Taking Part: England's Survey of Leisure, Culture and Sport (Year 5, 2009-10)

TNS-BMRB Technical Report

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Content

1. Introduction

This report outlines the methods used for Year 5 of the *Taking Part* survey. The sample for this survey was issued on a quarterly basis, starting with April 2009. The Year 5 survey comprises the April 2009, July 2009, October 2009 and January 2010 samples.

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2. Sample Design

2.1 Survey population and sample frame

The survey was designed to yield a representative sample of adults aged 16+ and of children aged 11-15 who are normally resident in England. Relevant adults also provided information about children aged 5-10 so this population is also covered.

The sample for Year 5 comprises two elements: the last quarter from the previous sample year (issued April-June 2009) plus three new quarters, each with a much smaller sample size. The original intention had been to issue a smaller 'middle year sample' between two full-scale samples. However, the survey year switched from July-June to April-May, meaning that the final quarter of the first year became the first quarter of the middle year. The original middle year sample was compressed into the three remaining quarters.

For practical purposes, residents of institutional accommodation (armed forces barracks, student halls of residence, hospitals, care homes, prisons etc.) were excluded.

TNS-BMRB utilised the residential Residential Postal Address File (PAF) as the sample frame. This provides a list of almost all private residential addresses in the UK and is the most comprehensive frame available. Because it lists addresses, not individuals, interviewers were required to randomly select respondents from among those eligible.

2.2 Selection of Primary Sampling Units

2.2.1 Different Primary Sampling Units based on population density

The sample design that was adopted in Year 4 – in which the primary sampling unit *varied* based on the local area's population density – continued for Year 5. The objective of the redesign was to loosen the level of clustering in the most densely populated areas while tightening it in the least densely populated areas. The theory was that the statistical cost due to clustering would be reduced significantly in the most densely populated areas but not increased a great deal in the least densely populated areas[1].

[1] An analysis of the results will follow in a later paper.

A formula was developed to ensure that:

- approximately one third of PSUs would be 'double' Medium Layer Super Output Areas (MSOAs);
- approximately one third of PSUs would be single MSOAs
- approximately one third of PSUs would be paired Lower Layer Super Output Areas (LSOAs).

'Double' MSOAs were formed by linking MSOAs with adjacent ONS codes. For the most part, those with adjacent ONS codes were also geographically adjacent, although this did not hold in every case. Two further rules were applied: no doubles could be formed that crossed local authority boundaries and no single MSOAs could be left unpaired. These singles were attached to adjacent doubles to form trio MSOAs. Census-derived data used for stratification was computed for each of these new PSUs.

Once this stage was complete, a measure of address density was formed. Following previous convention with this survey, 30 addresses were to be issued per PSU[2] everywhere except London where 38 were to be issued per PSU. From this a 'selected addresses per square kilometre' value was computed for every 'double' MSOA. Where this value was greater than 1.50, the double MSOA would be used as the PSU. Where this value fell between 0.35 and 1.49, the standard single MSOA would be used as the PSU. Where this value fell below 0.35, standard single MSOAs would be sampled but a second sampling stage would take place: two LSOAs would be sampled from those within the sampled MSOA.

This design ensured an even division between the three PSU types and an expected average of 8.9 selected addresses per square kilometre, a little less than in previous editions but not by a large enough margin to make a major impact on costs.

2.3 PSU stratification

Before TNS-BMRB sampled the PSUs, the list of PSUs was stratified into geographic areas - the 9 English regions - and, within, geographic areas, by the proportion of the working age population that were managers or professionals in the 2001 census. A more extensive stratification design was used for Year 4 so the first quarter of Year 5

[2] Reduced to 28 for the Year 5 sample but clustering stratum was not changed.

(originally the final quarter of Year 4 before the survey year was switched from July-June to April-March) is subject to that design, while the second, third and fourth quarters are subject to the design described below.

Table 1.1 shows the Year 5 design.

MANPROF = Proportion of residents aged 16+ classified as managerial/professional according to Census 2001

AGED1635 = Proportion of residents aged 16+ aged 16-35 according to Census 2001

Table 1.1 PSU stratification design for Taking Part 2009-10 (Q2-4)

	Stratification levels	
Region	**Level 1**	**Level 2**
North East England	3 percentiles of MANPROF	Sorted by AGED1635 (implicit)
North West England	9 percentiles of MANPROF	Sorted by AGED1635 (implicit)
Yorkshire / Humber	7 percentiles of MANPROF	Sorted by AGED1635 (implicit)
East Midlands	5 percentiles of MANPROF	Sorted by AGED1635 (implicit)
West Midlands	7 percentiles of MANPROF	Sorted by AGED1635 (implicit)
East of England	7 percentiles of MANPROF	Sorted by AGED1635 (implicit)
London	9 percentiles of MANPROF	Sorted by AGED1635 (implicit)
South East England	10 percentiles of MANPROF	Sorted by AGED1635 (implicit)
South West England	7 percentiles of MANPROF	Sorted by AGED1635 (implicit)

This design produced 64 explicit strata in total plus additional implicit stratification.

