

noo

National Obesity
Observatory



National Child Measurement Programme 2010/11

Guidance for analysis

February 2012

Delivered by NOO on behalf of the Public Health Observatories in England

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1 Introduction

- 1.1. The National Child Measurement Programme (NCMP) is an annual programme which measures the height and weight of children in Reception (age 4-5 years) and Year 6 (age 10-11 years) within state maintained schools in England. Some independent and special schools also choose to participate, however these records are usually excluded from the analysis for national NCMP reports as the majority of such schools do not take part (see Section 4.4).
- 1.2. The Health and Social Care Information Centre (HSCIC) and the National Obesity Observatory (NOO) publish analyses of this dataset annually. However, Public Health Observatories (PHOs) and Primary Care Trusts (PCTs) might want to undertake additional analyses at regional or local level to inform the work of the NHS or Local Authorities (LAs) on the healthy weight agenda.
- 1.3. The recently released obesity strategy *Healthy lives, healthy people: a call to action on obesity in England*¹ and the Public Health Outcomes Framework (PHOF)² outline the Government's ambition to achieve a sustained decrease in child obesity prevalence. The PHOF recommends that National Child Measurement Programme data should be used to monitor progress towards the ambition at a local level. As a result it is anticipated that there will be increasing demand for local level analysis of NCMP data.
- 1.4. This document provides guidance to PHOs, PCTs and other organisations who wish to make use of the NCMP data. It covers:
 - an overview of the analyses and tools provided by NOO and the HSCIC
 - how to access the 2010/11 NCMP dataset
 - which NCMP data can be shared between organisations
 - guidance on the appropriate use of the NCMP dataset, to comply with data protection and disclosure rules
 - caveats associated with the NCMP data and its interpretation
 - suggestions for regional and local analyses
 - an 'FAQ' for NCMP analysis
 - suggestions for local data quality checks
- 1.5. If users of the NCMP dataset have additional queries not covered in this guidance, they should **contact NOO at ncmp@noo.org.uk**.

2 National reports and data

A number of NCMP resources are produced each year by both the HSCIC and NOO. These consist of reports describing the NCMP data at national level, and also data tables at national, regional, PCT, LA, and Middle Super Output Area (MSOA) level. Users of the NCMP data are advised to familiarise themselves with these reports and data tables before performing analysis at a more local level. The main resources available are described in the following sections.

2.1. NCMP data and analysis provided by the HSCIC

2.1.1 Headline results from the 2010/11 NCMP, at national and sub-national level, are provided in the HSCIC's report *National Child Measurement Programme: England, 2010/11 school year*,³ published in December 2011.



2.1.2 This report describes the prevalence of child obesity and overweight at national and regional level, as well as the variation across sociodemographic groups. A comparison is also provided with the data from previous years.

2.1.3 The report also contains data tables showing obesity, overweight, healthy weight and underweight prevalence figures for SHAs, regions, PCT clusters, PCTs, and LAs (based both on location of school and area of residence, see section 4.8 to 4.14) for 2010/11.

2.1.4 Both the report itself, and the supporting excel files* are available on the HSCIC's NCMP pages (<http://www.ic.nhs.uk/ncmp>).

2.1.5 The HSCIC's 'headline results' reports and associated data files for earlier years are also available at the above link under 'Related Information'.

2.2. NCMP data, analysis, and resources provided by NOO

NCMP e-atlas

2.2.1 The 2010/11 NCMP data are also available through the NOO NCMP child obesity e-atlas. This online tool presents LA and PCT data in maps, charts and data tables and is available on the NOO website:

<http://www.noo.org.uk/visualisation/eatlas>

The e-atlas also allows NCMP data to be compared with other indicators.



* Prevalence figures based on the child's area of residence ('Child_LA_former' and 'Child_LA_current') within the 2010/11 NCMP dataset will differ very slightly from figures published by the NHS IC in Table 3B of the online tables for the following areas: Ealing (00AJ), Hammersmith and Fulham (00AN), Kensington and Chelsea (00AW), Milton Keynes (00MG) and Mid Bedfordshire (09UC). This is due to consistency revisions carried out on the database which required 14 records to be coded to a different 'Child_LA_former' to the one used in production of Table 3B. The effect of these consistency revisions on the published statistics for these areas is negligible.

2.2.2 In addition to the NCMP data already published by the HSCIC, the e-atlas contains NCMP data broken down by sex and by the UK90 clinical cut-offs for child body mass index (BMI), as used for parental feedback within the NCMP (see Appendix 2). Data are available for all years of NCMP measurements to date. The e-atlas also contains data on determinants of obesity, such as measures of geographic deprivation.

2.2.3 In addition to the LA/PCT e-atlases, NOO has published an e-atlas at MSOA level. Three years of NCMP have been combined to produce estimates of obesity and healthy weight prevalence that are as robust as possible at this level of analysis. The e-atlas currently contains NCMP data for 2007/08-2009/10 combined; data for 2008/09-2010/11 will be added in spring 2012.

NOO NCMP detailed reports

2.2.4 Further analysis of the 2010/11 NCMP will be published by NOO during 2012 to complement the HSCIC's 2010/11 report.

2.2.5 An update on the trends in obesity prevalence and mean BMI, which has previously been produced using 2008/09 and 2009/10 data, will be published in spring 2012.

2.2.6 Users of the NCMP dataset might also find it useful to read the NOO reports on the 2006/07, 2007/08, 2008/09, and 2009/10 NCMP datasets.



2.2.7 The 2006/07⁴ and 2007/08⁵ NOO reports examine some of the data quality issues observed within the NCMP database for those years and describe the possible effect of these on reported prevalence of overweight and obesity.

2.2.8 The 2008/09⁶ and 2009/10⁷ NOO reports examine the changes that have taken place in the BMI of Reception and Year 6 children over the period for which NCMP data are available.

2.2.9 These reports also examine the impact of demographic and socioeconomic variables (principally ethnicity and deprivation) on both the patterns and trends observed.

Other NOO NCMP publications

2.2.10 NOO has published analyses of 2009/10 NCMP data for the new PCT Cluster geographies. This short report examines the variation in child obesity and healthy weight across the PCT clusters in England. It also illustrates the relationship between obesity prevalence and level of socioeconomic deprivation at this geographic level (<http://www.noo.org.uk/gsf.php5?f=11853&fv=13082>). In addition, the HSCIC has published 2010/11 prevalence rates for PCT Clusters in

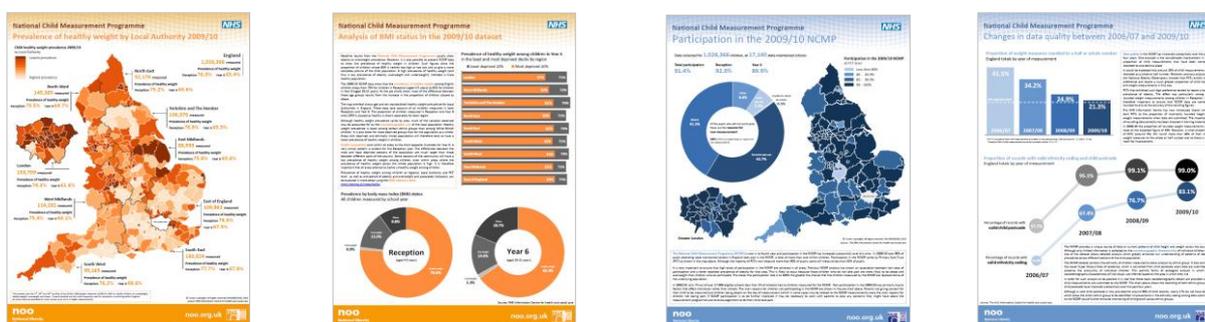
Table 6 of the NCMP England, 2010/11 Online Tables available at www.ic.nhs.uk/ncmp.

2.2.11 NOO have also published short reports describing the use of the ONS Area Classification (see 4.18 and 6.14) in NCMP analysis,⁸ and the impact of month of measurement on reported obesity prevalence within the NCMP dataset.⁹

2.2.12 The NOO newsletter 'NOO news', which is published twice a year, regularly includes short articles communicating findings from NCMP analyses. http://www.noo.org.uk/NOO_pub/newsletters

Data visualisations

2.2.13 Other NCMP analyses are provided through a series of data visualisations on the NOO website. These illustrate key issues within NCMP data such as data quality and participation, patterns of prevalence, and health inequalities. These can be downloaded from the NOO website at: <http://www.noo.org.uk/visualisation>



2.2.14 Charts presenting analyses of NCMP data have also been included in a set of PowerPoint slides available to download from the NOO website. http://www.noo.org.uk/slide_sets

NCMP Excel Analysis Tools

2.2.15 Updated NCMP analysis Excel tools will be shared with PHOs in spring 2012. Two tools will be circulated – a Regional/PCT analysis tool and a Local Authority analysis tool. Each consists of a macro-enabled Excel workbook containing charts and maps presenting NCMP data on BMI status and data quality indicators in a variety of forms. PHOs, PCTs, and LAs can use the charts and maps in this tool for their own NCMP reports and presentations.

2.2.16 The Regional/PCT analysis tool has been designed primarily to assist in the reporting of NCMP data at regional level, but PCTs may also find this tool useful in order to benchmark against surrounding areas. The user first selects a region of England, and the tool presents NCMP data for that region compared to the other regions of England, as well as a comparison between all the PCTs within that region.

2.2.17 The Local Authority analysis tool has been designed primarily for use at a more local level. The user first selects the LA of interest, and whether data are to be compared against geographic or statistical neighbours. The tool then presents NCMP data for that LA compared to others, as well as analysis showing the variation in child BMI status by sociodemographic group within that LA compared to the national data.

2.2.18 Both the Regional/PCT and Local Authority analysis tools will be distributed through PHOs. PCTs and LAs should contact their regional obesity lead in order to obtain the tools. The Regional/PCT analysis tool contains unsuppressed data and so can only be circulated within the NHS community. However data within the Local Authority analysis tool has been suppressed and so can be shared outside the NHS.

