

**NHS Patient Survey Programme**

**2016 Adult Inpatient  
Survey:  
Quality and Methodology  
Report**

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# 1 Introduction

The Adult Inpatient Survey is the longest running survey in the NHS Patient Survey Programme (NPSP). The Co-ordination Centre, based at Picker, manages and co-ordinates the programme at national level, on behalf of the Care Quality Commission (CQC).

The survey is run on an annual basis, with all NHS acute hospital trusts in England participating. The 2016 survey is the fourteenth iteration since the inception of the NPSP in 2002, and was concerned with inpatients who were discharged from an NHS England trust during July 2016. Each trust selected a sample of 1,250 patients, by including every consecutive discharge counting back from 31<sup>st</sup> July 2016; with smaller trusts sampling as far back as January 2016, as required. In total, 149 NHS England trusts partook in the survey, with more than 77, 000 questionnaires being successfully completed by patients; a response rate of 44%.

This report details the quality and methodological issues relating to the 2016 Adult Inpatient Survey; with a particular focus on the development, implementation, data quality, analysis, and the outputs of the project. Additional information on the development of the 2016 survey and errors made during the sampling process can also be found on the [NHS surveys site](#).

An overview of the approaches taken to ensure quality within the NHS Patient Survey Programme (NPSP) is available in the '[NHS Patient Survey Programme: Quality Statement](#)'.

## 2 Survey development

### 2.1 Survey design and implementation

The NHS Patient Survey Programme (NPSP) implements general principles of good survey practice. The programme has implemented a number of measures to help maximise response rates:

- The development of survey questions that are relevant to all, or most, people in the sample.
- Questionnaires are produced using clear and simple language.
- Rigorously testing questions and response options, by way of cognitive interviews with past service users, so as to ensure that they are easily understood and relevant.
- Reassurances of anonymity and confidentiality.
- Up to two reminders are sent to non-responders.
- Long fieldwork period to encourage lesser heard from groups, such as minority ethnic groups, to respond.
- A Freephone language line that provides translation services.
- MENCAP provides support for people with learning difficulties.
- The use of a Quality Assurance Framework, which ensures that all survey materials and results are reliable and accurate.

Like most surveys in the NPSP, the Adult Inpatient Survey uses a postal survey approach: with a questionnaire being sent to the home addresses of potential participants. This reduces the effects of social desirability bias; which may occur when people give feedback either directly to staff or whilst on trust premises.

A number of steps are taken to ensure the robustness of the survey design and implementation. As with all surveys in the NPSP, consulting both relevant stakeholders (i.e. NHS England and the NHS trusts) and service users is fundamental to the design and development of a new questionnaire or new questions; as this helps to ensure that questionnaire content reflects the interests of both groups.

Questionnaires are 'cognitively tested' before the surveys commence in order to ensure that questions and response options are understood as intended. As discussed in Section 2.3, this involves participants working through the questionnaire with a researcher to understand how they interpret questions and what they are thinking about when they answer.

There were five changes made to the methodology for Adult Inpatients 2016. Three of these changes were made to the sample declaration form. Firstly, following feedback from contractors, the declaration form was made available in digital form; this enabled contractors and trusts to submit it directly to the Co-ordination Centre at Picker. The paper-based version was still available and could be submitted in the same manner as previous years. Secondly, the sample declaration

forms were expanded to include additional checks concerning both inclusion/exclusion checks and data extraction checks. Finally, the declaration form for the 2016 survey required trusts to produce figures in relation to the number of records submitted for DBS checking and the number of records that were returned as a mismatch.

In regards to the sampling methodology, trusts were required to collect treatment function codes for each patients in their sample for the 2016 survey. This enabled trusts to more accurately identify patients who were ineligible to partake in the study, such as those who had been treated for termination of pregnancy. During previous iterations of the survey, such cases were identified by way of the main speciality assigned to the case, but this presented accuracy errors in regards to the actual treatment received by the patient.

The 2016 methodology also included an additional code to the 'outcome' field for the weekly monitoring sheets and data entry templates. This was used to indicate patients who had been identified as being deceased after the sample file had been signed off and submitted to the Co-ordination Centre, but before any mailings had been sent out to patients. In such cases, records were not removed from either the sample or mailing files. Instead, the outcome field for the record in question was populated with the new code '7 – *patient deceased prior to fieldwork*'. If there are instances whereby a service user was identified as deceased after the first mailing had been sent out, outcome code '3 – *service user died*' was used.

All surveys follow a strict methodology, as specified in the [survey instruction manuals](#) which all trusts and contractors must follow. Any deviation from these instructions may result in data being excluded from published results. Any decision to exclude data is made by the Surveys Team at the Care Quality Commission, in conjunction with the Patient Survey Co-ordination Centre, based on discussion with, and evidence provided by, the trust(s).

## 2.2 Questionnaire development

Efforts were taken to ensure the 2016 questionnaire was as similar as possible to the 2015 version to maximise comparisons between survey years. The 2016 survey had 84 questions compared to the 82 of the 2015 survey. Three questions were added to the 2016 survey, one question that had previously been in the 2015 survey was not included, and one question from the 2015 survey was amended for 2016. More information can be found about these in the '[Survey Development Report](#)'.

## 2.3 Cognitive testing

As is common practice in the NPSP, the revision and re-development of all questionnaires follows best practice. All question changes, regardless of the extent, are cognitively tested with a group of service users with recent and current experience of being treated as an inpatient by a NHS trust in England. Cognitive testing is a process which tests both new questions and questions used in previous years to check whether they are understood as intended by participants, and that they are able to answer them appropriately with the response options provided. The participants are recruited via different mechanisms; including local advertisements in newspapers, public buildings (shops, cafes, libraries, community centres, community noticeboards etc.), online forums as well as websites (such as Gumtree) and social media. People were recruited to cover a wide demographic base and range of experiences.

For the 2016 survey, eighteen people participated in cognitive interviews:

- 10 male
- 8 female
- Aged 26 - 83 years old
- A mix of ethnic backgrounds
- 11 elective admissions
- 7 planned admissions

Cognitive interviews were conducted during April 2016, primarily in Oxford and the surrounding areas. These interviews were conducted in three rounds, with alterations made to certain questions between rounds in accordance with feedback from participants and stakeholders. Again, further details of this process can be found in the ['Survey Development Report'](#).

