Ofcom

UHF Strategy Research

Summary Report

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bdrc continental

Tim Barber & Dave Chilvers
Tel: 020 7400 1000
tim.barber@bdrc-continental.com

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1. Background, objectives and method

1.1 Background

Ofcom is currently looking at developing a framework for the long term future of UHF spectrum bands IV and V. In particular this relates to the need to evaluate the balance between Digital Terrestrial Television (DTT) – the technology used to deliver Freeview services – and mobile internet.

Ofcom's initial considerations around possible policy action will be informed by consumer views on preferences between and within the detailed make up of DTT and mobile internet services. Research was required to provide these views.

Please note that in the consumer research, we asked respondents about their use and views on Freeview services, as opposed to Digital Terrestrial Television, as this would be a more widely understood term.

1.2 Objectives

As outlined in the original Research Brief, the research objectives were to understand the importance that consumers attach to specific characteristics and functionalities of DTT and mobile internet:

- to understand the characteristics, scope and scale of future TV services (post 2020) that will continue to have sufficient relevance to deliver Public Service Broadcasting objectives in future
- to understand the potential scale and scope of mobile capacity requirements by assessing future demand for mobile internet services

1.3 Method

To meet these objectives, 2,100 online interviews were undertaken with respondents in three segments

- 828 with Digital Terrestrial TV as their main method of TV viewing or planning to acquire this (778 already have DTT on main set) – this was denoted **Segment 1**
- 724 with pay TV as their main method of TV viewing with DTT as a secondary method or planning to acquire this (624 already have pay TV on main set and DTT on secondary set) – this was denoted **Segment 2**
- 1,413 with or planning to acquire mobile internet (841 already using mobile internet) – this was denoted as **Segment 3**

There is overlap between Segment 3 (mobile internet) and Segments 1 and 2 (DTT).

The questionnaire that was used comprised:

- A series of conventional questions about DTT and mobile internet
- A trade off (conjoint) section where respondents were given a number of pairs of scenarios to look at and select the one they preferred in each case
- Respondents in the overlap were presented with just one of the DTT or mobile internet conjoints, selected at random, to limit the overall questionnaire length
- 1,115 participated in the DTT conjoint analysis, 985 in the mobile internet conjoint analysis

All data has been weighted to the UK national population (**not** online population) using current segment sizes and profiles (gender, age, class) taken from Ofcom's 2011 Media Tracker[1]. An urban/rural classification was added to the dataset via postcode lookup – all but 38 matched to a postcode based file previously used and supplied by Ofcom.

More detail on the methodology is provided at Annex A.

[1] Latest published data tables from the Media Tracker are available from the Ofcom Statistical Release calendar: www.ofcom.org.uk/static/marketdataresearch/statistics/media-tracker-data-2010.pdf

2. Executive summary

Digital Terrestrial Television (DTT)

The key conclusions from the DTT part of this project are:

- When evaluating future options, most DTT viewers showed an aversion to paying anything for TV services
    - While there was some interest in having 20 premium channels available on DTT at a cost of £15 per month, other subscription options such as enhanced catch-up TV/ Video on Demand offers were rejected
    - Of those who had not acquired new TV products – such as High Definition (HD) TV, a Digital Video Recorder (DVR), Video on Demand (VOD) – cost was cited as a main reason. A lack of any perceived need (by the consumer) was also an important factor for those who had not acquired these items.
- When asked to consider what would be the most important feature of their Freeview service in future, the ability to pause/ record live TV was the most popular first choice for homes with DTT on a secondary set (with Pay TV on the main set), with this chosen by 31% of respondents
- In comparison, having more Standard Definition (SD) channels was the most popular first choice for households with DTT on their main set favoured (25% cited this)
- Trading off HD channels against SD channels showed consumers' preference for increasing the number of SD channels by a large amount rather than increasing the number of HD channels available by a smaller amount.

Mobile internet

The key conclusions from the mobile internet questionnaire are as follows:

- As with DTT, price was a key driver of levels of interest
    - The size of the monthly bill was the most important feature to emerge from the trade-off analysis
    - Price was more important for older users
    - Improving a single attribute of the mobile internet package/ service on offer (such as coverage in home/ coverage outdoors/ usage caps) was not seen as warranting an increased price per month
    - However, changing all or three to four attributes simultaneously from minimum to maximum values did seem to appeal, even with larger price increases

- Lack of a usage cap, in-home reception and mobile reception while travelling at speed were also key areas of interest/ importance to most consumers
- The research confirms that the mobile internet market is expected to grow significantly – driven largely by smartphone growth
- Younger consumers tend to spend more on their mobile service, and use mobile internet in more situations e.g. on the move, around their neighbourhood, than older consumers
- Home use of mobile internet was important – more so for older users
    - They (older users) were more interested in better in-home reception
- The length of time required for downloads was the biggest practical issue that users faced – with this problem most commonly experienced in home (49% of respondents cited this as an issue), and when travelling (31%).

When we asked respondents which of two potential uses of freed up spectrum – better Freeview services, or faster mobile broadband – they would prefer, there was a preference to improve the former, even among mobile internet users. The main reasons given among those preferring better Freeview services were:

- 21% do not use mobile Internet services
- 18% want more channels available on Freeview, or feel that the range of channels on offer is poor

3. Detailed findings - DTT

3.1 Market profile

The following data provides information about the breakdown of the two DTT segments.

Segment 1 (Households with DTT on main TV set or planning to get DTT on their main set in the next 12 months) breaks down as follows:

- 90% DTT only
- 6% DTT + Top Up TV of some sort
- 3% Freesat (planning to get DTT on main set)

Furthermore:

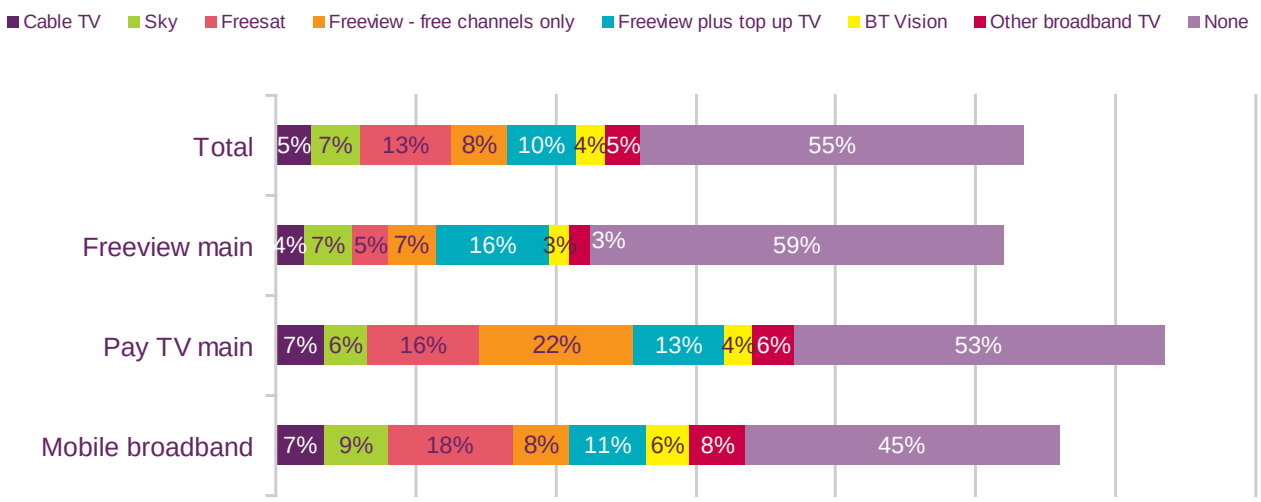
- 43% receive through decoder on TV only
- 35% receive through set-top box only
- 21% receive through both (on different TVs)

Segment 2 (Pay TV on main set, DTT on or planned on subsidiary set) breaks down as follows:

- 63% satellite
- 33% cable
- 3% other

The chart overleaf shows the extent to which consumers are planning to switch their main TV platform in the next year:

Figure 1: Plans to get new TV platform on main set



Source: **Q7 Which of the following are you planning to get on your main TV set in the next year or so?**
Base: All Respondents (2100/828/724/1413)

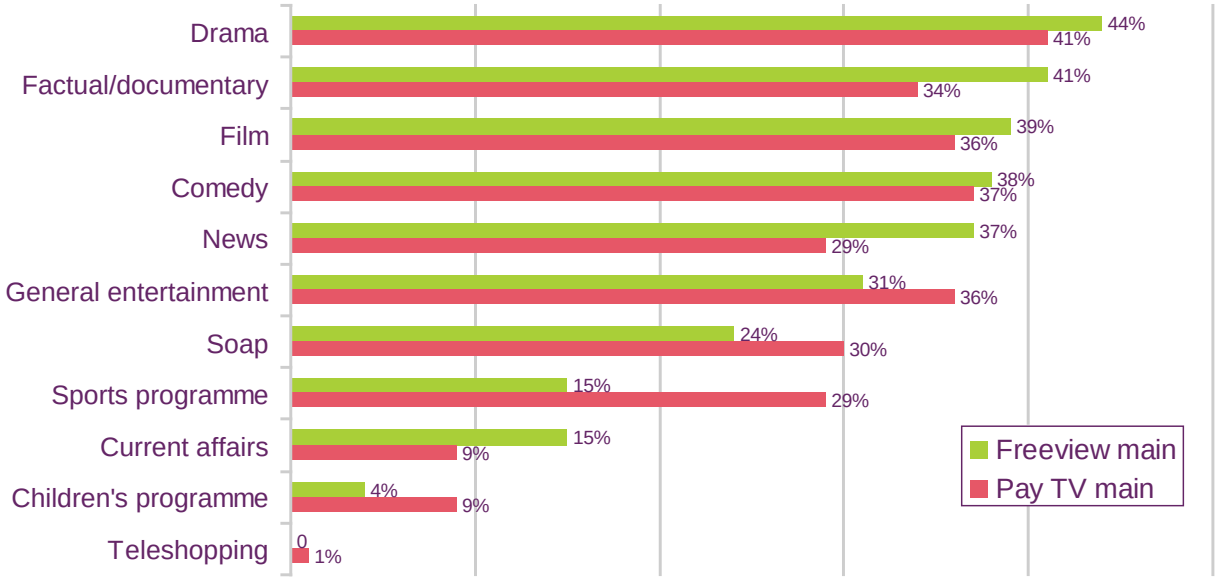
Consumers frequently overstate their likely behaviour in relation to questions like this, but nevertheless the responses to this question do suggest that some platform changing may occur in the future.

3.2 Interest in viewing genres

To provide some context, respondents in the television section of the questionnaire were asked about genres in which they were interested and which genres they would miss most if not available.

The chart overleaf shows that consumers across DTT main set and Pay TV main set households had similar levels of interest in most TV genres, with sports being the one with the greatest difference. As would be expected, given sports is a key driver to acquiring pay TV, this genre was of much more interest to those in pay TV homes (29% mentioning it) than those in DTT homes with DTT on a subsidiary set (15% mentioning it).

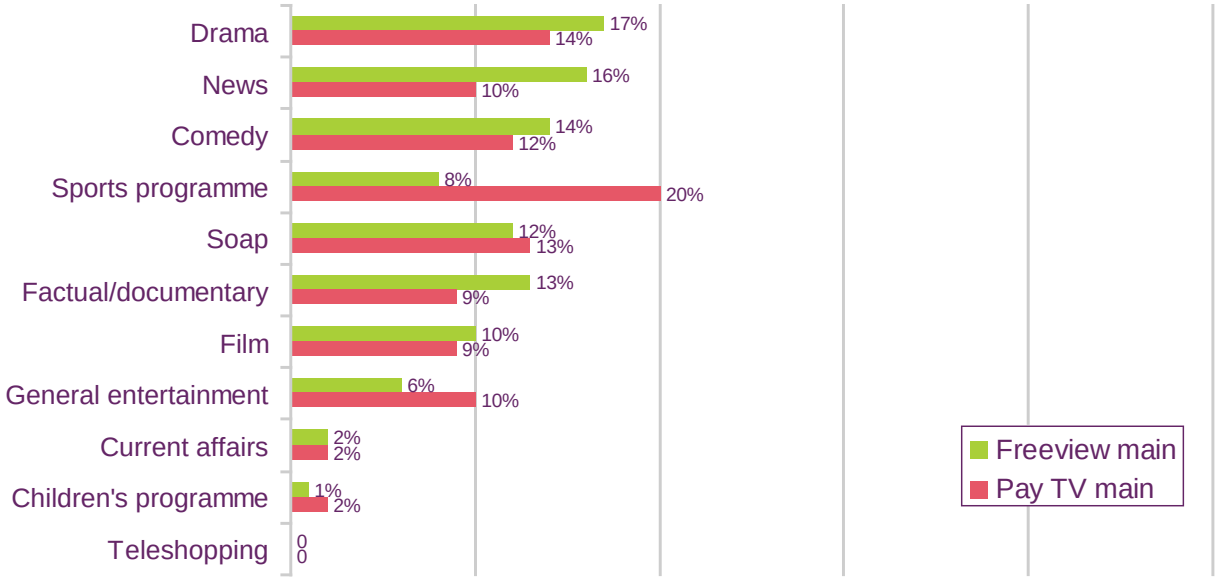
Figure 2: Most watched genres on TV



Source: **Q14 Which of these programme genres do you watch the most on TV – please tick up to 3?**
Base: All DTT Respondents (828/724)

A similar pattern emerges when looking at which genre would be missed most if it ceased to be available in future (see Figure 3 below).

Figure 3: Which genres respondents would most miss



Source: **Q15 And if one of these genres was not available, which would you miss the most?**
Base: All DTT Respondents (828/724)

3.3 Awareness and use of DTT related products and services

To begin to understand what types of service features consumers might be looking for in future, questions about current awareness and usage of these services were asked.

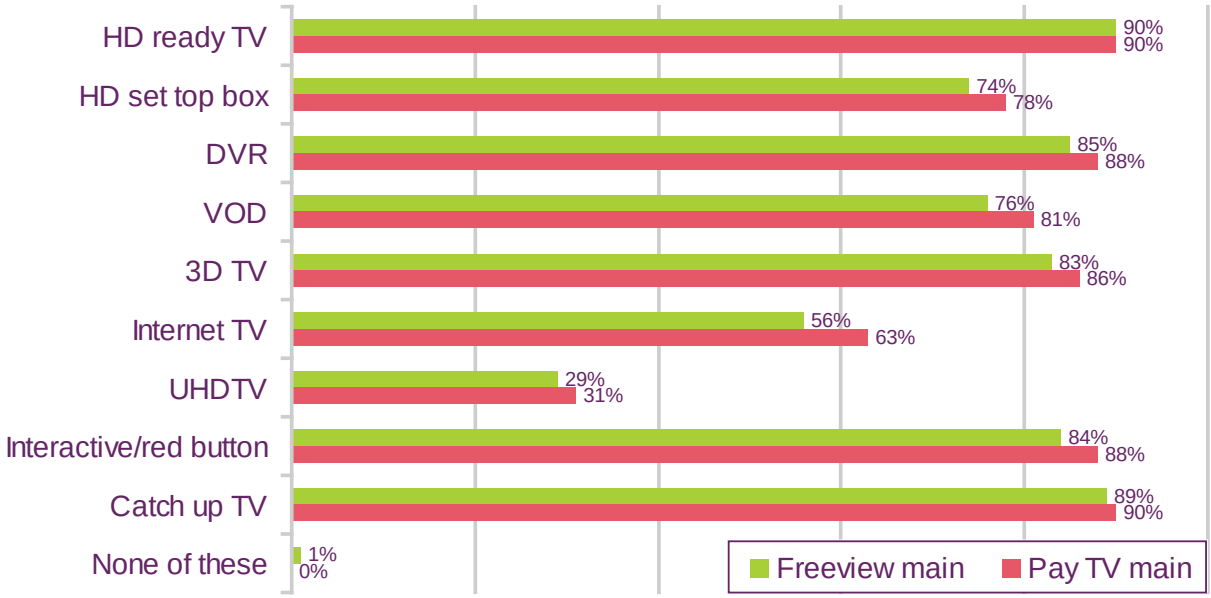
Apart from Ultra High Definition TV, the majority of consumers in both DTT and Pay TV homes with DTT on a subsidiary set were aware of enhanced products and services that we asked them about. In the questionnaire, respondents were given longer definitions of each of these products/services (the questionnaire is shown in Annex C).

Prompted awareness of the following products and services is currently at 75% or more:

- HD ready TV (90%)
- Digital Video Recorder (DVR) (86%)
- 3D TV (84%)
- Interactive/red button (86%)
- Catch up TV (89%
- HD set-top box (75%)
- Video on demand (VOD) (78%)

Apart from Ultra High Definition TV, only internet TV currently had prompted awareness below 75%.

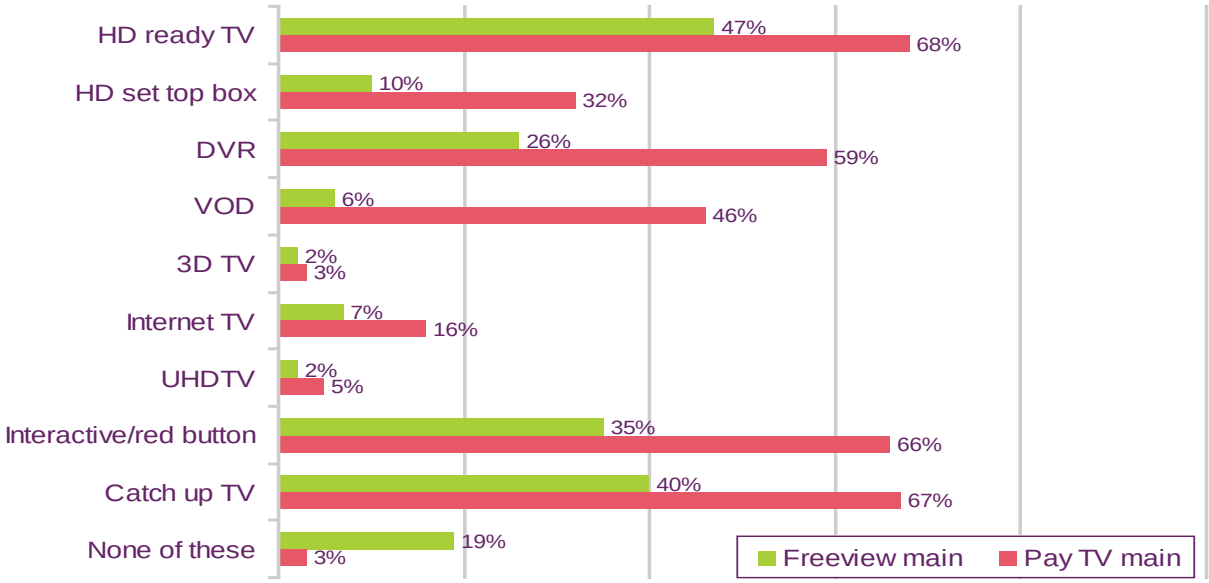
Figure 4: Awareness of TV services and devices



Source: **Q16 Which of the following TV services or functions have you heard of before today?**
Base: All DTT Respondents (828/724)

In contrast to awareness, there were substantial differences in current ownership of these products and services between DTT homes and Pay TV homes with DTT on a subsidiary set, with the latter having higher levels of ownership for most.