School feedback tool

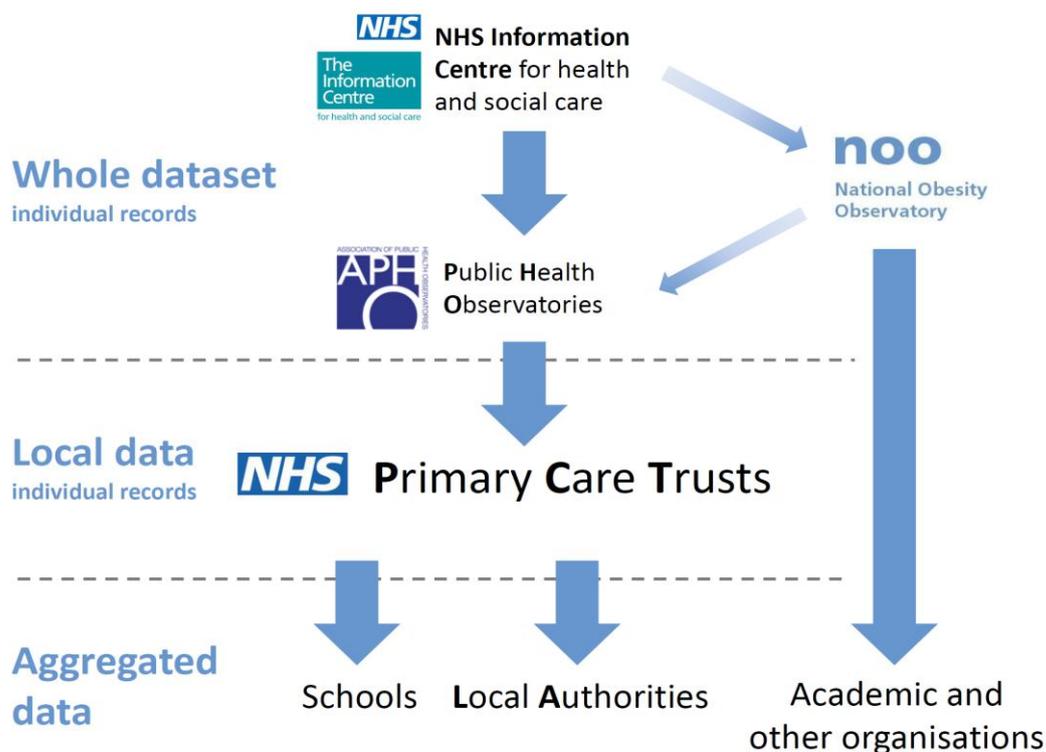
2.2.19 NOO is updating the school feedback tool and will distribute it to PHOs in February 2012. This is also an Excel-based tool which can be used by PHOs or PCTs to generate letters to share information and data from the NCMP with schools. For more information on school feedback see Section 3.4.

3 Obtaining and sharing the 2010/11 NCMP dataset

3.1. Obtaining the data

- 3.1.1 The HSCIC makes available a cleaned copy of the 2010/11 NCMP dataset to PHOs in England through 'Data Depot', a secure, web-based electronic file transfer system. The dataset contains an individual record for each child measured in the NCMP. Obesity leads within PHOs will receive an email from the HSCIC explaining how to access the dataset.
- 3.1.2 Alongside the 2010/11 NCMP dataset on 'Data Depot' the HSCIC will be providing improved versions of the 2006/07, 2007/08, 2008/09 and 2009/10 datasets. These revised historic datasets have been updated so they conform more closely to the specification shown in Appendix 1 which will allow users to carry out trend analyses using a wider variety of variables.
- 3.1.3 The terms of the data-sharing agreement between the HSCIC and PHOs state that these data can be shared under certain conditions.
- 3.1.4 PCTs can request a cleaned copy of their own NCMP data from PHOs. Under the Information Governance guidelines for NCMP data, PCTs are not entitled to access record level NCMP data for children measured by other PCTs.
- 3.1.5 Other organisations, for example LAs, are able to request NCMP data from PCTs, PHOs or from NOO. However this information should only be shared in an aggregated form.

Figure 1: Level of access to NCMP by different organisations



- 3.1.6 More details on the data available to different organisations are given below.

3.2. Data available to local NHS

- 3.2.1 PCTs that want their own cleaned dataset should request it from their PHO. PHOs should provide PCTs with a copy of the full 2010/11 NCMP MS Access database, but with child records attributed to other PCTs deleted from the 'Pupil data' and 'Pupil_data_excluded' tables.[†] In this way PCTs will have access to all the lookup tables and associated information contained within the database. **This approach is much preferable to running a query on the Access database to return all records attributed to a given PCT and then copying and pasting it into an Excel spreadsheet.**
- 3.2.2 PCTs should note that they will only be able to access individual level data for children measured by their PCT. Some PCTs may require wider access to NCMP data, in order to make detailed comparisons with the national or regional averages, or to produce analysis which includes children resident within the local area but measured by another PCT. In such situations, these data can be requested from the regional PHO or from NOO. However, to ensure individual children cannot be identified, any such data will have to be provided in an aggregate form – for example, by providing a count of children measured by LSOA and BMI classification.
- 3.2.3 Although PCTs will already have access to their own NCMP data, it is recommended that cleaned data from the HSCIC are used for local analysis, rather than the records held locally by PCTs. This is important to ensure potentially invalid records are not included in the analysis and for consistency with published figures. Furthermore, the HSCIC dataset is likely to hold a greater number of fields than locally held data (see Appendix 1) which facilitates a greater range of possible analyses.
- 3.2.4 The data sharing agreement states that all record level data must be treated in accordance with the Data Protection Act 1998,¹⁰ and any data will, therefore, need to be transferred safely and securely between PHOs and PCTs.
- 3.2.5 When sharing NCMP data with PCTs, PHOs are advised to ensure PCTs are aware of the terms of the data sharing agreement between PHOs and the HSCIC, and that the relevant individuals in PCTs have read this analysis guidance document. It is particularly important that PCTs appreciate the need to ensure that any published analysis does not risk identification of individual children (see section 5.1), and that any comparisons made between different prevalence figures are performed using confidence limits or appropriate statistical significance testing (see Appendix 4).

3.3. Data available to non-NHS organisations

- 3.3.1 PHOs and PCTs may receive requests for local NCMP data from non-NHS sources, such as colleagues in LAs. Often the information needed will already be available through the HSCIC website and the NOO e-atlas, or via the UK Data Archive (UKDA) at <http://www.data-archive.ac.uk>. Where possible users should be directed towards these existing resources.

[†] This can be achieved in a number of ways. One recommended option is to save a new copy of the database, then run a 'delete' query on the 'pupil data' and 'pupil data excluded' tables to remove records where the PCT field does not equal (<>) the PCT code of the desired PCT. In this way the relational structure between all tables in the dataset will be maintained.

- 3.3.2 The datasets on the UK Data Archive contain most of the variables contained within the full NCMP dataset, but ethnic coding and detailed geographic coding (which includes any geographic areas smaller than PCTs) have been removed to prevent individual children being identified. A full list of the fields available through the UKDA is available here:
<http://www.esds.ac.uk/findingData/snDescription.asp?sn=6577>.
- 3.3.3 In some cases the information requested will not be publicly available and therefore will need to be produced using the individual row level dataset. PCTs and PHOs are able to provide such information, but this will need to be provided in an aggregated form. This ensures individual information is not shared unnecessarily and prevents the identification of individual children.
- 3.3.4 If neither aggregated data nor the NCMP data held by the UKDA can be used to meet the requirements of a specific project or piece of analysis, PCTs and PHOs are advised to contact NOO for further advice.
- 3.3.5 It is recommended that requests for NCMP data from academic organisations or individuals are also forwarded to NOO, who will liaise with the HSCIC and DH in responding to the request.

3.4. Feeding back NCMP data to schools

- 3.4.1 Many schools are keen to receive detailed feedback showing the results of the child measurements that have taken place within their school. However, **it is not possible to share individual child records with schools.**
- 3.4.2 In addition, users of the NCMP data are advised against routinely feeding back statistics such as obesity prevalence at a school level on an annual basis. The reasons for this are:
- With small denominator populations, such as those for primary schools, the numbers of overweight and obese children are likely to be small. In many cases publication of these small number data is therefore not possible as it might allow individual children to be identified. As a result many schools would receive very limited information, due to suppression of cells based on counts of five or fewer children measured per BMI category (see section 5.1).
 - Most schools will have less than 100% coverage. Some groups, such as overweight or obese children, may be more likely to opt-out of being measured than others. This could introduce bias into the results and render them less reliable at school level.
 - Class sizes in primary schools are small, so school-level prevalence figures will be subject to small number variation. They would, therefore, not provide robust measures of obesity prevalence, even if there was 100% coverage of all children in the relevant age-groups within a school.
- 3.4.3 If routine feedback on the NCMP is provided to schools, PCTs are advised to use the standard school feedback letter see Appendix 2 for a specimen letter. The wording of this letter has been provided by DH and the Department for Education (DfE). The letter provides information on levels of participation within

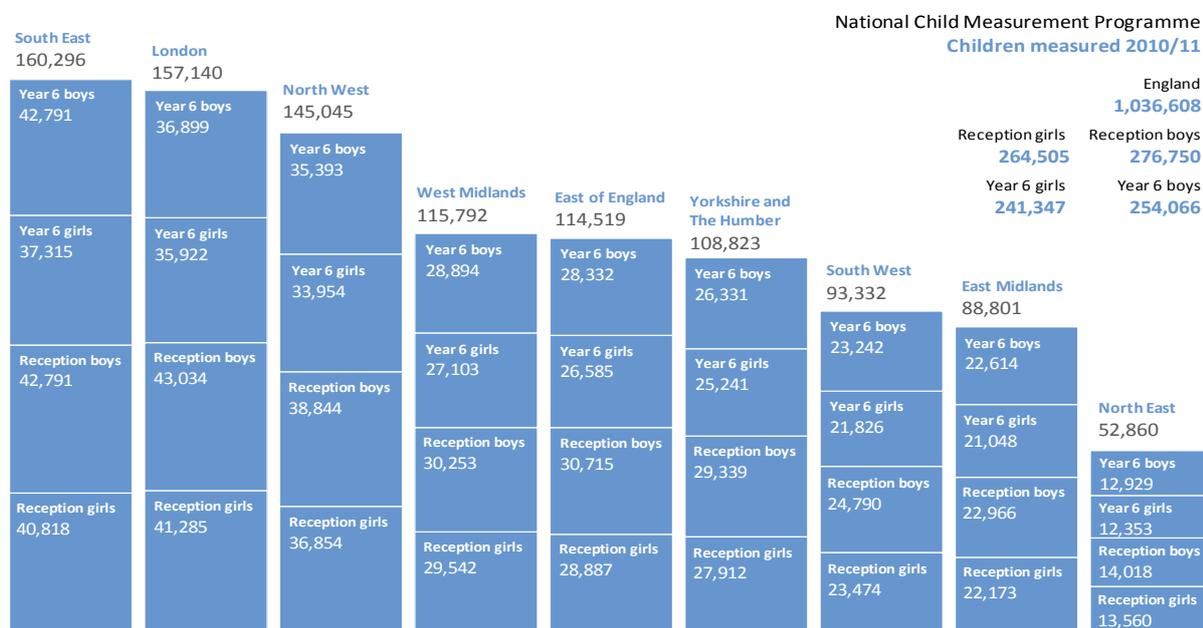
the school, and also informs the school whether obesity, overweight and underweight prevalence in that school falls into one of four categories:

- significantly higher than the national/regional/PCT average (worse)
 - significantly lower than the national/regional/PCT average (better)
 - no different from the national/regional/PCT average
 - insufficient information to provide feedback.
- 3.4.4 The fourth category is suggested for use where the participation rate is low (e.g. less than 70%) in a school.
- 3.4.5 To support the use of this letter, NOO has developed an Excel-based tool which can be used by PHOs or PCTs to generate and populate these school feedback letters automatically. The latest version of this tool containing the 2010/11 NCMP data will be released to PHOs in February 2012 along with accompanying guidance. PCTs should contact their regional PHO to obtain a copy (see Section 2.2.19).
- 3.4.6 If local areas wish to conduct more detailed analysis of obesity prevalence at school level, this can be done in a number of ways. Data from more than one school year can be used to increase the number of child records used in the calculation of prevalence figures. Alternatively, schools could be clustered geographically, or according to shared characteristics such as deprivation or levels of pupil attainment.
- 3.4.7 Whilst such techniques are likely to result in more robust estimates of obesity prevalence at school level, it is important to exercise caution if these statistics are to be published or fed back to schools. Care must be taken to ensure schools support the release of these figures and to ensure the data are not misinterpreted as a measure of whether a school provides a 'healthy environment' or not. Most of the variation between schools in statistics such as obesity prevalence is explained by the sociodemographic mix of the pupils attending the school, rather than the school environment.