## 3 Sampling and fieldwork

### 3.1 Sampling

People aged 16 and over at the time of sampling were eligible for participation in the survey if they had been discharged from an NHS trust during July 2016 after having stayed for at least one night in hospital. Trusts were asked to draw a sample of 1,250 consecutive eligible discharges, working backwards from 31st July 2016. Smaller trusts who could not draw a sample of 1250 from July 2016 alone were allowed to sample back to previous months, as far back as 1st January 2016 if necessary.

The sample of 1250 inpatients excluded:

- Deceased patients
- Children or young persons under 16 years old at the time of sampling
- Obstetrics/maternity service users, including spontaneous miscarriages
- Patients admitted for planned termination of pregnancy
- Psychiatry patients
- Day case patients (i.e. patients who arrived and left on the same day. If the patient stayed overnight and occupied a bed, then they would be included in the sample.)
- Private patients (non-NHS)
- NHS patients treated at private hospitals
- Any patients known to be current inpatients
- Patients without a UK postal address (but not excluded if addresses are incomplete but useable, e.g. no postcode).
- Any patient known to have requested their details are not used for any purpose other than their clinical care

Further details of the sampling methodology can be found in the [instruction manuals](#) and [sampling handbooks](#).

No trusts were excluded as a consequence of sample checking or analysis of the final data. Fieldwork for the survey (the time during which questionnaires were sent out and returned) took place between the end of August 2016 and the beginning of July 2017.

### 3.2 Sampling error

As the survey does not use a random sample, sampling error calculations were not applicable when determining the minimum sample size. The sample size for the Adult Inpatient Survey was 1,250 participants per trust; of which there are 149. This sample size was large enough to minimise any sampling error, while a much smaller sample size could have resulted in a trust sampling a subset of inpatients who happened to have a significantly more positive experience than their inpatient population as a whole. Given that the final data consisted of ~77, 000 responses, the sampling error for the 2016 survey was very small.

Assuming the sample period is not atypical, then given the large sample size and number of responses, the 2016 sample can be considered representative of all eligible inpatients in England. Indeed, there is no reason to suggest that the provision of NHS inpatient services in July 2016 was atypical, the risk of sample bias is therefore small.

### 3.3 Trust Mergers

Although normally marginal, changes in the number of participating trusts can have an impact upon the survey results. As far as the 2016 Adult Inpatient Survey is concerned, there was only one merger during the period 2015 – 2016 that could affect the results of the survey. This came in the form of West Middlesex University Hospital NHS Trust being incorporated into Chelsea and Westminster Hospital NHS Foundation Trust in September 2015.

### 3.4 Errors in drawing samples

The chances of mistakes being made by trusts during sampling are minimised by multi-stage sample checks. In the first instance, trusts are provided with a checklist to review their drawn sample. Those trusts that appoint an 'approved contractor'<sup>1</sup> to undertake the survey on their behalf will have their sample reviewed by this company.

All anonymised samples are then checked by the Co-ordination Centre at Picker, who look for errors that are more noticeable when pooling data together; unusual or skewed age distributions, for example. Several items are also checked against the trust's data submissions for previous surveys, so as to ascertain whether or not said trust has followed the guidelines correctly. These checks include comparisons of population size, demographics, route of admission, etc. Should there be any discrepancies that merit investigation, queries will be raised with the trust or contractor responsible for the data sample.

Any errors identified during this process are categorised as either minor or major in nature. The former is defined as a mistake that will not affect the usage or quality of the survey response data. An example of this would be if the patient record numbers (URNs) were applied in an incorrect format. This is an error that could be rectified by the trust, contractor or the Co-ordination Centre by amending the sample's URNs, which would not undermine the quality of the sample.

A major error is defined as a mistake that would affect the usage or quality of the survey response data. An example of which would be a trust excluded inpatients admitted for the treatment of a gynaecological condition, as this has the potential to create bias in the sample. Such an error would result in a trust having to re-draw the sample in line with the guidance.

A '[Sampling Errors Report](#)', which details the errors identified by the Co-ordination Centre, is produced after each iteration of the survey. It is strongly advised that trusts and contractors review this report in an attempt to minimise the recurrence of previously detected errors.

The '[Statement of Administrative Sources](#)' outlines the chances of errors occurring at the stage whereby trusts input patient data into administrative systems; data from which samples are drawn. It was concluded that, although the potential does exist for inaccurate addresses or coding of cases at this stage, this is unlikely to occur due to the data quality requirements placed upon NHS trusts. As a result, the chances of such errors occurring at this stage are small enough that any impact upon trust results are likely to be minimal, and in turn, would have an even smaller effect upon the aggregated, national-level, results.

Additionally, the sample declaration form is used to help further reduce sampling errors. This form not only outlines a number of checks that have to be completed, but also ensures adherence to the

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<sup>1</sup>These are companies approved by the Care Quality Commission during a competitive tendering process to carry out surveys in the NPSP on behalf of trusts. For more information please see: [www.nhssurveys.org/approvedcontractors](http://www.nhssurveys.org/approvedcontractors)



sampling methodology on the part of both the sampler and the trust's Caldicott Guardian. Crucially, this form also ensures that trusts have maintained confidentiality of patients by taking the steps laid out in the guidance, such as only passing on specific variables. Approval of this form prior to data submission thus fulfils the trust's own requirements under the Data Protection Act, as well as reducing the potential for breaches to the support received under Section 251 of the NHS Act 2006<sup>2</sup>.

### 3.5 Historical sampling errors and excluded trusts

During the sample-checking investigations for the 2016 survey, it was found that eight trusts had made sample drawing errors during previous iterations of the Adult Inpatient Survey. These had not been detected at the time due to the errors only being observable by way of historical comparison. As a result of these errors, three of the eight trusts were excluded from any trust-level historical comparisons produced for the 2016 survey, and their 2015 results were removed from the NHS Surveys website. Their 2016 results were unaffected. The three trusts concerned were:

- North Middlesex University Hospital NHS Trust (RAP)
- Milton Keynes Hospital NHS Foundation Trust (RD8)
- Bolton NHS Foundation Trust (RMC)

Royal Devon and Exeter NHS Foundation Trust (RH8) was also excluded from any trust-level historical comparisons produced for the 2016 survey following to a major sampling error discovered at the close of the 2015 survey's fieldwork period.