Figure 5: Ownership of services and devices

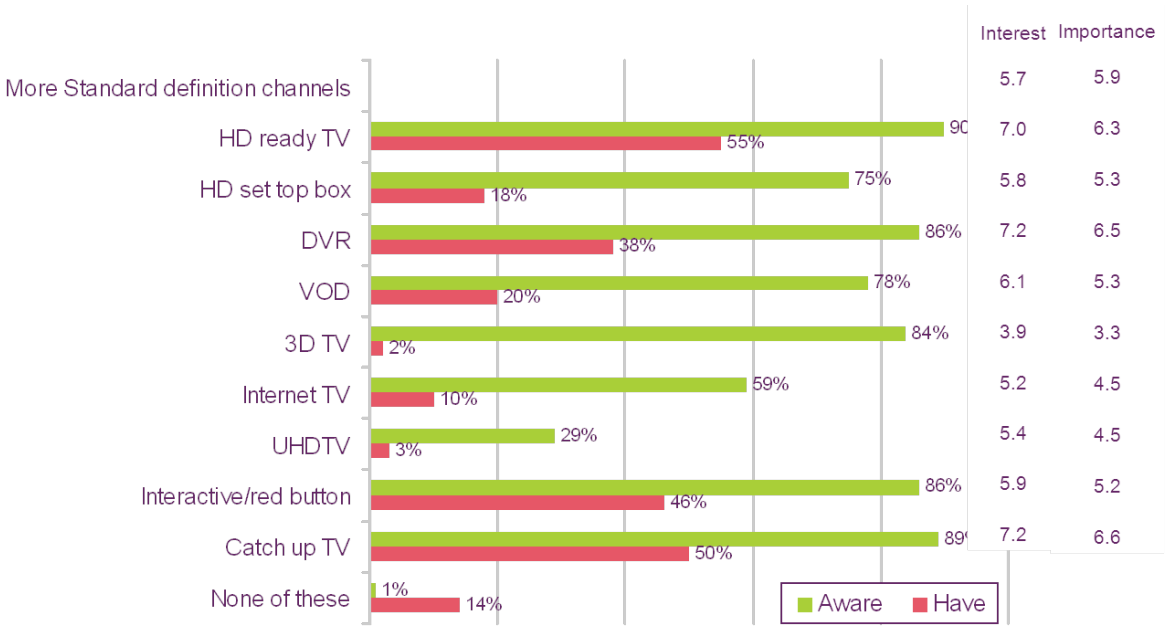


Source: **Q17 And which of these services do you currently have at home?**
Base: All DTT Respondents (828/724)

Only 3% of Pay TV homes with DTT on a subsidiary set did not have any of these products and services, whilst this rises to 20% of DTT homes.

Questions were asked about the importance and level of interest in the future in these products and services – using scores out of 10. The mean scores on these two measures correlate relatively strongly with ownership, with those products that currently have relatively low ownership levels generating lower mean scores for interest and importance. For example, 55% had an HD ready TV, and this was rated as one of the most important (6.3).

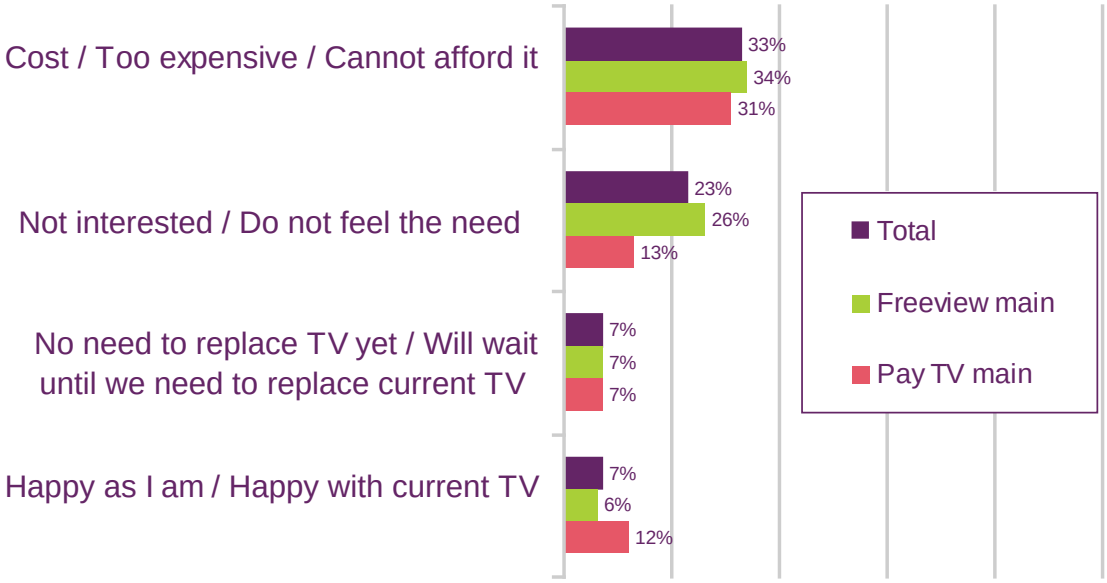
Figure 6: Interest in and importance of services and devices



Source: **Q16 Which of the following TV services or functions have you heard of before today?**
Q17 And which of these services do you currently have at home?
Base: All DTT Respondents (1552)

Of those who did not currently own any of the specific products and services listed, Figure 7 below shows cost and lack of perceived need were most often cited as reasons (as we had seen earlier, there was high awareness of them except for UHDTV).

Figure 7: Reasons for lack of Interest in an HD TV set



Source: **Q20 What is the main reason you don't have? HD ready TV**
Base: All DTT Respondents without HD ready TV (516/316/160)

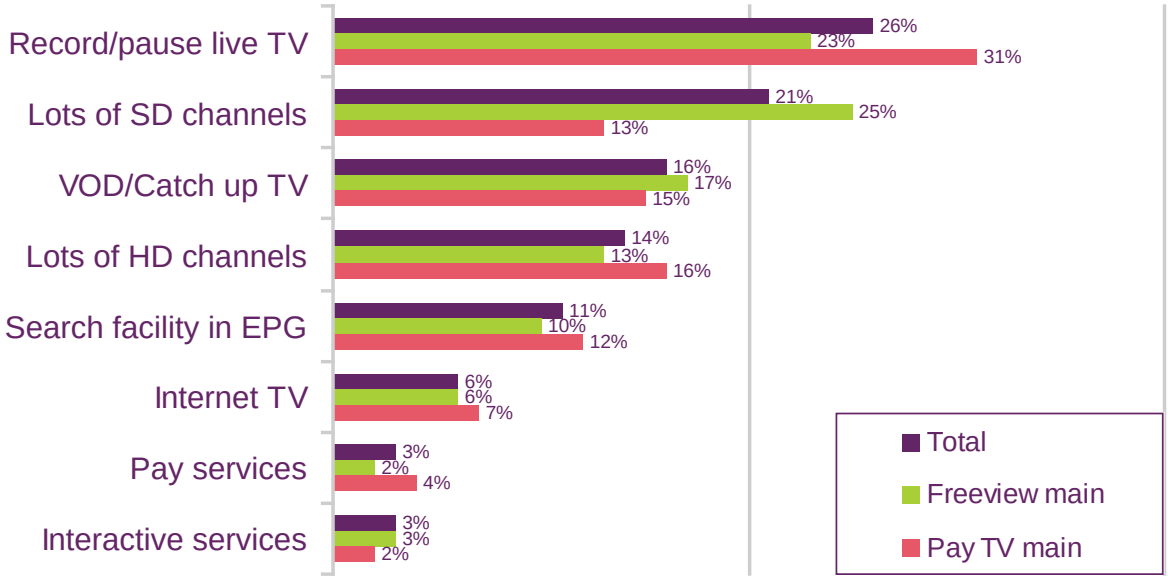
For internet TV, respondents' existing viewing via PC was given as a further reason for lack of interest in ownership

3.4 Products and services most wanted in future

The questionnaire then moved towards products and services in which consumers might be interested in future (using the same list but adding in additional Standard Definition channels). This was achieved by asking consumers to select the most important feature and drag it across the screen; and then to repeat this for the 2nd and 3rd choices.

The chart below shows the first choice selected, split by segment (those with DTT on their main set and those with Pay TV on their main set and DTT on a subsidiary set). DTT main set homes favoured lots of SD channels (25% stated this), those with Pay TV and DTT on a subsidiary set favoured recording and live pause facilities (31%).

Figure 8: Most important feature over the next 10 years – first choice

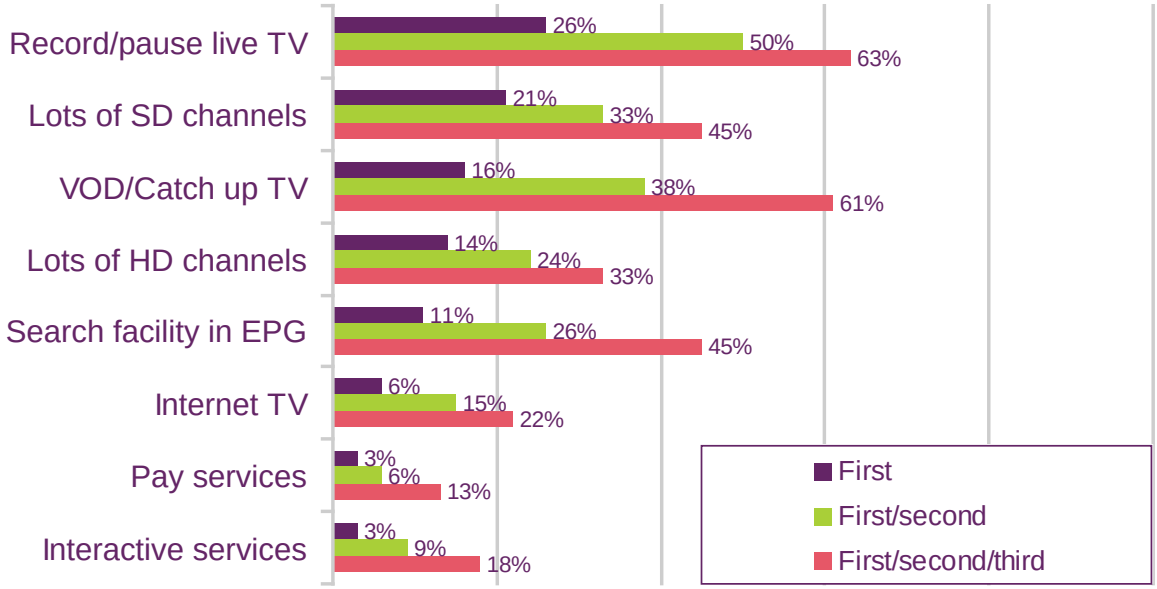


Source: **Q22 Drag across the feature that you think will be the most/second most/third most important for you over the next 10 years.**
Base: All DTT Respondents (1552)

When the consumer's first, second and third choices are all combined, VOD and the search facility via the EPG, become more important – so these are not first choices but important subsidiary choices. The four key products and services that consumers were interested in were thus confirmed as:

- Lots of SD channels
- Record/live pause facilities
- VOD
- Search facility in the EPG

Figure 9: Most important features over the next ten years – 1st/2nd/3rd choices



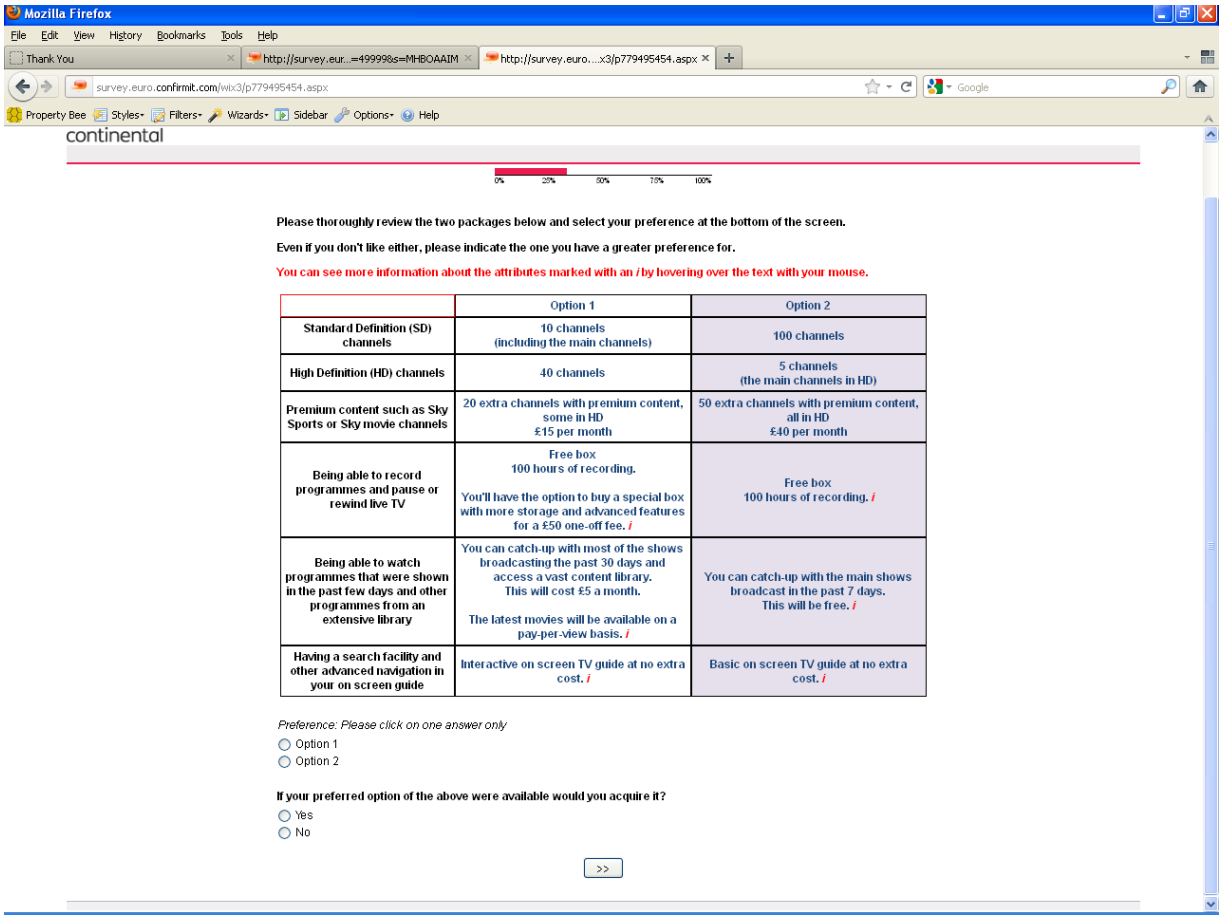
Source: **Q22 Drag across the feature that you think will be the most/second most/third most important for you over the next 10 years.**
Base: All DTT Respondents (1552)

Respondents then completed the DTT conjoint section of the questionnaire. Respondents were shown a pair of scenarios and asked to select the scenario they preferred. The scenarios were made up of one level of each of the following six attributes:

	Levels		
Attribute	Low	Medium	High
Standard Definition(SD)channels	10 channels (including the main channels)	50 channels	100 channels
High Definition (HD) channels	5 channels (the main channels in HD)	10 channels (including the main channels)	40 channels
Premium content such as Sky Sports or Sky movie channels	No premium content	20 extra channels with premium content, some in HD £15 per month	50 extra channels with premium content, all in HD £40 per month
Being able to record programmes and pause or rewind live TV	Free box 100 hours of recording	Free box 100 hours of recording. You'll have the option to buy a special box with more storage and advanced features for a £50 one-off fee	Special box 500 hours of recording and other advanced features. £10 per month

Being able to watch programmes that were shown in the past few days and other programmes from an extensive library	You can catch-up with the main shows broadcast in the past 7 days. This will be free	You can catch-up with the main shows broadcast in the past 30 days. This will be free. Other content will be available on a pay-per view basis	You can catch-up with most of the shows broadcasting the past 30 days and access a vast content library. This will cost £5 a month The latest movies will be available on a pay-per-view basis
Having a search facility and other advanced navigation in your on screen guide	Basic on screen TV guide at no extra cost	Interactive on screen TV guide at no extra cost	Advanced navigation, including search and recommendations - for £3 a month

The scenarios were presented on screen as shown in the example overleaf. Many of the descriptions have an *i* symbol, denoting that further information was available to the respondent if required.



Each respondent was shown 12 such screens, in each case being asked to select their preferred scenario out of two options. A further question asked whether they would actually acquire their preferred scenario in each case, if it was available. This question had a dual purpose:

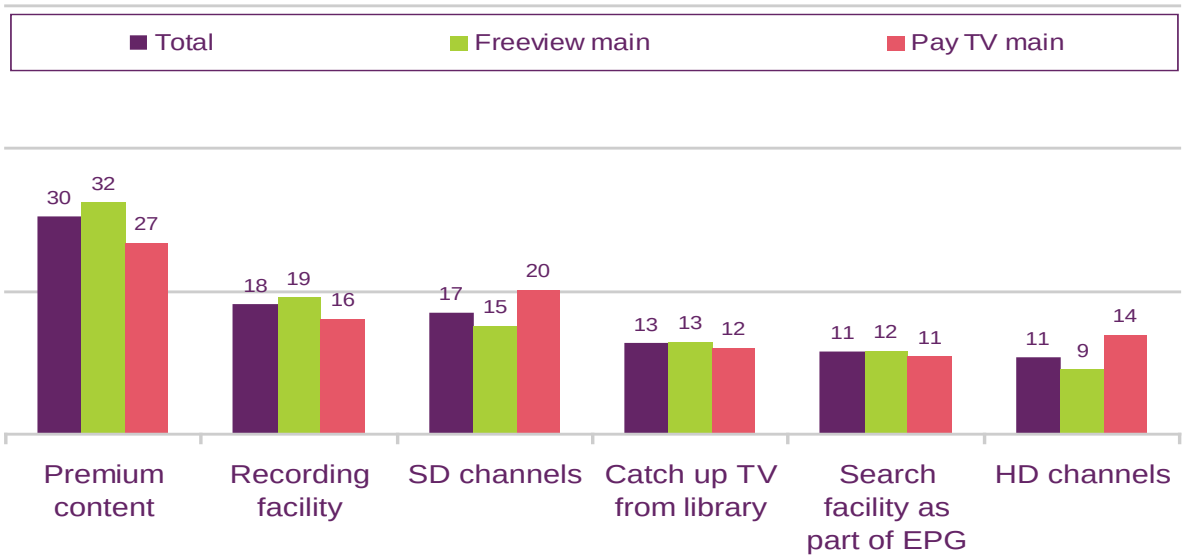
- It was used in the conjoint analysis to help assess levels of interest
- It allowed the respondent to reject both scenarios offered, providing an opportunity for a preference to be given even if neither was that appealing

The first output from the conjoint analysis showed the relative importance of each product/service (see chart 10 below). These metrics are relative, the absolute numbers have no particular value – it is from comparing one feature with another that the relativities emerge.

The analysis showed that premium content is the feature that had the strongest influence, followed by recording facility and the number of SD channels. However, the apparent importance of premium content was almost entirely driven by the result that there was relatively little interest in paying £40 per month for premium (sports/movies) channels, when compared to the options of having no premium content, or paying £15 per month for 20 extra channels.

The next most important features in the future were increasing the number of SD channels and providing recording and 'live pause' facilities – again there was only limited interest in any subscription options with these features.

