2023 Maternity Survey

Quality and Methodology Report

NHS Patient Survey Programme

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Contents

Introduction

The NHS Patient Survey Programme (NPSP) was initiated in 2002 by the Department of Health and is now overseen by the Care Quality Commission (CQC), the independent regulator of health and social care in England. The 2023 Maternity Survey was coordinated by the Coordination Centre for Mixed Methods (CCMM) based at Ipsos.

The Maternity Survey is completed using a 'push to web' mixed method approach. This means that at the start of fieldwork, maternity service users were only offered the option of completing the survey online. Later in fieldwork, those who had not yet participated were provided with a paper questionnaire. In addition to postal invitations and reminders, service users also received text message (SMS) reminders containing a direct link to the online survey. This year, a sample boost was introduced to increase responses from individuals from ethnic minority backgrounds. You can read more about the scoping work behind the booster and the methodology in section four of the Survey Development Report.

The 2023 Maternity Survey included all eligible maternity service users who delivered their baby or babies during February 2023 at a participating NHS trust in England. Additionally, all eligible maternity service users from ethnic minority backgrounds who gave birth in January or March 2023 from NHS trusts participating in the booster were included. Full details on the eligibility criteria for the sample can be found in the Sampling Instructions. In total, 121 NHS trusts took part in the 2023 survey, with 25,515 questionnaires being successfully returned completed, an adjusted response rate of 41%.[1]

This report provides detailed information on key quality and methodological issues relating to the 2023 Maternity Survey. It covers the implementation and analysis of the survey, as well as the quality of the data and any points that should be noted when using the outputs. More detail on the development of the survey and errors made during the sampling process can also be found in the Survey Development Report and Sampling Errors Report. An overview of CQC's approach to quality within the NPSP is available in the NHS Patient Survey Programme: Quality Statement document.

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[1] The adjusted response rate of 41% reflects the whole sample, including the core census sample and the booster sample.

Survey development

Survey design and implementation

The 2023 Maternity Survey methodology incorporates principles of best practice to help maximise response rates and ensure good-quality design. These include:

- Cognitive testing of survey questions with recent service users to ensure their relevance and clarity.

- Use of best-practice principles in the design of invitation and reminder letters such as using a clear call to action in reminders and emphasising how the research will be used to improve services.

- Reassurances of anonymity and confidentiality in all service user communications.

- Use of multimode contact across invitation and reminders (letter and SMS).

- Provision of a choice of completion modes (online, paper and telephone).

- Sending up to two SMS messages and two letter reminders to service users who have not responded.

- A long fieldwork period to encourage response from less-heard groups, such as minority ethnic groups (13 weeks for 2023 Maternity Survey).

- A Freephone language line providing translation services.

- Provision of the questionnaire in accessible formats (Braille, Easy Read, large print, 9 languages in addition to English, telephone assisted completes including additional languages, and a screen-reader compatible online questionnaire).

As with all surveys in the programme, an external advisory group was consulted to ensure that a range of internal and external stakeholders were given the opportunity to provide input during the survey development phase. The advisory group included representatives from CQC, NHS England, Birthrights, the Ethnic Minorities Service User Steering Group, the National Perinatal Epidemiology Unit (NPEU), as well as several trusts and recent users of maternity services.

Alongside routine processes to ensure the quality of the survey design, additional steps were taken for the 2023 Maternity Survey due to this year's focus on health inequalities. The questionnaire and sampling parameters were reviewed to maximise response rate from service users from ethnic minority backgrounds and ensure that the questions reflect

their experiences. The latter was addressed by conducting additional scoping interviews with recent maternity service users from a range of ethnic backgrounds.

Mixed-mode approach

Following a successful implementation of a mixed-mode approach in 2021, the same approach was adopted for the 2022 and 2023 Maternity Survey. The change was part of the larger strategic direction for the NPSP, which sets out the CQC's ambitions to create a digital method of survey delivery. A mixed-mode approach includes sending invitation letters to service users' home addresses, offering the option of completing the survey online. Later reminder letters provide service users with a paper questionnaire.

The use of self-completion methods aims to reduce the effects of social desirability bias, which can arise when people give feedback either directly to staff, or while on trust premises. Furthermore, busy staff may not have the time to distribute questionnaires to all service users in a consistent manner.

The use of an online questionnaire also has a positive impact on data quality. It is possible to introduce validation rules in an online questionnaire to ensure participants follow routing correctly and do not select incompatible answer codes. Whereas in paper questionnaires, responses must be cleaned manually. This means online questionnaires lead to higher data quality, and higher response rates (as less data needs to be removed).

Changes to materials

Ahead of the 2023 Maternity Survey, CCMM reviewed the survey to ensure the content of the questionnaire, fieldwork materials and internal processes were in line with current policy and practice. The Survey Development Report outlines the methodology and results of this consultation process. The changes are summarised in Table 1.

Table 1: Overview of 2023 Maternity Survey development

Strand	Summary of development
Methodology	▪ Using a mixed method approach. ▪ Shortened fieldwork length from 16 to 13 weeks.
Sampling	▪ Removal of the COVID-19 treatment variable. ▪ Introduction of the booster sample.
Materials	▪ Minor change to wording of the mail-out letter.
Questionnaire	▪ Questions and response codes reviewed to ensure the content remained in line with current policy and practice.

	▪ Questions and response codes reviewed with the aim of obtaining better understanding of health inequalities and disparities of care within maternity services.
Accessibility	▪ No changes to note.
Survey documentation changes (due to the Booster sample)	▪ Sample Construction Form - addition of booster sample variable column. ▪ Sample Declaration Form - additional sample checks and information on total number of deliveries (January/ March). ▪ Sampling Instructions – guidance on how to draw the booster sample. ▪ Survey Handbook – information on the booster sample and changes to the survey process.

All surveys in the NPSP, including the Maternity Survey, follow a strict methodology. This is detailed in the Survey Handbook and Sampling Instructions which all in-house trusts and approved contractors must follow.[2,3]

Deviation from the survey methodology, depending on severity, may result in data being excluded from published results. Any decision to exclude data is made by the Research Team at CQC in conjunction with the CCMM, based on discussion with and evidence provided by the trust(s). No trusts were excluded from the 2023 Maternity Survey publication.

Questionnaire changes

In order to update the questionnaire ahead of the 2023 Maternity Survey, CCMM analysed the 2022 survey results, carried out scoping interviews, consulted key stakeholders and cognitively tested the proposed changes with maternity service users who had recently given birth. As a result, seven questions were deleted, seven new questions were added, and fourteen existing questions were amended. For more information about the amendments made to the 2023 questionnaire, please see the Survey Development Report.

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[2] These are companies that have been approved by the CQC during a competitive tendering process to carry out surveys in the NPSP on behalf of trusts. For more information please see the NHS Surveys website.

[3] These are trusts who have opted to carry out the survey themselves. In 2023 one trust conducted the survey in-house.

Sampling and Fieldwork

Sampling

All trusts that provide maternity services and have a sufficient number of births were eligible to take part in the survey.[4] In total, 121 trusts participated in the 2023 survey.

Individuals were eligible for the survey if they had a live birth during February 2023, were aged 16 years or over at the time of delivery and gave birth under the care of an NHS trust (including home births). These eligible deliveries in February form the 'core', census sample for the survey. Trusts with fewer than 300 eligible deliveries in February were required to also include individuals who gave birth in January 2023, beginning with deliveries on 31st January and working backwards until either a core sample size of 300 was achieved or January 1st was reached. Trusts which were able to compile their core sample from February were eligible to take part in the booster, introduced for this iteration of the survey. This meant, that they had to additionally sample all eligible births from ethnic minority service users from January and March 2023.