Further details concerning historical errors identified during the 2016 Adult Inpatient Survey can be found in the ['Sampling Error Report'](#).

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<sup>2</sup> Section 251 of the NHS Act 2006 provides a legal basis for the transfer of data to a survey contractor.

## 4 Data analysis and reporting

### 4.1 Data cleaning and editing

Survey data from each participating trust is submitted to the Co-ordination Centre for cleaning. During fieldwork, a [data cleaning guidance manual](#) covering the checks that the Co-ordination Centre undertakes is made available so as to allow participating trusts and contractors to understand the data cleaning processes undertaken by the Co-ordination Centre and the types of common errors they will be looking for. This enables contractors and trusts to replicate these processes for the subsequent benchmark reports.

The data are submitted to the Co-ordination Centre using an Excel spreadsheet. However, the final dataset for the survey, which is used by secondary data users and passed on to the UK Data Service (UKDS), is in a SPSS data file format.

Each survey involves a number of standard checks that are undertaken on the data, including:

- Checks of the hard copies of questionnaires from contractors and trusts to verify that questions, response options, routing, and instructions are as they should be
- Check that number of rows of data is as expected, i.e. the correct number of patients are in the data file
- Variables, question, and response options wording checks; ensuring that the data matches the questionnaire
- Out of range checks for variable such as age on both sample and response data
- Incorrect filtering, where respondents have answered a question that does not apply to them
- Coding errors whereby the answer given is outside the expected range of response options for a given question
- Data validation, whereby the response date is used to confirm whether the sample data submitted by the trust is valid for certain demographics
- Use of the response data to check that only eligible patients were included in the survey

The data are also checked for a number of other, more in depth, errors. This includes looking at questionnaire item non response, for example. This checks whether there are high levels of missing data on suites of questions that are positioned next to each other on survey pages indicate an issue with page turnover, as well as whether or not a question is being understood in the intended way manner.

It is also worth noting that in instances where a trust has fewer than 30 response for a trust, the data are suppressed, and that this is cross-referenced against the raw data submitted by said trust so as to ensure that the suppression process was applied correctly.

In cases where a trust has a low response rate for a particular question, the data are checked for demographic representativeness against the sample in order to determine whether or not the data should be included. No such exclusions were made for the 2016 data.

In cases where errors are uncovered, trusts and contractors are required to re-submit their sample data with corrections applied; no such re-submissions were necessary for the 2016 survey.

## 4.2 Statistical Release

A statistical release has been published which provides full England-level results for the 2016 survey, comparisons with other results from the last ten years (trend data), where appropriate, and multi-level analysis of subgroups.

### Trend data

Ten year trend analyses on a selection of questions from the 2006 survey through to the 2016 survey were conducted. Where questions have had minor redevelopments over the years (e.g. wording changes), which may affect their comparability, their inclusion / exclusion for historical comparisons were assessed.

Comparisons to previous iterations of the survey are made possible by conducting significance testing, using a z-test applied to the standardised proportions to see whether the difference is statistically significant (unlikely to have occurred by chance). Historical comparisons were made using this method. Results were compared to the 2006, 2011 and 2015 surveys wherever the same questions included in those surveys were present in the 2016 survey.

In order to control for the influence individual trusts' response rates have on the England-level average, and year-to-year changes in the age / sex / route of admission profile of respondents, the data are standardised<sup>3</sup>.

### Multi-level analysis

The multi-level analysis of subgroups highlights the experiences of different demographic populations. Results for each demographic subgroup are generated as adjusted means (also known as estimated marginal means or population marginal means) using a linear mixed effects model. These means are compared on patient-centred care themes, derived from composites of results from specific questions. This model takes into account trust clustering, as trusts are likely to have a big impact on reported patient experience at a national level.

To assess whether experiences differ by demographic factors, F tests are performed on each factor (fixed effect) as a predictor of the target variable. P-values are also generated to show the likelihood of differences between groups observed in the results arising from a population where no actual differences occur. They relate to the demographic factor as a whole rather than to comparisons between specific categories within the factor. Variables are also checked for multicollinearity to ensure co-efficient estimates are not influenced by additional factors.

Differences of at least 0.1 standard deviations from the overall mean of the target variable are treated as being noteworthy.

For the 2016 survey the following demographic factors were analysed:

- Age
- Gender
- Religion
- Sexual orientation
- Ethnicity
- Long term conditions

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<sup>3</sup> More information on the standardisation approach applied to the data can be found in Section 6.5 'Addressing non response bias in the survey results'

- ICD-10 Chapter codes

The themes of patient-centred care against which these demographic factors were compared are as follows:

- Information sharing: Q37, Q69, Q66, Q32 and Q61.
- Respect for patient-centred values: Q53, Q35, Q25, Q28 and Q40.
- Emotional support: Q39 and Q38.
- Confidence and Trust: Q29, Q26 and Q36.
- Coordination and integration of care: Q59, Q60, Q67, Q71 and Q33.
- Food choice: Q23.
- Respect and dignity: Q72.
- Overall: Q74.

### 4.3 Trust results

Analysis is conducted on the data at trust level, to allow comparisons to be drawn between the performance of each unique trust to individual questions in the survey. The method for this analysis is detailed in the technical document that could be found here: [www.cqc.org.uk/inpatientsurvey](http://www.cqc.org.uk/inpatientsurvey).

The results of this analysis are published in [benchmark reports](#) and made available on the [CQC's website](#). A report is produced for each individual trust, which illustrates how the trust performed on each question when compared to all other trusts.

For applicable questions, each response option is assigned a score (0-10) and composite section scores are produced by grouping similar questions together. Demographic questions, non-specific responses, some routing questions and questions that do not evaluate a trust's performance are not scored. A trust's score for a specific question is calculated by taking the weighted average<sup>4</sup> of scores of all trusts for the current question.