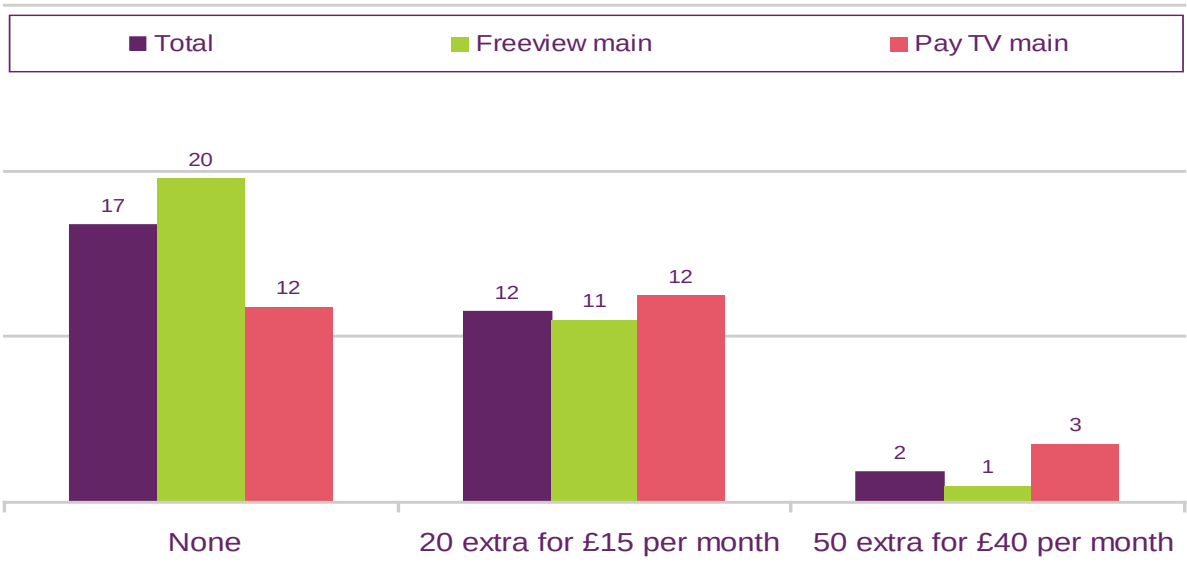
Figure 10: Conjoint analysis – Summary of overall importance of attributes



Source: Conjoint analysis
Base: All DTT Respondents completing DTT conjoint (1115/603/512)

The following chart shows there was relatively low interest in a smaller number of premium channels at a £20 per month subscription level (compared to the option of having no premium content, at no cost) and so at the margin this data does suggest there was a small level of interest in premium content. But the key conclusion is of resistance to paying for premium content.

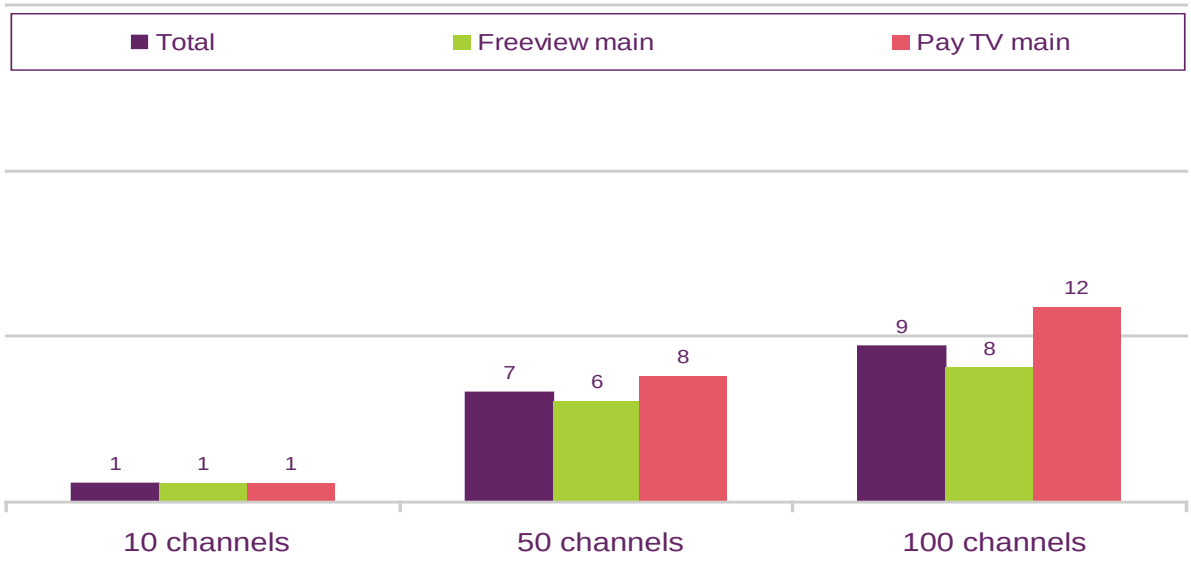
Figure 11: Conjoint utilities for premium channels



Source: Conjoint analysis
Base: All DTT Respondents completing DTT conjoint (1115/603/512)

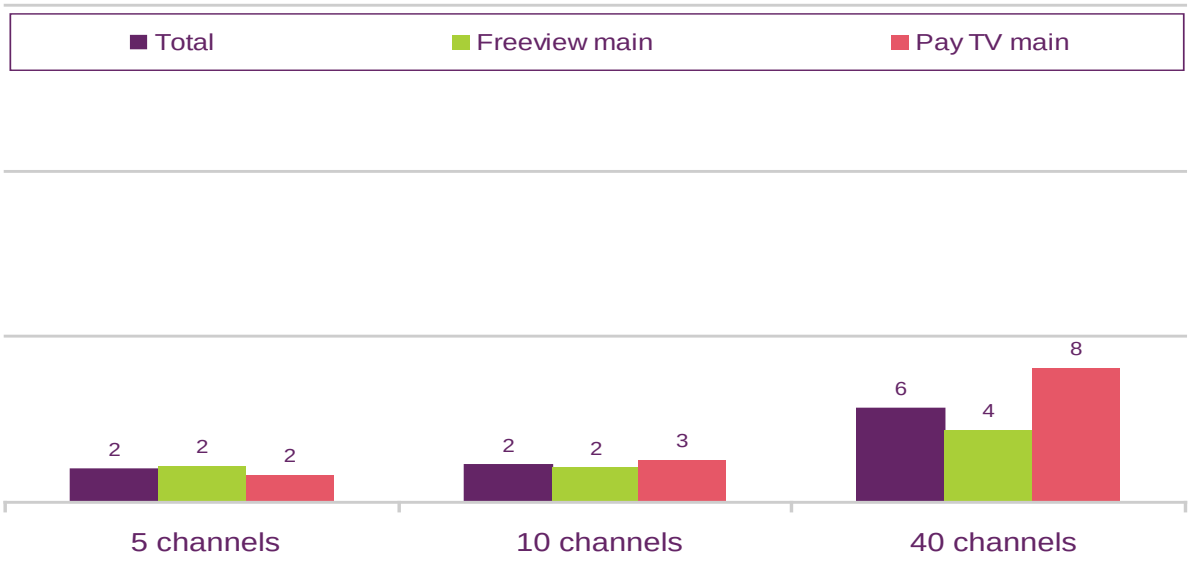
Respondents were more interested in having more SD channels than in having more HD channels – where the increase in utility scores did not increase as much as for HD channels as for SD, as the number of channels increased.

Figure 12: Conjoint utilities for three levels of number of SD channels



Source: Conjoint analysis
Base: All DTT Respondents completing DTT conjoint (1115/603/512)

Figure 13: Conjoint utilities for three levels of number of HD channels



Source: Conjoint analysis
Base: All DTT Respondents completing DTT conjoint (1115/603/512)

The two remaining features - catch-up TV/ VOD and an Electronic Programme Guide (EPG) again demonstrated the relatively low interest in any subscription options involving monthly fees (see Annex E, page 66).

In summary, there was relatively limited interest among both DTT main set homes and Pay TV homes with DTT on a subsidiary set in any of the options that involve monthly subscriptions. Based on choices made by respondents, it is likely that a majority of DTT consumers would not switch to a Pay TV platform to access these services.

One of the outputs from the conjoint analysis was a simulator, which enables scenarios to be compared and preference shares to be estimated for each. This has been run to compare the reactions to increasing the number of SD channels vs. increasing the number of HD channels.

The chart below compares a 100 SD/10 HD scenario with a 10 SD/40 HD scenario. The simulator predicts that around two thirds (64.2%) of consumers would prefer the package with a greater number of SD channels (which by extension also offers the greatest number of channels).

Clearly, respondents preferred lots of SD channels to a smaller increase in the number of HD channels, whether these be DTT homes or Pay TV homes with DTT on a subsidiary TV set.

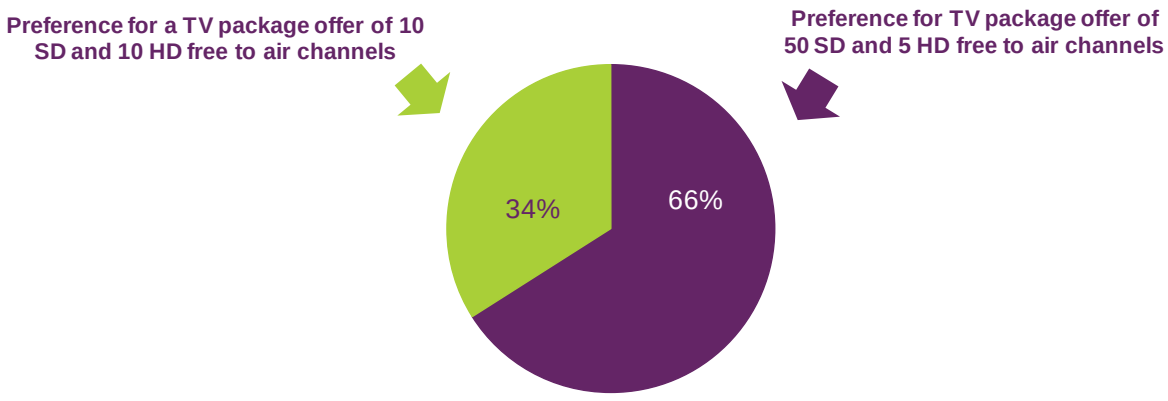
DTT – Example from model

- Comparing similar amounts of spectrum use, consumers prefer more SD channels rather than more HD channels

		Scenario 1	Scenario 2
	SD channels	100	10
	HD channels	10	40
		% prefer	% prefer
TOTAL		64.2%	35.8%
Segment	Freeview main	64.6%	35.4%
	Freeview secondary	63.4%	36.6%
Age	16 - 24	71.6%	28.4%
	25 - 34	67.9%	32.1%
	35 - 44	66.1%	33.9%
	45 - 54	64.7%	35.3%
	55+	58.4%	41.6%
Preference	Better Freeview	66.6%	33.4%
	Faster mobile internet	62.8%	37.2%
	No preference	59.1%	40.9%

Our conjoint research indicates that DTT viewers value access to an increased number of free TV channels more highly than all other digital TV platform features including: Pay TV, catch-up TV, PVR functionality or better EPGs. Figure 9a below shows the results from a conjoint run confirming the importance of free channels – when all the other attributes are kept equal, two out of three respondents would choose the DTT option with the greater number of free-to-air channels, even if it has fewer HD channels

Figure 9a Importance of free SD channels



3.5 Overall summary of DTT section

The key conclusions from the DTT part of this project are as follows:

- For the majority of respondents, there was an aversion to paying anything for TV services
    - Although there was some interest in 20 premium channels at £15 per month
    - But other subscription options were rejected, with the utility scores for pay options being close to zero
    - Cost was one of the main reasons for not acquiring new TV products (HD, DVR, VOD etc)
    - A lack of any perceived need (by the consumer) was also an important factor
- Homes with pay TV with DTT on a subsidiary set favoured recording/pause facilities when looking a future options
- DTT main set homes favoured more SD channels
- Trading off HD channels against SD channels showed a preference for increasing the number of SD channels by a large amount rather than increasing the number of HD channels available by a smaller amount.

4. Detailed findings – mobile internet

4.1 Market profile

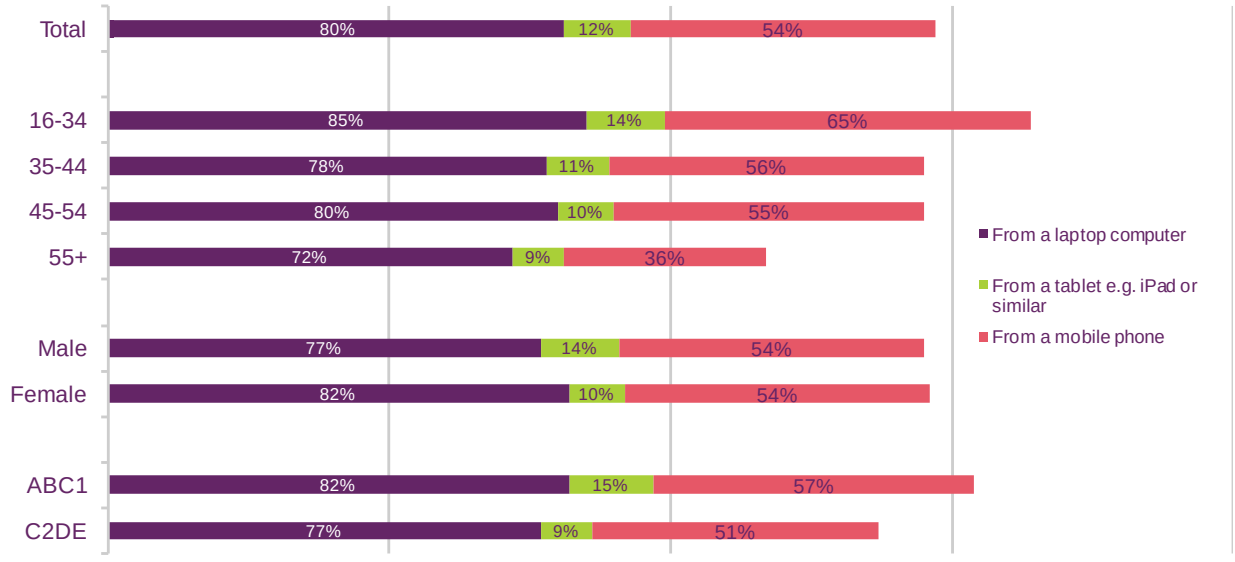
The mobile internet research sample breaks down as follows:

- 1,792 respondents using a laptop, tablet or mobile phone to connect to the internet
- 841 of these use a mobile network at some times and pay the mobile bill
- 572 respondents planning to acquire a device to use mobile internet services

There were thus 1,413 respondents in total that had or planned to acquire mobile internet, and were included in this survey. The questionnaire attempted to ensure that those using, for example, only fixed wireless services at home were not included, as this is not using truly mobile internet services.

Respondents were using a variety of devices to access internet services with laptops and mobiles being more prevalent among young people.

Figure 14: Means of mobile internet access amongst current users

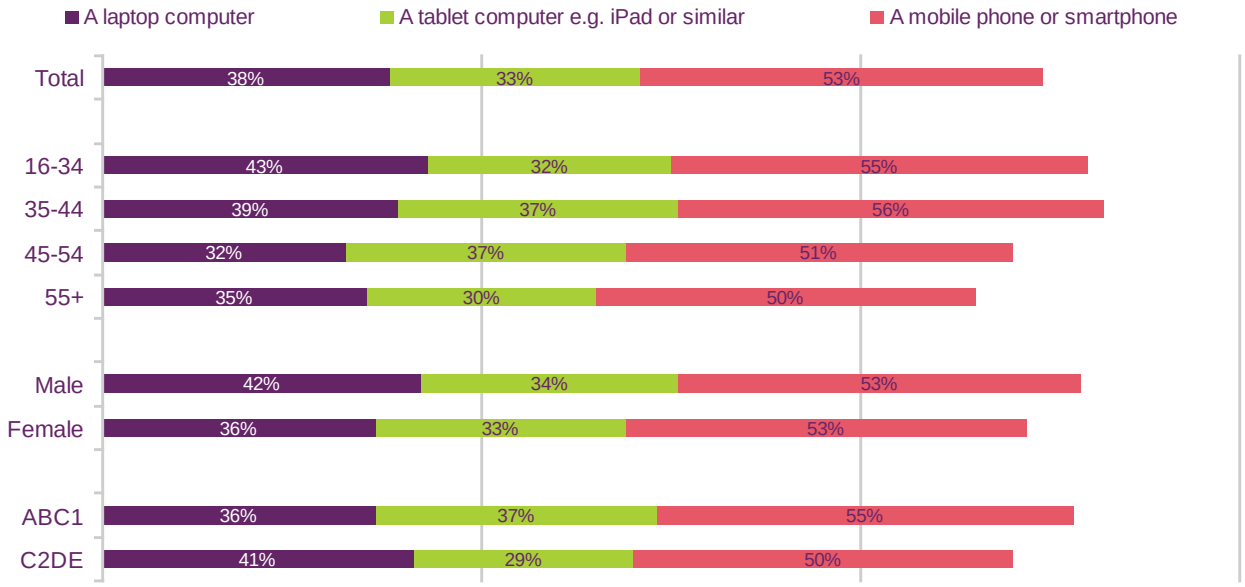


Source: **Q9 Do you use the Internet yourself in any of the following ways? Please exclude any use of the Internet made using a computer at your normal place of work.**
Base: All Respondents using or planning to use mobile Internet (1413/ 554/ 320/ 288/ 251/ 661/ 752/ 817/ 558). Excludes use of desktop PC.

For those planning to acquire mobile internet access in the next year, a similar array of devices was planned, with tablets having increased significance compared to the

existing market. Compared to DTT, the mobile internet section had a higher percentage of planned new users (compared to existing users).