2.4 PSU sampling method

In both Years 4 and 5, TNS-BMRB sampled the PSUs with a probability proportionate to size (number of delivery points/addresses) using the method of random start and fixed interval.

The design called for a proportionate sample but sampling fractions varied slightly by region to take account of historically different conversion rates (interviews per sampled address) in different regions. TNS-BMRB calculated regional conversion rates based on the previous two editions of *Taking Part*.

In total, TNS-BMRB sampled 153 PSUs for Year 5 Q2-4:

- 29 'double' MSOAs,
- 66 single MSOAs, and
- 58 single MSOAs in which two LSOAs were sampled with a probability proportionate to size (= 116 LSOAs).

There were 222 PSUs sampled for Q1.

In each PSU, TNS-BMRB sampled 28 addresses after sorting addresses by postcode and house number to maximise the spatial dispersion of the sample. In London 38 addresses were sampled because of its historically relatively low response rate.

TNS-BMRB actually drew a sample of PSUs equal to *110%* of the required size. One in eleven of the PSUs was systematically assigned to the reserve sample using the final stratification 'order' and a random start. However, the reserve sample was not required.

2.4.1 Quarter and Month assignment

The newly sampled PSUs were sorted using their original stratification values and systematically tagged with a 'fieldwork quarter' label (Q2, 3 or 4).

The primary objective was to achieve a representative sample for the nine month period viewed as a whole but a secondary objective was to achieve a representative sub-sample of the whole in each quarter.

2.4.2 Sampling of individuals

At each sampled address, the interviewer would randomly sample one dwelling unit (if more than one), then randomly sample one household (if more than one) within the sampled dwelling unit. Interviewers used unique Kish Grids assigned to each address to assist them in this process.

The same Kish Grid was also used to randomly sample individuals within the household. Interviews were sought with:

- 1 adult aged 16+
- 1 child aged 11-15 (if resident)

Any parents of 5-10 year olds who were interviewed for the adult survey were asked to provide information about one randomly sampled child in this age range.

3. Fieldwork

All fieldwork was conducted on behalf of TNS-BMRB by interviewers trained and supervised by Kantar Operations[3]. In total, approximately 180 interviewers worked on the survey in Year 5.

3.1 Briefings

Before starting work on Taking Part all interviewers attend a face-to-face briefing. These are presented by TNS-BMRB researchers and Kantar Operations field staff. The initial briefings held in July and August 2005 of Year 1 were also attended by representatives from the DCMS and/or representatives of the Non-Departmental Public Bodies.

After doing 37 briefings during Year 1, 5 briefings in Year 2, 2 briefings in Year 3 and 3 in Year 4, only 1 full-day briefing was conducted during Year 5. Around 12-15 interviewers attend each briefing.

Each briefing included the following topics:

1. Background and information on the Taking Part Survey and its use by the DCMS.

2. Information about sampling procedures; contact procedures and dwelling/respondent selection; the importance of high response rates, with methods of ensuring contact and encouraging co-operation; and the use of incentives.

3. Description of the questionnaire, and interview procedures, including explanations of the more complex questions and question sequences. Particular attention was paid to the questions used to measure the PSA targets.

4. Group exercise to get interviewers to think of ways to respond to potential refusals on the doorstep.

[3] Kantar is the information, insight and consultancy arm of WPP. Kantar Operations manage all aspects of the operational side of research on behalf of TNS-BMRB. Further details can be found at http://www.kantaroperations.com.

In addition to attending the face to face briefing, interviewers were also required to read the written Interviewer Instructions (a copy can be found in Appendix E) and carry out at least two practice interviews before starting their first assignment.

Interviewers briefed in Years 1 to 4 were not required to attend a further face-to-face briefing. Interviewers were sent an updated set of Interviewer Instructions, highlighting the changes to their assignment in Year 5.

3.2 Supervision and quality control

Several methods were used to ensure the quality and validity of the data collection operation.

A proportion of interviewers, particularly those less experienced, were accompanied in the field by supervisors. All interviewers who were new to random probability sample surveys were accompanied on the first day of a Taking Part assignment by a supervisor.

