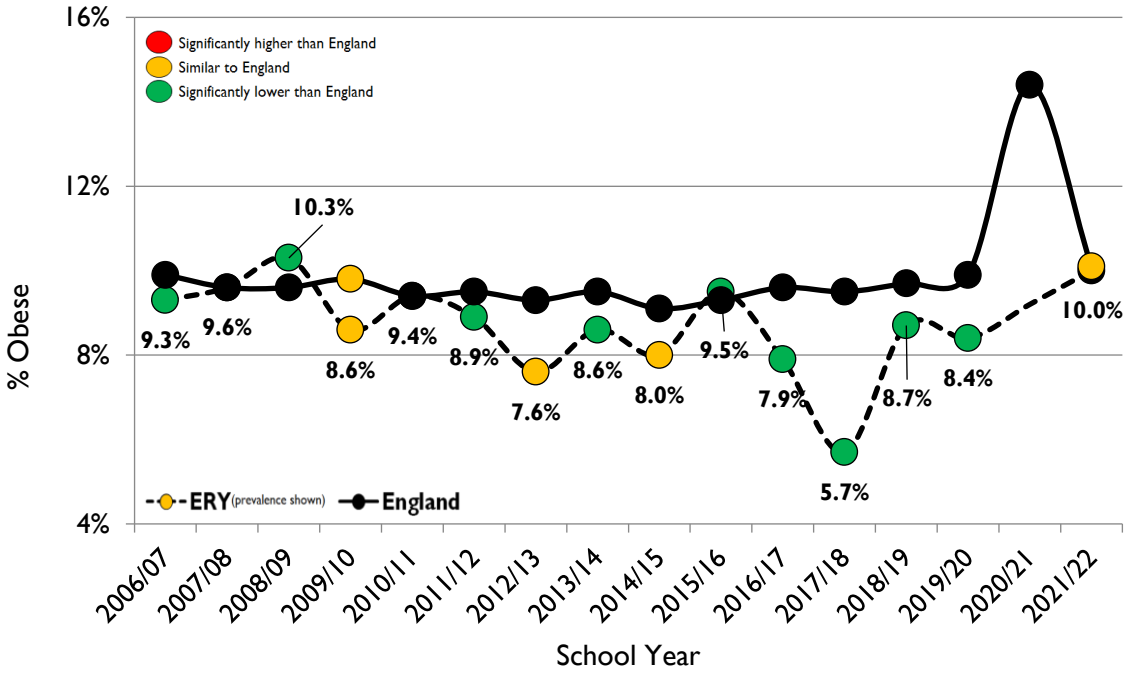

Figure 5.1.1 Obesity prevalence in reception year within the East Riding and England. Local authority level data from the 2020/21 NCMP has been omitted due to COVID-19.

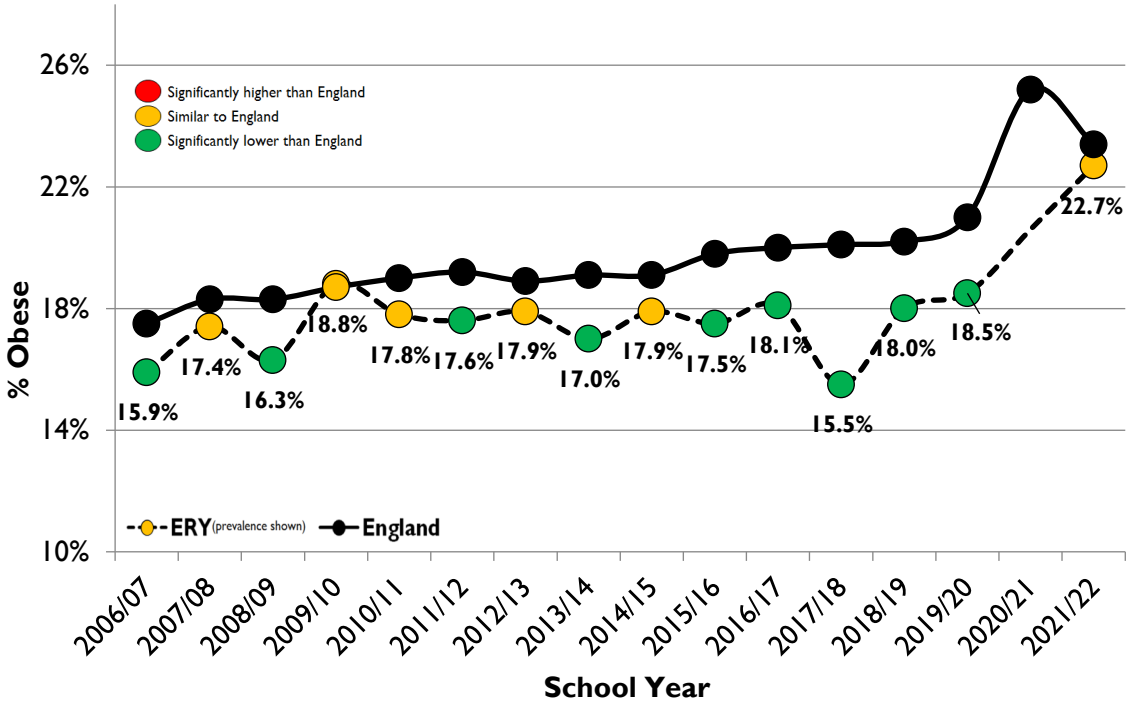

Figure 5.1.2. Obesity prevalence in year 6 within the East Riding and England. Local authority level data from the 2020/21 NCMP has been omitted due to COVID-19.

As highlighted in section 4.4, in 2021/22, the East Riding had a similar prevalence of obesity to England in both reception year and year 6 cohorts.

Viewing the charts above, it appears that 2017/18 was also an abnormal year, with a sudden drop in prevalence going against the trend seen before. No observable reason for this anomaly has been given based on impacts to NCMP data collection procedures, nor were significant changes observed in terms of the sample size of pupils being measured.

Between 2018/19 and 2021/22, the prevalence of obesity in the East Riding has increased from 8.7% to 10.0% for reception and the year 6 prevalence has increased from 18.0% to 22.7%. Overall, obesity among reception and year 6 children has been increasing and getting worse, however this increase is particularly significant for year 6 children.

Looking at the whole period (2006/07 to 2021/22), the East Riding and England reception year prevalence appears to have remained similar and for year 6 the prevalence has been gradually increasing.

5.2. The prevalence of obesity in the East Riding compared to other local authorities

Earlier in this document the prevalence of obesity in East Riding was compared with the regional average and whilst this is a convenient comparison to make because of the location of the East Riding it might not be the most suitable. A number of East Riding characteristics differ from its regional neighbours, therefore the Chartered Institute of Public Finance and Accountancy (CIPFA) Nearest Neighbours (see Supplementary Information) have been for comparison.

Individual bars in the figures shown below are coloured according to statistical significance compared to the national average such that amber indicates no significant difference, green denotes a statistically better value and red is used for values which are statistically worse off than nationally.

Appendix 9.1.4 compares the 2021/22 East Riding prevalence of reception year obesity against other local authorities within the Yorkshire and Humber region (top) against the nearest 15 CIPFA neighbours (bottom). The East Riding had the 5th lowest prevalence within the region and 4th highest amongst CIPFA neighbours.

Similarly, Appendix 9.1.5 shows the prevalence for year 6, where the East Riding had the 5th lowest prevalence in the region but was the 3rd highest amongst CIPFA neighbours.

Consequently, both figures above indicate the East Riding obesity prevalence ranks similarly in comparison to both regional and CIPFA neighbours across both year groups. The comparatively low rank when compared to regional neighbours suggests the local authority is performing well for the region and that the obesity prevalence is similar to the national average (amber). Conversely, when compared to CIPFA neighbours, the East Riding ranks among the top. This suggests that when compared to similar areas, the performance could be improved. As a result, regional comparisons should be interpreted alongside CIPFA neighbours for holistic insights.

5.3. Obesity prevalence within the wards of the East Riding

So far, this document has examined the prevalence of different child weight categories at a local authority level which allows comparison to national and other local authorities.

In order to examine the inequalities experienced within the local authority, electoral wards and Lower-layer Super Output Areas (LSOA) have been a natural choice of geography for analysis. Service professionals and members of the public are generally familiar with them, and they are also politically relevant too. There are 26 wards and 210 LSOAs (Census 2011) within the East Riding, and similarly to deprivation bands (section 5.4) they can be used to view inequalities across areas.

Figure 5.3.1 and Figure 5.3.2 display the prevalence of obesity by the wards of East Riding, for reception year and year 6. Both charts highlight which wards are significantly higher than the East Riding average (red) and those that are significantly lower (green).

Unlike the other analysis so far used in this document (which have concentrated solely on the latest NCMP year), the ward charts use a 3-year combined period to provide a more robust set of data to calculate the prevalence. Data for 2020/21 was excluded from the pooled data due to low participation rates during COVID-19. Therefore, the last pooled data contains values for 2018/19, 2019/20 and 2021/22.

