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Child Measurement Programme for Wales 2014/2015



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Foreword



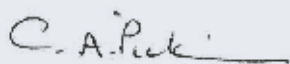
I am very pleased to introduce the fourth Annual Report of the Child Measurement Programme (CMP) for Wales. This report covers the academic year 2014/15. We in Public Health Wales are very grateful to all the families in Wales who have allowed their children to be part of the programme. We are also grateful to the staff in the health boards who have supported the programme.

Participation in the Programme by children has increased every year since the Programme began. This year 94.5% of our reception year children took part in the measurements. The more children take part, the more reliable the information is. This is important as we use this information to give us an indication of the health and wellbeing of young children in Wales. The percentage of children in the CMP who are of a healthy weight is an indicator in both the NHS Outcomes Framework for 2016/17 and the new Public Health Outcomes Framework from Welsh Government.

The good news is that the majority of children who participated in the most recent Child Measurement Programme are of a healthy weight – more than 73%.

Children who are not a healthy weight – who are overweight or obese – are at risk of being overweight as adults. The health consequences of this in adulthood can include type 2 diabetes, heart disease, some cancers, liver disease and problems with mobility. The consequences are not just physical – children who are obese experience more social and emotional problems than children of a healthy weight.

The report gives us some in-depth information about child growth in Wales. It tells us about where there are concentrations of children who are overweight or obese, and reminds us of the association between unhealthy weight and disadvantage. This information will enable those in charge of planning local services to focus their efforts to help families to achieve the best results for their children.



Dr. Chrissie Pickin

Executive Director of Health and Wellbeing, Public Health Wales



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^aAll children who participated in the programme for this report were aged between 4 and 5 when they took part.

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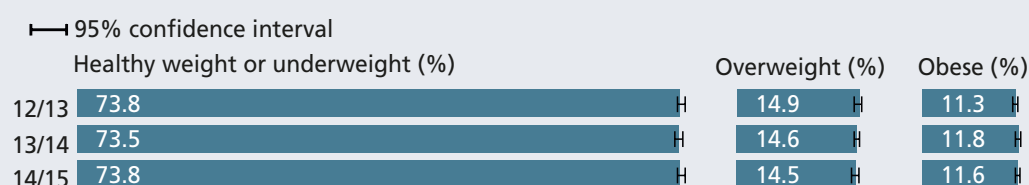
Abbreviations

ABUHB	Aneurin Bevan University Health Board
ABMUHB	Abertawe Bro Morgannwg University Health Board
BCUHB	Betsi Cadwaladr University Health Board
BME	Black and minority ethnic
BMI	Body mass index
C&VUHB	Cardiff and Vale University Health Board
CDC	Center for Disease Control (USA)
CI	Confidence interval
CMP	Child Measurement Programme for Wales
CTUHB	Cwm Taf University Health Board
HUHB	Hywel Dda University Health Board
IOTF	International Obesity Task Force
LA	Local Authority
LHB	Local Health Board
LSOA	Lower Super Output Area
MSOA	Middle Super Output Area
NCCHD	National Community Child Health Database
NCMP	National Child Measurement Programme England
NHS	National Health Service
NICE	National Institute of Health and Clinical Excellence
NWIS	NHS Wales Informatics Service
ONS	Office for National Statistics
PTHB	Powys Teaching Health Board
SACN	Scientific Advisory Committee on Nutrition
SOA	Super Output Areas
THB	Teaching Health Board
UHB	University Health Board
UK90	Growth reference system used in the Child Measurement Programme
WHO	World Health Organisation
WIMD	Welsh Index of Multiple Deprivation



Summary and key messages

Figure 1 Percentage of children aged 4 to 5 years who are a healthy weight or underweight, overweight, or obese, Child Measurement Programme for Wales, 2012/13-2014/15 Produced by Public Health Wales Observatory, using CMP data (NWIS)



Childhood obesity is an important public health challenge facing the population of Wales. In order to address the challenge we need to better understand it. This fourth report of the Child Measurement Programme adds to that understanding with robust information about child growth in Wales. The report contains analysis of information about heights and weights collected from children aged between 4 and 5 attending reception class. The information was gathered during the school year 2014/15.

Figure 1 summarises information for the last three years (2012/13, 2013/14, 2014/15) at an all-Wales level for the three main weight categories discussed in this report. There has been no statistically significant change across the three years.

Key messages from report

- Participation in the programme has increased by more than 10% in three years, from 84.3% of all children in 2012/13 to 94.5% in 2014/15
- Just over seven in every ten Welsh children have a healthy weight

- Reception year girls are more likely to have a healthy weight (74%) than boys (72%)
- More than a quarter of children in reception year (26.2%) were either overweight or obese. This proportion varied by local authority, from 17.0% (Vale of Glamorgan) to 31.7% (Merthyr Tydfil)
- Reception-age children are significantly more likely than the Welsh average to be obese, if they live in areas of higher deprivation
- 26.2% of children in Wales are overweight or obese, compared to 21.9% in England in this age group. The region in England with the highest prevalence is the North East with 23.7% of children measured being overweight or obese
- Across the last three years there appears to have been a significant increase in the prevalence of overweight or obesity in reception year in Hywel Dda UHB (26.4% to 30.1%), and a significant fall in Cardiff and Vale UHB (23.7% to 20.9%). The small changes in the other health boards are not statistically significant.



Introduction

The rising level of obesity in both children and adults is a major public health challenge in Wales. The causes of this rise are complex, and in order to address the issue, greater understanding is needed. The information gathered and analysed within the Child Measurement Programme (CMP) will assist with this understanding. Being able to measure and report on patterns in child weight allows us to monitor whether actions intended to improve diet or increase physical activity are effective in slowing or reversing the increase in prevalence of overweight and obesity.

2014/15 was the fourth year the CMP was run in Wales and so this report about those measurements (published 2016) is the fourth report from the programme. During the first year of the programme (2011/12) the standards and guidance governing the programme were not fully implemented. Therefore the findings from that year have been excluded where data is aggregated or examined for trends.

Aims

The aim of the programme as set out in 2011 is to *"describe population prevalence of underweight, overweight and obesity, at national and local authority levels. It will also allow anonymised population level information to be used for surveillance, research, monitoring or audit purposes and planning of health services"*.

Since its inception the CMP has also provided the analysis at health board level. The programme was designed as a surveillance programme and is not aimed at screening individuals.

The challenge of obesity in children

Obesity is a major public health challenge for society, which will not be resolved by the health service alone. The causes of obesity in both adults and children are multi-factoral, as any solutions will need to be.

Well planned 'active' transport systems, better regulation of advertising aimed at children, what children are learning at school, the availability of affordable healthy food, and opportunities for physical activity all have a part to play.

There is evidence² that children who are obese are more likely to also be obese as adults. Analysis³ from the Public Health Wales Health Observatory suggests that between 2004/5 and 2011/12, adult levels of obesity and overweight increased from 54% to 58% of the adult population. For obesity alone there was a 5% increase from 18% to 23%. Obesity increases the likelihood of a person developing chronic diseases such as high blood pressure, type II diabetes, osteoarthritis and some cancers. The cost of treating conditions linked to obesity in Wales was estimated in 2011⁴ as between £1.4 million to £1.65 million per week.

Expert opinion from the National Institute for Health and Care Excellence⁵ (NICE), and from the Lancet⁶ journal suggests that in order to reduce obesity prevalence, action must be taken at a societal level to combat an increasingly obesogenic environment. The Lancet concluded that *"children are exposed to whatever environment we create for them, and while it is important to have child-specific interventions and actions, societal change as a whole is also required"*.



About the Child Measurement Programme

Structure

There are several teams of professionals who have a part to play in the different stages of the programme and ultimately in its successful delivery. The CMP consists of a central programme office within the Health Intelligence Division of Public Health Wales, with input from staff across the NHS in Wales. School health teams in local health boards (LHBs) are responsible for communication with schools, parents and children and for carrying out the measurements. Local child health records teams are responsible for ensuring all the information is entered onto the National Community Child Health Database (NCCHD) using the correct software module.

The Public Health Wales Observatory analysts receive the information in an anonymised download from the NHS Wales Informatics Service (NWIS) who maintain the NCCHD and process the data before passing it on to the analysts. The Observatory Analytical Team prepare the data for use by staff in the programme office in the annual report. The process is supported by the Child Measurement Programme Advisory Group, which is a multi agency group including representatives from local health boards, education, the Voluntary sector and Welsh Government.

Who gets measured?

Parents of all children who were both resident in Wales and attending a reception class in school in Wales during 2014/15 were contacted to let them know the measurements were taking place and that they could opt their child out of the measurements if they so wish. The results have been included in the analysis if their fifth birthday was between the 1st September 2009 and 31st August 2010, and their parents had not chosen to opt them out of the programme. Measurements are taken in a standardised way – the school health team members received additional training in taking the measurements and the equipment used is standardised, maintained and calibrated. Most schools are visited twice in order to catch up with children who were not present or not able to be measured during a first visit. Where two measurements for the same child appear on the database, only the most recent is used.

Some children are not measured because their parents choose to opt them out of the programme or because they are not present on either visit when the measurements are taking place. More information on participation is given later.

Number of schools in Wales (from 2015 school census⁷)

In January 2015 there were 13 nursery, 1,330 primary, 6 middle schools, 207 secondary schools and 39 special schools. Of these, 435 primary, 4 middle and 50 secondary schools were classified as Welsh medium. There were 66 independent schools, 4 fewer than in January 2014. Overall, there were 38 fewer local authority maintained schools than at January 2014.

How are the results analysed?

The children's measurements are assigned to categories based on body mass index (BMI), taking into account the sex and exact age of the child when measured. The prevalence categories used in the CMP in Wales are:

- Underweight: BMI less than but not including the second centile
- Healthy weight: BMI second centile up to but not including the 85th centile
- Healthy weight and underweight
- Overweight but not obese: BMI 85th centile up to but not including the 95th centile
- Overweight and obese
- Obese: 95th centile and above.

A full explanation is given in appendix 1 of how a child's body mass index (BMI) is classified by prevalence categories. Results in the report are expressed as the percentage of children within each BMI category. Comparisons are then made looking at time periods; where children live; their sex; deprivation and ethnicity. An assessment is then made about whether the results are (statistically) significant or not. Statistical significance is assessed using confidence intervals (CIs).

If the number of children in any one category is less than five the result has been suppressed to avoid the possibility of identifying individual children. More explanation about confidence intervals, suppression and other methods used in the analysis is given in appendix 1. Because the height of children is measured accurately and recorded, children of lower than expected height may also be identified through the programme.

Analysis of the information has been done looking at geography, sex and deprivation for each of the years that the programme has been in place. For the first time in 2014, analysis was done looking at weight categories by the ethnicity of children. This was repeated last year and will be repeated for this report. During the first year (2011/12) the programme was run the Child Measurement Programme standards and guidance were not in place. As the results for that year may be less robust they will no longer be included where data has been aggregated or trends are being assessed.

For the report published in 2015, analysis was provided by urban, rural and very rural super output areas (using area classifications from the Office for National Statistics {ONS}). This showed very little difference in the prevalence categories and the analysis has not been repeated this year, but will be repeated in the report to be published in 2018.

Information in the report is presented at a national, local authority and health board level. It is also aggregated over three years and presented at Middle Super Output Area (MSOA) level for some analysis. An MSOA is an area smaller than a local authority, usually containing a population of around 7,000 people. Maps showing information at MSOA level for the country as well as for health boards are contained within this report.

Is it a screening or surveillance programme?

The Child Measurement Programme is a population surveillance programme, and is not aimed at identifying individual children who may benefit from an intervention. However staff involved in taking the measurements of children are expected to take appropriate action should they identify concerns, whether their concern relates to children who are obese, underweight, of lower than expected height or if a child has any other health issue. Their response should be in line with their own professional codes of practice and with locally agreed protocols.

While the programme is concerned primarily with BMI surveillance, some children who are of lower than expected height may be identified for the first time during the measurement process which could indicate a health concern. Additional guidance⁸ for health professionals about identification and follow up of children of low height (also known as 'short stature') is available from the CMP website.

The rationale for having a surveillance programme is that it will allow for better planning and for evaluation of existing and new programmes. Government, local authorities and health services will have more in-depth information about the issues, and will then be able to better plan the wider environmental changes as well as plan the appropriate intervention services needed to address the challenge. Changes in growth patterns over time will also identify what progress is being made in addressing childhood obesity and allow for the evaluation of any investment in early years aimed at halting the rise of childhood obesity.

How is the CMP quality assured?

Children in this year group have been weighed at this stage for many years as part of the pre-school health check, however when the CMP was introduced, new standards and guidelines were introduced and school health team members were

offered additional training to carry out the measurements in a more robust way. Each health board provides assurance to the CMP office that the standards and guidance are being adhered to.

The Child Measurement Programme Standards and Guidelines⁹ were agreed by the Child Measurement Programme Steering Group and Board in 2012. These were revised in 2014 and endorsed by the new Child Measurement Programme Advisory Group¹⁰ which has oversight of the whole programme. The Standards and Guidelines are designed to facilitate a uniform way in which children are measured, and results recorded and analysed so that the results will be seen as robust, comprehensive and comparable across Wales and over time. The Child Measurement Programme Standards and Guidelines are available on the CMP website in both Welsh and English.

They contain information for local health teams including:

- How measurements should be carried out
- How equipment used in taking the measurements should be maintained and calibrated
- Staff training
- Recording and communication of results
- Children not included in the programme
- Assurance and audit.

To support staff to deliver the programme, a CMP e-learning package was developed for use by NHS staff working in local health boards. This is designed to be used in conjunction with the staff training video available on the CMP website in both English and Welsh.

History of the programme in Wales

Prior to the introduction of the Child Measurement Programme in Wales a feasibility study was carried out, and the full programme then began in 2011/12. This first year was seen as a 'transitional year' as the full standards and guidance governing the programme were not agreed until 2012. The programme was established following Directions¹¹ issued by the Minister for Health and Social Services in the National Assembly for Wales. These came into force in August 2011. The programme is governed by the Welsh Government's Child Measurement Programme (Wales) Regulations¹². The CMP is delivered by the seven health boards in Wales, with Public Health Wales having responsibility for coordination, data-analysis and reporting. A Child Measurement Programme Advisory Group is in place and this group has a remit for advising on the strategic direction of the CMP.

Factors affecting the Child Measurement Programme in 2014/15

There are several factors which may have affected analysis of the Child Measurement Programme this year, some having recurred. These are:

- A continuing issue with the recording of ethnicity on the National Community Child Health Database (NCCHD). This is discussed more fully in appendix 1, but briefly 49.7% of the children had their ethnicity recorded using a coding system that was discontinued in 2002, several years before they were born. Investigation into this issue suggests that they have been classified using the codes from their mother's health records, rather than having a new code assigned on the NCCHD. The two main issues arising from use of the pre-2002 codes are –
 - Children do not always share their mother's ethnicity and should always be assigned their own ethnicity based on both parents' ethnic origin

- The pre-2002 coding system did not have coding available for children of mixed heritage and it is unknown how these children were coded.

Further investigation into this issue showed that in 2013/14, in those areas where the black and minority ethnic population was highest (Cardiff and Newport), the majority (87.1% and 92.4% respectively) had been classified using the correct post-2002 codes.

- Each year a comparison is made between the number of children eligible to participate in the CMP and the number of children counted in reception year in the annual school census carried out by Welsh Government in Wales. The number of children eligible to participate (NCCHD denominator) is taken at the end of the school year in July, while the census is carried out in January of the same year. The comparison is made to assess whether there are any major difference between the two numbers, which might suggest a problem with the figures.

The census suggested that there were 35,584 children attending reception year in Wales in 2014/15, while the NCCHD denominator was 34,815. There may be several reasons for the gap of 769 children, including:

- Pupil movements in and out of schools between January and July when the two counts are taken
- The school census includes children who are attending school in Wales but may have a residential postcode in England, and are thus not eligible to be included in the CMP
- The schools census provides a head-count of the children attending school by local authority, while the NCCHD denominator is by local authority of residence, so there may be cross-border issues within Wales.

The largest discrepancy occurred in Ceredigion where 971 children were recorded on the school census, but only 733 were recorded on the NCCHD – a difference of 238 children. Cross-border issues where children resident in Wales attend a school in England or vice versa is unlikely to be the explanation for a difference occurring in Ceredigion. Neither are there very large discrepancies in the local authorities bordering Ceredigion, which would suggest children resident in one local authority were attending a school in the neighbouring authority. A very similar discrepancy was investigated in 2015 but no conclusive reason for the discrepancy was identified.

- By both local authority and health board, participation was lower in Powys than elsewhere in Wales at 86%. School health teams in Powys report that they face a challenge with measuring children as it is the most rural county in Wales, where often a very small number of children in each year group are attending schools in quite isolated areas, and the teams are often unable to make follow-up visits to catch up with children who were not measured in a first round of measuring. However in number terms, only 167 children were not measured in Powys, which is the second lowest number not measured by health board in Wales.





Findings

Participation

Each year the CMP analysis examines information on how many children there were in the reception year that year, and of these, how many had measurements taken that were included in the analysis. There has been a gradual increase in CMP participation since the first year of the programme. This has increased again from 90.8% last year to 94.5% this year (table 1). Participation also increased in all health boards with the exception of Powys where it fell slightly. And it increased or stabilised in most local authority areas. The most marked increase was in Cardiff, where participation rose from 75% in 2013/14 to 90.2% in 2014/15 – as this is the largest local authority in Wales, this meant an increase in numbers of 706 children participating in the CMP.

Information taken from the National Community Child Health Database suggested that there were 34,815 children eligible to participate in the CMP in 2014/15, of whom 32,889 had valid measurements taken during the year and included in the

analysis. Of the 1,926 children who did not have measurements included, some will have been 'opted-out' of the programme by their parents, some will have been not at the school on the day measurements were taken, and for some children it will not have been possible to obtain a valid measurement.

Children regarded as eligible for inclusion were all born between 1st September 2009 and 31st August 2010. 51.3% were boys, 48.7% girls. The count of eligible children, known as the denominator, is taken from the NCCHD in July each year.

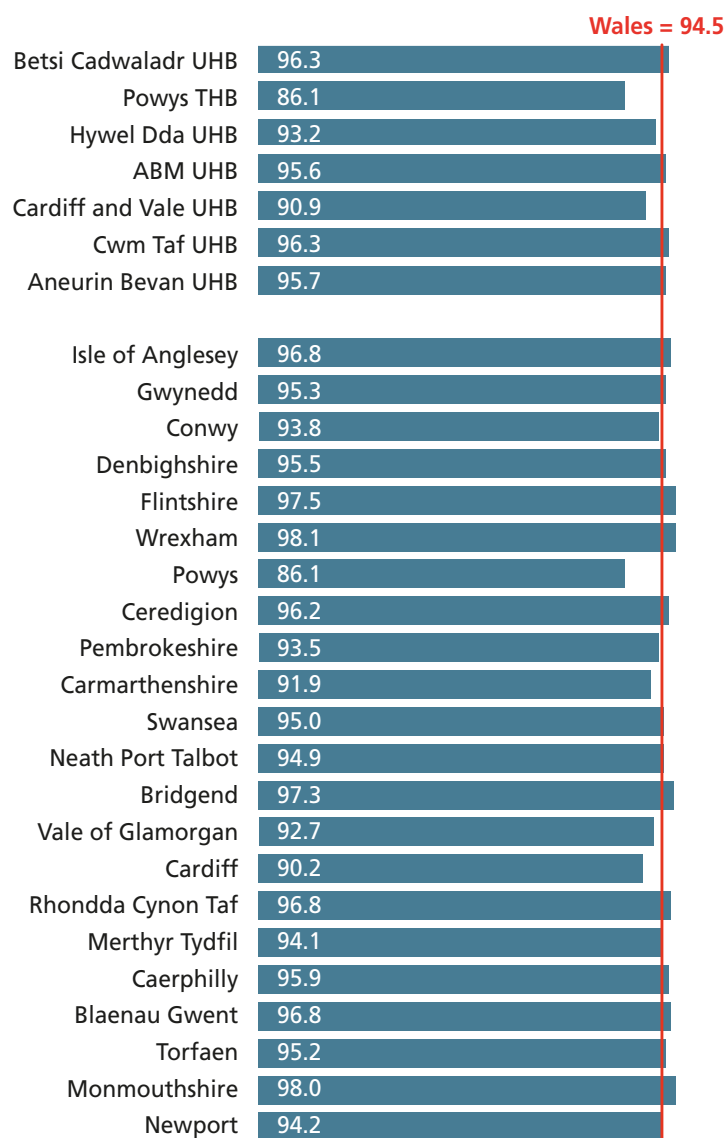
Figure 2 displays participation across the health boards and local authorities. Powys (which is the only health board which is co-terminus with a single local authority) had the lowest participation at 86.1%, while participation in Cwm Taf University Health Board (UHB) and Betsi Cadwaladr UHB is the highest at 96.3%. At local authority level, again Powys has the lowest percentage participation, while Monmouthshire was the highest at 98%.

Table 1 Participation in the Child Measurement Programme for Wales since 2012/13

	2012/13	2013/14	2014/15
Children participating/ eligible	29,238 / 34,679	30,669 / 33,794	32,889 / 34,815
Percentage	84.3%	90.8%	94.5%

Figure 2 Percentage of children aged 4 to 5 years participating in a measurement programme, Wales health boards and local authorities, Child Measurement Programme for Wales, 2014/15

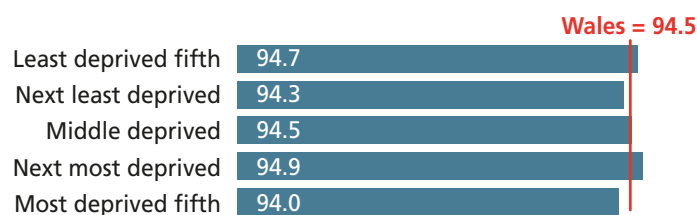
Produced by Public Health Wales Observatory, using CMP data (NWIS)



In figure 3, participation in the programme by deprivation quintiles is displayed.

Figure 3 Percentage of children aged 4 to 5 years participating in a measurement programme, Welsh Index of Multiple Deprivation quintiles, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



There does not appear to be any gradient across levels of deprivation, for participation in 2014/15. This is a contrast to last year (figure 4) when participation in the least deprived quintile was much lower than in the rest of Wales. This could have been as a result of the low participation last year in Cardiff (75%), which has not recurred this year. Across the last three years, the increase in participation in the least deprived quintile (8.1%) has been exceeded by the increase in participation in the most deprived quintile (9.5%).