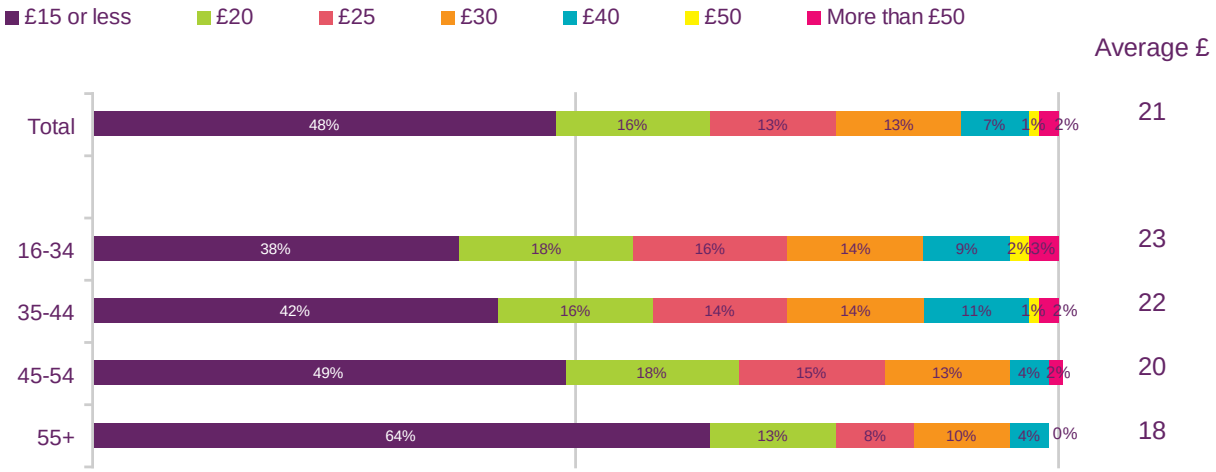
Figure 15: Proposed means of accessing mobile internet amongst those planning to acquire this service in the next year



Source: **Q11 Are you planning to acquire any of the following in the next year to enable you to access the Internet via a mobile phone network?**
Base: All MBB Respondents not currently using MBB (572/ 216/ 125/ 118/ 113/ 257/ 315/ 313/ 249)

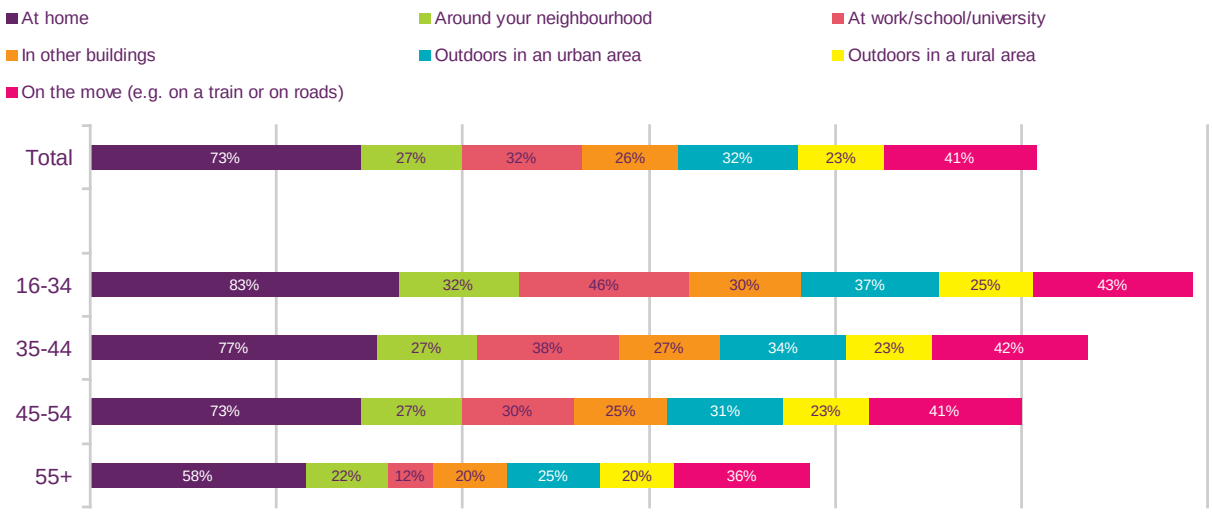
The size of monthly mobile bills declined with age, with younger people (16-34) paying £23 per month on average and those aged 55+ paying £18 per month on average.

Figure 16: Monthly spend to access mobile internet



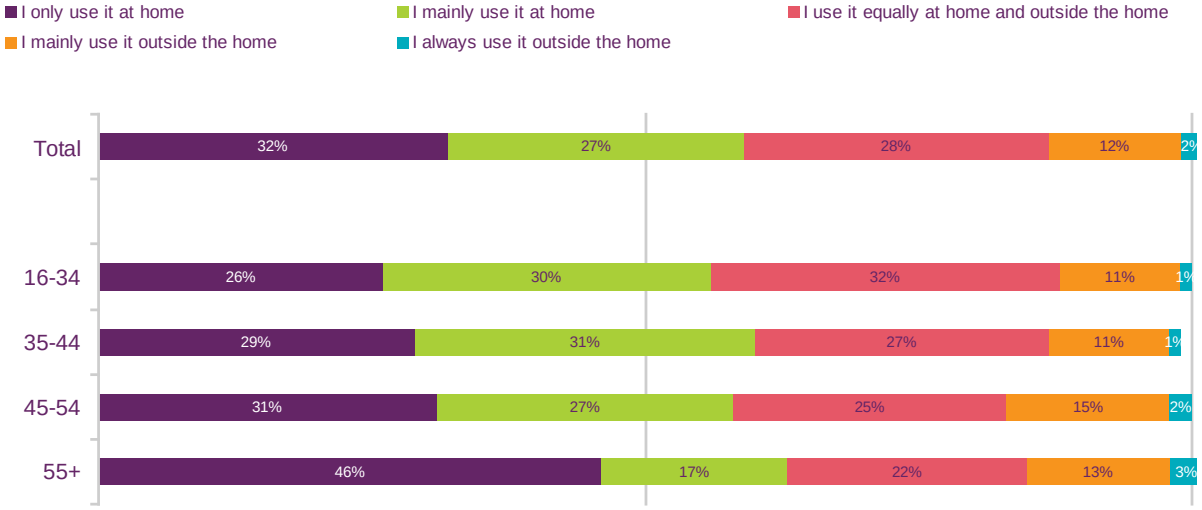
Source: **Q31a Roughly how much a month do you pay your mobile phone company to connect to the internet via a mobile phone network using a laptop, tablet or mobile phone?**
Base: All Respondents using MBB (1413/554/320/288/251)

Figure 17: Situations where mobile internet used



Source: **Q29 In which of the following situations do you connect to the internet via a mobile phone network using a laptop, tablet or mobile phone?**
Base: All Respondents using MBB (1413/554/320/288/251)

Figure 18: Locations where mobile internet used

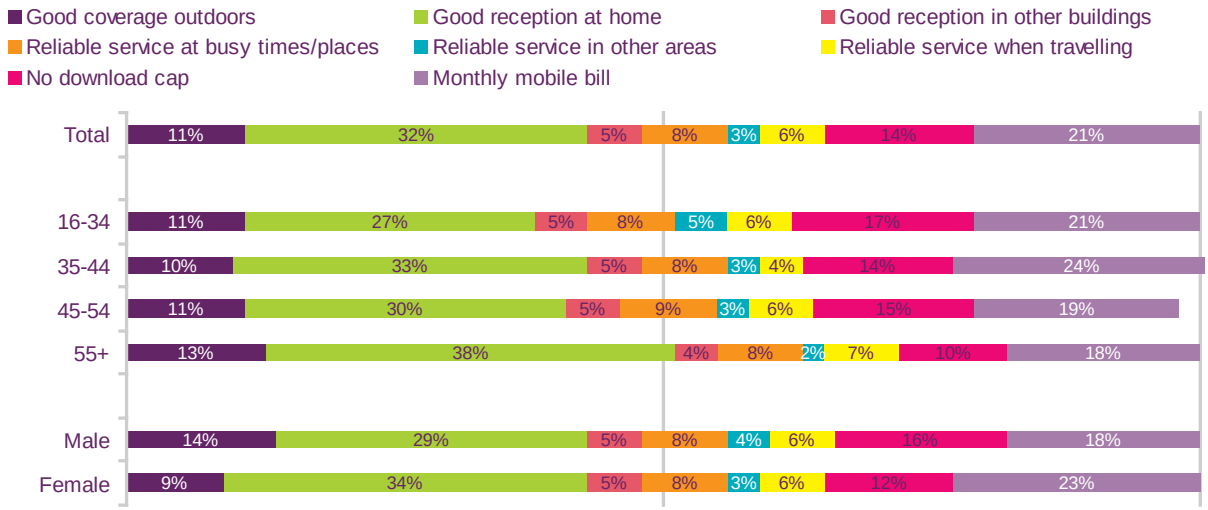


Source: **Q30 Which of the following best describes your use of the Internet when connecting via a mobile phone network using a laptop, tablet or mobile phone?**
Base: All Respondents using MBB (1413/554/320/288/251)

4.2 Products and services most wanted in future

Respondents were asked which of a range of eight potential service improvements was most important to them in the future. This was obtained by asking respondents to drag across the most important, 2nd most important and 3rd most important service feature to be improved. The chart below shows which service features were seen as the first choice to be improved. Overall the most mentioned feature was “Good reception in the home” (32%), and this was driven by respondents aged 55+ (38% of whom mentioned it).

Figure 19: Most important features of mobile internet service over the next 10 years 1st choice

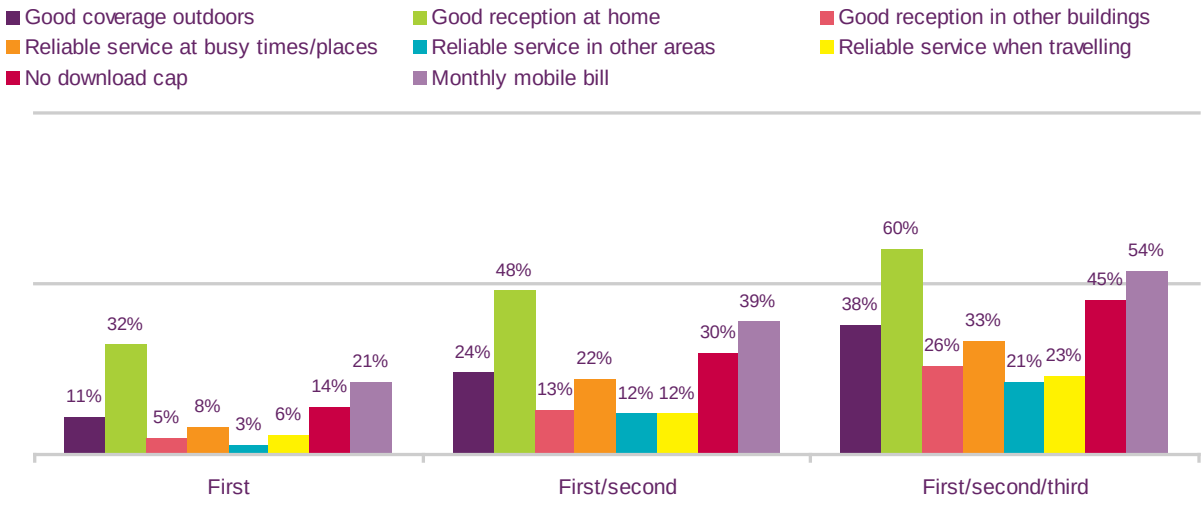


Source: **Q34 Drag across the feature that you think will be the most/second most/third most important for you over the next 10 years**
Base: All Respondents using MBB (1413/554/320/288/251)

Older consumers were most likely to want to see in-home reception improved, perhaps dues to their higher in-home use (Figure 17 refers). Younger consumers had a greater preference for having no cap on data use. The deeper analysis in Section 5 shows that age, rather than attitude to technology, was the key driver of these differences.

These factors were still important when the top three improvements were analysed.

Figure 20: Most important features over the next 10 years – 1st/2nd/3rd choices



Source: **Q34 Drag across the feature that you think will be the most/second most/third most important for you over the next 10 years**
Base: All Respondents using MBB (1413)

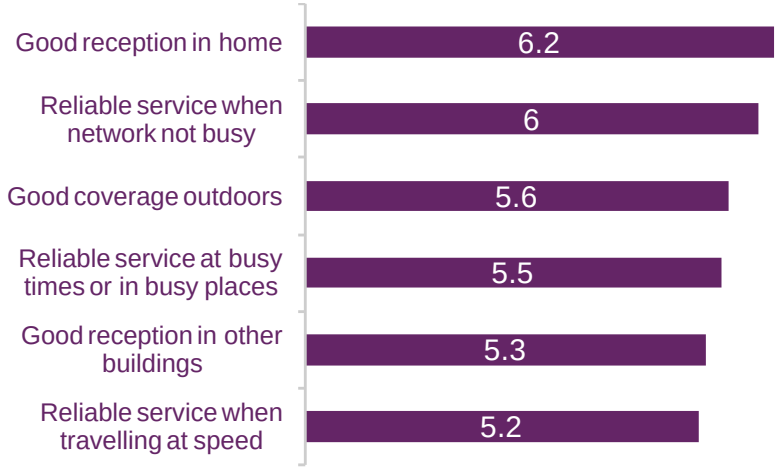
Prior to the conjoint section for mobile internet, respondents were asked to rate their current level of service across these features, using scales that ran from a less than universal service to a fairly universal service.

The table below defines these “low” and “high” values, and respondents were asked to use a slider scale to indicate where they believed each feature currently stood on this low (1) to high (10) scale. As shown in Figure 21, all features had average scores of between 5.2 and 6.2 out of 10, with reliability whilst travelling at speed (5.2) the lowest and in-home coverage the highest (6.2).

Q34A ***I am going to put on screen a number of things relating to using the Internet via a mobile phone network. Each one has two extremes and I’d like you to use the slider scale to indicate what you think your current level of service is between these two extremes.***

Feature	Low value = 1 on scale	High value = 10 on scale
Breadth of outdoor coverage	**Generally good with patchy areas** Urban areas well covered. Some rural areas have no coverage.	**Total coverage** Coverage available in most population centres, including small villages.
In home coverage	Some homes have poor mobile reception or none at all	Mobile coverage is as good in the home as it is outside
In other buildings coverage – e.g. offices and shopping centres	Some buildings have poor mobile reception or none at all	Mobile coverage is as good in buildings as it is outside
Quality of service – when busy or at busy places (e.g. main line stations, stadium events)	**Unreliable in high demand areas** At busy times or in busy places, the service might slow down or cut out completely.	**Reliable independent of demand** The service remains reliable at busy times and in busy places
Quality of service –when the network is not busy	**Generally good** In areas of good coverage emails and websites can be downloaded in seconds. It is usually possible to stream video clips Occasionally the connection might slow down or cut out	**Excellent at all times** In areas of good coverage emails and websites can be downloaded instantly. It is always possible to stream video clips – including high definition The connection is very consistent and reliable
Quality of service - when travelling at speed (e.g. by train or car)	**Unreliable** Connection is unreliable on trains and in cars. Signal strength is intermittent and subject to frequent ‘drop outs’.	**Reliable** Connection is almost always possible when travelling at speed where there is coverage.

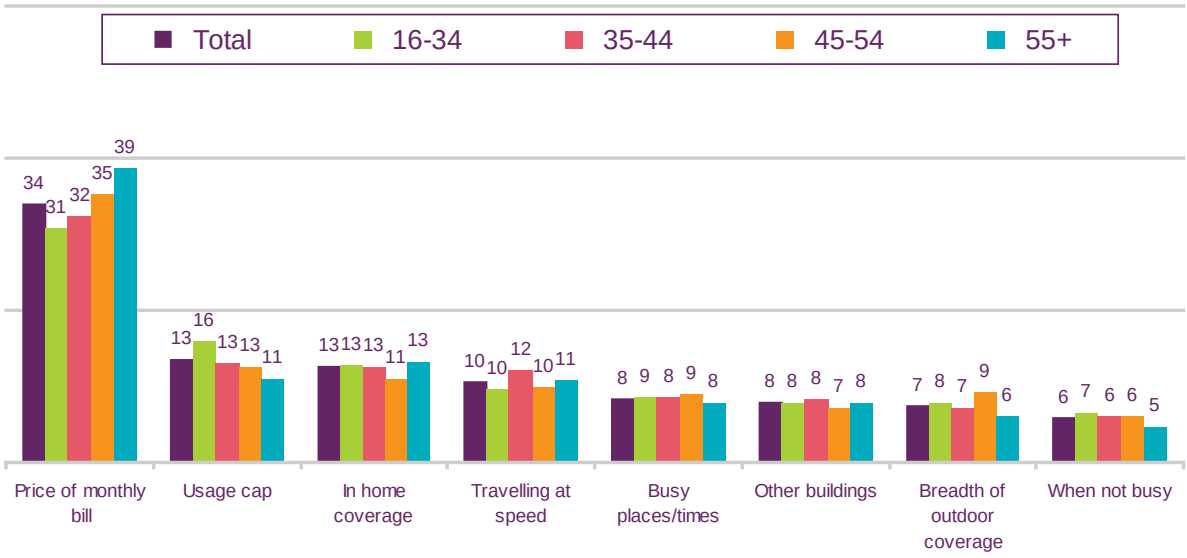
Figure 21: Mean rating of service received for each feature



Source: **Q34A I am going to put on screen a number of things relating to using the Internet via a mobile phone network. Each one has two extremes and I'd like you to use the slider scale to indicate what you think your current level of service is between these two extremes.**
Base: All Respondents using MBB (1413)

As with the DTT conjoint output, the first chart below shows the relative importance of each feature, with the price of the monthly bill being by far the most important. Compared to the importance of price, the differences in importance between all other features were relatively small.

Figure 22: Conjoint: summary of overall importance for mobile internet attributes



Source: Conjoint analysis
Base: All Respondents using MBB (1413/554/320/288/251)

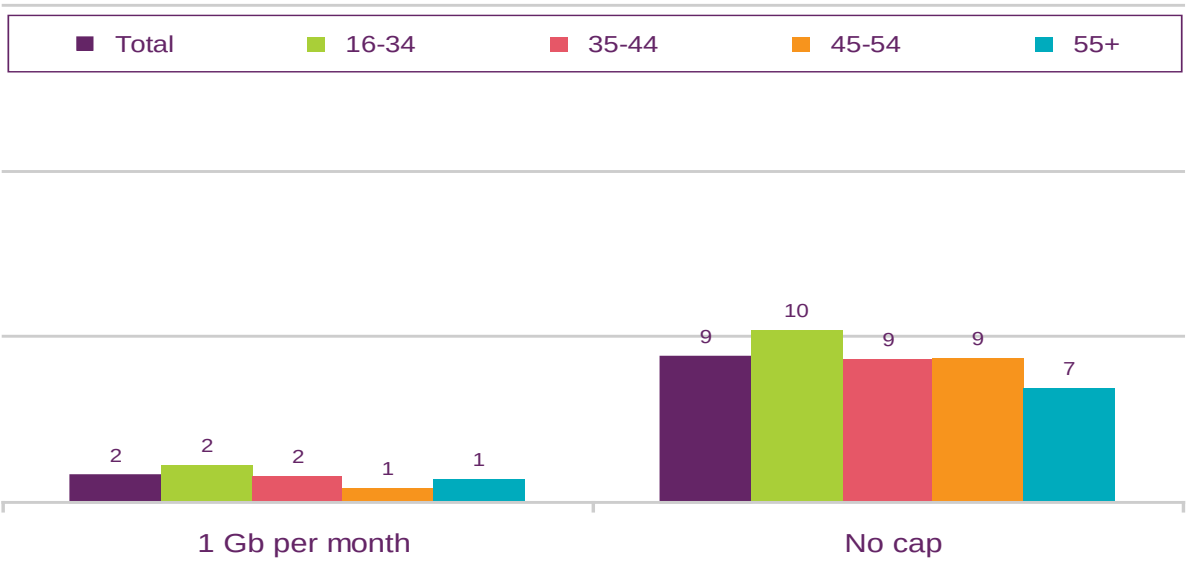
There was virtually a linear relationship with price of monthly bill and the utility score at that price, with the gradient for older consumers being steeper than that for younger people. Again, the deeper analysis in Section 5 confirmed that age, rather than attitudes, was the most important driver of these differences.

Figure 23: Conjoint utilities for four levels of monthly mobile bill

Source: Conjoint analysis
Base: All Respondents using MBB (1413/554/320/288/251)

The usage cap was the second most important feature – consumers tended to favour no usage cap to a cap of 1Gb per month (when exceeding such a cap would result in additional charges for each Mb downloaded).