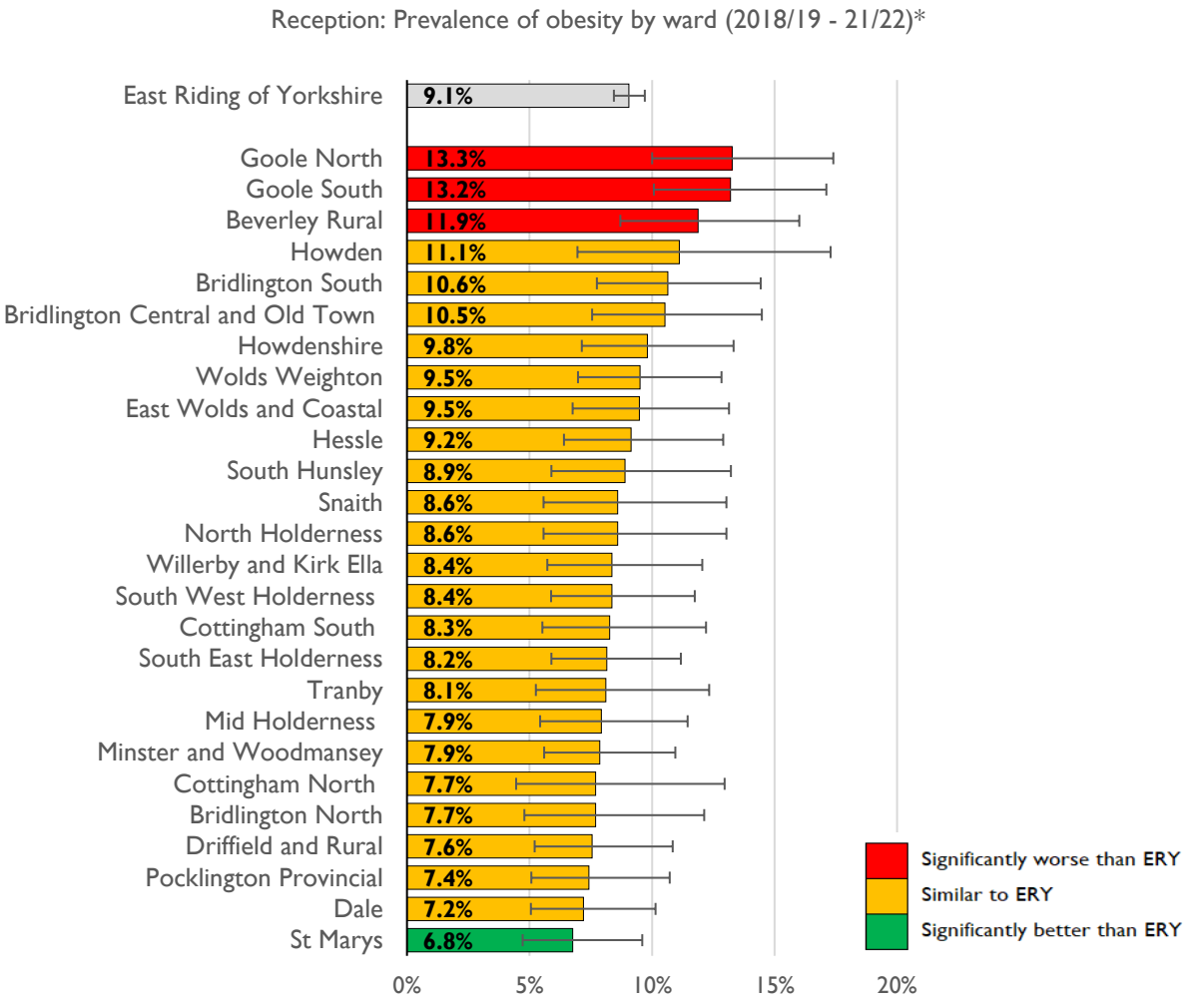

Figure 5.3.1. Obesity prevalence by ward among reception year pupils in 2018/19 to 2021/22 (3-years pooled). *Data from 2020/21 was not used due to low participation rates during COVID-19.*

The highest prevalence of childhood obesity among reception year pupils occurred across Goole North and South (13.3% and 13.2% respectively), which were significantly higher than the corresponding average across the East Riding (9.1%). The previous NCMP position statement for 2018/19 also reported Goole North and South as having significantly higher prevalence values (10.5% and 10.7%) compared to the East Riding average. St Mary's was the only ward with a lower childhood obesity prevalence than the local authority average. Overall, childhood obesity among reception year children across the local authority and all wards has increased.

The ranking of the wards based on the reception year obesity prevalence, appears to show some of the East Riding more deprived wards with a higher prevalence of obesity (e.g. Goole South and Goole North) than some of the least deprived wards at the bottom (e.g. St. Mary's). However, there was no conclusive pattern regarding deprivation and this is reflected more accurately later in section 5.4.

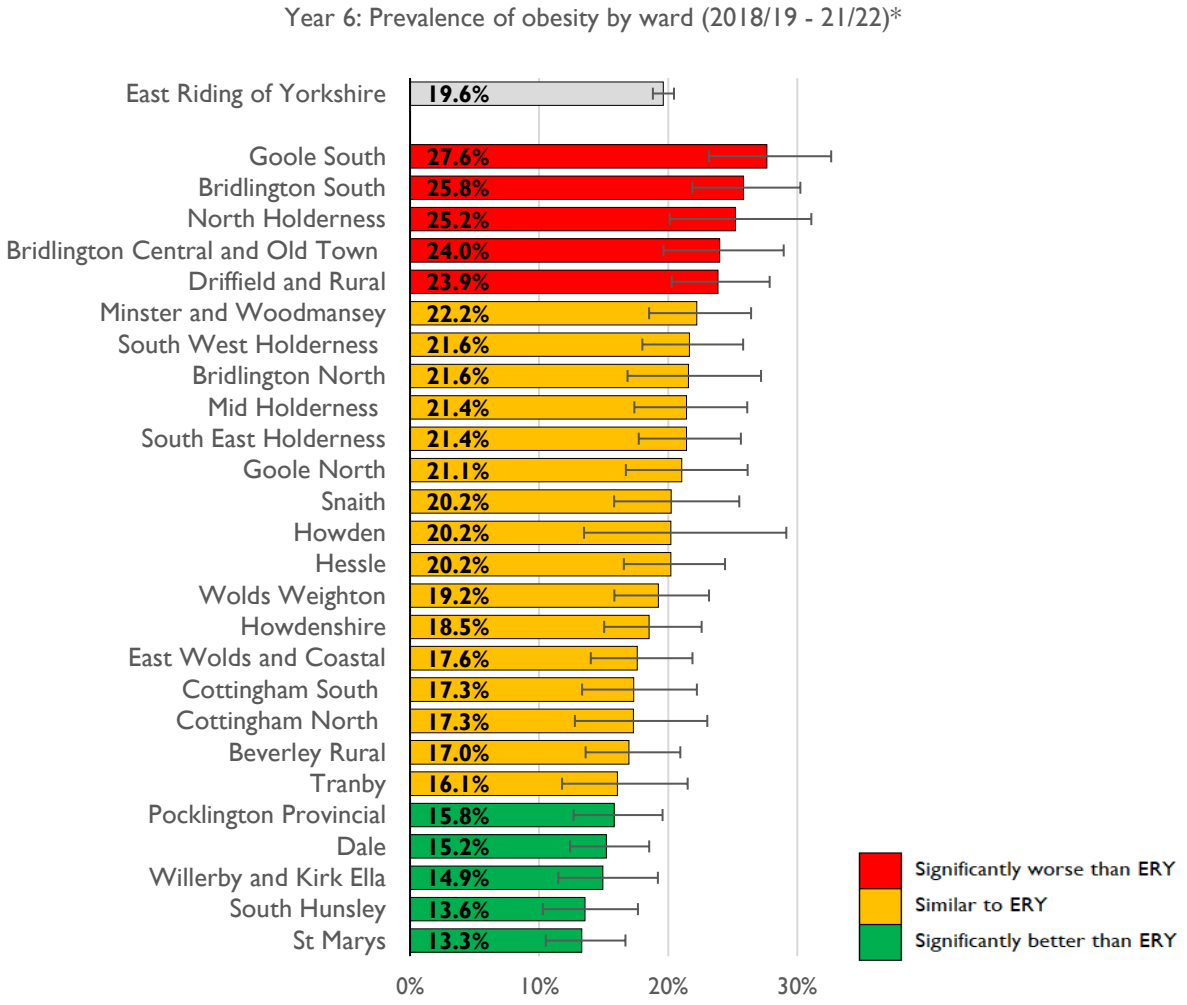

Figure 5.3.2. Obesity prevalence by ward among year 6 pupils in 2018/19 to 2021/22 (3-years pooled). *Data from 2020/21 was not used due to low participation rates during COVID-19.*

For year 6 children (Figure 5.3.2) Goole South recorded the highest prevalence of obesity followed by Bridlington South and North Holderness. These wards alongside Bridlington Central & Old Town and Driffield & Rural all showed higher prevalence of obesity than the local authority average (19.6%) and are typically considered to be among the most deprived in the East Riding. Several wards, typically among the least deprived wards in the local authority, showed significantly lower occurrence of childhood obesity among year 6 pupils. The increasing polarity of higher childhood obesity prevalence among more deprived wards compared to the lower prevalence observed across less deprived wards may suggest a growing gap among children's' health inequalities. The next section (5.4) will examine obesity prevalence across deprived communities in greater detail.