Opting out

Parents are given the option of opting their children out of the programme and a small number choose to do this every year. Table 2 shows the number of children in each health board who were recorded as having opted out of the programme. This is a small fall from last year when 98 children were opted out. Each year of the programme has seen successive falls in the numbers opted out. The numbers overall of children opting out is small when viewed as a proportion of the total numbers of children in each health board (given in appendix 3).

Figure 4 Percentage of children aged 4 to 5 years participating in the Child Measurement Programme, Wales, quintiles of deprivation, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

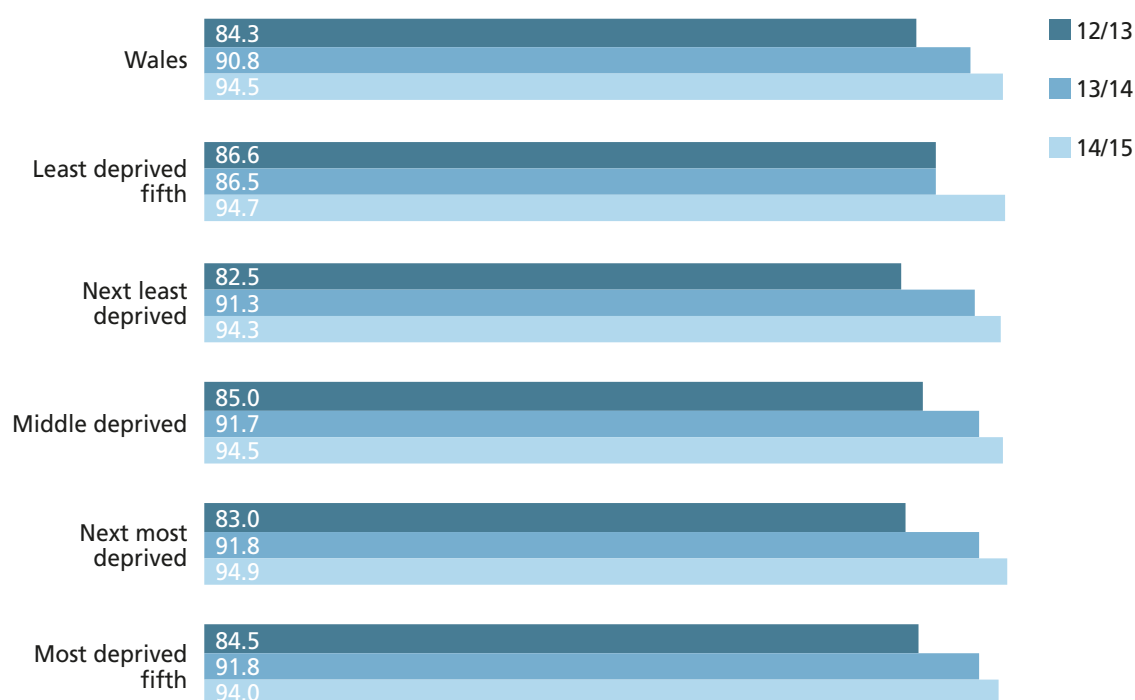


Table 2 Children recorded as having opted out, Wales health boards, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

	Number of opt outs
Betsi Cadwaladr UHB	6
Powys THB	15
Hywel Dda UHB	2
ABM UHB	0
Cardiff and Vale UHB	46
Cwm Taf UHB	9
Aneurin Bevan UHB	6
Wales	84

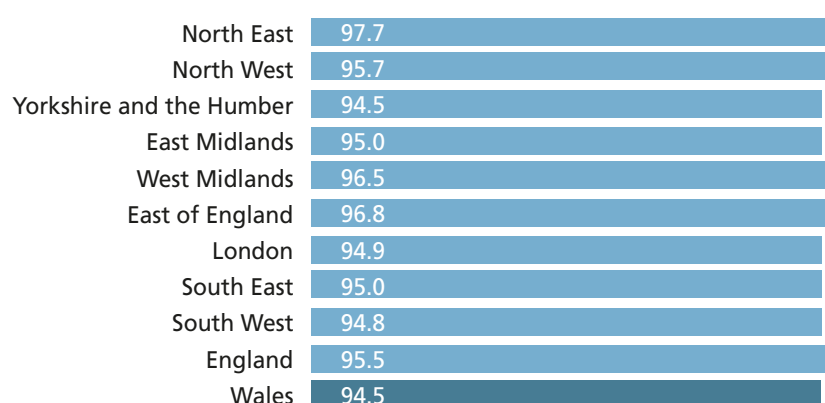
Comparison with English NCMP

There are no national child measurement programmes run with the same age group of children on an annual basis in Scotland or Northern Ireland. The only UK country therefore that we can compare the CMP in Wales with is the National Child Measurement Programme (NCMP) in England. This is run on similar lines to the one in Wales, in that it is national, and

runs in reception year, but it is also run in Year 6 in England and of course includes over a million children each year. The NCMP started in 2006/7, so five years before the CMP started in Wales. Figure 5 shows a comparison of participation between Wales and England and also the English regions, and as can be seen, participation in Wales is very close to that in much of England and in the English regions.

Figure 5 Children participating in a measurement programme, Wales, England and English regions, Child Measurement Programme for Wales and the National Child Measurement Programme (England), 2014/15

Produced by Public Health Wales Observatory using CMP data (NWIS) and NCMP data (HSCIC)



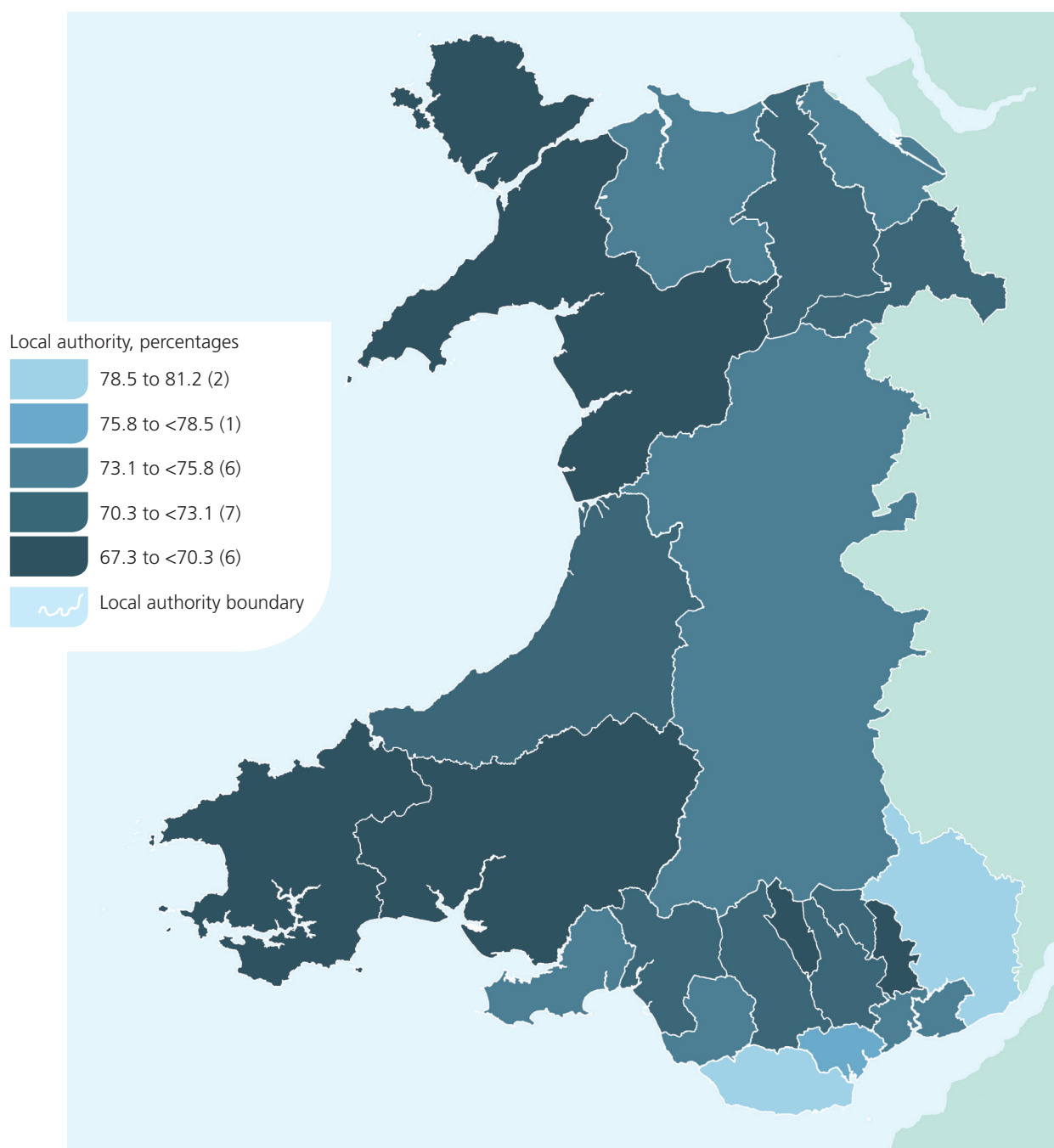
Healthy weight

72.9% of children living in Wales are deemed to be of a healthy weight – 72% of all boys and 74% of all girls. Prevalence of healthy weight in girls is statistically significantly higher than in boys. There has been no statistically significant change across the last three years.



Map 1^b Percentage of children aged 4 to 5 years who are a healthy weight, Wales local authorities, Child Measurement Programme for Wales, 2014/15

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Because the numbers of children in Wales who are underweight is very small (0.9%), the information on children who are underweight is combined with information about children who are of a healthy weight, at any level below the national level for several of the local authorities and one of the health boards. This is to mitigate the risk

that individual children who are underweight could be identified. The all-Wales prevalence of healthy weight and underweight is 73.8%. As figure 6 shows, this varies from 68.3% in Merthyr Tydfil to 83% in the Vale of Glamorgan, despite the fact that there is only about 15 miles between the boundaries of the two local authority areas.

^b Exact values are used to determine the ranges, and hence membership, of groups within maps. However, in the legend those ranges are shown to one decimal place only. Therefore, whilst the top of one range appears to overlap with the bottom of the following range within the legend, each exact value could only fall within a single exact range and group.

Figure 6 Percentage of children aged 4 to 5 years who are a healthy weight or underweight, Wales health boards and local authorities, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

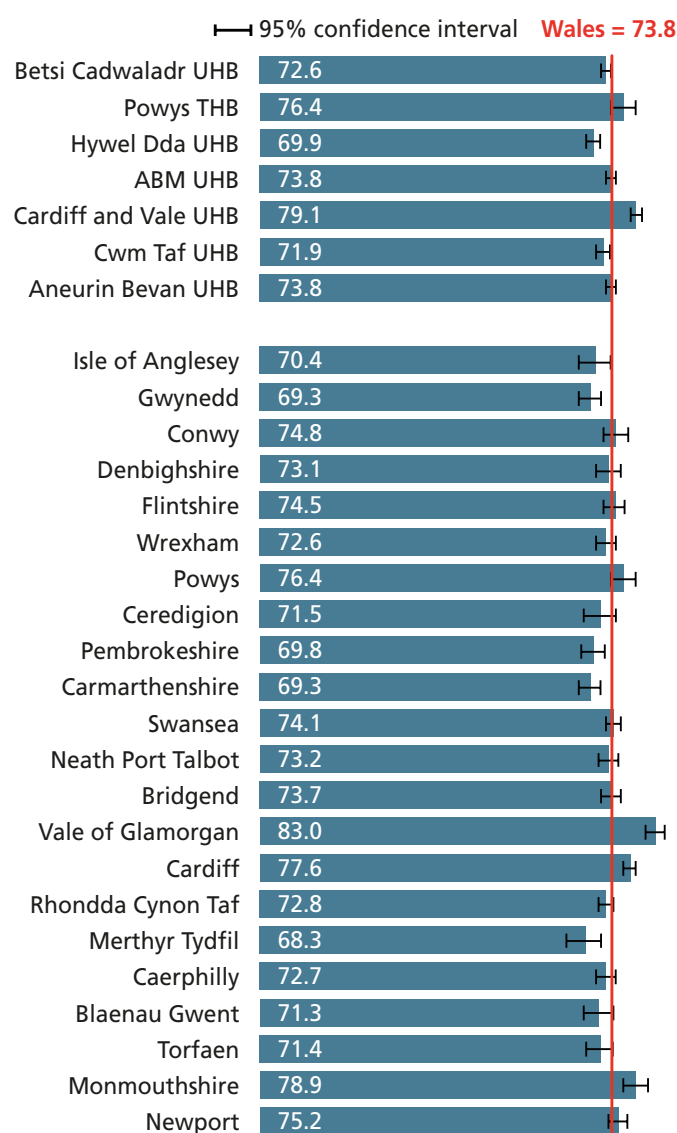
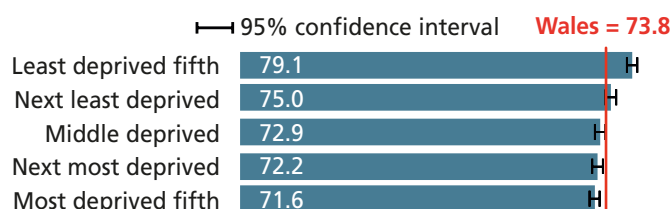


Figure 7 shows the prevalence of healthy and underweight children by deprivation quintiles, and the lowest prevalence of healthy weight and underweight is in the most deprived quintile. There is a body of evidence that being overweight or obese is linked to deprivation in both adults and children and the picture below in figure 7 bears this out. There is a clear inverse relationship between proportion of children of a healthy weight and deprivation. Those in the most deprived quintiles have a statistically significantly lower prevalence

than the average for Wales. For those in the least deprived quintiles the prevalence is statistically significant higher. More explanation of how deprivation is assigned is contained in appendix 1.

Figure 7 Percentage of children aged 4 to 5 years who are a healthy weight or underweight, Welsh Index of Multiple Deprivation quintiles, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Underweight

The number of children whose BMI fell into the underweight category is very small – a total of 293 across Wales or 0.9% of the children who were measured as part of the programme. Information for prevalence of underweight may be available at health board level, and occasionally at local authority level (see tables in appendix 3), however when broken down further by sex the information may only be presented at a national level to avoid the risk of disclosure.

Exploration of prevalence of underweight children in Cardiff

For the fourth year running, prevalence of underweight was significantly higher in Cardiff and Vale UHB at 1.7% than in any of the other health boards. The number of children affected is small, but the difference is statistically significant. While public health concerns are focused in the main on prevalence of obesity and overweight in children in the CMP, it is still important to gain a better understanding of the factors that influence prevalence of underweight in children. To this end a review was carried out in 2015/16 and a report¹³ written, which provides some analysis of this issue. The report findings, from a comprehensive review of national and international literature, were that boys were more likely than girls to be underweight, and that the prevalence of underweight varied between ethnic groups. CMP data across three years from 2011/2012 to 2013/14 was examined.

From the data which relates solely to children aged between four and five, the report confirms:

- A significantly higher proportion of children resident in Cardiff local authority (LA), were underweight when compared to their peers across Wales (1.47% vs. 0.67%)
- Across Wales, significantly more boys (0.82%) than girls (0.51%) were underweight. A difference was also observed in Cardiff, however this was not statistically significant
- Across Wales, a significantly higher proportion of children aged 4 to 5 years from the Asian ethnic group were underweight, than compared to children from the White ethnic group
- In Cardiff LA, a significantly higher proportion of children from the White ethnic group were also classed as underweight than compared to the all-Wales rate (1.24% vs. 0.58%).

The report does provide insight into some of the factors influencing the prevalence of underweight, however, with more data available in future years, there may be more insights to gain from further analysis.

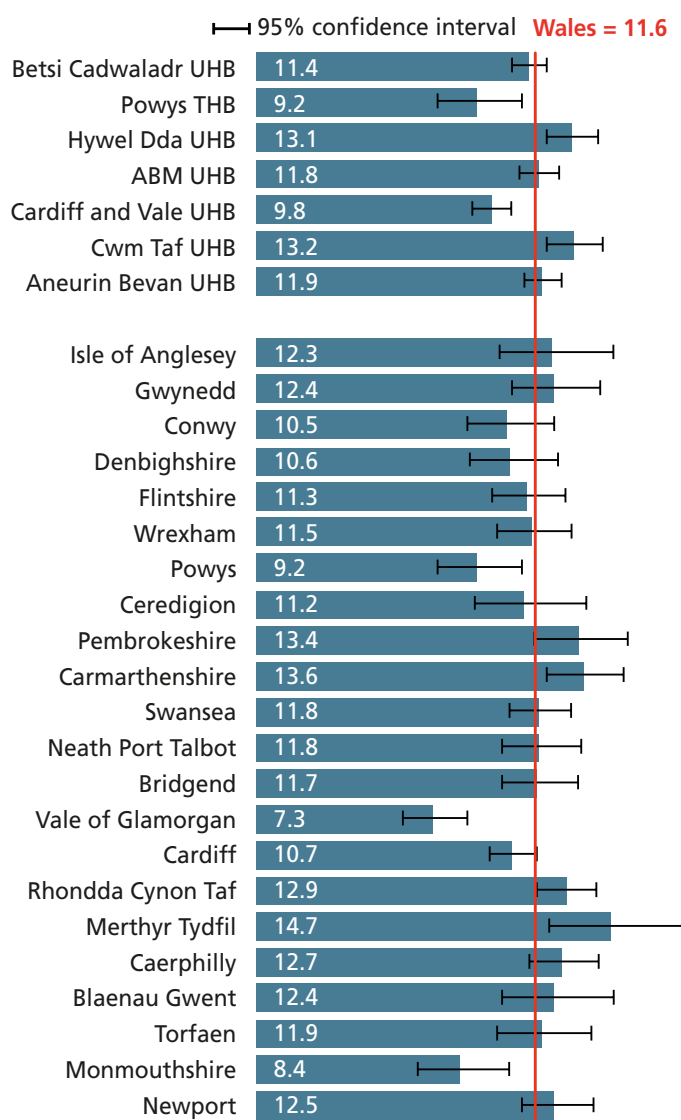
Obesity

As figure 8 shows, 11.6% of children who participated in the CMP were obese. This is a slight fall from last year when national prevalence of obesity in this age group was 11.8%, but the fall is not statistically significant. Obesity prevalence in reception year in Merthyr Tydfil at 14.7% is double that in the Vale of Glamorgan at 7.3%. Levels of deprivation in Merthyr Tydfil are much higher than they are in the Vale of Glamorgan and the relationship between obesity prevalence and deprivation can be clearly seen in figure 9.



Figure 8 Percentage of children aged 4 to 5 years who are obese, Wales, health boards and local authorities, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



More than a fifth (22.2%) of the Lower Super Output Areas (LSOAs) in Merthyr Tydfil and only 5.1% in the Vale of Glamorgan were in the most deprived 10% of LSOAs in Wales.

Welsh Index of Multiple Deprivation (WIMD) 2014, revised.

It does appear though that obesity prevalence has fallen since last year in Merthyr Tydfil when it was 16.6%, but the fall is not statistically significant and there

is not enough data to assess any further movement or trend across more years.

More information on the changes over time at local authority level is given later in this report. The changes over the last three years at health board level are given in figure 10. While some of the changes between 2012/13 and 2013/14 were significant, none of the changes between obesity prevalence this year and last are statistically significant.

Figure 9 Percentage of children aged 4 to 5 years who are obese, Welsh Index of Multiple Deprivation quintiles, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

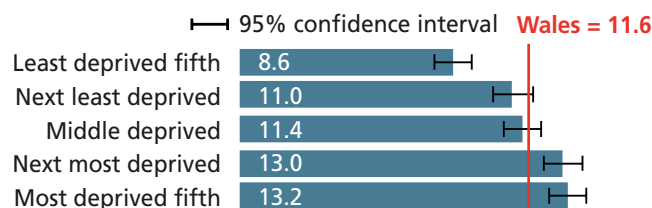
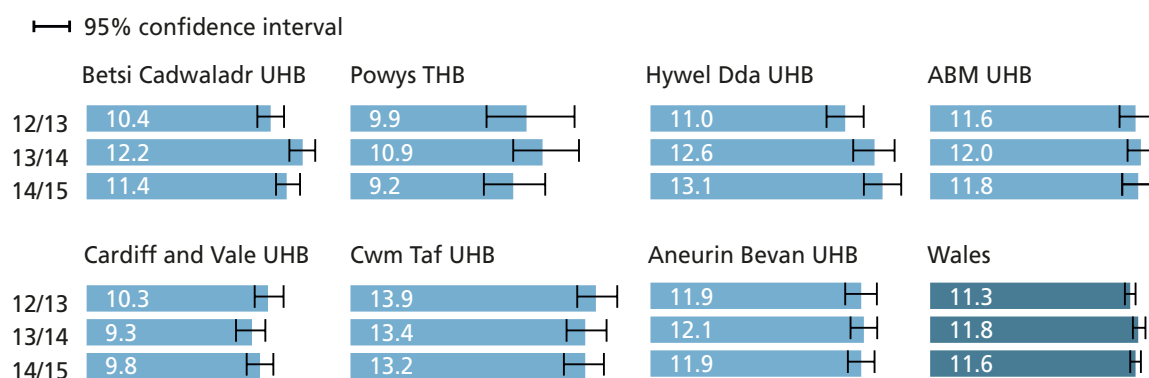


Figure 10 Percentage of children aged 4 to 5 years who are obese, Wales health boards, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Information on childhood obesity, by health board and corresponding local authority areas

Information in this section is presented in the form of maps and charts at health board level. Maps 2 to 8 display information on obesity prevalence aggregated over the last three years. Through combining data for the last three years a more robust picture of obesity prevalence within each health board can be developed, with the darker areas on each map showing where prevalence of child obesity is more concentrated. Figures 11 to 17 show the changes over time in obesity prevalence within each local authority in each health board, as well as at the health board level.

Abertawe Bro Morgannwg University Health Board

In Abertawe Bro Morgannwg UHB, while there appears to have been changes in

obesity prevalence over the last three years, none of the changes are statistically significant.