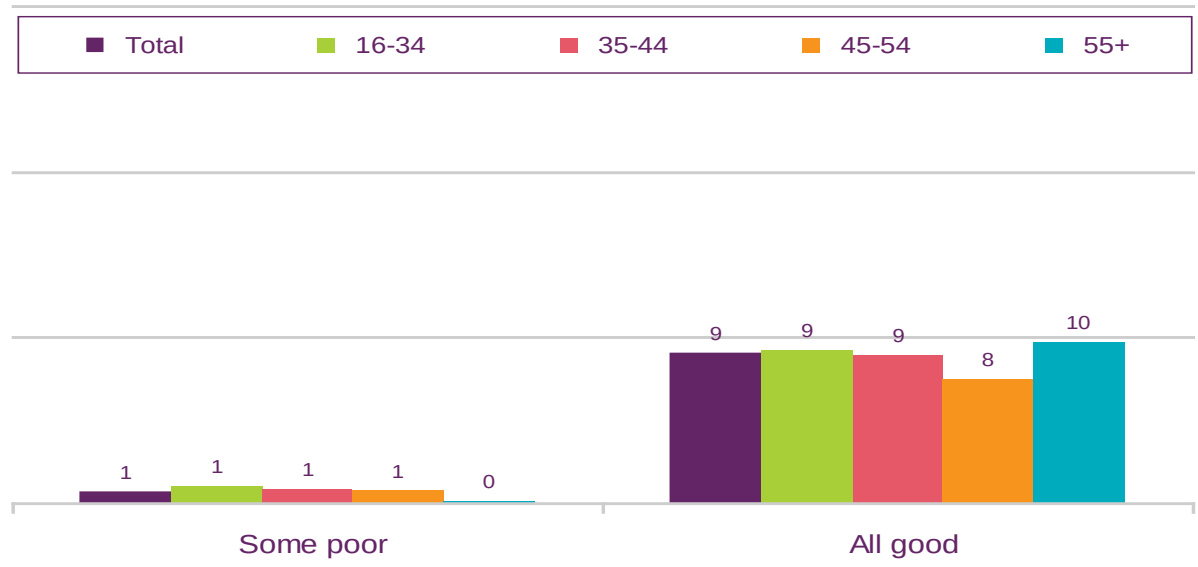
Figure 24: Conjoint utilities for two levels of usage cap



Source: Conjoint analysis
Base: All Respondents using MBB (1413/554/320/288/251)

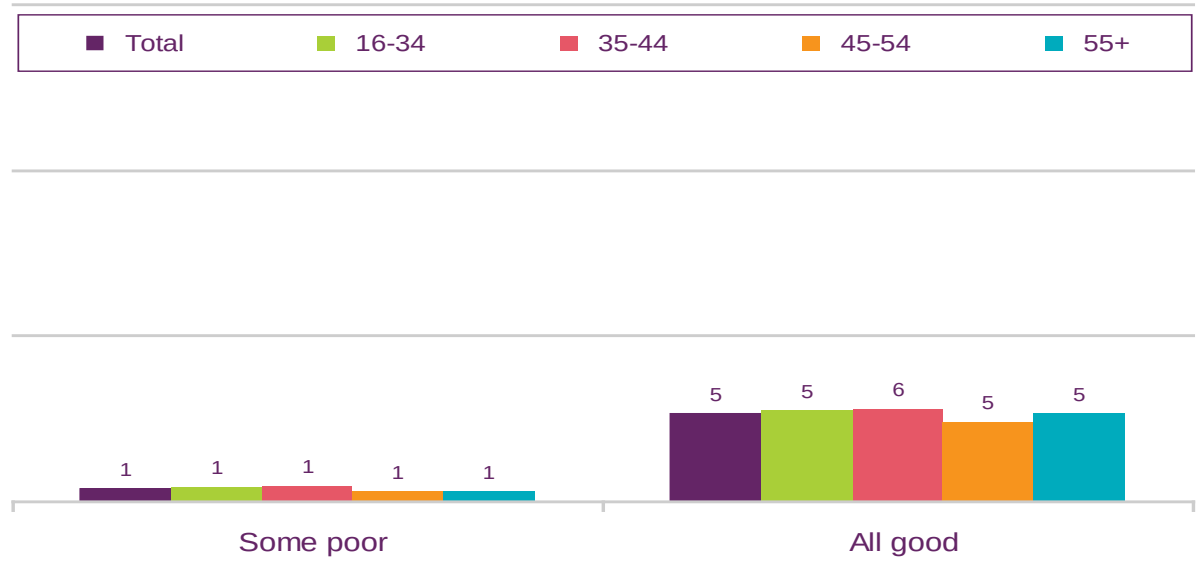
Scores relating to various aspects of coverage were slightly more important than those relating to service reliability in various situations.

Figure 25: Conjoint utilities for two levels of in home coverage



Source: Conjoint analysis
Base: All Respondents using MBB (1413/554/320/288/251)

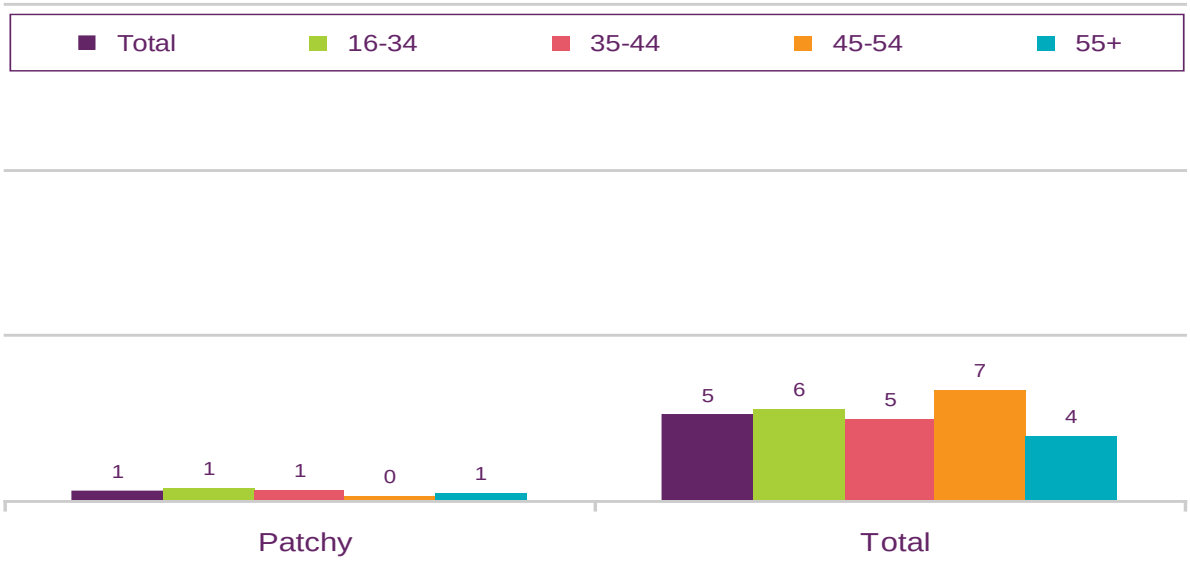
Figure 26: Conjoint utilities for two levels of coverage in other buildings



Source: Conjoint analysis
Base: All Respondents using MBB (1413/554/320/288/251)

The average utility score for the three coverage features at the maximum value was just above 6, with in home coverage showing the biggest premium (i.e. difference in utility score between the low option and the high option) for good coverage (8) and outdoor and other buildings showing a premium of around 4 points.

Figure 27: Conjoint utilities for two levels of breadth of outdoor coverage



Source: Conjoint analysis
Base: All Respondents using MBB (1413/554/320/288/251)

As with DTT, the conjoint data was used to create a simulator enabling different scenarios to be compared. For mobile internet, increasing one feature from the minimum to maximum value, alongside an increase of one price step did not significantly increase the proportion of respondents selecting this option.

Mobile internet – Example from model

- Just changing one attribute does not generally warrant a modest price increase

		Scenario 1	Scenario 2
	Outdoor coverage	Patchy	Total
	Price per month	£15	£20
TOTAL		60.2%	39.8%
Age	16 - 24	59.9%	40.1%
	25 - 34	59.7%	40.3%
	35 - 44	55.3%	44.7%
	45 - 54	52.6%	47.4%
	55+	71.5%	28.5%
Preference	Better Freeview	64.4%	35.6%
	Faster mobile internet	54.8%	45.2%
	No preference	59.0%	41.0%

However, improving all features simultaneously from their minimum to maximum value fared well against the biggest price differential available in the model (from £15 to £30 per month).

Mobile internet – Example from model

- Changing all attribute simultaneously does seem to warrant a larger price increase

		Scenario 3	Scenario 4
	Attributes	All at min	All at max
	Price per month	£15	£30
TOTAL		30.2%	69.8%
Age	16 - 24	25.6%	74.4%
	25 - 34	28.7%	71.3%
	35 - 44	29.0%	71.0%
	45 - 54	26.4%	73.6%
	55+	38.1%	61.9%
Preference	Better Freeview	38.5%	61.5%
	Faster mobile internet	19.1%	80.9%
	No preference	28.8%	71.2%

This analysis suggests there was relatively low interest in improving one feature on its own, but considerable interest in improving the mobile internet service across all features simultaneously – people did seem to be prepared to pay for a major step change in the service (but not for marginal improvements).

The different features were split into three different groups depending on what they related to:

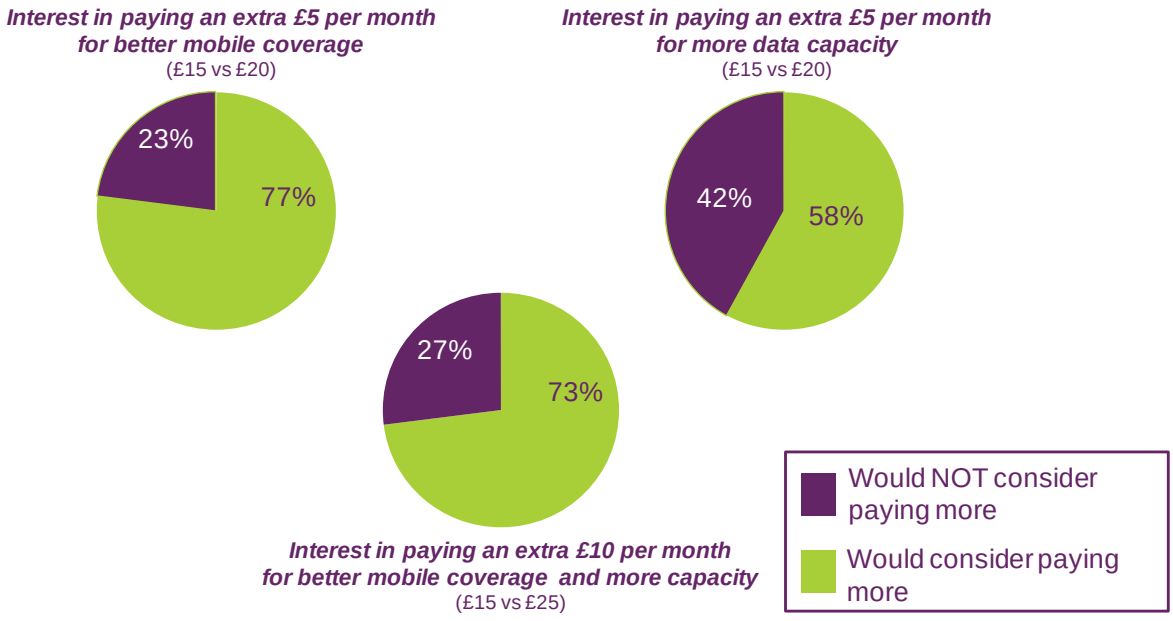
- Coverage (in-home coverage, coverage in other buildings, travelling at speed, and breadth of outdoor coverage);
- Capacity (usage cap, and quality in busy times/places); and
- Price

The model revealed there was also interest in a more expensive package once consumers are offered improvements across one of these packages of key features – either the four coverage features or the two capacity features – as Figure 27a below shows:

Figure 27a: Interest in paying for all three coverage or all three capacity features

Further, the conjoint analysis shows over 70% of mobile users are prepared to consider paying £10 per month more for better data capacity and coverage, as shown in Figure 27b below.

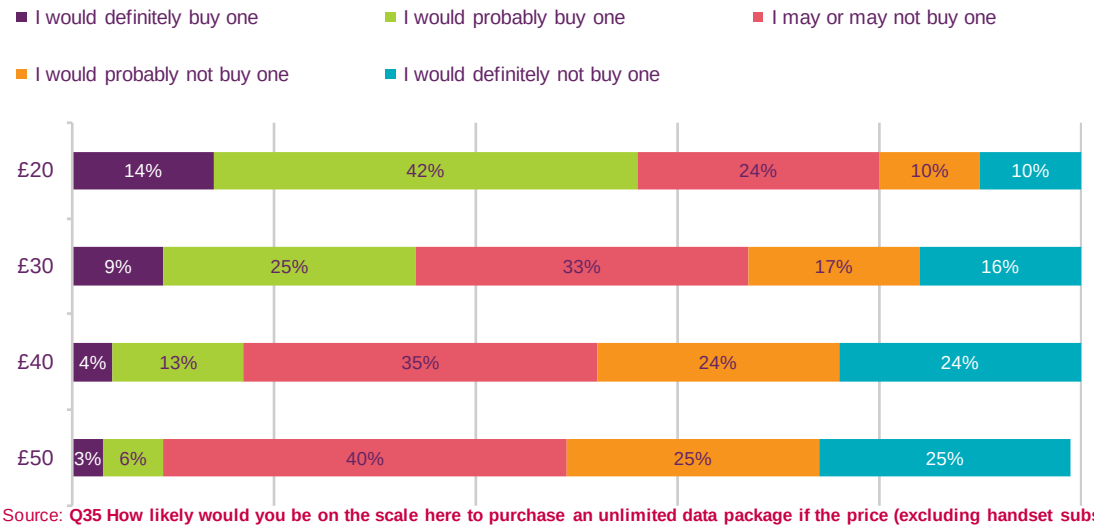
Figure 27b: Interest in paying for better data capacity and coverage



To help expand on this, respondents were asked how much they would be prepared to pay per month for an unlimited data package at prices ranging from £20 to £50 per month. The results confirmed the significant price deterrence that has already been seen in the mobile internet market (e.g. the size of monthly bill being the feature of greatest importance to consumers).

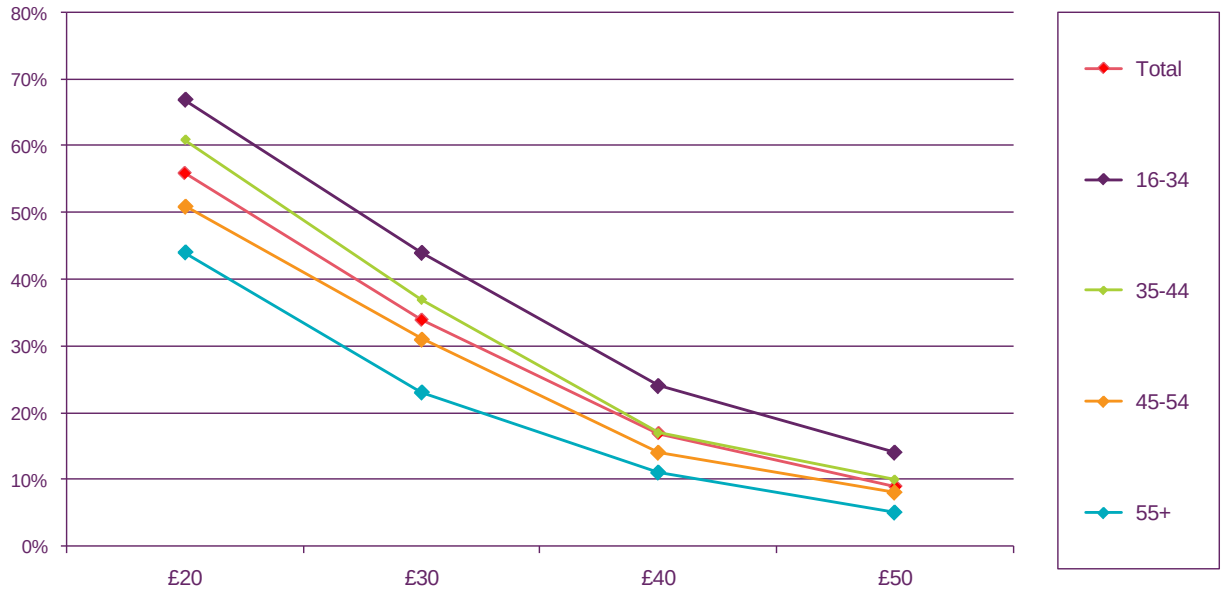
Price deterrence for this unlimited data package was greater for older people, again confirming the even greater importance of price to this market segment. At the £20 level 10% said they would definitely not purchase it, but this rose to 24% at the £40 level.

Figure 28: Likelihood to purchase an unlimited data package at different price points



Source: **Q35 How likely would you be on the scale here to purchase an unlimited data package if the price (excluding handset subsidy) was....**
Base: All Respondents using MBB (1413)

Figure 29: Proportion likely to take an unlimited data package, by age



Source: Q35 How likely would you be on the scale here to purchase an unlimited data package if the price (excluding handset subsidy) was…
Base: All Respondents using MBB (1413/554/320/288/251). Excludes those who did not express an opinion.
'Likely' defined as those stating they would 'definitely 'or 'probably' purchase the package at the relevant price point.

Respondents confirmed that, out of three potential issues (video cutting out, web pages taking too long to download and connections keeps dropping), the time taken to download web pages was the most pressing issue – and this was true across all locations where mobile internet was used.