5.4. Obesity prevalence by deprivation

In this section, the Index of Multiple Deprivation (IMD) was used to measure relative deprivation in the East Riding of Yorkshire to assess correlation between childhood obesity and deprivation.

While the previous section touched on deprivation across wards, as wards are not officially given a deprivation score, it is more appropriate to examine deprivation across LSOAs.

England – obesity by IMD deprivation

Nationally, there is a strong relationship between deprivation and childhood obesity historically and this is increasingly the case in 2021/22. The OHID Fingertips inequality tool reports (Appendix 9.1.6) that 13.6% of reception year children living in the most deprived decile (i.e. the most deprived 10% of LSOAs in England) are obese, compared with almost 6.2% in the least deprived decile.

In Year 6 the prevalence of obesity in the most deprived decile rises to 31.3%, compared to 13.5% in the least deprived decile (Appendix 9.1.7). Nationally, there is a consistent decrease in the prevalence of obesity from the most deprived decile through to the least deprived decile in both school year groups.

East Riding of Yorkshire – obesity by local IMD deprivation quintiles

For the deprivation analysis of the East Riding, a slightly different methodology has been used. This is because the East Riding is generally less deprived than England as there are fewer areas within the East Riding that fall within the most deprived national deciles. Therefore, in this section 'local deprivation quintiles' have been used, where the 210 East Riding LSOAs have been ranked based on their IMD 2019 score and then divided into fifths to form equal local quintiles. Whilst the local quintiles are based on the same IMD 2019 system as the national deciles, they are not comparable.

The figures below reveal the obesity prevalence for the different local deprivation quintiles of the East Riding for reception year and year 6 respectively during 2018/19 to 2021/22. Similar to the ward-based analyses, these figures use a 3-year combined period to provide a more robust set of data to calculate the prevalence. Data for 2020/21 was excluded from the pooled data due to low participation rates during COVID-19. Therefore, the last pooled data contains values for 2018/19, 2019/20 and 2021/22.

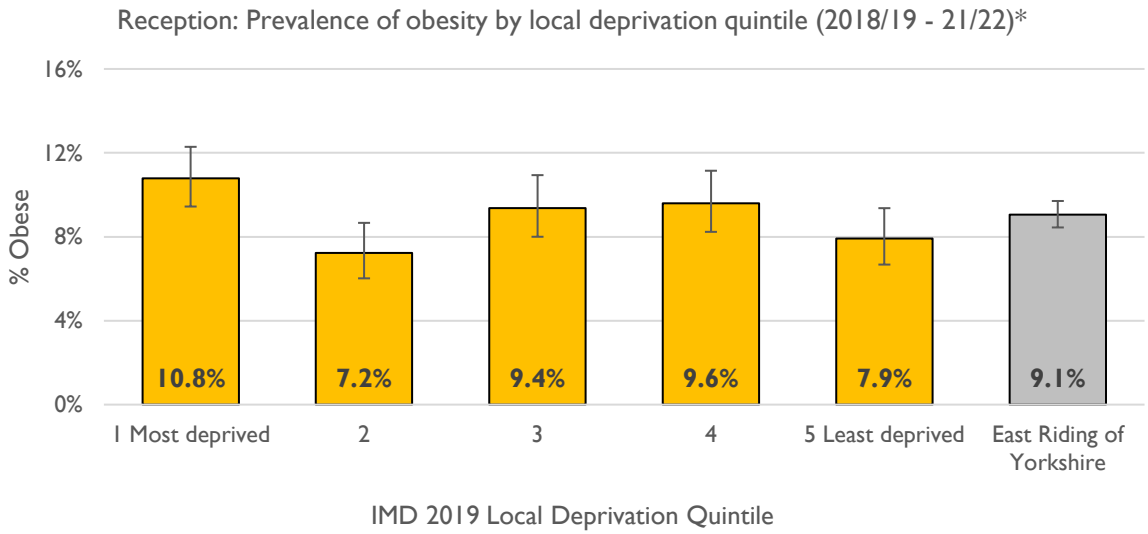

Figure 5.4.1. Prevalence of obesity in reception year children by local IMD quintiles in 2018/19 to 2021/22 (3-years pooled). *Data from 2020/21 was not used due to low participation rates during COVID-19.*

In reception year (Figure 5.4.1), all deprivation quintiles were found to be statistically similar to the East Riding local authority average (10.0%). The difference in obesity prevalence between the most and least deprived quintiles was also not significantly different (indicated by the overlap between corresponding error bars). Unlike England overall, the deprivation quintiles did not uniformly decrease

in prevalence. The most deprived quintile did have a higher prevalence compared to other quintiles, and surprisingly quintile 2 was found to have the lowest prevalence (7.6%) overall.

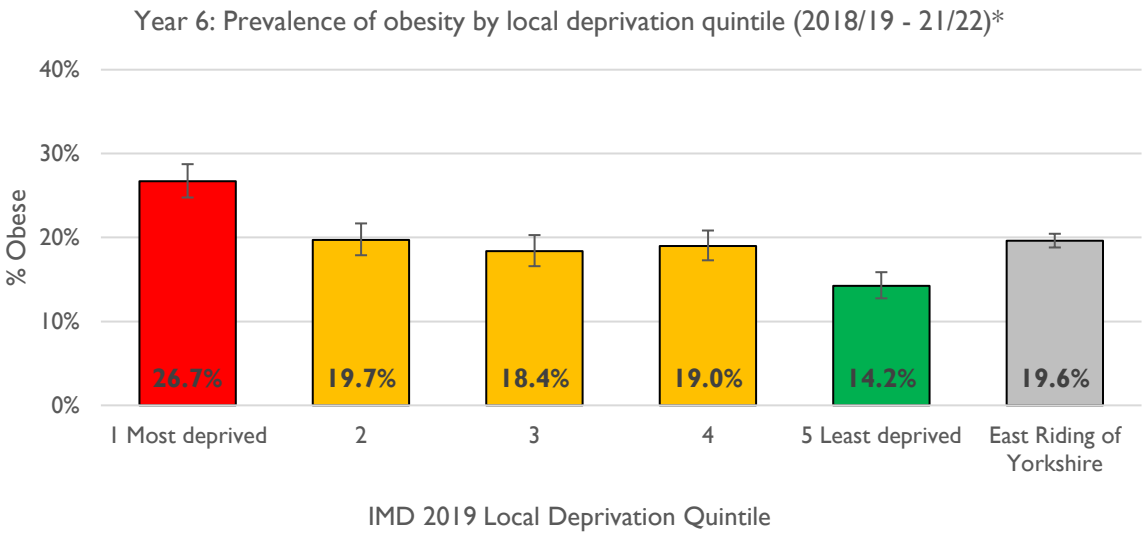

Figure 5.4.2.Prevalence of obesity in year 6 children by local IMD quintiles in 2018/19 to 2021/22 (3-years pooled). *Data from 2020/21 was not used due to low participation rates during COVID-19.*

For year 6 pupils (Figure 5.4.2), there is an overall decrease in obesity prevalence between local deprivation quintiles except for quintile 4 (22.8%) having a greater prevalence than expected. Nearly a third (30.0%) of year 6 pupils in the most deprived quintile were classed as obese. This graph also corroborates the suggestion (section 5.3) that deprivation likely affects childhood obesity among year 6 pupils, such that pupils from the most deprived areas are more likely to be classed as obese than others from less deprived areas.

East Riding of Yorkshire – obesity by deprivation trends

To examine health inequalities for childhood obesity, Figure 5.4.3 illustrates the trends among the most (blue squares) and least deprived (yellow circles) local IMD quintiles. The distance between the most and least deprived quintiles indicates the degree of health inequalities for year 6 obesity.

Do note that rather than using single academic years, 3-years of data have been combined to mitigate random irregularity that is often found with data. For instance, to form the first values, NCMP data from academic years 2006/07, 2007/08 and 2008/09 have been combined. The latest two values take exception to this due to the poor quality of NCMP data during COVID-19. Particularly, data from the 2020/21 academic year has been omitted.

Since the conception of the NCMP, multiple iterations of the IMD (2004, 2007, 2010 and 2015) have occurred. Therefore, the most appropriate version of the IMD were used for the school years shown below.