Map 2 Percentage of children aged 4 to 5 years who are obese, ABM UHB MSOAs, Child Measurement Programme for Wales, 2012/13 – 2014/15

Due to smaller sample sizes at MSOA level, caution should be taken when making comparisons between areas. Produced by Public Health Wales Observatory, using CMP data (NWIS) © Crown copyright and database right 2016. Ordnance Survey 1000044810

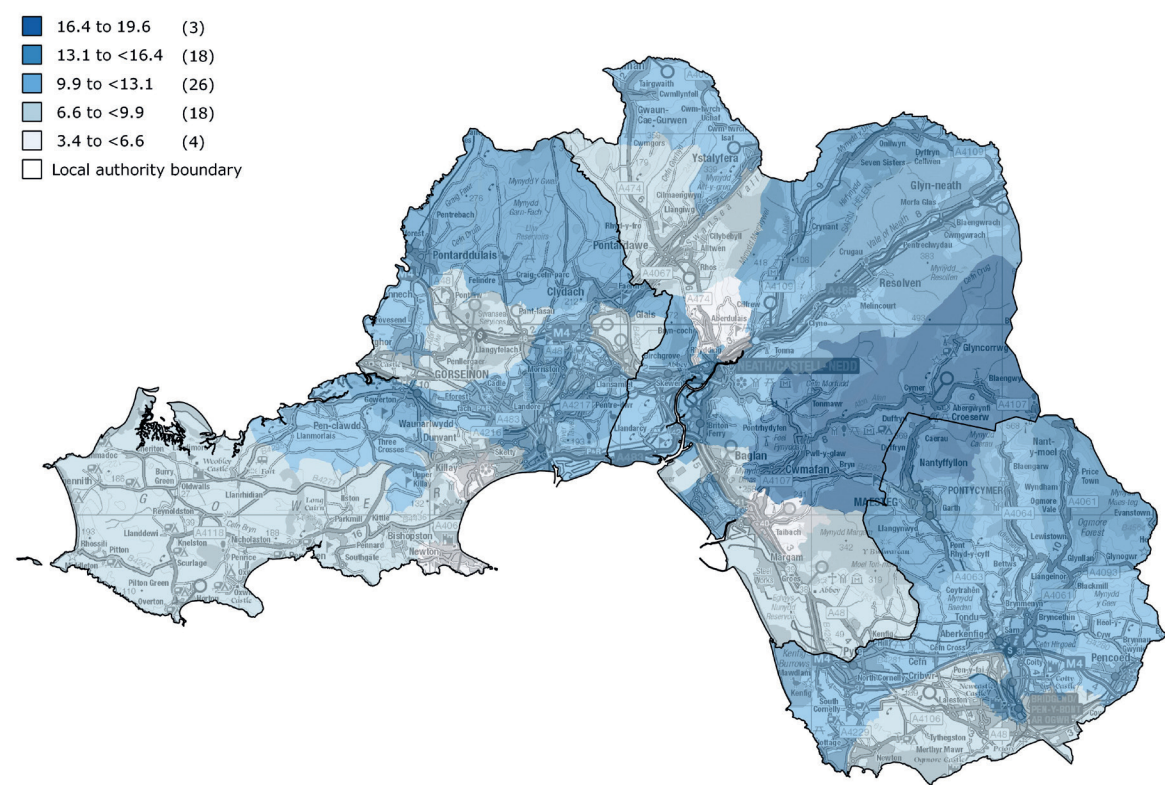
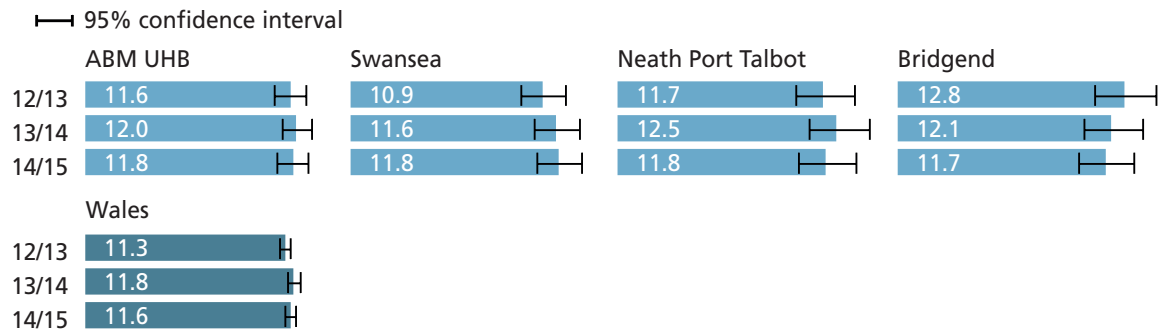


Figure 11 Percentage of children aged 4 to 5 years who are obese, ABM UHB, local authorities and Wales, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Aneurin Bevan University Health Board

As can be seen from Map 3, prevalence of obesity across Monmouthshire appears lower than elsewhere in the health board.

In 2012/13 and again in 2014/15 the difference in prevalence between Monmouthshire and the whole health board was statistically significant. At a local

authority level (figure 12) there was only a significant difference between Monmouth / Caerphilly and Monmouth / Newport, but not between Monmouth and Blaenau Gwent or Monmouth and Torfaen. This is possibly because of the small number of children involved. None of the changes over time in the health board or at local authority level are statistically significant.

Map 3 Percentage of children aged 4 to 5 years who are obese, Aneurin Bevan UHB MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

Due to smaller sample sizes at MSOA level, caution should be taken when making comparisons between areas.

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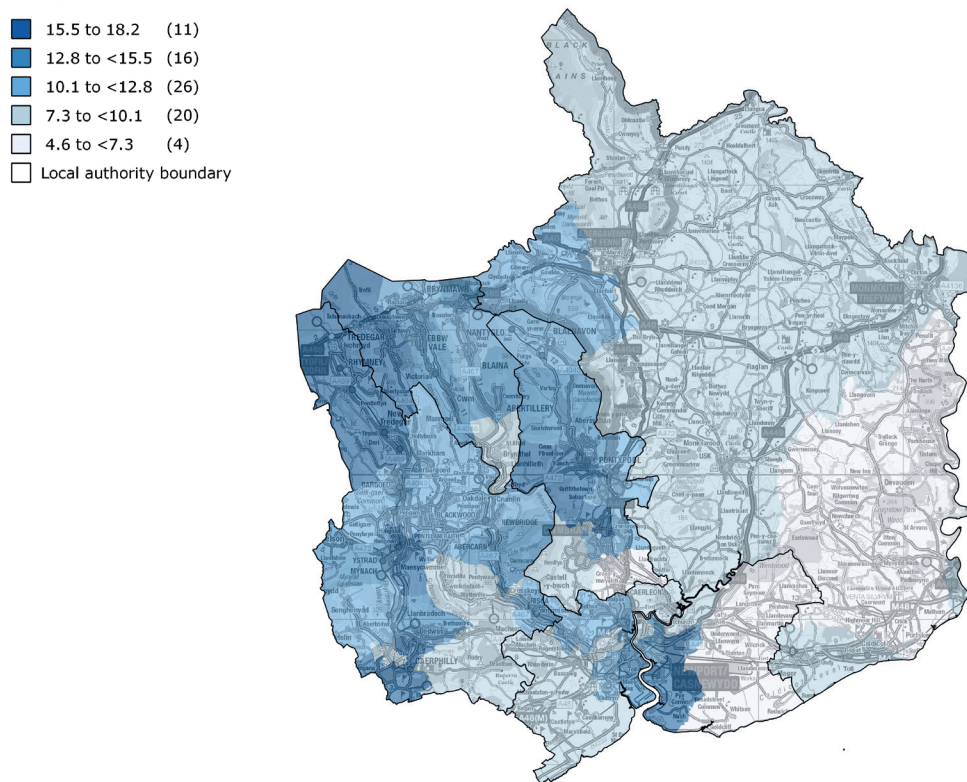
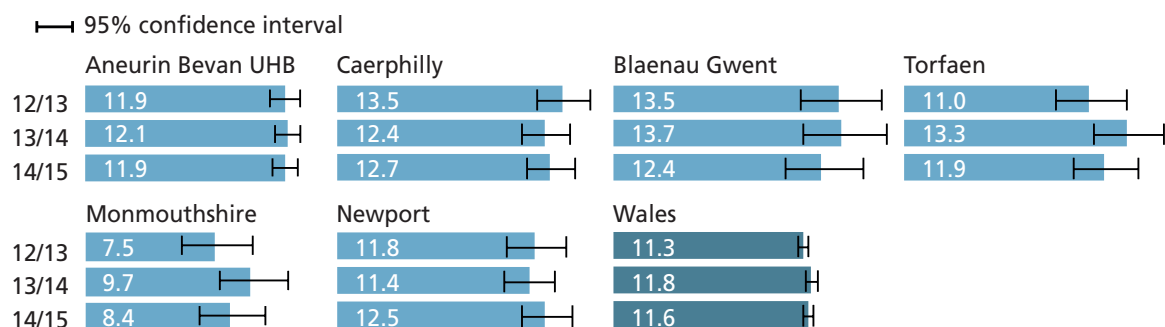


Figure 12 Percentage of children aged 4 to 5 years who are obese, Wales, Aneurin Bevan UHB and local authorities, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Betsi Cadwaladr University Health Board

At health board level (figure 13), there did appear to be a significant increase in obesity prevalence in BCUHB between 2012/13 and 2013/14. However the difference between

obesity prevalence for 2014/15 and the preceding two years is not statistically significantly different. There is no significant change between this year and either of the two preceding years at a local authority level in north Wales.

Map 4 Percentage of children aged 4 to 5 years who are obese, Betsi Cadwaladr UHB MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

Due to smaller sample sizes at MSOA level, caution should be taken when making comparisons between areas. Produced by Public Health Wales Observatory, using CMP data (NWIS) © Crown copyright and database right 2016. Ordnance Survey 1000044810

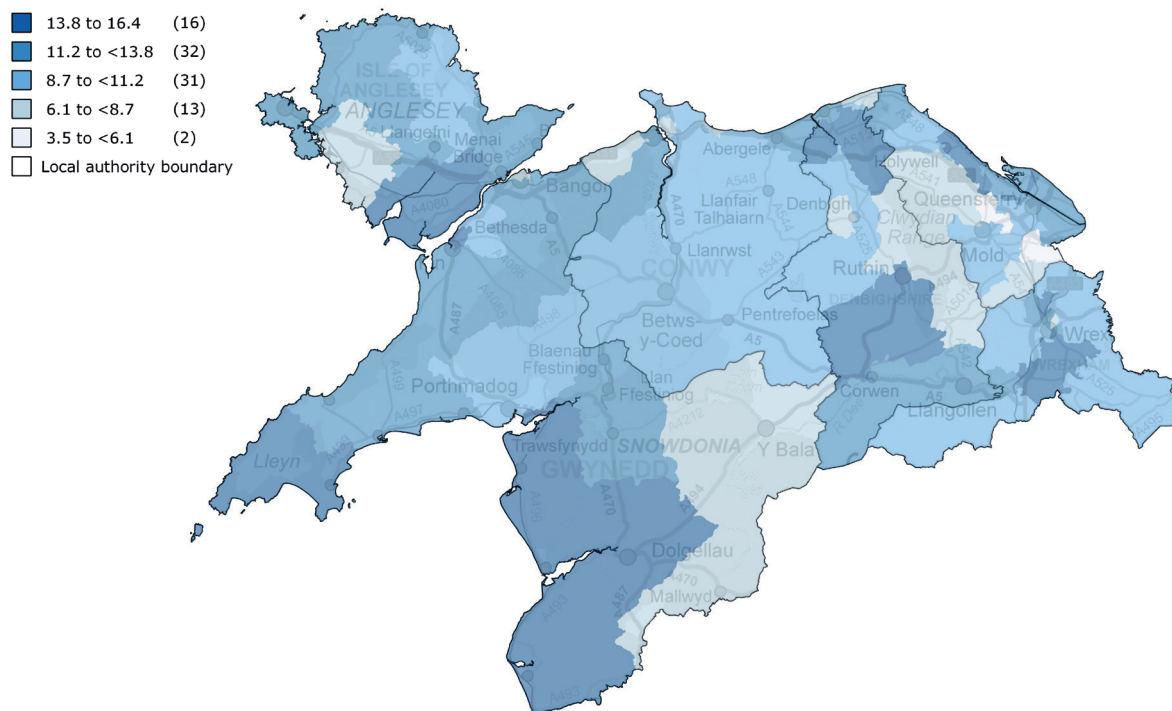
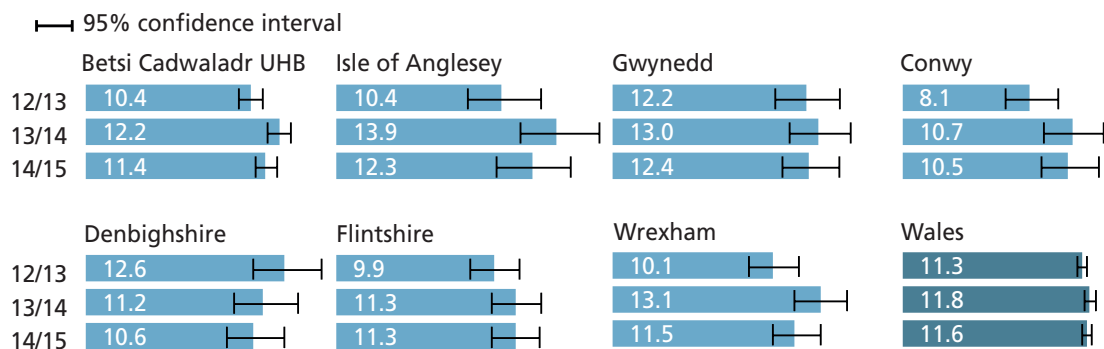


Figure 13 Percentage of children aged 4 to 5 years who are obese, Wales, Betsi Cadwaladr UHB and local authorities, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Cardiff and Vale University Health Board

Obesity prevalence in the Vale of Glamorgan is significantly lower than in Cardiff, although there is a concentration of obesity prevalence centred on Barry (map 5). The difference is statistically significant, as it is between the Vale and most other local

authorities in Wales with the exception of Powys, Monmouthshire and Conwy.

While there appears to have been changes over the three years (figure 14), none of the changes over time are significant in either the Vale of Glamorgan or Cardiff, or at a health board level.

Map 5 Percentage of children aged 4 to 5 years who are obese, Cardiff and Vale UHB MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

Due to smaller sample sizes at MSOA level, caution should be taken when making comparisons between areas.

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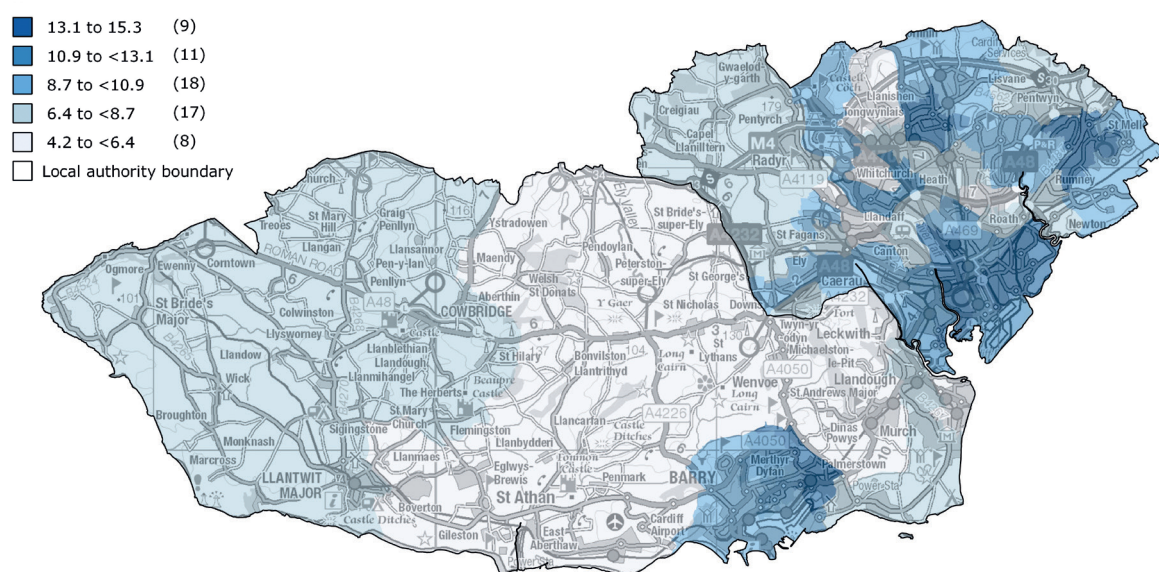
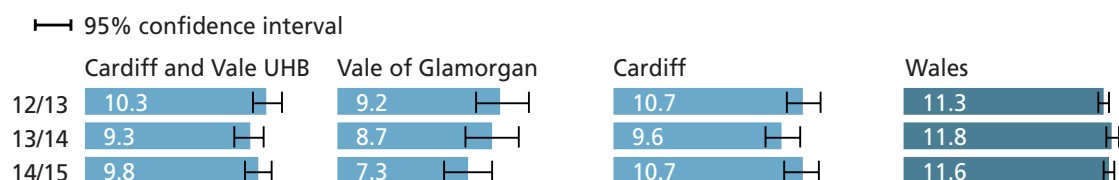


Figure 14 Percentage of children aged 4 to 5 years who are obese, Wales, Cardiff and Vale UHB and local authorities, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Cwm Taf University Health Board

Obesity prevalence has been significantly higher than the national average in Cwm Taf UHB since the Child Measurement Programme began, and the same is true this year. It also appeared to be significantly higher in Merthyr Tydfil than in Rhondda Cynon Taf in 2013/14, but that difference is not apparent this year.

From figure 15, it may appear that obesity prevalence in Merthyr Tydfil has reduced this year, from the two previous years. But this is not a statistically significant fall. Because of the small numbers involved, any sustained significant falls will only become apparent when data is available for a few more years.

Map 6 Percentage of children aged 4 to 5 years who are obese, Cwm Taf UHB MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

Due to smaller sample sizes at MSOA level, caution should be taken when making comparisons between areas. Produced by Public Health Wales Observatory, using CMP data (NWIS) © Crown copyright and database right 2016. Ordnance Survey 1000044810

- 17.4 to 19.8 (2)
- 15.1 to <17.4 (10)
- 12.8 to <15.1 (9)
- 10.5 to <12.8 (12)
- 8.1 to <10.5 (5)
- Local authority boundary

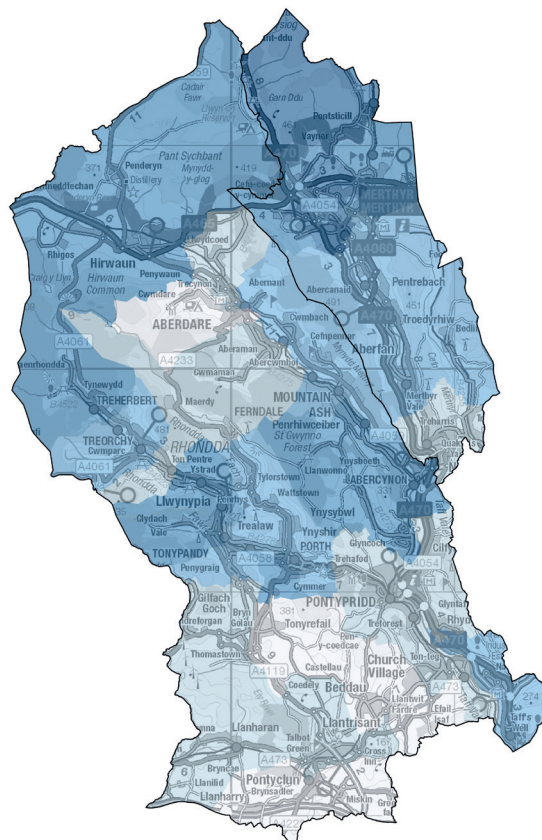
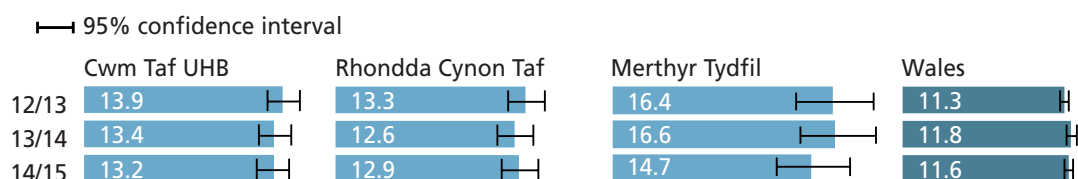


Figure 15 Percentage of children aged 4 to 5 years who are obese, Wales, Cwm Taf UHB and local authorities, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Hywel Dda University Health Board

Obesity prevalence in Hywel Dda UHB (13.1%) is significantly greater than the Welsh average (11.6%), and at local authority level the difference is also significant within Carmarthenshire (13.6%).

At a local authority level, while prevalence appears to have changed over the years (figure 16), none of the increases or

decreases are significant. Neither is the difference in prevalence between the local authorities statistically significant. This is possibly because of the small number of children per year who are categorised as obese at the level of the local authority.

Map 7 Percentage of children aged 4 to 5 years who are obese, Hywel Dda UHB MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

Due to smaller sample sizes at MSOA level, caution should be taken when making comparisons between areas.