Fieldwork for the survey (the time during which the online survey was available and postal questionnaires sent out and returned) took place between May and August 2023. This approach allowed for the six-week postnatal period to have concluded by the time fieldwork commenced, which is important because several questions relate to postnatal care. The length of fieldwork varied from one trust to another, as fieldwork for each trust only started once the trust's sample had been approved. Across all participating trusts, the fieldwork length varied from 7 to 13 weeks. Further information about the sampling process and full details of the inclusion and exclusion criteria are available in the Sampling Instructions.

Attribution data

Some individuals in the sample may not have received their antenatal and/or postnatal care from the trust at which they gave birth. This could be due to them moving home or having to travel for more specialist care. Therefore, in addition to a sample file, trusts are also asked to submit an attribution file to CCMM which indicates if antenatal and/or postnatal care was provided by the trust. It is compiled using electronic records where possible, or by matching residential postcodes against the trust's geographical boundaries. The aim of collecting this information is to improve the accuracy with which survey responses are attributed to a trust.

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[4] Trusts with fewer than 300 eligible births across January and February were able to take part but were informed that results might be suppressed if there were fewer than 30 responses at any question.

Attribution files are submitted during fieldwork, after the sample file has been submitted and approved. This is mainly to avoid delays in the sample approval process, and because postnatal care information may not yet be available at the time the sample is drawn. Submitting attribution data is optional, though without it antenatal and postnatal benchmarked results cannot be produced for the trust in question. In 2023, all of the 121 participating trusts submitted attribution data.

Sampling size

The Maternity Survey's minimum sample size of 300 was set to ensure that samples would be large enough to remain robust while still including trusts with smaller populations. Overall, this would generate a minimum sample size of 36,300 across the 121 participating trusts across England.

Larger samples are associated with greater confidence in results, smaller sampling error, and results that are more representative of the target population's true value. Assuming the core sample month of February is not atypical, the combined sample can be considered representative of all eligible maternity service users in England.

Trust mergers

The results for England are based on an average of the pooled results from all participating trusts. Changes in the number of participating trusts have a very small effect on the results for England. However, when reporting individual trust results it would be inaccurate to display historical data if a trust has undergone a merger since the previous survey. Mergers and acquisitions make the trust's results incomparable with previous years.

There has been one trust merger since the 2022 Maternity survey:

- Royal Devon and Exeter NHS Foundation Trust acquired Northern Devon Healthcare NHS Trust, forming Royal Devon University Healthcare NHS Foundation Trust. This change was legally effective on 1st April 2022.

The above trust did not receive historical comparisons in 2023.

Errors in drawing samples

The chances of sampling mistakes being made by trusts (for example, excluding certain eligible service users) are minimised by multi-stage sample checks:

- Firstly, trusts are provided with standard Sampling Instructions to follow when drawing and reviewing their sample.

- Trusts that appoint a contractor to undertake the survey on their behalf will then have their sample reviewed by their contractor.

- A Sample Declaration Form is completed by trusts prior to submitting their sample to CCMM. This is used to help further reduce sampling errors. The form outlines a number of required checks to ensure that the sampling instructions have been followed. It also helps to confirm that trusts have maintained patient confidentiality by taking the steps laid out in the sampling instructions, such as only sharing the required variables. Approval of this form by the trust's Caldicott Guardian prior to sample submission not only fulfils the trust's requirements under the General Data Protection Regulation (the data protection legislation which the 2023 survey was subject to), but also reduces the potential for breaches to the support received under Section 251 of the NHS Act 2006.

- Contractors and in-house trusts then submit their anonymised samples via a business engine using an API, which automatically identifies any major and minor errors. If major errors are present in the sample, the sample is rejected by the API; if minor errors are detected, the sample is allowed to progress through, but the errors are flagged to both the trust or contractor, and CCMM.

- Finally, all anonymised samples are checked by CCMM.

During CCMM's sample checking process, several items were checked against the previous years' submission to help ascertain whether a trust has followed the sampling instructions.[5] These include comparisons of population size, year of birth, date and time of delivery, gender, ethnicity, actual delivery place, site code and number of babies per birth. If there were any concerning discrepancies, queries were raised with the contractor or in-house trust as appropriate. In keeping with the 2022 iteration of the survey, CCMM checked the mobile phone number indicator, querying trusts when the proportion of cases coded positively was below 50%. CCMM also checked the variables relating to maternity care setting, querying any erroneous codes or missing data.

Errors identified from these checks are classified as either minor or major. A minor error is defined as a mistake that will not affect the usage or quality of the survey response data. One example of a minor error is applying patient record numbers in an incorrect format. Minor errors can be rectified by the trust, contractor or CCMM as appropriate, without the need for the sample to be redrawn or service users to be added or replaced.

A major error is defined as an error that will affect the usage or quality of the response data. An example of this type of error is exclusion of home birth service users, which

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[5] For the 2023 survey this meant a comparison against 2022

potentially creates bias in the sample. If a major error is spotted during sample checking, the trust is required to redraw their sample or add/remove service users as appropriate.

A Sampling Errors Report is produced each year and is published on the NHS Surveys website. Trusts and contractors are encouraged to review this report to minimise the recurrence of previously detected errors. As detailed in the 2023 report there were no major errors and 17 minor errors identified in samples submitted to the CCMM for this survey.

Historical comparisons and excluded trusts

Part of the CCMM's sample checking process involves comparing a trust's sample data to their samples from previous iterations of the survey and investigating any discrepancies. This can sometimes reveal errors in samples from previous years, which only become apparent when comparing with the current year's sample.[6] If these are classified as major errors, historical comparisons between the current and previous years may not be possible for the trust in question. In 2023, two trusts were found to have made historical errors in their attribution data. CQC decided against removing historical data to safeguard trends and take other steps to reduce the historical errors' impact on the results. More detail on these errors can be found in the Sampling Errors Report.

CCMM also carries out comparative analysis to ensure that trusts' results can be compared with its own results from previous years. To determine this, CCMM analyses previous decisions on historical comparability and organisational changes (for example trust mergers and closures), since 2013. The outcome of this analysis indicated that, with the exception of the one trust that has undergone a merger, no trusts should be removed from the trust benchmarking.

Fieldwork and fieldwork problems

Fieldwork for the 2023 Maternity Survey took place over 13 weeks between May and August 2023. Prior to fieldwork, CCMM conducted a number of standard checks to ensure that the data provided by contractors and in-house trusts was correct:

- Prior to printing, electronic and hardcopies of survey materials from contractors and in-house trusts are reviewed to ensure personalisation, questions, response options, routing and instructions are as they should be.

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[6] Whilst the coordination centre undertakes robust checks on the sample, it is not always possible to identify all sampling errors from the sample declaration form and anonymised sample file. Therefore, some errors are identified retrospectively when checking the current year's data. It remains the responsibility of trusts to ensure samples are drawn correctly and that all inclusion and exclusion criteria have been correctly applied.

- Individuals from the CCMM team are included in the sample for the live mailings to ensure there are no differences between the versions signed off and the versions of materials sent to service users.

- The online survey is extensively checked to ensure it matches the paper version, with questions, routing, response options and instructions being checked for consistency.

