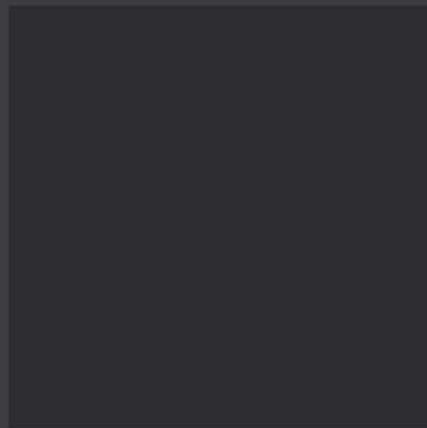
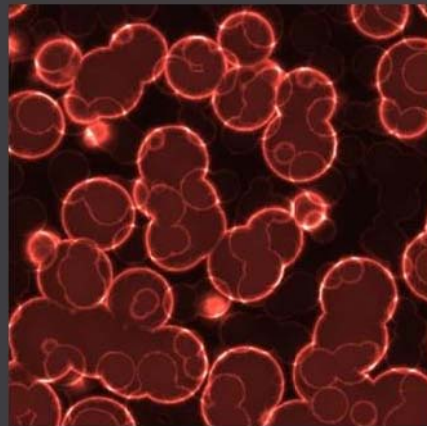


March 2014

Public Attitudes to Science 2014

Technical Report



Contents

1	Introduction.....	1
2	Quantitative methodology	2
2.1	The samples.....	2
2.2	Development of the survey materials.....	4
2.3	Data collection.....	9
2.4	Response rate and sample outcomes.....	10
2.5	Weighting.....	13
2.6	Sampling errors	15
2.7	Data processing and management	16
2.8	Social Grade classification.....	17
3	Qualitative methodologies	19
3.1	Social listening	19
3.2	Ipsos MORI Connects online qualitative research.....	21
3.3	Face-to-face observational interviews.....	28
3.4	Day of Discovery workshop and toolkit.....	29
	Appendix A: questionnaire.....	35
	Appendix B: advance letter	64

List of Tables

Table 2.1	– fieldwork outcomes for adult sample.....	11
Table 2.2	– full fieldwork outcomes for adult main sample	12
Table 2.3	– approximate sampling tolerances.....	16
Table 2.4	– social Grade definitions.....	18
Table 3.1	– demographic profile of Ipsos MORI Connects community	21
Table 3.2	– overview of Ipsos MORI Connects study topics.....	22
Table 3.3	– demographic profile of Ipsos MORI Connects wave 1 survey participants	23
Table 3.4	– demographic profile of Ipsos MORI Connects wave 1 ‘live chat’ participants.....	24
Table 3.5	– demographic profile of Ipsos MORI Connects wave 2 bulletin board participants.....	25
Table 3.6	– demographic profile of Ipsos MORI Connects wave 3 ‘live chat’ participants.....	26
Table 3.7	– demographic profile of Ipsos MORI Connects wave 4 qualitative survey participants..	27
Table 3.8	– topics covered in in-depth interviews	29
Table 3.9	– quotas set for Day of Discovery participants.....	30
Table 3.10	– summary of ‘stations’ at Day of Discovery.....	33

1 Introduction

This report presents the technical details of a programme of quantitative and qualitative research carried out as part of Public Attitudes to Science (PAS) 2014, a study of attitudes among the UK public. The research was conducted by Ipsos MORI, in partnership with the British Science Association (BSA), on behalf of the Department for Business, Innovation and Skills (BIS) and the Economic and Social Research Council (ESRC).

A *Main Report*, presenting the findings from the research in detail, has been published separately. In addition, an infographic showing the key findings has been published.¹

¹ These separate publications are available on the Ipsos MORI website, at: <http://www.ipsos-mori.com/pas2014>.

2 Quantitative methodology

2.1 The samples

Overview

The survey comprises two samples: a representative sample of UK adults aged 16 or over living in private residential accommodation (the “main” sample) and an additional representative boost sample of young people in the UK aged 16 to 24 living in private residential accommodation. Sampling of the main population was undertaken at designated addresses, while a quota approach was used to obtain interviews with young people.

The sample for PAS 2014 covered England, Wales, Scotland and Northern Ireland. The main sample was drawn from the Postcode Address File (PAF).² At each sampled main address, the interviewer screened for dwelling units (DUs) containing at least one person aged 16 years or over. If there was more than one eligible DU at the sampled address, one was randomly selected using a selection grid. At responding DUs interviewers used a selection grid to select one individual aged 16 years or over at random to complete the adult interview. The main sample was designed to be representative of the general adult population aged 16 or over, living in private households in the UK.

Drawing the main sample

In a change from the 2011 survey, PAS 2014 used a random probability sampling methodology. As is common in high-quality surveys of the general population, a multi-stage stratified sample was drawn to maximise precision while minimising cost.

The first stage of the sampling was to select the clusters, or Primary Sampling Units (PSUs) from which addresses for interviewers to visit would be sampled. Office for National Statistics Lower Super Output Areas (LSOAs) were chosen to be used as PSUs. A list of all UK LSOAs was drawn from the most up-to-date small-user PAF, maintained by the Post Office.

Prior to selection the list of LSOAs was stratified by Local Authority and proportion of the population with qualifications at A Level or to a higher level based on 2001 census data. Stratification can increase the precision of survey estimates if the variables used as stratifiers correlate with survey

² The version of the PAF used was the Royal Mail postcode update from February 2013.

variables. Given the topics covered by the survey, educational achievement was considered an appropriate choice.

PSUs were selected with probability proportional to size³ by applying the method of random start and fixed interval to cumulative PAF totals. Within each PSU, 37 addresses were randomly selected from the list of addresses in that PSU, sorted by postcode. Thus, each UK address had an equal probability of being sampled.

An initial sample of 194 main sample points was selected with 37 addresses per sample point, giving a total of 7,178 addresses. Sample points were then randomly allocated to either main or reserve sample, with 97 sample points being allocated to each. This meant a total of 3,589 addresses were issued to interviewers at the start of fieldwork. During fieldwork a further nine PSUs and 334 addresses were selected from the reserve sample at random. Thus, overall, 3,923 main addresses were issued to interviewers.

At each main address interviewers, where necessary, randomly selected one dwelling unit, and approached those living there to take part. At each dwelling unit, interviewers attempted to identify and interview one adult aged 16 or over. Where a household contained more than one adult, one was randomly selected.

Drawing the young adults booster sample

In order to allow for more in-depth analysis of young adults' attitudes to science a booster survey was also conducted with 16-24 year-olds. The booster survey retained the quota sampling approach of previous PAS surveys.

The sampling points were defined as two paired-adjacent output areas (OAs), which equal a Super Output Area (SOA). For Northern Ireland, which does not have SOAs, PSUs were drawn from the largest output areas, and chosen using probability proportionate to size.

SOAs were sorted within each country (England, Scotland, Wales and Northern Ireland), Government Officer Region and council area. SOAs where less than 16% of the local adult population were aged 16-24 were excluded.⁴

All eligible SOAs were ranked by a social grade discriminator (percentage of ABs) and 62 sampling points (i.e. SOAs) were selected, with probability

³ This was proportional to the number of adults in each PSU.

⁴ It should be noted that in 2011 this level was set at 30% rather than 16%. This was done in order to be comparable with the previous PAS study (PAS 2008), which took the same approach. As the main survey methodology was changed for PAS 2014, it was considered appropriate to increase the robustness of the booster survey as well, thereby moving away from the 2011 approach in this respect.

proportional to size, i.e. proportional to the number of 16-24 year olds in each one.

Quotas of five interviews per sampling point were set, with interviewers able to interview anyone in the household aged 16-24. Further non-interlocking flexible quotas were set on age (16-17 and 18-24) to reflect the population profile of the SOAs.

In addition to the 62 initial sampling points, two reserve sampling points per Government Officer Region were selected (per country for Scotland, Wales and Northern Ireland). Four reserve sample points were issued during the course of fieldwork.

2.2 Development of the survey materials

Scope of development work

The development stages of the survey were conducted over a three-month period from March 2013 to June 2013. While this was a tracking survey, some new questions were included to reflect topical issues in science. The main requirements of the development phase were to test new questions, to identify any changes that needed to be made to existing questions, and to test the new methodology.

The programme of development work was based around two pilots. The first involved a cognitive pilot of the new and a selection of the amended questionnaire material. The second consisted of a field pilot using the CAPI (Computer Assisted Personal Interviewing) program and the testing of many of the survey procedures to be used in the main stage. The questions for the pilot were primarily new questions designed specifically for this study, although the final questionnaire did include some repeat items, many of which had a number of minor amendments.

This included testing the four new module sections on big data, energy, agri-technologies and robots, as well as some of the new and amended agree/disagree statements.

Cognitive pilot

Ipsos MORI and the PAS 2014 steering group undertook a thorough review of the questionnaire used in the 2011 survey. New questions developed for PAS 2014 were cognitively tested in an iterative process in April 2013. The primary aim of the cognitive pilot was to test how well newly-developed questions worked, in terms of:

- respondents' understanding of the terms or concepts used in the questions

- whether questions had the same meaning for different groups of respondents
- whether questions were clear
- whether questions were easy for respondents to answer.

The cognitive pilot was split into two rounds, with findings discussed with BIS and with the PAS 2014 steering group between each round, and the questionnaire being developed and re-tested from round-to-round in light of these discussions.

Respondents

The cognitive interviews were conducted by members of the research team, in Ipsos MORI's London office. Respondents were recruited by specialist recruiters within Ipsos MORI's field team from local areas. Attempts were made to recruit respondents from both low-income and high-income areas. It was anticipated that knowledge and understanding of science would vary by socio-economic status.

While strict quotas were not enforced for the cognitive pilot, recruiters were instructed to recruit respondents with a variety of characteristics, according to a recruitment specification created for each round of interviews. These were identified through the use of a screening questionnaire. In total, ten interviews were conducted with adults and young people. These consisted of eight adults and two young people aged 16-24, consisting of five women and five men, ranging from 16 to 78 years of age.

The first round of cognitive testing was carried out on 10 April 2013, and the second round took place on 17-18 April 2013. Each consisted of five interviews, one of which was with a respondent aged 16-24.

Respondents to the cognitive interviews were given a £35 cash incentive to thank them for their time.

Cognitive pilot materials

Interviewers used the following materials to administer the cognitive interviews:

- cognitive pilot instructions
- cognitive testing questionnaire and prompts
- showcards
- Ipsos MORI's cognitive testing guidelines, detailing general prompts for the interviews.

Interviewers were asked to make full notes as they conducted each interview, noting down any general problems and responses to the specified probes.

Cognitive pilot modifications

Feedback was provided to BIS and to the steering group after each round of cognitive testing, with recommended revisions to particular sections of the questionnaire being submitted and discussed.

Primarily the changes made were small wording changes to enhance clarity. For the most part these were made to the modular sections at the end of the questionnaire, where almost all questions were new and untested. All of the main changes made are shown below.

- Respondents struggled to understand the phrase “scientific peer review in scientific journals” without seeing it written down. Therefore a showcard was used at this question.
- For both the energy and robots modules definition showcards were created and tested. It was noted in the cognitive testing the respondents struggled to hold all of the information in mind when going through the module, and responded better when they could refer back to the information as they answered questions. These showcards were excluded from the main showcard pack so that they could be left in front of respondents for the relevant module.
- Some respondents were confusing genetically modified (GM) crops with organic crops, so an explanation of the term was included.
- A new question was added to the personal data section to take account of those who did not join services because of data concerns, rather than only asking about those who had left. A clarification was also added to the battery of questions asking about support or opposition for specific uses of personal data to make it clear that the questions were asking about anonymised data, which was not clear to people in cognitive testing.
- Questions asking about public transport and elderly care by robots were clarified as respondents explained that their views would differ depending on specific examples.
- It was decided after the cognitive testing that the questions about scientists and engineers would be split and asked of split samples in the final survey, in order to seek views on both without conflating both professions within the same question.

CAPI field pilot

A field pilot took place in June 2013. Its primary aim was to test important aspects of PAS 2014, with a view to maximising the quality and effectiveness of the main-stage survey, due to go into the field in July 2014. The field pilot sought to test a number of distinct aspects of the study – the practical administration of the questionnaire and survey in the field and the process of encouraging participation among potential respondents. In addition, this pilot helped confirm the content and length of the questionnaire and test the new methodology for this survey. The field pilot did not seek to test the contact procedures or to determine likely response rates.