Figure 30: Problems experienced when using mobile internet

PROBLEM : / LOCATION	Video cuts out	Web pages take too long to download	Connection keeps dropping
In home	39%	49%	36%
On other buildings	14%	24%	18%
Outdoors in urban areas	14%	23%	19%
Outdoors in rural areas	17%	26%	24%
On the move e.g. on a train or when travelling by road	22%	31%	29%
At busy times or in busy places where lots of people are using their phones	15%	23%	17%
At times when many people across the nation might be using their mobile phone	17%	22%	19%
Not a problem anywhere	32%	14%	23%

Source: **Q32 Have you ever experienced any of the following problems?**
Base: All Respondents using MBB (1413)

Finally, respondents were asked what they would do if service quality deteriorated and web pages took longer to download – would they:

- stop using mobile internet services (29% of all said they would do so, rising to 37% amongst 55+s)
- upgrade to an enhanced speed package – same quality of service that they receive today, but cost another £5/month (29% would do so)
- carry on using mobile internet services, paying the same amount, even if the service got worse (17% would do so, with higher proportions amongst younger age groups)

Figure 31: Likely reactions to potential future disruptions to mobile internet service

Source: Q36. In the future it is possible that, as the number of mobile internet users increases, the reliability of your mobile internet service could be affected, which could mean that web pages take longer to load and that you experience times when you can't connect at all more frequently.
Base: All Respondents using MBB (1413/554/320/288/251)

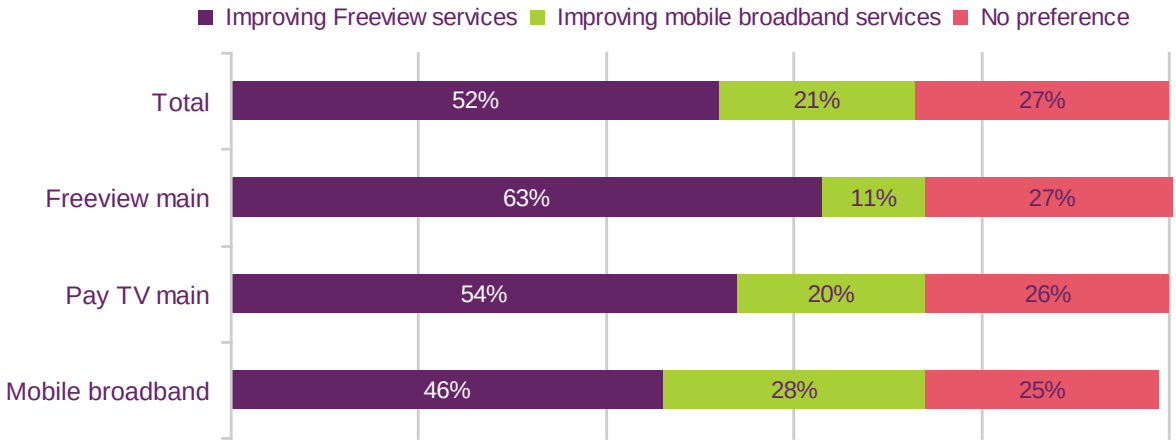
4.3 Overall summary

- As with DTT, price was a key driver of levels of interest
  - Monthly bill was by far the most important feature/ aspect of consumers' mobile internet service
  - Price was more important for older users
  - For most respondents, improving just one attribute was not seen as warranting a price increase
- However, changing all or most attributes simultaneously from minimum to maximum values did seem to appeal, even with larger price increases
- Unlimited data usage caps, improved in-home reception and reliable service while travelling at speed also were also attractive for some respondents
- Younger users spend more and use mobile internet in more situations
- Home use of mobile internet was important – more so for older users
  - They (older users) were more interested in better in-home reception
- The length of time required for downloads was the biggest practical issue that users face

5. Looking across the two potential uses of spectrum

This final part of the report looks at how consumer preferences between improving DTT and improving mobile internet services vary. When asked, the preference of all segments was to improve Freeview services over mobile internet services, given the choice (52% stated this). Even the mobile internet segment has this preference. Indeed, the majority of all groups within our sample said that they would like to access more Freeview channels.

Figure 32: Preference for better Freeview service or improved mobile internet service

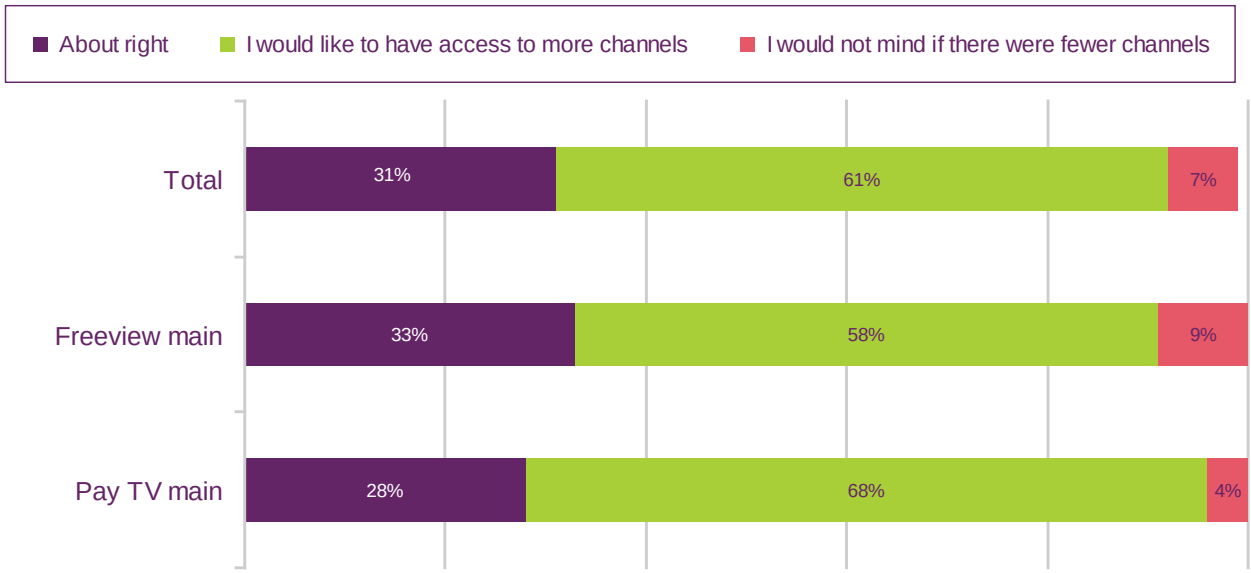


Source: **Q12 If you had the choice of better Freeview services – e.g. with more channels, HD channels or the option to pay for more channels, or faster mobile internet – e.g. allowing you to watch high quality video on a mobile device, which would you choose?**
Base: All Respondents (2100/828/724/1413)

Of those with DTT, around 6 in 10 said they 'would like to have access to more channels', while around a third considered the number of channels currently available to be 'about right'. Those with Pay TV on their main set were slightly more likely to consider the DTT platform offers too few channels. The main reasons given among those preferring better Freeview services were:

- 24% want more channels available on Freeview, or feel that the range of channels on offer is poor
- 21% do not use mobile Internet services
- 9% prefer to watch TV
- 7% do not watch video clips on their mobile internet

Figure 33: Attitudes to current range of channels on Freeview



Source: **Q21 Thinking specifically now about Freeview services, which of the following best describes what you think about the current range of channels on Freeview?**
Base: All DTT Respondents (1552/828/724)

It is important to bear in mind that this represents consumers' current preferences. In this regard, it is probably worth bearing in mind that DTT has been available for many years now, whilst mobile internet is relatively new. Consumer views may change in the future.

A. Detailed methodology

Background

Important context is that the research was looking at a very long term time horizon (post 2020) and was not needed to determine exactly how the UHF spectrum should be used in the longer term, but rather to help determine whether Ofcom needs to retain a future option regarding this spectrum use (and thus to help Ofcom determine what actions to take or positions to adopt). Part of the resolution of this would be the extent to which consumers themselves were clear at this point in time about their preferences.

Sample groups

Ofcom required robust quantitative data to help meet its research objectives, covering three subgroups:

- Households that use DTT (Freeview) on their main TV set: (approximately 36% of the UK population)
- Households that use DTT (Freeview) on secondary TV sets in the home (approximately 18% of the UK population)
- Individuals that use mobile internet services (via a dongle/ datacard or mobile phone): (approximately 35% of the UK population)

These subgroups overlap, although we chose to inhibit this in the sample for the second subgroup above by defining this as 'households that have Pay TV on their main TV set and DTT on a secondary set' (those that had DTT on a main set and a secondary set would fall into the first subgroup). We felt this would be a preferable definition as those with Pay TV would likely have less strong views about what services are available on DTT.

Some overlap between those with DTT and those using mobile broadband would also exist, although DTT homes are biased towards an older demographic and those using mobile broadband are biased towards a younger demographic. Nevertheless the overlap offered an opportunity to compare preferences for improvements to DTT services with improvements to mobile broadband services. Further, given the time horizon envisaged (post 2020), we would suggest covering those with or planning to obtain DTT (possibly post digital switchover) and those using or planning to use mobile broadband.

Our recommended sample groups were thus:

- Those with or considering DTT for their main TV set (with a quota for current users to allow analysis of this group separately)

- Those with Pay TV for their main TV set and with or considering DTT for other TV sets (again with a quota for current users)
- Those with or considering a smartphone, tablet or laptop with mobile broadband capability (again with a quota for current users)

Data collection

We endorsed Ofcom's suggestion of using an online approach. While this would over-represent those who were currently tech savvy, given we were looking forward 10 years, this was likely to be an advantage – as people in 10 years are likely to be even more technically savvy than the online sample of today. As such, respondents would be better placed to answer questions regarding technology related areas – particularly mobile broadband. We included "hook" questions to downweight/calibrate such respondents in the overall analysis.

Sample design

Given there were three sample subgroups (albeit overlapping), and so that Ofcom could have a thoroughly robust sample size, we used the following:

Sample group	Overall N=2000
DTT on main TV set	600
DTT considered on main set in future	200
DTT on secondary set, not on main	600
DTT considered on secondary set, not on main, in future	200
Use mobile broadband	600
Consider mobile broadband in future	200

As these samples overlap, the total of the six sub groups (2800) would yield 2000 individual respondents overall. Within each sub group, we set demographic quotas derived from an existing Ofcom survey (the Media Tracker).

Pilot stage

Given the questionnaire would be covering new areas for many respondents, we recommended a pilot stage. It was set up as an online questionnaire, respondents were recruited face-to-face close to our office in Holborn and went through the questionnaire in our viewing facility or a meeting room in the presence of an interviewer/researcher.

Quality control

We have several quality control measures with our online research, and exclude the responses from participants who complete the questionnaire too quickly, who might provide

inconsistent answers, or who ‘straight-line’ their responses e.g. by selecting all the first options available on a page. This meant we excluded 296 respondents.

B. Weighting of data

Data was weighted using analysis of the 2011 Ofcom Media Tracker, as follows:

		segment 3	not segment 3
segment 1	682	**229**	**453**
segment 2	370	**196**	**174**
not segment 1/2	1089	**502**	587
Total	2141	927	1214

This data enables us to estimate the size of the five non overlapping subgroups as follows:

	number	%
segment 1 and segment 3	229	15%
segment 1 segment 3	453	29%
segment 2 and segment 3	196	13%
segment 2 not segment 3	174	11%
segment 3 alone	502	32%
total market	1554	

The following data from the Media Tracker was used to weight each segment to demographic targets:

	DTT main set %	pay main/DTT 2nd %	mobile internet %
GENDER			
Male	48	51	50
Female	52	49	50
AGE			
16-34	31	33	38
35-54	29	44	36
55-64	16	10	14
65+	25	12	12
SOCIAL GRADE			
ABC1	48	58	55
C2DE	52	42	45

The initial data was weighted to these targets and profiles and tables excluding the conjoint analysis output produced. The form of conjoint used in this project (Hierarchical Bayesian) allows the production of importance scores and utilities for each respondent. This data was also used to generate crosstabs, with the same targets and profiles used as weights.

The respondent postcode was matched against an Ofcom file, which contains other data at a postcode level and this data was pasted into the survey database. Only 38 postcodes failed to generate a match to the master file. The variables pasted in include:

- Standard Region
- Local Authority area
- East-West and North-South Grid co-ordinates
- Urban/rural classification

To check the online sample generated a good sample by region, both unweighted and weighted counts by region/nation have been compared to the UK adult profile, as follows:

region/nation	% unweighted	% weighted	% UK
East Midlands	7.08%	7.06%	6.95%
East of England	9.31%	9.05%	8.97%
London	11.45%	9.97%	12.91%
North East	4.56%	4.36%	4.19%
North West	11.40%	12.56%	11.41%
South East	13.77%	13.66%	13.32%
South West	10.62%	11.67%	8.21%
West Midlands	9.02%	8.53%	8.77%
Yorkshire & Humberside	8.83%	9.32%	8.56%
Wales	4.51%	4.20%	5.01%
Scotland	7.66%	7.87%	8.70%
Northern Ireland	1.79%	1.73%	3.00%

There is a broad level of consistency in the profiles and at any event, this population is not all UK households and so we would not expect total agreement between the sample profiles and the UK population (the sample excludes analogue TV homes and Pay TV only homes which do not have mobile internet access).

C. Questionnaire

11432 UHF Strategy

INTRODUCTION:

We are conducting a survey on behalf of Ofcom, the independent regulator for the UK's communication industries. Ofcom is very interested to hear your views on your preferences regarding television and mobile internet services.

The survey should take no more than 30 minutes and you can break off at any point and then come back and complete the survey at a more convenient time.

Q1 Are you:

Male 1
Female 2

Q2 Are you aged: | | |

16-17 1
.....
18-24 2
25-34 3
35-44 4
45-54 5
55-64 6
65-74 7
75+ 8

TV SCREENING SECTION

The first few questions are about television.

Q4 ASK ALL

Which, if any, of these types of television service does your household receive at the moment?
Please select all that apply.

SCRIPTER MULTICODE OK FOR CODES B OR 2-9. ONLY ALLOW SINGLE CODE FOR 1 OR 0

Please note if you only receive BBC1, BBC2, ITV1, Channel 4 and Channel 5 then you should select 'Only terrestrial TV' from the list below and no others.

Please select all that apply.

Q5 ASK ALL CODING MORE THAN ONE AT Q4 (CODES 2-9). OTHERS SKIP TO Q13

And which one of these do you consider to be your main type of television?

Please select one. SINGLE CODE

SCRIPTER: PLEASE MASK CODE 2 AT Q4 AND AUTOCODE IF ANY OF CODES 3-9 ARE SELECTED

	Q4	**Q5**
Only terrestrial TV and no others (Channels 1-4/1-5) (SINGLE CODE)	1	1
Terrestrial TV(Channels 1-4/1-5) (IF ANY OTHER TYPE ALSO MENTIONED)	2	2
Cable TV (through Virgin Media)	3	3
Satellite TV (Sky)	4	4
Satellite TV (Freesat or other)	5	5
Freeview (through a set-top box or digital television set) with ONLY free channels	6	6
Freeview (through a set-top box or digital television set) with free channels PLUS Top-up TV (where a subscription can be paid to access additional programmes).	7	7
BT Vision	8	8
Digital TV via a broadband DSL line (Talk Talk TV, Fetch TV or other)	9	9
No TV set in household SINGLE CODE AND GO TO Q9	0	0

Q5B ASK ALL WITH FREEVIEW (CODES 6 OR 7 AT Q4)

How do you receive your Freeview service?

Through a set-top box 1
Part of an integrated TV set.....2
Both – I receive Freeview on more than one set.....3
Don't know.....4

Q3 ASK ALL WITH A TV SET IN HOUSEHOLD (NOT CODE 10 AT Q4)
How many TV sets do you have in your household?

1
2
3
4
5 or more

Q6 ASK ALL WITH SATELLITE TV AT Q4 (CODES 4-5)

Do you use your satellite television service to receive subscription channels or free-to-air services only? – i.e. Do you pay a monthly subscription fee on top of what you paid to have the satellite dish installed?

SINGLE CODE

Receive subscription channels (pay a monthly subscription fee).....1
Free to air services (no monthly subscription fee).....2
Don't Know 3

Q7 ASK ALL
ONLY SHOW CODES NOT SELECTED AT Q5

Which of the following are you planning to get on your main TV set in the next year or so?

Cable TV (through Virgin Media)	1
Satellite TV (Sky)	2
Satellite TV (Freesat or other)	3
Freeview (through a set-top box or digital television set) with ONLY free channels	4
Freeview (through a set-top box or digital television set) with free channels PLUS Top-up TV (where a subscription can be paid to access additional programmes).	5
BT Vision	
Digital TV via a broadband DSL line (Talk Talk TV, Fetch TV or other)	6
None	7

IF CODES 6/7 AT Q5(HAVE FREEVIEW ON MAIN SET) OR CODE 6/7 AT Q4 IF ONLY ONE SET OR CODE 4/5 AT Q7 (PLANNING TO GET FREEVIEW ON MAIN SET) – CODE AS FREEVIEWMAIN SET

IF (CODE 3 AT Q5(HAVE CABLE ON MAIN SET) OR CODE 3 AT Q4 IF ONLY ONE SET OR (IF CODE 4 OR 5 AT Q5 OR CODE 4 OR 5 AT Q4 IF ONLY ONE SET AND CODE 1 AT Q6 (HAVE PAY SATELLITE)))OR CODES 1/2 AT Q7(PLANNING TO GET CABLE/SKY)) AND

CODE 6/7 AT Q4 (HAVE FREEVIEW) BUT NOT ON MAIN SET- CODE AS PAY TV – FREEVIEW ON 2ND SET

TV SEGMENT ASSIGNMENT MUST BE EXCLUSIVE I.E. *EITHER* CODE 1 *OR* CODE 2 AND SHOULD PRIORITISE *CURRENT* SEGMENT. THEREFORE IF NO SEGMENT ASSIGNED BEFORE Q7

- ASSIGN TO 'FREEVIEW – MAIN SET' (SEGMENT 1) IF CODES 4 AND/OR 5 ONLY AT Q7 AND
- ASSIGN TO 'PAY TV MAIN SET – FREEVIEW AS WELL' (SEGMENT 2) IF CODES 1 OR 2 *AND* CODES 4 OR 5 AT Q7

INITIAL SEGMENT ASSIGNMENT

Freeview – main set	1
Pay TV main set – Freeview as well	2
Neither of these	3

INTERNET SCREENING SECTION - ASK ALL

ASK ALL
IF CODES 1, 5 OR 6 SELECTED AND NONE OF CODES 2, 3 OR 4, THEN ASK Q11

Q9 Do you use the Internet yourself in any of the following ways? Please exclude any use of the Internet made using a computer at your normal place of work.

Please tick all ways you connect to the Internet

From a desktop computer at home 1
From a laptop computer 2
From a tablet e.g. iPad or similar.....3
From a mobile phone.....4
From some other device (Please type in).....5
(14-17)
(18)
Cannot access the Internet in any of these ways.....0 Goto Q12

ASK ALL CODING 2, 3 OR 4 AT Q9

Q10 When connecting to the Internet via a laptop, tablet or mobile phone, do you always/sometimes connect using a mobile phone network or do you always use a fixed connection or wifi at home or some other place?

(25)

Use mobile phone network always/sometimes .....1 Goto Q10A

Only ever use fixed connection or wifi at home or some other place.....2 Goto Q11

ASK ALL CODING 1 AT Q10

Q10A And do you pay for this usage yourself, i.e. via a monthly contract or pay as you go, or is this paid for by someone else?

(25)

Pay for it myself 1

Paid for by someone else, e.g. through work or a family member 2

Q11 Are you planning to acquire any of the following in the next year to enable you to access the Internet using a mobile phone network?

A laptop computer	1
A tablet computer e.g. iPad or similar	2
A mobile phone or smartphone	3
None of these	0

FINAL SEGMENT ASSIGNMENT

IF CONNECT TO INTERNET USING MOBILE PHONE NETWORK IS PAID FOR BY RESPONDENT (CODE 1 AT Q10A) OR PLANNING TO ACQUIRE LAPTOP/TABLET/MOBILE PHONE (CODES 1/2/3 AT Q11)

CODE AS SEGMENT 3 – MOBILE BROADBAND

PLEASE NOTE A RESPONDENT CAN BE IN SEGMENT 3 AS WELL AS SEGMENT 1 OR 2.

IF STILL SEGMENT 0 (DOES NOT HAVE ANY OF FREEVIEW ON MAIN SET, PAY TV ON MAIN AND FREEVIEW ON 2ND OR MOBILE BROADBAND – THEN CLOSE

Q12 If you had the choice of better Freeview services – e.g. with more channels, HD channels or the option to pay for more channels, or faster mobile broadband – e.g. allowing you to watch high quality video on a mobile device, which would you choose?

Improving Freeview services	1
Improving mobile broadband services	2
No preference	3

ASK ALL

Q13 Why do you say that?