Every week during fieldwork, approved contractors and in-house trusts sent the CCMM a weekly monitoring report, summarising the outcome status by use of the following codes:

- Outcome 1 = Returned completed questionnaire

- Outcome 2 = Undelivered / moved house

- Outcome 3 = Mother or baby deceased after first mailing (either reported from DBS checks after mailing one or reported via helpline)

- Outcome 4 = Too ill / opt out

- Outcome 5 = Ineligible

- Outcome 6 = Unknown – response not received

- Outcome 7 = Mother or baby deceased before the start of fieldwork (DBS check ahead of the first mailing)

From the above outcome codes, the adjusted response rate was calculated by dividing all service users who returned a completed questionnaire (Outcome 1) by all service users that potentially received the questionnaire and were potentially able to respond:

$$Adjusted\ response\ rate = \frac{Outcome\ 1}{\sum(Outcome\ 1, 4, 5\ and\ 6)}$$

Weekly monitoring allows the CCMM to track the progress of the survey throughout fieldwork and identify and assist with any potential problems that arise. This monitoring is largely interpreted in its own right as weekly response rates and other metrics are not comparable across years; they depend on the number of trusts who go into field at any given point, their respective size and geography, and length of fieldwork.

Data analysis and reporting

Data cleaning and editing

At the end of fieldwork, uncleaned survey respondent data from each participating trust are submitted to the CCMM for processing and cleaning. This ensures data are cleaned consistently. Data Cleaning Instructions covering the cleaning process undertaken by the

CCMM are published online. In-house trusts and contractors use these instructions to understand and replicate the CCMM's data cleaning processes. Data is submitted in Excel via a secure FTP site. An abridged version of the cleaned respondent dataset is available for secondary data users at the UK Data Service (UKDS).

There are a number of standard checks undertaken on the data. These include checks to ensure that the data provided from contractors and in-house trusts is correct such as:

- Checking to ensure data is provided for all service users in the sample, whether or not they have taken part in the survey and covers all expected variables.

- Checking to ensure there are no out-of-range values in either sample or response data, and all response coding falls within the expected range of response options for a question.

- Checking to ensure the sample variables match the final approved sample data, to ensure data has not been missorted, or that incorrect sample data has not been included.

Once the data submitted has been reviewed, further cleaning takes place to make sure that data from respondents matches the agreed data validation rules. This includes:

- Removing duplicate responses where a participant has responded more than once (e.g., completing the online survey and the paper questionnaire). Where this has happened, priority is given to the more complete response, then the online response and finally the response received first.

- Ensuring routing has been followed correctly (i.e., participants have not answered a question that does not apply to them). Where a participant has provided an answer to a question that did not apply to them, this answer is removed and set to missing. If they have not answered the filter question, then the filter question is also set to missing. The proportion of responses cleaned in this way for the Maternity Survey 2023 was low, ranging from 0% to 4.5%.

- Verifying that single and multiple response questions have been coded correctly. Where a participant has provided more than one answer to a single response question or has provided incompatible responses to a multiple response question (e.g., both "Yes" and "No"), then these answers are also cleaned and set to missing.

- Checking only eligible service users were included in the survey (for more details on eligibility in the final data, please see the Data Cleaning Guidance).

The final dataset is also checked to ensure the structure includes all the data required and to make sure variable, question and response option labelling matches the questionnaire.

For questions that have fewer than 30 responses at trust level after cleaning, data are suppressed. This procedure of data suppression is implemented across the NPSP to protect against respondents potentially being identified and because the confidence interval around a trust's question score would be too large to be meaningful. Demographic and proxy response question items (response data) are excluded from suppression, in line with other surveys on the national programme.

National data and statistical release

The national data output is provided as an .ods file. Each question in the questionnaire is presented in a separate tab, alongside data from 2013-2022, where available. The number and percentage of respondents who ticked each response option, and the total number of respondents who answered the question is shown. A year will not be present if the question from that year is not comparable to 2023.

For questions that are comparable across survey years, comparisons were made using z-tests to determine whether differences between 2022 and 2023 are statistically significant. This allows trusts to see if they have made meaningful improvements between survey years.

For evaluative questions with at least 5 years of data (2018-2023), line charts show the overall pattern of data over time. In addition, trend analysis is conducted to identify significant change over the last five data points. A generalized linear model (GzLM) is used to fit a binary logistic regression model, using a 95% confidence level. The regression model estimates the effect of the independent variable (survey year) on the dependent variable (the most positive – "top box" – response option for that question). A negative coefficient indicates a downward trend by survey year, while a positive coefficient indicates an upward trend by survey year. Where a question has data prior to 2018, this is not included within the analysis, though it is shown in the time-series charts, with earlier timepoints marked by a broken trend line.

The data is weighted to control the influence of individual trusts' response rates on the England-level average. This prevents trusts with a large number of responses from having an undue influence on the England averages.[7]

For each survey, a statistical release is published, providing full descriptive analysis of England-level results. In the statistical release for the 2023 survey, results are compared against previous survey years and a multi-variate analysis of sub-groups is conducted to

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[7] More information on the weighting approach applied to the data can be found in the Addressing potential non-response bias in the survey results section of this report.

assess the experience of care for different demographic sub-populations (as described below). The statistical release is published on the CQC website.

Analysing service user experience by sub-group

The statistical release includes additional analysis to compare how different groups of maternity services users rated their experience using a mixed effects model. This analysis allows the data user to explore how experiences are associated with demographic and care characteristics, highlighting inequalities in care experiences.

The subgroup analysis compares the average predicted probability of different subgroups of people answering positively to individual survey questions, controlling for other characteristics. The analysis can suggest which groups are more and less likely to select the most positive answers to survey questions.

For the 2023 survey, the following sub-groups based on demographic and care characteristics were used to understand differences in care experiences:

- Age
- Parity
- Type of delivery
- Gestation
- Ethnicity
- Religion
- Sexual orientation
- Long term health condition (conditions and Yes/ No)
- Pregnancy-related condition (conditions and Yes/No)
- Index of Multiple Deprivation decile
- Gender identity
- Whether English was the participant's main language
- Frequency of contact with same midwife during antenatal care
- Same midwife across antenatal care and labour and birth
- Frequency of contact with same midwife during postnatal care.

The questions and themes against which the above sub-groups were compared are listed below. Where an individual question was used, the analysis examined the likelihood of a sub-group selecting the most positive response. Where multiple questions were combined into a theme, the analysis examined the likelihood of a sub-group selecting the most positive response to all questions included in the theme. Not all sub-groups were included in some themes. For example, the subgroups denoting type of delivery were only accounted for in themes that included questions about labour, birth, or the postnatal period.

For the 2023 iteration of the survey, differences in experiences for the groups selected above were examined in 31 different care areas. Where questions measure similar area of care, they have been grouped into a theme. Others have been analysed separately.

Themes:

- Communication – intelligibility (B13, C15)
- Communication – quality (B8, B9)
- Experience of induction (C4, C5, C6)
- Information in hospital (C19 and D4)
- Mental Health – Antenatal (B10 and B11)
- Mental Health – Postnatal (F11, F12, F13)
- Pain management (C8 and D7)
- Respect & Dignity (B17 and C17)
- Kindness, understanding, compassion (C21, D5)

Individual questions:

- B2. Roughly how many weeks pregnant were you when you first saw or spoke to this health professional about your pregnancy care?
- F8. Did the midwife or midwifery team that you saw or spoke to take your personal circumstances into account when giving you advice? (Postnatal care)
- F2. If you contacted a midwifery or health visiting team, were you given the help you needed?
- D3. If you needed attention while you were in hospital after the birth, were you able to get a member of staff to help you when you needed it?
- C14. During labour and birth, were you able to get a member of staff to help you when you needed it?
- F7. Did you feel that the midwife or midwifery team that you saw or spoke to always listened to you?
- B16. Did you have confidence and trust in the staff caring for you during your antenatal care?
- C18. Did you have confidence and trust in the staff caring for you during your labour and birth?
- F9. Did you have confidence and trust in the midwife or midwifery team you saw or spoke to after going home?
- B7. During your antenatal check-ups, did your midwives or doctor appear to be aware of your medical history?
- C20. During your labour and birth, did your midwives or doctor appear to be aware of your medical history?