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- 17.4 to 20.4 (1)
- 14.4 to <17.4 (7)
- 11.4 to <14.4 (22)
- 8.4 to <11.4 (15)
- 5.4 to <8.4 (5)
- Local authority boundary

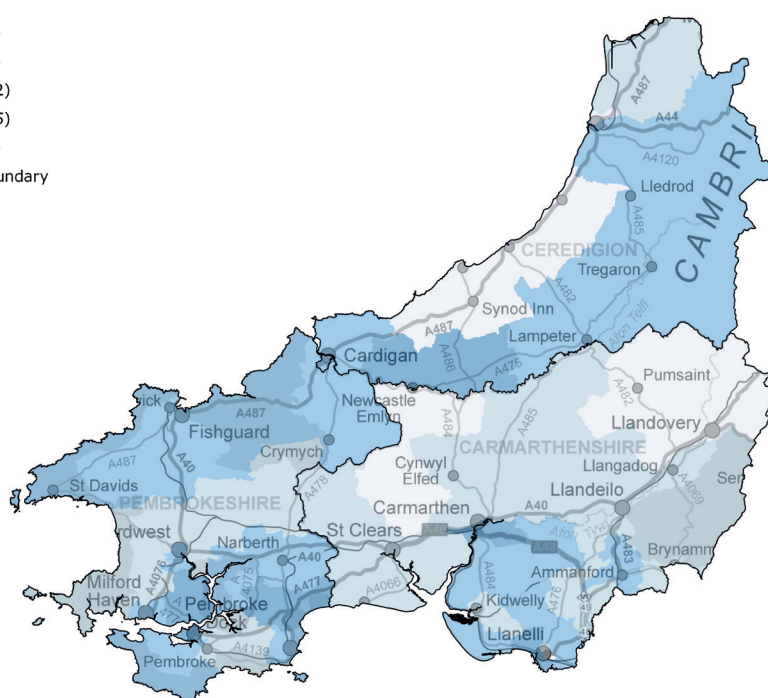
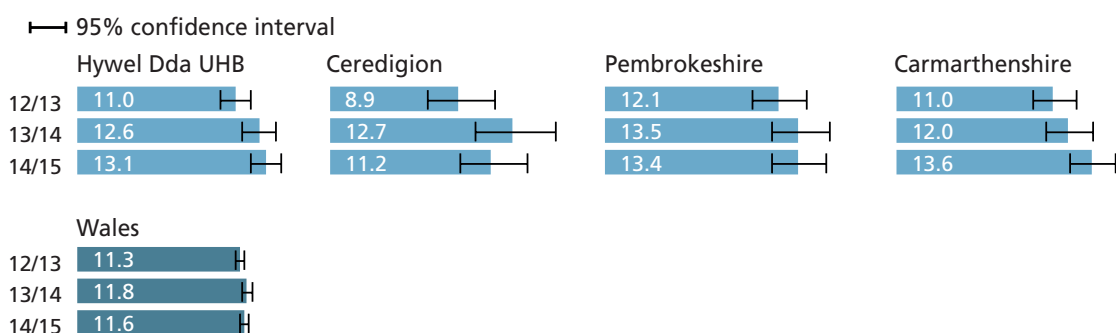


Figure 16 Percentage of children aged 4 to 5 years who are obese, Wales, Hywel Dda UHB and local authorities, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Powys Teaching Health Board

Powys is the only health board in Wales which is coterminous with a single local authority. While it is one of the largest health boards geographically, it has the smallest population of any of the health boards, and the smallest number of children (1,201) eligible to participate in the Child Measurement Programme. This is little more than a third of the number in the next smallest health board, population-wise

(Cwm Taf UHB with 3,511 children).

The small number of children in the prevalence categories can magnify the effect of any changes or differences, and make them appear more important than they are.

Obesity prevalence in Powys has appeared to be lower than the Welsh average for the last three years (figure 17). However this is the first year (2014/15) that the difference is statistically significant.

Map 8 Percentage of children aged 4 to 5 years who are obese, Powys THB MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

Due to smaller sample sizes at MSOA level, caution should be taken when making comparisons between areas.

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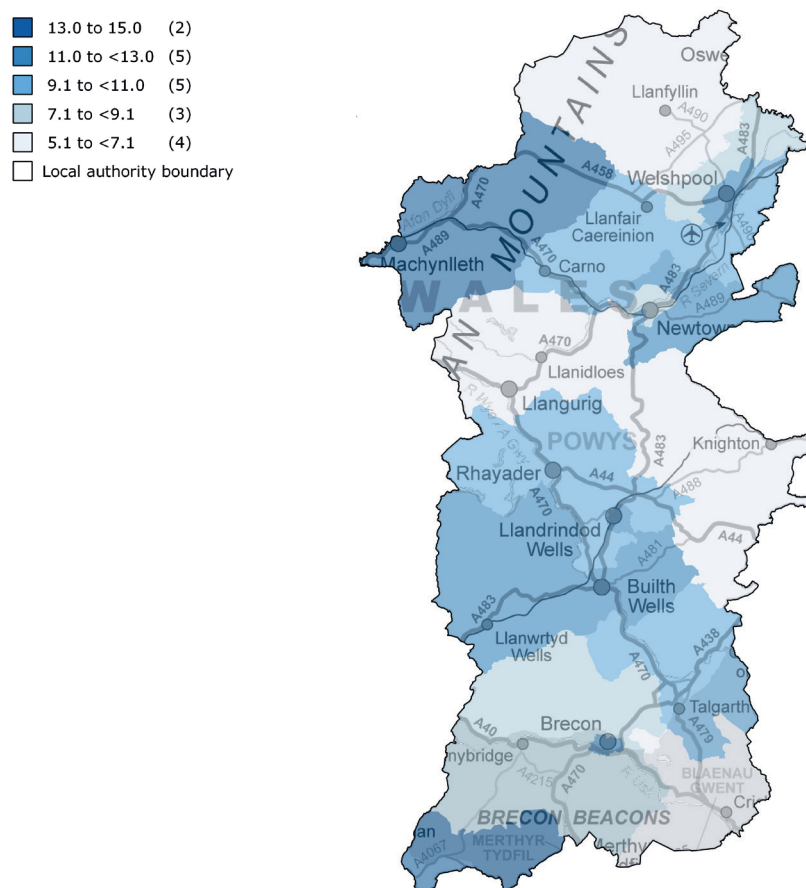
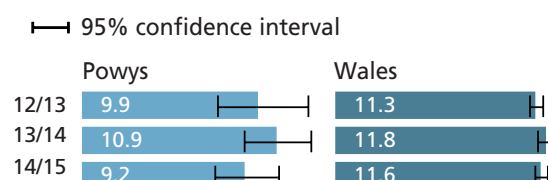


Figure 17 Percentage of children aged 4 to 5 years who are obese, Wales and Powys THB, Child Measurement Programme for Wales, 2012/13-2014/15

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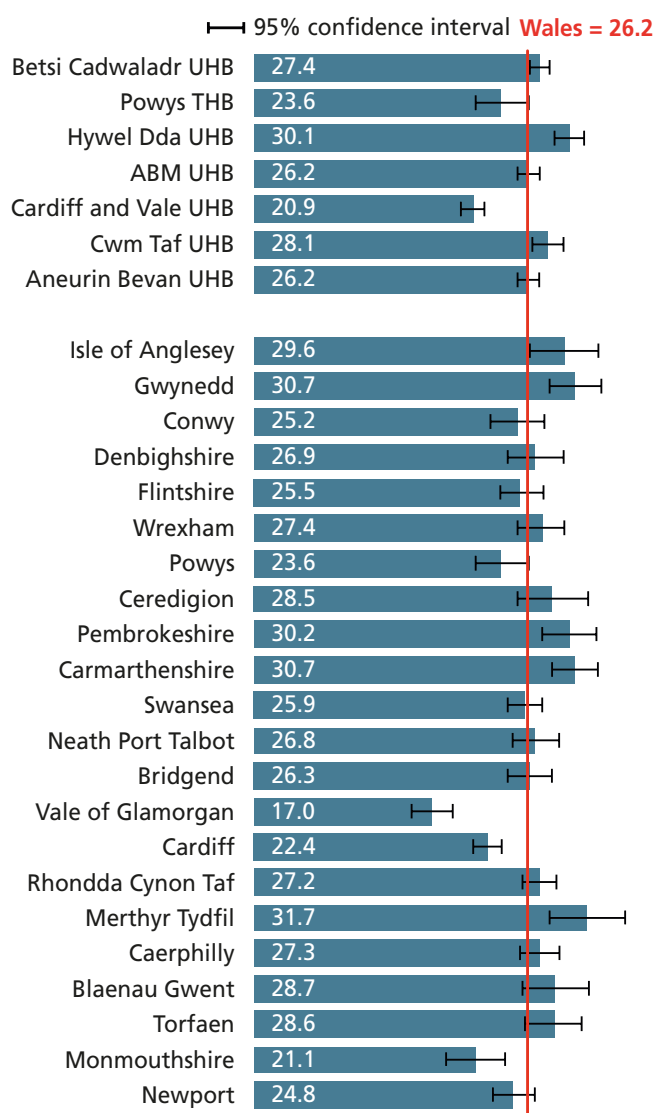
Overweight or obese

As already mentioned, 11.6% of children measured in 2014/15 had a BMI categorised as obese. An additional 14.5% were in the overweight category, giving a prevalence of overweight or obese of 26.2% as shown in figure 18. So more than a quarter of

children were of greater than a healthy weight. Combining data across several years should provide greater assurance about the reliability of information, and there is little difference between the data for one year and data for three years combined (figure 19).

Figure 18 Percentage of children aged 4 to 5 years who are overweight or obese, Wales, health boards and local authorities, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Looking at the information for three years combined (figure 19), there are three health boards where the prevalence of overweight and obesity is statistically significantly higher than the all-Wales average. These are Betsi Cadwaladr UHB, Hywel Dda UHB and Cwm Taf UHB. Prevalence in Cardiff and Vale UHB and Powys THB is significantly lower. In eight of the 22 local authorities – Isle of Anglesey, Gwynedd, Pembrokeshire, Carmarthenshire, Rhondda Cynon Taf, Merthyr Tydfil,

Caerphilly and Blaenau Gwent – prevalence is also significantly higher than the Welsh average.

As with obesity, prevalence of overweight plus obese is linked to deprivation, and is significantly higher in the two most deprived quintiles in Wales (figure 20). While these areas of high deprivation may be concentrated in some areas such as Merthyr Tydfil, there are areas of high deprivation scattered throughout Wales.

Figure 19 Percentage of children aged 4 to 5 years who are overweight or obese, Wales, health boards and local authorities, Child Measurement Programme for Wales, 2012/13, 2013/14 and 2014/15 combined

Produced by Public Health Wales Observatory, using CMP data (NWIS)

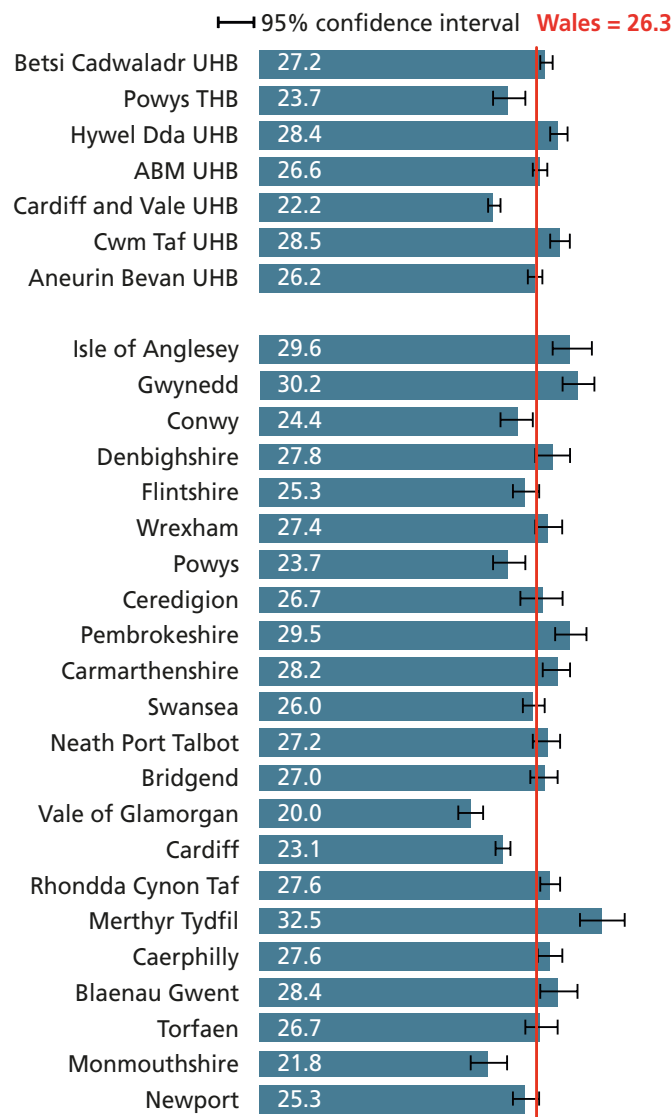


Figure 20 Percentage of children aged 4 to 5 years who are overweight or obese, Welsh Index of Multiple Deprivation quintiles, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

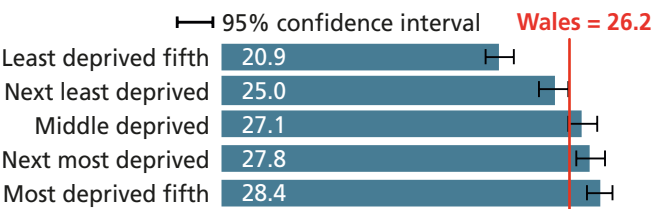
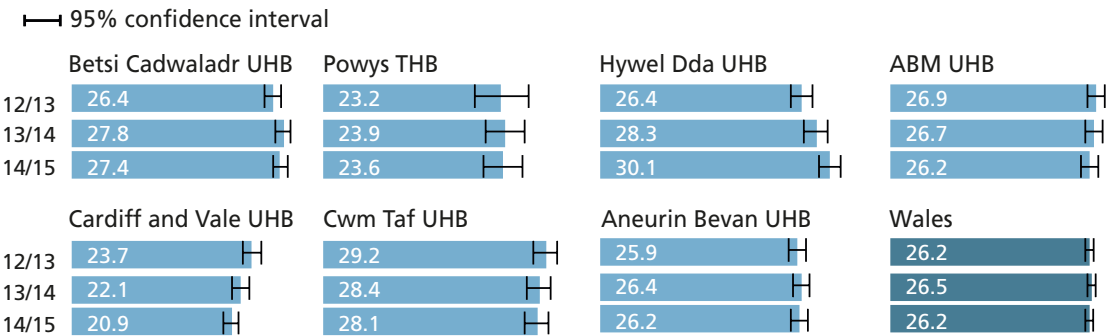


Figure 21 shows the changes across the last three years by health board. While there was little change between 2014/15 and 2013/14, there was a small but statistically significant change in prevalence in two of the health boards between 2012/13 and 2014/15,

which was the second year the programme was in place: in Hywel Dda UHB prevalence increased from 26.4% to 30.1% and in Cardiff and Vale UHB it decreased from 23.7% to 20.9%.

Figure 21 Percentage of children aged 4 to 5 years who are overweight or obese, Wales health boards, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Sex

For the report this year, we have provided a focus on differences in prevalence categories by sex. Similar to the report published in 2015, at a national level there is greater prevalence of overweight and obesity in boys and the difference is significant. Boys also have greater prevalence of underweight and again, this is significant. As can be seen

from the reference tables in appendix 3, there is no significant difference between prevalence in boys and girls in any category at health board local or authority level, with one exception – there is greater prevalence of underweight in boys in Cardiff & Vale UHB (and in Cardiff local authority area), but the number of children involved is very small.

Table 3 Prevalence of weight categories by sex, Wales, Child Measurement Programme for Wales 2014/15

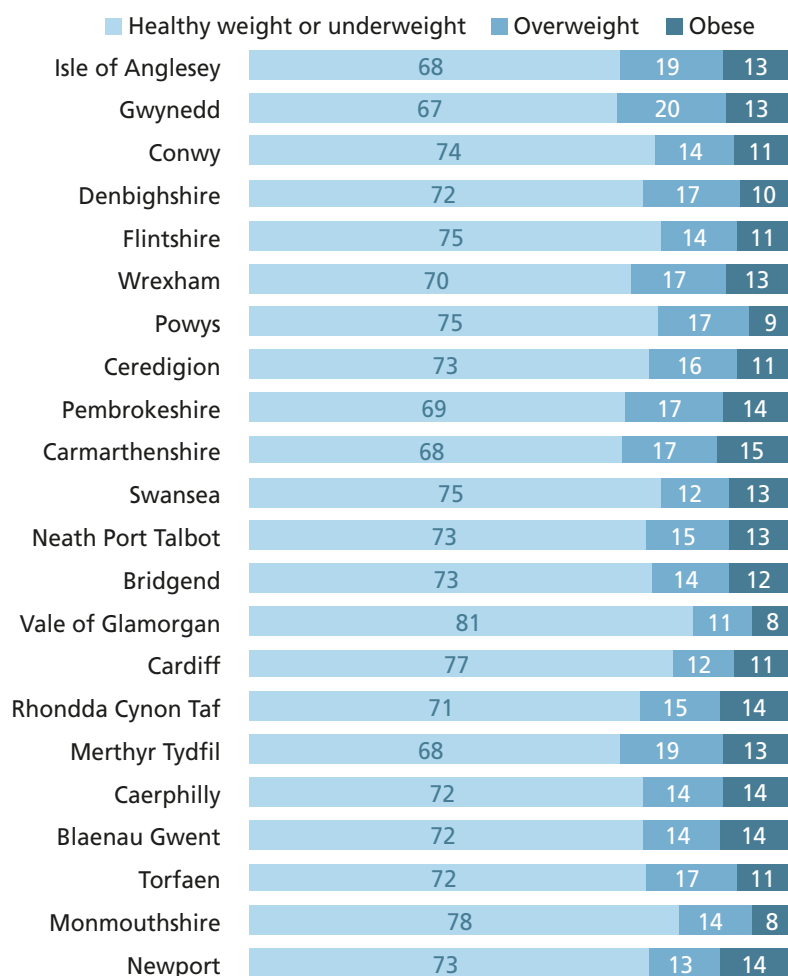
Produced by Public Health Wales Observatory, using CMP data (NWIS)

	Healthy weight or underweight		Overweight or obese		Underweight		Healthy weight		Overweight not obese		Obese	
	%	(95% CI) ¹	%	(95% CI) ¹	%	(95% CI) ¹	%	(95% CI) ¹	%	(95% CI) ¹	%	(95% CI) ¹
Girls	74.6	(74.0 to 75.3)	25.4	(24.7 to 26.0)	0.7	(0.5 to 0.8)	74.0	(73.3 to 74.6)	14.3	(13.8 to 14.9)	11.0	(10.6 to 11.5)
Boys	73.1	(72.4 to 73.7)	26.9	(26.3 to 27.6)	1.1	(1.0 to 1.3)	72.0	(71.3 to 72.6)	14.7	(14.2 to 15.3)	12.2	(11.7 to 12.7)

¹ 95% confidence level

Figure 22 Weight category percentages, boys aged 4 to 5 years, Wales, local authorities, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Figures 22 and 23 give a breakdown by sex and local authority area, showing the proportion of boys and girls in each of the prevalence categories.

Figures 24 and 25 give the breakdown of prevalence of overweight and obesity by

sex and Welsh Index of Multiple Deprivation quintile. Both boys and girls in the most deprived quintile are significantly more likely to be overweight or obese than the average for Wales.

Figure 23 Weight category percentages, girls aged 4 to 5 years, Wales local authorities, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

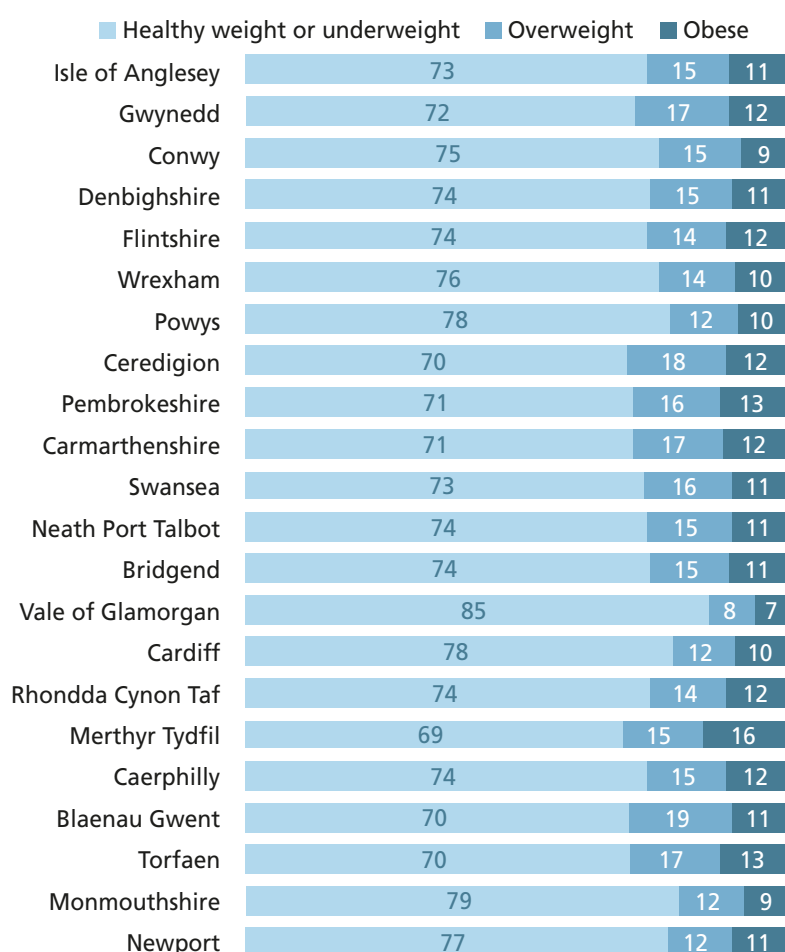
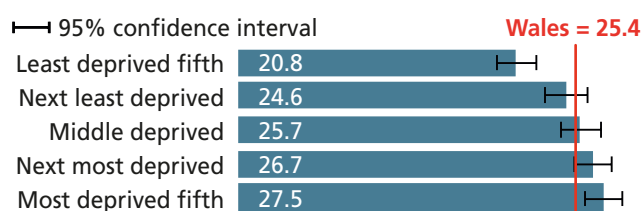


Figure 24 Percentage of girls aged 4 to 5 years who are overweight or obese, Welsh Index of Multiple Deprivation quintiles, Child Measurement Programme for Wales, 2014/15

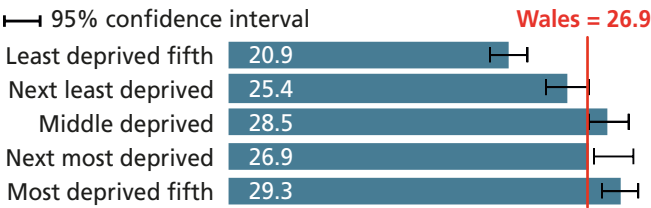
Produced by Public Health Wales Observatory, using CMP data (NWIS)



While there appears to be a difference in obesity prevalence between boys (29.3%) and girls (27.5%) living in the most deprived areas of Wales, the difference cannot be described as statistically significant.

Figure 25 Percentage of boys aged 4 to 5 years who are overweight or obese, Welsh Index of Multiple Deprivation quintiles, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Ethnicity

This is the fourth year for the programme report, but the third year that analysis of the child measurements has been undertaken by ethnicity. There are caveats around the recording of ethnicity on the National Community Child Health Database and these are explained more fully in appendix 1, and in the earlier section “Factors affecting the

Child Measurement Programme in 2014/15” on page 12. As can be seen from figure 26, 13.5% of children who were measured for the programme in 2014/15 had their ethnicity recorded as not known on their health records. This is an increase from 11% in last year’s report for whom ethnicity was “not known”.