A proportion of respondents were re-contacted to verify that an interview had taken place. In total, 14.8% of respondents were re-contacted in Year 5 to verify that the interviewer had contacted someone and whether or not an interview was completed. Addresses for back checking were selected on the basis of Kantar Operations overall field quality procedures, whereby all interviewers have their work checked at least twice a year.

These back checking procedures were mainly carried out by telephone. Where no telephone number was available a short postal questionnaire was sent to the address to collect the same information.

3.3 Fieldwork dates and fieldwork management

Fieldwork was conducted between 20th April 2009 and 9th May 2010.

Fieldwork was managed on a quarterly basis and assignments were issued to interviewers prior to each quarter starting. Table 2.1 shows the number of assignments and core sample addresses per quarter.

Table 2.1 Assignments and core sample addresses per quarter

Quarter	Number of assignments issued	Number of core sample addresses
Quarter 1	222	6516
Quarter 2	51	1508
Quarter 3	51	1498
Quarter 4	51	1488

Interviewers had about 4-5 weeks to cover all the addresses in their assignment and report final outcomes. Interviewers were encouraged to start their assignment as early as possible in fieldwork to try to maximise the time available for making contact at the addresses.

Once all the issued addresses had been covered the Address Contact Sheets were returned to Kantar Operations and a decision was taken about re-issuing non-productive outcomes. As a general rule all non-productive addresses (non-contacts, refusals, broken appointments, etc.) were considered for re-issue unless there was a specific reason not to or it was not considered cost effective (e.g. response rate and interview projections were on track or if only one or two addresses in an assignment were available for reissue). Once the first re-issue period had been completed a decision was taken about whether to re-issue addresses that were still non-productive for a second or third time.

Table 2.2 shows the fieldwork dates for each sample month.

Table 2.2 Fieldwork dates for each sample month

Quarter	Fieldwork start	Fieldwork end
Quarter 1	20/4/09	9/8/09
Quarter 2	20/7/09	25/10/09
Quarter 3	19/10/09	14/2/10
Quarter 4	18/1/10	9/5/10

3.4 Fieldwork procedures and documents

3.4.1 Introductory letters and leaflet

All the core sample addresses were sent an advance letter and a Taking Part respondent leaflet. The letters and leaflets were sent by interviewers a couple of days before starting their assignment.

The letter and leaflet were designed to answer respondents' questions and encourage them to take part. No changes were made to these documents in Year 5 of the survey (having already been revised in the previous years of the survey to make them more respondent friendly and persuasive, these documents seemed to be working well).

The letters outlined the background to the survey, stressed the importance of the respondent taking part, the confidential nature of the survey and the financial 'thank you' for taking part. The letters were despatched on DCMS headed paper and signed by the project manager at the DCMS to authenticate the survey.

There were also 2 'reissue' letters – one for those addresses where the initial interviewer was unable to make contact at the address and one for those where a refusal had occurred. Both were despatched on TNS-BMRB headed paper and signed by the project manager at TNS-BMRB.

All letters provided a telephone number and an email address so that individuals could find out more about the survey, make an appointment for an interviewer to call, or opt out of the survey. Over the course of the year, **210** people, representing **2.1%** of addresses issued, opted out of the survey by contacting TNS-BMRB, Kantar Operations or the DCMS.

Copies of the letters and the leaflet can be found in Appendix B and Appendix D respectively.

3.4.2 Limited/non speakers of English

In cases where the selected person had limited or no English, interviewers were permitted to use another person to interpret, provided such a person was appropriate (e.g. a close relative). The minimum age for an interpreter was set at 12 years old.

3.4.3 Address Contact Sheets

Each address was issued to the interviewer on a document called the Address Contact Sheet (ACS). The ACS used for the main sample served six main functions:

it contained full address details for the sampled address;

interviewers used it to make random selections of dwelling units and eligible adults;

interviewers used it to complete the screening for the child interview, make the selection of the child and record parental permission to approach the child for interview;

interviewers used it to record the outcome of their attempts to make contact and conduct an interview at the address;

it included the signed receipt of the incentive.

Interviewers made a minimum of eight calls at each address before regarding it as a non-contact, recording details of these on the ACS. Calls had to be made on different days of the week and at different times of day: at least two of the calls had to be made on a weekday evening (after 7.00 p.m.) and at least one call at a weekend (10.00 a.m. – 9.00 p.m.), in order to make contact with households where everyone was working.

An example ACS is included in Appendix C.