TV DETAILED SECTION

IF SEGMENT 1 OR 2 – SEGMENT 3 ONLY GO TO MOBILE BROADBAND SECTION

Q14 Which of these programme genres do you watch the most on TV – please tick up to 3?
ROTATE

News	1
Current affairs	2
Comedy	
Factual/documentary	3
Sports programme	4
Children's programme	5
General entertainment	6
Soap	7
Drama	8
Film	9
Teleshopping	0

Q15 And if one of these genres was not available, which would you miss the most?
ROTATE

News	1
Current affairs	2
Comedy	
Factual/documentary	3
Sports programme	4
Children's programme	5
General entertainment	6
Soap	7
Drama	8
Film	9
Teleshopping	0

Q16 Which of the following TV services or functions have you heard of before today?
ROTATE

A High definition ready television (this probably had an HD Ready sticker on it when you bought it)	2
A set-top box enabling you to view HD channels	3
A Digital Video Recorder (DVR) system (sometimes known as a PVR) such as Sky Plus, V Plus, Freeview Plus with e.g. ability to record programmes and pause and rewind live TV	4
Video on demand through the TV where you can select programmes that are from an extensive library (these include Virgin on Demand, Sky Anytime, 4oD etc.)	5
3D TV (where you need to use special glasses to watch 3D programmes)	6
Internet services and apps accessed through the TV (this requires a broadband connection to your set-top box)	7
Ultra high definition TV	8
Interactive and red button services, that can be used to access other services or programmes	9
Catch-up TV where you can watch programmes that were broadcast in the previous week or so on your PC or laptop (e.g. via BBCiPlayer, itvplayer, sky player etc.)	0
None of these	1

Q17 FOR EACH SERVICE AWARE OF AT Q16 ASK Q17

And which of these services do you currently have at home?
ROTATE

A High definition ready television (this probably had an HD Ready sticker on it when you bought it)	2
A set-top box enabling you to view HD channels	3
A Digital Video Recorder (DVR) system (sometimes known as a PVR) such as Sky Plus, V Plus, Freeview Plus with e.g. ability to record programmes and pause and rewind live TV	4
Video on demand through the TV where you can select programmes that are from an extensive library (these include Virgin on Demand, Sky Anytime, 4oD etc.)	5
3D TV (where you need to use special glasses to watch 3D programmes)	6
Internet services and apps accessed through the TV (this requires a broadband connection to your set-top box)	7
Ultra high definition TV	8
Interactive and red button services, that can be used to access other services or programmes	9
Catch-up TV where you can watch programmes that were broadcast in the previous week or so on your PC or laptop (e.g. via BBCiPlayer, itvplayer, sky player etc.)	0
None of these	1

Q18 ASK ALL

And how would you rate your interest in using these services in the future, where 1 means not at all interested and 10 means very interested? [Allow: “Don’t know enough about it”]
ROTATE

More Standard definition TV	1
A High definition ready television (this probably had an HD Ready sticker on it when you bought it)	2
A set-top box enabling you to view HD channels	3
A Digital Video Recorder (DVR) system (sometimes known as a PVR) such as Sky Plus, V Plus, Freeview Plus with e.g. ability to record programmes and pause and rewind live TV	4
Video on demand through the TV where you can select programmes that are from an extensive library (these include Virgin on Demand, Sky Anytime, 4oD etc.)	5
3D TV (where you need to use special glasses to watch 3D programmes)	6
Internet services and apps accessed through the TV (this requires a broadband connection to your set-top box)	7
Ultra high definition TV	8
Interactive and red button services, that can be used to access other services or programmes	9
Catch-up TV where you can watch programmes that were broadcast in the previous week or so on your PC or laptop (e.g. via BBCiPlayer, itvplayer, sky player etc.)	0

Q19 ASK ALL

And how important are the following services to you, where 1 means not at all important and 10 means very important [Allow: “Don’t know enough about it”]
ROTATE

Standard definition TV	1
A High definition ready television (this probably had an HD Ready sticker on it when you bought it)	2
A set-top box enabling you to view HD channels	3
A Digital Video Recorder (DVR) system (sometimes known as a PVR) such as Sky Plus, V Plus, Freeview Plus with e.g. ability to record programmes and pause and rewind live TV	4
Video on demand through the TV where you can select programmes that are from an extensive library (these include Virgin on Demand, Sky Anytime, 4oD etc.)	5
3D TV (where you need to use special glasses to watch 3D programmes)	6
Internet services and apps accessed through the TV (this requires a broadband connection to your set-top box)	7
Ultra high definition TV	8
Interactive and red button services, that can be used to access other services or programmes	9
Catch-up TV where you can watch programmes that were broadcast in the previous week or so on your PC or laptop (e.g. via BBCiPlayer, itvplayer, sky player etc.)	0

FOR EACH RESPONSE AWARE OF AT Q16 BUT NOT USING AT Q17, ASK Q20.
SHOW OPEN TEXT FIELD FOR EACH

Q20 What is the main reason you don't have?

ROTATE

Standard definition TV	1
A High definition ready television (this probably had an HD Ready sticker on it when you bought it)	2
A set-top box enabling you to view HD channels	3
A Digital Video Recorder (DVR) system (sometimes known as a PVR) such as Sky Plus, V Plus, Freeview Plus with e.g. ability to record programmes and pause and rewind live TV	4
Video on demand through the TV where you can select programmes that are from an extensive library (these include Virgin on Demand, Sky Anytime, 4oD etc.)	5
3D TV (where you need to use special glasses to watch 3D programmes)	6
Internet services and apps accessed through the TV (this requires a broadband connection to your set-top box)	7
Interactive and red button services, that can be used to access other services or programmes	9
Catch-up TV where you can watch programmes that were broadcast in the previous week or so on your PC or laptop (e.g. via BBCiPlayer, itvplayer, sky player etc.)	0

Q21 Thinking specifically now about Freeview services, which of the following best describes what you think about the current range of channels on Freeview? ….

About right	1
I would like to have access to more channels.	2
I would not mind if there were fewer channels	3

Q22 Think about the past 10 years and the way in which your use of, or interest in, the TV functions we are talking about has changed over this period. Many of the functions and services we are discussing in this questionnaire didn't even exist. Now think about the next 10 years and how your preferences for these TV services and functions may change in future**.**

Drag across the feature that you think will be the most important for you over the next 10 years into the 1st box, the next most important into the 2nd box and so on until you have dragged all the features into a box:

ROTATE

- Having lots of standard channels (SD) available
- Having lots of High Definition (HD) channels
- Having pay services available if you want them e.g. the ability to watch premium content such as movies, concerts or sports.
- Being able to record programmes and pause or rewind live TV
- Having a search facility in the on-screen programme guide e.g. you can type in the name of the programme you'd like to see and it will tell you when it is being shown
- Being able to watch programmes that were shown in the past few days and other programmes from an extensive library
- Having a range of interactive services available e.g. being able to 'press the red' button to vote or view additional content
- Being able to access internet content through apps on your TV as you would on your smartphone or surf the net like you would on a normal PC

TRADE OFF SECTION
INTRO SCREEN
On each of the following screens we are going to present you with a pair of possible future television offerings. Each of them will have a different combination of attributes and we would you like to compare the two and indicate which one you would prefer. *You will be shown 12 screens with a different pair of scenarios on each.*

Please note, while some scenarios will appear similar, everyone will have a **different** combination of attributes with **at least** one aspect changing in each, so please read carefully.

You can see more information about some of the attributes by hovering over the text with your mouse. These are marked with an *i*.

FIRST PAIRED SCREEN TEXT
Please thoroughly review the two packages below and select your preference at the bottom of the screen.

SUBSEQUENT PAIRED SCREENS
Below are two more packages. Remember they won't be the same as one you've previously been shown, but it may only be one aspect that may have changed (although there could be more!).

Please carefully review and select your preference at the bottom of the screen.

Even if you don't like either, please indicate the one you have a greater preference for.

You can see more information about the attributes marked with an *i* by hovering over the text with your mouse.

Option 1 1
Option 2 2

If your preferred option of the above were available would you acquire it?

Yes.....1
No 2

FOR THOSE IN SEGMENT 3 (AS WELL AS SEGMENT 1 OR 2), ONLY ASK HALF OF THEM THIS TRADE OFF SECTION – THE OTHER HALF TO BE SHOWN THE MOBILE BROADBAND TRADE OFF SECTION

RESPONDENTS WILL BE SHOWN A NUMBER OF PAIRS OF SCENARIOS RELATING TO THE FOLLOWING ATTRIBUTES WITH ONE OF THE THREE LEVELS

Attribute	Low	Medium	High
Standard Definition(SD)channels	10 channels (including the main channels)	50 channels	100 channels
High Definition (HD) channels	5 channels (the main channels in HD)	10 channels (including the main channels)	40 channels
Premium content such as Sky Sports or Sky movie channels	No premium content	20 extra channels with premium content, some in HD £15 per month	50 extra channels with premium content, all in HD £40 per month
Being able to record programmes and pause or rewind live TV	**Free box** **100 hours of recording** ***i*** You can pause live TV and set recordings for future shows up to a total equivalent to 100 hours of content in standard definition	**Free box** **100 hours of recording.** **You'll have the option to buy a special box with more storage and advanced features for a £50 one-off fee** ***i*** You can pause live TV and set recordings for future shows up to a total equivalent to 100 hours of content in standard definition For an extra £50 standalone fee, you can upgrade to a better box giving you storage equivalent to 500 hours, automatic series link, dual recording	**Special box** **500 hours of recording and other advanced features.** **£10 per month** ***i*** You can record and pause live TV up to a total to 500 hours + automatically record episodes of a selected TV series (series link) + record multiple channels simultaneously + automatic recording of shows you may like based on your past preferences + if you forget to set up your recorder at home you can do that over the internet through your PC in the office or on your smartphone
Being able to watch programmes that were shown in the past few days and other programmes from an extensive library	**You can catch-up with the main shows broadcast in the past 7 days.** **This will be free** ***i*** The main shows broadcast on the main channels over the past 7 days are available for watching at any time	**You can catch-up with the main shows broadcast in the past 30 days.** **This will be free.** **Other content will be available on a pay-per view basis** ***i*** Most of the shows broadcast on the main channels over the past 30 days are available for watching at any time – for free.	**You can catch-up with most of the shows broadcasting the past 30 days and access a vast content library.** **This will cost £5 a month** **The latest movies will be available on a pay-per-view basis** ***i*** For an extra £5 you get access to catch up TV, with most of the shows broadcast on all

		Additional archive content, some TV series and some movies can be accessed anytime on a pay-per-view basis	channels over the past 30 days available for watching at any time. A vast library of other content (including archive) is also included in the £5 fee. The latest movies will be available for watching at any time on a pay-per-view basis
Having a search facility and other advanced navigation in your on screen guide	**Basic on screen TV guide at no extra cost** ***i*** The on screen guide provides information (including a short description) of programmes that are currently being shown and thatwill be broadcast over the next few days	**Interactive on screen TV guide at no extra cost** ***i*** The on screen guide provides information (including a short description) about past, current and future programmes. Descriptions include images and short clips. A selection of past programmes can be accessed directly through the on screen guide.	**Advanced navigation, including search and recommendations - for £3 a month** ***i*** The on screen guide provides rich information all programmes scheduled or shown in the past, including images and clips. You'll be able to search content by title, actor or director. On screen information is interactive: in case of a movie, clicking on the name of an actor will take you to his biography and all other movies available starring the same actor. The on screen guide will also provide recommendations for shows you may like, based on programmes you watched in the past

MOBILE BROADBAND DETAILED SECTION

I'd now like you to think specifically about using the internet through your mobile phone, tablet or laptop with dongle.

Q23 IF CONNECT TO INTERNET USING LAPTOP AND MOBILE NETWORK (CODES 2 OR 3 AT Q9 AND CODE 1 AT Q10) ASK Q23

And which operator provides your connection to the Internet using your laptop or tablet?

(26)

3 1
BT 2
Orange 3
O2 4
T mobile 5
Virgin 6
Vodafone 7
Other (please type in) 8
Don't know

(27-31)

Q25 IF USE MOBILE PHONE TO ACCESS THE INTERNET (CODE 4 AT Q9) ASK Q25, OTHERS GO TO Q28

Do you personally use a Smartphone? A Smartphone is a phone on which you can easily access emails, download files and applications, as well as view websites and generally surf the internet. Popular brands of Smartphone include BlackBerry, iPhone and Android phones such as the HTC Desire.

Yes
No
DK

Q26 IF CODE 1 AT Q25, ASK Q26, OTHERS GO TO Q27

Which make and model is your mobile phone?

MULTICODE POSSIBLE.

(37)

Apple iPhone 1
Blackberry 2
Nokia 3
Samsung 4
Sony Ericsson 5
HTC - Android handsets 6
Other (please type in) 7

(38-41)

Q27 IF CODE 2 AT Q25ASK Q27, OTHERS GO TO Q28

What is the make and model of your mobile phone?

WRITE IN.

(42-45)

Q28 if have tablet (CODE 3 AT Q9) ASK Q28

What type of tablet do you have?

Apple iPad	1
Archos	2
Dell	3
HP	4
Samsung	5
Sony	6
Other (please type in)	7

Q29 ASK ALL

In which of the following situations do you connect to the internet via a mobile phone network using a laptop, tablet or mobile phone?

PLEASE TICK ALL THAT APPLY

(24)

At home	1
Around your neighbourhood	2
At work/school/university	3
In other buildings	4
Outdoors in an urban area	5
Outdoors in a rural area	6
On the move (e.g. on a train or on roads)	7
Other (please type in)	8

Q30 IF USE IN THE HOME (CODE 1 ABOVE) ASK Q30

Which of the following best describes your use of the Internet when connecting via a mobile phone network using a laptop, tablet or mobile phone?

PLEASE TICK JUST ONE

I only use it at home	1
I mainly use it at home	2
I use it equally at home and outside the home	3
I mainly use it outside the home	4
I always use it outside the home	5

Q31 And at what time of day do you connect to the internet via a mobile phone network using a laptop, tablet or mobile phone??

PLEASE TICK ALL THAT APPLY

Weekday daytime (7 am – 5 pm)	1
Weekday evening (5 pm – 11 pm)	2
At weekends	3
At night (11 pm – 7 am)	4
All the time	5

Q31A Roughly how much a month do you pay your mobile phone company to connect to the internet via a mobile phone network using a laptop, tablet or mobile phone? (Please include the total cost you pay including rental, voice calls, text and data)

£15 or less
£20
£25
£30
£40
£50
More than £50

Q31B IF USE MOBILE PHONE TO ACCESS THE INTERNET (CODE 4 AT Q9) ASK
Did you purchase the handset separately upfront, at the start of the contract?

Yes
No
Don't know

Q31C IF PURCHASED SEPARATELY UP FRONT (CODE 1 AT Q31B) ASK
How much was this?

Please type in amount.

Q32 Have you ever experienced any of the following problems?

	In home	In other buildings	Outdoors in urban areas	Outdoors in rural areas	On the move – e.g. on a train or when travelling by road	At busy times or in busy places where lots of people are using their phones (e.g. at a stadium, main railway station during rush hour)	At times when many people across the nation might be using their mobile phone (e.g. New Year's Eve or when a major news story is breaking)
Video being watched keeps cutting out							
Web pages take too long to load							
Your connection keeps dropping out							

Q33 Which of the following activities do you undertake on your laptop/mobile phone/tablet?
ROTATE

- Sending and receiving Email
- Surfing the Internet looking at websites
- Downloading apps
- Making telephone calls using the Internet (e.g. using Skype)
- Watching live TV programmes
- Watching catch up TV programme (e.g. using BBC iPlayer, itv player, Sky player)
- Watching video clips/webcasts from Youtube or similar services
- Downloading music (e.g. to an iPod)
- Downloading a full length film (e.g. using Lovefilm Online or iTunes)
- Listening to or downloading audio services (e.g. radio stations)
- Playing games online
- Catching up with news or sports
- Looking up local information - restaurants/shops/cash points
- Looking at maps of the local area
- Accessing social networking sites
- Banking
- Shopping
- School/college/work related activities

Q34 Think about the past 10 years and the way in which your use or interest in accessing the internet has changed over this period. Many of the functions and services we are discussing in this questionnaire didn't even exist. I'm going to give you a list of a number of features or aspects that mobile internet services currently have or might have in the next 10 years and I'd like you to rank them. Drag across the feature that you think is the most important into the 1st box, the next most important into the 2nd box and so on until you have dragged all the features into a box:

ROTATE

Having good coverage outdoors
Having good reception at home
Having good reception in other buildings e.g. offices and shopping centres
Having a reliable service at busy times or in busy places (e.g. railways stations, stadium events)
Having a reliable service in other-non crowded areas
Having a reliable service when travelling at speed e.g. on a train or in a car
Being able to download as much data as I want without incurring extra charges if I go over a defined data cap
The monthly cost of using the device i.e. the bill your mobile company sends you

Q34A I am going to put on screen a number of things relating to using the Internet via a mobile phone network. Each one has two extremes and I'd like you to use the slider scale to indicate what you think your current level of service is between these two extremes.

ROTATE

Item	Left hand end of slider scale	Right hand end of slider scale
Breadth of outdoor coverage	**Generally good with patchy areas** Urban areas well covered. Some rural areas have no coverage.	**Total coverage** Coverage available in most population centres, including small villages.
In home coverage	Some homes have poor mobile reception or none at all	Mobile coverage is as good in the home as it is outside
In other buildings coverage – e.g. offices and shopping centres	Some buildings have poor mobile reception or none at all	Mobile coverage is as good in buildings as it is outside
Quality of service – when busy or at busy places (e.g. main line stations, stadium events)	**Unreliable in high demand areas** At busy times or in busy places, the service might slow down or cut out completely.	**Reliable independent of demand** The service remains reliable at busy times and in busy places
Quality of service – when the network is not busy	**Generally good** In areas of good coverage emails and websites can be downloaded in seconds. It is usually possible to stream video clips Occasionally the connection might slow down or cut out	**Excellent at all times** In areas of good coverage emails and websites can be downloaded instantly. It is always possible to stream video clips – including high definition The connection is very consistent and

		reliable
Quality of service - when travelling at speed (e.g. by train or car)	**Unreliable** Connection is unreliable on trains and in cars. Signal strength is intermittent and subject to frequent 'drop outs'.	**Reliable** Connection is almost always possible when travelling at speed where there is coverage.

TRADE OFF SECTION – A NUMBER OF PAIRS OF SCENARIOS LISTING A LEVEL FOR THESE FACTORS, PLUS ONE OF THE FOUR PRICES ASKING RESPONDENTS TO CHOOSE THE ONE THAT THEY WOULD PREFER.

INTRO SCREEN

On each of the following screens we are going to present you with a pair of possible scenarios with regard to future mobile broadband offerings. Each scenario will have a different combination of attributes and we would you like to compare the two and indicate which one you would prefer. *You will be shown 12 screens with a different pair of scenarios on each.*

Please note, while some scenarios will appear similar, everyone will have a **different** combination of attributes with **at least** one aspect changing in each, so please read carefully.

You can see more information about some of the attributes by hovering over the text with your mouse. These are marked with an *i*.

FIRST PAIRED SCREEN TEXT

Please thoroughly review the two packages below and select your preference at the bottom of the screen.

SUBSEQUENT PAIRED SCREENS

Below are two more packages. Remember they won't be the same as one you've previously been shown, but it may only be one aspect that may have changed (although there could be more!).

Please carefully review and select your preference at the bottom of the screen.

Even if you don't like either, please indicate the one you have a greater preference for.

You can see more information about the attributes marked with an *i* by hovering over the text with your mouse.

Option 1 1
Option 2 2

If your preferred option of the above were available would you purchase it?