A chart is then produced for every scored question and each section of the questionnaire, except for if a question has fewer than 30 response, in which case, a graph is not produced<sup>5</sup>. Each chart depicts the range of scores for all trusts for its corresponding question/section. An example of such a graph can be seen in Figure 1. Here, the black diamond indicates the score of the trust. If the diamond lies in the red section, then the trust performed 'worse' than expected when compared to other trusts. Likewise, if it lies in the green, then the trust performed 'better' than others. If the diamond lies in the orange, as in the example, then the trust performed about the same as the other trusts on question being considered

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<sup>4</sup> Weighting the averages adjusts for variation between trusts in age, sex and route of admission.

<sup>5</sup> 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 national averages and the trust is not given a section score.

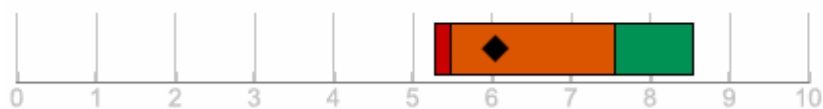


Figure 1: Example question-specific graph comparing the results of one particular trust to all others in the survey.

The benchmark reports also contain a number of tables which detail the range of scores, number of responses, and comparisons to the 2015 scores for each individual question and section. Arrows next to each row in the table indicate where the 2015 score for the question featured in the row is significantly higher or lower than the 2016 score, while no arrow reflects no statistically significant change. However, as noted stated in Section 3.5, it was not feasible to draw comparison between the 2015 and 2016 data for four trusts due to sampling errors made during the 2015 survey.

A second batch of tables included in these reports detail the number of respondents, response rate, and demographic information for trust compared to that of all the trusts featured in the survey as a whole<sup>6</sup>.

#### 4.4 NHS England National Statistics

Twenty questions in the 2016 Adult Inpatient Survey contribute to Overall Patient Experience Scores, as outlined by NHS England, and which cover five domains of patient experience:

- Access and waiting
- Safe, high quality, co-ordinated care
- Better information, more choice
- Building closer relationships
- Clean, friendly, comfortable place to be

More information on these domains can be found on the website for [NHS England](#).

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<sup>6</sup> 'National' figures are calculated using survey data from all trusts - these figures refer to the sampled population, which may have different characteristics to the population of England.

## 5 Quality assurance

### 5.1 Approved contractor / in house trust checks

Each contractor and in-house trust undertakes a series of checks at key stages of the survey, especially the sample preparation and data cleaning stages, where checks tend to focus on issues such as including ineligible patients. Due to contractors receiving mailing information, they also do validation checks to see if the address is complete enough for a survey to be sent out.

The progress of survey is monitored at trust level on a weekly basis during the fieldwork stage, with the Co-ordination Centre investigating any issues that arise.

### 5.2 Co-ordination Centre checks

The Co-ordination Centre undertake a number of quality assurance (QA) checks throughout the course of the survey project. The first of these are concerned with determining whether there are any errors in the sample file that is used for mailing, with the aim of minimising any exclusions of data at the analysis stage of the survey, due to eligibility issues.

The Co-ordination Centre also check hard copies of the covering letters and questionnaires used by each trust within the survey, with the aim of identifying where errors have been introduced when the survey documents are reproduced by either contractors or in house trusts; errors which tend to be typographical in nature. If an error is identified that would compromise the data collected, making the data unusable, one of two things happen. The first, and more favourable option, would be to rectify the mistakes before mailing. Otherwise, the second option is to exclude the data for that particular question from the final dataset and output for the trust in question.

During fieldwork stage, the Co-ordination Centre monitor the progress of the mailings and response rates at both national and trust level. While not technically a QA check, this monitoring does allow the Co-ordination Centre to flag any concerns in regards to how the survey is progressing. This highlights any issues that could have an impact on the data collected due to low response rates affecting the representativeness of the data, thereby limiting its usability. Furthermore, the survey is administered in a standardised approach, with a set number of mailings during fieldwork and with a particular final mailing date, so as to allow groups that tend to respond late in surveys to have sufficient time to respond.

The final set of QA checks undertaken by the Co-ordination Centre focus on the response data and analysis thereof. In addition to the aforementioned checks undertaken on the survey data, each stage of the data cleaning process is second checked internally.

Finally, all analysis outputs, including the trust level results and England level reporting, go through a two stage quality assurance process, being checked by both the Co-ordination Centre and CQC.

## 6 Data limitations

### 6.1 Context

As with any piece of social research, statistical analysis of the data collected as part of the Adult Inpatient Survey is susceptible to various types of errors from different sources. As a result of this, potential sources of error are carefully controlled through rigorous development work in terms of questionnaire design and sampling strategy, which in turn, is supported by extensive quality assurance at every stage.

### 6.2 Seasonal effects

Participating NHS Trust selected inpatients who had a stay of at least one night during the month of July 2016, starting from 31<sup>st</sup> July 2016 and working backwards. The vast majority of patients included in the 2016 Adult Inpatient Survey therefore received treatment in July 2016. Indeed, 91% of the sample were discharged from hospital in July, with 97% being discharged in either June or July. It is therefore possible that there may be some seasonal effects on responses; if staffing levels and other factors differ throughout the year, for example. However, given that the sampling period is the same for all trusts taking part in the survey and that the Adult Inpatient Survey has historically been sampled during the summer months, any such seasonal variation would not affect the comparability of the results or its use in assessing the performance of trusts.

### 6.3 Response rates

Response rates for the survey have dropped since it was first launched, and this is consistent with both other surveys in the NHS Patient Survey Programme and social and market research more generally.

Figure 2 illustrates response rate trends for the more established surveys in the NHS Patient Survey Programme. Although it should be noted that not all surveys are carried out on an annual basis, there is a clear downward trend across all surveys. It can be seen here that the Adult Inpatient Survey generally has the highest response rates, with the Community Mental Health and Emergency Department<sup>7</sup> surveys having the lowest. The Adult Inpatient Survey has traditionally maintained a response rate >50%, but it hit its lowest point during the 2014 and 2015 iterations of the survey. For 2016, this dropped even lower, with a response rate of 44%, although this is still in line with broader trends. It should be noted that, due to differences in the sampled populations and the year of implementation, there are no appropriate surveys to compare the response rate with.

