## Contents

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction</td>
</tr>
<tr>
<td>2.</td>
<td>Relevance - coverage and content</td>
</tr>
<tr>
<td>3.</td>
<td>Accuracy and reliability</td>
</tr>
<tr>
<td>4.</td>
<td>Timeliness and punctuality</td>
</tr>
<tr>
<td>5.</td>
<td>Coherence and comparability</td>
</tr>
<tr>
<td>6.</td>
<td>Accessibility and clarity</td>
</tr>
<tr>
<td>7.</td>
<td>Confidentiality, transparency and security</td>
</tr>
<tr>
<td>8.</td>
<td>Trade-offs between output quality components</td>
</tr>
<tr>
<td>9.</td>
<td>Assessment of user needs and perceptions</td>
</tr>
<tr>
<td>10.</td>
<td>Performance cost and burden</td>
</tr>
</tbody>
</table>
1. **Introduction**

1.1. The National Child Measurement Programme (NCMP) was introduced in 2005/06 and collects height and weight measurements of children in reception (aged 4–5 years) and year 6 (aged 10–11 years) in state-maintained schools\(^1\) in England. The programme now holds eleven years of reliable\(^2\) data and annually measures over one million children.

1.2. The NCMP provides robust data for the child excess weight indicators in the Public Health Outcomes Framework\(^3\), and is a key element of the Government’s approach to tackling child obesity.

1.3. Public Health England (PHE) has responsibility for national oversight of the programme and local authorities (LAs) have a statutory responsibility to deliver it.

1.4. NHS Digital has responsibility for the collection, validation and dissemination of NCMP data. PHE make the data available via an interactive analysis tool and also carry out some more detailed analyses.

1.5. The national report is accompanied by technical appendices that provide details on:
   i. Data quality (annex A);
   ii. Data collection and validation (annex B);
   iii. How BMI classifications are derived (annex C);
   iv. Guidance on using the data (annex D);
   v. Methodology used for confidence intervals (annex E); and
   vi. Significance testing (annex F).

The report is published on the NHS Digital website at:
http://www.digital.nhs.uk/lifestyles

2. **Relevance - coverage and content**

2.1. NCMP covers children aged 4–5 years and 10–11 years attending mainstream state-maintained schools in England\(^1\).

2.2. For each collection year LAs are assigned a list of mainstream state-maintained schools, within their area, along with associated reception and year 6 headcounts\(^4\).

2.3. The proportion of returned schools and measured children are assessed at the end of the collection to check that coverage falls within acceptable thresholds. All LAs passed the check for the proportion of returned schools. Two LAs failed to meet the participation rate target and are mentioned under the “Data quality issues for 2016/17” in this note.

2.4. Coverage against each data item is also assessed and more details are provided in the following section.

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\(^1\) Local authorities are mandated to collect data from mainstream state-maintained schools. Collection of data from special schools (schools for pupils with special educational needs and pupil referral units) and independent schools is encouraged but data collected these schools is excluded from the national report.

\(^2\) 2006/07 is the first year that the data are considered to be robust due to the low participation in 2005/06.

\(^3\) 2.06ii - Excess weight in 4-5 and 10-11 year olds.

\(^4\) Based on Department for Education school census data.
2.5. Information in the report is presented by the following breakdowns:
   i. Age;
   ii. Sex;
   iii. Geography (region and LA);
   iv. Deprivation;
   v. Rurality;
   vi. ONS area classification; and
   vii. Ethnicity.

3. **Accuracy and reliability**

3.1. The accuracy and reliability of the dataset underpinning the analyses in the report is ensured by a rigorous validation procedure. Further details are provided in Validation of National Child Measurement Programme data.

3.2. As records are submitted, the NCMP system checks that all mandatory data items have been provided and data validation rules have been met.
   - Records with missing data items are rejected.
   - Invalid data items (e.g. incorrect ethnicity codes) are rejected.
   - Unexpected data items (e.g. “extreme” heights) generate warning flags that require LA confirmation.

3.3. The NCMP system provides LAs with real-time data quality indicators throughout the collection period. This enables them to monitor the quality of their data during the collection period so they can take action if necessary.

3.4. The LA’s NCMP Lead is required to sign off these indicators as being within acceptable limits as part of finalising their data at the end of the collection. The data quality thresholds are provided in the validation document mentioned above.

3.5. The performance of LAs against these data quality measures is published in a data quality table (Online table 8) along with the national report. This table serves to highlight publicly any LAs which have poor quality data in relation to their peers to provide an incentive for LAs to take active steps to improve data quality.