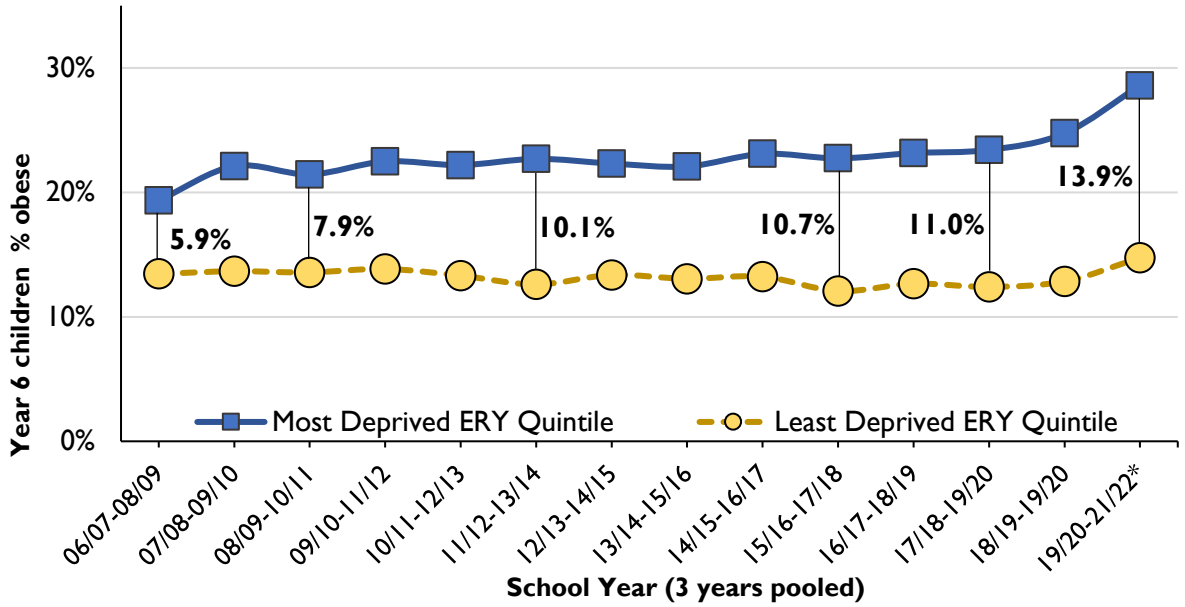

*Figure 5.4.3. Year 6 obesity prevalence (3-years combined) by local IMD quintiles. *The value for 2019/20 – 2021/22 does not include 2020/21 data.*

Examining the prevalence of obesity of year 6 pupils from the most and least deprived local deprivation quintiles over time (Figure 5.4.3) illustrates growth in the health inequalities relating to childhood obesity over time. Over time, the difference between obesity among year 6 pupils from the most and least deprived areas has increased from 5.9% (2006/07 – 2008/09) to 13.9% (2019/20 – 2021/22).

5.5. Prevalence of obesity in rural and urban areas

To examine whether differences in the incidence of childhood obesity occur based on rural and urban areas, pupil LSOAs were assigned with the appropriate 2011 Rural Urban Classification (RUC) defined by the cross governmental working group formed by Defra, DCLG and the ONS.

The chart below shows the difference between obesity prevalence for pupils living in urban and rural areas. In both school years, urban children showed a higher obesity prevalence, however the differences were not statistically significant. Neither urban nor rural categories were significantly different from the East Riding average in either pupil year, as indicated by the amber bars.

For context, the East Riding of Yorkshire is 43.3% rural by population using mid-year 2020 population estimates. Similar proportions among measured pupils were observed, such that 41.0% of pupils measured by the 2021/22 NCMP were from rural areas, therefore skewed sampling on the basis of RUC11 classifications has not taken place. Therefore, it does not seem obesity is swayed by rural-urban classifications.

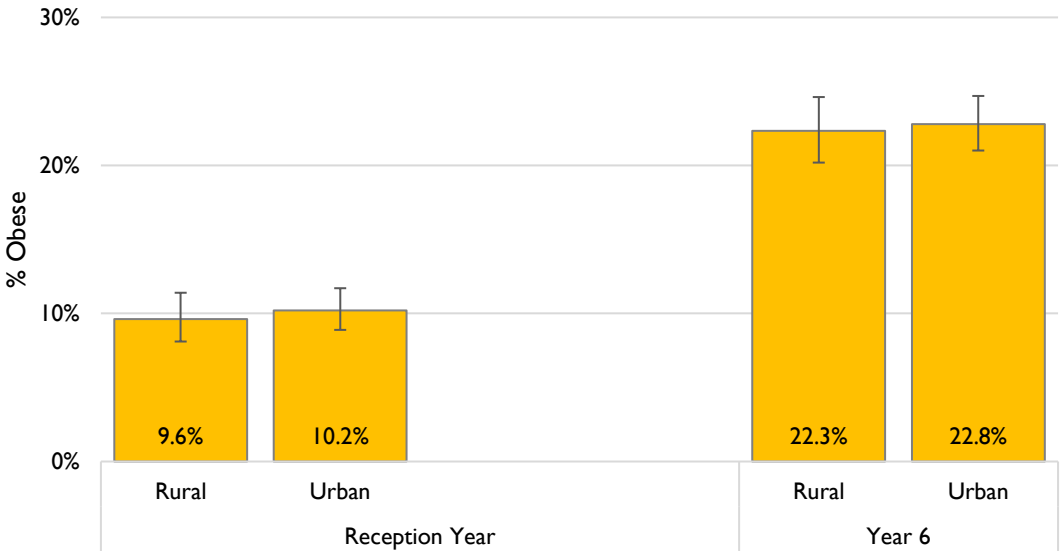

Figure 5.5.1. Prevalence of obesity in rural and urban areas in 2021/22.

5.6. Obesity prevalence by school

This section describes the implications of using school-based locations to assess deprivation. While NCMP data reports both the pupil and school-locations, this document has primarily used the pupil-postcodes to assess the correlation between obesity and deprivation (5.4).

The obesity prevalence across schools and by the IMD decile (national) within which the school is located was examined.

To yield the results shown in the table below, postcodes of schools and their assigned IMD 2019 deciles were determined. Subsequently, the percentage of pupils eligible for free school meals (FSM) and the proportions of obese pupils were averaged and grouped by IMD deciles.

Table 5.6.1. School-based obesity prevalence and free school meals eligibility, 2021/22.

	Reception		Year 6	
School IMD Decile	**Average FSM**	**Average obesity**	**Average FSM**	**Average obesity**
1 - most deprived	42.1%	26.8%	48.3%	24.3%
2	32.7%	6.4%	23.8%	27.4%
3	35.7%	17.5%	31.9%	46.0%
4	25.9%	16.3%	26.6%	34.8%
5	20.3%	6.3%	21.6%	49.8%
6	19.5%	6.4%	18.9%	18.8%
7	16.5%	6.5%	16.9%	21.0%
8	16.3%	7.1%	15.9%	22.5%
9	9.2%	9.4%	8.7%	17.4%
10 - least deprived	7.5%	8.5%	7.5%	18.8%

Table 5.6.1 shows that both free school meal eligibility and obesity tend to be more prevalent among schools in deprived areas. However, while free school meal eligibility across both pupil groups tends to correlate with deprivation linearly, the prevalence of obesity among these pupil groups does not consistently follow deprivation. Consequently, it has been decided to primarily use the locations in

which pupils reside as the primary location for examining deprivation in section 5.4. It is also worth noting that this is not to suggest there are links between free school meal (FSM) eligibility and obesity.

6. BMI Category – Underweight

6.1. Past trends of underweight prevalence compared to England

Historically, the prevalence of underweight reception year and year 6 children in the East Riding, has usually been lower than the England average and this is illustrated in Figure 6.1.1 and Figure 6.1.2 respectively. When interpreting the figures shown below, it is important to remember the impact of COVID-19 on the low participation rates for NCMP results in 2019/20 and the absence of local authority level data for 2020/21.

During the last few years, the East Riding reception year prevalence has remained similar (0.6% in 2019/20 and 0.4% in 2021/22) and similarly among the year 6 pupils (1.0% in 2018/19 and 2021/22).

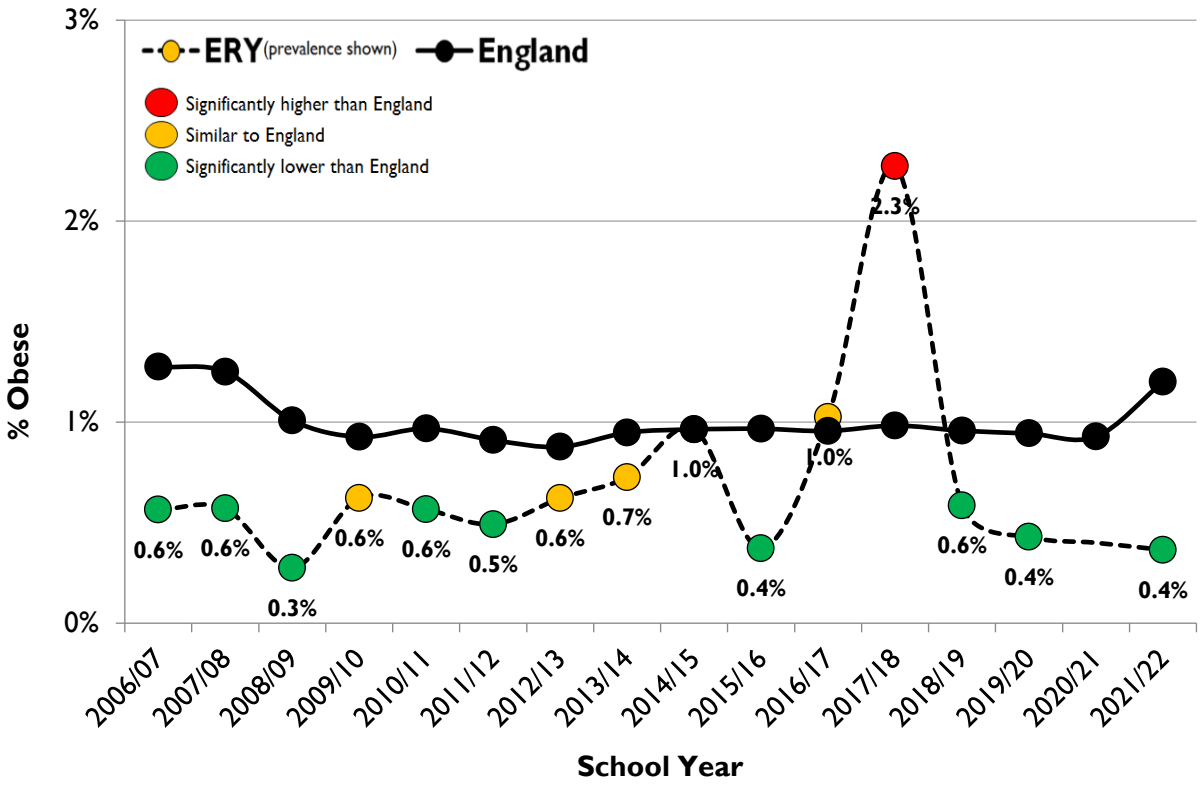

Figure 6.1.1. East Riding prevalence of underweight children in reception year compared to national averages.