3.5 The Child Surveys

The Taking Part child surveys remained unchanged from Year 4. The 5 to 10 interview was carried out by proxy with the adult respondent if they were the parent of a 5-10 year old. The 11 to 15 interview was carried out with the child, following parental consent being granted.

3.5.1 Screening procedures for the child sample

The child screening was carried out at all addresses in the sample. Where an eligible 5-10 year old and an eligible 11-15 year old were identified the interviewer was instructed to attempt to carry out both extra interviews (a “child interview by proxy” for 5-10 year olds and a “child interview” for 11-15 year olds) at that household.

There were screening instructions for both the 5-10 proxy interview and the 11 to 15 interview on the main address contact sheet, but in order not to jeopardise the adult survey the child screening was left until after the adult interview unless brought up by the respondent. Once the selection of any children aged 11 to 15 had been made, the interviewer was required to obtain written parental permission before proceeding with the interview. The adult was shown the Parental Permission Card (see Appendix C2) to indicate what the interviewer would be asking the child, and asked to sign the "parental/guardian permission" section of the address contact sheet. This was not required with the 5 to 10 proxy interview as this was completed by the parent on behalf of the child.

3.5.2 Attempting interviews with the children

For the 5 to 10 proxy interview, the interviewer was instructed to continue straight into the child survey after the adult interview if possible. For the 11 to 15 interview, the interviewer was only permitted to approach the child to attempt an interview once parent/guardian permission had been obtained. It was recommended that the 11 to 15 interview should be conducted during the same visit as the adult interview if possible, though appointments for a re-visit could be made for the 11 to 15 interview if necessary.

3.6 Interview length

The mean adult sample interview length was 22.2 minutes (median 20.4 minutes).

The 5 to 10 child interview mean length was 11.8 minutes (median 10.5 minutes), while the 11 to 15 child interview had a mean length of 23.7 minutes (median 22.2 minutes)[4].

[4] All figures have been calculated after capping the lower and upper extreme values - adult interview – lower 0.003%, upper 0.01%; 5-10 interview – lower 0.02%, upper 0.00% and 11-15 interview – lower 0.01%, upper 0.006%. Extreme lower (including negative) and upper values are likely to have arisen from interviews being split into two or more sessions, since the computation is not date-sensitive (e.g. if an interview was concluded on a subsequent day but earlier in the day, the difference between relative start and end times could be negative, or unexpectedly small).

3.7 Respondent incentives

Incentives remained the same between Year 4 and Year 5, following the continued success of the incentives piloted in Year 2. As with the previous year, each household received a book of stamps with the advance letter. In addition, each household that completed the interview(s) received a £5 high street voucher.

No additional incentive was provided for the child surveys.

4. Coding open ended questions

Code frames for open-ended (and 'partially open-ended[5]) questions for the survey were originally developed by TNS-BMRB and signed-off by DCMS in Year 1 of the survey, based on the verbatim answers of such questions. Code frames were reviewed quarterly in Year 5 though no new codes were added during the course of Year 5 fieldwork.

The coding of open-ended questions was carried out using a web-based package called Ascribe by an experienced team of coders in Kantar Operations. Five per cent of open-ended answers were checked by senior coders. New coders had 100% of their work checked until the required standard was reached and thereafter their work was systematically spot-checked. On questions where the "Other" answer category exceeded 10%, answers were also reviewed.

The coding team also code socio-economic data for this survey to produce Standard Occupational Classification (SOC) and National Statistics Socio-economic Classification (NS-SEC) categorisation, from a series of standard questions which were designed for NS-SEC and SOC categorisation.

TNS-BMRB researchers kept in close contact with the coding team throughout fieldwork to ensure that coding was carried out at regular intervals. At least every quarter of the survey year the coding was accessed by the TNS-BMRB research team to check the quality of the coders' work in terms of what had been back-coded to each answer category, and to see what sort of answers had been left in "Other".

A list of all of the code frames used on open-ended and partially open-ended questions in Year 5 can be found in Appendix G.

[5] Questions with a response list but with an "Other – specify" response option, for the respondent to give an answer that the response list did not cover, are known as "partially open-ended".

5. Fieldwork outcomes

5.1 Adult sample

Table 4.1 shows the fieldwork outcomes for the adult sample issued in Year 5 (Q1-Q4) of Taking Part. The final contact rate was 92.1%[6] and the final co-operation rate was 66.4%[7]. The (unadjusted) response rate was **61.1%**.

It is standard practice to assume that a proportion of the outcomes classified as 'Residential address but no contact with anyone at address' is actually deadwood. This proportion is equal to the proportion of other outcomes that is classified as deadwood.