3.6. Table A1, in appendix A of the publication, shows the key data quality measures at national level since the first year of robust NCMP data was collected in 2006/07. These data quality measures include indicators around coverage, completeness and accuracy of data entry.

3.7. Since 2006/07, there have been considerable improvements in data quality. In 2016/17 for example, 93 per cent of records included a valid ethnic code compared to 32 per cent in 2006/07\(^5\).

3.8. After the collection deadline, NHS Digital carries out further validation, e.g. comparing data across LAs and over time. NHS Digital contacted a number of LAs to query unexpected findings and, where necessary, requested that data were corrected.

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\(^5\) Missing codes excludes ‘Not Stated’
3.9. The participation rate can particularly affect the accuracy of estimates derived from
the data. For example, if the participation rate is very low in a local authority then the
prevalence estimates for the BMI categories should be treated with caution as those
children measured may not be representative of all children in the LA. The required
participation rate is 85 per cent. Two LAs failed to meet this target and they are
mentioned under the “Data quality issues for 2016/17” in this document.

3.10. In recognition of the effect of natural year to year variation, confidence intervals
are included around the prevalence estimates in the online report tables and these
should be considered when interpreting results. A confidence interval gives an
indication of the sampling error around the estimate calculated and takes into
consideration the sample sizes and the degree of variation in the data. They are used
to determine whether any differences in prevalence figures are likely to be real or due
to natural variation.

3.11. As the sample sizes and participation rates for NCMP are large (1,185,811
records and 95 per cent participation in 2016/17) the 95 per cent confidence intervals
for prevalence estimates at national level are very narrow (indicating a small margin
of potential error). The comparisons that feature in this report have all been tested at
a 95 per cent significance level. Where two figures are described as being different
(e.g. higher/lower or increase/decrease etc.) the result of the test has determined a
statistically significant difference. Further details are provided in appendix F of the
publication.

4. **Timeliness and punctuality**

4.1. The NCMP national report is published annually and has never missed a scheduled
publication date.

4.2. The production time for the report has been reduced each year due to increased
efficiency in production processes and fewer data quality issues as LA understanding
of data requirements improves. This year’s report is being published over two weeks
earlier than last year’s.

4.3. This report is being published on 19 October 2017 and reports on the 2016/17 school
year.

5. **Coherence and comparability**

5.1. The report uses the population monitoring thresholds of the British 1990 Growth
Reference (UK90) to calculate the prevalence of the BMI classifications. This is a
common approach used in England to classify children into different BMI categories.

5.2. Comparisons of overweight and obesity prevalence figures between the NCMP and
other sources can only be made where the other source also uses the population
monitoring thresholds of UK90.

5.3. The Health Survey for England (HSE) also contains prevalence of different BMI
categories. HSE covers all children and is not restricted to those in reception or year

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6 85th and 95th centiles.
6 but as it is based on a much smaller sample the confidence intervals around the estimates are much wider than those presented in this report.


5.5. The report contain links to data published relating to children in Wales, Scotland and Northern Ireland.

6. **Accessibility and clarity**


6.2. The report is accompanied by technical appendices that provide details on methodology and data tables in Excel format.

6.3. In order to meet the Government’s transparency agenda and to facilitate re-use of the data, the data is also been made available as a record level file. However, in order to comply with the NHS Anonymisation Standard and mitigate against an individual being identified, certain fields have been removed and others overwritten with blanks or altered. Further information on how this has been carried out is given within the guidance document which accompanies the record level file. This document contains important information on how the file can and cannot be used in the form of a Q&A section. The 2016/17 record level file will be published in CSV format soon after this report is published.

7. **Confidentiality, transparency and security**

7.1. This publication is subject to an NHS Digital risk assessment prior to issue which is approved by the NHS Digital Statistical Head of Profession. Information is disseminated at a high level of aggregation (lower tier LA level and above).

7.2. For the non-identifiable version of the dataset, some of the data items collected have been removed and others have been altered to compliance with the NHS Anonymisation Standard. This is approved by the NHS Digital Disclosure Panel which is chaired by the NHS Digital Statistical Head of Profession and contains representation from Information Governance specialists and experienced statisticians within NHS Digital.

7.3. For the purposes of maintaining confidentiality, City of London LA has been combined with Hackney LA, and Isles of Scilly LA has been combined with Cornwall LA.

7.4. In addition, primary suppression has been applied to the LA level tables by not showing prevalence rates based on less than or equal to five children. This also leads to secondary suppression by not showing the prevalence rate for another BMI category within that LA and not showing the corresponding prevalence rates for another LA within that region. However this latter stage is not necessary if a
prevalence rate for another LA within the region has already undergone primary suppression.

