Public Service Broadcasting Tracker 2015 – Weighting Approach

Technical Appendix

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1. Background

Until 2014, the PSB tracker was conducted via a CATI[1] telephone methodology. In 2015 the decision was made to transition it to a split sample of online and face to face CAPI[2] survey with a smaller parallel run of telephone interviews using the previous CATI methodology to enable recalibration of previous data.

This document outlines the process by which results were normalised between the online and face to face surveys to provide final results for reporting. It also outlines the process for calibrating pre-2015 telephone surveys with the 2015 mixed methodology.

[1] CATI - Computer-assisted telephone interviewing
[2] CAPI - Computer-assisted personal interviewing

2. Sample structure 2015

The PSB 2015 tracker was conducted as follows;

- Main survey total 3653 interviews
  - CAPI Face to face (F2F) - 810
  - Online - 2843
- Parallel run using previous methodology
  - CATI Telephone – 500

The online component of the main survey was conducted using an online panel. The face to face survey was conducted in home via CAPI.

Both surveys were designed to be nationally representative with quotas being set by age, gender and socio economic status within nation, by region within England, and a minimum quota set for EMG at an overall UK level. For the main survey separate, matching quotas were set for the online and Face-to-Face elements in proportion to the total interviews conducted in each. In addition, the devolved nations are over-sampled, and England is under-sampled, to allow more robust analysis of the individual channels (in particular, BBC One, ITV1 and Channel 4) by nation.

Boost samples for regular viewers of Channel 4 in each of the devolved nations were included to ensure minimum samples for analysis.

3. Methodology

3.1 Discriminant analysis

Analysis called *discriminant analysis* is undertaken in order to determine which survey questions discriminate most between respondents answering the survey using the different methodologies. The analysis is used to determine the attributes which most strongly predict which group a respondent belongs to based on a number of other attributes.

Firstly, discriminant analysis was run only on the main survey to predict differences between responses based on whether the questionnaire had been completed face-to-face or online. The second analysis was conducted between the reweighted main survey and the parallel run of telephone interviews to identify which attributes aligned these datasets. The second stage identified which questions to use to weight previous waves of the PSB tracker to provide tracking data.

Since discriminant analysis aims to predict which group a respondent belongs to, as well as determine which questions are the most discriminating (in order of greatest to least significance), it also provides the accuracy of a prediction based on those variables. This we will refer to this as the *accuracy*. The accuracy is given as the percentage of respondents which are correctly allocated to their survey methodology.

When weighting data the effectiveness of each interview diminishes, so the data is less robust than using unweighted data. We use a concept of efficiency of the weighting to say how much the effectiveness of the data is reduced by. The efficiency of the weighting (or just *efficiency*) is the proportion of the sample size which would give the same effectiveness if we had achieved the desired profile using no weighting. In other words, if we have an efficiency of 75% we could have the same reliability of data with 75% of the sample size if we had a perfect profile and did not weight the data. The efficiency is also given as a percentage where no weighting would be 100%. Generally efficiency of 50% or above is considered acceptable.

3.2 Capping weights

Capping weights is the process of limiting the range of values a weight can take. This is done because large weights – or more specifically large differences in weights can cause issues with small numbers of respondents dominating results. For both stages we have capped weights at 0.2 and 5, so no respondent can have a weight below 0.2 or above 5. This reduces issues caused by large differences in weight. All targets within the sample were still achieved.

4. Weighting variables

4.1 Main PSB audience opinion measures

There are a number of main audience opinion measures from the PSB tracker which are published by Ofcom on an annual basis. These are as follows;

- Proportions of self-claimed regular viewers of any PSB channel as well as each PSB channel (Q12)
- Delivery of the PSB purposes for each channel (Q15)
- Delivery of the PSB purposes across all PSB channels (Q16)
- Importance of the PSB purposes (Q17)

4.2 Stage 1 - Main Survey Weighting

All weighting includes standard demographic variables; age, gender, socio economic status, region, working status and ethnicity.