Respondents

The CAPI field pilot used the same sampling methodology as that described for the main survey and 29 respondents were interviewed between 28 May and 11 June 2013. This meant that the survey could be tested amongst a broad spectrum of the general public. Six sample points were selected, an interviewer was assigned to each area, and a target was set of five adults in each of the six areas. The six areas were selected randomly but analysis suggested that they represented a good cross-section of the UK population in terms of educational levels.

Briefing and debriefing

Interviewers attended a telephone briefing on 28 May 2013 where they were given background information about the purpose of the survey and were shown how to administer the questionnaire and given suggestions on how to encourage participation on the doorstep. Prior to the briefing, interviewers downloaded the questionnaire script on to their CAPI laptops. Each interviewer was also sent:

- Copies of an advance letter, in envelopes
- Set of showcards
- Set of field pilot project instructions
- Set of interviewer instructions
- Contact sheets for all addresses in sample point
- Copies of a field pilot feedback form
- 1 quota sheet
- £10 high street voucher for each respondent
- Paper copy of the survey questionnaire.

All relevant documents are presented in Appendix A of this report.

The telephone debrief was held on 17 June 2013 and was attended by BIS. Interviewers were asked to complete a feedback form for each interview, recording all of their feedback, prior to the debrief. These formed the basis of the discussion at the debrief.

Outcomes

The characteristics of the achieved sample suggest that this represented a good cross-section of the population as a whole in terms of demographic characteristics, and in relation to some of the characteristics likely to be associated with attitudes towards science research.

Post-pilot modifications

A number of issues were highlighted as a result of the field pilot. These were addressed, in consultation with BIS and the PAS 2014 steering group, prior to the main stage. The main changes were as follows:

- Interviewers noted that there was some difficulty in getting respondents to take part. At their suggestion amendments were made to the Advance letter and a list of answers to Frequently Asked Questions was provided to help interviewers encourage participants to take part in the survey. The £10 incentive was also seen as a positive way of encouraging participation.
- Average interview length in the pilot was significantly over the 45 minutes planned, at 57 minutes. Interviewers reported that interviews with older people in particular could last much longer than 45 minutes. Although some questions were removed as a result of the pilot, the primary change was to move to one module per respondent rather than two modules per respondent.

Questionnaire testing

In addition to piloting the questionnaire, the program was also tested by the Research and Operations teams. Checks were made to confirm the accuracy and sense of questionnaire wording and response options, as well as the accuracy of showcard references, to ensure that adults and young people, within main and boost addresses, were routed to the appropriate question sets, and to ensure that the modular sections were allocating approximately equal numbers of respondents to each module. Dummy topline were run to ensure that the survey routing was correct and that respondents would be asked only questions appropriate to their knowledge and situation.

The final version of the questionnaire as used for the main survey is included as Appendix A.

2.3 Data collection

Fieldwork was undertaken by Ipsos MORI interviewers. All fieldwork was conducted using face-to-face computer assisted interviewing.

Advance letter and leaflet

Interviewers were supplied with letters to send to all sampled main addresses two days before they intended to visit. This provided an introduction to the survey and explained to respondents how their addresses had been selected and what their participation would involve. Letters were also issued for the boost survey which interviewers could deliver by hand to addresses they called at.

This letter contained the contact details of the Ipsos MORI executive team, alongside information about the purpose of the survey and instructions on what to do next.

A copy of the advance letter can be found in Appendix B.

Briefings

A total of four telephone briefings were held for main stage interviewers between 9 and 23 July 2013. A further briefing was held later in the fieldwork period when new interviewers were added to the project. The briefings were conducted by researchers from Ipsos MORI.

The briefings covered the aims and background of the survey, procedures for starting work and selecting a respondent at the main address, an overview of the questionnaire and strategies for gaining respondents' cooperation. Interviewers were given a copy of the project instructions.

No interviewer briefings were carried out for the boost interviewers as they were using the more standard quota methodology. In practice, however, there was significant overlap between interviewers working on the two surveys.

Scheduling of interviews

For the main survey, standard guidelines were issued to all interviewers about the timing and the number of calls they should make to an address in the sample. These stipulated that a minimum of six calls (three of which must be made at either a weekend or evening) must be made at each address over a three-week period before recording a non-contact or refusal. A maximum of nine calls was allowed, as it is envisaged that further effort beyond that point is unlikely to yield many more productive interviews.

Interviewers recorded details of every attempt to make contact with each address and, where selected, each respondent, on the relevant contact sheet.

Fieldwork progress was monitored using Ipsos MORI's computer booking-in system, iProgress.

For the boost survey all addresses in the sample point were tried until it had been established that no young people lived at the address. In cases where there was a high proportion of non-residential properties or retirement properties in a sample point interviewers were permitted to work addresses in adjoining streets or a reserve sample point was issued, depending on which was felt to be most appropriate. In total, four reserve sample points were issued.

Quality control

The time, date and outcome of all calls for the main survey were recorded by interviewers and checks were made by field management.

Fieldwork progress

For the main survey, interviewers updated their iProgress application with information from the paper contact sheets at the end of each interviewing day, and this information was transmitted back to Ipsos MORI's Borough Road office over the internet. With this information, fieldwork progress could be updated on a daily basis.

Information on fieldwork progress was reported on a weekly basis to BIS.

Using this information, researchers were able to identify unproductive cases and points which could be reissued.

Fieldwork lasted for a total of 19 weeks, from 15 July 2013 to 24 November 2013. This was longer than anticipated in order to try and maximize the number of reissued addresses converted.

Incentives

All respondents who completed the questionnaire were given a £10 high street voucher as an incentive immediately upon completion as a token of appreciation.

Interview length

The interviews took an average of 43 minutes to complete for the main survey. Interview length was not recorded for the boost survey.

2.4 Response rate and sample outcomes

This section looks at the fieldwork outcomes for the survey. It starts by presenting separate response rates for the main survey, then gives a full breakdown of individual outcomes for the sample.

The total achieved sample was 1,749 adults aged 16+ and 315 young people aged 16 to 24 (all interviewed as part of the boost sample). The response rate achieved among adults at the main addresses was 47.5%.⁵ Response rates are not available for the young person boost survey or for the PAS 2011 survey as they cannot be calculated for quota surveys.

Main sample response rate

Table 2.1 shows a breakdown of the fieldwork outcomes for adults in the main sample. Because there are a small proportion of cases where it is not known if there was an eligible adult at the address, the 'true' response rate falls within a range where all unknown eligibility cases (for example, address inaccessible, or unknown whether address is residential) are assumed to be eligible, to an upper limit where all these cases are assumed to be ineligible. These calculations are based on the (conservative) assumption that all unknown eligibility cases are eligible.

Table 2.1 – fieldwork outcomes for adult sample

	PAS 2014	
	n	%
Addresses issued	3,922	100%
Ineligible (out of scope)	237	6.0%
Potentially eligible	3,685	94.0%
<i>Of potentially eligible</i>		
Unknown eligibility	24	0.7%
Definitely eligible	3,661	99.3%
Interview achieved	1,749	47.5%
Interview not achieved	1,912	51.9%
<i>Non-contact</i>	396	10.7%
<i>Refusal</i>	1,388	37.7%
<i>Other unproductive</i>	128	3.5%

Source: Ipsos MORI

The main reason for unproductive outcomes was refusal – 37.7% of eligible addresses or addresses where eligibility was unknown were unproductive for this reason. Non-contacts accounted for 10.7% of eligible addresses or addresses where eligibility was unknown, with a further 3.5% covered by other unproductive outcomes, such as being away or ill during fieldwork.

Outcomes

The full set of outcomes for main stage addresses is provided in Table 2.2.

⁵ Response rates are calculated using response rate 1 defined by the American Association for Public Opinion Research Standard Definitions (2011) – see <http://bit.ly/ZWA0ST> for AAPOR's Standard Definitions (2011)

Table 2.2 – full fieldwork outcomes for adult main sample

	PAS 2014	
	n	%
Issued	3,922	100%
Ineligible	237	6.0%
Communal establishment no private dwellings	4	0.1%
Non-residential address	29	0.7%
Address occupied, not main residence	17	0.4%
No eligible respondent 16+	0	0.0%
Not yet built/under construction	1	0.0%
Demolished/derelict	12	0.3%
Vacant/empty housing unit	164	4.2%
Other ineligible	10	0.3%
Potentially eligible	3,685	94.0%
Unknown eligibility	24	0.6%
Address not traceable or address not sufficient	23	0.6%
Other unknown eligibility	1	0.0%
Definitely eligible sample	3,661	93.3%
<i>Of potentially eligible:</i>		
Non-contact	386	10.5%
Some contact with respondent, no interview	192	5.2%
No contact with anyone at address after 6+ calls	204	5.5%
Refusal	1,388	37.7%
Refusal during interview	7	0.2%
Refusal by selected respondent	764	20.7%
Refusal by proxy	102	2.8%
Contact made at address but information refused	434	11.8%
Refused – entry to block/scheme refused by warden	7	0.2%
Refusal by phoning office	27	0.7%
Broken appointment - no re-contact	47	1.3%
Other non-productive	128	3.5%
Respondent physically/mentally incapable	62	1.7%
Language difficulties with selected person	21	0.6%
Away or in hospital during survey period	22	0.6%
At home ill during survey period	17	0.5%
Other unproductive outcome	6	0.2%
Productive	1,749	47.5%
Full interview obtained	1,749	47.5%

Source: Ipsos MORI

Further information on response

The main issue encountered during fieldwork was the high refusal rate. Interviewers reported that people were reluctant to take part in a survey about science because they did not know anything about it and because they felt it would be too difficult for them. This was particularly the case in more deprived and less well-educated areas. The fieldwork materials attempted to address these misconceptions with revised wording for the reissue advanced letter and a sheet of answers to Frequently Asked Questions for interviewers.

Efforts made to maximise response

During fieldwork an extensive reissue strategy was implemented with selected non-productive cases being reissued, often to a different interviewer, for a second attempt.

In all, 1,677 addresses (42.8% of all addresses) were reissued. Nine reserve sample points were also issued for the main stage to ensure that the final number of achieved interviews was as close as possible to the 1,800 target for completes.

2.5 Weighting

Overview

The survey dataset has been weighted to ensure that it is representative of the two survey populations – adults aged 16 or over in the UK and young adults aged 16-24.

Three stages of weighting were applied. The data were weighted to account for differing probabilities of selection (to take into account differing numbers of dwelling units at a small number of addresses, and household composition). The next step was to create a non-response weight to adjust for the propensities of people in different areas to respond (using logistic regression modelling). The final step was to apply calibration weighting, meaning the sample was proportionally matched to the UK population with regard to age within gender, and to region.

The dataset contains one weight variable, which should be applied for all analysis. Analysis should always be conducted separately for the main sample and the boost sample of young people. As the main sample and the young person boost are drawn from separate samples and the surveys conducted using different methodologies, the weight calculation is different depending on whether the respondent is in the main sample or young person boost sample.

Main sample weight

The weight for main sample respondents:

- adjusts for differential selection probabilities resulting from the selection of one dwelling unit per address and one adult per dwelling unit
- adjusts for a modelled propensity to respond in geo-demographically defined areas
- adjusts for differential non-response by region and, separately, by age and gender, thereby making the achieved sample representative of the population by these variables.

The weights were created in a series of steps detailed below.

Dwelling unit selection weight

One dwelling unit was selected at each address and where there was more than one dwelling unit at an address the participating dwelling unit had a lower chance of selection than addresses where there was only one dwelling unit. To correct for unequal probabilities of selection, a dwelling unit selection weight was created. This was equal to the number of dwelling units found at the address. The weight was trimmed at three to avoid a small number of very high weights as these would inflate the standard errors and reduce the precision of the survey estimates.

Adult selection weight

One adult aged 16 or over was interviewed at each participating dwelling unit. Therefore adults living with others had a lower chance of selection than those living alone. To correct for this, an adult selection weight was created. This was equal to the number of adults in the dwelling unit. The weight was trimmed at four.

Combined selection weight

The dwelling unit selection weight and the adult selection weight were combined (multiplied together) to create one selection weight for each adult in the sample.