8. **Trade-offs between output quality components**

8.1. A small number of children move schools during the school year and therefore can be measured more than once depending on when the measurements take place in the schools they have attended. This is a necessary trade-off since LAs have a statutory responsibility to measure children in mainstream state-maintained schools regardless of whether these children have been measured previously or not.

9. **Assessment of user needs and perceptions**

9.1. This report was part of a consultation on all NHS Digital publications in 2016. There were proposals for changes to this report in section A6.

9.2. In response to user feedback gathered from this consultation, the report has now been reformatted with extensive written content being replaced by headline results and associated graphics. These presentation techniques are in line with other reports already being produced by NHS Digital which have received positive feedback from users.

9.3. User feedback is also collected via NHS digital online feedback forms linked to the publication page.

9.4. The 2015/16 report underwent a review managed by the Government Statistical Service (GSS) Good Practice Team where a team of seven GSS colleagues reviewed the report and made suggestions for improvements. The vast majority of these suggested improvements have been implemented in this 2016/17 report.

9.5. Ad hoc requests for NCMP data inform the content of published tables during the design and development stage of the publication each year.

10. **Performance cost and burden**

10.1. The NCMP operates on an “opt out” basis. Local authorities send letters to parents of children eligible to participate in the NCMP. This letter sets out the purposes for which the data will be held and used and provides an opportunity for the parent to say they do not want their child to be measured. Children not opted out by their parents or by themselves are then measured and their measurements and other details are entered into the NCMP collection system.

10.2. The measurement of children's heights and weights, without shoes and coats and in normal, light, indoor clothing, was overseen by healthcare professionals and undertaken in school by trained staff. Public Health England provides guidance to local authorities on how to accurately measure height and weight.

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10.3. Data are provided annually by local authorities and published by NHS Digital. Most local authorities also choose to feedback measurements to parents by generating a letter, using the NCMP collection system, and are encouraged to do so within six weeks of the measurements being taken.

10.4. The cost of providing the data centrally was last measured in 2012 and was estimated to be around £131,000. This was at a time when the data was provided by Primary Care Trusts (PCTs) rather than LAs. However, it should be a reasonable approximation of the current cost to LAs as the collection has changed little since then. The cost for NHS Digital to collect, analyse and disseminate the data was around £200,000 in 2016/17. This includes hosting, maintaining and enhancing the NCMP IT collection system.

11. Data quality issues in 2016/17 collection

11.1. This section provides information on the local authorities who failed post deadline validations carried out by NHS Digital. These validations are fully detailed in the “Post Deadline Validations” section of the guidance document Validation of National Child Measurement Programme data and are done in two stages:

i. Firstly NHS Digital examines the data quality indicators that the LA has signed off as part of the submission process and queries any which do not match the required conditions.

ii. Secondly NHS Digital carries out additional post deadline validations on the record level data.

Stage 1 validation

11.2. LAs failing to meet the required data quality thresholds for stage 1 validation are shaded red in Online table 8 and more detail is provided below. All these issues need to be considered when interpreting NCMP data, particularly at a local level.

11.3. Two LAs failed to meet the 85% target for participation rate. If the missing pupils are not representative of all pupils then this will affect their prevalence estimates for the different BMI categories.

i. Oldham (84.3% in reception)

ii. Peterborough (79.7% in reception)

iii. Haringey originally failed this check due to incorrect school headcount figures but made corrections after the deadline and subsequently passed.

iv. Note that Oldham or Peterborough entered school headcount data for fewer than 10% of their schools and the low participation could therefore be due to inaccurate headcount figures rather than high numbers of children not being measured.

11.4. Wolverhampton exceeded 5% of blank child postcodes (5.5%).
11.5. Three LAs exceeded 30 per cent\(^9\) whole number heights indicating that heights had not been recorded to the required level of accuracy (i.e. a large proportion of measurements were to the nearest cm instead of mm):
   i. Lambeth (47.4%)
   ii. Darlington (33.8%)
   iii. Swindon (30.8%)

11.6. Ten LAs exceeded 25% of blank ethnicities: Plymouth, Havering, Trafford, Wigan and Sunderland all provided no ethnicity data. The following LAs had high proportions of blank ethnicities: Liverpool (99.7%); Bolton (99.1%), Rotherham (94.7%), Coventry (90.1%) and Bristol (56.2%). Oxfordshire originally failed this check but added ethnicity data after the deadline and subsequently now passed.