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<sup>7</sup> Formally known as the Accident and Emergency Department survey.

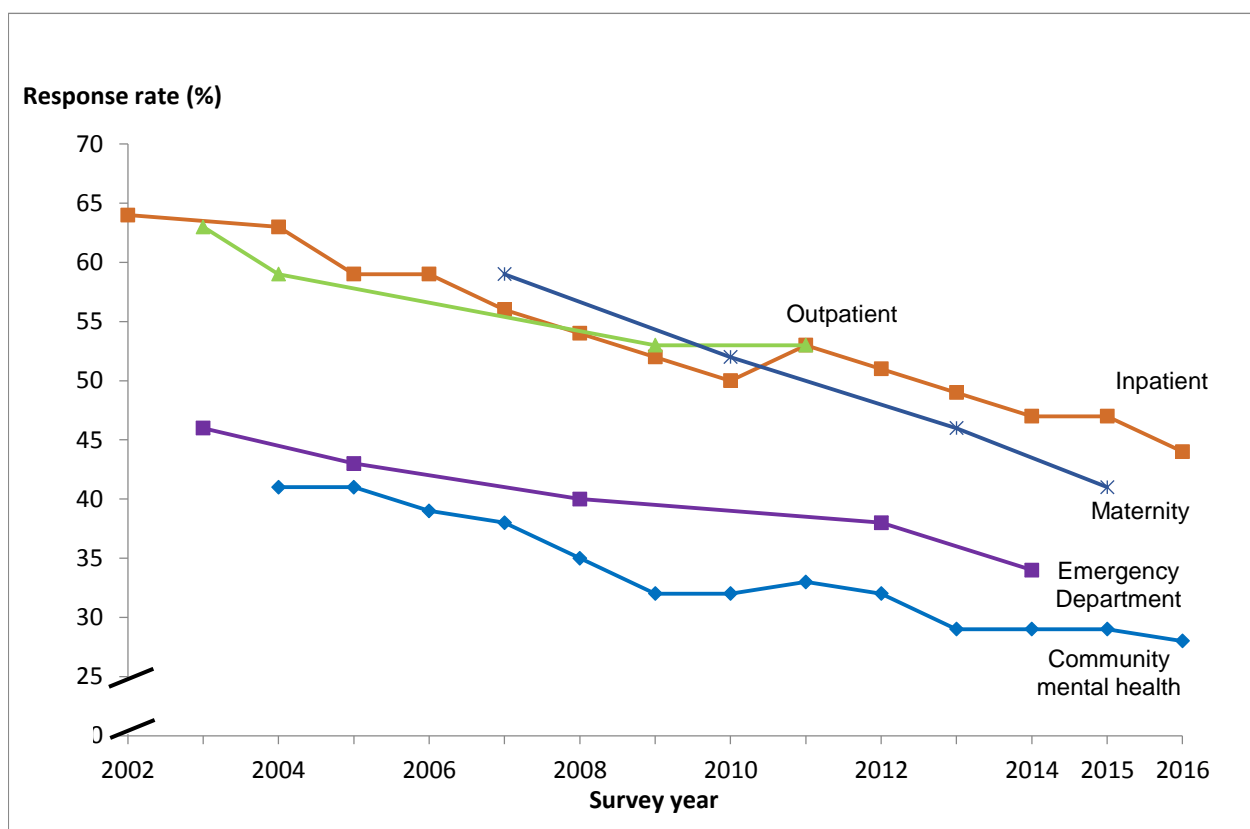


Figure 2: response rates for established surveys in the NHS Patient Survey Programme. Note that not all surveys are conducted on an annual basis.

The CQC has made a concerted effort in recent years to improve response rates for the Adult Inpatient Survey. In 2007, following pilot survey work which indicated that it can take longer for minority groups to complete and return response, the fieldwork period was extended to 9 weeks. Further [pilot work](#) to improve response was conducted as part of the 2015 Adult Inpatient Survey, with the aim of testing approaches in order to improve survey participation; particularly from groups known to be less likely to respond.

Response rates were once again reviewed prior to the start of the 2016 iteration, and a fieldwork period of 19 weeks was opted for. Trusts were also contacted by the Co-ordination Centre and encouraged to strengthen their pre-survey publicity.

The development of the 2017 Adult Inpatient Survey will include a more in-depth review of feasible interventions or measures that might further boost response rates; with more detail on specific measures being communicated to participating trusts, and published as part of the information for the 2017 survey.

## 6.4 Non-response bias

Non-response bias is one of the main issues that can affect the survey results, and as response rates for surveys decline, the risk of this increases. Non-response bias is the result of certain individuals in the sample being unwilling to partake in a survey. This creates the potential for those who chose to respond being different from those who chose not to, such as those people with more negative views of the service being more likely to respond.



This issue is exacerbated by a number of factors. Firstly, non-response bias is difficult to assess, due to there being no way of knowing how those people who did not respond would have answered.

Secondly, the split between those who did not receive a questionnaire (and could not respond) versus those who chose not to respond cannot always be known. Although the number of questionnaires that were 'returned undelivered' was logged during the course of the survey, there may be another group of individuals who, for example, had changed address but not informed the trust, and therefore did not receive the questionnaire. When logging the outcome of sending a questionnaire, those individuals are placed in the group 'outcome unknown', alongside others who have chosen not to return the questionnaire.

Thirdly, patient confidentiality prevents the Co-ordination Centre from assessing the data quality of the samples that were drawn as they do not have access to the name and address details of those in the sample population.