4 The 2010/11 NCMP national dataset

- 4.1. The 2010/11 NCMP dataset consists of a single MS Access database with all the information required for local analysis.
- 4.2. The database is organised into a series of tables, which are shown in Appendix 1. The tables hold data at pupil, school, PCT, LA (derived from both school location and child residence), Government Office Region (GOR) (derived from both school location and child residence) Strategic Health Authority (SHA), PCT cluster, and SHA cluster levels. In addition, a series of lookup tables are provided to allow the interpretation of coding used within the dataset (e.g. ethnicity and BMI classification).
- 4.3. This dataset has been cleaned according to the HSCIC's data-cleaning protocol.¹¹ All invalid records have been removed but can be viewed in a separate table (Pupil_data_excluded).
- 4.4. The dataset includes a column labelled 'Exclude_flag'. Records from independent schools and special schools are coded as 1. PCTs are not required to take measurements at these schools, and many independent and special schools do not participate in the NCMP. As a result these records cannot be seen as a representative sample of pupils attending such schools and are therefore not included in the national analysis. **These records need to be excluded if analysis is to match the HSCIC's figures.**
- 4.5. The number of records in the 2010/11 NCMP dataset, excluding records from independent and special schools, is shown in Figure 2 by region, school year, and sex.

Figure 2: Number of records in the 2010/11 NCMP by region, school year, and sex (excluding records from independent and special schools)



- 4.6. The dataset contains several fields that the HSCIC has assigned to the data - e.g. codes for local government and health geographies, sociodemographic indicators, and BMI classification for each child.
- 4.7. It is important that users of the NCMP dataset are aware of the assigned fields provided, and how these are calculated. A full list and description of all fields within the NCMP

dataset is provided in Appendix A, and the sections below provide more information on key fields.

Geographic coding

- 4.8. The NCMP dataset contains a number of fields providing geographic information for each child record. These fields can be assigned based on the PCT that took the measurements, the school attended, or the child's area of residence, as shown in the table below.

Geographic coding in the NCMP dataset

Geography:	Derived from:
Primary Care Trust	PCT taking measures
Primary Care Trust cluster (new field)	PCT taking measures
Strategic Health Authority	PCT taking measures
Strategic Health Authority cluster (new field)	PCT taking measures
Local Authority of school	School postcode
Government Office Region of school	School postcode
School Lower Super Output Area (LSOA)	School postcode
Child LSOA	Child postcode [‡]
Local Authority of child (new field)	Child postcode
Government Office Region of child (new field)	Child postcode

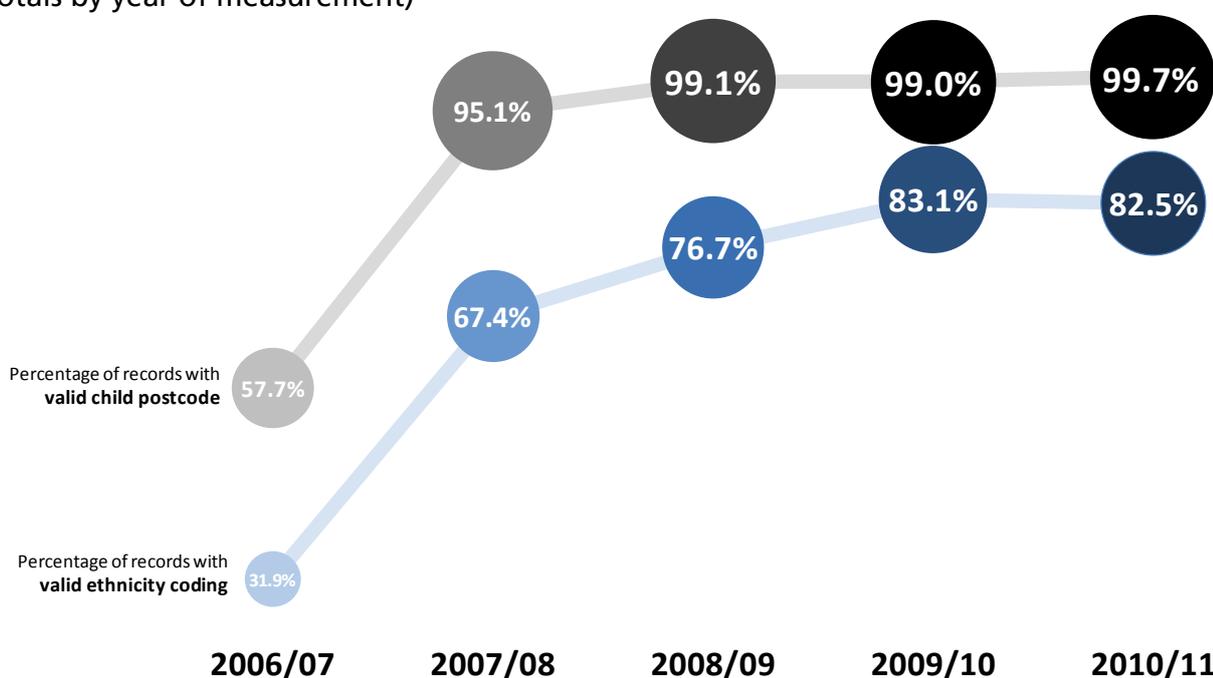
- 4.9. The different methods of assigning geographies may lead to small differences between figures for LAs and PCTs, or GORs and SHAs in some cases, even where these areas are apparently coterminous.
- 4.10. Most published NCMP statistics use geographic information derived from the PCT or school postcode, rather than the child's area of residence. In the first few years of the NCMP, a considerable number of child records were provided without information on area of residence so any summary statistics based on this variable would have to exclude some children from the analysis. PCT or school location has usually been used to ensure all child records can be included in the published analysis.
- 4.11. The proportion of child records with valid coding for area of residence has improved considerably over the years of the NCMP, and in 2010/11 area of residence coding could be assigned to 99.7% of records (see Figure 3).
- 4.12. As a result of this improvement, the 2010/11 NCMP statistics provided by the HSCIC include data based on the area of residence of the child for the first time. In addition, Local Authority and Government Office Region coding based on the area of residence of each child (Child_LA_current, Child_LA_former and Child_GOR) has been included in the dataset.

[‡]Child postcode is converted to a Lower Super Output Area (LSOA) code at the time of upload of data to the HSCIC.

4.13. There are a small number of records in the 2010/11 NCMP dataset where a child record has coding for LA of residence, but not for LSOA. This has arisen where the child postcode provided was incomplete and could not be accurately assigned to an LSOA, but could be assigned to a Local Authority. There are also a small number of records where a child record has coding for the urban / rural classification based on child residence, but could not be assigned to an English Local Authority. This occurs where a child's residence is in Scotland or Wales, but they attend a school in England.

4.14. It is important to note that PCTs are only able to access the individual child records for those children measured by that PCT. As a result the dataset supplied to PCTs will not necessarily contain records for all children resident within the local area. If PCTs wish to access information for those children resident within the area, but who attend schools outside the area, these data will need to be requested from the local PHO or direct from NOO. This additional information can be provided, but usually only in an aggregated form (for example in the form of a count of BMI status by LSOA).

Figure 3: Proportion of records with valid child postcode and ethnicity coding (England totals by year of measurement)



Geographically assigned variables

4.15. The NCMP dataset contains a number of variables assigned based on the geographic coding described in 4.8. These include an indicator of deprivation, an urban/rural classification, and a category based on the Office of National Statistics Area Classification (ONS-AC) (see 4.18).

4.16. These indicators are provided based both on the LSOA of the school and the LSOA of residence of the child. The former indicators are available for all pupils, whereas the latter is not provided for those children where the LSOA of residence is not available. Indicators based on the LSOA of residence will typically produce more accurate analysis of the resident population in an area. However in areas where a substantial proportion of children measured have no coding for area of residence, indicators based on the school location may need to be used. This is only really an issue with the 2006/07 and

2007/08 NCMP datasets as from 2008/09 more than 99% of child records had a valid postcode of residence.

- 4.17. The deprivation indicator provided in the dataset consists of an Index of Multiple Deprivation (IMD) 2010 decile. IMD decile one includes those LSOAs within the least deprived 10% of all the LSOAs in England, whereas decile ten contains the most deprived 10%.
- 4.18. The ONS-AC is a system of population stratification that categorises local areas based on a range of sociodemographic characteristics, including deprivation, ethnicity, and urban/rural environment. The categories are named in a way that describes the type of population predominant in those areas, for example 'Disadvantaged Urban Communities' or 'Professional City Life'. More information on the ONS urban/rural and Area Classification indicator is available here:
www.neighbourhood.statistics.gov.uk/dissemination/Info.do?page=nessgeography/area_classification/area-classification.htm

See also Sections 2.2.11 and 6.14.

Child measurements

- 4.19. In addition to the actual height, weight, and BMI of each child, the NCMP dataset contains the appropriate z scores and centiles for BMI, height and weight for each child. Appendix 5 of this guidance provides more information on how these variables are calculated and how they are used.
- 4.20. Two fields are provided in the dataset which show whether that child is underweight, healthy, overweight, or obese.
- 4.21. The 'BMI_pop_mon_class' field in the Pupil_data table shows whether individual children are classified as underweight, healthy weight, overweight or obese, for population monitoring according to the 2nd, 85th and 95th centiles on the British 1990 growth reference (UK90).^{12,13}
- 4.22. The 'BMI_clinical_class' field in the Pupil_data table uses the clinical cut-offs of the UK90 BMI growth reference which classify children into these categories according to the 2nd, 91st and 98th centiles of the UK90 BMI growth reference (see Appendix 5).