Non-response modelling

A standard way of correcting for non-response is to model the probability of response in geo-demographically defined areas. A logistic regression model was used to estimate the probability that a selected address will yield a productive interview. The explanatory variables in the model were Government Office Region and the proportion of adults in the PSU SOC grade AB.

The non-response weight and the selection weight were multiplied together to obtain a “pre-calibration” weight.

Calibration to the population

The next step was to take the weighted sample and to “calibrate” the totals in each Government Office Region (GOR), and each of twelve age/gender categories, to population totals derived from the latest (mid-2011) population estimates for the UK. Calibration adjusts a set of input weights to sum to the totals specified in each category. This step adjusts for differential non-response by region and (separately) by age and gender.

Scaling the weights

The final step was to re-scale the weights so that the weighted total for the whole sample was equal to the unweighted total (1,749); this results in weights with an average of 1.⁶

Boost survey weights

As the boost survey took a quota approach, non-response weighting was not appropriate in this case. Data for the boost survey were weighted by gender, age, ethnicity, social grade, work status and country or region. Where young people from the main stage survey were added to the boost data tables, they retained their original non-response weight from the main survey with RIM weighting applied on top of that to the whole population of young people.

2.6 Sampling errors

The respondents to this survey are only a sample of the total UK population aged 16+ so it is not possible to be certain that the figures obtained are exactly those that would have been found if everybody had been interviewed (the “true” values). It is, however, possible to predict the variation between the sample results and the true values from knowledge of the size of the samples on which the results are based and the number of times that a particular answer is given. The confidence with which this prediction can be made is usually chosen to be 95% – that is, the chances are 95 in 100 that the true value will fall within a specified range. Table 2.3 illustrates the predicted ranges for different sample sizes and percentage results at the 95% confidence interval.

⁶ Individual weights were multiplied by the unweighted base size divided by the sum of weights.

Table 2.3 – approximate sampling tolerances

Size of sample on which survey result is based	Approximate sampling tolerances applicable to percentages at or near these levels		
	10% or 90%	30% or 70%	50%
	+/-	+/-	+/-
100 responses	5.9	9.0	9.8
200 responses	4.2	6.4	6.9
300 responses	3.4	5.2	5.7
385 (boost survey effective base)	3.0	4.6	5.0
400 responses	2.9	4.5	4.9
500 responses	2.6	4.0	4.4
510 responses (boost survey base)	2.6	4.0	4.3
600 responses	2.4	3.7	4.0
1,000 responses	1.9	2.8	3.1
1,379 (main survey effective base)	1.6	2.4	2.6
1,749 (main survey base)	1.4	2.1	2.3
2,000 responses	1.3	2.0	2.2

Source: Ipsos MORI

For example, with a sample size of 500 where 30% give a particular answer, the chances are 19 in 20 that the true value (which would have been obtained if the whole population had been interviewed) will fall within the range of +/-4 percentage points from the sample result.

When results are compared between separate groups within a sample, different results may be obtained. The difference may be real, or it may occur by chance (because not everyone in the population has been interviewed). To test if the difference is a real one, i.e. if it is statistically significant, the size of the samples, the percentage giving a certain answer and the degree of confidence chosen need to be known. The statistical test used for this is a two-tailed t-test. Where differences are reported against the total, an overlap formula is applied to account for the fact that these groups are not mutually exclusive (i.e. that those in the subgroup being tested will also appear in the total column).

2.7 Data processing and management

Editing

No hard checks were included in the scripting. Soft checks were included only at S1 and S2 to query if the number of dwelling units or the number of adults in the household were entered as greater than nine.

Given that most of the questions asked as part of this study related to the respondents' own attitudes and it is perfectly possible that one individual

may hold a variety of inconsistent attitudes, these were not subject to editing and any inconsistencies in the respondents' answers remain as given during the interview.

Coding

Post-interview coding was undertaken by members of Ipsos MORI's coding department using our coding software, Ascribe. Coders were briefed by researchers.

Other specify questions

For "other – please specify" questions, coders were asked to check the answers to see whether any could be back-coded into any of the pre-existing codes. Researchers also considered whether any additional codes needed to be added to the code frame.

There were no open-ended questions in the survey.

2.8 Social Grade classification

Social Grade coding (rather than Standard Occupational Classification coding) was conducted for both the main and boost surveys. Social grade is a classification system based on occupation and it enables a household and all its members to be classified according to the occupation of the Chief Income Earner (CIE).

A number of questions need to be asked in the interview in order to assign social grade accurately. The interviewer probes the respondent for information about the occupation of the CIE, the type of organisation he or she works for, job actually done, job title/rank/grade, and whether the CIE is self-employed. Also relevant are details of the number of people working at the place of employment and whether the CIE is responsible for anyone, together with confirmation of qualifications. Back-checking of social grade classifications was undertaken by the research team for a sample of cases. The social grade definitions are shown in Table 2.4.

Table 2.4 – social Grade definitions

Grade	Definition
A	Higher managerial, administrative or professional
B	Intermediate managerial, administrative or professional
C1	Supervisory or clerical and junior managerial, administrative or professional
C2	Skilled manual workers
D	Semi and unskilled manual workers
E	Casual or lowest grade workers, pensioners, and others who depend on the welfare state for their income, this also includes students

Source: National Readership Survey

3 Qualitative methodologies

The aim of the qualitative research for the 2014 project was to work iteratively, using online qualitative research and innovative offline techniques to answer research questions as they emerged from other aspects of the project and steering group meetings.

To that end, the qualitative research was structured as follows:

- social listening across 2013, tracking how various science topics were discussed online
- four waves of qualitative research across 2013 and early 2014 with members of the Ipsos MORI Connects online community to explore in more depth the attitudes of those who are already online
- eight follow-up face-to-face observational interviews in late 2013 and early 2014 with Ipsos MORI Connects members observing how they sought out science-related information online
- a Day of Discovery workshop in London on 11 January 2014 to further explore issues raised by the survey data with 106 members of the general public in London.

3.1 Social listening

Understanding the way opinions on science are formed online, especially through social media, was a key objective for this study, and one that had not been explored in previous PAS studies. To this end, a social listening exercise was undertaken using the Brandwatch proprietary search tool. The aim was to explore how particular science issues are discussed online and what people's sources of information are in these discussions.

The central challenge with this piece of research was the breadth of the topic area as it was not possible to map every mention of science online. It was decided in conjunction with the team at BIS to choose a certain number of science-related topics to track over different periods.

The eight topics chosen were:

- Horsemeat; meteor over Russia (Jan-Mar 2013)
- Genetically modified food; measles outbreak (Apr-Jun 2013)
- Fracking; badger cull (Jul-Oct 2013)

- Climate change; animal research (Oct-Dec 2013).

The Brandwatch tool was then used to identify the online conversation about each topic. Queries were programmed into the system and the search tool then looked for mentions across traditional news sites, Twitter, blogs and forums (Facebook was excluded due to the high security settings of the majority of users). For example, the query term for animal research was⁷:

"animal test" OR "animal testing" OR "animal research" OR "research on animals" OR "tests on animals*" OR *tested on animals* OR "testing on animals"

The tool allowed examination of the various aspects of the conversation quantitatively, including peaks in conversation, most linked sources, and reach of particular interventions in the debate. Some of the data was also analysed qualitatively. Researchers examined who was talking and what they were saying, and searched for themes, patterns and linkages within the data. This analysis allowed for a description of the nature of the conversations around each topic, and conclusions to be drawn about how people talk about science online, and the types of intervention in the online conversation that are likely to have impact.

⁷ Please see the social listening topic reports for the particular queries used for each specific topic.

3.2 Ipsos MORI Connects online qualitative research

Ipsos MORI Social Research Institute ran Ipsos MORI Connects (until February 2014), an online community of 2001 members of the public, covering a diverse range of demographic groups. The profile of the membership is outlined below:

Table 3.1 – demographic profile of Ipsos MORI Connects community

	Demographic	Number	% in community
Age	18-24	188	9%
	25-34	427	21%
	35-44	491	25%
	45-54	461	23%
	55-64	312	16%
	65+	118	6%
Gender	Male	733	37%
	Female	1264	63%
Region	North East	114	6%
	North West	206	10%
	Yorkshire & Humberside	177	9%
	East Midlands	147	7%
	West Midlands	183	9%
	East Anglia	155	8%
	South East	273	14%
	South West	159	8%
	London	226	11%
	Northern Ireland	77	4%
	Scotland	166	8%
	Wales	114	6%
		Total	2001

Source: Ipsos MORI

Ipsos MORI Connects members regularly commented on a range of social and political issues through surveys, discussion forums, blogs and live chats. Throughout the PAS project, members of this online community took part in four 'waves' of research about science, outlined in Table 3.2.

Table 3.2 – overview of Ipsos MORI Connects study topics

Date + Topic	Activity	Objectives
March 2013 (Wave 1) Science Information	Open qualitative “survey”, Live chat	To explore where people get their information about scientific issues from, in what format, and when. Where possible: <ul style="list-style-type: none"> exploring any relevant differences by type of issue or type of person exploring different behaviours and opinions by information channel (e.g. newspapers, radio, television, social networks, word of mouth) focusing in particular on how people interact with science information online.
July 2013 (Wave 2) Sharing science online	Week long bulletin board	<ul style="list-style-type: none"> to explore if, how and when people share and discuss science topics online to understand what makes particular topics “shareable” to understand what drives sharing of science topics and discussion.
October 2013 (Wave 3) Science funding	Short quantitative survey, Live chat	The short quantitative survey allowed participants to be assigned to one of the science segments, which enabled recruitment for the observational interviews. The live chat aims were: <ul style="list-style-type: none"> to gain an understanding of public views of government science policy and current priorities for investment. to understand views of how science is funded and by whom and how this compares with other countries to explore public reaction to the arguments currently used around science investment.
February 2014 (Wave 4) Survey follow up	Open qualitative ‘survey’	To follow up a small number of specific findings from the overall survey, either to understand apparent contradictions in findings, or to gain some insight into the implications of findings. Questions were asked about: <ul style="list-style-type: none"> Science and school Science organisations Scientists’ traits Trust in science Public involvement in science Media coverage of science.

Source: Ipsos MORI

Respondent Demographic Profiles

Where percentages do not add up to 100, this is due to lack of information about all participants (i.e. where they have chosen the option “prefer not to say”).

Ipsos MORI Connects wave 1

Table 3.3 – demographic profile of Ipsos MORI Connects wave 1 survey participants

Qualitative Survey Respondents (n=432)	Number	%*
Age		
18-24	9	2
25-34	53	12
35-44	95	22
45-54	122	28
55-64	106	25
65+	47	11
Gender		
Female	271	63
Male	161	37
Employment Status		
In education / student	7	2
Unemployed (seeking employment)	25	6
Unemployed for other reason (e.g. housewife / househusband)	85	20
Working part time (29 or fewer hours per week)	76	18
Working full time (30 or more hours per week)	167	39
Retired	72	17
Annual pre-tax income		
Under £20,000	146	34
£20,000 - 24,999	47	11
£25,000 - 34,999	79	18
£35,000 - 44,999	53	12
£45,000 - 54,999	32	7
£55,000 - 99,999	32	7
£100,000 or more	7	2
Highest level of education		
Primary School	3	1
Secondary School (GCSE / O Level)	130	30
College of further education / Sixth form (A-Level)	108	25
General National Vocational Qualification (GNVQ)	27	6
University degree	95	22
Masters degree / Post graduate diploma	45	10
Doctorate	6	1
Other	17	4
Ethnicity		
White	390	90
BME	35	8

Source: Ipsos MORI

**Table 3.4 – demographic profile of Ipsos MORI Connects wave 1
'live chat' participants**

Live-Chat Participants (n=14)	Number
Age	
18-24	3
25-34	2
35-44	3
45-54	3
55-64	2
Gender	
Male	7
Female	7
Employment Status	
In education / student	2
Unemployed (seeking employment)	1
Working part time (29 or fewer hours per week)	2
Working full time (30 or more hours per week)	7
Retired	1
Highest level of education	
Secondary School (GCSE / O Level)	4
General National Vocational Qualification (GNVQ)	1
College of further education / Sixth form (A-Level)	1
University degree	3
Ethnicity	
White	10
BME	4

Source: Ipsos MORI

Ipsos MORI Connects wave 2

All participants in this bulletin board were active on social media. A total of 45 IMC members who were also regular users of Twitter were invited to take part; 13 posted regularly throughout the course of the week, generating 85 detailed posts.