Research carried out as part of the NHS Patient Survey Programme<sup>8 9 10</sup> has shown that certain groups are consistently less likely to respond. These include:

- Young people
- Males
- Black and minority ethnic groups (BME)
- People from London
- People from deprived areas
- People with poor literacy
- People with a mental health condition

Tables 1 and 2 demonstrate how there is clear demographic response bias in the 2016 sample. It can be seen from table 1 that the current data sample has a clear bias in favour of respondents of white ethnicity and aged >50 years. Two separate factors account for this bias. Firstly, data from the most recent UK census in 2011 demonstrated that the white ethnic group is the most prominent in England and Wales; account for 86% of the total population<sup>11</sup>, which is in line with the data in Table 1. Secondly, life expectancy in England and Wales is slowly increasing, with the number individuals living to be older than 65 years of age being significantly higher than in the late-1970s<sup>12</sup>.

Table 2 outlines the demographic information for the sample as a whole, all patients selected for inclusion in the survey, and the respondents. This second table offers the same conclusions as those drawn from Table 1.

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<sup>8</sup> [http://www.nhssurveys.org/Filestore/documents/Increasing\\_response\\_rates\\_literature\\_review.pdf](http://www.nhssurveys.org/Filestore/documents/Increasing_response_rates_literature_review.pdf)

<sup>9</sup> [http://www.nhssurveys.org/Filestore/documents/Review\\_BMEcoverage\\_HCC\\_surveys.pdf](http://www.nhssurveys.org/Filestore/documents/Review_BMEcoverage_HCC_surveys.pdf)

<sup>10</sup> [http://www.nhssurveys.org/Filestore/documents/Increasing\\_response\\_rates\\_stakeholder\\_consultation\\_v6.pdf](http://www.nhssurveys.org/Filestore/documents/Increasing_response_rates_stakeholder_consultation_v6.pdf)

<sup>11</sup> The Office for National Statistics 'Ethnicity and National Identity in England and Wales: 2011' [accessed on 06/04/2017].

<sup>12</sup> The Office For National Statistics 'Overview of the UK Population, February 2016: Overview of the UK Population, its Size, Characteristics and the causes of population change including national and regional variation' [accessed on 06/04/2017].

Please note that tables 1 and 2 are based on information from trust sample files<sup>13</sup> only, and will therefore differ from response rates published elsewhere; which are a combination of responses to the demographics questions, or sample file information if the response is missing. Respondent-provided information cannot be used to calculate response rates, as the corresponding information is unavailable for non-responders. The response rate is based on the adjusted response; deceased patients and anyone for whom the questionnaire was undeliverable were removed from the base.

**Table 1 Respondents and non-responders to the 2016 Adult Inpatient Survey by key demographics**

Demographics	Responded (%)	
	Yes	No
<b>Gender</b>		
Male	47%	53%
Female	53%	47%
<b>Age</b>		
18-35	5%	95%
36-50	9%	26%
51-65	23%	77%
66+	63%	37%
<b>Ethnicity</b>		
White	90%	10%
Mixed	1%	99%
Asian or Asian British	3%	97%
Black or Black British	1%	99%
Chinese or other	0%	100%
Not stated or missing	5%	95%

<sup>13</sup> Trust sample files contain all people selected to take part in the survey and includes information such as age, gender and ethnicity

**Table 2 Sample and demographic profile for the 2016 Adult Inpatient Survey**

Demographics	Profile (%)	
	Sample	Respondent
<b>Gender</b>		
Male	47%	47%
Female	53%	53%
<b>Age</b>		
18-35	14%	5%
36-50	14%	9%
51-65	21%	23%
66+	51%	63%
<b>Ethnicity</b>		
White	83%	90%
Mixed	1%	1%
Asian or Asian British	4%	3%
Black or Black British	2%	1%
Chinese or other	1%	0%
Not stated or missing	9%	5%

## 6.5 Addressing non response bias in the survey results

We have considered the application of non-response weighting to the survey results for both the England data and the trust level results. However, in the consideration of 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 why the survey data are being collected.

For the majority of social research studies, in particular those that are cross sectional or general population, non-response is weighted for against the population demographics. This is normally achieved by weighting for key characteristics such as age, gender, marital status, socio-economic status, and if these variables exist either on the sampling frame or are collected at the time of interview. For example, in face to face interviewing, interviewers are able to collect observations about non-responding sample units by assessing the characteristics of the dwelling or neighbourhood (Lynn, 1996). Alternatively, if a national dataset exists for these key characteristics, such as the Census, then this can be used in deriving the weighting approach. The reason why weighting back to the population is key for these studies is that they are looking to make generalisations about a population as a whole rather than individual cases or sampling units within it.

For the NHS Patient Survey Programme, the data collected is used for measuring and comparing the performance of individual NHS trusts. Therefore it is important that we are able to distinguish between the characteristics of different trusts (i.e. the variation between them) to identify those trusts that are doing better or worse than the 'average' trust. As demographic characteristics such as age and gender are known to be related to responses, we therefore standardise different

organisations to a common average case-mix when calculating organisational results. This removes demographic differences as a source of variation and provides a 'level playing field' for comparing providers. Weighting for non-response to either a national population dataset or back to the sample data for a trust would not achieve this.

The England level results for the survey are weighted to the average trust. Some trusts have a higher response rate than others and would therefore have a greater influence over the England average than if a simple mean was 'calculated' across all respondents. To avoid this, weights are applied to the data. By applying these weights, the responses from each trust have an equal influence over the England average regardless of differences in response rates between trusts.

As the 2016 England level results present trend comparisons across surveys from 2006 to 2016, it is also necessary to standardise the data. Weights derived from the average age / sex / route of admission profile of the 2016 survey and average trust are multiplied together to produce a single, combined weight. This combined weight is applied to the 2006, 2011, 2015, and 2016 England level results, standardising them to the 2016 respondent age / sex / route of admission profile. Doing so controls for demographic changes in trust's respondents which accumulate over time<sup>14</sup>.

This weighting has been applied to the results for scored questions only. Results for demographic questions at the end of the survey questionnaire and all non-scored questions are left unweighted (a table listing which questions have been weighted can be found in Section 10 - Appendix A: Question weighting). The demographic questions are presented without weights applied, as it is more appropriate to present the real percentages of respondents to describe the profile of respondents, rather than average figures. Non-scored questions are unweighted to ensure consistency across the NHS Patient Survey Programme.

The potential non-response bias is partly addressed via statistical standardisation by age / sex / route of admission in the trust level results<sup>15</sup>. Standardising by ethnicity would in theory help address this non-response, however the ability to do this is hindered by a number of limitations detailed below.