Figure 26 Percentage of children aged 4 to 5 years by ethnic group, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

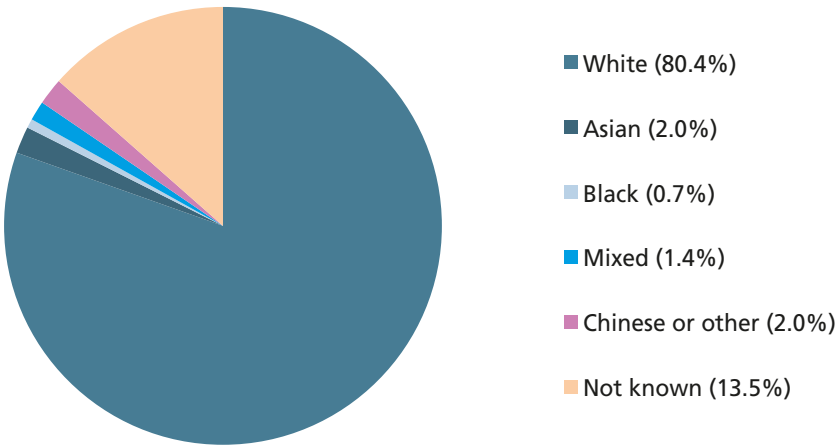


Figure 27 shows that children of Asian ethnicity had a significantly higher prevalence of healthy and underweight than the average for Wales for 2014/15.

Because the number of children from a black or minority ethnic background is quite small, more robust information on their growth can be obtained by combining the data for the three years that this information has been available. The results are shown for the combined years of 2012/13 to 2014/15 for prevalence of obesity (figure 28) and prevalence of obesity and overweight (figure

29). As can be seen in figures 28 and 29, children whose ethnicity is recorded as black have higher prevalence of obesity, and of obesity plus overweight than the Welsh average, and this difference is significant. It should be noted that the centile charts on which the measurements and thresholds are based were developed in the UK using a population that does not include children from ethnic minority backgrounds and there are known differences in growth rates between children from different ethnic groups (see appendix 1 – “Classifying a child’s BMI”).

Figure 27 Percentage of children aged 4 to 5 years who are healthy weight or underweight by ethnic group, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)

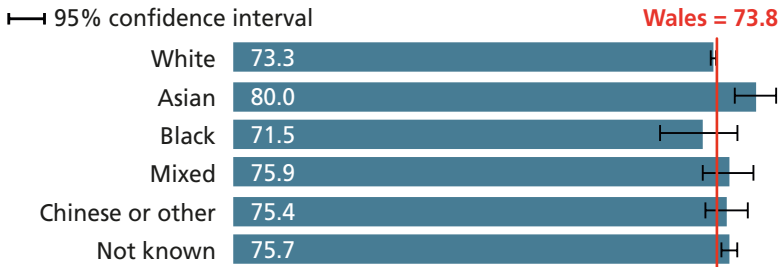


Figure 28 Percentage of children aged 4 to 5 years who are obese by ethnic group, Child Measurement Programme for Wales, 2012/13, 2013/14 and 2014/15 combined

Produced by Public Health Wales Observatory, using CMP data (NWIS)

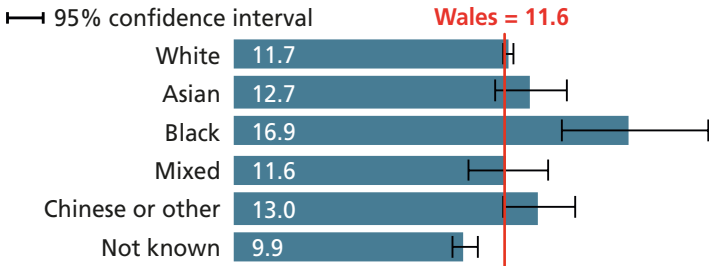


Figure 29 Percentage of children aged 4 to 5 years who are overweight or obese by ethnic group, Child Measurement Programme for Wales, 2012/13, 2013/14 and 2014/15 combined

Produced by Public Health Wales Observatory, using CMP data (NWIS)

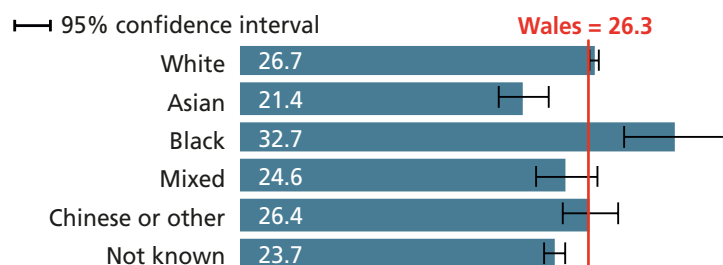


Figure 30 Weight category percentages by ethnic group, children aged 4 to 5 years, Child Measurement Programme for Wales, 2012/13, 2013/14 and 2014/15 combined

Produced by Public Health Wales Observatory, using CMP data (NWIS)

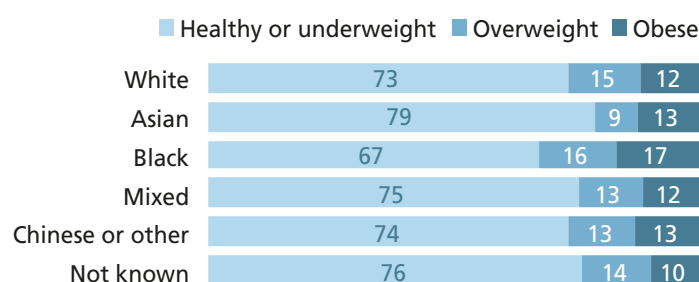


Figure 30 shows the prevalence categories by each ethnic group, and again the data has been combined over three years to provide a more robust picture.

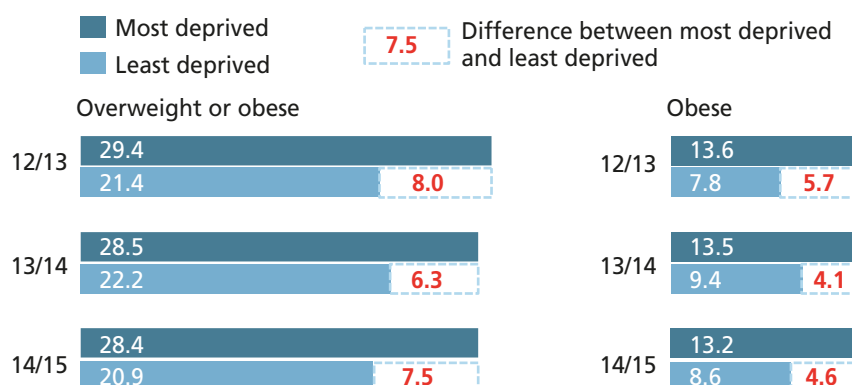
Deprivation – differences across the years

Information about the prevalence categories analysed by deprivation has been mentioned throughout the report, and as already described, prevalence of obesity and overweight plus obesity, is greater in areas of higher deprivation¹⁵.

Figure 31 displays the difference between the most and least deprived quintiles in prevalence of overweight or obese, over the last three years.

Figure 31 Percentage of children aged 4 to 5 years who are overweight or obese, or obese, most and least deprived fifth in Wales, Child Measurement Programme for Wales, 2012/13-2014/15

Produced by Public Health Wales Observatory, using CMP data (NWIS)



Comparisons with England

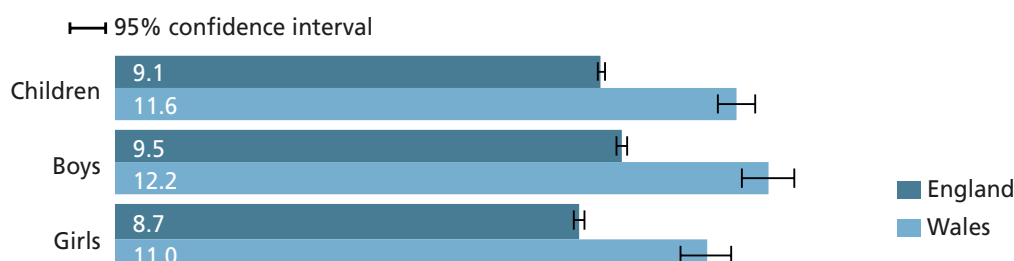
In figure 5 a comparison of participation levels between Wales and the regions of England for their National Child Measurement Programme was given. Participation in Wales has increased steadily over the last four years, and is reaching the levels of participation seen in England where a national measurement programme has been in place since 2006.

Figures 32 and 33 show a comparison of two of the main prevalence categories between

England and Wales. The comparison is possible as they also carry out measurements in reception year in England. There is considerably higher prevalence of obesity, and overweight and obese in Wales when compared to England. The differences are significantly different for all children and for boys and girls. The confidence intervals around the data from England are much smaller than those for the data from Wales, because of the number of children measured in the NCMP – just over 610,000 in 2014/15.

Figure 32 Percentage of children aged 4 to 5 years who are obese, Wales and England, Child Measurement Programme for Wales and the National Child Measurement Programme (England), 2014/15

Produced by Public Health Wales Observatory using CMP data (NWIS) and NCMP data (HSCIC)



Figures 34 and 35 show the same information displayed comparing prevalence between the regions of England and all of Wales. There is a significant difference

between Wales and each of the regions of England for both prevalence of obesity, and overweight or obesity.

Figure 33 Percentage of children aged 4 to 5 years who are overweight or obese, Wales and England, Child Measurement Programme for Wales and the National Child Measurement Programme (England), 2014/15

Produced by Public Health Wales Observatory using CMP data (NWIS) and NCMP data (HSCIC)



Figure 34 Percentage of children aged 4 to 5 years who are obese, Wales, England and English regions, Child Measurement Programme for Wales and the National Child Measurement Programme (England), 2014/15

Produced by Public Health Wales Observatory using CMP data (NWIS) and NCMP data (HSCIC)

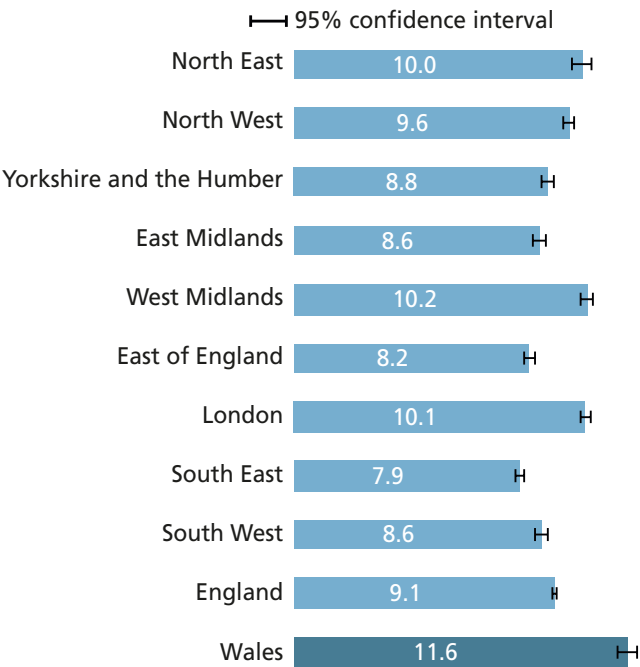
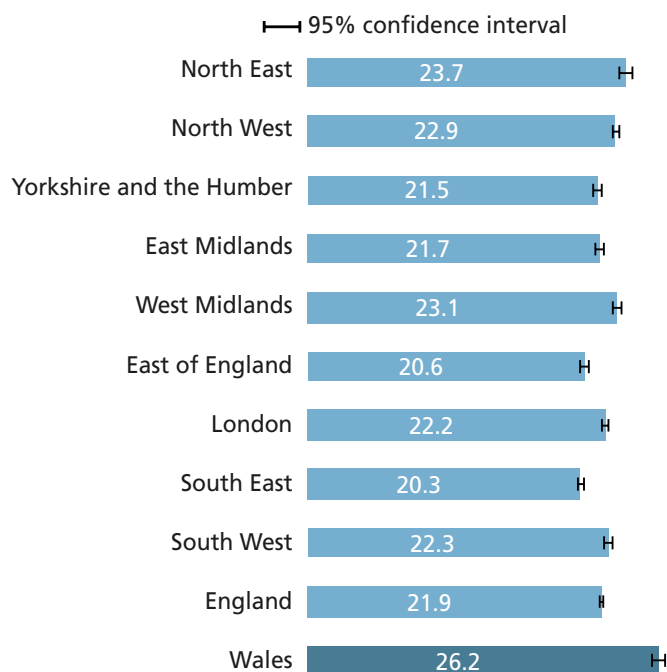


Figure 35 Percentage of children aged 4 to 5 years who are overweight or obese, Wales, England and English regions, Child Measurement Programme for Wales and the National Child Measurement Programme (England), 2014/15

Produced by Public Health Wales Observatory using CMP data (NWIS) and NCMP data (HSCIC)





Appendix 1 Methods and technical information

This appendix gives information about the methods employed in analysing and interpreting information used to compile the CMP report. All measurements that were included in the 2014/15 figures were collected during the academic year 2014/15 in line with the Child Measurement Programme Standards and Guidance.

The measurement process

School Health teams across Wales have routinely weighed and measured children in the reception year age-group for many years. This was done as part of the traditional 'pre-school' check. With the introduction of the Child Measurement Programme in 2011/12 this measurement is now done in a standardised way, and all health professionals involved are given additional training to carry this out. Measurements of height and weight are recorded by school health teams to the nearest 0.1 kg and 0.1 cm respectively in order to establish an accurate BMI measurement.

During 2014 an online training package was developed for NHS Wales to enable school nurses and others involved in the measuring process to refresh their knowledge and skills in undertaking the measurements, and information about this is circulated to all health boards.

BMI in adults

Once someone has reached adulthood (age 18+), the thresholds at which they are deemed to be of normal weight, under or overweight or obese remain the same. BMI is calculated by dividing a person's weight in kilograms by their height in metres squared (kg/m^2). The BMI thresholds for adults, as classified by the World Health Organisation¹⁴ are as follows:

- BMI of less than 18.5 is deemed underweight
- BMI of 18.5 and above, but less than 25 is deemed normal weight
- BMI of 25 and above, but less than 30 is deemed overweight
- BMI of 30 and above, but less than 40 is deemed obese
- BMI of 40 or more is deemed morbidly obese.

Classifying a child's BMI

The classification of children's BMI differs from the classification of adult BMI. In children the BMI is categorised using variable thresholds that alter depending on a child's age and sex, as growth patterns differ depending on a child's age and sex. Each child's BMI is calculated and then assessed against a reference population or growth reference derived from the measurements

of a large sample of children of the same age and sex. There are a number of different growth reference scales available, but for this programme UK90 was selected. The reference scale is divided into 100 units known as centiles (see appendix 2 for a sample centile chart). Depending on where on the UK90 growth/centile chart each child is, measurements are assigned to one of the following categories:

- Underweight: less than but not including the second centile
- Healthy weight: second centile up to but not including the 85th centile
- Overweight but not obese: 85th centile up to but not including the 95th centile
- Obese: 95th centile and above.

There is no standard definition of morbid / severe obesity in children in common use, as there is in adults.

Prevalence rates are calculated using age and sex-specific BMI centiles, derived using the British 1990 growth reference (UK90) from a method proposed by Cole et al¹⁵. The BMI is calculated using a method proposed by Keys et al¹⁶. The British 1990 growth reference (UK90) is also used in the National Child Measurement Programme for England which allows comparisons to be made between the two countries. Measurements which informed UK90 were drawn from seven major studies of growth in the UK, and comprise measurements of over 30,000 children¹⁷ and young people between 33 weeks of gestation and age 23 years. One criticism of this growth reference is that measurements of only a small number of children from ethnic minority backgrounds were available in the studies and these were not included, although there are known variations in growth patterns between children from different ethnic groups¹⁸.

Other growth references used internationally include those developed by the World Health Organization (WHO), Center for Disease Control in the USA (CDC) and the International Obesity Task Force (IOTF).

Comparisons between obesity prevalence across populations should only be made if the same growth reference has been used, as they do differ. The National Obesity Observatory in England have published a useful guide¹⁹ which gives more information about each of the above growth references.

Epidemiological versus clinical thresholds for classifying weight

Different thresholds are used for clinical purposes rather than population surveillance purposes, i.e. NICE recommend clinical interventions for children with a BMI on or above the 91st centile²⁰ (rather than the 85th centile) as this is the threshold for obesity in clinical settings. Information on the clinical thresholds is given in appendix 4 to assist health boards and local government in planning services.

Which records are included?

Records are included in the programme if they meet all of the following criteria:

- The location of residence can be determined
- The child is resident in Wales
- The school is located in Wales
- They were born in the period September 2009 - August 2010
- The child's sex is recorded

Eligible records were included in the number measured, if they met all of the following criteria:

- The height measurement is recorded and is not an implausible measurement^c
- The weight measurement is recorded and is not an implausible measurement^c
- Consent has not been withdrawn
- The measurement was collected during the academic year 2014/15.

The measurements of seven children from across Wales were excluded from the analysis as no accurate measurement could be obtained – this could be for a variety of reasons, but is usually because the child

^c In some cases it was apparent that human error had resulted in the wrong figures being entered into the wrong fields. Although it appeared as if the height and weight measurements had been switched there was no way to confirm this so the measurements were not included.

is wearing a plaster cast or has a health reason which prevents them from standing up straight when being measured. However those children can still be weighed and measured along with the rest of their class so they don't feel excluded from the process.

Small number suppression

When information is released in detail there is the risk that individuals could be identified even though their names, addresses or dates of birth have been removed. This risk is exacerbated if two or more sources of data are compared or the data is describing uncommon events. When the data is describing events or information that only applies to very few people in the information set, or to people living in a small geographical area, people's identities can be protected by adding in safeguards such as 'small number suppression'.

In this report, small numbers between one and four have been suppressed to avoid potential identification of individuals. In this report, this mainly relates to children who were underweight or of low height. Suppression of related data has also been performed where suppressed numbers could have been derived from totals (secondary suppression).

In order to avoid potentially identifying individual children in local authority or health board areas, the information about children who are categorised as underweight is combined with children categorised as being of healthy weight.

Confidence intervals and statistical significance

When looking at any statistical information it is important to assess the robustness of that information. In particular it is important to assess whether any difference may in fact be only the result of a chance effect. Two ways to support this assessment are:

- Calculation and use of confidence intervals (CIs)
- Carrying out a statistical test for significance.

Confidence intervals are indications of the natural variation that would be expected around proportion (e.g. percent obese) and they should be considered when assessing or interpreting that proportion. The size of the confidence interval depends upon the size of the sample being studied. Generally speaking, rates based on small samples are likely to have wider confidence intervals. Conversely, rates based on large samples are likely to have more narrow confidence intervals.

A simple, lay explanation of the 95% confidence interval is that we can be confident that the true value is within the range given for obesity prevalence (for example) 95% of the time. In this report the 95% CIs were calculated using a method proposed by Wilson et al as described by Altman et al (2000)²¹. The level of confidence is not prescribed, but 95% confidence intervals are commonly used in public health and have been used for this report. 99% confidence intervals are more commonly used in research.

Statistical significance helps assess how likely it is that a difference between two values may or may not be due to chance alone. A 'statistically significant' finding suggests that the difference between two values is not due to chance. For the purposes of the Child Measurement Programme for Wales, a difference is considered statistically significant if the 95% confidence intervals do not overlap rather than carrying out a specific statistical test for significance.

There is a caveat around using measurement data such as is collected for the CMP, and inferring statistical significance between proportions (in this case through the use of confidence intervals). The caveat is that in this report the difference between results is described as statistically significant if it appears unlikely that the difference could have occurred by chance alone. However, this can be misleading. Many different results were compared for this report, this is called multiple testing. Multiple testing increases the risk of inadvertently

classifying a difference as being of statistical significance, when in reality the difference is due to chance (type I error). Similarly, a difference may inadvertently be classified as not statistically significant, when in fact there are important factors (other than chance) that contribute to the difference (type II error). This is most likely to occur when the numbers in the groups (e.g. number of children measured) are small.

Recording of ethnicity

The codes in table 4 were used by health board staff to record the ethnicity of children on the National Community Child Health

Database. Some of the codes used were supposed to have been discontinued by the NHS in 2002 and all children in this Child Measurement Programme were born well after 2002. However some children were still classified according to the discontinued codes. The use of the pre-2002 codes therefore suggests that ethnicity was assigned to the children using the classification on the mother's records at the birth of the child. The pre-2002 codes did not include a specific code for children of mixed race and it is not known which code was assigned to these children.

Table 4 Recording of ethnicity

Codes A-Z used post 31st March 2002.	Codes 0-9 used pre 31st March 2002.
A = White British	0 = Caucasian
B = White Irish	1 = White
C = Other White Background	2 = Black (Caribbean)
D = Mixed White & Black Caribbean	3 = Black (African)
E = Mixed White & Black African	4 = Black (Other)
F = Mixed White & Asian	5 = Indian
G = Any Other Mixed Background	6 = Pakistani
H = Indian (Asian or British)	7 = Bangladeshi
J = Pakistani (Asian or British)	8 = Chinese
K = Bangladeshi (Asian or British)	9 = Other ethnic group
L = Any Other Asian Background	
M = Caribbean (Black or Black British)	
N = African (Black or Black British)	
P = Other (Black or Black British)	
R = Chinese	
S = Any Other Ethnic Group	

Super output areas (SOA)

Super output areas are a way of breaking down larger geographic areas (such as local authorities) in order to allow for reporting of small-area statistics. In Wales there are three tiers – lower, middle and upper. In this report of the CMP, information on the prevalence categories is provided at Middle super output area (MSOA) level as well as national, health board and local authority area.

The average population for an MSOA is about 7,000, meanwhile the average population for a Lower super output area is about 1,600 people living in 650 households. According to the Office for National Statistics²² (ONS) there were 410 MSOAs and 1,909 Lower Super Output Areas (LSOA) in Wales following a reorganisation in 2011, and population minimum and maximum thresholds for SOAs are given in table 5 below. Both MSOAs and LSOAs may vary in geographical size but will not vary greatly in population size.