- F6. Did the midwife or midwifery team that you saw or spoke to appear to be aware of the medical history of you and your baby?
- E2. Were your decisions about how you wanted to feed your baby respected by midwives?
- F15. In the six weeks after the birth of your baby did you receive help and advice from a midwife or health visitor about feeding your baby?
- E3. Did you feel that midwives and other health professionals gave you active support and encouragement about feeding your baby?
- B14. Thinking about your antenatal care, were you involved in decisions about your care?
- C16. Thinking about your care during labour and birth, were you involved in decisions about your care?
- F1. Thinking about your postnatal care, were you involved in decisions about your care?
- C12. Were you (and / or your partner or a companion) left alone by midwives or doctors at a time when it worried you?
- B18. If you raised a concern during your antenatal care, did you feel that it was taken seriously?
- C13. If you raised a concern during labour and birth, did you feel that it was taken seriously?
- F21. At any point during your maternity care journey, did you consider making a complaint about the care you received?

Trust results

Analysis is conducted at a trust level to allow comparisons to be drawn between the performance of different trusts for individual questions in the survey. The method used for this is 'expected range' analysis. The results of this analysis are published in benchmark reports for each individual trust, available on the NHS Surveys website.

After redevelopment work in 2021, the report templates for the Maternity Survey 2023 remain largely unchanged, with minor adjustments made in line with new developments in the questionnaire and sampling. The report is split into five main sections:

- **Background and methodology** – presenting information about the survey programme, how the survey is run, and how to interpret the results.

- **Headline results** – includes information on the trust population, an overview of the benchmarking results, and the trust's top and bottom scores as compared to the trust average.

- **Benchmarking** – shows how each trust scored for each evaluative question in the survey, compared with other trusts that took part using the 'expected range' analysis technique. This shows the range of scores achieved and allows trusts to compare themselves with the other organisations that took part in the survey.

- **Trends over time** – includes the trust mean score for each evaluative question in the survey since at least the 2018 survey, if results are available for each survey since, and are comparable. Historical results also include the national mean score by year, allowing trusts to see whether their performance is in line with the national trend or not.

  Where possible, significance testing between 2022 and 2023 for all questions is carried out. If comparable results are not available for each survey since at least the 2018 survey, then just the results for 2022 and 2023 are compared and significance tested. Trusts are then able to see whether they have made meaningful improvements between survey years or not.

- **Appendix** – includes additional data for each trust, further information on the survey methodology, and information on the interpretation of graphs in the report.

For questions evaluating care (scored questions), each response option is assigned a score (from 0-10). Composite section scores are produced by grouping similar questions together and taking the average. Demographic questions, non-specific responses, some routing questions and other questions that do not evaluate a trust's performance are not scored. The scoring for each question can be found in the scored version of the questionnaire. A trust's question score is calculated by taking the weighted average of responses for the trust, for the given question.[8]

In the 'benchmarking' section of the trust reports, a chart is produced for each scored question, unless a question has fewer than 30 responses.[9] These charts show the overall range of trusts' scores for a question, broken down into seven parts. A black diamond indicates the trust score for each question. The average score for all trusts is also indicated by the blue line; this is the arithmetic mean of all trusts' scores after weighting is applied. Each chart shows how the score for a trust compares to the range of scores achieved by other trusts taking part in the survey:

- If the black diamond lies in the dark green section of the graph, its result is 'much better than expected'.

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[8] Weighting the responses adjusts for variation between trusts in age and parity

[9] If a question has fewer than 30 responses for a given trust, the confidence interval around the trust's question score is considered too large to be meaningful and results are not reported. Additionally, for any such question, the trust is excluded from England averages and is not given a section score.

- If the black diamond lies in the mid-green section of the graph, its result is 'better than expected'.

- If the black diamond lies in the light green section of the graph, its result is 'somewhat better than expected'.

- If the black diamond lies in the grey section of the graph, its result is 'about the same'.

- If the black diamond lies in the yellow section of the graph, its result is 'somewhat worse than expected'.

- If the black diamond lies in the light orange section of the graph, its result is 'worse than expected'.

- If the black diamond lies in the dark orange section of the graph, its result is 'much worse than expected'.

An example of one of these charts is shown in Figure 1 below:

Figure 1: Example benchmarking chart

The 'benchmarking' section also includes tables that show the number of responses, the trust score, the average score for all trusts and the range of scores for all trusts.

Trend analysis

Charts showing the historical trends are presented when there are at least five data points available to plot on the chart. Five data points may not be available due to:
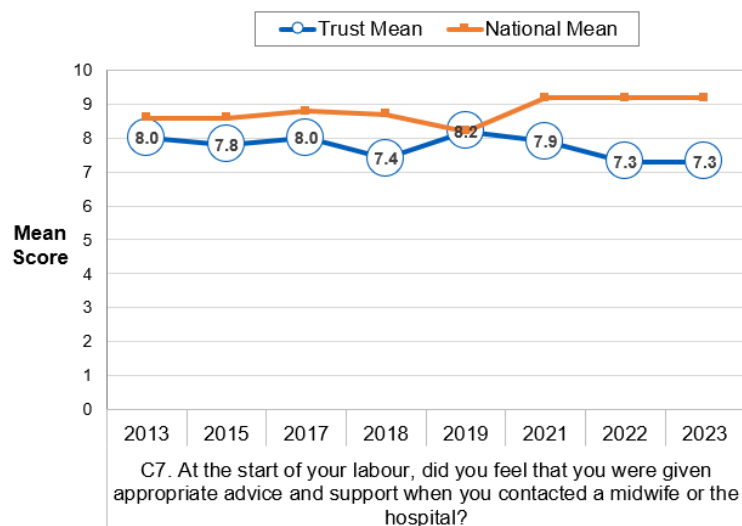
- changes to the questionnaire since 2018 which mean that a question is no longer comparable over time,

- organisational changes, such as trust mergers, which impact comparability of results over time; or,

- historical errors with sampling or issues with fieldwork which impact comparability.

Where data since at least 2018 are not available, significance test tables are displayed for each historically comparable scored question. Significance test tables compare 2022 performance to 2023 performance.

Line charts have been used for trust trends rather than control charts because using control charts at a trust level leads to inconsistencies in the performance limits for each trust. Limits for the control charts are calculated based on past performance. Therefore, those trusts that have worse performance historically end up having lower performance limits set. Conversely, higher performing trusts end up having higher performance limits set. It was considered that this messaging could lead to confusion amongst trusts.

An example of one of the line charts used in the trust benchmark reports is shown below:

Figure 2: Trust historical trends: Line chart example

C7. At the start of your labour, did you feel that you were given appropriate advice and support when you contacted a midwife or the hospital?

Statistically significant differences in the trust mean score between 2022 and 2023 are highlighted. These are carried out using a two-sample t-test. Where a change in results is shown as 'significant', this indicates that this change is not due to random chance but is likely due to some factor at the trust. Significant increases are indicated with a filled green circle, and significant decreases are in red.