Codes used within 'BMI_pop_mon_class' field

BMI classification	UK90 population monitoring BMI centile range	School year	
		Reception	Year 6
Obese	>=95 th centile	1	2
Overweight	>=85 th and <95 th centile	3	4
Underweight	<=2 nd centile	5	6
Healthy weight	>2 nd and <85 th centile	7	8

Codes used within 'BMI_clinical_class' field

BMI classification	UK90 clinical cut-offs BMI centile range	School year	
		Reception	Year 6
Obese	$\geq 98^{\text{th}}$ centile	1	2
Overweight	$\geq 91^{\text{st}}$ and $< 98^{\text{th}}$ centile	3	4
Underweight	$\leq 2^{\text{nd}}$ centile	5	6
Healthy weight	$> 2^{\text{nd}}$ and $< 91^{\text{st}}$ centile	7	8

5 Essentials for NCMP analysis

- 5.1. When making NCMP data publicly available, **counts of five or fewer children (excluding zeros) must be suppressed in figures for LAs and smaller geographies**, such as electoral wards and SOAs. Corresponding cells providing totals should also be suppressed to avoid disclosure by differencing. However, figures for PCTs, SHAs and GORs do not need to be suppressed. This is in line with the guidance of the HSCIC Information Governance team, as outlined in the PHO data-sharing agreement.
- 5.2. Users should familiarise themselves with the published data to ensure they are not just duplicating analysis that has already been performed nationally.
- 5.3. Wherever possible, local analysis should be checked against the figures published by the HSCIC and NOO to ensure consistency. For example, if figures are produced for electoral wards within an LA, it should be possible to check that the total counts of children across all wards match with the published figures for the relevant LA (subject to the footnote that appears at the bottom of page 5 of this document).
- 5.4. Pupils measured attending independent and special schools should be excluded to match published data (see Section 4.4).
- 5.5. Confidence limits are published in the Excel data tables provided by the HSCIC and NOO and these should be used when comparing between areas or monitoring change over time. Users of the NCMP dataset should also apply confidence limits or statistical tests to their own analysis. Methods for doing this are outlined in Appendix 4 of this guidance.
- 5.6. Any publications using NCMP data should clearly state the thresholds used (usually the 85th and 95th centiles of the UK90 BMI growth reference) to derive obesity and overweight prevalence figures.
- 5.7. Any published analysis should include 'The Health and Social Care Information Centre (HSCIC)' as the data source for NCMP data.

6 Suggested analysis at regional and local level

Data quality and participation

- 6.1. Previous analysis has shown that low levels of participation in the NCMP and poor data quality may affect the reported prevalence of obesity. At national level both participation and data quality have improved with each year of the NCMP, however there are still some parts of the country where data quality indicators show a need for improvement. It is therefore important that these issues are examined at a local level, both to determine whether further improvements can be made, and also to explore whether any observed changes in obesity prevalence might be related to changes in participation or data quality. A PCT level data quality metric is included in Annex 2 of the HSCIC's 2010/11 NCMP report.
- 6.2. Participation rate and prevalence: Published analyses of the 2006/07 and 2007/08 NCMP datasets suggest that low rates of participation in the NCMP at PCT level may be associated with a lower reported prevalence of obesity, especially for Year 6. This effect may have been due to selection bias in children who were measured, whereby children who do not participate in the NCMP are more likely to be obese than those who do participate.
- 6.3. As participation rates have increased, the impact of selective opt-out on prevalence rates appears to have declined in more recent years. Information on the effect of participation on prevalence in the current NCMP dataset is included in Annex 6 of the HSCIC's 2010/11 NCMP report. Although the potential impact of selective opt-out on prevalence in the latest data appears to be small at national level, it is possible that the effects could be greater at a local level. This issue is likely to be particularly important when comparing prevalence figures for areas with very different participation rates, or looking at change over time in areas where participation rates have increased or decreased markedly over the same period.
- 6.4. Local areas may wish to identify areas of low participation within their NCMP data, and also the reasons for these – for example whether this is due to entire schools not taking part (selective opt-out should not be a factor in such cases), or due to individual children within schools not taking part (selective opt-out may be a factor). This information can then be used to increase participation for future years of the NCMP. The 'schools_data' table in the NCMP dataset contains all eligible state schools, as well as a field to show which schools participated. This can be used to quickly identify which schools within a local area did not take part in the NCMP in 2010/11.
- 6.5. If investigating the impact of participation on prevalence, it may be preferable to calculate participation rates which relate to just those schools for which measurements were submitted. This is because if an entire school did not take part in the NCMP, selective opt-out of obese children should not be a factor for children with that school. Such a participation rate is calculated by dividing the number of children measured by a PCT in each school year by the sum of the eligible pupil numbers in schools in which measurements were taken. This figure will be higher than the published participation rate for the PCT if there were any schools in the PCT that did not take part in the programme.
- 6.6. Participation by sex: Previous NCMP analyses have suggested that participation of girls in the NCMP may be lower than that for boys, and differs by area. If this is due to a selective opt-out of overweight and obese girls from the NCMP measurements, any bias could be stronger for girls than for boys. This issue might also benefit from local analysis

and should also be considered when looking at differences in prevalence by sex at a local level.

- 6.7. Data quality: The national NCMP dataset has undergone extensive cleaning but there is a limit on the checks that can be done nationally with such a large dataset. It is therefore advised that local areas assess the quality of their NCMP data before conducting detailed analysis. More information on suggested data quality checks is provided in Appendix 3.

Sociodemographic variation: effect of ethnicity, deprivation and setting

- 6.8. Published NCMP analyses show that ethnicity, deprivation, and setting (e.g. urban/rural environment) may influence prevalence of obesity, overweight and underweight. A number of related indicators, such as IMD decile and ONS Area Classification, have been added to the NCMP dataset in order to facilitate the analysis of these factors.
- 6.9. PCTs and PHOs can also use their local intelligence and data to determine to what extent the variation within their local area can be explained by these variables. It may be useful to make comparisons with the regional or national average to determine whether the relationship between sociodemographic variables and child obesity prevalence in the local population is the same as that for all children in English schools, or whether a different pattern is observed. Such information should be useful to assist any local targeting of interventions to tackle unhealthy weight among children.
- 6.10. Ethnicity: The NCMP dataset contains fields showing the ethnicity of individual children. Children have been coded to one of the 16 NHS ethnicity codes as well as one of the more detailed codes, of which there are approximately 230, used by child health systems. Therefore analyses can easily be performed at a local level for different ethnic groups. To avoid problems due to potentially low numbers of children for some ethnic groups, it may be necessary to combine certain ethnic groups, or combine data from a number of years of NCMP measurements when conducting such analysis at local level.
- 6.11. Socioeconomic status: Analysis of socioeconomic status can be undertaken using the IMD deciles already assigned to child records within the NCMP dataset. Both IMD decile of the school location and of the child's area of residence are included in the NCMP dataset. Coding based on area of residence is preferable for most analysis, although coding based on the location of school can be used where coding for area of residence is missing for a large proportion of children. If other indicators are required for analysis these can be assigned to individual children using the LSOA of residence or school LSOA.
- 6.12. Analysis is often best performed by grouping child records according to quintiles or deciles of these socioeconomic indicators, depending on the number of child records available for analysis. Analyses can be produced for these groupings to determine the links between factors such as deprivation and prevalence of obesity. An example of such analysis can be found in the *Child Obesity and Socioeconomic Status* data factsheet available at: http://www.noo.org.uk/NOO_pub/Key_data.
- 6.13. Setting: As shown in the HSCIC's 2010/11 NCMP report, obesity prevalence can be seen to vary between urban and rural areas. Urban and rural coding is available within the NCMP dataset to allow local areas to investigate these patterns. However, it is likely that much of the differences in obesity prevalence between urban and rural areas can be explained by differences in the sociodemographic mix of the urban and rural populations.

- 6.14. **ONS Area Classification:** The ONS Area Classification might provide a more useful way of analysing differences in obesity prevalence that takes account of the urban or rural setting, as well as the demographic and socioeconomic mix of the population. This population stratification system is available for free from the ONS website. More information on this can be found in the report published by NOO: *NCMP Analysis using the ONS Area Classification*.⁵ ONS Area Classification 'Group', 'Sub-group', and 'Super-group' have been assigned to child records with a valid LSOA of residence in the NCMP dataset. Also see Sections 2.2.11 and 6.14.
- 6.15. Users of the NCMP dataset who already have access to commercially available population stratification systems may use these to perform similar analysis.

Monitoring change over time

- 6.16. Results from previous years of the NCMP can be downloaded from the HSCIC website (see Section 2.1.5), or produced locally through analysis of the datasets provided to PHOs by the HSCIC.
- 6.17. If users want to make comparisons with data from previous years, then the impact of changing participation rates and changes in data quality between the years should always be taken into account. Appropriate statistical testing should be undertaken to ensure any reported differences are indeed significant. The suggested method for establishing the statistical significance of a change in prevalence is described in Appendix 4 of this guidance.
- 6.18. When examining change in populations over time, a number of papers have suggested looking at change in a measure such as mean BMI z score, rather than change in prevalence figures.^{14,15} This can easily be calculated within the NCMP dataset, using the 'BMI_z' field. As this measure takes account of the whole child population, rather than just the proportion above or below a certain threshold, it may allow changes over time to be detected earlier than if prevalence figures alone are used.

Small area analysis

- 6.19. Obesity prevalence figures are routinely published for PCTs and LAs. However, many practitioners require information for sub-populations within these areas. Often such small area analysis is required in order to focus resources on the most at risk areas or communities. Obesity prevalence figures for small populations might also be required in order to allow comparisons with other variables available for small geographies, enabling an investigation of the local determinants of obesity in a form of ecological analysis.
- 6.20. Sub-PCT or LA level geographical analysis is possible using NCMP data. Analysis can easily be performed using school or LSOA as the unit of analysis, or by assigning an MSOA, or ward code from the LSOA code. However, such analysis needs to be performed and interpreted with caution. (See Section 2.2.3)
- 6.21. Prevalence figures for sub-PCT populations are likely to be based on small numbers and so are subject to a high degree of natural variation. Confidence limits should always be used around prevalence estimates and any differences in prevalence between areas should be tested for statistical significance to make sure the differences are not just the result of the small sample size at this level of analysis (see Appendix 4).

- 6.22. To tackle the issue of small numbers it is advised that, wherever possible, analyses are conducted using more than one year of NCMP data. Combining three years of NCMP data appears to provide relatively robust figures for obesity prevalence at MSOA level. However, for smaller geographies (e.g. LSOAs or schools), even four years of data may not be enough to provide robust figures. Furthermore, combining data from different years of NCMP measurements reduces the sensitivity of such measures to any change over time.
- 6.23. An alternative to combining data from different years of NCMP measurements is to combine small areas into clusters of a size which permits robust analysis.
- 6.24. Certain issues come into play with small area analyses that are less problematic for larger geographic areas. For example, the sex ratio of children measured is likely to show much greater variation across small populations than across PCTs or regions. As obesity prevalence varies significantly by sex, it is possible that statistics based on small populations could be affected by the sex ratio of children measured as well as by the underlying prevalence of obesity.
- 6.25. NOO has published an e-atlas showing NCMP data for MSOAs. These figures are based on data from 2007/08, 2008/09, and 2009/10 combined. NOO has also published further guidance on using NCMP data for small area analysis. This guidance explains the issues associated with presenting NCMP data at small area level as well as exploring what methods are appropriate and available for analysis to ensure more useful and valid results.¹⁶