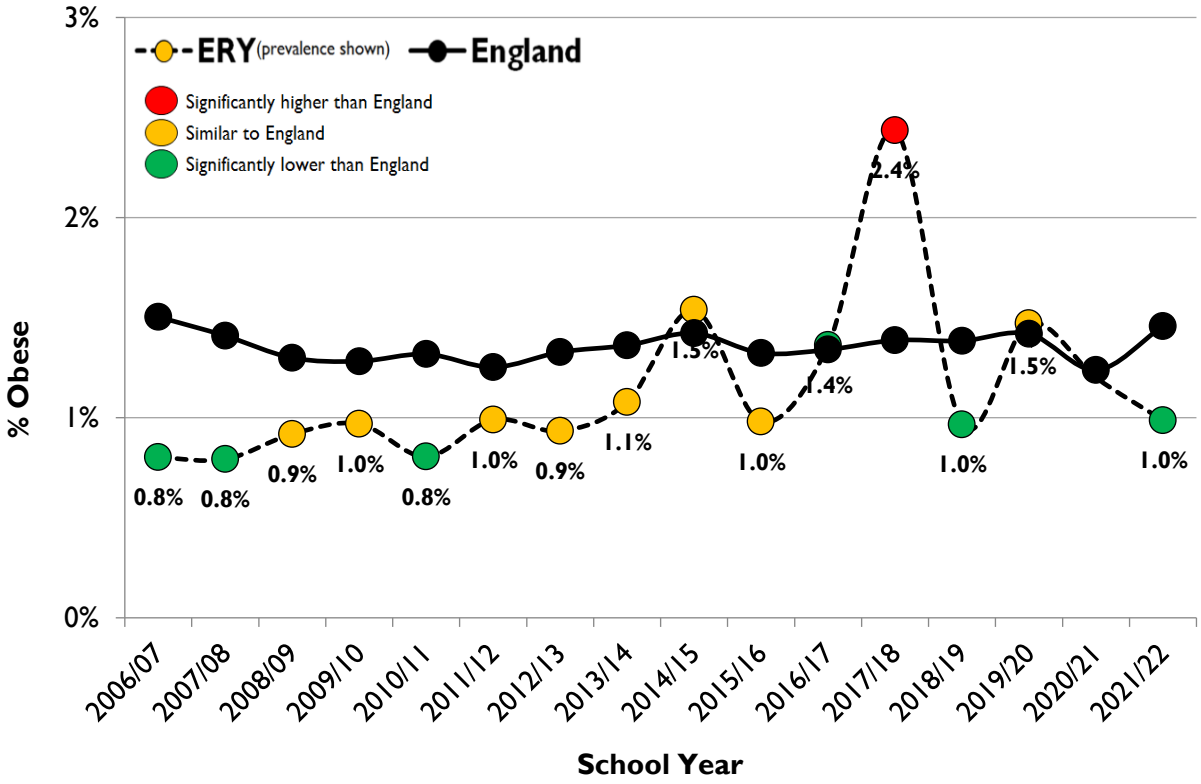

Figure 6.1.2. East Riding prevalence of underweight children in year 6 compared to national averages.

6.2. Prevalence of underweight children compared to other local authorities

Appendix 9.2.1Appendix 9.2.2 compare the East Riding prevalence of underweight children in a similar way as section 5.2 compared obesity, showing values for local authorities within the Yorkshire and the Humber region and the nearest CIPFA neighbours.

In reception, the East Riding underweight prevalence is the lowest within the region and CIPFA neighbours (2nd lowest). The green bar of the East Riding confirms that has a significantly lower prevalence than the England average, as stated in section 4.4.

In year 6 the East Riding underweight prevalence placed it amongst the lower values of local authorities falling within the same region (4th lowest in Yorkshire and the Humber region). Among the CIPFA neighbours, the East Riding was placed nearly in the middle as the 7th lowest, or 10th highest.

6.3. Prevalence of underweight by deprivation

The presence of small numbers has meant that analysis of underweight children at ward level cannot be reproduced in this document.

Nationally in 2021/22, it was reported that there were inequalities in the prevalence of underweight children in reception year, with higher percentages of underweight children in the most deprived areas compared with the least deprived. In England (Appendix 9.2.3), the prevalence in the most deprived quintile was 1.2%, significantly higher than the prevalence of the least deprived quintile (1.0%).

Nationally, in year 6 there appeared to be no clear pattern with underweight prevalence relating to deprivation (Appendix 9.2.4). Interestingly, the least deprived decile showed the greatest prevalence of underweight year 6 children in 2021/22.

A similar analysis was conducted for the East Riding shown in Figure 6.3.1 and Figure 6.3.2. Due to the low numbers and yearly fluctuations figures below were made using 3-years of data combined, such that NCMP data from 2018/19 to 2021/22 (excluding 2020/21 due to COVID-19) were used.

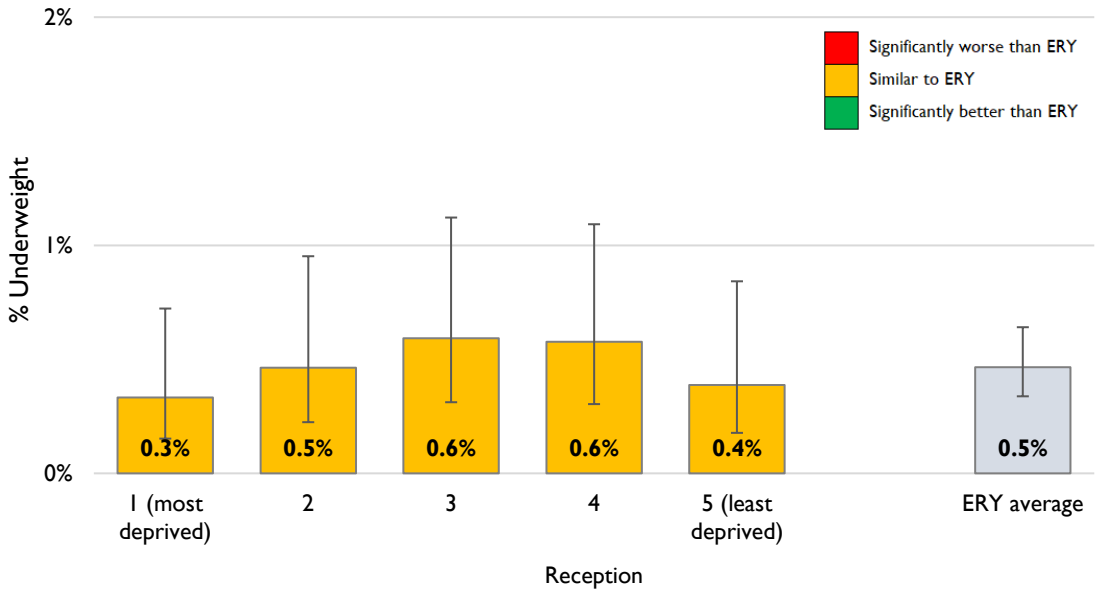

Figure 6.3.1. Prevalence of underweight pupils in reception year, 2018/19 to 2021/22.*

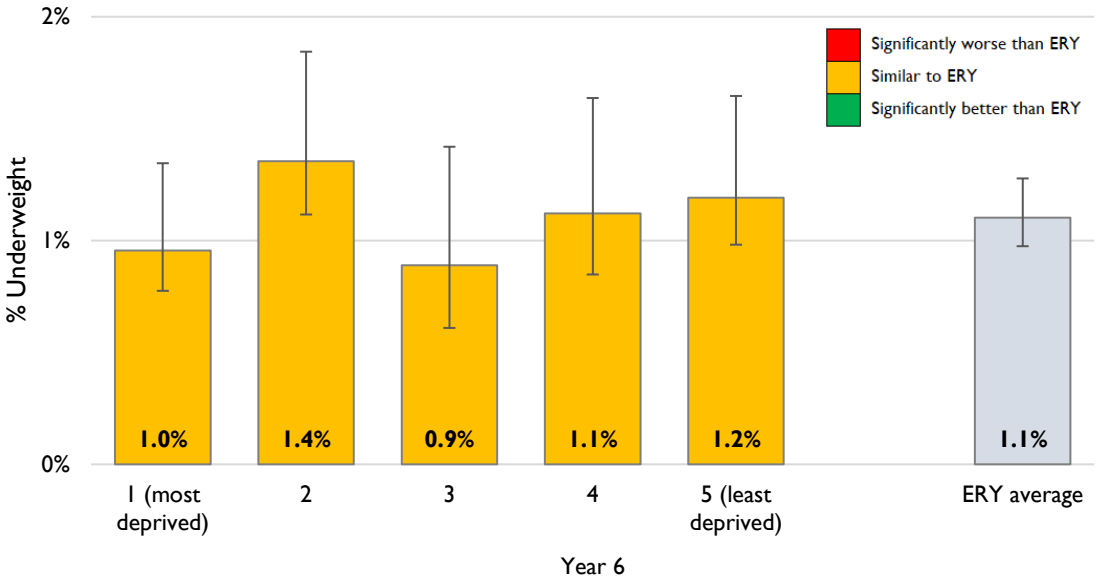

Figure 6.3.2. Prevalence of underweight pupils in year 6, 2018/19 to 2021/22.*

In both reception year and year 6, the prevalence of underweight pupils remained statistically similar across all deprivation quintiles. Additionally, none of the deprivation bands were significantly higher or lower than the East Riding average.