Analysis by deprivation

Deprivation is assessed using the Welsh Index of Multiple Deprivation (WIMD) which was updated in 2014. The WIMD is the official measure of relative deprivation for small areas in Wales. This index is constructed by using a range of indicators to assign a deprivation rank to each of the 1,909 LSOAs in Wales. The WIMD is a way of identifying

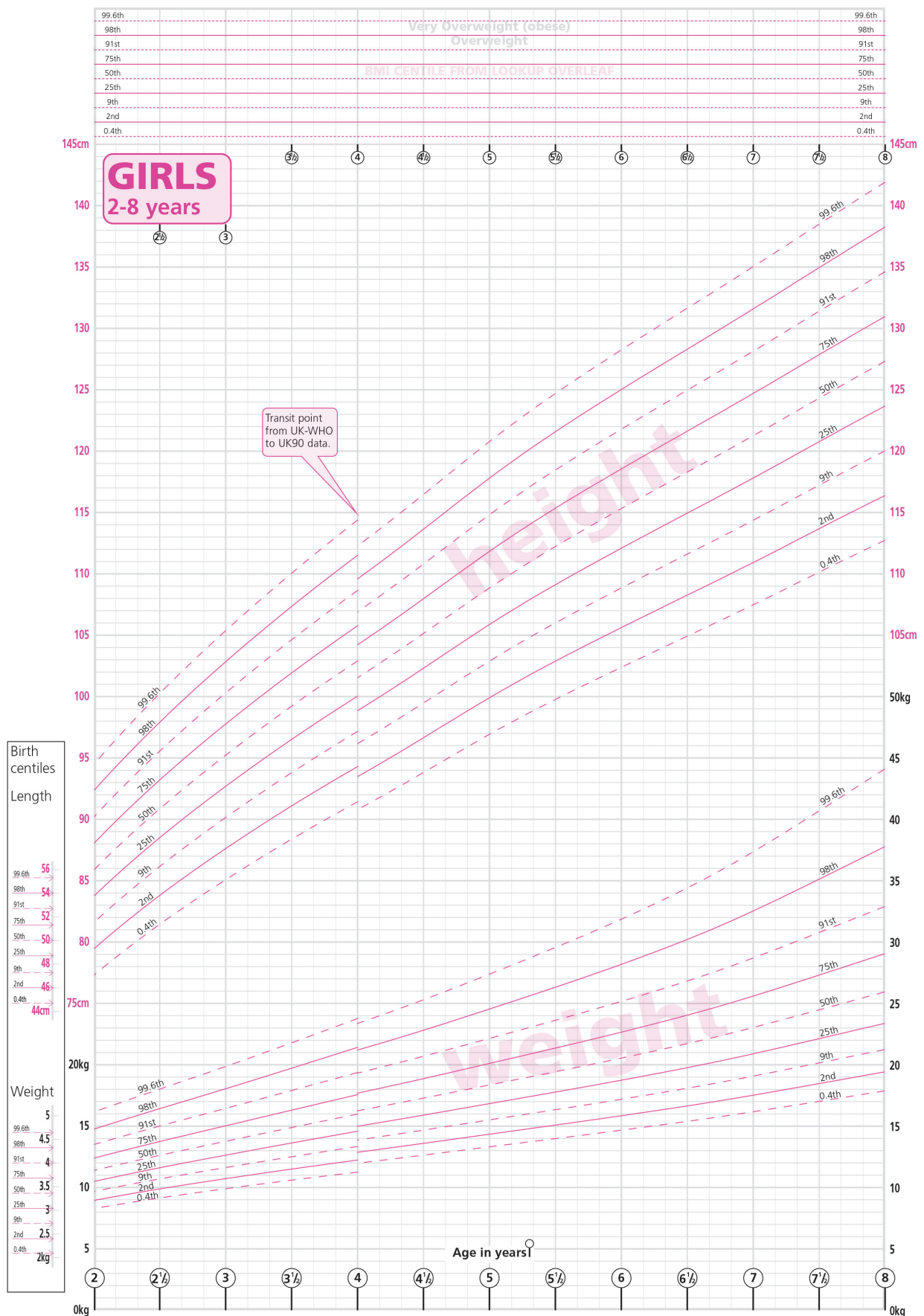
areas in the order of most to least deprived, but it does not provide a measure of the level of deprivation in an area, rather where an area is in relation to other areas in Wales. Because the WIMD is constructed specifically for Wales, it is also not possible to draw comparisons between areas in Wales and areas in the other UK countries who have their own deprivation measures.

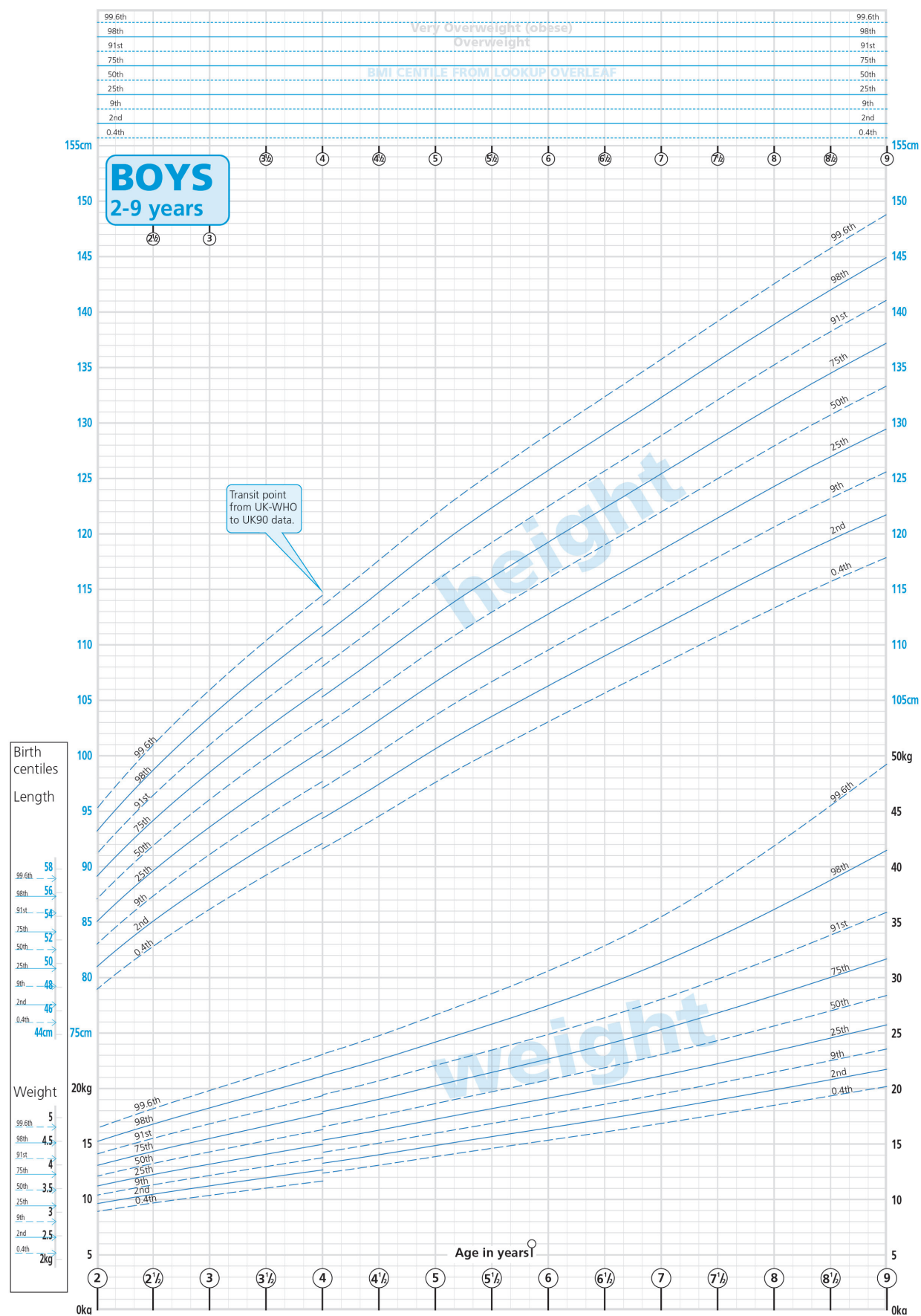
There are pockets of deprivation across Wales, for example in 2014 the most deprived area in Wales was identified as being in Caerphilly, with an area in Rhyl West being the second most deprived. However deprivation is particularly concentrated in Merthyr Tydfil, Blaenau Gwent and Rhondda Cynon Taf. The only local authority with no areas ranked in the most deprived 20% (fifth) of areas in Wales is Monmouthshire.

Table 5 Super Output Areas

Geography	Minimum population	Maximum population	Minimum number of households	Maximum number of households
LSOA	1,000	3,000	400	1,200
MSOA	5,000	15,000	2,000	6,000

Appendix 2 Sample centile charts





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Appendix 3 Reference tables

Participation data from the Child Measurement Programme for Wales, children aged 4 to 5 years, 2014/15

	All				Boys				Girls			
	Eligible	Measured	Not Measured	% Participation	Eligible	Measured	Not Measured	% Participation	Eligible	Measured	Not Measured	% Participation
Wales	34,815	32,889	1,926	94.5	17,848	16,798	1,050	94.1	16,967	16,091	876	94.8
Least deprived fifth	5,960	5,644	316	94.7	3,101	2,928	173	94.4	2,859	2,716	143	95.0
Next least deprived	5,990	5,647	343	94.3	3,097	2,913	184	94.1	2,893	2,734	159	94.5
Middle deprived	6,721	6,354	367	94.5	3,452	3,257	195	94.4	3,269	3,097	172	94.7
Next most deprived	7,334	6,959	375	94.9	3,739	3,531	208	94.4	3,595	3,428	167	95.4
Most deprived fifth	8,810	8,285	525	94.0	4,459	4,169	290	93.5	4,351	4,116	235	94.6
Betsi Cadwaladr UHB	7,757	7,473	284	96.3	4,061	3,907	154	96.2	3,696	3,566	130	96.5
Isle of Anglesey	779	754	25	96.8	404	390	14	96.5	375	364	11	97.1
Gwynedd	1,305	1,244	61	95.3	704	665	39	94.5	601	579	22	96.3
Conwy	1,199	1,125	74	93.8	611	575	36	94.1	588	550	38	93.5
Denbighshire	1,118	1,068	50	95.5	573	548	25	95.6	545	520	25	95.4
Flintshire	1,710	1,668	42	97.5	920	895	25	97.3	790	773	17	97.8
Wrexham	1,646	1,614	32	98.1	849	834	15	98.2	797	780	17	97.9
Powys THB	1,201	1,034	167	86.1	598	520	78	87.0	603	514	89	85.2
Hywel Dda UHB	3,929	3,662	267	93.2	2,010	1,865	145	92.8	1,919	1,797	122	93.6
Ceredigion	733	705	28	96.2	356	342	14	96.1	377	363	14	96.3
Pembrokeshire	1,298	1,213	85	93.5	660	621	39	94.1	638	592	46	92.8
Carmarthenshire	1,898	1,744	154	91.9	994	902	92	90.7	904	842	62	93.1
ABM UHB	5,803	5,548	255	95.6	2,966	2,830	136	95.4	2,837	2,718	119	95.8
Swansea	2,617	2,486	131	95.0	1,350	1,279	71	94.7	1,267	1,207	60	95.3
Neath Port Talbot	1,539	1,460	79	94.9	787	743	44	94.4	752	717	35	95.3
Bridgend	1,647	1,602	45	97.3	829	808	21	97.5	818	794	24	97.1
Cardiff and Vale UHB	5,810	5,281	529	90.9	3,001	2,719	282	90.6	2,809	2,562	247	91.2
The Vale of Glamorgan	1,513	1,403	110	92.7	777	714	63	91.9	736	689	47	93.6
Cardiff	4,297	3,878	419	90.2	2,224	2,005	219	90.2	2,073	1,873	200	90.4
Cwm Taf UHB	3,511	3,382	129	96.3	1,773	1,690	83	95.3	1,738	1,692	46	97.4
Rhondda Cynon Taf	2,848	2,758	90	96.8	1,416	1,356	60	95.8	1,432	1,402	30	97.9
Merthyr Tydfil	663	624	39	94.1	357	334	23	93.6	306	290	16	94.8
Aneurin Bevan UHB	6,804	6,509	295	95.7	3,439	3,267	172	95.0	3,365	3,242	123	96.3
Caerphilly	2,127	2,040	87	95.9	1,105	1,046	59	94.7	1,022	994	28	97.3
Blaenau Gwent	791	766	25	96.8	392	378	14	96.4	399	388	11	97.2
Torfaen	1,104	1,051	53	95.2	541	516	25	95.4	563	535	28	95.0
Monmouthshire	846	829	17	98.0	412	405	7	98.3	434	424	10	97.7
Newport	1,936	1,823	113	94.2	989	922	67	93.2	947	901	46	95.1

Produced by Public Health Wales Observatory, using CMP data (NWIS), WIMD 2014 (WG)

Key data from the Child Measurement Programme for Wales, children aged 4 to 5 years, 2014/15

All Children	Healthy weight or underweight			Overweight or obese			Underweight			Healthy weight			Overweight not obese			Obese		
	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹
Wales	24,284	73.8	(73.4 to 74.3)	8,605	26.2	(25.7 to 26.6)	293	0.9	(0.8 to 1.0)	23,991	72.9	(72.5 to 73.4)	4,783	14.5	(14.2 to 14.9)	3,822	11.6	(11.3 to 12.0)
Least deprived fifth	4,465	79.1	(78.0 to 80.2)	1,179	20.9	(19.8 to 22.0)	60	1.1	(0.8 to 1.4)	4,405	78.0	(76.9 to 79.1)	695	12.3	(11.5 to 13.2)	484	8.6	(7.9 to 9.3)
Next least deprived	4,234	75.0	(73.8 to 76.1)	1,413	25.0	(23.9 to 26.2)	41	0.7	(0.5 to 1.0)	4,193	74.3	(73.1 to 75.4)	793	14.0	(13.2 to 15.0)	620	11.0	(10.2 to 11.8)
Middle deprived	4,629	72.9	(71.7 to 73.9)	1,725	27.1	(26.1 to 28.3)	42	0.7	(0.5 to 0.9)	4,587	72.2	(71.1 to 73.3)	1,003	15.8	(14.9 to 16.7)	722	11.4	(10.6 to 12.2)
Next most deprived	5,026	72.2	(71.2 to 73.3)	1,933	27.8	(26.7 to 28.8)	54	0.8	(0.6 to 1.0)	4,972	71.4	(70.4 to 72.5)	1,030	14.8	(14.0 to 15.7)	903	13.0	(12.2 to 13.8)
Most deprived fifth	5,930	71.6	(70.6 to 72.5)	2,355	28.4	(27.5 to 29.4)	96	1.2	(0.9 to 1.4)	5,834	70.4	(69.4 to 71.4)	1,262	15.2	(14.5 to 16.0)	1,093	13.2	(12.5 to 13.9)
Betsi Cadwaladr UHB	5,429	72.6	(71.6 to 73.6)	2,044	27.4	(26.4 to 28.4)	52	0.7	(0.5 to 0.9)	5,377	72.0	(70.9 to 73.0)	1,192	16.0	(15.1 to 16.8)	852	11.4	(10.7 to 12.1)
Isle of Anglesey	531	70.4	(67.1 to 73.6)	223	29.6	(26.4 to 32.9)	9	1.2	(0.6 to 2.3)	522	69.2	(65.8 to 72.4)	130	17.2	(14.7 to 20.1)	93	12.3	(10.2 to 14.9)
Gwynedd	862	69.3	(66.7 to 71.8)	382	30.7	(28.2 to 33.3)	8	0.6	(0.3 to 1.3)	854	68.6	(66.0 to 71.2)	228	18.3	(16.3 to 20.6)	154	12.4	(10.7 to 14.3)
Conwy	842	74.8	(72.2 to 77.3)	283	25.2	(22.7 to 27.8)	8	0.7	(0.4 to 1.4)	834	74.1	(71.5 to 76.6)	165	14.7	(12.7 to 16.9)	118	10.5	(8.8 to 12.4)
Denbighshire	781	73.1	(70.4 to 75.7)	287	26.9	(24.3 to 29.6)	9	0.8	(0.4 to 1.6)	772	72.3	(69.5 to 74.9)	174	16.3	(14.2 to 18.6)	113	10.6	(8.9 to 12.6)
Flintshire	1,242	74.5	(72.3 to 76.5)	426	25.5	(23.5 to 27.7)	6	0.4	(0.2 to 0.8)	1,236		(71.9 to 76.1)	238	14.3	(12.7 to 16.0)	188	11.3	(9.8 to 12.9)
Wrexham	1,171	72.6	(70.3 to 74.7)	443	27.4	(25.3 to 29.7)	12	0.7	(0.4 to 1.3)	1,159	71.8	(69.6 to 74.0)	257	15.9	(14.2 to 17.8)	186	11.5	(10.1 to 13.2)
Powys THB	790	76.4	(73.7 to 78.9)	244	23.6	(21.1 to 26.3)	7	0.7	(0.3 to 1.4)	783	75.7	(73.0 to 78.2)	149	14.4	(12.4 to 16.7)	95	9.2	(7.6 to 11.1)
Hywel Dda UHB	2,560	69.9	(68.4 to 71.4)	1,102	30.1	(28.6 to 31.6)	22	0.6	(0.4 to 0.9)	2,538	69.3	(67.8 to 70.8)	622	17.0	(15.8 to 18.2)	480	13.1	(12.1 to 14.2)
Ceredigion	504	71.5	(68.0 to 74.7)	201	28.5	(25.3 to 32.0)	-	-	-	-	-	-	122	17.3	(14.7 to 20.3)	79	11.2	(9.1 to 13.7)
Pembrokeshire	847	69.8	(67.2 to 72.3)	366	30.2	(27.7 to 32.8)	-	-	-	-	-	-	203	16.7	(14.7 to 18.9)	163	13.4	(11.6 to 15.5)
Carmarthenshire	1,209	69.3	(67.1 to 71.4)	535	30.7	(28.6 to 32.9)	13	0.7	(0.4 to 1.3)	1,196	68.6	(66.4 to 70.7)	297	17.0	(15.3 to 18.9)	238	13.6	(12.1 to 15.3)
ABM UHB	4,092	73.8	(72.6 to 74.9)	1,456	26.2	(25.1 to 27.4)	34	0.6	(0.4 to 0.9)	4,058	73.1	(72.0 to 74.3)	803	14.5	(13.6 to 15.4)	653	11.8	(10.9 to 12.6)
Swansea	1,843	74.1	(72.4 to 75.8)	643	25.9	(24.2 to 27.6)	19	0.8	(0.5 to 1.2)	1,824	73.4	(71.6 to 75.1)	350	14.1	(12.8 to 15.5)	293	11.8	(10.6 to 13.1)
Neath Port Talbot	1,068	73.2	(70.8 to 75.4)	392	26.8	(24.6 to 29.2)	-	-	-	-	-	-	220	15.1	(13.3 to 17.0)	172	11.8	(10.2 to 13.5)
Bridgend	1,181	73.7	(71.5 to 75.8)	421	26.3	(24.2 to 28.5)	-	-	-	-	-	-	233	14.5	(12.9 to 16.4)	188	11.7	(10.3 to 13.4)
Cardiff and Vale UHB	4,176	79.1	(78.0 to 80.2)	1,105	20.9	(19.8 to 22.0)	89	1.7	(1.4 to 2.1)	4,087	77.4	(76.2 to 78.5)	588	11.1	(10.3 to 12.0)	517	9.8	(9.0 to 10.6)
The Vale of Glamorgan	1,165	83.0	(81.0 to 84.9)	238	17.0	(15.1 to 19.0)	26	1.9	(1.3 to 2.7)	1,139	81.2	(79.1 to 83.1)	135	9.6	(8.2 to 11.3)	103	7.3	(6.1 to 8.8)
Cardiff	3,011	77.6	(76.3 to 78.9)	867	22.4	(21.1 to 23.7)	63	1.6	(1.3 to 2.1)	2,948	76.0	(74.6 to 77.3)	453	11.7	(10.7 to 12.7)	414	10.7	(9.7 to 11.7)
Cwm Taf UHB	2,433	71.9	(70.4 to 73.4)	949	28.1	(26.6 to 29.6)	29	0.9	(0.6 to 1.2)	2,404	71.1	(69.5 to 72.6)	501	14.8	(13.7 to 16.1)	448	13.2	(12.1 to 14.4)
Rhondda Cynon Taf	2,007	72.8	(71.1 to 74.4)	751	27.2	(25.6 to 28.9)	-	-	-	-	-	-	395	14.3	(13.1 to 15.7)	356	12.9	(11.7 to 14.2)
Merthyr Tydfil	426	68.3	(64.5 to 71.8)	198	31.7	(28.2 to 35.5)	-	-	-	-	-	-	106	17.0	(14.2 to 20.1)	92	14.7	(12.2 to 17.7)
Aneurin Bevan UHB	4,804	73.8	(72.7 to 74.9)	1,705	26.2	(25.1 to 27.3)	60	0.9	(0.7 to 1.2)	4,744	72.9	(71.8 to 73.9)	928	14.3	(13.4 to 15.1)	777	11.9	(11.2 to 12.7)
Caerphilly	1,484	72.7	(70.8 to 74.6)	556	27.3	(25.4 to 29.2)	20	1.0	(0.6 to 1.5)	1,464	71.8	(69.8 to 73.7)	296	14.5	(13.0 to 16.1)	260	12.7	(11.4 to 14.3)
Blaenau Gwent	546	71.3	(68.0 to 74.4)	220	28.7	(25.6 to 32.0)	-	-	-	-	-	-	125	16.3	(13.9 to 19.1)	95	12.4	(10.3 to 14.9)
Torfaen	750	71.4	(68.6 to 74.0)	301	28.6	(26.0 to 31.4)	11	1.0	(0.6 to 1.9)	739	70.3	(67.5 to 73.0)	176	16.7	(14.6 to 19.1)	125	11.9	(10.1 to 14.0)
Monmouthshire	654	78.9	(76.0 to 81.5)	175	21.1	(18.5 to 24.0)	-	-	-	-	-	-	105	12.7	(10.6 to 15.1)	70	8.4	(6.7 to 10.5)
Newport	1,370	75.2	(73.1 to 77.1)	453	24.8	(22.9 to 26.9)	24	1.3	(0.9 to 2.0)	1,346	73.8	(71.8 to 75.8)	226	12.4	(11.0 to 14.0)	227	12.5	(11.0 to 14.0)

Produced by Public Health Wales Observatory, using CMP data (NWSIS), WIMD 2014 (WVG). ¹ 95% confidence interval. To avoid disclosure small numbers (0-4) and some larger complementary numbers have been suppressed.