Where comparable data is not available, statistical significance test tables are provided instead of line charts. Statistically significant changes in trust scores between 2022 and 2023 are shown in the last column to the right 'Change from 2022 survey'. Significant increases are indicated with a green arrow pointing up, and significant decreases are indicated with a red arrow pointing down, as shown in Figure 3 below.

Figure 3: Trust historical trend: significance test table example

		2023 Trust Score	2022 Trust Score	No. of respondents in 2023	Change from 2022 survey
Staff caring for you					
C19.	After your baby was born, did you have the opportunity to ask questions about your labour and the birth?	7.8	7.8	318	▼
C20.	During your labour and birth, did your midwives or doctor appear to be aware of your medical history?	5.9	5.9	318	

▼▲   Significant difference between 2023 and 2022

Blank   No Significant difference between 2023 and 2022

Quality assurance

Approved contractor / in-house trust checks

Each approved contractor and in-house trust undertake checks at key stages of the survey, especially during the sample preparation and data cleaning stages. These checks help to identify any obvious errors in the sample and response data, such as inclusion of ineligible service users or incorrect coding. Validation checks are also undertaken on mailing information to determine whether the service user's address is complete enough for a postal version of the survey to be sent. Contractors and in-house trusts also have internal quality assurance guidelines they follow during the survey.

CCMM checks

There are several quality assurance checks undertaken by the CCMM at various stages of the survey:

- **Sampling**: The CCMM review both sample declaration forms and samples submitted by contractors or in-house trusts. These checks help to determine whether there are any errors in the sample file, such as the exclusion of eligible service users. CCMM approval of the sample declaration form is required before a sample can be submitted, similarly CCMM approval of a sample is required before fieldwork can begin.

- **Survey materials**: The CCMM checks hard copies of the covering letters and the postal questionnaires used by in-house trusts and contractors. This can help to identify whether any errors have been introduced when the survey documents were reproduced. Errors are usually typographical in nature, such as misspelt or missing words, improper use of emboldening (which is normally used to highlight key words for cognition reasons), and misworded or missing response options. If an error is identified that would compromise the collected data, the CCMM asks the contractor or in-house trust to rectify the error and resubmit their hard copies.

- **Online survey**: The CCMM and CQC conduct checks of the online surveys offered by contractors across all trusts and offered by the in-house trust. This includes checks for routing, question text, response codes, consistency across the different online survey platforms, availability of accessible options and translations.

- **Live mailings**: In addition to signing off hard copies of the survey materials in advance of invitations being sent, the CCMM are also included in live mailings to ensure there are no differences between the versions signed off and the version of materials sent to service users. If an error is found, CCMM undertakes investigatory analysis to determine the impact of the error on the response data such as identifying any response bias with regards to demography or patterns of response (for example, certain groups responding differently to questions because of the errors introduced). Data for the question containing the error may then be excluded from the final dataset and outputs for the affected trusts. There have been no such exclusions for the 2023 survey.

- **Fieldwork monitoring**: During fieldwork the CCMM monitors the weekly progress of the mailings and response rates both at England-level and trust-level. This is important because low response rates can limit the representativeness, and therefore usability, of the data. In addition, the survey needs to be administered using a standardised approach with a set number of mailings during fieldwork and a set deadline for receipt of questionnaires. If any concerns about the progress of the survey are identified, the CCMM will investigate the reasons for this.

- **Analysis and Reporting**: The final set of quality assurance checks undertaken by the CCMM focuses on the response data, and all subsequent analysis and reporting outputs. Each check of the respondent data, as outlined in the section above on data cleaning and editing, is carried out by a member of the CCMM team, which is then reviewed and signed off by a separate senior member of the CCMM team. Data processing and analysis syntax is reviewed as well as the outputs. All analysis outputs based on the data (such as the trust-level results and England-level reporting) go through this two-stage quality assurance process. Once the output has been signed off by the CCMM, it is then sent for further quality assurance by CQC.

Care Quality Commission (CQC) checks

Prior to finalising any materials which are to be used in implementing the Maternity Survey (e.g., paper questionnaire, cover letters, sampling instructions, online survey), the Research Team at CQC conducts quality assurance to ensure these are free of error. Checks include a two-stage process whereby a Researcher and Senior Researcher both independently review materials against the project brief.

Extensive quality assurance is conducted by CQC during the reporting stage. The approach taken to quality assurance by CQC is a combination of 'double running' i.e., recreating outputs produced by CCMM in their entirety as well as additional checks designed to supplement the quality assurance conducted by CCMM. Any 'double running' checks conducted by CQC focus on the most high-risk elements of the analysis and publication phase. For example, all weighting variables are independently reproduced using patient-level datasets, and R scripts developed in-house.

A quality assurance plan is agreed at project inception and the quality assurance requirements are documented in the master 'QA log'. The quality assurance checks conducted vary by output, examples of checks conducted on the cleaned patient-level dataset include checking the number of responses received per trust match the fieldwork monitoring information, checking all the system missing, missing and ineligible responses are set properly. These checks are designed to test whether the output has been produced in accordance with the agreed analysis plan, a document which is produced at close of fieldwork between CQC and CCMM and details the requirements of each analytical output.

Upon completion of the first round of quality assurance, queries are raised with CCMM, and further rounds of checks are conducted on all subsequent versions until all queries have been satisfied.

Prior to sign-off, a Senior Researcher from CQC conducts a review of all quality assurance documentation to ensure there is a clear audit trail of all checks conducted to date and that all queries have been sufficiently resolved.

As a final stage, the Senior Analytical Owner and Senior Responsible Owner review all quality assurance documentation before providing Analytical Clearance and Organisational Sign off respectively. Until these approvals are received outputs are not published externally.

Quality assurance checks undertaken by the CCMM focus on the response data and analysis. In addition to the specific checks of the survey data cleaning and process, the final respondent dataset is quality assured internally once the data has been processed and cleaned. Both the syntax produced for data processing and the final dataset are systematically quality assured by the project team and each check is signed off by a senior member of the CCMM team. All analysis outputs based on the respondent dataset (such as the trust-level results and England-level results) also go through the same quality assurance process. Once the output has been signed off by the CCMM, it is then sent to CQC for further quality assurance.

Data limitations

Context

As with any survey, statistical analysis of data from the Maternity Survey is susceptible to various sources of error. These are carefully controlled through questionnaire design and sampling strategy, which is in turn supported by extensive quality assurance at every stage of the survey.

Seasonal effects

In the previous iterations of the survey, it was established that including January births by smaller trusts did not have introduce any bias, due to the length of the maternity journey. All service users would have received their antenatal and postnatal care at a similar time of the year. This was taken into consideration when deciding on the booster months for the 2023 Maternity Survey. It was decided that one of them would be January, to mirror the approach taken by small trusts, minimising any risk of additional bias. It was decided that March would be the second booster month, so that it would 'balance out' January births and stay within 2023. More information on the decision-making behind the booster can be found in the Survey Development Report.

With everything taken into consideration, it is still possible that there may be some seasonal effects on responses – for example if staffing levels differ throughout the year. However, as the sampling period is the same for all trusts and the same as previous maternity surveys, any such seasonal variation would not impact on the comparability of the data or its use in assessing the performance of trusts.