Table 3.5 – demographic profile of Ipsos MORI Connects wave 2 bulletin board participants

Bulletin Board regular participants (n=13)	Number
Age	
18-24	1
25-34	5
35-44	2
45-54	3
55-64	2
Gender	
Male	9
Female	4
Employment Status	
In education / student	1
Unemployed for other reason (e.g. homemaker)	2
Working part time (29 or fewer hours per week)	1
Working full time (30 or more hours per week)	9
Highest level of education	
Secondary School (GCSE / O Level)	2
College of further education / Sixth form (A-Level)	5
University degree	2
Masters degree / Post graduate diploma	4
Ethnicity	
White	9
BME	4

Source: Ipsos MORI

Ipsos MORI Connects wave 3

Table 3.6 – demographic profile of Ipsos MORI Connects wave 3 'live chat' participants

Live-Chat Participants (n=10)	Number
Age	
18-24	4
25-34	1
35-44	2
45-54	2
55-64	1
65+	1
Gender	
Male	5
Female	5
Employment Status	
Unemployed (seeking employment)	1
Unemployed for other reason (e.g. homemaker)	1
Working part time (29 or fewer hours per week)	1
Working full time (30 or more hours per week)	5
Retired	2
Highest level of education	
College of further education / Sixth form (A-Level)	7
University degree	2
Doctorate	1
Ethnicity	
White	8
BME	2

Source: Ipsos MORI

Ipsos MORI Connects wave 4

Table 3.7 – demographic profile of Ipsos MORI Connects wave 4 qualitative survey participants

Qualitative Survey Respondents (n=198)	Number	%*
Age		
18-24	5	3
25-34	16	8
35-44	33	17
45-54	62	31
55-64	51	26
65+	31	16
Gender		
Female	126	64
Male	72	36
Employment Status		
In education / student	1	1
Unemployed (seeking employment)	10	5
Unemployed for other reason (e.g. homemaker)	33	17
Working part time (29 or fewer hours per week)	74	37
Working full time (30 or more hours per week)	35	18
Retired	45	23
Annual pre-tax income		
Under £20,000	72	36
£20,000 - 24,999	18	9
£25,000 - 34,999	43	22
£35,000 - 44,999	22	11
£45,000 - 54,999	11	6
£55,000 - 99,999	13	7
£100,000 or more	2	1
Highest level of education		
Primary School	1	1
Secondary School (GCSE / O Level)	63	32
College of further education / Sixth form (A-Level)	43	22
General National Vocational Qualification (GNVQ)	1	6
University degree	56	28
Masters degree / Post graduate diploma	15	8
Doctorate	1	1
Other	7	4
Ethnicity		
White	184	93
BME	11	6

Source: Ipsos MORI

3.3 Face-to-face observational interviews

The second wave of the online qualitative research identified that the act of sharing science stories online is a complicated process with a number of different drivers. Participants found it easy to describe the information they shared and who with, but not the mechanics of how they did so.

As a result, a small piece of qualitative research was designed to allow researchers to observe participants' behaviours when looking for and sharing science information online. To this end, eight members of the Ipsos MORI Connects community were recruited, two each from four of the six PAS segments (Concerned, Late Adopters, Confident Engagers, Sceptical Engagers), with one male and one female respondent in each segment. A short quantitative poll with members of the Ipsos MORI Connects community allowed researchers to assign each to one of the attitudinal segments. Participants were then sampled and recruited via e-mail.

Once participants had been recruited, in home depth interviews lasting between 90 minutes and two hours were conducted. During the interview, each respondent was asked to complete various online tasks involving researching science information. Researchers asked follow-up questions after the tasks had been completed in order to gain greater depth of understanding.

The overall aims of the interviews were to understand:

- How people evaluate online sources of science information for trustworthiness, accuracy and potential bias
- What makes particular topics interesting and sharable to different types of people

Table 3.8 below outlines the themes and topics covered in each of the interviews.

Table 3.8 – topics covered in in-depth interviews

Discussion sections	Aims
Introduction	To orientate the participants and prepare them to take part in the interview.
Science and you	To understand the participants' broad level of engagement with science, including the extent to which they come into contact with it in their daily lives and how, whether they actively seek out science news and information, and how important they think science is.
Online behaviour	To observe what people do online on a daily basis: what are their most visited sites, where do they get their news?
Sharing behaviours	To understand to what extent participants share things online, why they share the things they do, through what channels and with whom.
Science information	To work out whether participants have accessed science information recently. To find out what sites are used and why, as well as how science information is shared.
Task 1: Finding out more about a science topic I am already interested in	To observe where participants would spontaneously go to learn more about science or a science related topic they are already interested in – participant choice of topic.
Task 2: Looking for science information on a new/unknown topic	To observe how participants would find out more about subjects they are likely to have little or no knowledge about currently; including what sites people use, search terms etc. To understand how, if at all, people choose which of the many sources to use and trust. Topic: synthetic biology.
Task 3: Making my mind up about a controversial science topic	To observe how participants look for more information about a contentious scientific issue in the news, and whether and how they engage in debate and share this information. Topic: the badger cull.

Source: Ipsos MORI

3.4 Day of Discovery workshop and toolkit

Following the survey, face-to-face qualitative research was conducted to explore how the findings might be used to engage the public and explore the implications of the findings for science communicators and policymakers. A 'Day of Discovery' was held in a venue in central London, during which survey results were used as stimulus to engage public participants in conversation about a range of science topics. There were

also four scientists (recruited by BSA) present on the day to engage with participants and answer any questions they had about how scientists work.

The materials and findings from the day are currently being worked into a toolkit, which will allow those who work in science engagement to run their own PAS-related events. The toolkit will be presented at the 2014 Science Communication Conference in London, and published in May 2014.

Sample and recruitment

Participants were recruited in-street on the day. They were all asked to stay for a minimum of 40 minutes, although many stayed for much longer than that. Recruiters were given the following minimum quotas to achieve, all of which were met. Across the day, 106 members of the public took part in the event.

Table 3.9 – quotas set for Day of Discovery participants

Demographic	Category	Minimum quota
Gender	Male	30
	Female	30
Age	18-24	20
	25-44	10
	45-65	10
	65+	10
Social Grade	AB	15
	C1C2	15
	DE	15
Ethnicity	White	30
	BME	20

Source: Ipsos MORI

Overall Objectives

The main objective for this piece of work was to use the survey findings from PAS 2014 to start a public debate about the best ways for public to become better informed about science. It was also intended to generate some new ideas for scientists and policy makers to connect with the public (taking into account the segmentation developed for the 2011 and 2014 surveys).

In order to do achieve this overall objective, the following sub-questions were developed:

- What is the best way to communicate with members of the different science segments?⁸
- What makes people informed about certain topics?

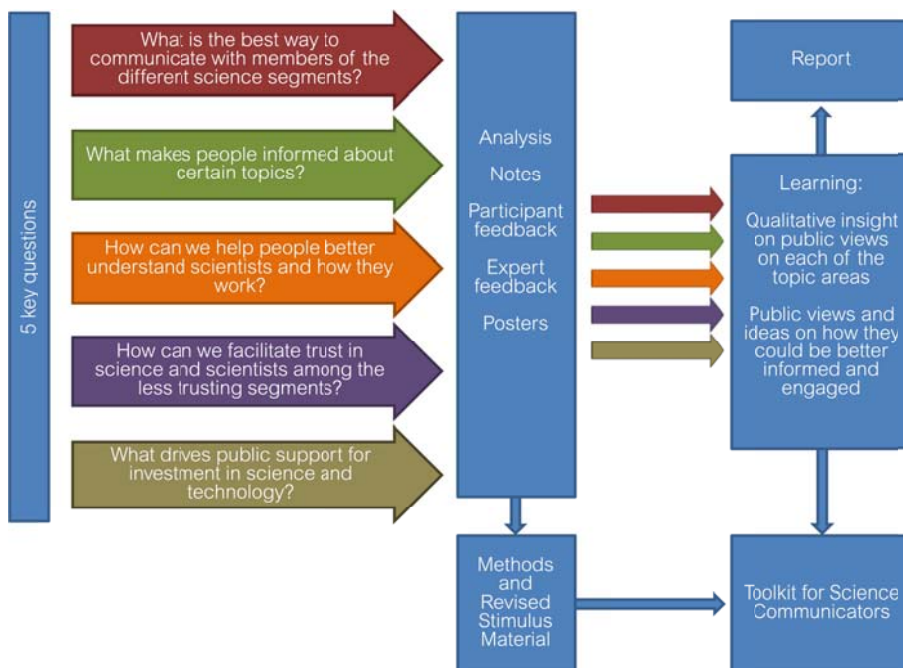
- How can we help people better understand scientists and how they work?
- How can we facilitate trust in science and scientists among the less trusting segments?
- What drives public support for investment in science and technology?

The main outputs of the event were:

- a toolkit for those working in science engagement (forthcoming)
- qualitative data that was integrated into the main PAS 2014 report
- two short videos that accompany the toolkit and the report.

Figure 3.1 shows how the data collected was used to feed into each of these outputs. The toolkit itself will lead to further outputs as the science engagement community runs their own events and generates further ideas for scientists and policy makers to connect with the public.

Figure 3.1 – data analysis of data collected during Day of Discovery



Participants had a choice of six 'stations' to visit during their time at the event. Each station focused on a different survey topic, or theme coming out of the findings. There were no compulsory stations, but participants were asked to visit at least three.

Upon arrival participants were given a short questionnaire to allocate them to one of the six segments identified in the quantitative survey. Participants

were given different coloured name badges so facilitators could identify which segment they belonged to.

The materials used on the day will be published as part of the toolkit (forthcoming, May 2014). The format, objectives and materials for each station are outlined in Table 3.10.

Table 3.10 – summary of 'stations' at Day of Discovery

Station and format	Research objectives	Engagement objectives	Stimulus
<p>Station 2: What do we know about science and what do we want to know?</p> <p>Posters based on survey results Rolling depths Rolling mini-groups.</p>	<p>Collect qualitative data relating to the following questions:</p> <ul style="list-style-type: none"> Why the public are better informed about some topics over others? How much is this linked to how it is reported in the media? Is lack of information simply a function of lack of interest? 	<ul style="list-style-type: none"> What more do the public (and members of specific segments) want to know about the science topics in the survey? What are the best ways to inform people about these kinds of topics? 	<p>Posters based on Q7 in the survey which measures how informed people feel about various science topics. Each poster was displayed near the station, with facilitators stationed nearby. Each participant recorded their reactions to the posters on post-it notes on/around the posters. This set-up was repeated at Station 4 and 5.</p>
<p>Station 3: How do scientists work?</p> <p>Chats with scientists Participant worksheets</p>	<p>Collect qualitative data around public understanding of scientists' day-to-day work</p>	<ul style="list-style-type: none"> Greater understanding of what people want to know about the scientific process and how scientists work, which will inform ideas for helping to demystify it. Understand in greater detail the characteristics that the public think that scientists should display, and how they want scientists to engage with the public. 	<p>Participants were given a hand-out explaining how the station worked, with prompts for questions to ask the scientists. Participants could also pose their questions on post-its if they didn't want to talk to the scientists, or there wasn't enough time. Once they had talked to the scientists or posted questions, they were given a worksheet to fill out about the ideal traits of scientists.</p>
<p>Station 4: Do I trust science, scientists, and the media reporting of science?</p> <p>Posters based on survey results Rolling focus groups</p>	<p>Collect qualitative data around public trust and confidence in science, scientists and media reporting of science</p>	<ul style="list-style-type: none"> Suggestions for how scientists should consider the risks of new technologies and the consequences of their work. Suggestions for improving trust in the media reporting of science Public views on how to improve trust in (different types of) scientists 	<p>Posters based on the survey questions around trust in science and trust in the media reporting of science.</p>

Station and format	Research objectives	Engagement objectives	Stimulus
<p>Station 5: Science and the economy</p> <p>Posters based on survey results Rolling depth interviews</p>	<p>Collect qualitative data around public understanding of science and the economy</p>	<ul style="list-style-type: none"> Insight into the kind of messages that would help people to understand and support investment in science and technology. 	<p>Posters based on the survey questions around the place of science in the economy.</p>
<p>Station 6: My science journey</p> <p>Design task Rolling depth interviews</p>	<p>Collect qualitative data to help us understand the times in their lives when people are most open to learning about and engaging with science</p>	<ul style="list-style-type: none"> Insight into the kind of messages to help people to understand and support investment in science and technology. 	<p>Each participant was given a hand-out explaining the task and had access to card, pens, coloured paper, scissors and science and other magazines to use for images. They were encouraged to use a timeline structure, and to be as visually creative as they were comfortable with.</p>
<p>Station 7: Segments and vox pop</p> <p>Posters based on survey segmentation Filming of vox pops</p>	<p>Collect qualitative data on the following questions:</p> <ul style="list-style-type: none"> How do people feel about the segmentation? Do the attitudinal segments seem like good descriptions of people's attitudes and behaviours? Participants' ideas for how people in each segment could learn more about science. 	<ul style="list-style-type: none"> Film clips of participants' reactions to the survey findings and ideas for engagement, which were then edited to produce short videos to accompany the main report and toolkit. 	<p>Six posters describing each of the science segments were hung up in the exit corridor. Each participant could record their reactions to the posters on post-its on/around the posters.</p>

Source: Ipsos MORI

Appendix A: questionnaire

SCRIPTER NOTE: FOR PROBABILITY SAMPLE SURVEY ADD SCREENS FOR INTERVIEWER TO ENTER VALID POINT NUMBER, ADDRESS NUMBER AND CHECK DIGIT, AND CONFIRM THEY ARE AT THE CORRECT ADDRESS; FOR 16-24 BOOSTER SURVEY ADD SCREEN FOR INTERVIEWER TO ENTER VALID POINT NUMBER ONLY

SHOW IF PROBABILITY SAMPLE SURVEY

S1.