Similar trends were also found in the previous NCMP position statement for 2018/19, suggesting that the prevalence of underweight does not show clear patterns with deprivation.

7. Supplementary Information

This document summarises results in relation to reception and year 6 children residing within the East Riding of Yorkshire. However, as local authorities' access to pupil-level NCMP records is limited to children who both reside within and were measured in schools located in each local authority area, this means that some pupils who reside within the East Riding but who were measured by another local authority are excluded.

Cohort – data access implications

The East Riding of Yorkshire Council and Hull City Council have a continuous agreement to share records of pupils accessing schools within another local authority to the one they reside in. Therefore, the dataset used to inform this document details both the children residing and going to schools in the East Riding as well as pupils living in the East Riding but accessing schools in Hull. Pupils residing within the East Riding but going to schools located within the City of York, Wakefield, Doncaster, and other local authorities are not contained. Consequently, results contained within this report may differ slightly from national data tables.

Academic years

Please note that this document uses school years throughout (e.g. 2021/22) and they should not be confused with financial or calendar years. Most analyses presented in this report are based on the single school year of 2021/22. With smaller geographic areas such as wards and for data broken down by deprivation quintiles, the last three school years have been pooled together to provide a more robust source of data.

Body mass index (BMI) categories

The analysis in this document uses population body mass index (BMI) categories, as opposed to clinical BMI categories. Population thresholds are used for most published obesity and overweight prevalence figures whilst clinical cut-offs are recommended by NICE for use in clinical settings with 6 individual children and also used for the NCMP parental feedback letters and the NHS choices BMI calculator.

Whereas national NCMP datasets split pupil measurements into BMI categories including underweight, healthy weight, overweight, obese and severe obesity; the pupil-level data categorises BMI into the following four categories.

- Underweight
- Healthy weight
- Overweight
- Very overweight

For the purposes of this document, when analysing pupil-level data, the *very overweight* category will be interchangeable with *obese*.

Comparison with other areas – regional and CIPFA neighbours

As well as comparing against other local authorities within the Yorkshire and the Humber (Y&H) region, this document compares the East Riding with local authorities elsewhere in the country who have similar socio-economic characteristics. This has been based on the CIPFA 'Nearest Neighbours model'.

The CIFPA nearest neighbours methodology compares the East Riding with the 15 other councils calculated to have the most similar statistical characteristics in terms from a social and economic perspective. These neighbours are usually recalculated annually and so may differ from those that appear in previous versions of this document.

Annual updates to national and local authority level information, can be found on the *Obesity Profile* on OHID Fingertips. The source of the East Riding ward data in this document has come directly from

the record level data provided by NHS Digital and differs from the estimates produced by OHID, owing to the different methodology used.

Index of Multiple Deprivation

The Index of Multiple Deprivation (IMD), determined most recently in 2019 by the Ministry of Housing, Communities and Local Government (MHCLG), is used as the official measure of local relative deprivation in England. Deprivation measured by the IMD is determined for each LSOA by ranking each LSOA relative to other areas. The IMD 2019 is composed of seven domains (informed by academic literature on poverty and deprivation) which encapsulate the principal ways in which deprivation often affects people.

- Income (22.5%)
- Employment (22.5%)
- Health Deprivation and
- Disability (13.5%)
- Education, Skills Training (13.5%)
- Crime (9.3%)
- Barriers to Housing and Services (9.3%)
- Living Environment (9.3%)

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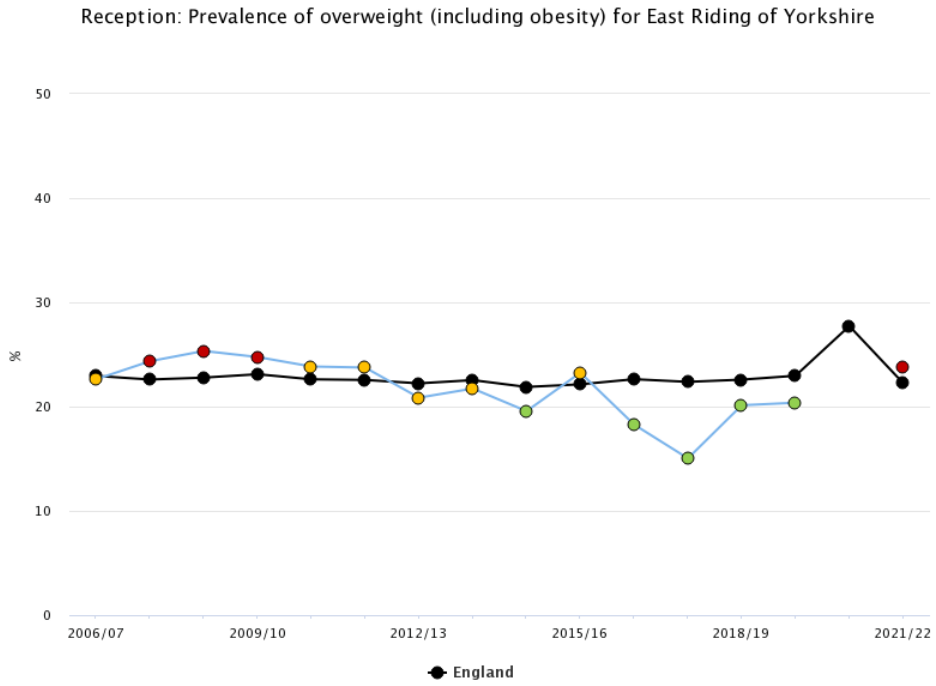
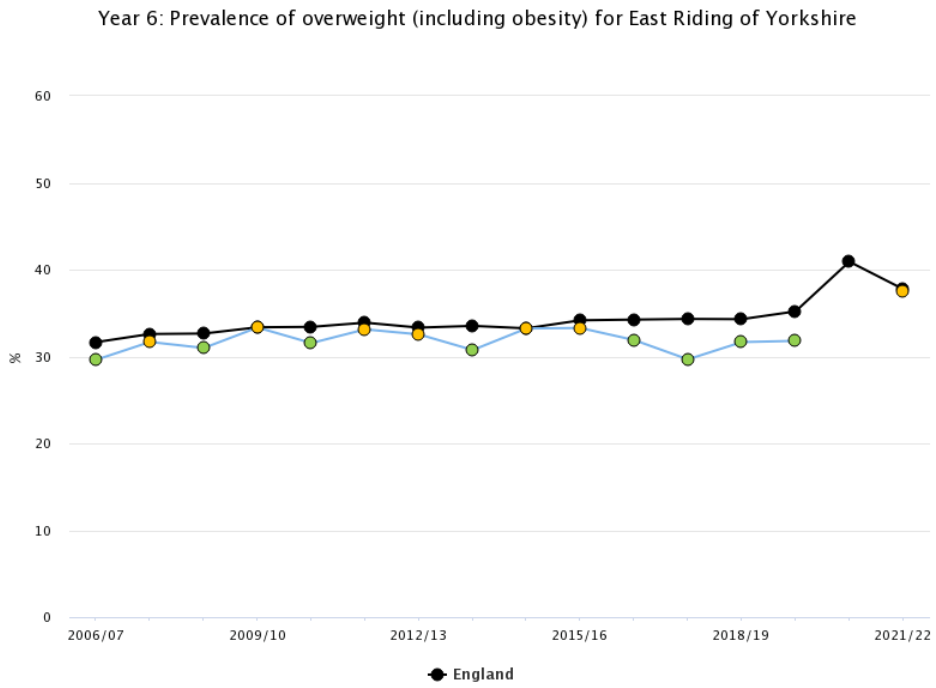
9. Appendices

9.1. BMI Category: Obesity



Appendix 9.1.1. Prevalence of overweight (incl. obesity) in reception year across the East Riding and England, 2021/22.



Appendix 9.1.2. Prevalence of overweight (incl. obesity) in year 6 across the East Riding and England, 2021/22.

Appendix 9.1.3. BMI categories for pupils residing within the East Riding in 2021/22.