Attribution data

The attribution data provided by trusts has several limitations, and as such, the data collected from the antenatal and postnatal sections of the questionnaire cannot be considered as robust as the data collected from the labour and birth section. The reasons for this are:

- As service users are sampled from trust records it is known that they had their labour and birth under the care of that trust. Trusts attribute the location of antenatal and postnatal care using either electronic records, the residential location of individuals, a combination of both, or another method. Attribution data is assigned on an individual level, as opposed to a trust level. Therefore, a trust can use electronic records for some individuals, and postcode lookups for other individuals.

- Where an individual's attribution data is based on their residential location it is not possible to identify whether individuals received care from a different provider (e.g., if they required specialist care or moved house). This may mean that some respondents are erroneously included in the data for one trust despite having received care from another trust.

- As trusts complete the attribution exercise themselves, and due to the limitations of this process, CCMM is unable to verify the accuracy of the information provided. This means the reliability of the attribution data cannot be ascertained.

Table 2: Proportion of individuals in the sample who had their attribution data assigned using electronic records, residential location, a combination of both, or another method

Attribution method	Count of individuals	Proportion (%)
Electronic records for antenatal and postnatal care	53,327	84%
Residential location for antenatal and postnatal care	4,153	7%
Electronic and residential location for antenatal and postnatal care	5,572	9%
Other method	195	0%
No method provided	24	0%
Total	63,271	100%

Note: The percentages are rounded up, so do not necessarily add up to 100%.

Table 3: Proportion of trusts who used electronic records for all their attribution data, residential location for all their attribution data, another method, or a mix of methods

Attribution method	Count of trusts	Proportion (%)
All electronic records	95	79%
All residential location records	9	7%
Mix of electronic and residential location records	16	13%
All other methods	1	0%
No attribution data supplied	0	0%
Total	121	100%

Note: Attribution data is assigned on an individual level rather than a trust level.

Response rates

Please note that in this section we are only referring to the core sample of the 2023 Maternity Survey in order to maintain comparability across years. The booster sample is discussed in section the following section.

Response rates for the Maternity Survey have been decreasing since it was first launched in 2007. Between 2007 and 2019 response rates dropped from 59% to 37%. The 2021 survey saw a turnaround in this downward trend and a response rate of 52% was achieved. It is very likely that this was due to the switch to a mixed methods approach, but external issues should also be noted, such as the impact of the second Covid-19 national lockdown during the start of the fieldwork period when response rates across other patient experience surveys such as the GP Patient Survey increased.

The 2022 survey saw a dip in response rates to 46%, with a further drop to 43% in 2023. This figure denotes an improved response rate compared to 2015–2019 but dropping in comparison to 2022. However, as shown in the chart below, the response rate for the Maternity Survey continues to exceed other studies in the National Patient Survey Programme. In 2023, 19,062 core sample service users responded to the survey. Of those, 88% of responses were completed online, and 12% on paper.

Figure 4 below illustrates response rate trends for the more established surveys in the NPSP.[10] The figure shows a downwards trend across all surveys, up until 2020 and 2021. Lower response rates may mean that larger sample sizes are required to get the same number of responses, which has cost implications.[11]

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[10] Please note that not all surveys are carried out annually.

[11] Groves, R. and Peytcheva, E. (2008), The impact of nonresponse rates on nonresponse bias: a meta-analysis. Public Opinion Quarterly 72, 167-189

Figure 4: Response rates for each survey in the National Patient Survey Programme
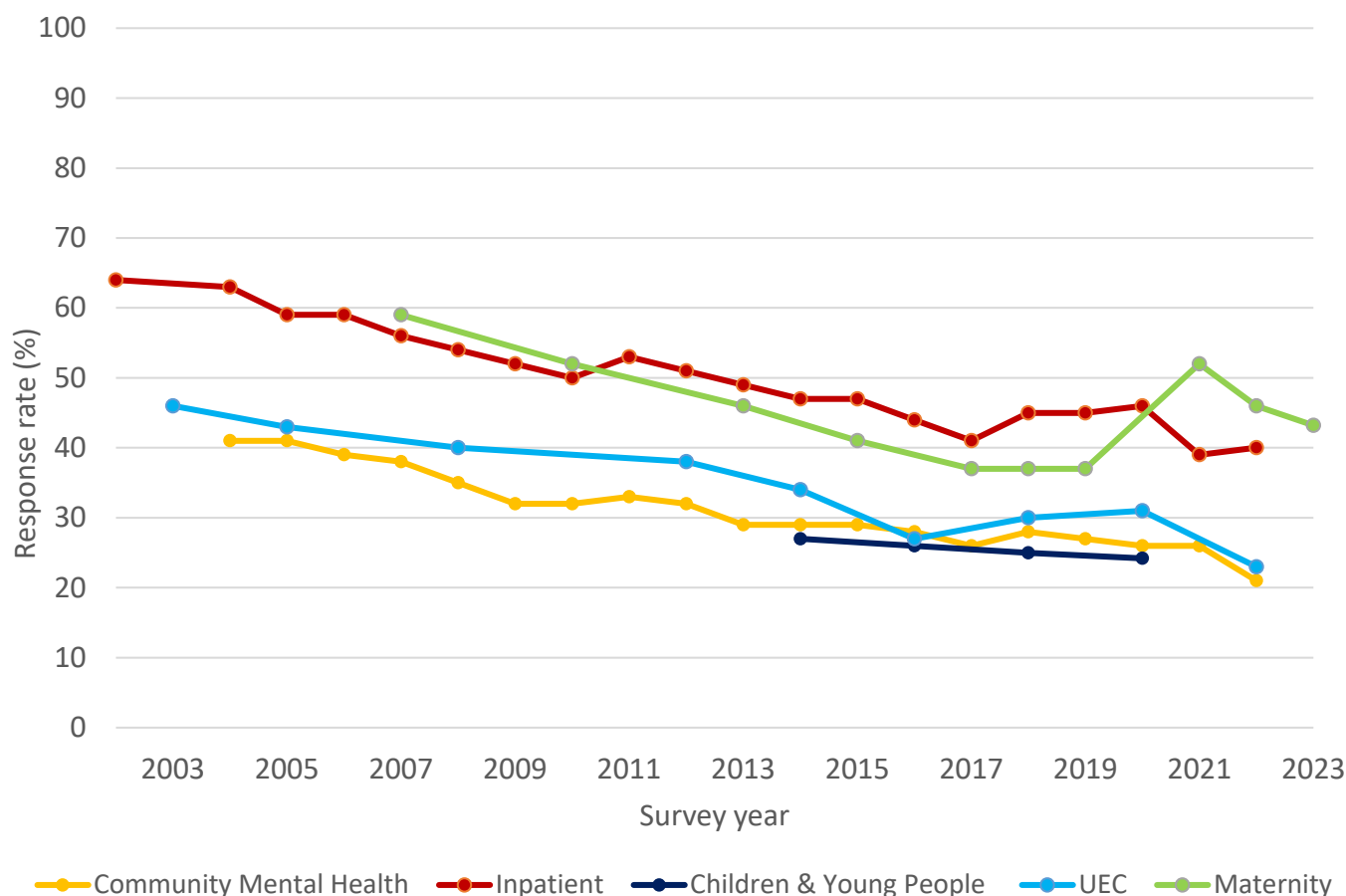
Non-response bias

Non-response bias refers to the risk that those who chose to respond to the survey are different from those who chose not to respond. This type of bias would arise, for example, if maternity service users with more positive views of their care were more likely to respond than those with negative views (or visa-versa). Please note that all of the proportions reported in this section of the report are based on the core sample only to maintain comparability across years.

There are several limitations to assessing levels of non-response bias:

- We cannot always differentiate between those who received a questionnaire but chose not to respond (non-response), versus those who did not receive a questionnaire and could not respond (non-contact), even though mailings returned undelivered are logged during fieldwork.

