

1. Listed events model documentation

Purpose

- 1.1 This documentation is provided to assist stakeholders in navigating the model we have published alongside the Listed events consultation¹ (“the consultation”). The purpose of the model, and the policy proposals underlying it, are as explained in that consultation.
- 1.2 The inputs to the model are:
 - a) BARB establishment data (we have used Q3 2017)
 - b) DTT coverage data (we have used post clearance data - ref 7.029)

The spreadsheet

Tab “User Groups”

- 1.3 This tab acts as a reference to the Venn diagram published at Figure 1 of the consultation.

Tab “Flow chart”

- 1.4 This tab describes the steps followed in the model as well as the formulae used.

Tabs “Input Data”

- 1.5 These tabs contain the data supplied by the BARB Establishment Survey as well as the DTT coverage figures.
- 1.6 For the BARB establishment data, each row describes a household type, while the columns are:
 - a) “Total base” is the number of people that belong in this household type,
 - b) “Watch online” is the number of people out of the total base that use their broadband connection to watch TV (IPTV) and
 - c) “Watch online via best device” is the number of people out of the “Watch online” base that watch IPTV on the household’s main device.

Tab “Model”

- 1.7 This tab includes the calculations performed by the model as follows:
 - a) Each row of the input data is assigned a user group as described in section I of the flowchart (and as per the Venn diagram in Figure 1) in columns Q through U.
 - b) Then, based on what user group the household type belongs to, a contribution to the various Venn Diagram segments is calculated. This is calculated separately for PSB

¹ [Listed events consultation](#)

(section IIa of the flowchart) and COM (section IIb of the flowchart) multiplexes, in columns Y to AE and AI to AO respectively.

- c) Finally, the data is summed to form the total number of people in each segment, in row 73.

Tab “Results”

- 1.8 This tab contains the results of the model, where the sums mentioned above are divided over the UK population and summed to form a grand total².

Counting IPTV users

- 1.9 BARB asked the respondents two separate questions regarding IPTV: whether they have a broadband connection and whether they watch TV online. If a user has broadband, they might not necessarily use it to watch IPTV, therefore we redistribute part of the population in groups E, F and G.
- 1.10 To illustrate, a fictitious example: Of 100 people in Group F (DTT and broadband), 20 have said they watch TV online. 20 users are assigned to segment F and 80 users are assigned to segment B.
- 1.11 BARB also asked what device the respondents use to watch TV online (connected TV, games console, laptop, tablet or mobile). As explained in the consultation (paragraph 3.14) we only consider the “watch online via best device” figures.
- 1.12 The redistribution formulae for the user groups are as follows:

A	A = Total Base
B	B = Total Base
C	C = Watch Online via Best Device
D	D = Total Base
E	A = Total Base - Watch Online via Best Device E = Watch Online via Best Device
F	B = Total Base - Watch Online via Best Device F = Watch Online via Best Device
G	D = Total Base - Watch Online via Best Device G = Watch Online via Best Device

Table 1: Redistribution formulae for PSB multiplexes

Differentiating between PSB and COM DTT

- 1.13 We explain in our consultation (paragraph 3.20) why and how we propose to adjust for differences in coverage between the PSB and commercial DTT multiplexes. While 98.8% of the UK population can receive channels on the PSB multiplex, only 91.0% of the population can receive channels on the commercial multiplexes (4, 5, and 6), based on DTT coverage data. We assume that all survey respondents that have claimed to have DTT are within the

² Due to a rounding error found in the model, COM percentages now add up to 93.1% instead of 93.2%

PSB coverage and thus we weight the COM percentage to account for this. Therefore, of all DTT users, we assume that 92.1%³ can receive channels on the commercial multiplexes.

1.14 For commercial multiplexes (4, 5 and 6), the redistribution formulae account for 92.1% of the total coverage, as shown below in Table 2:

A	A = Total Base
B	B = 92.1% x Total Base
C	C = Watch Online via Best Device
D	A = 7.9% x Total Base D = 92.1% x Total Base
E	A = Total Base - Watch Online via Best Device E = Watch Online via Best Device
F	B = 92.1% x (Total Base - Watch Online via Best Device) C = 7.9% x Watch Online via Best Device F = 92.1% x Watch Online via Best Device
G	A = 7.9% x (Total Base - Watch Online via Best Device) D = 92.1% x (Total Base - Watch Online via Best Device) G = 92.1% x Watch Online via Best Device

Table 2: Redistribution formulae for COM multiplexes

1.15 For example:

- a) 100 people in Group D are allocated as follows:
 - i) 92.1 users are assigned to segment D; and
 - ii) 7.9 users are assigned to segment A.