INTERVIEWER ENTER TOTAL NUMBER OF DWELLING UNITS (FROM CONTACT SHEET)

ENTER FIGURE (RANGE 1-99; SOFT CHECK IF OVER 9)

SHOW IF PROBABILITY SAMPLE SURVEY

S2.

INTERVIEWER ENTER TOTAL NUMBER OF ADULTS AGED 16+ IN HOUSEHOLD (FROM CONTACT SHEET)

ENTER FIGURE (RANGE 1-99; SOFT CHECK IF OVER 9)

SHOW IF 16-24 BOOSTER SURVEY

S3.

INTERVIEWER CONFIRM WHICH QUOTA RESPONDENT FITS INTO

16-17

18-24

(SP)

READ OUT

Good morning, afternoon, evening. My name is ... from Ipsos MORI, the research organisation, and we are carrying out a survey on science on behalf of the UK Government.

The interview will take around 45 minutes.

I would like to assure you that all the information we collect will be kept in the strictest confidence, and used for research purposes only. The results will be presented as percentages, or individual (non-identifiable) comments. It will not be possible to identify any particular individual or address in the results.

Initial demographics

READ OUT

Firstly, can we ask a few questions about you? This is so we can make sure we only ask questions that are relevant to you.

CODE WITHOUT ASKING

QA.

Gender

Male

Female

(SP)

ASK ALL
 QB.
 Exact age

CODE EXACT AGE (RANGE 16-99)
 (Allow REF)

SCRIPTER NOTE: IF AGE>25 OR REF AT QB2, THANK AND CLOSE 16-24 BOOSTER SURVEY

ASK IF REF AT QB
 SHOWCARD A
 QB2.

Which of these age bands do you belong to? Just read out the letter that applies.

- A. 16-24
 - B. 25-34
 - C. 35-44
 - D. 45-54
 - E. 55-59
 - F. 60-64
 - G. 65-74
 - H. 75+
- (SP; allow REF)

SCRIPTER NOTE: IF CODES 2-7 OR REF AT QB2, THANK AND CLOSE 16-24 BOOSTER SURVEY

ASK ALL
 QC.
 Working status of respondent

- Working – full-time (30+ hrs)
 - Working – part-time (9-29 hrs)
 - Unemployed
 - Not working – retired
 - Not working – looking after house/children
 - Not working – invalid/disabled
 - Student
 - Other
- (SP; allow REF)

Core questionnaire

READ OUT
 Now I want to ask some questions about science. If there's something you don't know, just say so and we'll move on.

ASK ALL
 Q1.
 When I talk about "science", what comes to mind?
 DO NOT PROMPT
 PROBE FULLY
 CODE NULL FOR NOTHING

Advancement/progress/the future/better world/helping mankind/easier living/easier life
 Animal research/animal experiments

Archaeology
 Biology/chemistry/physics
 Boffins/nerds/eccentric/crazy/mad/mad professor/mysterious
 Bombs/war/destruction of mankind
 Boring/dull
 Laboratory/labs
 Bunsen burners
 Test tubes/chemicals
 Chemical reaction
 Communications/phones
 Computers/IT
 Difficult/difficult to understand
 Disliked at school/horrible teacher
 Economic benefits/jobs in the sciences
 Engineering
 Environment/nature/plants
 Experiment/inquisitive/understanding
 Fiction/science fiction
 Food/food production
 Genetics/DNA
 GM food/GM crops
 Health/drugs/cures for diseases/hospitals/doctors/medicine/hygiene
 Ideas/innovation/invention/discovery/research/analysis/logic
 Important/necessary
 Nanotechnology
 New appliances/new technology
 Preserving our heritage
 School
 Science festival/science museum/centre
 Social sciences/economics/psychology/sociology
 Space/rockets/astronomy
 Test-tube babies/IVF
 Understanding human behaviour/society
 White coats/lab coats
 Other – specify
 (MP; allow DK and NULL)

SHOWCARD B (R)

Q2.

How well informed do you feel, if at all, about science, and scientific research and developments?

Very well informed

Fairly well informed

Not very well informed

Not at all informed

(SP; allow DK)

SHOWCARD C (R) THAT INCLUDES INTRODUCTORY LINE

Q3.

Which of the following statements on this card do you most agree with? Just read out the letter that applies.

These days I hear and see ...

A. ... far too much information about science

B. ... too much information about science

C. ... the right amount of information about science

- D. ... too little information about science
 - E. ... far too little information about science
- (SP; allow DK)

SHOWCARD D (R)

Q4.

Outside of any formal science lessons or classes you may take, from which one or two of these, if any, do you hear or read about new scientific research findings most often? Just read out the letter or letters that apply.

CODE NULL FOR NONE OF THESE

- A. Books
 - B. Friends and family
 - C. Magazines
 - D. Print newspapers
 - E. Online newspapers or news websites
 - F. Radio – news programmes
 - G. Radio – other programmes
 - H. Science blogs
 - I. Scientific journals
 - J. TV – news programmes
 - K. TV – other programmes
 - L. Work colleagues
 - M. Twitter
 - N. Facebook
 - O. Other social networking websites
 - P. Other websites (not news or social networking websites)
- Other – specify
(MP UP TO TWO; allow DK and NULL)

ASK IF CODE 5 AT Q4

SHOWCARD E (R)

Q5.

You said you get information about new scientific research findings from online newspapers or news websites. From this card, which of these, if any, do you use? Just read out the letter or letters that apply.

CODE NULL FOR NONE OF THESE

- A. BBC/BBC News – www.bbc.co.uk/news
- B. Sky/Sky News – <http://news.sky.com>
- C. ITN – www.itn.co.uk
- D. The Guardian – www.guardian.co.uk
- E. The Daily Mail – www.dailymail.co.uk
- F. The Daily Telegraph – www.telegraph.co.uk
- G. The Times – www.thetimes.co.uk
- H. The Sun – www.thesun.co.uk
- I. The Financial Times – www.ft.com
- J. The Independent – www.independent.co.uk
- K. Daily Mirror – www.mirror.co.uk
- L. Daily Express – www.dailyexpress.co.uk
- M. Daily Star – www.dailystar.co.uk
- N. Yahoo – <http://uk.yahoo.com>
- O. Google News – <http://news.google.co.uk>
- P. MSN – <http://uk.msn.com>
- Q. An online-only magazine, e.g. The Huffington Post or The Daily Beast

Other – specify
(MP; allow DK and NULL)

ASK ALL
Q6.

As far as you know, who funds scientific research in the UK?

DO NOT PROMPT
PROBE FULLY

The Government/taxpayer
Private industry/business/companies
Charities
Universities
Wealthy individuals
Other – specify
(MP; allow DK)

SHOWCARD F (R)
Q7.

I'm going to read out a list of topics. Could you tell me, using this card, how well informed you feel, if at all, about each topic?

ROTATE ORDER

- a. Genetically modified plants (GM crops)
- b. The use of animals in research
- c. Nuclear power
- d. Stem cell research
- e. Synthetic biology
- f. Climate change
- g. Economics and the way the economy works
- h. Clinical trials
- i. Vaccination of people against diseases
- j. Renewable energy
- k. Nanotechnology

Very well informed
Fairly well informed
Not very well informed
Not at all informed
Have never heard of it
(SP; allow DK)

ASK IF CODES 1-4 AT Q7

SHOWCARD G (R)
Q8.

From what you know or have heard about [INSERT ISSUE FROM LIST BELOW], which of these statements, if any, most closely reflects your own opinion? Just read out the letter that applies.

ROTATE ORDER

CODE NULL FOR NONE OF THESE

- a. Genetically modified plants (GM crops)
- b. The use of animals in research
- c. Nuclear power
- d. Stem cell research

- e. Synthetic biology – that is, designing new biological parts or systems that do not already exist, or modifying existing ones
 - f. Taking action to address climate change
 - g. Clinical trials
 - h. Vaccination of people against diseases
 - i. Renewable energy
 - j. Nanotechnology – that is, using tiny particles in manufacturing different sorts of products
- A. Benefits far outweigh the risks
 - B. Benefits slightly outweigh the risks
 - C. The risks and benefits are about the same
 - D. Risks slightly outweigh the benefits
 - E. Risks far outweigh the benefits
- (SP; allow DK and NULL)

ASK ALL

SHOWCARD H (R) EXCLUDING CODE 5

Q9.

How confident, if at all, are you that scientists in the UK have thoroughly considered the risks of new technologies before they are used?

Very confident

Fairly confident

Not very confident

Not at all confident

DO NOT READ OUT: It depends on the area they work in

(SP; allow DK)

Q10.

As far as you know, who, if anyone, sets the rules and regulations for scientists in the UK to follow when they are doing their job?

DO NOT PROMPT

PROBE FULLY

CODE NULL FOR NO ONE

Scientists themselves

The Government/government agency/department/quango

Parliament/Westminster/Scottish Parliament/Welsh Assembly/Northern Ireland Assembly

The general public

Business/industry/companies/the companies the scientists work for

Campaign groups/the campaign groups the scientists work for

Charities/the charities the scientists work for

Environmental groups/the environmental groups the scientists work for

Ethics Committees

Global body (unspecified)

Health and Safety Executive (HSE)

The European Union (EU)/Brussels

Local council

The NHS

The Royal Society

Research Councils

Scientific professional bodies

The United Nations (UN)

Universities/the universities the scientists work for

Other

(MP; allow DK and NULL)

Q11.

Who, if anyone, do you think should set the rules and regulations for scientists in the UK to follow when they are doing their job?

DO NOT PROMPT

PROBE FULLY

CODE NULL FOR NO ONE

Scientists themselves

The Government/government agency/department/quango

Parliament/Westminster/Scottish Parliament/Welsh Assembly/Northern Ireland Assembly

The general public

Business/industry/companies/the companies the scientists work for

Campaign groups/the campaign groups the scientists work for

Charities/the charities the scientists work for

Environmental groups/the environmental groups the scientists work for

Ethics Committees

Global body (unspecified)

Health and Safety Executive (HSE)

The European Union (EU)/Brussels

Local council

The NHS

The Royal Society

Research Councils

Scientific professional bodies

The United Nations (UN)

Universities/the universities the scientists work for

Other

(MP; allow DK and NULL)

SHOWCARD I (R)

Q12.

I am now going to read out some statements. For each, please could you tell me the extent to which you agree or disagree?