A number of variables were identified which were significantly different between the survey methodologies. However, not all of these brought the main audience option measures into line, therefore they were not included in the final weighting. Three variables were identified as the optimum to bring the survey methodologies closely into line while maintaining an acceptable efficiency. Using the weighting scheme produced by these variables, 99% of key measures and 80% of other survey measures were within 10% difference between the survey methodologies.

However, there were still some significant differences between survey methodologies. Since 70% of interviews were conducted online, if we were to weight the online to the Face-to-Face, the online would still contribute the majority to the results. The decision was made to weight the survey methodology so Face-to-Face and online both contribute 50% to results.

Table 1 provides the final variables included in weighting stage 1, along with the weighting efficiency and the discriminant accuracy they provide. Both the *efficiency* and *accuracy* relate to the statistics provided by including all variables up to and including the current one.

Table 1 - Main survey final weighting variables and the weighting efficiency and accuracy they provide

Question	Efficiency (with demos)	Accuracy
Q15J It shows new programmes, made in the UK - BBC2 (AGREE 7-10)	65.2%	49.6%
Q17E Rating on statement - It portrays my region/Scotland/Wales/Northern Ireland fairly to the rest of the UK (AGREE 7-10)	54.9%	62.1%
Q15G It shows well-made, high quality programmes - Channel 4 (AGREE 7-10)	49.3%	64.1%

The final accuracy was slightly below the target of 50%, however since it was less than 1% it was deemed to still be acceptable.

The final weighting targets for the combined methodology main survey were therefore;

Table 2 - Final weighting targets for main survey

Q4 Respondent gender	Male	49%
	Female	51%
Q3 Respondent age	16-24	15%
	25-34	16%
	35-44	17%
	45-54	17%
	55-64	14%
	65-74	11%
	75+	10%
SEG	AB	22%
	C1	31%
	C2	21%
	DE	26%
Working status	Working Full time	36%

	Working Part Time	14%
	Not working	50%
Definitive standard region	Scotland	9%
	North	4%
	Yorkshire/Humberside	8%
	North West	11%
	West Midlands	9%
	East Midlands	7%
	East Anglia	9%
	Wales	6%
	South West	8%
	London	13%
	South East	13%
	Northern Ireland	2%
Ethnicity	BAME	13%
	White	87%
Q15J It shows new programmes, made in the UK - BBC2	Not asked (i.e. do not view channel regularly)	78%
	Not 7+ (i.e. 1-6 or DK)	7%
	7+	15%
Q17E Rating on statement - It portrays my region/Scotland/Wales/Northern Ireland fairly to the rest of the UK	Not asked (i.e. do not view channel regularly)	6%
	Not 7+ (i.e. 1-6 or DK)	15%
	7+	79%
Q15G It shows well-made, high quality programmes - Channel 4	Not asked (i.e. do not view channel regularly)	76%
	Not 7+ (i.e. 1-6 or DK)	7%
	7+	18%

Survey methodology	CAPI	50%
	Online	50%

4.3 Stage 2 - Telephone Boost weighting

The second stage of the weighting process was to identify the key differences between the weighted main survey and the parallel run of telephone interviews. This was used to produce a weighting algorithm to be added to previous years weighting to allow tracking of results.

As with the main survey all the weighting variables are on top of standard demographic variables; age, gender, socio economic status, region, working status and ethnicity.

Again several variables helped in bringing the other measures into line. This time four variables were identified which provided optimum alignment with high accuracy. Since this weighting was to be applied to past waves of data where weighting has already been implemented, efficiency well above 50% was desired to ensure the final efficiency remained acceptable. In this case there was no benefit in adding more variables beyond the four selected which gave efficiency of 76%.

Table 3 – Telephone boost final weighting variables and the weighting efficiency and accuracy they provide

Question	Efficiency (with demos)	Accuracy
Regularly view any PSB channels	91%	57%
Q15E It portrays my region/Scotland/Wales/Northern Ireland fairly to the rest of the UK - Channel 4	87%	57%
Q15G It shows well-made, high quality programmes - ITV/STV/ITV WALES/UTV	79%	60%
Q15A Its programmes help me understand what's going on in the world today BBC1	76%	60%

5. Weighting Previous Years Data (2011-2014)

Given the weighting variables identified in the stage 2 weighting (above) an additional recalibration was used to produce the weighting targets for these variables in previous years. This was in order to take account of the fact the achieved values could have been different in the past. The recalibration takes account of the relationship between the telephone and online/Face-to-Face results in 2015. Using this relationship we can assume it would be similar in previous years and apply it to the collected telephone data to predict results for online/Face-to-Face data collection in the given year.