- We do not have a way of finding out how non-responders would have answered had they participated.

- There are limitations on the checks that the CCMM and contractors are able to conduct on the initial samples due to confidentiality concerns. For example, it is not possible to check for duplicate individuals across trusts, which may impact individual service user's likelihood to respond.

Research carried out as part of the NPSP has shown that certain demographic groups are consistently less likely to respond, including young people, people from Black and other minority ethnic groups, and people from deprived areas.[12,13,14] These groups also often report more negative experiences of care, meaning that by underrepresenting these groups, results may underrepresent their experiences, leading to non-response bias.[15] Therefore, comparisons for demographic variables such as age and ethnicity between responders and non-responders is often used as a proxy for assessing the level of non-response bias (see Table 4 below).

As is the case for most large-scale surveys of this kind, there is some evidence that non-response biases exist in the 2023 Maternity Survey (see Table 4 and 5 below). An over-representation of older age groups can be observed in the Maternity Survey, with women over 30 years old more likely to respond than those in younger age groups. However, there is only a minor skew in ethnicity. When interpreting these tables, it should be noted that it is likely that there are some inter-relationships between these groups.

Currently, the CQC and CCMM aim to mitigate this through offering mixed-mode completion and correct for it by applying non-response weighting to the England-level data. More information on this can be found in the section on survey development. Overall, participants in online surveys tend to be younger and better educated than participants that respond by other survey methods, so by offering both modes we aim to maximise the potential response rate.

Table 4 shows the proportions of the respondent and non-respondent profile by key demographic groups.[16] It is based on information from trust sample files only and may differ from respondent breakdowns published elsewhere based on response data. We cannot use respondent-provided information to calculate response rates, as the corresponding information is unavailable for non-responders.[17]

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[12] nhssurveys.org/Filestore/documents/Increasing_response_rates_literature_review.pdf

[13] nhssurveys.org/Filestore/documents/Review_BMEcoverage_HCC_surveys.pdf

[14] nhssurveys.org/Filestore/documents/Increasing_response_rates_stakeholder_consultation_v6.pdf

[15] www.england.nhs.uk/ltphimenu/definitions-for-health-inequalities/

[16] Trust sample files contain all women selected to take part in the survey and include information such as women's year of birth, number of babies born at delivery and ethnicity.

[17] In the respondent dataset, non-responders are those with outcome codes of 4, 5 or 6.

Table 4: Respondent and non-respondent sample profile for the 2023 Maternity Survey

	Demographics	Respondent profile (%)	Non-respondents profile (%)
Age	16-18	0.2%	0.7%
	19-24	6.8%	14.0%
	25-29	20.1%	25.6%
	30-34	37.6%	32.1%
	35+	35.3%	27.6%
Ethnicity	White	72.1%	67.7%
	Mixed	2.2%	2.6%
	Asian or Asian British	11.7%	15.7%
	Black or Black British	5.4%	5.4%
	Arab or other ethnic group	2.9%	3.9%
	Not known	5.6%	4.7%

Note: Percentages are rounded to the nearest 0.1%. Totals may add up to more than 100%.
This table is based on sample data, not respondent data, and will therefore differ from the respondent profile below which is based on respondent data.

Table 5 below shows key demographics for the overall sampled cohort for the survey (based on sample data) compared to respondents (based on response data).

Table 5: Sample and respondent demographic profile for the 2023 Maternity Survey

	Demographics	Sample (%)	Respondents (%)
Age	16-18	0.5%	0.2%
	19-24	10.9%	6.8%
	25-29	23.3%	20.0%
	30-34	34.4%	37.7%
	35+	30.9%	35.2%
Ethnicity	White	69.6%	75.1%
	Mixed	2.5%	3.2%
	Asian or Asian British	14.0%	12.3%
	Black or Black British	5.4%	5.8%
	Arab or other ethnic group	3.4%	1.5%
	Not known	5.1%	2.2%

Note: Percentages are rounded to the nearest 0.1%. Totals may add up to more than 100%. The respondent demographic profile is based on respondent data.

Table 6 compares the respondent profiles of the 2022 survey to the 2023 survey. There is a decrease in responses of 0.9 percentage points from those aged 19-24, and 1.8 percentage points for those aged 25-29. There was a 1.2 percentage point increase amongst those aged 30-34, and a 1.6 percentage point increase amongst those aged 35 and over.

Table 6: Respondent age profiles for the Maternity Survey 2022 and 2023

Age	2022 Response profile	2023 Response profile
16-18	0.3%	0.2%
19-24	7.7%	6.8%
25-29	21.8%	20.0%
30-34	36.5%	37.7%
35+	33.6%	35.2%

Note: Percentages are rounded to the nearest 0.1%. Totals may add up to more than 100%. The above figures are based on respondent data.

Table 7 below compares the respondent profile by ethnic identity since 2013. This year's survey, similarly, to last year's, has seen a small but noticeable increase in the proportion of respondents from every ethnic group, except from the White ethnic group, which has declined (to a statistically significant degree). The increase from 2022 to 2023 is statistically significant for the following groups:

- Asian or Asian British; and

- Black or Black British.

This suggests that the switch to a mixed modes method, and the inclusion of online responses has increased representations from all ethnic groups that are not White, and reduced representations from the White ethnic group.

Table 7: Respondent ethnic profiles for the Maternity Survey 2013 to 2023

Ethnic group	Survey Year							
	2013	2015	2017	2018	2019	2021	2022	2023
White	82.2%	82.1%	81.7%	83.2%	82.0%	79.1%	77.0%	75.1%
Mixed	1.8%	1.7%	2.0%	2.4%	2.4%	2.8%	3.1%	3.2%
Asian or Asian British	8.3%	8.6%	8.4%	7.9%	8.5%	11.1%	11.3%	12.3%
Black or Black British	3.7%	3.4%	3.1%	3.0%	3.5%	3.8%	4.8%	5.8%
Arab or other ethnic group	0.6%	0.7%	0.8%	0.7%	0.8%	1.3%	1.5%	1.5%
Not Known	3.4%	3.5%	4.0%	2.8%	2.9%	2.0%	2.3%	2.2%

Note: Percentages are rounded to the nearest 0.1%. Totals may add up to more than 100%.

However, this change is minor and represents a redistribution of approximately two percentage points from the White ethnic group, across the other four ethnic groups. Therefore, it is unlikely that this has had an impact on the changes in national results.

Ethnicity Booster Pilot

For the 2023 Maternity Survey CQC decided to pilot an ethnicity booster sample. This section talks about the data limitations of the booster sample. To learn more about the development of this approach please refer to the Survey Development Report.

Overall, there were 6,453 responses received from the booster sample, at an adjusted response rate (ARR) of 35.6%, in comparison to the ARR of 43.2% of the core sample. Of those, 90% were received online and 10% on paper.

Table 8: Respondent and non-respondent booster sample profile for the 2023 Maternity Survey

	Demographics	Respondent profile (%)	Non-respondents profile (%)
Age	16-18	0.1%	0.3%
	19-24	5.0%	9.5%
	25-29	21.0%	25.3%
	30-34	36.7%	33.1%
	35+	37.2%	31.7%
	Mixed	10.0%	9.3%
	Asian or Asian British	53.6%	56.7%
	Black or Black British	25.3%	21.1%
	Arab or other ethnic group	11.0%	12.9%

Note: Percentages are rounded to the nearest 0.1%. Totals may add up to more than 100%. This table is based on sample data, not respondent data.