Key data from the Child Measurement Programme for Wales, boys aged 4 to 5 years, 2014/15

Boys	Healthy weight or underweight			Overweight or obese			Underweight			Healthy weight			Overweight not obese			Obese		
	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹
Wales	12,275	73.1	(72.4 to 73.7)	4,523	26.9	(26.3 to 27.6)	187	1.1	(1.0 to 1.3)	12,088	72.0	(71.3 to 72.6)	2,477	14.7	(14.2 to 15.3)	2,046	12.2	(11.7 to 12.7)
Least deprived fifth	2,315	79.1	(77.6 to 80.5)	613	20.9	(19.5 to 22.4)	49	1.7	(1.3 to 2.2)	2,266	77.4	(75.8 to 78.9)	353	12.1	(10.9 to 13.3)	260	8.9	(7.9 to 10.0)
Next least deprived	2,173	74.6	(73.0 to 76.1)	740	25.4	(23.9 to 27.0)	23	0.8	(0.5 to 1.2)	2,150	73.8	(72.2 to 75.4)	416	14.3	(13.1 to 15.6)	324	11.1	(10.0 to 12.3)
Middle deprived	2,329	71.5	(69.9 to 73.0)	928	28.5	(27.0 to 30.1)	26	0.8	(0.5 to 1.2)	2,303	70.7	(69.1 to 72.2)	546	16.8	(15.5 to 18.1)	382	11.7	(10.7 to 12.9)
Next most deprived	2,512	71.1	(69.6 to 72.6)	1,019	28.9	(27.4 to 30.4)	34	1.0	(0.7 to 1.3)	2,478	70.2	(68.6 to 71.7)	513	14.5	(13.4 to 15.7)	506	14.3	(13.2 to 15.5)
Most deprived fifth	2,946	70.7	(69.3 to 72.0)	1,223	29.3	(28.0 to 30.7)	55	1.3	(1.0 to 1.7)	2,891	69.3	(67.9 to 70.7)	649	15.6	(14.5 to 16.7)	574	13.8	(12.8 to 14.8)
Betsi Cadwaladr UHB	2,789	71.4	(69.9 to 72.8)	1,118	28.6	(27.2 to 30.1)	31	0.8	(0.6 to 1.1)	2,758	70.6	(69.1 to 72.0)	652	16.7	(15.6 to 17.9)	466	11.9	(10.9 to 13.0)
Isle of Anglesey	264	67.7	(62.9 to 72.1)	126	32.3	(27.9 to 37.1)	-	-	-	-	-	-	74	19.0	(15.4 to 23.2)	52	13.3	(10.3 to 17.1)
Gwynedd	448	67.4	(63.7 to 70.8)	217	32.6	(29.2 to 36.3)	-	-	-	-	-	-	130	19.5	(16.7 to 22.7)	87	13.1	(10.7 to 15.9)
Conwy	427	74.3	(70.5 to 77.7)	148	25.7	(22.3 to 29.5)	-	-	-	-	-	-	82	14.3	(11.6 to 17.4)	66	11.5	(9.1 to 14.3)
Denbighshire	396	72.3	(68.4 to 75.8)	152	27.7	(24.2 to 31.6)	-	-	-	-	-	-	95	17.3	(14.4 to 20.7)	57	10.4	(8.1 to 13.2)
Flintshire	672	75.1	(72.1 to 77.8)	223	24.9	(22.2 to 27.9)	-	-	-	-	-	-	126	14.1	(12.0 to 16.5)	97	10.8	(9.0 to 13.0)
Wrexham	582	69.8	(66.6 to 72.8)	252	30.2	(27.2 to 33.4)	5	0.6	(0.3 to 1.4)	577	69.2	(66.0 to 72.2)	145	17.4	(15.0 to 20.1)	107	12.8	(10.7 to 15.3)
Powys THB	389	74.8	(70.9 to 78.3)	131	25.2	(21.7 to 29.1)	-	-	-	-	-	-	86	16.5	(13.6 to 20.0)	45	8.7	(6.5 to 11.4)
Hywel Dda UHB	1,292	69.3	(67.1 to 71.3)	573	30.7	(28.7 to 32.9)	-	-	-	-	-	-	319	17.1	(15.5 to 18.9)	254	13.6	(12.1 to 15.3)
Ceredigion	250	73.1	(68.2 to 77.5)	92	26.9	(22.5 to 31.8)	-	-	-	-	-	-	56	16.4	(12.8 to 20.7)	36	10.5	(7.7 to 14.2)
Pembrokeshire	428	68.9	(65.2 to 72.4)	193	31.1	(27.6 to 34.8)	-	-	-	-	-	-	108	17.4	(14.6 to 20.6)	85	13.7	(11.2 to 16.6)
Carmarthenshire	614	68.1	(65.0 to 71.0)	288	31.9	(29.0 to 35.0)	8	0.9	(0.5 to 1.7)	606	67.2	(64.1 to 70.2)	155	17.2	(14.9 to 19.8)	133	14.7	(12.6 to 17.2)
ABM UHB	2,093	74.0	(72.3 to 75.5)	737	26.0	(24.5 to 27.7)	20	0.7	(0.5 to 1.1)	2,073	73.3	(71.6 to 74.8)	385	13.6	(12.4 to 14.9)	352	12.4	(11.3 to 13.7)
Swansea	960	75.1	(72.6 to 77.4)	319	24.9	(22.6 to 27.4)	11	0.9	(0.5 to 1.5)	949	74.2	(71.7 to 76.5)	159	12.4	(10.7 to 14.4)	160	12.5	(10.8 to 14.4)
Neath Port Talbot	540	72.7	(69.4 to 75.8)	203	27.3	(24.2 to 30.6)	-	-	-	-	-	-	110	14.8	(12.4 to 17.5)	93	12.5	(10.3 to 15.1)
Bridgend	593	73.4	(70.2 to 76.3)	215	26.6	(23.7 to 29.8)	-	-	-	-	-	-	116	14.4	(12.1 to 16.9)	99	12.3	(10.2 to 14.7)
Cardiff and Vale UHB	2,128	78.3	(76.7 to 79.8)	591	21.7	(20.2 to 23.3)	63	2.3	(1.8 to 3.0)	2,065	75.9	(74.3 to 77.5)	311	11.4	(10.3 to 12.7)	280	10.3	(9.2 to 11.5)
The Vale of Glamorgan	581	81.4	(78.4 to 84.1)	133	18.6	(15.9 to 21.6)	15	2.1	(1.3 to 3.4)	566	79.3	(76.1 to 82.1)	77	10.8	(8.7 to 13.3)	56	7.8	(6.1 to 10.0)
Cardiff	1,547	77.2	(75.3 to 78.9)	458	22.8	(21.1 to 24.7)	48	2.4	(1.8 to 3.2)	1,499	74.8	(72.8 to 76.6)	234	11.7	(10.3 to 13.2)	224	11.2	(9.9 to 12.6)
Cwm Taf UHB	1,193	70.6	(68.4 to 72.7)	497	29.4	(27.3 to 31.6)	17	1.0	(0.6 to 1.6)	1,176	69.6	(67.4 to 71.7)	261	15.4	(13.8 to 17.2)	236	14.0	(12.4 to 15.7)
Rhondda Cynon Taf	967	71.3	(68.8 to 73.7)	389	28.7	(26.3 to 31.2)	-	-	-	-	-	-	198	14.6	(12.8 to 16.6)	191	14.1	(12.3 to 16.0)
Merthyr Tydfil	226	67.7	(62.5 to 72.5)	108	32.3	(27.5 to 37.5)	-	-	-	-	-	-	63	18.9	(15.0 to 23.4)	45	13.5	(10.2 to 17.6)
Aneurin Bevan UHB	2,391	73.2	(71.6 to 74.7)	876	26.8	(25.3 to 28.4)	38	1.2	(0.8 to 1.6)	2,353	72.0	(70.5 to 73.5)	463	14.2	(13.0 to 15.4)	413	12.6	(11.5 to 13.8)
Caerphilly	753	72.0	(69.2 to 74.6)	293	28.0	(25.4 to 30.8)	11	1.1	(0.6 to 1.9)	742	70.9	(68.1 to 73.6)	150	14.3	(12.3 to 16.6)	143	13.7	(11.7 to 15.9)
Blaenau Gwent	273	72.2	(67.5 to 76.5)	105	27.8	(23.5 to 32.5)	-	-	-	-	-	-	52	13.8	(10.6 to 17.6)	53	14.0	(10.9 to 17.9)
Torfaen	374	72.5	(68.5 to 76.2)	142	27.5	(23.8 to 31.5)	-	-	-	-	-	-	86	16.7	(13.7 to 20.1)	56	10.9	(8.5 to 13.8)
Monmouthshire	317	78.3	(74.0 to 82.0)	88	21.7	(18.0 to 26.0)	-	-	-	-	-	-	55	13.6	(10.6 to 17.3)	33	8.1	(5.9 to 11.2)
Newport	674	73.1	(70.1 to 75.9)	248	26.9	(24.1 to 29.9)	14	1.5	(0.9 to 2.5)	660	71.6	(68.6 to 74.4)	120	13.0	(11.0 to 15.3)	128	13.9	(11.8 to 16.3)

Produced by Public Health Wales Observatory, using CMP data (NWSIS), WIMD 2014 (WG). ¹ 95% confidence interval. To avoid disclosure small numbers (0-4) and some larger complementary numbers have been suppressed.

Key data from the Child Measurement Programme for Wales, girls aged 4 to 5 years, 2014/15

Girls	Healthy weight or underweight			Overweight or obese			Underweight			Healthy weight			Overweight not obese			Obese		
	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹
Wales	12,009	74.6	(74.0 to 75.3)	4,082	25.4	(24.7 to 26.0)	106	0.7	(0.5 to 0.8)	11,903	74.0	(73.3 to 74.6)	2,306	14.3	(13.8 to 14.9)	1,776	11.0	(10.6 to 11.5)
Least deprived fifth	2,150	79.2	(77.6 to 80.6)	566	20.8	(19.4 to 22.4)	11	0.4	(0.2 to 0.7)	2,139	78.8	(77.2 to 80.3)	342	12.6	(11.4 to 13.9)	224	8.2	(7.3 to 9.3)
Next least deprived	2,061	75.4	(73.7 to 77.0)	673	24.6	(23.0 to 26.3)	18	0.7	(0.4 to 1.0)	2,043	74.7	(73.1 to 76.3)	377	13.8	(12.5 to 15.1)	296	10.8	(9.7 to 12.0)
Middle deprived	2,300	74.3	(72.7 to 75.8)	797	25.7	(24.2 to 27.3)	16	0.5	(0.3 to 0.8)	2,284	73.7	(72.2 to 75.3)	457	14.8	(13.6 to 16.0)	340	11.0	(9.9 to 12.1)
Next most deprived	2,514	73.3	(71.8 to 74.8)	914	26.7	(25.2 to 28.2)	20	0.6	(0.4 to 0.9)	2,494	72.8	(71.2 to 74.2)	517	15.1	(13.9 to 16.3)	397	11.6	(10.6 to 12.7)
Most deprived fifth	2,984	72.5	(71.1 to 73.8)	1,132	27.5	(26.2 to 28.9)	41	1.0	(0.7 to 1.3)	2,943	71.5	(70.1 to 72.9)	613	14.9	(13.8 to 16.0)	519	12.6	(11.6 to 13.7)
Betsi Cadwaladr UHB	2,640	74.0	(72.6 to 75.4)	926	26.0	(24.6 to 27.4)	21	0.6	(0.4 to 0.9)	2,619	73.4	(72.0 to 74.9)	540	15.1	(14.0 to 16.4)	386	10.8	(9.8 to 11.9)
Isle of Anglesey	267	73.4	(68.6 to 77.6)	97	26.6	(22.4 to 31.4)	-	-	-	-	-	-	56	15.4	(12.0 to 19.5)	41	11.3	(8.4 to 14.9)
Gwynedd	414	71.5	(67.7 to 75.0)	165	28.5	(25.0 to 32.3)	-	-	-	-	-	-	98	16.9	(14.1 to 20.2)	67	11.6	(9.2 to 14.4)
Conwy	415	75.5	(71.7 to 78.9)	135	24.5	(21.1 to 28.3)	-	-	-	-	-	-	83	15.1	(12.3 to 18.3)	52	9.5	(7.3 to 12.2)
Denbighshire	385	74.0	(70.1 to 77.6)	135	26.0	(22.4 to 29.9)	-	-	-	-	-	-	79	15.2	(12.4 to 18.5)	56	10.8	(8.4 to 13.7)
Flintshire	570	73.7	(70.5 to 76.7)	203	26.3	(23.3 to 29.5)	-	-	-	-	-	-	112	14.5	(12.2 to 17.1)	91	11.8	(9.7 to 14.2)
Wrexham	589	75.5	(72.4 to 78.4)	191	24.5	(21.6 to 27.6)	7	0.9	(0.4 to 1.8)	582	74.6	(71.4 to 77.5)	112	14.4	(12.1 to 17.0)	79	10.1	(8.2 to 12.4)
Powys THB	401	78.0	(74.2 to 81.4)	113	22.0	(18.6 to 25.8)	-	-	-	-	-	-	63	12.3	(9.7 to 15.4)	50	9.7	(7.5 to 12.6)
Hywel Dda UHB	1,268	70.6	(68.4 to 72.6)	529	29.4	(27.4 to 31.6)	-	-	-	-	-	-	303	16.9	(15.2 to 18.7)	226	12.6	(11.1 to 14.2)
Ceredigion	254	70.0	(65.1 to 74.5)	109	30.0	(25.5 to 34.9)	-	-	-	-	-	-	66	18.2	(14.6 to 22.5)	43	11.8	(8.9 to 15.6)
Pembrokeshire	419	70.8	(67.0 to 74.3)	173	29.2	(25.7 to 33.0)	-	-	-	-	-	-	95	16.0	(13.3 to 19.2)	78	13.2	(10.7 to 16.1)
Carmarthenshire	595	70.7	(67.5 to 73.6)	247	29.3	(26.4 to 32.5)	5	0.6	(0.3 to 1.4)	590	70.1	(66.9 to 73.1)	142	16.9	(14.5 to 19.5)	105	12.5	(10.4 to 14.9)
ABM UHB	1,999	73.5	(71.9 to 75.2)	719	26.5	(24.8 to 28.1)	14	0.5	(0.3 to 0.9)	1,985	73.0	(71.3 to 74.7)	418	15.4	(14.1 to 16.8)	301	11.1	(9.9 to 12.3)
Swansea	883	73.2	(70.6 to 75.6)	324	26.8	(24.4 to 29.4)	8	0.7	(0.3 to 1.3)	875	72.5	(69.9 to 74.9)	191	15.8	(13.9 to 18.0)	133	11.0	(9.4 to 12.9)
Neath Port Talbot	528	73.6	(70.3 to 76.7)	189	26.4	(23.3 to 29.7)	-	-	-	-	-	-	110	15.3	(12.9 to 18.2)	79	11.0	(8.9 to 13.5)
Bridgend	588	74.1	(70.9 to 77.0)	206	25.9	(23.0 to 29.1)	-	-	-	-	-	-	117	14.7	(12.4 to 17.4)	89	11.2	(9.2 to 13.6)
Cardiff and Vale UHB	2,048	79.9	(78.3 to 81.4)	514	20.1	(18.6 to 21.7)	26	1.0	(0.7 to 1.5)	2,022	78.9	(77.3 to 80.5)	277	10.8	(9.7 to 12.1)	237	9.3	(8.2 to 10.4)
The Vale of Glamorgan	584	84.8	(81.9 to 87.3)	105	15.2	(12.7 to 18.1)	11	1.6	(0.9 to 2.8)	573	83.2	(80.2 to 85.8)	58	8.4	(6.6 to 10.7)	47	6.8	(5.2 to 9.0)
Cardiff	1,464	78.2	(76.2 to 80.0)	409	21.8	(20.0 to 23.8)	15	0.8	(0.5 to 1.3)	1,449	77.4	(75.4 to 79.2)	219	11.7	(10.3 to 13.2)	190	10.1	(8.9 to 11.6)
Cwm Taf UHB	1,240	73.3	(71.1 to 75.3)	452	26.7	(24.7 to 28.9)	12	0.7	(0.4 to 1.2)	1,228	72.6	(70.4 to 74.6)	240	14.2	(12.6 to 15.9)	212	12.5	(11.0 to 14.2)
Rhondda Cynon Taf	1,040	74.2	(71.8 to 76.4)	362	25.8	(23.6 to 28.2)	-	-	-	-	-	-	197	14.1	(12.3 to 16.0)	165	11.8	(10.2 to 13.6)
Merthyr Tydfil	200	69.0	(63.4 to 74.0)	90	31.0	(26.0 to 36.6)	-	-	-	-	-	-	43	14.8	(11.2 to 19.4)	47	16.2	(12.4 to 20.9)
Aneurin Bevan UHB	2,413	74.4	(72.9 to 75.9)	829	25.6	(24.1 to 27.1)	22	0.7	(0.4 to 1.0)	2,391	73.8	(72.2 to 75.2)	465	14.3	(13.2 to 15.6)	364	11.2	(10.2 to 12.4)
Caerphilly	731	73.5	(70.7 to 76.2)	263	26.5	(23.8 to 29.3)	9	0.9	(0.5 to 1.7)	722	72.6	(69.8 to 75.3)	146	14.7	(12.6 to 17.0)	117	11.8	(9.9 to 13.9)
Blaenau Gwent	273	70.4	(65.6 to 74.7)	115	29.6	(25.3 to 34.4)	-	-	-	-	-	-	73	18.8	(15.2 to 23.0)	42	10.8	(8.1 to 14.3)
Torfaen	376	70.3	(66.3 to 74.0)	159	29.7	(26.0 to 33.7)	-	-	-	-	-	-	90	16.8	(13.9 to 20.2)	69	12.9	(10.3 to 16.0)
Monmouthshire	337	79.5	(75.4 to 83.1)	87	20.5	(16.9 to 24.6)	-	-	-	-	-	-	50	11.8	(9.1 to 15.2)	37	8.7	(6.4 to 11.8)
Newport	696	77.2	(74.4 to 79.9)	205	22.8	(20.1 to 25.6)	10	1.1	(0.6 to 2.0)	686	76.1	(73.2 to 78.8)	106	11.8	(9.8 to 14.0)	99	11.0	(9.1 to 13.2)

Produced by Public Health Wales Observatory, using CMP data (NWIS), WIMD (WG). ¹ 95% confidence interval. To avoid disclosure small numbers (0-4) and some larger complementary numbers have been suppressed.

Height data from the Child Measurement Programme for Wales, children aged 4 to 5 years, 2014/15

	All				Boys				Girls			
	Measured		Low height		Measured		Low height		Measured		Low height	
	N	n	%	(95% CI) ¹	N	n	%	(95% CI) ¹	N	n	%	(95% CI) ¹
Wales	32,889	153	0.5	(0.4 to 0.5)	16,798	68	0.4	(0.3 to 0.5)	16,091	85	0.5	(0.4 to 0.7)
Least deprived fifth	5,644	14	0.2	(0.1 to 0.4)	2,928	5	0.2	(0.1 to 0.4)	2,716	9	0.3	(0.2 to 0.6)
Next least deprived	5,647	21	0.4	(0.2 to 0.6)	2,913	12	0.4	(0.2 to 0.7)	2,734	9	0.3	(0.2 to 0.6)
Middle deprived	6,354	32	0.5	(0.4 to 0.7)	3,257	17	0.5	(0.3 to 0.8)	3,097	15	0.5	(0.3 to 0.8)
Next most deprived	6,959	39	0.6	(0.4 to 0.8)	3,531	14	0.4	(0.2 to 0.7)	3,428	25	0.7	(0.5 to 1.1)
Most deprived fifth	8,285	47	0.6	(0.4 to 0.8)	4,169	20	0.5	(0.3 to 0.7)	4,116	27	0.7	(0.5 to 1.0)
Betsi Cadwaladr UHB	7,473	35	0.5	(0.3 to 0.7)	3,907	15	0.4	(0.2 to 0.6)	3,566	20	0.6	(0.4 to 0.9)
Isle of Anglesey	754	-	-	-	390	-	-	-	364	-	-	-
Gwynedd	1,244	5	0.4	(0.2 to 0.9)	665	-	-	-	579	-	-	-
Conwy	1,125	8	0.7	(0.4 to 1.4)	575	-	-	-	550	-	-	-
Denbighshire	1,068	7	0.7	(0.3 to 1.3)	548	-	-	-	520	-	-	-
Flintshire	1,668	-	-	-	895	-	-	-	773	-	-	-
Wrexham	1,614	9	0.6	(0.3 to 1.1)	834	-	-	-	780	-	-	-
Powys THB	1,034	5	0.5	(0.2 to 1.1)	520	-	-	-	514	-	-	-
Hywel Dda UHB	3,662	14	0.4	(0.2 to 0.6)	1,865	-	-	-	1,797	-	-	-
Ceredigion	705	-	-	-	342	-	-	-	363	-	-	-
Pembrokeshire	1,213	7	0.6	(0.3 to 1.2)	621	-	-	-	592	-	-	-
Cardiganshire	1,744	-	-	-	902	-	-	-	842	-	-	-
ABM UHB	5,548	28	0.5	(0.3 to 0.7)	2,830	14	0.5	(0.3 to 0.8)	2,718	14	0.5	(0.3 to 0.9)
Swansea	2,486	11	0.4	(0.2 to 0.8)	1,279	-	-	-	1,207	-	-	-
Neath Port Talbot	1,460	9	0.6	(0.3 to 1.2)	743	-	-	-	717	-	-	-
Bridgend	1,602	8	0.5	(0.3 to 1.0)	808	-	-	-	794	-	-	-
Cardiff and Vale UHB	5,281	15	0.3	(0.2 to 0.5)	2,719	8	0.3	(0.1 to 0.6)	2,562	7	0.3	(0.1 to 0.6)
The Vale of Glamorgan	1,403	5	0.4	(0.2 to 0.8)	714	-	-	-	689	-	-	-
Cardiff	3,878	10	0.3	(0.1 to 0.5)	2,005	-	-	-	1,873	-	-	-
Cwm Taf UHB	3,382	25	0.7	(0.5 to 1.1)	1,690	14	0.8	(0.5 to 1.4)	1,692	11	0.7	(0.4 to 1.2)
Rhondda Cynon Taf	2,758	-	-	-	1,356	-	-	-	1,402	-	-	-
Merthyr Tydfil	624	-	-	-	334	-	-	-	290	-	-	-
Aneurin Bevan UHB	6,509	31	0.5	(0.3 to 0.7)	3,267	9	0.3	(0.1 to 0.5)	3,242	22	0.7	(0.4 to 1.0)
Caerphilly	2,040	18	0.9	(0.6 to 1.4)	1,046	6	0.6	(0.3 to 1.2)	994	12	1.2	(0.7 to 2.1)
Blaenau Gwent	766	-	-	-	378	-	-	-	388	-	-	-
Torfaen	1,051	-	-	-	516	-	-	-	535	-	-	-
Monmouthshire	829	-	-	-	405	-	-	-	424	-	-	-
Newport	1,823	5	0.3	(0.1 to 0.6)	922	-	-	-	901	-	-	-

Produced by Public Health Wales Observatory, using CMP data (NHS), WIMD 2014 (WGS). ¹ 95% confidence interval. To avoid disclosure small numbers (0-4) and some larger complementary numbers have been suppressed.