- b) 100 people in Group F, out of which 20 watch IPTV on their main device, are allocated as follows:
 - i) $92.1\% \times 20 = 18.4$ users are assigned to segment F;
 - ii) $7.9\% \times 20 = 1.6$ users are assigned to segment C; and
 - iii) $92.1\% \times (100 - 20) = 73.7$ users are assigned to segment B.

Sensitivity analysis

1.16 In addition, we have undertaken sensitivity analysis to understand whether a skew to satellite/cable or IPTV would change our assessment as to the qualifying services. The overall household population of DTT, Satellite/Cable and IPTV are constant and it is their relative overlap that leads to different model outcomes. In the PSB model, the size of segment A and B is at its greatest relative to other segments and results in the 95.3% assessment. When the household population in segments of D, E, F and G are greatest the output will be 91.2%. These represent the limits of the model. As the overlap of segments

³ 92.1% = 91.0% / 98.8%

changes, there is a linear correlation between the relative size of segments and the calculated assessment.

1.17 Specifically, we found that even making an extreme assumption for a PSB multiplex-only area - that DTT usage drops by 50%, with those households using satellite/cable or IPTV instead - our indicative assessment of qualifying services based on the current data would not change. The figure below shows a representation of this sensitivity, where the size of the DTT population is reduced, whilst Satellite/cable and IPTV populations are allowed to change. A 50% skew results in an assessment of 94.2%.

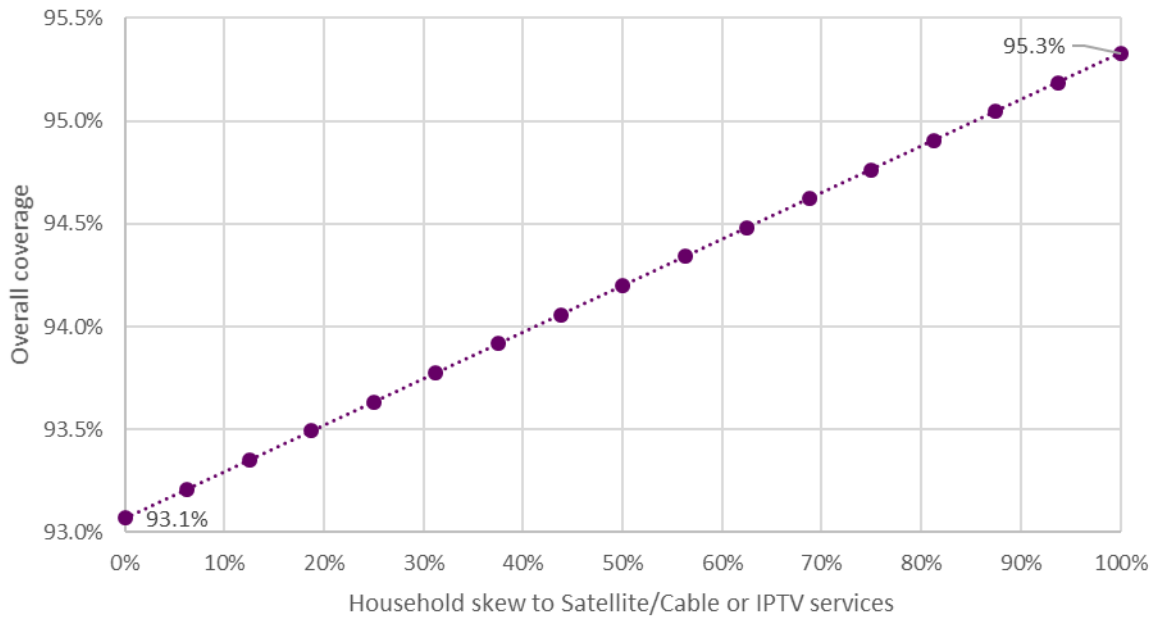


Figure 1. Representative linear relationship showing model outputs based on household transition to Satellite/cable or IPTV services