ROTATE ORDER

- a. The UK Government is working hard to ensure that people living in the UK will have enough fuel for our future needs
- b. We depend too much on science and not enough on faith
- c. Human activity does not have a significant effect on the climate
- d. People shouldn't tamper with nature
- e. I enjoy new situations and challenges
- f. God created the earth and all life in it
- g. It is important for me to keep on learning new skills
- h. It is possible to believe in a god and still hold the view that life on earth, including human life, evolved over time as a result of natural selection

Strongly agree

Tend to agree

Neither agree nor disagree

Tend to disagree

Strongly disagree

(SP; allow DK)

Q13.

SHOWCARD J (R)

Which, if any, of the things on this list have you visited or attended in the last 12 months? Just read out the letter or letters that apply.

CODE NULL FOR NONE OF THESE

- A. Science museum
- B. Art gallery
- C. Another type of museum (not science or art)
- D. Science and discovery centre
- E. Planetarium
- F. Zoo or aquarium
- G. Working laboratory or similar scientific site
- H. Science festival
- I. Literature festival
- J. Nature reserve
- K. Other science-related attraction – specify (DO NOT INCLUDE “SPECIFY” ON CARD)
(MP; allow DK and NULL)

ASK FOR EACH ANSWER AT Q13

Q14.

And on your last visit, who, if anyone, did you go to the [INSERT ANSWER FROM Q13] with?
DO NOT PROMPT

Went alone

- Son(s) (including step or foster)
 - Daughter(s) (including step or foster)
 - Mother (including step or foster)
 - Father (including step or foster)
 - Sister(s) (including step)
 - Brothers (including step)
 - Partner
 - Friends
 - With school, college or university
 - Other relative (including in-laws)
 - Other (non-relative)
- (SP code 1; MP code 2-12; allow DK)

ASK ALL (RESPONDENTS ASKED EITHER STATEMENTS B OR C, Q OR R, AND U OR V)

SHOWCARD K (R)

Q15.

Here are some statements about science. For each, please could you tell me the extent to which you agree or disagree?

ROTATE ORDER

- a. I don't understand the point of all the science being done today
- b. ASK HALF THE SAMPLE: I don't think I'm clever enough to understand science and technology
- c. ASK HALF THE SAMPLE: I don't think I'm clever enough to understand engineering
- d. Science is such a big part of our lives that we should all take an interest
- e. Even if it brings no immediate benefits, scientific research which advances knowledge should be funded by the Government
- f. I see science and engineering differently
- g. School put me off science
- h. The benefits of science are greater than any harmful effects

- i. I cannot follow developments in science and technology because the speed of development is too fast
- j. Government funding for science should be cut because the money can be better spent elsewhere
- k. Science and technology are too specialised for most people to understand them
- l. It is important to know about science in my daily life
- m. The speed of development in science and technology means that they cannot be properly controlled by government
- n. On the whole, science will make our lives easier
- o. The more I know about science the more worried I am
- p. Scientific advances tend to benefit the rich more than they benefit the poor
- q. ASK HALF THE SAMPLE: I don't really know what a scientist does
- r. ASK HALF THE SAMPLE: I don't really know what an engineer does
- s. Science should be seen in isolation from other aspects of human knowledge
- t. Science makes our way of life change too fast
- u. ASK HALF THE SAMPLE: Applying the findings from research on human behaviour will help to reduce people's impact on the environment
- v. ASK HALF THE SAMPLE: Applying the findings from research on human behaviour will help to improve the population's health

Strongly agree

Tend to agree

Neither agree nor disagree

Tend to disagree

Strongly disagree

(SP; allow DK)

RESPONDENTS ASKED EITHER Q16 AND Q17 OR Q18 AND Q19

SHOWCARDS L1-L7 (R) WITH ONE PAIR PER CARD

Q16.

ASK HALF THE SAMPLE: Looking at these pairs of words or phrases, which one of each of these pairs comes closest to your current view of scientists?

Q17.

ASK HALF THE SAMPLE: Looking at these pairs of words or phrases, which one of each of these pairs comes closest to your current view of engineers?

CODE NULL FOR NONE OF THESE/IT DEPENDS/BOTH

- | | |
|--------------------------|-----------------------|
| a. Interesting | Boring |
| b. Narrow-minded | Open-minded |
| c. Good at communicating | Poor at communicating |
| d. Secretive | Open |
| e. Creative | Uncreative |
| f. Honest | Dishonest |
| g. Unethical | Ethical |

(SP for each row; allow DK and NULL)

SHOWCARD L8 (R)

Q18.

ASK HALF THE SAMPLE: And looking at these words or phrases, which one or two, if any, do you think it is most important for scientists to be? Please just pick one or two options.

Q19.

ASK HALF THE SAMPLE: And looking at these words or phrases, which one or two, if any, do you think it is most important for engineers to be? Please just pick one or two options.

CODE NULL FOR NONE OF THESE

Interesting
 Open-minded
 Good at communicating
 Open
 Creative
 Honest
 Ethical
 (MP up to two; allow DK and NULL)

Q20.

I am going to read out a number of statements. For each one, I would like you to tell me whether you think it is true or false.

ROTATE ORDER

INTERVIEWER NOTE: IF NECESSARY, ALLOW RESPONDENTS A FEW SECONDS TO THINK BEFORE ANSWERING

- a. UK law states that all medicines must be tested on animals before being made available to people
- b. Any scientist in the UK can carry out research with animals
- c. You need a licence before you can plant genetically modified (GM) crops in the UK
- d. Before a medicine can be given to patients in the UK, the company that make it must demonstrate to regulators that it has been tested
- e. Any food that contains genetically modified (GM) ingredients must be labelled as such in the UK

True

False

(SP; allow DK)

RESPONDENTS ASKED EITHER Q21 OR Q22

ASK HALF THE SAMPLE

SHOWCARD M (R) CONTAINING INTRODUCTORY LINE

Q21.

How much, if at all, do you trust each of these groups to follow any rules and regulations which apply to their profession?

ROTATE ORDER

- a. Scientists working for government
- b. Scientists working for private companies
- c. Scientists working for universities
- d. Scientists working for charities
- e. Scientists working for environmental groups

I trust them to follow any rules and regulations which apply to their profession ...

... a great deal

... a fair amount

... not very much

... not at all

(SP; allow DK)

ASK HALF THE SAMPLE

SHOWCARD M (R) CONTAINING INTRODUCTORY LINE

Q22.

How much, if at all, do you trust each of these groups to follow any rules and regulations which apply to their profession?

ROTATE ORDER

- a. Engineers working for private companies
- b. Engineers working for universities
- c. Researchers working for government
- d. Researchers working for universities
- e. University lecturers

I trust them to follow any rules and regulations which apply to their profession ...

- ... a great deal
 - ... a fair amount
 - ... not very much
 - ... not at all
- (SP; allow DK)

ASK ALL (RESPONDENTS ASKED EITHER STATEMENT A OR B)
SHOWCARD N (R)

Q23.

Here are some statements about working in science. For each, please could you tell me the extent to which you agree or disagree?

ROTATE ORDER

- a. ASK HALF THE SAMPLE: Scientists make a valuable contribution to society
- b. ASK HALF THE SAMPLE: Engineers make a valuable contribution to society
- c. It's normal for scientists to disagree
- d. Scientists adjust their findings to get the answers they want
- e. In general, scientists want to make life better for the average person
- f. Rules will not stop scientists doing what they want behind closed doors
- g. It is important to have some scientists who are not linked to businesses
- h. The independence of scientists is often put at risk by the interests of their funders
- i. Government should delay the introduction of new medicines or technologies until scientists are completely certain there are no bad side effects
- j. Scientists should listen more to what ordinary people think
- k. Scientists should be allowed to carry out research with animals, if this can lead to improvements in human health
- l. Scientists are too dependent on business and industry for funding

- Strongly agree
 - Tend to agree
 - Neither agree nor disagree
 - Tend to disagree
 - Strongly disagree
- (SP; allow DK)

READ OUT IF AGED 16-24 AT QB

And now I want to ask you about science at school.

ASK IF AGED 16-24 AT QB

Q24.

Did your school have any science or engineering clubs while you were there? This might have been at lunch time or after school.

- Yes
 - No
- (SP; allow DK)

ASK IF CODE 1 AT Q24

Q25.

And did you ever go to any of these science or engineering clubs while you were at school?

Yes

No

(SP; allow DK)

ASK ALL (RESPONDENTS ASKED EITHER STATEMENTS C OR D, E OR F, I OR J, K OR L AND N OR O)

SHOWCARD O (R)

Q26.

Here are some statements about studying and working in science. For each, please could you tell me the extent to which you agree or disagree?

ROTATE ORDER

- a. Because of science and technology there will be more work opportunities for the next generation
- b. The science I learnt at school has been useful in my everyday life
- c. ASK HALF THE SAMPLE: Science is not a suitable career for a woman
- d. ASK HALF THE SAMPLE: Engineering is not a suitable career for a woman
- e. ASK HALF THE SAMPLE: Science is a dying industry in the UK
- f. ASK HALF THE SAMPLE: Engineering is a dying industry in the UK
- g. The maths I learnt at school has been useful in my everyday life
- h. Young people's interest in science is essential for our future prosperity
- i. ASK HALF THE SAMPLE: Compared to other professions, science offers a well-paid career
- j. ASK HALF THE SAMPLE: Compared to other professions, engineering offers a well-paid career
- k. ASK HALF THE SAMPLE: Studying science won't necessarily get you a good job
- l. ASK HALF THE SAMPLE: Studying engineering won't necessarily get you a good job
- m. The UK needs to develop its science and technology sector in order to enhance its international competitiveness
- n. ASK HALF THE SAMPLE: Jobs in science are very interesting
- o. ASK HALF THE SAMPLE: Jobs in engineering are very interesting
- p. The maths I learnt at school has been useful in my job
- q. Scientific research makes a direct contribution to economic growth in the UK

Strongly agree

Tend to agree

Neither agree nor disagree

Tend to disagree

Strongly disagree

(SP; allow DK)

SHOWCARD P (R)

Q27.

How much effort do you think the Government is making to consult the public on science?

A great deal of effort

A fair amount of effort

Not very much effort

No effort at all

(SP; allow DK)

SHOWCARD Q (R)

Q28.

Which of these statements, if any, comes closest to your own attitude to decision-making about science issues? Just read out the letter that applies.

- A. I'm not interested in being involved in decision-making about science issues, as long as scientists are doing their jobs
 - B. I would like to know that the public are involved in decision-making about science issues, but I don't want to be involved personally
 - C. I would like to have more of a say in science issues
 - D. I would like to become actively involved in decision-making about science issues
 - E. I am already actively involved in decision-making about science issues
- (SP; allow DK)

SHOWCARD R (R)

Q29.

Here are some statements about how science is communicated and discussed. For each, please could you tell me the extent to which you agree or disagree?

ROTATE ORDER

- a. Public consultation events are just public relations activities and don't make any difference to policy
- b. The Government should act in accordance with public concerns about science and technology
- c. Those who regulate science need to communicate with the public
- d. We have no option but to trust those governing science
- e. The public is sufficiently involved in decisions about science and technology
- f. Experts and not the public should advise the Government about the implications of scientific developments
- g. There is so much conflicting information about science it is difficult to know what to believe
- h. Politicians are too easily swayed by the media's reaction to scientific issues
- i. Scientists put too little effort into informing the public about their work
- j. The information I hear about science is generally true
- k. Scientists should be rewarded for communicating their research to the public
- l. The media sensationalises science
- m. I would like more scientists to spend more time than they do discussing the social and ethical implications of their research with the general public
- n. We ought to hear about potential new areas of science and technology before they happen, not afterwards
- o. I feel I could influence Government policy on science if I wanted to

Strongly agree

Tend to agree

Neither agree nor disagree

Tend to disagree

Strongly disagree

(SP; allow DK)

ASK IF CODES 1-2 AT Q29J

Q30.

You said that you agree that the information you hear about science is generally true. Why do you say that?

DO NOT PROMPT

PROBE FULLY

It's checked by journalists

It's checked by other scientists

It's checked by someone (unspecified)

It comes directly from scientists

Regulation/science is regulated

Have no reason to doubt it

No particular reason/that's my view
 Other – specify
 (MP; allow DK)

ASK IF CODES 4-5 AT Q29J

Q31.

You said that you disagree that the information you hear about science is generally true. Why do you say that?