11,010 (total number of outcomes) minus 642 (total residential non-contacts) = 10,368 outcomes, of which 1,028 are deadwood (9.92%). 1,028 * 9.92% = 102 assumed deadwood addresses among the residential non-contacts. This increases the total deadwood count to 1,130 (1028 + 102) and the total non-deadwood outcomes is reduced to 9,880 (11,010 – 1,130). The *adjusted* response rate = **61.7%.**

Table 4.1 Fieldwork outcomes (adult sample)

OUTCOME		OUTCOME GROUPING		% of total issues	% of non-deadwood
Not yet built/under construction	12	Deadwood	1,028	9.3%	-
Derelict/demolished	40				
Vacant/empty housing	575				
Non-residential address	135				
Communal establishment	38				
Address residential & occupied but not main residence	100				
Other ineligible	34				

[6] (Interviews + Refusals + Other unproductive)/ Total non-deadwood.

[7] Interviews / (Interviews + Refusals + Other unproductives).

Inaccessible	17				
Unable to locate address	77				
Residential address but no contact with anyone at address	642	Non contact	793	7.2%	7.9%
Person selected but no contact with selected person	151				
No contact with parent to get parental permission	-				
Information about occupants refused	1,031	Refusal	2,377	21.6%	23.8%
Office refusal	208				
Parent refused permission to interview	2				
Refusal by selected person	915				
Proxy refusal	209				
Refusal during the interview	12				
Broken appointment	180	Other unproductive	715	6.5%	7.2%
Selected person ill at home during survey period	55				
Selected person away or in hospital throughout survey period	99				
Selected person physically or mentally unable	131				
Selected person has inadequate English	65				
Other unproductive	172				
Interview reported but no data received	13				
Full interview	6,097	Interview	6,097	55.4%	61.1%
TOTAL			11,010		

5.2 Child Sample

5.2.1 5-10 sample

Table 4.2 shows the fieldwork outcomes for the 5-10 child sample. The final contact rate should be **100%** as screening for the 5-10 child interview by proxy should only take place with households co-operating with the main (adult) survey and when the person participating in the adult interview is the parent or guardian of the child aged 5-10. However in 3 households the screening was completed and no contact (or re-contact) was made with the parent or guardian of the selected 5-10 year old.

The final co-operation rate was **92.4%**[8] and response rate was **92.1%**. Occasionally, TNS-BMRB achieved a proxy child interview without the adult interview (due to lost data) but, as a general formula, the *cumulative* response rate for the 5-10 survey is adult response rate * child response rate = 61.1%*92.1% = **56.3%.**

Table 4.2 Fieldwork outcomes (5-10 sample)

OUTCOME		OUTCOME GROUPING		% of total issues	% of non-deadwood
No child aged 5-10 in household or main interview not with parent of 5-10 year old	6,475	Deadwood	10,174	92.4%	-
Information for child screening refused	64				
Unable to complete child screening (non-response/deadwood in adult survey)	3,635				
Residential address but no contact with anyone at address (when seeking child interview)	-	Non contact	3	0.03%	0.4%
Child selected but no contact (or re-contact)	3				

[8] (Interviews / (Interviews + Refusals + Other unproductives)

with parent of child					
Selection information refused	-	Refusals	50	0.5%	6.0%
Office refusal	1				
Refusal during interview	44				
Refusal by selected person	3				
Proxy refusal	2				
Broken appointment	1	Other unproductive	13	0.1%	1.6%
Selected person ill at home during survey period	-				
Selected person away or in hospital throughout survey period	2				
Selected person physically or mentally unable	-				
Selected person has inadequate English	-				
Other unproductive	8				
Interview reported but no data received	2				
Full interview	770	Interview	770	7.0%	92.1%
Partial interview	0				
TOTAL			11,010		

5.2.2 11-15 sample

Table 4.3 shows the fieldwork outcomes for the 11-15 child sample. The final contact rate was **98.5%**[9] and the final co-operation rate was **68.9%**[10]. The response rate was **67.9%**. It should be borne in mind that the request for an interview with an 11-15

[9] (Interviews + Refusals + Other unproductive)/Total non-deadwood

[10] (Interviews / (Interviews + Refusals + Other Unproductives)

year old could only be made in households co-operating with the main (adult) survey request. Occasionally, TNS-BMRB achieved a child interview without the adult interview (due to broken appointments with the adult or lost data) but, as a general formula, the *cumulative* response rate for the child survey is adult response rate * child response rate = 61.1%*67.9% = 41.5%.