11.7. The following responses were provided:
   i. Rotherham: “The Local Authority data for upload of the 2016/17 cohort into NCMP, did not have a standalone field for Ethnicity code. Therefore, the upload of this field into NCMP was not possible. Future submissions should have this Ethnicity data, as it is anticipated that this anomaly will be resolved in time for the 2017/18 collections and submission.”
   ii. Sunderland: “The bulk data received from the schools team for upload into the NCMP did not include the ethnicity data field for 2016/17. This was due to an oversight, as it has been included previously. Internal processes have been reviewed and going forward this data should again be routinely provided.”
   iii. Liverpool: “I have raised this with our Children’s Services department and our provider who administers the NCMP programme, and this field will be included in the 2017/18 return.”

11.8. 31 LAs exceeded 25% of blank NHS numbers. Of these 29 exceeded 95% blank NHS numbers. These can be seen shaded red in Online table 8 (column P). Failing to provide NHS number will make it harder to match year 6 and reception year measurements for the individual child.

Stage 2 validation

11.9. Four LAs had a number of children measured which was more than 10% different to 2015/16:
   i. St. Helens (14.7% more records in year 6)
   ii. Nottingham (14.4% more records in year 6)
   iii. Brighton (10.4% more records in year 6) and provided the following response: “Last year we saw a drop in the number of pupils measured due to the migration of data from the previous Child Health System to the new System 1, and so we expected to see an increase in the numbers recorded

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\(^9\) Assuming that height is distributed equally by mm, 10 per cent of entered heights would be expected to be whole numbers (e.g. 145.0). High proportions of whole numbers can indicate that measurements have not been taken to the required level of accuracy (1 decimal place).
this year. Furthermore changes in the reporting system have streamlined the reporting process and again we expected this to show an improvement. When comparing this year’s figures to 2014/15 the number of Y6 pupils measured has increased by 5%, which takes into account System 1 having been in place for the entire recording period and the improvements we have made to our reporting process.

iv. Northamptonshire (11.2% fewer records in reception)

v. Cumbria originally failed this check but made corrections by removing duplicate records and subsequently passed.

11.10. Five LAs had a change in a BMI classification prevalence exceeding five percentage points compared to the equivalent 2015/16 BMI classification prevalence. Note these changes are not necessarily due to erroneous data and in some cases could point to success in tackling obesity issues. They have, however, been highlighted due to the relatively large change:

i. Brent (healthy weight decreased by 6.5 percentage points in reception)

ii. Blackpool (healthy weight increased by 6.0 percentage points in year 6)

iii. Barnsley (overweight decreased by 5.3 percentage points in reception and healthy weight increased by 5.9 percentage points in reception)

iv. Rutland (obese decreased by 5.3 percentage points in year 6 and healthy weight increased by 5.4 percentage points in year 6)

v. Reading (healthy weight increased by 5.1 percentage points in year 6) and provided the following response: “received “nil” comments from school nursing team”.

11.11. Slough LA had a change in the proportion of children in one ethnic group, compared to 2015/16, exceeding 20 percentage points which put their proportion for this ethnic group in the top five in NCMP 2016/17 (46.1% increase in the Asian group). Since Slough did not submit ethnicity data in 2015/16, this check was just to verify the high proportion in the Asian group. Slough looked into this and confirmed this figure as being correct.

11.12. Three LAs had schools with a proportion of extreme measurements exceeding 10%:

i. Central Bedfordshire (11.1% extreme weights)

ii. Derbyshire (10.3% extreme BMI). Derbyshire looked into this and provided the following response: “I have verified our measurements with the relevant School Nursing Team and they are correct”.

iii. Southwark (10.3% extreme heights)

11.13. Four LAs had three or more extreme child to school distances (defined as more than 60km) within one school: Hampshire, Kirklees, Salford and Surrey. Salford and Surrey confirmed that their data is correct. Manchester originally failed this check but corrected some child postcodes and subsequently passed.
Other notes

11.14. Peterborough and Newham did not submit until after the deadline.

11.15. Windsor and Maidenhead did not finalise data by the deadline and therefore had not signed off their data quality indicators.

11.16. The following LAs requested access to the system post deadline to make late changes:
   i. Enfield (added data for one school).
   ii. Havering (updated school headcounts).
   iii. Shropshire (updated school headcounts).
   iv. Wolverhampton (updated school headcounts).
   v. Southampton (removed duplicate records).
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www.digital.nhs.uk
0300 303 5678
enquiries@nhsdigital.nhs.uk

@nhsdigital

ISBN 978-1-78734-081-7

This publication may be requested in large print or other formats.

Published by NHS Digital, part of the Government Statistical Service

NHS Digital is the trading name of the Health and Social Care Information Centre.

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