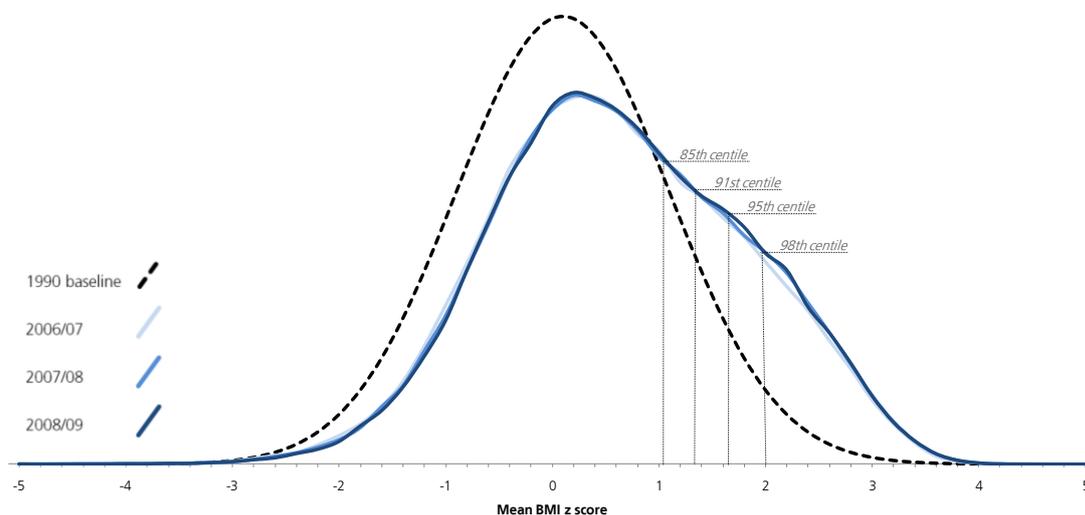
Alternatives to small area analyses

- 6.26. Rather than producing prevalence figures for small areas and then using these to target resources or investigate determinants, obesity prevalence may be better investigated using groups of pupils based on common characteristics. For example, the population could be grouped using an index of deprivation, ethnicity or by community type.
- 6.27. This approach has the advantage that, rather than resulting in prevalence figures for a large number of small areas based on a small number of children measured in each area, the dataset is divided into a much smaller number of population groups. As a result, any analyses for each group are based on a greater number of children per group, and so can be considerably more robust.
- 6.28. For example, child obesity prevalence for each LSOA within a LA will tend to show only a very weak correlation with an index of socioeconomic deprivation at LSOA level. However, if the NCMP data for the same LA are grouped into deciles of deprivation (based on the LSOA of residence), this will usually show a strong pattern of increasing obesity prevalence with increased levels of socioeconomic deprivation. By using fewer groups, based on similar characteristics, the underlying pattern can be seen much more clearly.
- 6.29. Analyses of this form can often provide much more useful information regarding the local determinants of obesity and generally provides more robust information on how best to target resources. If the most deprived parts of an LA are shown to have the highest prevalence of obesity, then resources can be targeted at these areas with a good degree of confidence that they will be reaching those individuals most at risk of future obesity-related ill health.

BMI distribution

6.30. Users of the 2010/11 NCMP dataset may wish to make use of the full range of height, weight and BMI values to examine the distribution of these measured rather than only considering the proportion of underweight, overweight, and obese children. Figure 4 provides an example of the distribution of BMI z scores within the 2006/07 to 2008/09 NCMP datasets for boys in Year 6, compared to the 1990 baseline.

Figure 4: Distribution of BMI z score for boys in Year 6 by year of measurement



6.31. In this case, the possible confounding effect of age on such analyses has been addressed by using z scores rather than the actual BMI values. The expected height, weight and BMI of children varies substantially with age and sex. Therefore if age and sex are not adjusted for, the shape of the distribution will be affected. These z scores are available in the dataset provided by the HSCIC.

6.32. It is important to note that the distribution of z scores derived from the UK90 growth reference will be closer in shape to the normal distribution, than the distribution of actual BMI values. These curves should be interpreted in terms of difference from the normal distribution, rather than viewed as representing the current actual population distribution of BMI.

7 Analysis FAQ

7.1. The following questions have been compiled from common queries received by NOO and information included in previous NCMP guidance.

Why should I use the HSCIC's cleaned data?

- 7.2. Analyses should be based on the cleaned data from the HSCIC rather than using the records held by PCTs, to ensure accuracy and consistency with published figures.
- 7.3. The HSCIC performs extensive data quality checks before the dataset is distributed to PHOs and where data quality issues are identified this information is fed back to PCTs. However local areas may wish to perform further data quality checks of their own. Some suggested checks are outlined in Appendix 3. Furthermore, the HSCIC dataset is likely to hold a greater number of fields than locally held data (see Appendix 1) which facilitates a greater range of possible analyses.

What sort of analyses do other areas perform?

- 7.4. Links to national, regional, and local reports from previous years (based on NCMP data) are available on the NOO website (<http://www.noo.org.uk/ncmp>). These documents provide an illustration of the sort of analyses that can be done with this dataset. Analysts may wish to look at some of these reports before performing their own analyses.
- 7.5. PHOs or PCTs undertaking analyses are asked to publish their reports on their own websites where possible. **NOO is keen to receive information about, and links to, any such reports at ncmp@noo.org.uk**, so that such information can be posted on the NCMP pages of the NOO website and be available to all.

How can I validate or QA my own analysis?

- 7.6. Users should check that their analyses match prevalence figures published by the HSCIC and NOO. However please also see the footnote at the bottom of page 5 of this document.

Can I combine data for school years?

- 7.7. Prevalence figures should usually be produced separately for Reception and Year 6, rather than combining the data. Prevalence of obesity and overweight differ with age, tending to be higher in the older age-groups. As a result, a combined prevalence figure will tend to be lower if a larger proportion of Reception children have been measured, and higher for areas in which a larger proportion of Year 6 children have been measured.
- 7.8. If combined prevalence figures are produced, they should be age standardised in some way, rather than created by simply combining data for children measured in Reception with that for children in Year 6 to create a 'crude' estimate. A simple way to achieve this involves taking an average of the Year 6 and Reception figures, rather than by calculating a rate in the usual manner by combining data for both school years. This will

give a figure which represents the value of the indicator in a hypothetical population where an equal proportion of Reception and Year 6 children were measured.

Do I need to take account of the sex ratio of children measured?

- 7.9. Obesity and overweight prevalence for children is known to vary by sex. Users of the NCMP dataset may wish to further investigate differences by sex within their local area. The NOO NCMP e-atlas (<http://www.noo.org.uk/visualisation/eatlas>) provides prevalence figures broken down by sex for LAs and PCTs, but users will need to perform their own analysis to obtain these figures for smaller geographies.
- 7.10. The 2006/07 NOO NCMP report noted differences between the sex ratios of children measured in different areas. This pattern appears to have continued in more recent years and such differences remain in the 2010/11 datasets. In addition, at least at national level, more boys participate than girls. Although this appears to have a minimal effect on PCT level prevalence figures, for smaller populations the possible impact of a skewed sex ratio is greater. Users should be aware of this issue and, if prevalence figures are to be compared for boys and girls combined, it should first be ensured that there are no large differences in sex ratio between the populations being examined.
- 7.11. This issue is likely to be particularly important at school level. Comparing prevalence of obesity at a single sex school with a prevalence figure for the PCT or region that includes girls and boys would not be appropriate. This issue needs consideration, especially if feeding back results to schools. The NCMP school feedback tool standardises for sex when feeding back information on school level obesity prevalence.

How can I check to see whether a change or difference in prevalence is meaningful?

- 7.12. Comparison of prevalence figures with the regional or national rate, between different populations or over time should always take into account the degree of uncertainty around these figures.
- 7.13. The HSCIC report and published data tables provide approximate confidence limits for PCT and LA prevalence rates. The method used to test for statistical significance is detailed in Annex 3 of the HSCIC report.
- 7.14. If users of the NCMP dataset want to calculate their own confidence limits for other geographic areas, or if they need to produce confidence limits for prevalence by sex or for underweight, the 'Wilson Score' method is recommended. See Appendix 4.
- 7.15. If examining a reported change in rate for statistical significance, the approach recommended by Altman et al. should be used. See Appendix 4, Section A4.5.
- 7.16. PHOs might also consider using funnel plots or control charts to show PCT prevalence rates with an indication of the expected variation around these figures dependent on the size of the population. An example of such analysis can be found in Section 4.2 of the 2007/08 NOO NCMP report.⁵

What are the best methods for comparing the data for children measured in Reception to Year 6 measurements of the same children?

- 7.17. In some areas it will be possible to compare the 2010/11 NCMP data for Year 6 children with child measurements for the same children taken in the Reception year during 2005/06 as part of the National Child Obesity Database (NCOD). Some local areas may even be able to perform such analysis with earlier NCMP datasets – for example where the height and weight Reception year children was routinely measured and recorded prior to the NCOD or NCMP.
- 7.18. Although it is interesting to compare change in these cohorts of children at a population level (e.g. comparing obesity prevalence in 2005/06 for children of Reception year with obesity prevalence in 2010/11 for Year 6), such analysis is unlikely to produce a great deal of new information beyond what is already known (i.e. that obesity prevalence increases between the Reception and Year 6).
- 7.19. Of greater interest would be a comparison of children's BMI at an individual level. Tracking individual children over time opens up the possibility for new avenues of analysis.
- 7.20. However, such analysis requires individual children to be identified within the dataset so that they can be tracked from Reception to Year 6. As the NCMP dataset supplied by the IC does not contain identifiable data, it is likely that such work can only be performed where child measurements are recorded onto a local system, such as a child health system, and can be extracted in an identifiable form[§].
- 7.21. Where such data are available, the sort of analysis that is likely to be most productive includes the change in BMI classification over time and the change in BMI z score or centile. If the number of children who can be identified in both school years is large enough it may be possible to perform analysis to investigate whether the change in children's BMI over time differs by sex, area, ethnicity or socioeconomic group.
- 7.22. Tools such as LMS Growth (see Appendix 5) are likely to prove helpful to anyone performing such analysis – this software can be used to assign BMI z scores, centiles, or BMI classification based on child measurements, which will be needed if child measurements are being extracted from a local data source and not the national NCMP dataset. (See A5.11 – A5.12 for further details).
- 7.23. As NOO does not have access to such data, it is not possible to trial such forms of analysis centrally. This limits the advice that can be provided to local areas. However, some examples of such work have been published, by Hull PCT¹⁷ and Southampton PCTs.¹⁸ Local areas who intend to perform such analysis might wish to review what has been done in these areas before deciding on a plan for individual level analysis.
- 7.24. If any local areas wish to conduct analysis of this sort, NOO would be happy to discuss suitable approaches and methods prior to commencing the work. NOO are also keen to receive links to, or electronic copies of, any local publications which present the results of this sort of analysis, which can then be shared with other areas via the NOO website.

[§] The Pupil_ID and Local_ID fields within the NCMP MS Access databases are individual row identifiers for each NCMP year and are only unique within each separate dataset. The same pupil identifiers are re-used for different individuals in each year's dataset, and therefore cannot be used to match the same pupil measured in Reception to their Year 6 measurement.

Appendix 1: NCMP 2010/11 data fields

A1.1. The 2010/11 NCMP dataset is supplied to PHOs by the HSCIC in a single Access database. The database contains 11 data tables which contain information at pupil (for both valid and excluded records), school, current LA, former LA, current PCT, former PCT, PCT cluster, GOR, SHA cluster and England level.

A1.2. Nine additional tables are provided which allow users to assign descriptions to the coding used within the dataset. These lookup tables cover BMI classification (clinical), BMI classification (population monitoring), ethnic codes, ONS Area Classification Group codes, ONS AC Subgroup codes, ONS AC Supergroup codes, removal criteria (description of the criteria under which excluded records were removed), school establishment type and Urban/Rural classification.