Table 4.3 Fieldwork outcomes (child sample)

OUTCOME		**OUTCOME GROUPING**		**% of total issues**	**% of non-deadwood**
No child aged 11-15 in household	6,562	Deadwood	10,254	93.1%	-
Information for child screening refused	49				
Unable to complete child screening (non-response /deadwood in adult survey)	3,643				
Child selected but no contact with selected child	9	Non-contacts	11	0.1%	1.5%
No contact with parent to get parental permission	2				
Selection information refused	-	Refusal	155	1.4%	20.5%
Office refusal	1				
Refusal during interview	10				
Parent refused permission to interview	96				
Refusal by selected child	40				
Proxy refusal	8				
Broken appointment	16	Other unproductive	77	0.7%	10.2%
Selected child ill at home during survey period	1				
Selected child away or in hospital throughout	10				

survey period					
Selected child physically or mentally unable	7				
Selected child has inadequate English	3				
Other unproductive	34				
Interview reported but no data received	6				
Full interview	513	Interview	513	4.7%	67.9%
Partial interview	0				
TOTAL			11,010		

6. Weighting

6.1 Adult data design weights

The adult data weights were separately computed for each quarter because of the requirement to generate a rolling dataset, updated each quarter.

The design weight is equal to the inverse of the individual's selection probability.

The individual's selection probability was computed as follows:

> Address selection probability * (1/ number of dwelling units at address) * (1/ number of individuals aged 16+ in selected dwelling unit).

6.2 Adult data non-response weights

Non-response weights were computed in two stages:

1) Area-type non-response weights;

2) Target population weights.

Area-based information was attached to each issued address in the core sample. This included a mix of Census data, Census-derived data (such as the ACORN geo-demographic classification) and administrative data (e.g. population density, deprivation indices and government boundaries).

The CHAID procedure was used to classify addresses in terms of mean response rate. Two area-based variables were found to be significant for Q1:

- Region
- % of PSU population age 65+ according to Census

Because quarters 2-4 were so small, the Q1 non-response weights were used directly, regardless of the actual response rates in each weighting cell. TNS-BMRB considered the Q1 response rates to be more reliable.

Table 5.1 Area-type non-response weights

REGION	% aged 65+	MEAN RR	WEIGHT (1/RR)
SW	All	66.3%	1.51
NE,NW, East Midlands	All	62.7%	1.59
Yorkshire & Humber, West Midlands, East of England, SE	>15.8%	60.5%	1.65
Yorkshire & Humber, West Midlands, East of England, SE	<=15.8%	56.9%	1.76
London	All	48.2%	2.07

In the second and final non-response weighting stage, TNS-BMRB applied rim weights to match targets provided by the 2008 ONS mid-year population estimates. The targets were based on sex, age, region, and (LFS estimate) ethnic group.

Table 5.4 Targets used for second stage non-response weighting

Age	Male	Female
16 – 19	3.27%	3.09%
20 – 24	4.36%	4.17%
25 – 29	4.29%	4.11%
30 – 34	3.89%	3.85%
35 – 39	4.32%	4.36%
40 – 44	4.67%	4.70%
45 – 49	4.36%	4.48%
50 – 54	3.79%	3.86%
55 – 59	3.48%	3.59%
60 - 64	3.59%	3.76%
65 – 69	2.68%	2.88%
70 – 74	2.27%	2.55%
75+	3.83%	5.79%
TOTAL	48.80%	51.20%

Region	
North East	5.05%
North West	13.29%
Yorkshire & Humberside	10.17%
East Midlands	8.68%
West Midlands	10.41%
East of England	11.15%
London	14.70%
South East	16.27%
South West	10.28%
TOTAL	100.00%

Ethnic group	
White	88.19%
Indian	2.79%
Pakistani / Bangladeshi / Other Asian	3.02%
Black	2.87%
Mixed/Chinese/Other ethnic group	3.13%
TOTAL	100.00%

London/ethnic group	
Not London	85.30%
London white	10.31%
London not white	4.39%
TOTAL	100.00%

6.3 Final adult weights

Weights were 'capped' to avoid inflating the variance of the survey estimates. Although such caps may introduce extra bias to the estimates, this is likely to be minor when only the top 1-2% of weights are capped (as here)[11].

The four quarters were then combined, with the sum of weights scaled so that each quarter equals 25% of the total.

6.4 Child data design weights

As before, the design weight is equal to the inverse of the sampling probability.

11-15s

The basic sampling probability for 11-15s was computed as follows:

Address selection probability * (1/ number of dwelling units at address) * (1/ number of individuals aged 11-15 in selected dwelling unit).