DO NOT PROMPT

PROBE FULLY

It's not checked by journalists
 It's not checked by other scientists
 It's not checked by anyone (unspecified)
 It does not come directly from scientists
 No proof/evidence/believe it if I can see it
 Weak regulation/science is not regulated
 Have no reason to trust it
 No particular reason/that's my view
 Other – specify
 (MP; allow DK)

ASK ALL

SHOWCARD S (R)

Q32.

Thinking of the information you hear about science, how true, if at all, do you think each of the following statements are?

ROTATE ORDER

- a. Journalists who write stories about science have a science degree or similar qualification
- b. People who write science blogs have a science degree or similar qualification
- c. Journalists check the reliability of scientific research findings before they write about them
- d. Before scientific research is published, it is checked by other qualified scientists

Always true
 Mostly true
 Occasionally true
 Never true
 (SP; allow DK)

SHOWCARD T (R) EXCLUDING CODE 5

Q33.

Now for a quick quiz. For each of the following statements, please say whether you think it is definitely true, probably true, probably false or definitely false. If you're not sure, just say so and we'll go on to the next one.

- a. Electrons are smaller than atoms
- b. All radioactivity is man made
- c. All plants and animals have DNA
- d. More than half of human genes are identical to those of mice
- e. The cloning of living things produces genetically identical copies
- f. Lasers work by focusing sound waves
- g. By eating a genetically modified fruit, a person's genes could also become modified
- h. The oxygen we breathe comes from plants
- i. It is the mother's genes that determine the sex of the child

Definitely true
Probably true
Probably false
Definitely false
Not sure
(SP)

SHOWCARD U (CONTAINS THE LIST OF NAMES RATHER THAN ANSWER CODES)

Q34.

Each of the following names is a person you may have heard of. For each person, please tell me if you most associate them with music, art or science. Again, if you're not sure, just say so and we'll go on to the next one.

ROTATE ORDER

- a. Claude Monet
- b. Andy Warhol
- c. Marie Curie
- d. Rachmaninov
- e. Galileo
- f. Rembrandt
- g. Miles Davis
- h. Louis Pasteur
- i. George Gershwin
- j. Stephen Hawking
- k. Mark Rothko
- l. Johannes Brahms

Music
Art
Science
Not sure
(SP)

SHOWCARD V (R)

Q35.

Now imagine you are standing alone and staring into a large waterfall, like Niagara Falls. Which one of the things on this card would come first to your mind? Just read out the letter that applies.

- A. You will be fascinated by the beauty of this natural spectacle
- B. You will be thinking of how much electricity this waterfall could produce
- C. You will be thinking of how unimportant you are in the natural order of things
- D. You will think of how to set up a visitor centre for people to enjoy nature, and to generate income for yourself and others

Other – specify
(SP; allow DK)

Modular questionnaire

SCRIPTER NOTE: RESPONDENTS ASKED ONE MODULE CHOSEN AT RANDOM

MODULE 1: BIG DATA

READ OUT

The following questions ask about your views on the information that private and public sector organisations can collect about people. This information is usually anonymised, so it can't be linked back to individuals. It may include things such as people's internet browsing history, travel habits through electronic travelcards, or purchases through supermarket loyalty cards.

ASK ALL

SHOWCARD W (R)

Q36.

Here are some services through which organisations can collect data about people. Which, if any, of these services have you decided not to take up because of concerns about how your data would be used? Again, just read out the letter or letters that apply.

READ OUT AFTER RESPONDENT ANSWERS: And, just to check, was this specifically because of concerns about how your data would be used?

CODE NULL FOR NONE OF THESE

- A. A loyalty card with a supermarket or shop (including online stores)
- B. A bank account
- C. An account with a mobile phone network
- D. A free email account (such as Yahoo Mail or Gmail)
- E. An account with a social networking site (such as Facebook, Twitter or Instagram)
- F. An account with an internet service provider to access the internet at home
- G. An electronic travelcard that allows you to "touch in" on buses or at train stations (such as an Oyster card)

Other – specify

(MP; allow DK and NULL)

SHOWCARD W (R) AGAIN

Q37.

And which, if any, of these services have you previously stopped using or changed to be with a different provider because of concerns about how your data was used? Again, just read out the letter or letters that apply.

READ OUT AFTER RESPONDENT ANSWERS: And, just to check, was this specifically because of concerns about how your data was used?

CODE NULL FOR NONE OF THESE

- A. A loyalty card with a supermarket or shop (including online stores)
- B. A bank account
- C. An account with a mobile phone network
- D. A free email account (such as Yahoo Mail or Gmail)
- E. An account with a social networking site (such as Facebook, Twitter or Instagram)
- F. An account with an internet service provider to access the internet at home
- G. An electronic travelcard that allows you to "touch in" on buses or at train stations (such as an Oyster card)

Other – specify

(MP; allow DK and NULL)

SHOWCARD X (R)

Q38.

To what extent do you agree or disagree with the following statement? I don't mind how data collected about me is used, as long as it's anonymised and can't be linked back to me.

Strongly agree

Tend to agree

Neither agree nor disagree

Tend to disagree

Strongly disagree
(SP; allow DK)

SHOWCARD Y (R)
Q39.

Here are some specific ways in which people's data can be used. In each of these instances, the data is anonymised, so it can't be linked back to individuals. To what extent do you support or oppose each of these uses of people's data?

ROTATE ORDER

- a. Using data from shop loyalty cards to target products at people who are more likely to want them
- b. Using data from electronic travelcards (such as Oyster cards) to help improve the scheduling of buses or trains for passengers
- c. Websites using people's online browsing histories to create personalised adverts for products that people are more likely to be interested in
- d. Combining the data held by multiple government departments and using them to better tailor public services to individuals

READ OUT BEFORE STATEMENT E UNLESS STATEMENT E IS FIRST IN ROTATION: Again, for these next instances, the data is anonymised, so it can't be linked back to individuals.

- e. Using police and crime data to predict and plan for crimes that might take place in the future
- f. Offering discounted mobile phone calls and texts, funded by personalised adverts based on the content of people's text messages
- g. Creating a DNA database of cancer patients, in order to help develop more effective treatments for cancer

Strongly support
Tend to support
Neither support nor oppose
Tend to oppose
Strongly oppose
(SP; allow DK)

ASK IF CODES 4-5 AT ANY Q39 STATEMENT
Q40.

You said you oppose people's data being used in some of these ways. What makes you oppose these uses?

DO NOT PROMPT
PROBE FULLY

Abuse of personal information (such as bank details)/identity theft
Being sent spam/junk mail
Depends on what information they want
Hackers/other people getting hold of data
Haven't got people's consent
I can't see what information is held on me
I don't trust private companies/don't want them to profit
I don't trust the Government
I don't trust the police
I don't know what the information is used for
I don't want people/organisations to know that much about me
People have a right to privacy
Nothing in particular/that's my view
(MP; allow DK)

ASK ALL

SHOWCARD Z (R)

Q41.

The analysis of large datasets often requires the use of supercomputers that use electrical power. How much of an impact, if any, do you think these supercomputers will have on the UK's energy consumption in the future?

A very big impact
 A fairly big impact
 Not a very big impact
 No impact at all
 (SP; allow DK)

MODULE 2: AGRI-TECHNOLOGIES

READ OUT

Now I'd like to ask you some questions about food production and genetically modified (GM) crops. GM crops are plants in which the genetic make-up has been altered in a way that does not happen naturally.

ROTATE ORDER OF Q42 AND Q43

ASK IF CODES 1-4 AT Q7

Q42.

[And] what would you say are the main benefits, if any, of genetically modified (GM) crops?

DO NOT PROMPT

PROBE FULLY

CODE NULL FOR NOTHING/NO BENEFITS

Health benefits (e.g. lower fat content)
 Increases levels of food production
 Make crops more consistent (in taste, quality, size etc)
 Make food tastier/better quality
 More disease resistant
 More predictable harvests
 Will allow certain crops to be grown in adverse conditions (e.g. drought)
 (MP; allow DK and NULL)

Q43.

[And] what would you say are the main risks, if any, of genetically modified (GM) crops?

DO NOT PROMPT

PROBE FULLY

CODE NULL FOR NOTHING/NO RISKS

Cross-pollination with non-GM crops
 Destroying natural crop species
 Disrupts ecosystem/wildlife
 Don't understand the long term effects
 Don't agree with the principle/not natural
 Not properly tested
 Potential negative impact on health
 (MP; allow DK and NULL)

ASK ALL

SHOWCARD AA (R)

Q44.

How much of an issue, if at all, do you think ensuring that there is enough food to go around is in ...

- a. ... the UK today?
- b. ... the whole world today?

A very big issue
 A fairly big issue
 Not a very big issue
 Not an issue at all
 (SP; allow DK)

ASK IF CODES 1-2 AT Q44A OR Q44B

Q45.

What do you think makes this a big issue today?

DO NOT PROMPT

PROBE FULLY

CODE NULL FOR NOTHING

INTERVIEWER NOTE: IF RESPONDENT SAYS THEY HEARD/READ ABOUT IT (E.G. ON TV),
 PROBE WHAT THEY SPECIFICALLY HEARD/READ

Climate change
 Famines/starvation in poor countries/third world
 Global economy/economic downturn
 Increasing population
 Inequality between countries
 Overfishing
 People eating more/changes in diets
 Politics/trade barriers/unfair trade
 Price of food/rising prices
 Scarce land/water/resources
 Transport costs
 Other – specify
 (MP; allow DK and NULL)

ASK ALL

SHOWCARD BB (R)

Q46.

To what extent do you agree or disagree with the following statements?

ROTATE ORDER

- a. Ensuring that the UK has enough food to go around will become a big issue in the future
- b. The UK Government is not doing enough to ensure that the UK has enough food to go around in the future
- c. We already grow enough food in the world – the problem is getting it to the people who need it the most
- d. We should not rule out any agricultural techniques or technologies that might help to increase world food production
- e. Genetically modified (GM) crops are needed to increase world food production

Strongly agree
 Tend to agree
 Neither agree nor disagree
 Tend to disagree
 Strongly disagree
 (SP; allow DK)

MODULE 3: ROBOTICS

READ OUT AND DISPLAY INFORMATION CARD A FOR Q47 TO Q49

I now want to ask you some questions about robots. By robots, I mean machines that can make their own decisions and assist humans in physical tasks, such as a mechanical co-worker helping on the factory floor, or as a cleaner at home, or in activities which may be dangerous for humans. Robots may come in many shapes or sizes.

Machines that do not make any of their own decisions, such as those performing the same set of actions repetitively, are not considered as robots in this survey.

ASK ALL

SHOWCARD CC (R)

Q47.

How much, if anything, have you heard or read about the use of robots and robotic technology in the following areas?

ROTATE ORDER

- a. Space exploration
- b. Manufacturing
- c. Military and security
- d. Healthcare
- e. Home use, such as cleaning
- f. Agriculture
- g. Transport
- h. Care of children
- i. Care of older people
- j. Education

A great deal

A fair amount

Not very much

Nothing at all

(SP; allow DK)

SHOWCARD DD (R)

Q48.

To what extent do you support or oppose the use of robots and robotic technology in the following areas?

ROTATE ORDER

- a. Space exploration
- b. Manufacturing
- c. Military and security
- d. Healthcare
- e. Home use, such as cleaning
- f. Agriculture
- g. Transport
- h. Care of children
- i. Care of older people
- j. Education

Strongly support

Tend to support

Neither support nor oppose

Tend to oppose
Strongly oppose
(SP; allow DK)

SHOWCARD DD (R) AGAIN

Q49.

And to what extent do you support or oppose the following specific uses of robots and robotic technology?

ROTATE ORDER

- a. To control driverless public buses without help from human beings
- b. To fly unmanned planes in military operations
- c. In hospitals, to carry out medical operations such as heart surgery
- d. To carry out household tasks for older or disabled people, such as cooking and cleaning
- e. In schools, as teaching assistants to help children to learn
- f. To fly unmanned planes in search and rescue missions
- g. To act as companions for older people and people with dementia
- h. To monitor the condition of food crops and apply water or pesticides as needed

Strongly support
Tend to support
Neither support nor oppose
Tend to oppose
Strongly oppose
(SP; allow DK)

MODULE 4: ENERGY

READ OUT

Now I'd like to ask you some questions about energy generation and storage.

READ OUT AND DISPLAY INFORMATION CARD B FOR Q50 TO Q58

Offshore wind is a form of renewable energy. It involves building "farms" of wind turbines at sea to generate electricity.