Similarly, to the core sample, younger age groups in the booster sample were less likely to respond to the survey compared to older age groups.

Addressing potential non-response bias in the survey results

In 2019, a pilot survey was run to compare mixed-mode experiment groups with a paper-only control group.[18] Higher response rates were achieved in the mixed-mode experiment groups overall compared with the control group across all ages, ethnicity and IMD groups. This was identified as a benefit of moving to a mixed-mode approach.

The survey continues to offer both online and paper completion options, as surveys that use an online only methodology introduce coverage bias; those who cannot or would not complete an online survey will not take part. Overall, participants in online surveys tend to be younger, and have completed more formal education than participants that respond by other survey methods. To mitigate non-response bias, it is important to offer alternative completion methods (such as paper) in addition to online.[19] More information on the pilot can be found in the Maternity 2019 pilot report.[20]

Non-response weighting is currently applied to the England-level data, but not the trust-level data. In considering whether to weight for non-response and whether this should be according to either the sample or population data, we need to factor in the primary aim of collecting the survey data. In this year, both national and trust-level data both incorporate a selection weight to address potential bias resulting from the Booster sample. Our weighting strategies are detailed in the sections below.

Additional weighting for the Booster Sample

The weighting methodology this year incorporates an additional step due to the inclusion of the Booster Sample. A selection weight was generated for each service user. This weight is based on the service users' relative likelihood of being selected for the survey, which depended on their eligibility for the Booster Sample. Service users from ethnic minority backgrounds (the Booster Sample members) were included if they had given birth in either January, February, or March, giving them a relatively higher chance of being selected. Non-booster sample members, who were not from a minority ethnic background, were in most trusts only included if they had given birth in February. The Booster Sample members are subsequently weighted down to ensure they are not over-represented in the final sample. This adjustment means the full, weighted sample is representative of the

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[18] https://nhssurveys.org/wp-content/surveys/06-development-work/06-engagement-work/2020/Maternity%202019%20Mixed-mode%20pilot%20results.pdf.

[19] E.g., Messer, B. L. and Dillman, D. A. (2011). Surveying the general public over the Internet using address-based sampling and mail contact procedures. Public Opinion Quarterly, 75, 429-457.

[20] See footnote 23.

target population, thus maintaining comparability across survey waves. To read more about the criteria of being included in the Booster Sample, please read the sampling instructions

Those identified in the sample as "White" or "Not known" are not boosted and have a weight of 1. Those in the booster sample, identified as being in a minority ethnic group, have a weight equivalent to the total number of births by minority ethnic mothers that occurred in their trust in the main sample month (February) divided by the total number of births by minority ethnic mothers in the same trust across all three sample months. The weight is roughly equal to one third, since it divides the total number of births in one month by the total number of births in three months.

The selection weight forms the basis of all other weights generated for the maternity survey. It ensures Booster Sample members are not over-represented in the national population or within each trust. Each of the subsequent weights described below incorporates the selection weight.

Weighting trust level benchmark analysis

For the NPSP, the data collected are used for measuring and comparing the performance of individual NHS trusts. Characteristics such as parity and age are known to be correlated with responses. Therefore, each trust is standardised to a common average case-mix of age and parity when calculating trust results, having first applied the selection weights described above.[21] This removes the demographic differences between trusts as a source of variation and provides a 'level playing field' for comparing trusts. Weighting for non-response to either an England-level population dataset or back to the sample data for a trust would not achieve this.

Direct assessment of non-response bias on survey data is difficult to measure due to the ethical implications of acquiring such data. This would require further contact with service users who may not wish to be contacted. Rather than further adjusting the data, this issue is managed by adopting best-practice methodologies to maximise response rates from all groups. As discussed in the section above on survey design and implementation, this included pre-testing survey questions, offering a choice of completion modes, allowing a long fieldwork period, sending out reminders to non-respondents by different modes, providing translation services, and using best-practice principles of design in the invitation and reminder letters, amongst other approaches.

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[21] For more information on the methodology for the trust-level results, please see the technical document which is referenced in the 'Further Information' section at the end of this document.

Weighting results for England

Some trusts have a higher response rate than others and would therefore have a greater influence over the England average if a mean was calculated across all respondents. To avoid this, 'trust' weights are applied to the England-level data, which means that England results are a mean of trust results. Therefore, each trust has an equal influence over the England average for each question, regardless of differences in response rates between trusts.

Additional 'population' weights were also introduced in the 2017 survey, with the aim of reducing potential non-response bias. This involved weighting by age group so that the weighted proportions in each group of the respondent population match those in the sampled population. Higher weight is therefore given to groups that had lower propensity to respond. Again, the selection weights are incorporated into this calculation. A single population weight was computed for each respondent.

The 2023 England-level results present trend comparisons across surveys from 2013 to 2023. The selection weight ensures the data are comparable. Historic data is not reweighted to the 2023 weights, and is reported in line with previous years, using historic weights. For 2023 responses, population weights and trust weights were multiplied together to produce a single, combined weight for each question, and this was applied when generating the national tables for England.[22]

Weighting each trust's results to their eligible population in this way theoretically makes the trust's results more representative of their population. However, this assumes that missing responses appear at random, which is not an assumption that can be checked.

The introduction of non-response weights to the England-level results creates a 'design effect' that reduces the precision of statistics from the survey. The design effect can be estimated as the following, where wi is the weight for respondent i and $ntotal$ is the total number of respondents:

$$DEFF = \frac{n_{total} * [\sum i \, wi^2]}{[\sum i \, wi]^2}$$

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[22] As this approach was new in 2017, the England-level data reported in the 2013 and 2015 Maternity Surveys will differ slightly from the 2013 and 2015 data reported in the 2021 England-level results.

This is then used to adjust the alpha value for the tests of column proportions in national tables for England, using alphanew = 2-tailed probability for a result at least as extreme as $|1.95996398454 \times \sqrt{DEFF}|$.

This weighting has been applied to the England-level results for all except the demographic questions. These questions are presented without weights applied, as it is more appropriate to present unadjusted data that describes the demographic profile of respondents, rather than weighted average figures.

Data revisions

CQC publishes a Revisions and Corrections Policy relating to these statistics. This policy sets out how CQC will respond if an error is identified, and it becomes necessary to correct published data and/or reports. The NPSP data is not subject to any scheduled revision as the surveys capture the views of service users about their experiences of care at a specific point in time. All new survey results are therefore published on CQC's website and the NHS Surveys website, as appropriate, and previously published results for the same survey are not revised.

Further information

The England-level and trust-level results for the 2023 Maternity Survey can be found on the CQC website. You can also find a 'Technical Document' here which describes the methodology for analysing trust-level results.

The England and trust-level results from previous Maternity Surveys that took place in 2007, 2010, 2013, 2015, 2017, 2018, 2019, 2021 and 2022 are available on the NHS Surveys website or on request.

Full details of the methodology for the survey, including questionnaires and covering letters, instructions on how to carry out the survey, and the Survey Development Report, are available on the NHS Surveys website.

More information on the NPSP, including results from other surveys and a programme of current and forthcoming surveys, can be found on the CQC website.

Feedback

We welcome all feedback on the survey findings and the approach we have used to report the results, particularly from people using services, their representatives, and those providing services. If you have any views, comments or suggestions on how this

publication could be improved, please contact Tamatha Webster, Principal Researcher, at patients.survey@cqc.org.uk.

The information you provide will be reviewed by CQC and used, as appropriate, to improve the statistics that we publish across the NPSP.