For example, the 2015 results for those who regularly view any PSB channel were 77% for online/Face-to-Face and 63% for telephone. The 2014 result (only available for telephone) was 66%. We looked at the relationship between online/Face-to-Face and telephone in 2015, 22% more respondents reported viewing any PSB channel for online/Face-to-Face and 37% fewer reported viewing none. Therefore, to predict the proportion regularly viewing any PSB channel, had we conducted interviewing online/Face-to-Face in 2014, starting with the telephone value we considered if 22% more viewed any and 37% fewer viewed none. Finally we rebased to give 100%. This provided a predicted value of 80% of online/Face-to-Face respondents would be regular viewer of any PSB channel in 2014. The same process was used with the remaining three weight variables for 2014 and similarly for earlier years. The final weighting targets for 2011-2014 are provided in Table 4. These are all in addition to any existing weighting from these years.

Table 4 – Final PSB Tracker weighting targets (2011 – 2014)

2014 weight target		
Regularly view any PSB channels	Any channel	79.1%
	None	20.9%
Q15E It portrays my region/Scotland/Wales/Northern Ireland fairly to the rest of the UK - Channel 4	Do not watch channel regularly	77.8%
	1-6 or DK	17.0%
	7-10	5.2%
Q15G It shows well-made, high quality programmes - ITV/STV/ITV WALES/UTV	Do not watch channel regularly	45.8%
	1-6 or DK	15.8%
	7-10	38.4%
Q15A Its programmes help me understand what's going on in the world today BBC1	Do not watch channel regularly	35.2%
	1-6 or DK	17.6%
	7-10	47.2%

2013 weight target		
Regularly view any PSB channels	Any channel	84.1%
	None	15.9%
Q15E It portrays my region/Scotland/Wales/Northern Ireland fairly to the rest of the UK - Channel 4	Do not watch channel regularly	75.4%
	1-6 or DK	19.0%
	7-10	5.6%
Q15G It shows well-made, high quality programmes - ITV/STV/ITV WALES/UTV	Do not watch channel regularly	40.5%
	1-6 or DK	17.9%
	7-10	41.6%
Q15A Its programmes help me understand what's going on in the world today BBC1	Do not watch channel regularly	33.4%
	1-6 or DK	20.4%
	7-10	46.2%
2012 weight target		
Regularly view any PSB channels	Any channel	85.4%
	None	14.6%
Q15E It portrays my region/Scotland/Wales/Northern Ireland fairly to the rest of the UK - Channel 4	Do not watch channel regularly	73.0%
	1-6 or DK	21.2%
	7-10	5.8%
Q15G It shows well-made, high quality programmes - ITV/STV/ITV WALES/UTV	Do not watch channel regularly	42.6%
	1-6 or DK	19.7%
	7-10	37.7%
Q15A Its programmes help me understand what's going on in the world today BBC1	Do not watch channel regularly	31.6%
	1-6 or DK	19.4%
	7-10	49.0%
2011 weight target		
Regularly view any PSB channels	Any channel	82.7%
	None	17.3%
Q15E It portrays my region/Scotland/Wales/Northern Ireland fairly to the rest of the UK - Channel 4	Do not watch channel regularly	75.4%
	1-6 or DK	19.5%
	7-10	5.1%
Q15G It shows well-made, high quality programmes - ITV/STV/ITV WALES/UTV	Do not watch channel regularly	45.8%
	1-6 or DK	20.8%

	7-10	33.4%
Q15A Its programmes help me understand what's going on in the world today BBC1	Do not watch channel regularly	34.3%
	1-6 or DK	20.1%
	7-10	45.5%