Carbon capture and storage is a new technology that involves capturing the carbon dioxide emissions from power stations and storing them underground, for example in old gas and oil fields in the North Sea. This prevents carbon dioxide from being released into the atmosphere.

Hydraulic fracturing, otherwise known as "fracking" is a process of pumping water at high pressure into shale rock to create narrow fractures which allow shale gas to be extracted. The gas can then be used in the same way as conventional or natural gas.

ASK ALL

SHOWCARD EE (R)

Q50.

Before this interview, how much, if anything, had you heard or read about the following energy technologies?

ROTATE ORDER

- a. Offshore wind farms
- b. Carbon capture and storage
- c. Fracking to extract shale gas

A great deal

A fair amount
 Not very much
 Nothing at all
 (SP; allow DK)

ASK IF CODES 1-3 AT EQUIVALENT Q50A-C
 SHOWCARD FF (R)
 Q51.

To what extent do you support or oppose the development of the following energy technologies in the UK?

ROTATE ORDER

- a. Offshore wind farms
- b. Carbon capture and storage
- c. Fracking to extract shale gas

Strongly support
 Tend to support
 Neither support nor oppose
 Tend to oppose
 Strongly oppose
 (SP; allow DK)

ASK IF CODES 1-3 AT Q50A
 SHOWCARD GG (R)
 Q52.

To what extent do you think that offshore wind farms would have a positive or negative effect on ...

ROTATE ORDER

- a. ... reducing climate change?
- b. ... the UK economy?

Very positive
 Fairly positive
 Neither positive nor negative
 Fairly negative
 Very negative
 (SP; allow DK)

ASK IF CODES 1-3 AT Q50B
 SHOWCARD GG (R) AGAIN
 Q53.

And to what extent do you think that carbon capture and storage would have a positive or negative effect on ...

ROTATE ORDER

- a. ... reducing climate change?
- b. ... the UK economy?

Very positive
 Fairly positive
 Neither positive nor negative
 Fairly negative
 Very negative
 (SP; allow DK)

ROTATE ORDER OF Q54 AND Q55

ASK IF CODES 1-3 AT Q50C

Q54.

And what would you say are the main benefits, if any, of fracking to extract shale gas?

DO NOT PROMPT

PROBE FULLY

CODE NULL FOR NOTHING/NO BENEFITS

Better for the environment/climate change/greener energy

Cheaper energy supply/bills

Reduce reliance on overseas gas sources

Will increase the supply of natural gas

Other – specify

(MP; allow DK and NULL)

Q55.

And what would you say are the main risks, if any, of fracking to extract shale gas?

DO NOT PROMPT

PROBE FULLY

CODE NULL FOR NOTHING/NO RISKS

Bad for the environment/climate change

Don't agree with the principle/not natural

Don't know the long-term effects

Earthquakes

Not properly tested

Pollution of water supplies

Pollution in general

Other – specify

(MP; allow DK and NULL)

SHOWCARD HH (R)

Q56.

To what extent do you think that fracking to extract shale gas would have a positive or negative effect on

...

ROTATE ORDER

- a. ... reducing climate change?
- b. ... the UK economy?
- c. ... people's energy bills?

Very positive

Fairly positive

Neither positive nor negative

Fairly negative

Very negative

(SP; allow DK)

ROTATE ORDER OF Q57 AND Q58

SHOWCARD II (R)

Q57.

And how much, if at all, do you trust the UK Government to adequately regulate fracking?

A great deal
 A fair amount
 Not very much
 Nothing at all
 (SP; allow DK)

SHOWCARD II (R) AGAIN

Q58.

And how much, if at all, do you trust the energy industry to carry out fracking safely?

A great deal
 A fair amount
 Not very much
 Nothing at all
 (SP; allow DK)

Final demographics

READ OUT

We're almost finished but I've got a few more questions just about you. IF NECESSARY: All the answers you give will be kept completely confidential and will be used for research purposes only, to help us categorise the answers you have already given me.

ASK ALL

SHOWCARD JJ

QD.

Please indicate the highest educational or professional qualification that you have obtained to date, if any? Just read out the letter that applies.

IF STILL STUDYING, CHECK FOR HIGHEST ACHIEVED SO FAR

- A. GCSE/O Level/CSE
 - B. Vocational qualifications (=NVQ1+2)
 - C. A Level or equivalent (=NVQ3)
 - D. Bachelor degree or equivalent (=NVQ4)
 - E. Masters/PhD or equivalent
 - F. Other
 - G. No formal qualifications
- (SP; allow DK and REF)

ASK IF CODES 4-5 AT QD

QE.

DO NOT PROMPT

And what was the main subject of your degree?

Arts/humanities subject (literature, classics, geography, history, religion etc)

Engineering subject

Language subject (French etc)

Law

Medicine/dentistry/pharmacy etc

Science/maths subject (not including medicine/dentistry/pharmacy etc)

Social science subject (economics, psychology, sociology etc)

Other

(SP; allow DK and REF)

ASK ALL

QF.

Occupation of Chief Income Earner

PROBE FULLY FOR PENSION

Position/rank/grade

Industry/type of company

Quals/degree/apprenticeship

Number of staff responsible for

WRITE IN FOR EACH CODE

CODE BASED ON QF.

QG.

Social grade

A

B

C1

C2

D

E

(SP; allow REF)

ASK ALL

QH.

Number of children aged 15 and under in household

None

1

2

3

4 or more

(SP; allow DK and REF)

ASK IF CODES 2-5 AT QH (1 OR MORE CHILDREN IN HOUSEHOLD)

QI.

What ages are the children, aged 15 and under, in your household?

0-4

5-7

8-10

11-15

(MP; allow DK and REF)

ASK ALL

QJ.

Do you regard yourself as belonging to any particular religion? IF YES: Which?

DO NOT PROMPT

No religion

Christian – no denomination

Roman Catholic

Church of England/Anglican

Baptist

Methodist
 Presbyterian/Church of Scotland
 Free Presbyterian
 Brethren
 United Reform Church (URC)/Congregational
 Other Protestant – specify
 Other Christian – specify
 Hindu
 Jewish
 Islam/Muslim
 Sikh
 Buddhist
 Other non-Christian – specify
 (SP; allow REF)

ASK ALL EXCEPT CODE 1 OR REF AT QJ

QK.

Apart from such special occasions as weddings, funerals and baptisms, how often nowadays do you attend services or meetings connected with your religion?

PROBE AS NECESSARY

SINGLE CODE ONLY

Once a week or more
 Less often but at least once in two weeks
 Less often but at least once a month
 Less often but at least twice a year
 Less often but at least once a year
 Less often than once a year
 Never or practically never
 Varies too much to say
 (SP; allow REF)

ASK ALL

SHOWCARD KK (R)

QL.

People also have different views about the origin of life on earth. Which of the following comes closest to your view about the origin and development of life on earth? Just read out the letter that applies.

- A. Humans and other living things were created by God and have always existed in their current form
- B. Humans and other living things evolved over time, in a process guided by God
- C. Humans and other living things evolved over time by natural selection, in which God played no part
- D. I have another view on the origins of species and development of life on earth, which is not included in this list

(SP; allow DK and REF)

SHOWCARD LL (R)

QM.

Through which of the following devices, if any, do you have access to the internet? Just read out the letter or letters that apply.

CODE NULL FOR NONE OF THESE

- A. Computer (PC or laptop)
- B. Games console (e.g. Xbox, PS3)
- C. Interactive Digital TV
- D. Smartphone

- E. Tablet device (e.g. iPad)
 - F. I do not have access to the internet
- (MP; allow DK and NULL)

SHOWCARD MM (R)

QN.

Which, if any, of the following applies to you? Just read out the letter or letters that apply.

CODE NULL FOR NONE OF THESE

- A. I have studied science to A Level or above
 - B. I am a scientist
 - C. I am an engineer
 - D. I have scientists among my friends
 - E. I have engineers among my friends
 - F. I have scientists among my relatives
 - G. I have engineers among my relatives
 - H. I work with scientists
 - I. I work with engineers
- (MP; allow DK and NULL)

SHOWCARD NN

QO.

Which of the groups on this card do you consider you belong to? Again, just read out the letter that applies.

- A. British
 - B. Irish
 - C. Gypsy or Irish Traveller
 - D. Any other White background
 - E. White and Black Caribbean
 - F. White and Black African
 - G. White and Asian
 - H. Any other mixed/multiple ethnic background
 - I. African
 - J. Caribbean
 - K. Any other Black background
 - L. Bangladeshi
 - M. Indian
 - N. Pakistani
 - O. Chinese
 - P. Any other Asian background
 - Q. Arab
 - R. Any other background (specify)
- (SP; allow REF)

SHOWCARD OO (R)

QP.

Here is a list of daily newspapers. Which, if any, of these do you read or look at regularly, either in print or online? By regularly I mean on average at least three out of four issues.

CODE NULL FOR NONE OF THESE

- A. Daily Express
- B. Daily Mail
- C. Daily Mirror
- D. Daily Record

- E. Daily Telegraph
 - F. Financial Times
 - G. The Guardian
 - H. The Herald (Glasgow)
 - I. The Independent/i
 - J. Metro
 - K. The Scotsman
 - L. Daily Star
 - M. The Sun
 - N. The Times
 - O. Evening Standard
- Other
(MP; allow NULL)

SHOWCARD PP (R)

QQ.

And which, if any, of these Sunday newspapers do you read or look at regularly, either in print or online?
By regularly I mean on average at least three out of four issues.

CODE NULL FOR NONE OF THESE

- A. The Sun on Sunday
 - B. Daily Star Sunday
 - C. Sunday Express
 - D. Sunday Mail (Scotland only)
 - E. Sunday Mirror
 - F. Sunday Post
 - G. The Sunday Telegraph
 - H. The Mail on Sunday
 - I. The Observer
 - J. Sunday People
 - K. The Sunday Times
 - L. Scotland on Sunday
 - M. The Independent on Sunday
 - N. Sunday Business
 - O. Sunday Herald
- Other
(MP; allow NULL)

SHOWCARD QQ (R)

QR.

Which, if any, of the following have you visited or used in the last 3 months?

CODE NULL FOR NONE OF THESE

- A. Facebook
 - B. Google+ (the new social networking site from Google, not the search engine)
 - C. Instagram
 - D. LinkedIn
 - E. Mumsnet
 - F. Myspace
 - G. Pinterest
 - H. Tumblr
 - I. Twitter
 - J. Yammer
 - K. YouTube
- (MP; allow NULL)

READ OUT

Ipsos MORI is conducting this research on behalf of the Government Department for Business, Innovation and Skills. Thank you very much for your time.

Appendix B: advance letter

Summer 2013

Science and society: your views

Dear Sir/Madam,

I am writing to ask for your help with an important study exploring people's attitudes to science, scientists and government science policies. Ipsos MORI, the independent research organisation, are carrying out this study on behalf of the Government Department for Business, Innovation and Skills.

We are inviting people to take part in a face-to-face survey in their homes, led by an Ipsos MORI interviewer. The survey asks about a range of issues, including:

- New developments in science and technology
- Views of scientists
- How science is reported

This is your chance to help inform future government policies on these issues. We are interested in everyone's views, no matter how much or how little they are involved in this area. No specialist knowledge is needed to take part.

People who have previously taken part have told us they have enjoyed the interview. As a thank you for taking part, the interviewer will give you a **£10 high street voucher**.

What do you need to do next?

You don't need to do anything. One of our interviewers will visit you shortly to explain the study in more detail and invite someone from your household to take part.

We hope that you will be able to participate. If you have any questions, please contact Tim Silman on 0808 129 5717 or email sciencesurvey@ipsos.com.

Thank you in advance for your help.

Yours faithfully,



Anna Quigley
Research Director, Ipsos MORI

For more information

Ipsos MORI
79-81 Borough Road
London SE1 1FY

t: +44 (0)20 7347 3000
f: +44 (0)20 7347 3800

www.ipsos-mori.com
www.twitter.com/IpsosMORI

About Ipsos MORI's Social Research Institute

The Social Research Institute works closely with national governments, local public services and the not-for-profit sector. Its c.200 research staff focus on public service and policy issues. Each has expertise in a particular part of the public sector, ensuring we have a detailed understanding of specific sectors and policy challenges. This, combined with our methodological and communications expertise, helps ensure that our research makes a difference for decision makers and communities.