Where the response rates for different groups vary, we have considered whether we could additionally weight by groups that are less likely to respond. However, there are a number of drawbacks to this approach, which is why it has not been implemented:

- As more variables are included in the standardisation, the analysis not only becomes more complex, but it also greatly increases the risk of very small groups with large weights.
- In order to weight data by age, gender, and ethnicity, and include this in the trust data, information on each of these variables is required. In order to maximise the amount of available data, if a respondent has not answered the corresponding questions that provide this information, then it is acquired from the sample file provided by the trust. However, while data for age and gender tends to be of very good quality, ethnicity is often quite poor; 479 people (3.6%) did not answer provide any information regarding their ethnicity in the 2016 survey. Thus, the sample file provided by the trust was missing this data for 474 people (3.6%). As the questionnaire uses the same ethnicity categories as those in the national UK census while trust records have use slightly different categories, and due to historical data quality concerns, the survey analysis

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<sup>14</sup> Please note, due to the approach taken to standardise the data, England level results in the 2006, 2011 and 2015 Inpatient Surveys will differ slightly from the trend comparison results in the 2016 survey's England level results.

<sup>15</sup> For more information on the methodology for the trust level results, please see the technical document which is referenced in the Section 8 'Further Information' at the end of this document.

relies solely on respondent-provided information for ethnicity. As a result, standardisation by ethnicity would, in this instance, require the removal of 479 people from the analysis; which is not desirable, particularly in a survey already suffering from low response rates.

- Some trusts have very low proportions of individuals from particular ethnic groups. As weights are capped, this would lead to many respondents having capped weights. This should be avoided as far as possible when standardising data, as it limits the comparisons that can be made fairly.
- Standardisation based on ethnicity should also be avoided due to genuine differences in the experiences across the sub-groups.
- Changing the method of weighting the data would make the survey data incomparable with data from previous survey iterations and therefore interrupt trend data.

Furthermore, it should be noted that direct assessment of non-response bias upon survey data is difficult to measure due to the obvious ethical implications of acquiring such data; this would require further contact with patients who do not wish to be contacted. Rather than further adjusting the data, this issue is managed by adopting best-practice methodologies so as to maximise response rates from all groups; as discussed Section 2.1 'Survey design and implementation'.

## 7 Data revisions

CQC publishes a [Revisions and Corrections Policy](#) relating to these statistics. The NHS Patient Survey data are not subject to any scheduled revision due to the surveys capture the views of patients about their experiences of care at a specific point in time. All new survey results are therefore published on CQC's website and NHS Surveys, as appropriate, and published results for previous iterations of the survey are not revised. The Revisions and Corrections Policy sets out how CQC will respond if an error is identified within this and it becomes necessary to correct published data and / or reports.

## 8 Further information

The report outlining the England and trust-level results can be found on the CQC website, and a 'technical document' which describes the methodology used for analysing trust-level results can also be found here.

The trust-level results from previous iterations of adult inpatient survey can be found on the [NHS surveys site](#).

Full details of the methodology for the survey, including questionnaires, letters sent to participants, instructions on how to carry out the survey and the survey development report, are also available on the [NHS surveys site](#).

More information on the NHS Patient Survey Programme, including results from other surveys and a programme of current and forthcoming surveys can be found on the [CQC's website](#).

## 9 Feedback

We welcome all feedback on the survey findings and the approach adopted in reporting the results; particularly from service users, their representatives, and those providing services. If you have any views, comments or suggestions on how this publication could be improved, please contact the User Voice Development Manager via [Patient.Survey@cqc.org.uk](mailto:Patient.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 NHS Patient Survey Programme.



## 10 Appendix A: Question weighting

The following table lists the questions included in the 2016 Adult Inpatient Survey and whether weighting is applied for England-level results.

No.	Question	Weighted / Unweighted
Q1	Was your most recent hospital stay planned in advance or an emergency?	Unweighted
Q2	When you arrived at the hospital, did you go to the A&E Department (also known as the Emergency Department, Casualty, Medical or Surgical Admissions unit)?	Unweighted
Q3	While you were in the A&E Department, how much information about your condition or treatment was given to you?	Weighted
Q4	Were you given enough privacy when being examined or treated in the A&E Department?	Weighted
Q5	When you were referred to see a specialist, were you offered a choice of hospital for your first hospital appointment?	Unweighted
Q6	How do you feel about the length of time you were on the waiting list before your admission to hospital?	Weighted
Q7	Was your admission date changed by the hospital?	Weighted
Q8	In your opinion, had the specialist you saw in hospital been given all of the necessary information about your condition or illness from the person who referred you?	Weighted
Q9	From the time you arrived at the hospital, did you feel that you had to wait a long time to get to a bed on a ward?	Weighted
Q10	While in hospital, did you ever stay in a critical care area (e.g. Intensive Care Unit, High Dependency Unit or Coronary Care Unit)?	Unweighted
Q11	When you were first admitted to a bed on a ward, did you share a sleeping area, for example a room or bay, with patients of the opposite sex?	Weighted
Q12	During your stay in hospital, how many wards did you stay in?	Unweighted
Q13	After you moved to another ward (or wards), did you ever share a sleeping area, for example a room or bay, with patients of the opposite sex?	Weighted
Q14	While staying in hospital, did you ever use the same bathroom or shower area as patients of the opposite sex?	Weighted