	Reception		Year 6	
BMI category	Number	Prevalence	Number	Prevalence
Underweight	11	0.4%	33	1.0%
Healthy weight	2287	75.8%	2055	61.5%
Overweight	419	13.9%	500	15.0%
Obese	301	10.0%	756	22.6%

Area	Recent Trend	Count	Value
England	↑	57,540	10.1
Yorkshire and the Humber region	↑	6,340	11.0
Kingston upon Hull	→	425	14.5
Doncaster	↑	435	12.9
North Lincolnshire	↑	210	12.5
North East Lincolnshire	→	225	12.4
Rotherham	→	365	12.0
Barnsley	↑	295	11.6
Kirklees	→	575	11.5
Wakefield	↑	420	11.4
Bradford	→	755	11.4
Sheffield	↑	670	11.0
East Riding of Yorkshire	↑	305	10.0
Leeds	↑	895	9.9
North Yorkshire	→	475	9.3
York	→	145	8.9
Calderdale	→	155	6.6

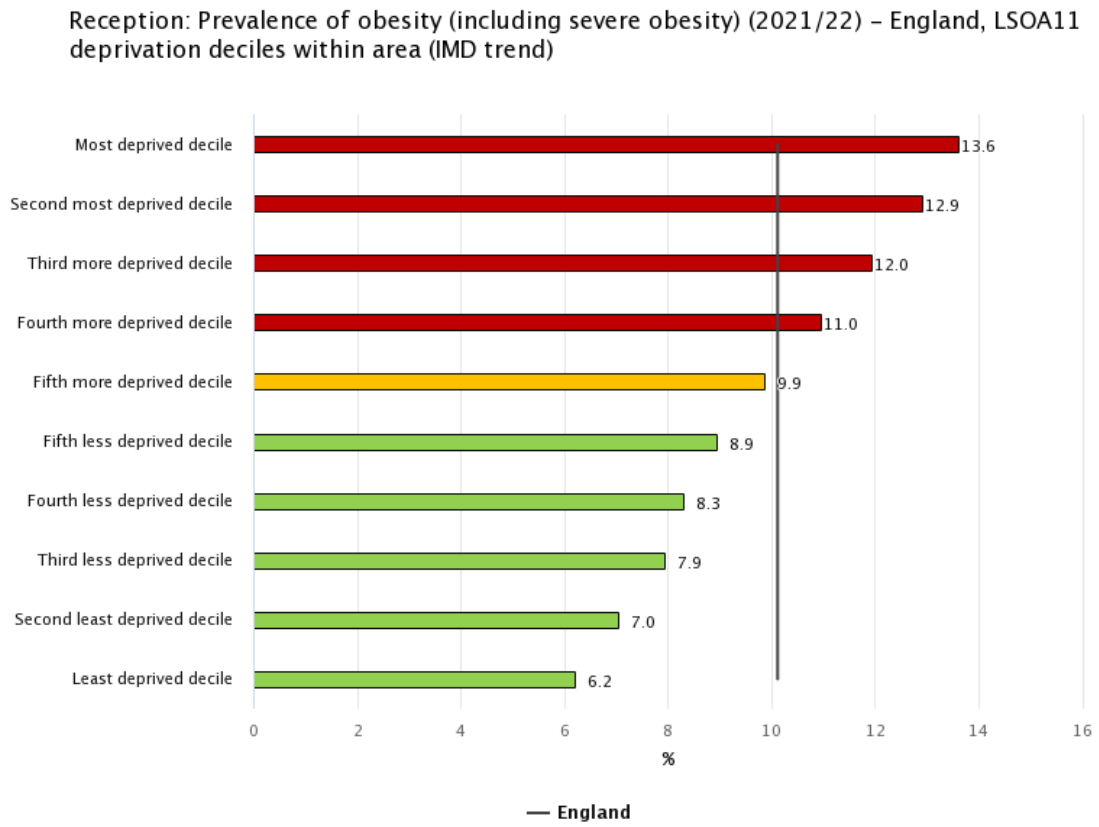
Area	Recent Trend	Neighbour Rank	Count	Value
England	↑	-	57,540	10.1
Neighbours average	–	-	-	-
North Lincolnshire	↑	13	210	12.5
Sefton	→	8	310	11.3
County Durham	→	14	560	11.2
East Riding of Yorkshire	↑	-	305	10.0
Shropshire	→	4	260	9.7
North Somerset	→	7	200	9.6
Cornwall	→	6	460	9.6*
Wiltshire	→	9	445	9.3
Northumberland	→	2	255	9.2
Cheshire East	↑	5	340	8.7
South Gloucestershire	→	11	250	8.2
Isle of Wight	→	3	90	8.1
Cheshire West and Chester	→	10	260	8.0
Dorset	→	1	230	7.8
Stockport	→	12	235	7.7
Central Bedfordshire	→	15	250	7.2

Appendix 9.1.4. Comparison of obesity prevalence across Yorkshire and the Humber region (top) and CIPFA neighbours (bottom) for reception year children in 2021/22.

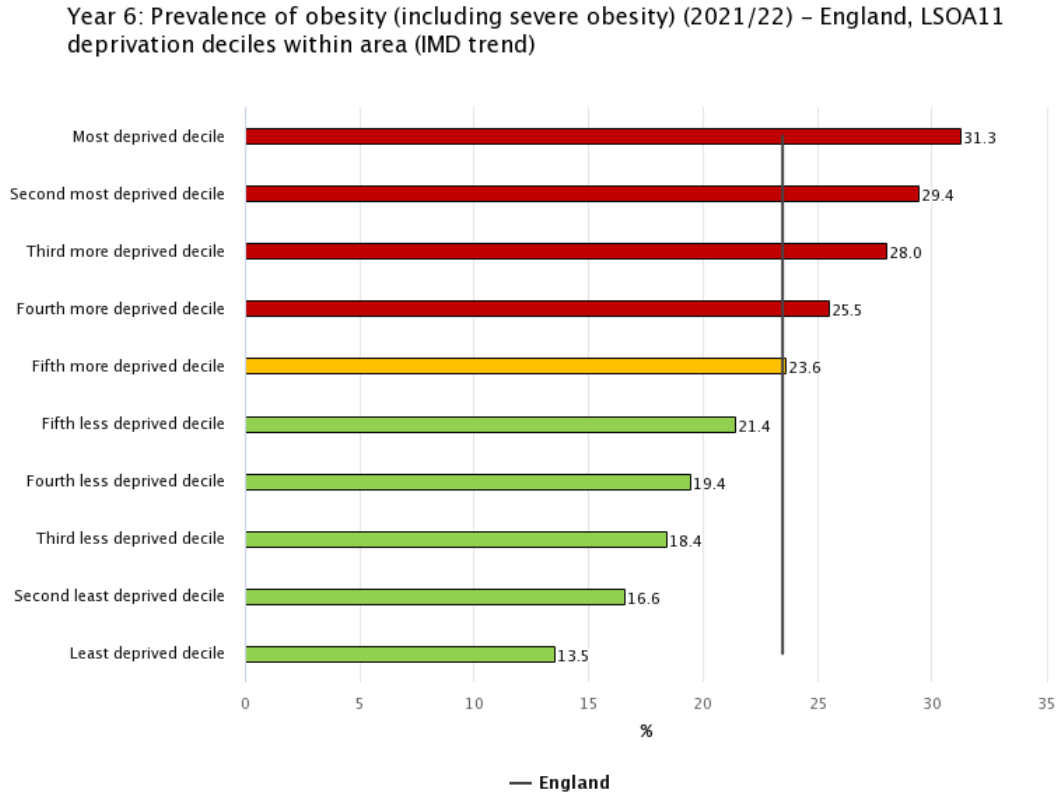
Area	Recent Trend	Count	Value
England	↑	141,145	23.4
Yorkshire and the Humber region	↑	15,345	24.9
Kingston upon Hull	↑	905	29.3
Doncaster	↑	1,010	27.6
Rotherham	↑	860	27.0
Bradford	↑	1,950	27.0
North East Lincolnshire	→	515	26.6
Wakefield	↑	985	26.0
Kirklees	↑	1,415	25.9
Barnsley	↑	705	25.5
Sheffield	↑	1,570	25.3
Leeds	↑	2,320	25.0
East Riding of Yorkshire	↑	750	22.7
North Lincolnshire	→	405	20.8
North Yorkshire	↑	1,095	20.1
Calderdale	→	500	20.0
York	→	350	18.9

Area	Recent Trend	Neighbour Rank	Count	Value
England	↑	-	141,145	23.4
Neighbours average	–	-	-	-
County Durham	↑	14	1,465	25.5
Sefton	→	8	690	23.3
East Riding of Yorkshire	↑	-	750	22.7
Northumberland	↑	2	665	21.8
Stockport	→	12	680	21.2
North Lincolnshire	→	13	405	20.8
Cornwall	↑	6	1,145	20.7*
Isle of Wight	→	3	245	20.7
Cheshire West and Chester	→	10	710	20.1
Wiltshire	↑	9	1,050	19.6
Cheshire East	↑	5	790	19.4
Central Bedfordshire	→	15	660	19.2
South Gloucestershire	↑	11	575	19.2
Shropshire	→	4	510	19.0
North Somerset	↑	7	435	18.7
Dorset	↑	1	535	17.0

Appendix 9.1.5. Comparison of obesity prevalence across Yorkshire and the Humber region (top) and CIPFA neighbours (bottom) for year 6 children in 2021/22.



Appendix 9.1.6. Prevalence of obesity in reception year across England by IMD 2019 deprivation deciles (2021/22).