5-10s

For the 5-10s, the sampling probability was dependent upon the adult respondent sampling probability. However, it needs to take into account the fact that in two parent households, the child may have been sampled via either of the parents/caregivers. The basic sampling probability for 5-10s was computed as follows:

Address selection probability * (1/ number of dwelling units at address) * (number of parents/guardians in household / number of adults in household) * (1/ number of individuals aged 5-10 with a dependent relationship with adult respondent).

[11] Most of the largest weights are due to unexpectedly large numbers of dwelling units at a single address. These are likely either to be interviewer errors or to be very unusual cases that happen to fall into this particular sample. The addresses used in a survey represent a random sample of the PAF which means that the proportion that turn out to contain multiple dwelling units is only an *estimate* of the proportion in the full PAF. This estimate is subject to natural sampling error so should not be taken as absolute.

6.5 Child data non-response weights

The PSU-level non-response weight computed for the adult dataset was also used for the child dataset since both the 11-15 interview and the 5-10 proxy interview were dependent upon the initial co-operation of the sampled adult.

In the second and final non-response weighting stage, TNS-BMRB applied rim weights to match targets provided by the 2008 ONS mid-year population estimates. The targets were based on sex, age, region, and ethnic group[12]. At the same time, each quarter was given an equal weight.

Table 5.6 Targets used for second stage non-response weighting

Age	**Male**	**Female**
5-6	8.89%	8.45%
7-8	8.81%	8.44%
9-10	9.24%	8.85%
11-12	9.55%	9.12%
13-15	14.71%	13.94%

Region	
North East	4.86%
North West	13.56%
Yorkshire & Humberside	10.13%
East Midlands	8.59%
West Midlands	10.92%
East of England	11.35%
London	14.10%
South East	16.66%
South West	9.83%

[12] Based on a projection from the 2007 estimates. The 2008 ethnic estimates were not yet available.

Ethnic group	5-10	11-15
White	44.14%	39.63%
Not white	8.55%	7.68%

7. Final design effects for key variables

7.1 Adult data

Significance tests assume that the achieved sample is a simple random sample from the survey population. The design effect takes into account the actual complexity of the sample design, reflecting the compromises necessary for real world survey practice.

The actual sample size divided by the design effect equals the *effective* sample size. The effective sample size - rather than the actual sample size - is used for tests of significance.

Table 6.1 below shows a selection of key (weighted) Y5 results, the attendant design effects and the 95% confidence intervals for each result[13]. The design effects range from 2.1 to 4.4 but all of the estimates are accurate to +/-2.6 percentage points or less.

Table 6.1 Design effects for key PSA variables (Year 5)

RESULT	Weighted result	Design effect	95% confidence intervals [range]
% Using a library service at least once in the last 12 months	37.0%	2.14	35.2% - 38.2% [3.0pp]
% Visiting a museum/gallery/archive at least once in last 12 months	46.7%	3.16	44.5% - 49.0% [4.5pp]
% Visiting 2+ historic environment sites in last 12 months	59.2%	4.41	56.6% - 61.8% [5.2pp]
% Engaging in at least three arts activities in the last 12 months	60.7%	3.37	58.4% - 63.0% [4.6pp]
% Doing at least 12 ‘thirty minute plus’ sessions of moderate intensity sports / recreational physical activity in last 4 weeks	23.6%	2.29	22.0% - 25.2% [3.2pp]
% meeting DCMS target (2/5)	67.8%	3.02	65.7% - 69.8% [4.1pp]

[13] Computed using STATA

Table 6.2 details the design effects for a number of key sub-groups. The design effects tend to be lower, reflecting the fact that these sub-groups will be more thinly distributed between PSUs leading to a smaller cluster effect[14].

Table 6.2 Key sub-group design effects (adult data Y5)

	PSA variable					
	Library use	Museum/ gallery/ archive visits	Historic site visits	Arts activity	Sport activity	2+/5
ALL	2.14	3.16	4.41	3.37	2.29	3.02
SEX						
▪ Males	1.93	3.13	3.78	3.27	2.72	2.46
▪ Females	1.91	2.33	2.81	2.11	1.57	2.40
DISABILITY STATUS						
▪ Longstanding illness/disability/ infirmity	1.73	1.72	2.21	1.61	1.43	1.66
▪ No longstanding illness/disability/ infirmity	2.03	3.13	4.17	3.33	2.28	2.80
ETHNIC GROUP						
▪ BME	2.16	3.10	3.71	3.56	2.11	4.03
▪ White	1.86	2.75	3.81	3.27	2.08	2.55

[14] There are two versions of these design effects that can be calculated. One uses a notional simple random sample of the full population as the benchmark and one uses a notional random sample of the sub-group population as the benchmark. The former is a more realistic assessment of the impact of complex sample design but the latter makes calculation of standard errors simpler as these are derived simply by multiplying the standard error of the simple random sample by the square root of the design effect (also known as the 'design factor').