A1.3. This table and field structure is now applicable to the most recent versions of NCMP datasets for the period 2006/07 – 2009/10, although some fields are not available for older datasets.

A1.4. The field names and descriptions for the 11 data tables are outlined below:

Table 1: Pupil_data and Pupil_data_excluded

Field Name	Field Description
Pupil_ID	Unique ID code for each pupil
Local_ID	PCT ID code for each pupil
Exclude_flag	Pupils attending independent and special schools are flagged as 1 (these records need to be excluded to match the published figures)
Sex	Sex of pupil
Age	Age of pupil (in months)
School_yr	School Year of pupil - derived from child age (R: Reception, 6: Year 6)
Ethnicity_full	Ethnicity code as entered by PCT
Ethnicity	Ethnicity recoded to NHS classification (see table Ethnicity_codes)
Height	Height of pupil (in cm)
Height_z	Height z score - derived from British 1990 growth reference, using Age, Sex and Height fields
Height_p	Height centile - derived from British 1990 growth reference, using Age, Sex and Height fields
Weight	Weight of pupil (in kg)
Weight_z	Weight z score - derived from British 1990 growth reference, using Age, Sex and Weight fields
Weight_p	Weight centile - derived from British 1990 growth reference, using Age, Sex and Weight fields
BMI	BMI of pupil in kg/m ² - derived from height and weight
BMI_z	BMI z score - derived from British 1990 growth reference, using Age, Sex and BMI fields
BMI_p	BMI centile - derived from British 1990 growth reference, using Age, Sex and BMI fields
BMI_class_pop_mon	BMI classification to UK90 population monitoring centiles (85th/95th centiles for overweight and obese), plus 2nd centile for underweight (See table BMI_class_pop_mon)
BMI_class_clinical	BMI classification to UK90 clinical centiles (approx 91st/98th centiles for overweight and obese), plus 2nd centile for underweight (See table BMI_class_clinical)
Month_meas	Month of measurement (1: January, 2: February etc)
DayofMeasurement	Day in week measurement took place (1: Sunday, 2: Monday, 3: Tuesday, 4: Wednesday, 5: Thursday, 6: Friday, 7: Saturday)
PCT_current	PCT that submitted measurement (see table PCT_current_data) based on PCT codes as at 1 st April 2011
PCT_former	PCT that submitted measurement (see table PCT_former_data) based on PCT codes prior to 1 st April 2011
SHA	SHA - based on PCT that submitted measurement (see table SHA_data)

PCT_cluster	PCT cluster that the PCT that submitted measurements was assigned to when PCT clusters were implemented in June 2011 (see table PCT_cluster_data)
SHA_cluster	SHA cluster that the PCT cluster is assigned to (see table SHA_cluster_data)
URN	DfE Unique Reference Number for school (see table School_data)
Schl_LA_current	Current Local Authority (post April 2009) - derived from postcode of school (see table LA_current_data)
Schl_LA_former	Former Local Authority (pre April 2009) - derived from postcode of school (see table LA_former_data)
Schl_GOR	Government Office Region - derived from postcode of school (see table GOR_data)
Schl_Supergroup_ONS_AC	ONS Area Classification Supergroup code - derived from school postcode (see table ONS_AC_Supergroup)
Schl_Group_ONS_AC	ONS Area Classification Group code - derived from school postcode (see table ONS_AC_Group)
Schl_Subgroup_ONS_AC	ONS Area Classification Subgroup code - derived from school postcode (see table ONS_AC_Subgroup)
Schl_Urban	ONS Urban/ Rural classification - derived from school postcode (see table Urban_rural)
Schl_IMD_decile	The decile that the Index of Multiple Deprivation (IMD) 2010 score falls into - derived from LSOA of school (0: not available, 1: 1st decile (least deprived),..., 10: 10th decile (most deprived))
Child_LA_current	Current Local Authority (post April 2009) - derived from child postcode (see table Current_LAs)
Child_LA_former	Former Local Authority (pre April 2009) - derived from child postcode (see table Former_LAs)
Child_GOR	Government Office Region - derived from child postcode (see table GORs)
Child_Supergroup_ONS_AC	ONS Area Classification Supergroup code - derived from child postcode (see table ONS_AC_Supergroup)
Child_Group_ONS_AC	ONS Area Classification Group code - derived from child postcode (see table ONS_AC_Group)
Child_Subgroup_ONS_AC	ONS Area Classification Subgroup code - derived from child postcode (see table ONS_AC_Subgroup)
Child_LSOA	Lower Super Output Area of child - derived from child postcode
Child_urban	ONS Urban/ Rural classification - derived from child postcode (see table Urban_rural)
Child_IMD_decile	The decile that the Index of Multiple Deprivation (IMD) 2010 score falls into - derived from LSOA of child (0: not available, 1: 1st decile (least deprived),..., 10: 10th decile (most deprived))
School_child_distance	The straight line distance between the school postcode and child postcode (in km). Please note the child postcode, and all fields derived from it, have been deleted if this distance is greater than 60km, as the child postcode was thought to be erroneous
Removal_criteria	Removal criteria (see table removal_criteria)

Table 2: PCT_current_data

Field Name	Field Description
PCT_current	PCT current code based on PCT codes from 1 st April 2011 onwards
PCT_current_name	PCT current name
SHA	SHA code of PCT_current
PCT_current_Meas_R	Number of pupils measured - Reception (used for published participation rates)
PCT_current_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
PCT_current_Eligible_R	Eligible Reception year pupils within PCT_current (derived from sum of school level eligible figures)
PCT_current_Eligible_6	Eligible Year 6 pupils within PCT_current (derived from sum of school level eligible figures)
PCT_current_Particip_R	Participation rate – Reception
PCT_current_Particip_6	Participation rate - Year 6
Storage_R	Mode of data storage – Reception
Storage_6	Mode of data storage - Year 6
Parentopt_R	Number of pupils not measured due to parental opt-out – Reception

Parentopt_6	Number of pupils not measured due to parental opt-out – Year 6
Childopt_R	Number of pupils not measured due to child opt-out – Reception
Childopt_6	Number of pupils not measured due to child opt-out – Year 6
Unable_R	Number of pupils not measured because child unable to stand on scales - Reception
Unable_6	Number of pupils not measured because child unable to stand on scales - Year 6
Absent_R	Number of pupils not measured because child absent on day of measurement - Reception
Absent_6	Number of pupils not measured because child absent on day of measurement - Year 6
Schl_opt_R	Number of pupils not measured because school opted out of measurement - Reception
Schl_opt_6	Number of pupils not measured because school opted out of measurement - Year 6
nSchl_opt_R	Number of schools which opted out of measurement – Reception
nSchl_opt_6	Number of schools which opted out of measurement – Year 6
Other_R	Number of children not measured for other reasons – Reception
Other_6	Number of children not measured for other reasons – Year 6

Table 3: PCT_former_data

Field Name	Field Description
PCT_former	PCT former code based on PCT codes prior to 1 st April 2011
PCT_former_name	PCT former name
SHA	SHA code of PCT_former
PCT_former_Meas_R	Number of pupils measured - Reception (used for published participation rates)
PCT_former_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
PCT_former_Eligible_R	Eligible Reception year pupils within PCT_former (derived from sum of school level eligible figures)
PCT_former_Eligible_6	Eligible Year 6 pupils within PCT_former (derived from sum of school level eligible figures)
PCT_former_Particip_R	Participation rate - Reception
PCT_former_Particip_6	Participation rate - Year 6

Table 4: PCT_cluster_data

Field Name	Field Description
PCT_cluster	PCT cluster code (based on introduction of PCT clusters in June 2011)
PCT_cluster_name	PCT cluster name
SHA_cluster	SHA_cluster code of PCT_cluster
PCT_cluster_Meas_R	Number of pupils measured - Reception (used for published participation rates)
PCT_cluster_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
PCT_cluster_Eligible_R	Eligible Reception year pupils within PCT_cluster (derived from sum of school level eligible figures)
PCT_cluster_Eligible_6	Eligible Year 6 pupils within PCT_cluster (derived from sum of school level eligible figures)
PCT_cluster_Particip_R	Participation rate - Reception
PCT_cluster_Particip_6	Participation rate - Year 6

Table 5: SHA_data

Field Name	Field Description
SHA	SHA code
SHA_name	SHA name
SHA_Meas_R	Number of pupils measured - Reception (used for published participation rates)

SHA_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
SHA_Eligible_R	Eligible Reception year pupils within SHA (derived from sum of school level eligible figures)
SHA_Eligible_6	Eligible Year 6 pupils within SHA (derived from sum of school level eligible figures)
SHA_Particip_R	Participation rate - Reception
SHA_Particip_6	Participation rate - Year 6

Table 6: SHA_cluster_data

Field Name	Field Description
SHA_cluster	SHA cluster code (based on introduction of SHA clusters in June 2011)
SHA_cluster_name	SHA cluster name
SHA_cluster_Meas_R	Number of pupils measured - Reception (used for published participation rates)
SHA_cluster_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
SHA_cluster_Eligible_R	Eligible Reception year pupils within SHA_cluster (derived from sum of school level eligible figures)
SHA_cluster_Eligible_6	Eligible Year 6 pupils within SHA_cluster (derived from sum of school level eligible figures)
SHA_cluster_Particip_R	Participation rate - Reception
SHA_cluster_Particip_6	Participation rate - Year 6

Table 7: LA_current_data

Field Name	Field Description
LA_current	LA current code (based on LA codes from 1 st April 2009 onwards)
LA_current_name	LA current name
GOR	GOR code
LA_current_Meas_R	Number of pupils measured - Reception (used for published participation rates)
LA_current_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
LA_current_Eligible_R	Eligible Reception year pupils within LA_current (derived from sum of school level eligible figures)
LA_current_Eligible_6	Eligible Year 6 pupils within LA_current (derived from sum of school level eligible figures)
LA_current_Particip_R	Participation rate - Reception
LA_current_Particip_6	Participation rate - Year 6

Table 8: LA_former_data

Field Name	Field Description
LA_former	LA former code (based on LA codes prior to 1 st April 2009)
LA_former_name	LA former name
GOR	GOR code
LA_former_Meas_R	Number of pupils measured - Reception (used for published participation rates)
LA_former_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
LA_former_Eligible_R	Eligible Reception year pupils within LA_former (derived from sum of school level eligible figures)
LA_former_Eligible_6	Eligible Year 6 pupils within LA_former (derived from sum of school level eligible figures)
LA_former_Particip_R	Participation rate - Reception
LA_former_Particip_6	Participation rate - Year 6

Table 9: GOR_data

Field Name	Field Description
GOR	GOR code
GOR_name	GOR name
GOR_Meas_R	Number of pupils measured - Reception (used for published participation rates)
GOR_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
GOR_Eligible_R	Eligible Reception year pupils within GOR (derived from sum of school level eligible figures)
GOR_Eligible_6	Eligible Year 6 pupils within GOR (derived from sum of school level eligible figures)
GOR_Particip_R	Participation rate - Reception
GOR_Particip_6	Participation rate - Year 6