<b>No.</b>	<b>Question</b>	<b>Weighted / Unweighted</b>
<b>Q15</b>	Were you ever bothered by noise at night from other patients?	Weighted
<b>Q16</b>	Were you ever bothered by noise at night from hospital staff?	Weighted
<b>Q17</b>	In your opinion, how clean was the hospital room or ward that you were in?	Weighted
<b>Q18</b>	How clean were the toilets and bathrooms that you used in hospital?	Weighted
<b>Q19</b>	Did you feel threatened during your stay in hospital by other patients or visitors?	Weighted
<b>Q20</b>	Did you get enough help from staff to wash or keep yourself clean?	Weighted
<b>Q21</b>	If you brought your own medication with you to hospital, were you able to take it when you needed to?	Weighted
<b>Q22</b>	How would you rate the hospital food?	Weighted
<b>Q23</b>	Were you offered a choice of food?	Weighted
<b>Q24</b>	Did you get enough help from staff to eat your meals?	Weighted
<b>Q25</b>	When you had important questions to ask a doctor, did you get answers that you could understand?	Weighted
<b>Q26</b>	Did you have confidence and trust in the doctors treating you?	Weighted
<b>Q27</b>	Did doctors talk in front of you as if you weren't there?	Weighted
<b>Q28</b>	When you had important questions to ask a nurse, did you get answers that you could understand?	Weighted
<b>Q29</b>	Did you have confidence and trust in the nurses treating you?	Weighted
<b>Q30</b>	Did nurses talk in front of you as if you weren't there?	Weighted
<b>Q31</b>	In your opinion, were there enough nurses on duty to care for you in hospital?	Weighted
<b>Q32</b>	Did you know which nurse was in charge of looking after you? (this would have been a different person after each shift change)	Weighted
<b>Q33</b>	In your opinion, did the members of staff caring for you work well together?	Weighted

No.	Question	Weighted / Unweighted
Q34	Sometimes in a hospital, a member of staff will say one thing and another will say something quite different. Did this happen to you?	Weighted
Q35	Were you involved as much as you wanted to be in decisions about your care and treatment?	Weighted
Q36	Did you have confidence in the decisions made about your condition or treatment?	Weighted
Q37	How much information about your condition or treatment was given to you?	Weighted
Q38	Did you find someone on the hospital staff to talk to about your worries and fears?	Weighted
Q39	Do you feel you got enough emotional support from hospital staff during your stay?	Weighted
Q40	Were you given enough privacy when discussing your condition or treatment?	Weighted
Q41	Were you given enough privacy when being examined or treated?	Weighted
Q42	Were you ever in any pain?	Unweighted
Q43	Do you think the hospital staff did everything they could to help control your pain?	Weighted
Q44	How many minutes after you used the call button did it usually take before you got the help you needed?	Weighted
Q45	During your stay in hospital, did you have an operation or procedure?	Unweighted
Q46	Beforehand, did a member of staff explain the risks and benefits of the operation or procedure in a way you could understand?	Weighted
Q47	Beforehand, did a member of staff explain what would be done during the operation or procedure?	Weighted
Q48	Beforehand, did a member of staff answer your questions about the operation or procedure in a way you could understand?	Weighted
Q49	Beforehand, were you told how you could expect to feel after you had the operation or procedure?	Weighted

No.	Question	Weighted / Unweighted
Q50	Before the operation or procedure, were you given an anaesthetic or medication to put you to sleep or control your pain?	Unweighted
Q51	Before the operation or procedure, did the anaesthetist or another member of staff explain how he or she would put you to sleep or control your pain in a way you could understand?	Weighted
Q52	After the operation or procedure, did a member of staff explain how the operation or procedure had gone in a way you could understand?	Weighted
Q53	Did you feel you were involved in decisions about your discharge from hospital?	Weighted
Q54	Were you given enough notice about when you were going to be discharged?	Weighted
Q55	On the day you left hospital, was your discharge delayed for any reason?	Weighted
Q56	What was the MAIN reason for the delay?	Weighted
Q57	How long was the delay?	Weighted
Q58	Where did you go after leaving hospital?	Unweighted
Q59	After leaving hospital, did you get enough support from health or social care professionals to help you recover and manage your condition?	Weighted
Q60	When you left hospital, did you know what would happen next with your care?	Weighted
Q61	Before you left hospital, were you given any written or printed information about what you should or should not do after leaving hospital?	Weighted
Q62	Did a member of staff explain the purpose of the medicines you were to take at home in a way you could understand?	Weighted
Q63	Did a member of staff tell you about medication side effects to watch for when you went home?	Weighted
Q64	Were you told how to take your medication in a way you could understand?	Weighted
Q65	Were you given clear written or printed information about your medicines?	Weighted

<b>No.</b>	<b>Question</b>	<b>Weighted / Unweighted</b>
<b>Q66</b>	Did a member of staff tell you about any danger signals you should watch for after you went home?	Weighted
<b>Q67</b>	Did hospital staff take your family or home situation into account when planning your discharge?	Weighted
<b>Q68</b>	Did the doctors or nurses give your family or someone close to you all the information they needed to help care for you?	Weighted
<b>Q69</b>	Did hospital staff tell you who to contact if you were worried about your condition or treatment after you left hospital?	Weighted
<b>Q70</b>	Did hospital staff discuss with you whether you would need any additional equipment in your home, or any adaptations made to your home, after leaving hospital?	Weighted
<b>Q71</b>	Did hospital staff discuss with you whether you may need any further health or social care services after leaving hospital? (e.g. services from a GP, physiotherapist or community nurse, or assistance from social services or the voluntary sector)	Weighted
<b>Q72</b>	Overall, did you feel you were treated with respect and dignity while you were in the hospital?	Weighted
<b>Q73</b>	During your time in hospital did you feel well looked after by hospital staff?	Weighted
<b>Q74</b>	Overall...	Weighted
<b>Q75</b>	During your hospital stay, were you ever asked to give your views on the quality of your care?	Weighted
<b>Q76</b>	Did you see, or were you given, any information explaining how to complain to the hospital about the care you received?	Weighted
<b>Q77</b>	Who was the main person or people that filled in this questionnaire?	Unweighted
<b>Q78</b>	Do you have any of the following long-standing conditions? (Cross ALL boxes that apply)	Unweighted
<b>Q79</b>	Does this condition(s) cause you difficulty with any of the following? (Cross ALL boxes that apply)	Unweighted
<b>Q80</b>	Are you male or female?	Unweighted
<b>Q81</b>	What was your year of birth?	Unweighted
<b>Q82</b>	What is your religion?	Unweighted

<b>No.</b>	<b>Question</b>	<b>Weighted / Unweighted</b>
<b>Q83</b>	Which of the following best describes how you think of yourself?	Unweighted
<b>Q84</b>	What is your ethnic group?	Unweighted