NS-SEC						
▪ NS-SEC 1-4	1.72	2.71	3.11	2.49	1.92	2.47
▪ NS-SEC 5-8	1.94	2.04	2.97	2.64	3.19	2.38
AGE GROUP						
▪ 16-24	3.56	2.36	3.19	2.72	1.93	2.54
▪ 25-44	1.75	2.25	2.58	2.23	2.21	1.94
▪ 45-64	1.70	2.40	2.42	2.37	1.94	2.09
▪ 65-74	1.41	1.55	1.52	1.77	1.17	1.56
▪ 75+	1.99	1.57	1.50	1.47	1.25	1.90
Average (nationally distributed groups)	2.04	2.39	2.85	2.51	1.99	2.36

For other measures, an average overall design effect of 2.36 may be used for calculating the effective sample size

7.2 Child data

Table 6.3 below shows a selection of key (weighted) Y5 results, the attendant design effects and the 95% confidence intervals for each result[15]. The design effects range from 1.6 to 2.9. They are lower than the equivalent adult design effects because the child cluster sizes are smaller.

[15] Computed using STATA. The design effects reflect only the highest level of stratification (region) due to a significant number of PSUs with one or fewer completed child interviews.

Table 6.3 Design effects for key child dataset variables (Year 5)

RESULT	**Weighted result**	**Design effect**	**95% confidence intervals [range]**
Hours of in school cultural participation (11-15s only)	5.2	2.94	4.3 – 6.2 [1.9]
Hours of in or out of school cultural participation (11-15s only)	11.1	2.14	9.7 – 12.5 [2.8]
Hours of out of school cultural participation (5-15s only)	5.1	2.06	4.6 – 5.6 [1.0]
Hours of in school sport participation (11-15s only)	1.3	2.4	1.1 – 1.6 [0.5]
Hours of out of school sports participation	3.4	2.34	3.0 – 3.8 [0.8]
Hours of in or out of school sports participation (11-15s only)	5.4	1.87	4.7 – 6.1 [1.4]
Meet 5-hour cultural target for in or out of school participation (11-15s only)	71.5%	2.22	65.6% - 77.5% [11.9%]
Meet 5-hour cultural target for out of school participation (5-10s only)	34.8%	1.62	30.4% - 39.1% [8.7%]
Whether meet 5-hour sport target for in or out of school participation (11-15s only)	39.1%	2.14	32.9% - 45.3% [12.4%]
Whether meet 3-hour sport target for out of school participation - (5-10s only)	35.5%	1.68	31.1% - 39.9% [8.8%]

Table 6.4 details the design effects for a number of key sub-groups. The design effects tend to be slightly lower than for the full sample. They are *very* low for disabled children because there is no cluster effect to consider.

Table 6.4 Key sub-group design effects (child data Y5)

	ALL	LIMITING DISABILITY	BME	WHITE	MALES	FEMALES	5 TO 10	11 TO 15
Hours of in school cultural participation (11-15s only)	2.94	1.35	1.65	2.92	2.12	1.98	-	2.94
Hours of in or out of school cultural participation (11-15s only)	2.14	1.47	1.36	2.11	1.89	1.49		2.14
Hours of out of school cultural participation (5-15s only)	2.06	0.89	1.96	1.81	2.11	1.89	1.66	1.69
Hours of in school sport participation (11-15s only)	2.40	1.28	2.09	1.97	2.05	2.00		2.40
Hours of out of school sports participation	2.34	1.00	1.45	2.40	1.72	2.31	1.98	1.75
Hours of in or out of school sports participation (11-15s only)	1.87	0.65	1.44	1.85	1.60	1.93		1.87
Meet 5-hour cultural target for in or out of school participation (11-15s only)	2.22	2.45	1.60	2.28	2.14	1.60		2.22
Meet 5-hour cultural target for out of school participation (5-10s only)	1.62	1.84	2.28	1.46	1.78	2.00	1.62	
Whether meet 5-hour sport target for in or out of school participation (11-15s only)	2.14	1.71	1.53	2.35	1.89	1.77		2.14
Whether meet 3-hour sport target for out of school participation - (5-10s only)	1.68	1.92	1.45	1.66	1.56	1.68	1.68	