Weight category by ethnic group, children aged 4 to 5 years, Child Measurement Programme for Wales, 2014/15

Produced by Public Health Wales Observatory using CMP data (NWIS)

Ethnicity	Healthy weight or underweight			Overweight or obese		
	n	%	(95% CI) [†]	n	%	(95% CI) [†]
White	19,393	73.3	(72.8 to 73.8)	7,058	26.7	(80.1 to 80.8)
Asian	523	80.0	(76.7 to 82.9)	131	20.0	(1.8 to 2.1)
Black	158	71.5	(65.2 to 77.0)	63	28.5	(0.6 to 0.8)
Mixed	359	75.9	(71.8 to 79.5)	114	24.1	(1.3 to 1.6)
Chinese or other	490	75.4	(71.9 to 78.5)	160	24.6	(1.8 to 2.1)
Not known	3,361	75.7	(74.4 to 76.9)	1,079	24.3	(13.1 to 13.9)



Appendix 4 Clinical thresholds

The Child Measurement Programme classifications are statistical thresholds used in surveillance. The table below provides information on prevalence at clinical thresholds for use by health boards wishing to plan services. Charts showing information for boys and girls (rather than all children) is available on the CMP website.

Key data from the Child Measurement Programme for Wales using clinical weight thresholds, children aged 4 to 5 years, 2014/15

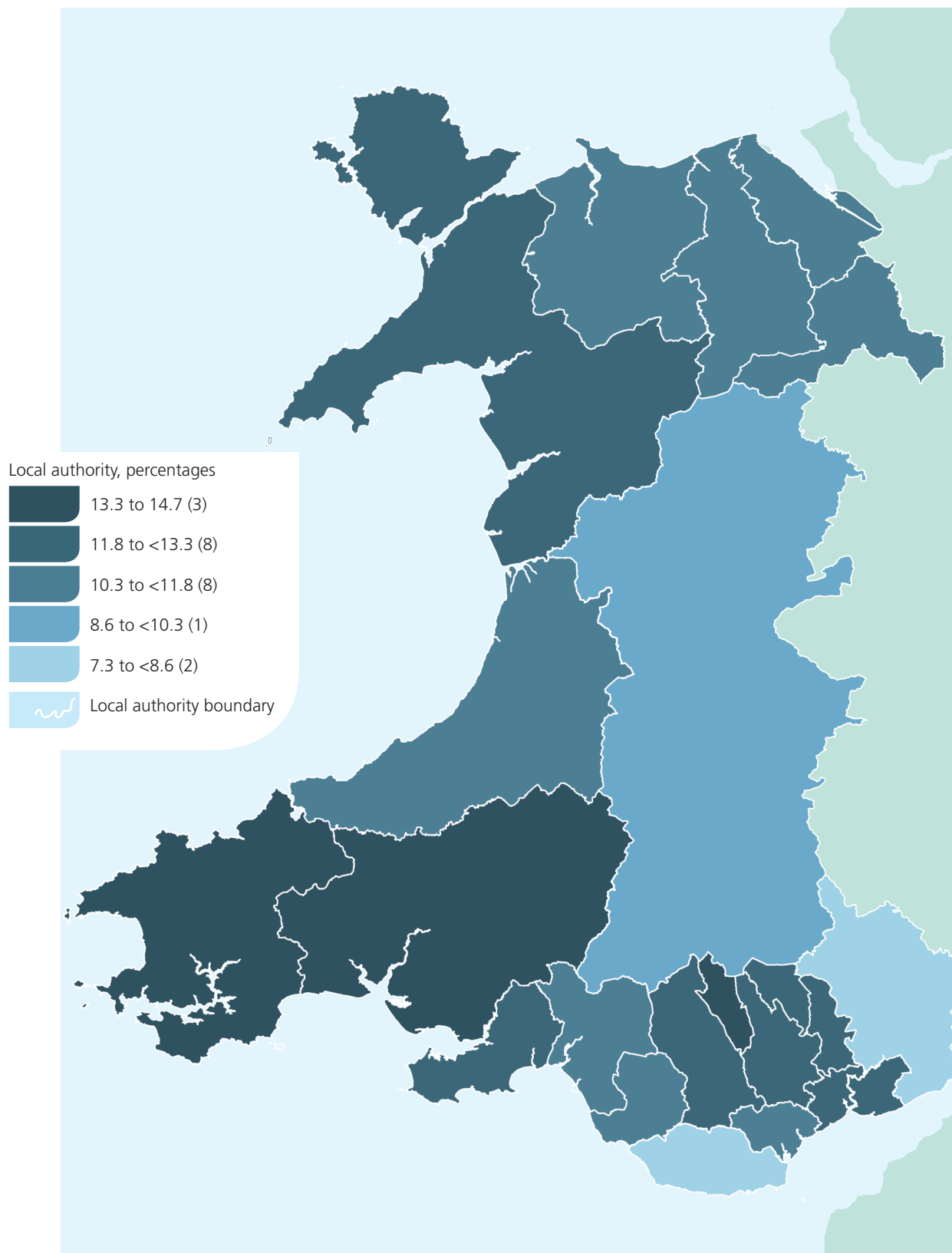
Produced by Public Health Wales Observatory, using CMP data (NWIS), WIMD 2014 (WG). ¹ 95% confidence interval.

All Children	91st centile and above			91st to <98th centile			98th centile and above		
	n	%	(95% CI) ¹	n	%	(95% CI) ¹	n	%	(95% CI) ¹
Wales	5,778	17.6	(17.2 to 18.0)	3,638	11.1	(10.7 to 11.4)	2,140	6.5	(6.2 to 6.8)
Least deprived fifth	750	13.3	(12.4 to 14.2)	504	8.9	(8.2 to 9.7)	246	4.4	(3.9 to 4.9)
Next least deprived	946	16.8	(15.8 to 17.7)	611	10.8	(10.0 to 11.7)	335	5.9	(5.3 to 6.6)
Middle deprived	1,123	17.7	(16.8 to 18.6)	706	11.1	(10.4 to 11.9)	417	6.6	(6.0 to 7.2)
Next most deprived	1,331	19.1	(18.2 to 20.1)	806	11.6	(10.9 to 12.4)	525	7.5	(6.9 to 8.2)
Most deprived fifth	1,628	19.6	(18.8 to 20.5)	1,011	12.2	(11.5 to 12.9)	617	7.4	(6.9 to 8.0)
Betsi Cadwaladr UHB	1,326	17.7	(16.9 to 18.6)	862	11.5	(10.8 to 12.3)	464	6.2	(5.7 to 6.8)
Isle of Anglesey	139	18.4	(15.8 to 21.4)	97	12.9	(10.7 to 15.4)	42	5.6	(4.1 to 7.4)
Gwynedd	256	20.6	(18.4 to 22.9)	170	13.7	(11.9 to 15.7)	86	6.9	(5.6 to 8.5)
Conwy	185	16.4	(14.4 to 18.7)	116	10.3	(8.7 to 12.2)	69	6.1	(4.9 to 7.7)
Denbighshire	178	16.7	(14.6 to 19.0)	116	10.9	(9.1 to 12.9)	62	5.8	(4.6 to 7.4)
Flintshire	284	17.0	(15.3 to 18.9)	177	10.6	(9.2 to 12.2)	107	6.4	(5.3 to 7.7)
Wrexham	284	17.6	(15.8 to 19.5)	186	11.5	(10.1 to 13.2)	98	6.1	(5.0 to 7.3)
Powys THB	162	15.7	(13.6 to 18.0)	112	10.8	(9.1 to 12.9)	50	4.8	(3.7 to 6.3)
Hywel Dda UHB	733	20.0	(18.8 to 21.3)	475	13.0	(11.9 to 14.1)	258	7.0	(6.3 to 7.9)
Ceredigion	124	17.6	(15.0 to 20.6)	84	11.9	(9.7 to 14.5)	40	5.7	(4.2 to 7.6)
Pembrokeshire	250	20.6	(18.4 to 23.0)	162	13.4	(11.6 to 15.4)	88	7.3	(5.9 to 8.9)
Carmarthenshire	359	20.6	(18.8 to 22.5)	229	13.1	(11.6 to 14.8)	130	7.5	(6.3 to 8.8)
ABM UHB	979	17.6	(16.7 to 18.7)	612	11.0	(10.2 to 11.9)	367	6.6	(6.0 to 7.3)
Swansea	441	17.7	(16.3 to 19.3)	281	11.3	(10.1 to 12.6)	160	6.4	(5.5 to 7.5)
Neath Port Talbot	266	18.2	(16.3 to 20.3)	163	11.2	(9.6 to 12.9)	103	7.1	(5.9 to 8.5)
Bridgend	272	17.0	(15.2 to 18.9)	168	10.5	(9.1 to 12.1)	104	6.5	(5.4 to 7.8)
Cardiff and Vale UHB	751	14.2	(13.3 to 15.2)	461	8.7	(8.0 to 9.5)	290	5.5	(4.9 to 6.1)
Vale of Glamorgan	152	10.8	(9.3 to 12.6)	91	6.5	(5.3 to 7.9)	61	4.3	(3.4 to 5.5)
Cardiff	599	15.4	(14.3 to 16.6)	370	9.5	(8.7 to 10.5)	229	5.9	(5.2 to 6.7)
Cwm Taf UHB	664	19.6	(18.3 to 21.0)	403	11.9	(10.9 to 13.1)	261	7.7	(6.9 to 8.7)
Rhondda Cynon Taf	523	19.0	(17.5 to 20.5)	321	11.6	(10.5 to 12.9)	202	7.3	(6.4 to 8.4)
Merthyr Tydfil	141	22.6	(19.5 to 26.0)	82	13.1	(10.7 to 16.0)	59	9.5	(7.4 to 12.0)
Aneurin Bevan UHB	1,163	17.9	(17.0 to 18.8)	713	11.0	(10.2 to 11.7)	450	6.9	(6.3 to 7.6)
Caerphilly	377	18.5	(16.9 to 20.2)	227	11.1	(9.8 to 12.6)	150	7.4	(6.3 to 8.6)
Blaenau Gwent	147	19.2	(16.6 to 22.1)	93	12.1	(10.0 to 14.6)	54	7.0	(5.4 to 9.1)
Torfaen	211	20.1	(17.8 to 22.6)	141	13.4	(11.5 to 15.6)	70	6.7	(5.3 to 8.3)
Monmouthshire	107	12.9	(10.8 to 15.4)	63	7.6	(6.0 to 9.6)	44	5.3	(4.0 to 7.1)
Newport	321	17.6	(15.9 to 19.4)	189	10.4	(9.1 to 11.9)	132	7.2	(6.1 to 8.5)

Appendix 5 Additional maps

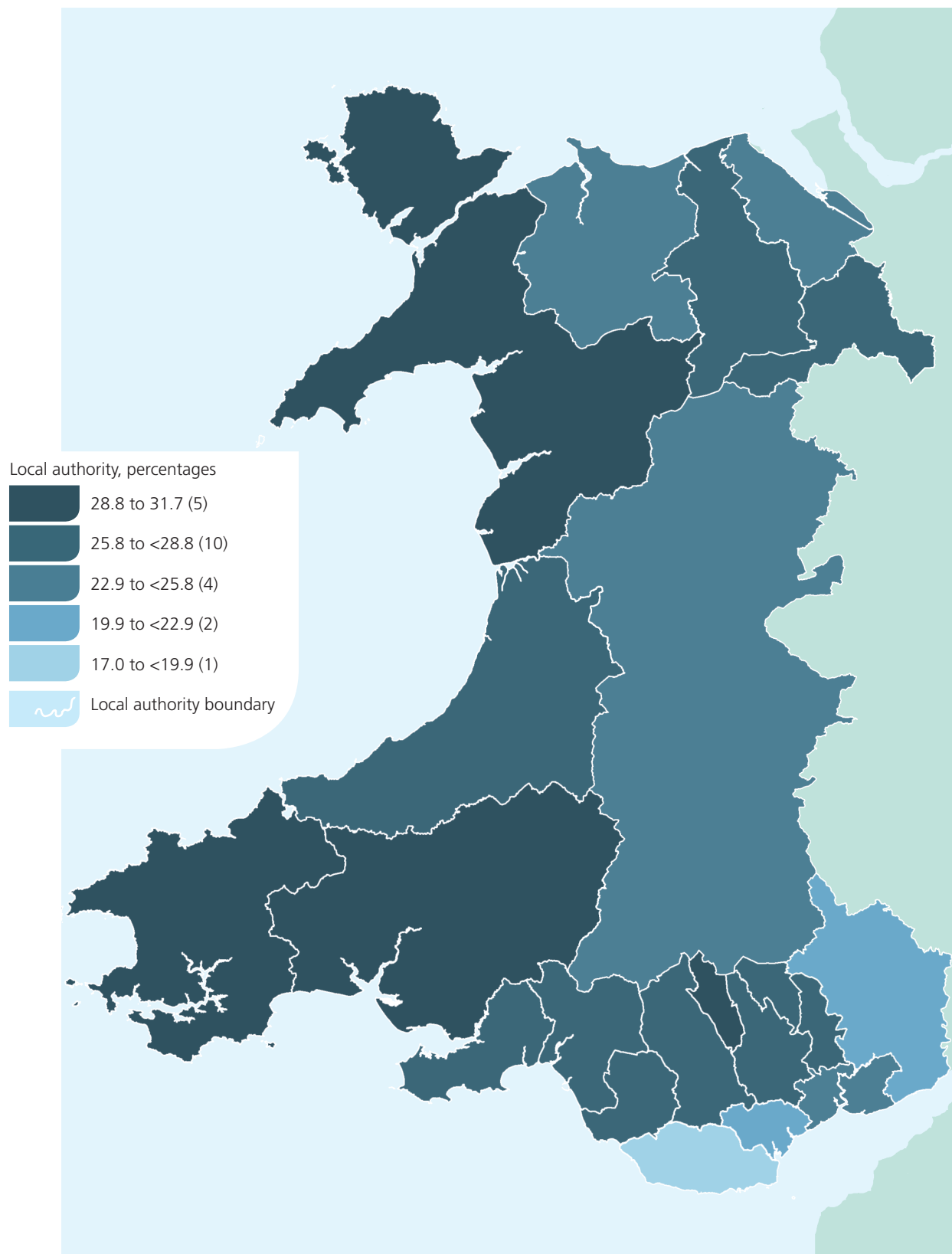
Map 9 Percentage of children aged 4 to 5 years who are obese, Wales local authorities, Child Measurement Programme for Wales, 2014/15

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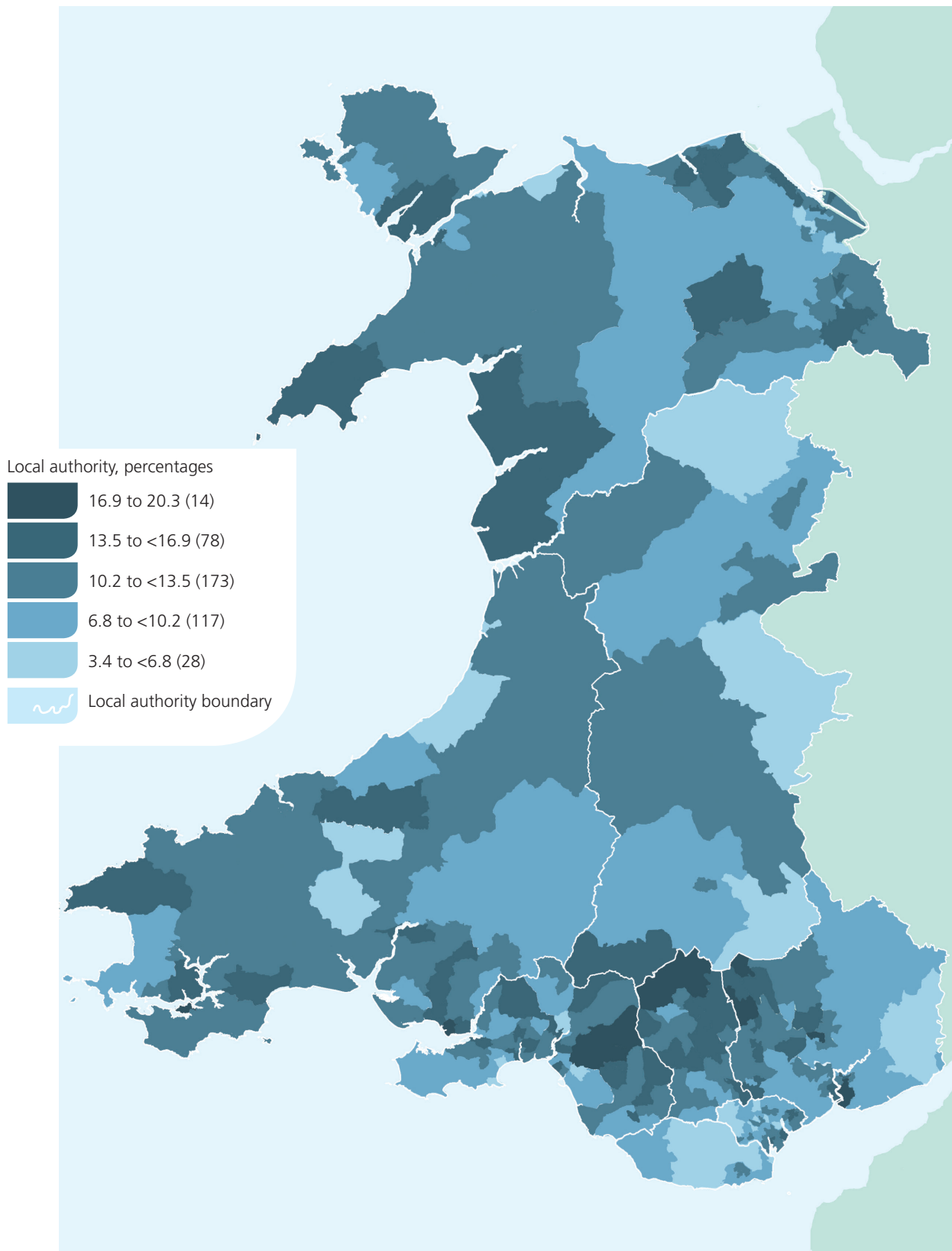
Map 10 Percentage of children aged 4 to 5 years who are overweight or obese, Wales local authorities, Child Measurement Programme for Wales, 2014/15

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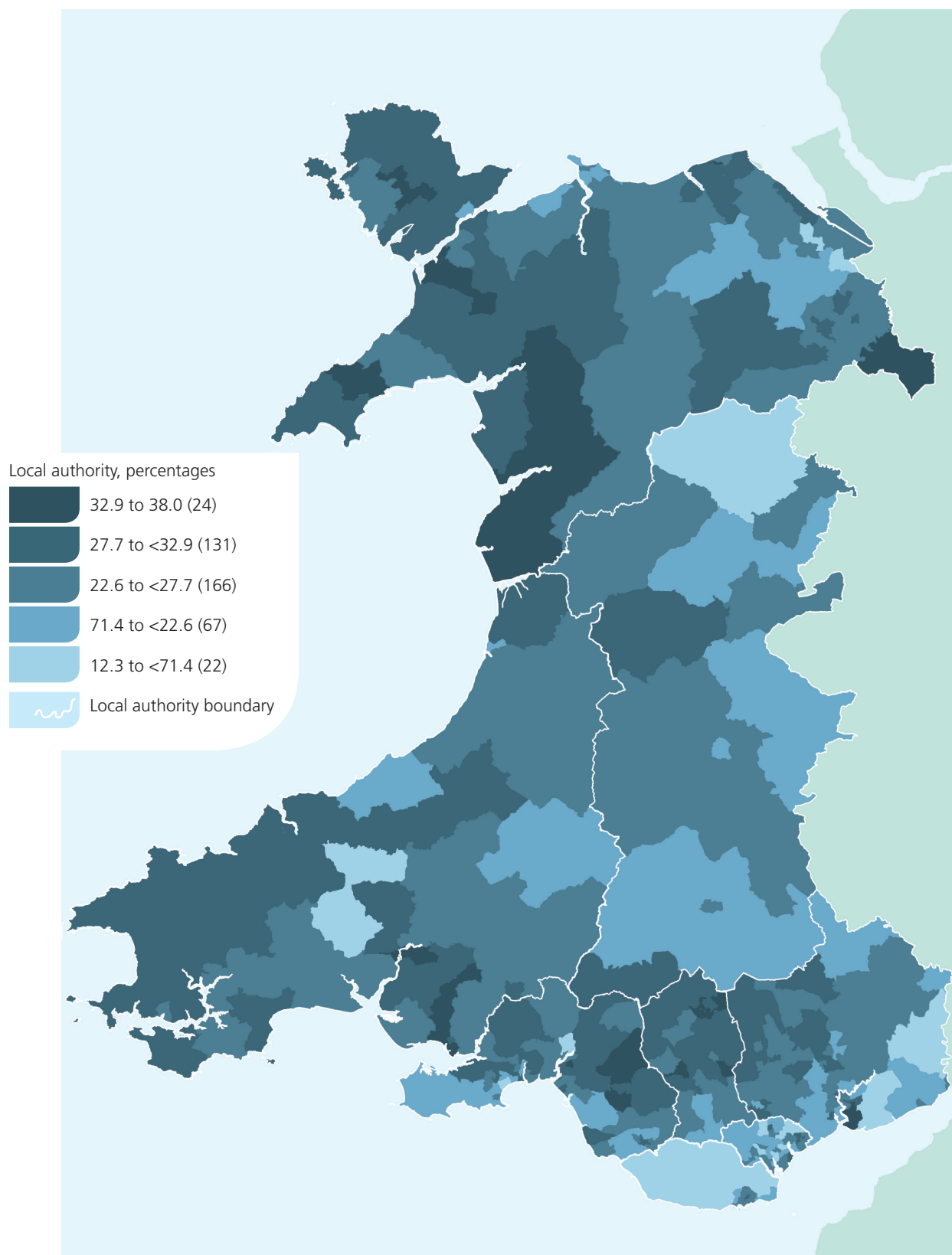
Map 11 Percentage of children aged 4 to 5 years who are obese, Wales MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

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Map 12 Percentage of children aged 4 to 5 years who are overweight or obese, Wales MSOAs, Child Measurement Programme for Wales, 2012/13-2014/15

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