Table 10: Eng_data

Field Name	Field Description
Eng_code	England code
Eng_name	England name
Eng_Meas_R	Number of pupils measured - Reception (used for published participation rates)
Eng_Meas_6	Number of pupils measured - Year 6 (used for published participation rates)
Eng_Eligible_R	Eligible Reception year pupils within England (derived from sum of school level eligible figures)
Eng_Eligible_6	Eligible Year 6 pupils within England (derived from sum of school level eligible figures)
Eng_Particip_R	Participation rate - Reception
Eng_Particip_6	Participation rate - Year 6

Table 11: School_data

Field Name	Field Description
URN	DfE Unique Reference Number for school
Schl_name	School name
Schl_Addr1	School address line 1
Schl_Addr2	School address line 2
Schl_Addr3	School address line 3
Schl_Addr4	School address line 4
Schl_Addr5	School address line 5
Schl_pcode	School postcode
Schl_type	School establishment type (see table School_type)
Particip_schl	Schools that participated in NCMP 1011 are flagged as 1
Optional_schl	Schools where NCMP measurements are optional, i.e. independent and special schools, are flagged as 1
Schl_LSOA	Lower Super Output Area of school - derived from school postcode
Schl_LA_current	Current Local Authority (post April 2009) - derived from postcode of school (see table LA_current_data)
Schl_LA_former	Former Local Authority (pre April 2009) - derived from postcode of school (see table LA_former_data)
Schl_GOR	Government Office Region - derived from postcode of school (see table GORs)
Schl_Supergroup_ONS_AC	ONS Area Classification Supergroup code - derived from school postcode (see table ONS_AC_Supergroup)
Schl_Group_ONS_AC	ONS Area Classification Group code - derived from school postcode (see table ONS_AC_Group)
Schl_Subgroup_ONS_AC	ONS Area Classification Subgroup code - derived from school postcode (see table ONS_AC_Subgroup)

Schl_urban	ONS Urban/ Rural classification - derived from postcode of school (see table Urban_rural)
Schl_IMD_decile	The decile that the Index of Multiple Deprivation (IMD) 2010 score falls into - derived from LSOA of school (0: not available, 1: 1st decile (least deprived),..., 10: 10th decile(most deprived))
PCT_current	PCT current code of PCT responsible for taking NCMP measurements (based on PCT codes from 1st April 2011 onwards)
PCT_former	PCT former code of PCT responsible for taking NCMP measurements (based on PCT codes prior to 1st April 2011)
SHA	SHA - based on PCT that submitted measurement (see table SHA_data)
PCT_cluster	PCT cluster code of PCT responsible for taking NCMP measurements (based on introduction of PCT clusters in June 2011)
SHA_cluster	SHA cluster code of PCT responsible for taking NCMP measurements (based on introduction of SHA clusters in June 2011)
Schl_Eligible_R	Eligible pupils figure supplied by PCT. Adjusted so not exceeded by number of pupils measured – Reception
Schl_Eligible_6	Eligible pupils figure supplied by PCT. Adjusted so not exceeded by number of pupils measured - Year 6

Appendix 2

Specimen school feedback letter, as used in the School Feedback Tool



PCT Name
PCT Address 1
PCT Address 2
PCT Address 3
PCT Address 4
PCT Postcode

School Name
School Address 1
School Address 2
School Address 3
School Postcode

day/month/year

Results from the National Child Measurement Programme 2010/11

Dear Headteacher

I am writing to thank you for agreeing to your school taking part in the National Child Measurement Programme (NCMP) in 2010/11 and to provide you with some feedback on your school's results from the programme.

Since 2005, the NCMP has recorded weight and height measurements from children in Reception and Year 6 across England. Nationally, around 99% of eligible schools participated in the 2010/11 NCMP. This valuable information is already being used to inform delivery of children's services locally, regionally and nationally. The programme also engages parents on the importance of healthy weight in children, through sharing their children's results with them. This is particularly important given that evidence shows that parents (and even healthcare professionals) are poor at telling visually when their child is overweight or obese.

We very much value your school's continuing engagement with the programme, which helps us plan local services to tackle child obesity. This can help schools support the health and wellbeing of their pupils, and can benefit pupils and the school by reducing teasing or bullying; reducing behavioural problems stemming from anxiety or depression; increasing participation in active play or learning opportunities in PE and school sport; and reducing missed school days for medical appointments or treatment. Guidance on schools' role in the programme is available at:

<https://www.education.gov.uk/publications/eOrderingDownload/NCMP%20schools%20guidance%202011-12.pdf>

You can view the results from the 2010/11 school year for your local area or download the full report at:

<http://www.ic.nhs.uk/ncmp>

Additionally, I am attaching a summary of your school's results for the 2010/11 school year. Also included is a comparison of the prevalence of underweight, overweight and obese children in your school with national, regional and local Primary Care Trust figures. Please note that specific percentages cannot be disclosed for individual schools to avoid any potential for identifying individual children.

Thank you again for your school's participation. If you want to discuss these results, please feel free to contact **[Insert name and contact details for appropriate contact]**.

Yours sincerely

PCT obesity lead

NCMP 2010/11 Results Summary

Results for: School Name

PCT: PCT Name

Region: Region Name

In this report any differences between your school and the area of comparison have been checked for statistical significance. This means that, if your school appears to have a different participation rate or prevalence to the comparator, there is a 95% chance that these differences are real, and only a 5% chance that they have arisen by chance due to the random natural variation among schools.

Participation rates

	Reception	Year 6	Total
National participation rate:	93%	92%	93%
Regional participation rate:	95%	93%	94%
PCT participation rate:	97%	91%	94%
School participation rate:	94%	97%	95%

Your school's participation rate in the 2010/11 NCMP was similar to the England average.

Even in areas where participation was good, it is important to try and maintain, or ideally increase participation rates in future years.

Analysis at the national level shows that lower participation rates are associated with lower reported prevalence of obesity. This is likely to be due to a selective opt-out of heavier children from the programme.

Even for schools with a good participation rate in 2010/11, it is still possible that such selective opt-out may occur, leading to an underestimation of the true prevalence of obesity for your school.

It is therefore important that all schools strive to achieve as high a participation rate as is possible in future years of the NCMP.

If participation rates fall below 70%, the data for your school will be considered too unreliable to provide any meaningful information, and so your school will be shown as having 'insufficient information'.

Prevalence of obesity, overweight and underweight

		Underweight	Overweight	Obesity
National prevalence:	Reception	1%	13%	9%
	Year 6	1%	14%	19%
Regional prevalence:	Reception	1%	14%	10%
	Year 6	1%	15%	20%
PCT prevalence rates:	Reception	2%	14%	12%
	Year 6	1%	15%	22%

It is important to note that the prevalence figures shown here use population monitoring definitions which are different, and less specific, than the definitions that would be used in a clinical setting. As a result these figures will be higher than the percentage of individual children who would be clinically diagnosed as being obese or overweight.

School prevalence indicator:

Shaded cells indicate the position of your school

		No data or insufficient data	Below the England average (better)	Similar to the England average	Higher than the England average (worse)
Reception	Underweight				
	Overweight				
	Obese				
Year 6	Underweight				
	Overweight				
	Obese				

If your school has a higher obesity and overweight prevalence than the area used for comparison, you may want to consider whether you can make your school a healthier place as part of contributing to the wider well-being of children at school. The Government wants all children and young people to be healthy and to achieve their full potential. A range of resources and support has been developed to help make schools healthier places for pupils and staff to work and learn in.

If your school has a prevalence rate below the area used for comparison, I would encourage you to consider how you can continue this record and make your school healthier by further promoting healthy weight and wider well-being.

If your school is shown to have 'insufficient data' this is either because your school had a very low participation rate in the NCMP or because the number of pupils in the school was below the minimum number required and so it would not be possible to provide accurate comparisons of the levels of child obesity. If your school has a low participation rate, encouraging full participation in the 2011/12 NCMP as part of contributing to the wider well-being of children at school may make it possible to provide prevalence indicators for your school next year.

Useful resources to help you make your school a healthier place, and to improve NCMP response rates, are available at:

Appendix 3: Suggested data quality checks at local level

- A3.1. Although the NCMP dataset provided to PHOs has undergone extensive cleaning at national level, there is a limit on the checks and cleaning that can be done centrally on a dataset with over one million records from around 17,000 schools. As a result there may be some minor remaining data quality issues within the NCMP dataset.
- A3.2. In earlier NCMP datasets a number of issues have been identified during analysis. These included: duplicate records in the dataset; the same pupil records entered for two adjacent schools; Year 6 pupils entered to infant schools or Reception pupils entered to junior schools and a large proportion of records were found to have height and weight measurements rounded to the nearest whole number.
- A3.3. The NCMP upload process is continually being improved to include additional validation checks, and further validation is now done by the HSCIC prior to the data being released. This process is described in the HSCIC's annual NCMP report.³ However, some data quality issues may remain despite these additional checks.
- A3.4. These data quality issues have minor effects on national analyses but may be more important in detailed regional or local analyses by PHOs or PCTs. It is therefore important that basic quality checks on the dataset are performed and any anomalies are clarified with the relevant PCT or with the staff involved in collecting and processing measurements. Please report any errors or issues found from any data quality checks to NOO (ncmp@noo.org.uk).
- A3.5. Users of the 2010/11 dataset may wish to check for some or all of the following issues before commencing detailed analysis.
- A3.5.1. **Records assigned to the wrong school:** In previous NCMP datasets some child records have been found to be coded to the wrong school. This issue could often only be easily identified in the most obvious cases, such as where infant schools had Year 6 pupils coded to them and where Reception pupils were coded to junior schools. As a result, the true scale of this issue is unknown.
- A3.5.2. In many cases this miscoding seems to have occurred where schools share similar names (e.g. St Mary's Infants and St Mary's Junior) and all records for both schools have been assigned to one of the two institutions.
- A3.5.3. The NCMP upload process includes checks to warn PCTs where such miscoding may have occurred. For example, PCTs are warned of the number of schools for which no records are entered and also of the number of schools where the number of pupils measured exceeds the number of pupils reported to be at the school. However, it is still possible that some incorrect school coding may have occurred within the 2010/11 dataset.
- A3.5.4. **Duplicate pupils:** Duplicate pupils assigned to a school should have been flagged during the upload process and removed before data were submitted to the NCMP database.
- A3.5.5. The HSCIC has also removed any duplicate records identified during data cleaning from the dataset. These suspected duplicate records are included in the NCMP Access database in the Pupil_data_excluded table under 'Removal_criteria' codes 8 and 9. Local areas may wish to examine how many local records have been identified as duplicates. If a substantial number of local child records have

been removed for this reason, this information should be fed back to the team responsible for data collection and processing.