Appendix 9.1.7. Prevalence of obesity in year 6 across England by IMD 2019 deprivation deciles (2021/22).

9.2. BMI Category: Underweight

Area	Recent Trend	Count	Value
England	→	6,835	1.2
Yorkshire and the Humber region	→	665	1.1
Calderdale	↑	105	4.6
Bradford	→	120	1.8
Kirklees	→	75	1.5
Sheffield	→	70	1.2
Leeds	→	95	1.1
Wakefield	→	35	1.0
North Lincolnshire	→	15	0.9
Kingston upon Hull	→	25	0.9
Rotherham	→	25	0.8
Barnsley	↓	20	0.8
Doncaster	→	25	0.7
York	→	10	0.6
North East Lincolnshire	→	10	0.6
North Yorkshire	→	25	0.5
East Riding of Yorkshire	↓	10	0.3

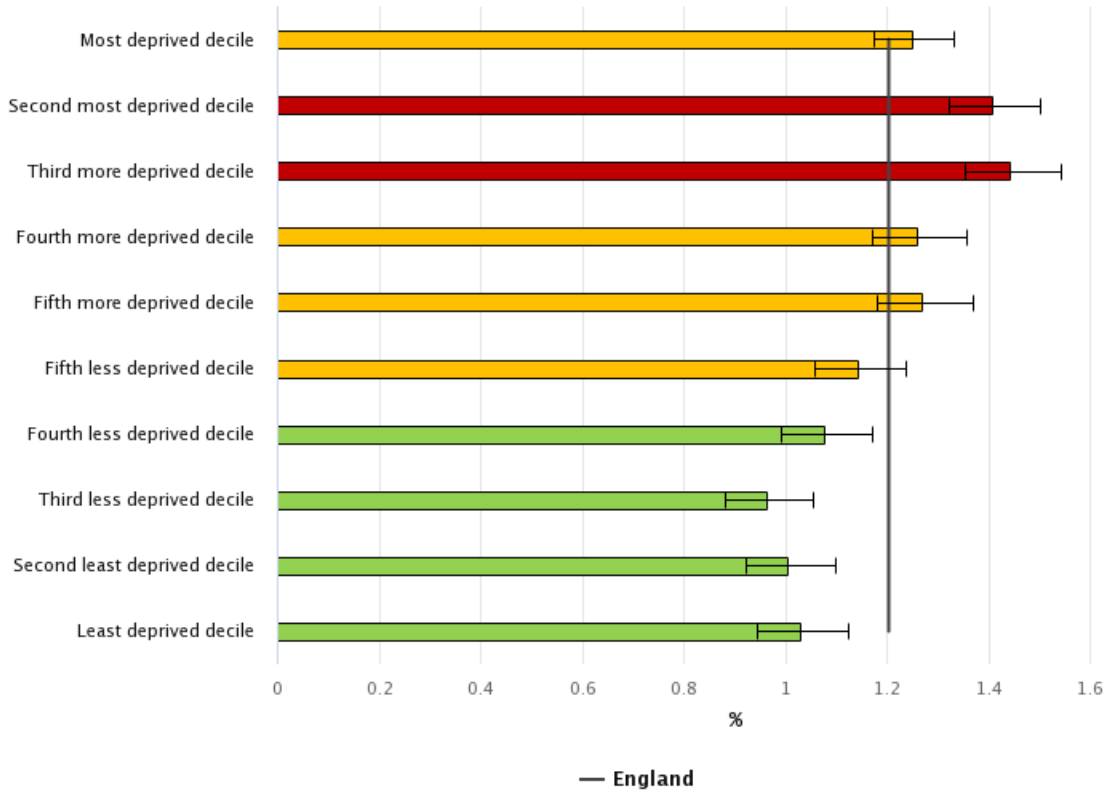
Area	Recent Trend	Neighbour Rank	Count	Value
England	→	-	6,835	1.2
Neighbours average	–	-	-	-
Northumberland	↑	2	45	1.6
Cheshire West and Chester	→	10	40	1.2
South Gloucestershire	→	11	35	1.2
Stockport	→	12	35	1.1
North Lincolnshire	→	13	15	0.9
Cheshire East	→	5	30	0.8
Wiltshire	→	9	35	0.7
North Somerset	→	7	15	0.7
Central Bedfordshire	→	15	25	0.7
County Durham	→	14	35	0.7
Dorset	→	1	20	0.7
Cornwall	↑	6	30	0.6*
Shropshire	→	4	10	0.4
Sefton	→	8	10	0.4
East Riding of Yorkshire	↓	-	10	0.3
Isle of Wight	–	3	-	*

Appendix 9.2.1. Comparison of underweight prevalence across Yorkshire and the Humber region (top) and CIPFA neighbours (bottom) for reception year children in 2021/22.

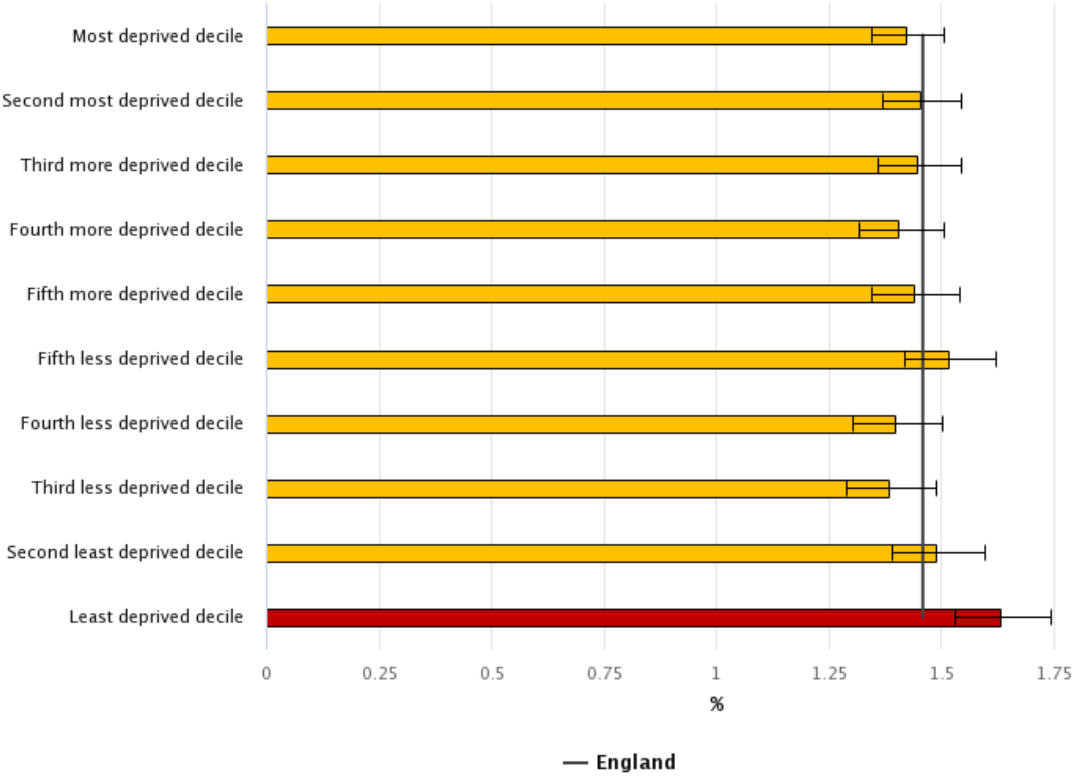
Area	Recent Trend	Count	Value
England	→	8,774	1.5
Yorkshire and the Humber region	→	870	1.4
Calderdale	↑	85	3.4
Bradford	→	160	2.2
Kirklees	→	95	1.7
Barnsley	→	40	1.4
York	→	25	1.3
Sheffield	→	80	1.3
North Lincolnshire	→	25	1.3
Leeds	→	115	1.2
Doncaster	→	45	1.2
Wakefield	→	45	1.2
Rotherham	→	35	1.1
East Riding of Yorkshire	→	35	1.1
Kingston upon Hull	→	30	1.0
North Yorkshire	→	50	0.9
North East Lincolnshire	→	15	0.8

Area	Recent Trend	Neighbour Rank	Count	Value
England	→	-	8,774	1.5
Neighbours average	–	-	-	-
Central Bedfordshire	→	15	50	1.5
Dorset	→	1	45	1.4
Cheshire West and Chester	→	10	50	1.4
Wiltshire	→	9	75	1.4
South Gloucestershire	→	11	40	1.3
North Lincolnshire	→	13	25	1.3
Isle of Wight	→	3	15	1.3
Stockport	→	12	40	1.2
Cheshire East	→	5	50	1.2
East Riding of Yorkshire	→	-	35	1.1
County Durham	→	14	60	1.0
Northumberland	→	2	30	1.0
Shropshire	→	4	25	0.9
Cornwall	→	6	50	0.9*
Sefton	→	8	25	0.8
North Somerset	→	7	15	0.6

Appendix 9.2.2. Comparison of underweight prevalence across Yorkshire and the Humber region (top) and CIPFA neighbours (bottom) for year 6 children in 2021/22.



Appendix 9.2.3. Prevalence of underweight reception year children by IMD deprivation deciles, 2021/22 England.



Appendix 9.2.4. Prevalence of underweight year 6 children by IMD deprivation deciles, 2021/22 England.