- A3.5.6. In some situations (e.g. where duplicate records were submitted to separate schools or where records were actually part of a set of duplicates but contain differing data for a given field) some duplicate records may remain in the dataset. It is therefore worthwhile for local areas to perform some quick checks to see if any such records can be identified.
- A3.5.7. Detailed analyses of previous NCMP datasets have shown that a few PCTs had submitted the same set of records for more than one school. Often this occurred where pupils had been inaccurately coded to schools (as described in A3.5.2). For example, in some cases a group of Reception year pupils had been incorrectly added to a similarly named junior school as well as to the correct infant school.
- A3.5.8. Although the NCMP dataset is anonymised, it is possible to detect potential duplicate records by matching on fields such as age, sex, height and weight.
- A3.5.9. **Rounded records:** NOO analyses of previous NCMP datasets has shown that incorrectly rounded records (especially those for weight in the Reception year) were associated with a lower reported prevalence of obesity.⁴
- A3.5.10. The HSCIC run a validation check for rounded records during the data upload process, but as this warns PCTs of rounded records only after data have been submitted, some PCTs still have a high proportion of rounded records in the 2010/11 dataset if they did not make amendments and resubmit.
- A3.5.11. A summary of the proportion of rounded records for every PCT has been provided within the HSCIC's 2010/11 NCMP report³ (Annex 2). Users of the NCMP data at local level are advised to check this list and, if the records for the population being studied have been submitted with rounded heights and/or weights, this issue may need to be taken into consideration when using prevalence figures for those areas. In addition it may prove beneficial to work with the teams responsible for collecting and entering NCMP data to ensure that data are entered to the correct level of precision (1 decimal place) in future years.
- A3.5.12. **Day of measurement:** The 2010/11 dataset contains, for the first time, a field showing day in the week of measurement within the 'Pupil_data' table.
- A3.5.13. Analysis of this field has shown that a small proportion of child records are submitted with a date of measurement that corresponds to a Saturday or Sunday. It seems likely that this has resulted where date of measurement has been incorrectly entered for that child.
- A3.5.14. Local areas may wish to investigate the proportion of local child measurements which appear to have taken place at a weekend, and feed this information back to the team who collects and processes data if this is found to be occurring locally.

Appendix 4: Methods for confidence limits

A4.1. We recommend that 95% confidence intervals are calculated with the method described by Wilson¹⁹ and Newcombe²⁰ which is a good approximation of the exact method.

A4.2. The estimated proportions of children with and without the feature of interest were calculated:

observed number of obese children in each area = r
 sample size = n
 proportion with feature of interest = $p = r/n$
 proportion without feature of interest = $q = (1 - p)$

A4.3. Three values (A, B and C) were then calculated as follows:

$$A = 2r + z^2; B = z\sqrt{z^2 + 4rq}; \text{ and } C = 2(n + z^2)$$

where z is the appropriate value, $z_{1-\alpha/2}$ from the standard Normal distribution. Then the confidence interval for the population proportion is given by

$$(A-B)/C \text{ to } (A+B)/C$$

A4.4. This method is superior to other approaches because it can be used for any data. When there are no observed events, then r and hence p are both zero, and the recommended confidence interval simplifies to 0 to $z^2/(n+z^2)$. When $r = n$ so that $p = 1$, the interval becomes $n/(n+z^2)$ to 1 .

A4.5. When testing for differences between rates or proportions it is important to use an appropriate statistical test rather than just looking at whether confidence intervals are overlapping. In some circumstances there could be a statistically significant difference even where confidence intervals overlap.

A4.6. The approach outlined by Altman et al. in *Statistics with Confidence (edition 2)*²¹ is recommended for such statistical testing.

Where the difference in two rates or proportions, $\hat{D} = \hat{p}_2 - \hat{p}_1$ has confidence limits from:

$$\hat{D} - \sqrt{(\hat{p}_2 - l_2)^2 + (u_1 - \hat{p}_1)^2} \text{ to } \hat{D} + \sqrt{(\hat{p}_1 - l_1)^2 + (u_2 - \hat{p}_2)^2}$$

Where \hat{p}_i is the estimated prevalence for year i , and l_i and u_i are the lower and upper confidence intervals for \hat{p}_i respectively.

A4.7. This method is also provided as 'method 10' in the Newcombe paper 'interval estimation for the difference between independent proportions: comparison of eleven methods'.²²

Appendix 5: BMI thresholds, z scores, and p scores

- A5.1. The height, weight and BMI of children change as children grow, and also vary between boys and girls. In order to determine whether any individual child's measurements should be considered too low or too high, the child's height, weight or BMI must be compared to a child growth reference. Such references describe the expected pattern of growth for children at different ages and by sex, and are usually based on a relatively healthy historic population (i.e. one with low obesity prevalence).
- A5.2. A child growth reference can be used to convert the height, weight or BMI measurements of individual children into standard deviation scores (z scores) or centiles (p scores). These z scores describe whether the child has a higher or lower value for that measure than would be expected of children of the same age and sex.
- A5.3. For example, a child with a BMI z score of 0 (which equates to the 50th centile) has a BMI the same as the average value for children of the same age and sex in the 1990 reference population. A child with a BMI z score of +1.64 (the 95th centile) has a BMI that is higher than 95% of children of the same age and sex in the 1990 reference population.

BMI thresholds used with the NCMP dataset

- A5.4. The NCMP published prevalence data use the British 1990 growth reference (UK90)^{8,9} for BMI and the 2nd, 85th and 95th centiles to define children as underweight, overweight or obese according to age and sex. This definition is the most commonly used in England for population monitoring – e.g. in Health Survey for England (HSE) figures.
- A5.5. It is important to note that the 85th and 95th centiles used in the NCMP are intended for population monitoring use only, and do not provide the number or percentage of individual children clinically defined as overweight or obese.
- A5.6. In clinical settings or when monitoring the BMI of individual children, the 2nd, 91st and 98th centiles of the UK90 reference are used in the UK to classify the BMI of individual children as underweight, healthy, overweight or obese taking into account the expected variation in BMI by age and sex. The NCMP parental feedback letters issued by PCTs use these clinical cut-offs to assign children to a BMI classification.
- A5.7. It is important to note that the clinical cut-offs for child underweight, overweight, and obesity are in fact set at -2 (i.e. -6/3), +4/3, and +2 (i.e. 6/3) standard deviations. These actually equate to the 2.3rd, 90.9th, and 97.7th centiles, when rounded to one decimal place, although they are usually referred to as the 2nd, 91st, and 98th centiles.
- A5.8. Underweight prevalence figures using both population monitoring and clinical thresholds are each presented as having been derived using the 2nd centile. However only those based on population monitoring thresholds use the 2nd centile, whereas those derived using clinical thresholds actually use -2 standard deviations (i.e. the 2.3rd centile). For a given population, prevalence of underweight will therefore differ slightly depending on whether the population monitoring or clinical cut offs are used.
- A5.9. The NOO child obesity e-atlases present NCMP data using both population monitoring and clinical cut-offs. These are available at <http://www.noo.org.uk/visualisation/eatlas>.
- A5.10. When presenting prevalence figures based on the 85th and 95th centile cut-offs, or any other BMI thresholds, it is important to state the thresholds being used to ensure valid

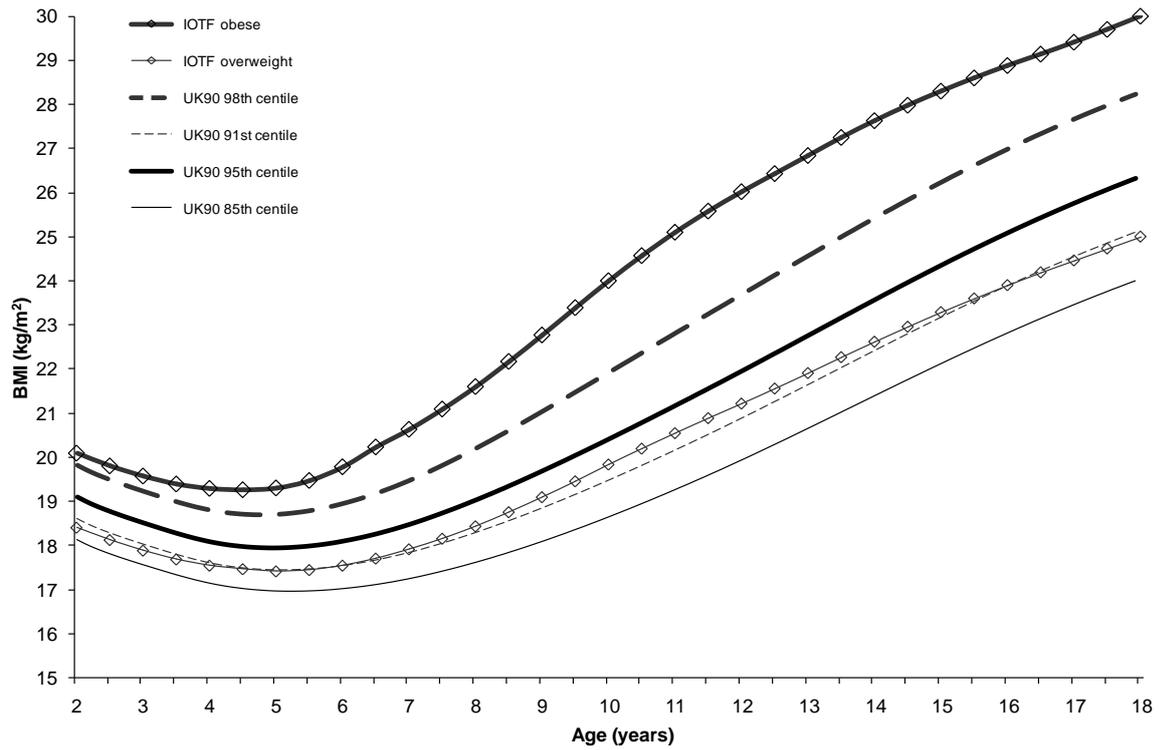
comparisons can be made between the figures being presented and those from other sources.

- A5.11. If for any reason users need to calculate their own BMI z scores for NCMP or other data, this can be done quickly and easily using the 'LMS Growth' Microsoft Excel add-in software. This software is available at no charge from Harlow Publishing at <http://www.healthforallchildren.com/index.php/shop/product/1-Software/Gr5yCsMCONpF39hF/0>
- A5.12. LMS Growth can be used to calculate both z scores and centile for child measurements. The two can also be converted within MS Excel, using the 'normsinv' and 'normsdist' commands.
- A5.13. There are very slight differences between this Excel add-in and the approach used to assign BMI z scores and centiles in the NCMP dataset. These relate to the precise method used to allocate L, M and S variables to individuals. Hence, the resulting BMI, height and weight z scores assigned may differ by a small amount. However these differences do not have any noticeable impact on prevalence figures.

Other thresholds for defining children's BMI status

- A5.14. Users of the NCMP dataset should also note that other growth references are sometimes used to classify children as overweight or obese. For example, the World Health Organization (WHO) 2007 or International Obesity Task Force (IOTF) thresholds are sometimes used in the UK. The IOTF thresholds were used in the Foresight obesity modelling²³ and for child obesity prevalence figures from the Millennium Cohort Study.²⁴
- A5.15. Although these alternative growth references show a broadly similar pattern of changing BMI with age, they produce very different thresholds for underweight, healthy weight, overweight and obesity.
- A5.16. Most published NCMP analyses use the recommended UK90 population monitoring thresholds to ensure consistency between published figures. If making comparisons with other published prevalence figures, the same definition of obesity, overweight and underweight must be applied across all figures. Prevalence figures that use different references or thresholds cannot be compared directly.

Figure 5: Obesity and overweight thresholds for boys – UK90 and IOTF



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Reader Information

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