Yes.....1
No 2

FOR THOSE IN SEGMENT 3 (AS WELL AS SEGMENT 1 OR 2), ONLY ASK HALF OF THEM THIS TRADE OFF SECTION – THE OTHER HALF TO BE SHOWN THE TV TRADE OFF SECTION

Service Attribute	Low	High
Breadth of outdoor coverage	**Generally good with patchy areas** ***i*** Urban areas well covered. Some rural areas have no coverage.	**Total coverage** ***i*** Coverage available in most population centres, including small villages.
In home coverage	Some homes have poor mobile reception or none at all	Mobile coverage is as good in the home as it is outside
In other buildings coverage – e.g. offices and shopping centres	Some buildings have poor mobile reception or none at all	Mobile coverage is as good in buildings as it is outside
Quality of service – when busy or at busy places (e.g. main line stations, stadium events)	**Unreliable in high demand areas** ***i*** When many people use their mobile device to connect to the internet, the service might slow down or cut out completely.	**Reliable independent of demand** ***i*** The service remains reliable at busy times
Quality of service - in other (non crowded) areas	**Generally good** ***i*** In areas of good coverage emails and websites can be downloaded in seconds. It is usually possible to stream video clip Occasionally the connection might slow down or cut out	**Excellent at all times** ***i*** In areas of good coverage emails and websites can be downloaded instantly. It is always possible to stream video clips – including high definition The connection is very consistent and reliable
Quality of service - when travelling at speed (e.g. by train or car)	**Unreliable** ***i*** Connection is unreliable on trains and in cars. Signal strength is intermittent and subject to frequent 'drop outs'.	**Reliable** ***i*** Connection is almost always possible when travelling at speed where there is coverage.
Usage caps – exceeding the limit will result in additional charges for each Mb	**1Gb per month** ***i*** You can send around 200 emails and visit around 250 web pages per day	**No usage cap**

downloaded	Watching occasional short video clips will be possible, but if you download several full length TV programmes or films using the mobile network you are likely to exceed your limit and incur extra charges.	
Price (monthly payment to your mobile phone company)	**Four levels - £15/£20/£25/£30**	

Q35.

As you may be aware, many mobile internet and mobile phone contracts have a data usage cap – usually about 1Gb per month. This means that if you download more than this limit you would be charged extra for each Mb downloaded.

The usage cap is usually set at a level that should allow you to access hundreds of emails and web pagesevery day without exceeding the limit. However, if you were to download several video clips or full length television programmes using the mobile network you are likely to exceed the limit and incur extra charges.

When it comes to the time to renew your mobile contract, if you had the option of signing up to a 24 month mobile phone contract that includes UNLIMITED data access:

How likely would you be on the scale here to purchase an unlimited data package if the price (excluding handset subsidy) was….

£20
£30
£40
£50

ROTATE ORDER OF START PRICE

If respondent is willing to pay (def/prob) the price shown, the next highest price is shown (repeat until the highest price has been shown). If the respondent is not willing to pay the price shown (may or may not/ probably not/ definitely not) then the next lowest price is shown (until the lowest price is shown). For reporting if a respondent is willing (def/prob) to pay a price all lower prices are auto-coded as (def would). If a respondent is not willing to pay a price (probably not/ definitely not) all higher price are coded definitely not (or probably not if they'd answered may or may not).

	Low	**Mid**	**High**	**Highest**
	£20	£30	£40	£50
I would definitely buy one	.....	.....		
I would probably buy one	.....	.....	.....	
I may or may not buy one	.....	.....	.....	
I would probably not buy one	.....	.....	.....	
I would definitely not buy one	.....	.....	.....	

Q36. USE SHOWCARD FOR RESPONSES

In the future it is possible that, as the number of mobile internet users increases, the reliability of your mobile internet service could be affected, which could mean that web pages take longer to load and that you experience times when you can't connect at all more frequently.

If this were the case which of the following best describes how you think you would react:

1. I would stop using mobile internet services
2. I would carry on using mobile internet services, paying the same amount, even if the service got worse.
3. I would upgrade to an enhanced speed package – this would give the same quality of service that you receive today, but cost an extra £5 per month.
1. Don't know

Q94a On a scale of 1-10, how much do you agree with the following statements, where 1 is not at all and 10 is a great deal?

"I try to keep up with technology"

Q94b On a scale of 1-10, how much do you agree with the following statements, where 1 is not at all and 10 is a great deal?

"My friends tend to come to me if they have questions about the internet"

ASK ALL

CLASSIFICATION: TO BE ASKED AT END OF INTERVIEW

Now, as you probably know, it is necessary in market research surveys to interview a wide cross-section of the public. The next few questions about yourself are just to ensure our sample is balanced.

ASK ALL

Q37 Are you yourself?

Working full time (30+ hours per week) ☐
Working part-time (8-29 hours per week) ☐
Not working (i.e. under 8hrs/week) retired ☐
Not working (i.e. under 8hrs/week)
Unemployed (registered/not registered but looking for work) ☐
Not working (i.e. under 8hrs/week) student ☐
Not working (i.e. under 8hrs/week) housewife/disabled/other ☐
Don't Know DO NOT READ OUT ☐

Q39 And which of the following best describes the occupation of the main income earner in your household? If they're retired please think back to their last job before retirement.

Please note:
1. If you live in a household with others but have separate finances, do not include them in this question. Only consider those who have shared incomes/ outgoings.
2. If the main income earner has been unemployed for less than 6 months, don't answer 'unemployed' but think back to the last job before that.
3. If they're retired and receiving a pension from employment as well as a state pension, please think back to the last job before retirement.

PLEASE CHOOSE ONE ANSWER.
DP: DO NOT DISPLAY GRADE IN SURVEY

Description	GRADE (DO NOT DISPLAY)	CODE
Very senior management; top-level civil servant or professional (e.g. surgeon; partner in a law firm; regional bank manager; board director of medium/ large firm)	A	1
Senior or middle management in large organisation; owner of small business; principal officer in civil service/ local government	B	2
Junior management or professional; or administrative (e.g. most office workers; accounts clerk; secretary; police sergeant)	C1	3
Skilled manual worker (e.g. Silversmith; Plumber; Electrician)	C2	4

Manual worker (e.g. Lorry driver; Holiday camp worker; Hotel porter)	D	5
Casual worker without regular income; or unemployed for 6 months or longer	E	6
Retired and receiving a state pension ONLY	E	7
Housewife/ house husband/ looking after family	E	8
Student	E	9
PREFER NOT TO SAY		10

Q40 STANDARD REGION.

In which of the following areas do you live?

Scotland ☐
North East ☐
North West ☐
Yorkshire ☐
East Midlands ☐
West Midlands ☐
Wales ☐
East ☐
South West ☐
South East ☐
London ☐
Northern Ireland ☐

Q41 POSTCODE

Please enter the first part of you postcode, e.g. W12.

Please write in. | | | | |

Thank you very much for your time. That's the end of the interview.

If we have any queries arising from this research, may we contact you by telephone to ask you some further questions?

SINGLE CODE

Yes ☐
No ☐

D. Technical description of conjoint

What is Conjoint Analysis?

A type of 'trade-off' analysis for **measuring buyers' preferences** for different product/service formulations

The trade-off approach would generate a number of pairs or trios of these scenarios and ask the respondent to select their preferred scenario. By careful choice of scenarios to be presented, results can be produced which provide:

- Utilities for each level of each service attribute – these demonstrate how much the preferences vary depending upon the level of service/product offered
- Interactions between attributes
- A preference model which allows simulation of the preferences for any service definition

The basic premise is that buyers value products or services based on the **sum of their parts**, e.g. A simplified version of the DTT conjoint might speculate its value to a consumer was:

SD channels + HD channels + Premium content

If you can measure how much value or worth buyers attach to each part of the product, then you can design products and services and see how they will perform, competitively

Conjoint analysis does exactly this: ***it measures how much buyers value each component of a product or service, so that we can test many different formulations***

50 SD channels **40 HD channels** **20 extra premium channels £15 per month**	**100 SD channels** **5 HD channels** **No premium content**

The process is repeated with respondents looking at twelve screens in turn and selecting their preferred formulation each time.

Through careful design of the options shown to respondents this gives sufficient information at the analysis stage to calculate their preferences towards each level of every attribute.

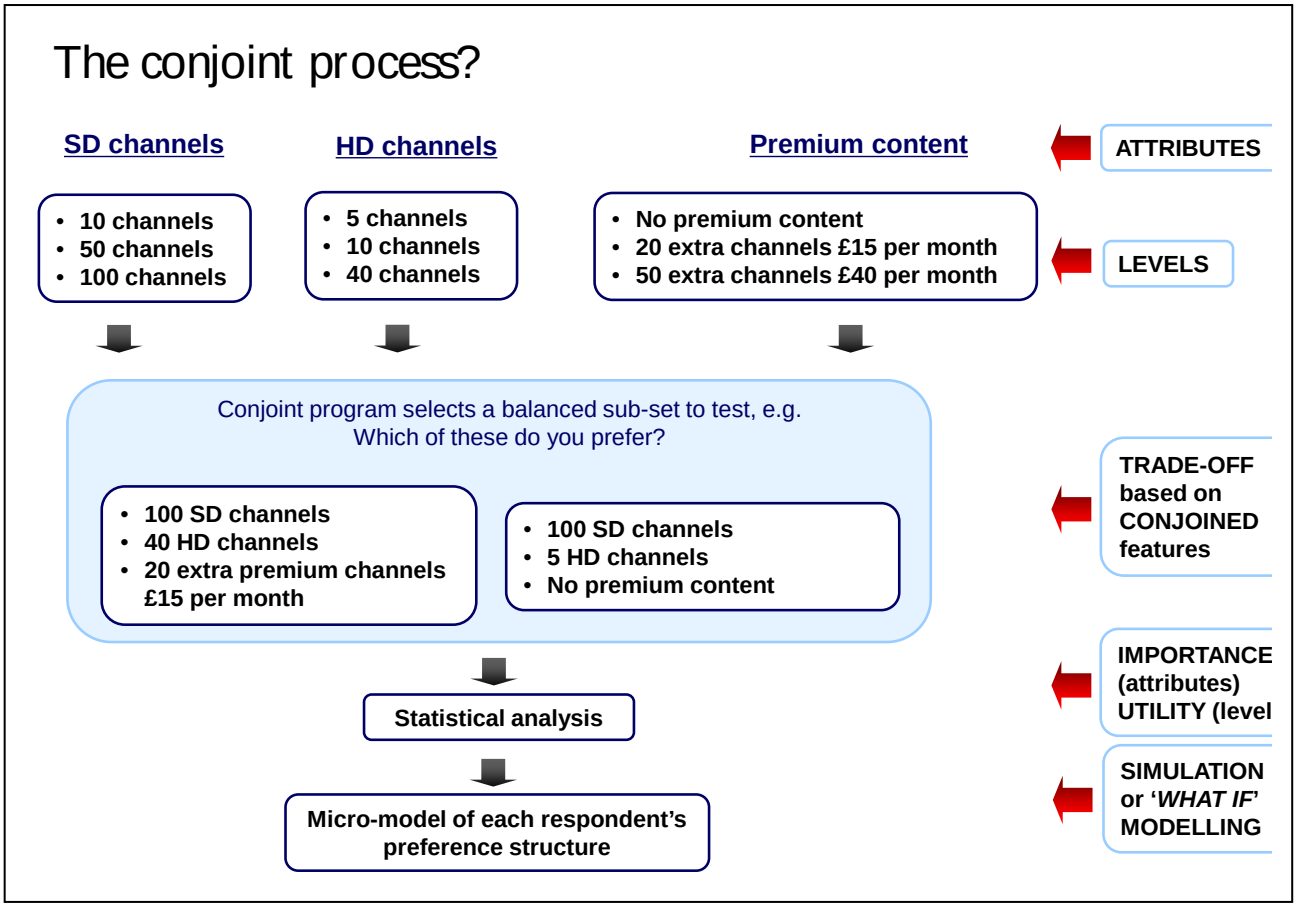
The findings can be used directly to identify the **relative appeal** of different formulations.

The results can be used to test the relative appeal of any permutation of attributes via a simulator that allows 'what if' questions to be answered, both for the sample overall and for sub-groups within (e.g. members and prospects).

Respondents are shown a number of available options as complete combinations of attributes at different levels.

For example:

Which television package would you prefer?



Statistical analysis

A technique called Hierarchical Bayesian (HB) analysis determines the individual level utilities from the choice data. HB analysis models respondents choices using an iterative process where the results from one iteration feeds into the next updating the utilities at each step to improve the accuracy of the results

10,000 iterations are conducted and the data examined to ensure convergence then a further 10,000 iterations are conducted providing estimates at an individual level

Interpreting the utility scores and other outputs

Each level of each attribute has a utility score – this is a measure of the appeal amongst the respondents. The utilities sum to 100 across all attributes.

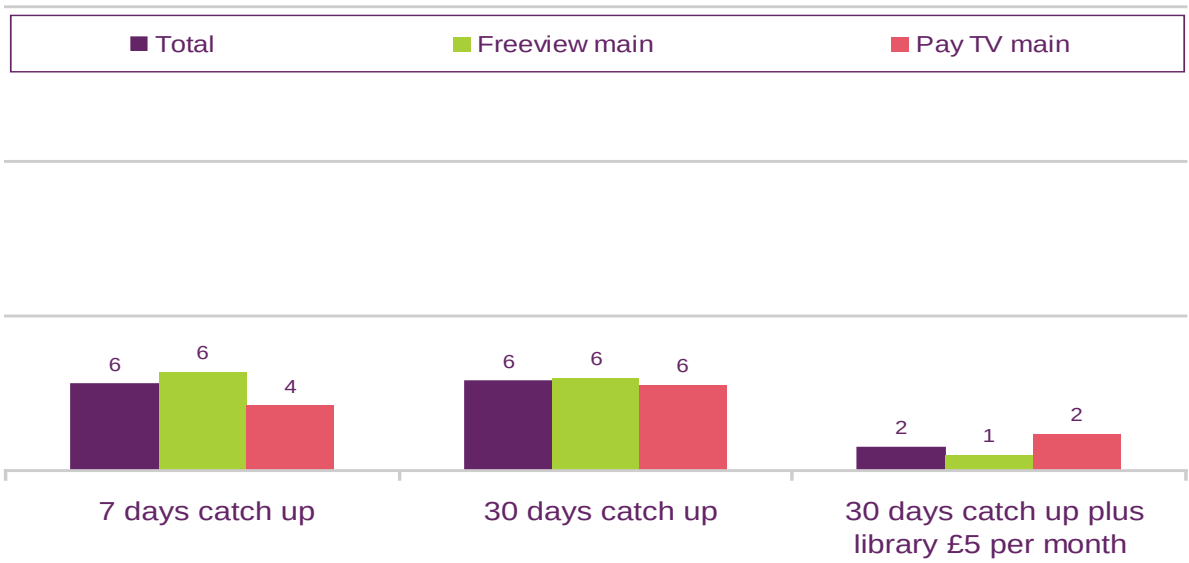
Utilities are designed to be added up to represent a complete product, i.e. with one level for each attribute. Thus you can compare the order or different levels within an attribute. You can also compare the difference between utilities of different levels within an attribute or against other attributes

However you wouldn't compare the ratio – i.e. just because one level has twice the utility we would not say it is twice as appealing. For example for a given attribute if level 1 had utility 0, level 2 had utility 5, and level 3 had utility 10we could say the difference between levels 1 and 2 is the same as between 2 and 3 but we would not say level 2 has twice the utility as level 3

These individual level utilities are used to create a simulator modelling results at an aggregate level.

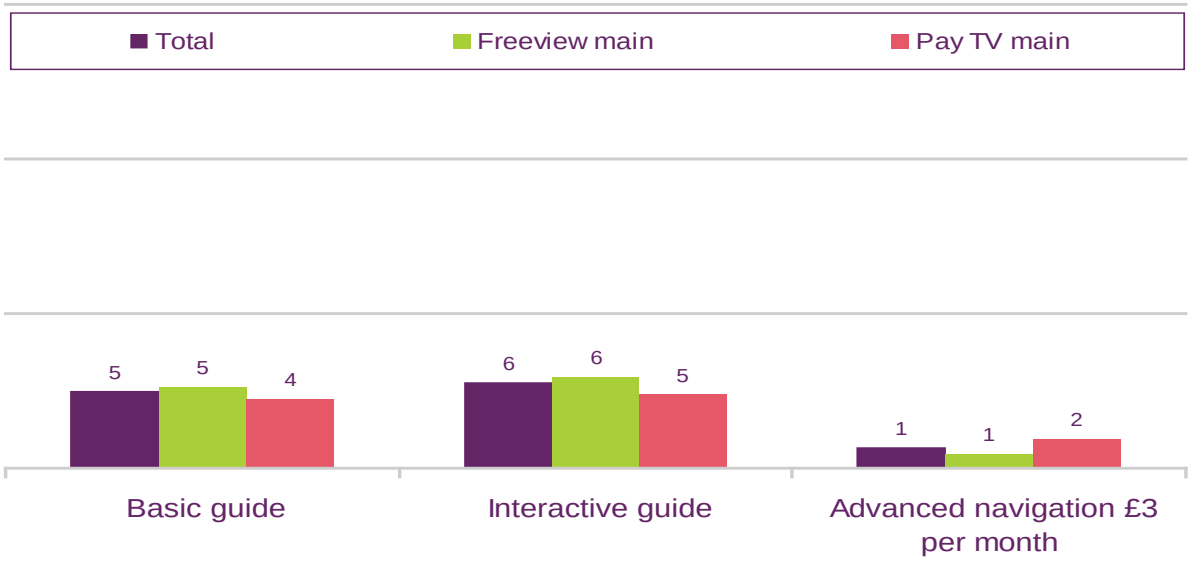
E. Supplementary charts – DTT conjoint utilities

Utilities for three levels of catch-up TV/ library/ VoD



Source: Conjoint analysis
Base: All DTT Respondents completing DTT conjoint (1115/603/512)

Utilities for three levels of Electronic Programme Guide



Source: Conjoint analysis
Base: All DTT Respondents completing DTT conjoint (1115/603/512)

Utilities for three levels of set-top box with recording facilities

Source: Conjoint analysis
Base: All DTT Respondents completing DTT conjoint (1115/603/512)

F. Glossary of Terms

Digital Switchover (DSO) This is the process of switching over the analogue television broadcasting system to digital. In the UK this process will be completed in 2012.

Digital Terrestrial Television (DTT) is the technology which delivers Freeview services in the UK.

Digital Video Recorder (DVR) Also known as a Personal Video Recorder (PVR), this is a digital TV set-top box including a hard disk drive which allows the user to pause, record and rewind live TV.

Video on Demand (VOD) This is a service or technology that enables TV viewers to watch programmes or films whenever they choose to, not restricted by a linear schedule.

Electronic Programme Guide (EPG) A programme schedule, typically broadcast alongside digital television or radio services, to provide information on the content and scheduling of current and future programmes.

High Definition (HD) High-definition television is a technology that provides viewers with better quality, high-resolution pictures.

Standard Definition (SD) Standard-definition television is a television system that uses a resolution that is not considered to be high-definition television (HDTV). The term is usually used in reference to digital television, in particular when broadcasting at the same (or similar) resolution as analogue systems.

Ultra High Frequency (UHF) refers to the Ultra-high frequency range of the radio spectrum (between 300 MHz to 1 GHz).

Ultra High Definition (UHD) This offers video and audio TV that is significantly better resolution and quality than existing HDTV. It is not currently available commercially in the UK.

G. Key drivers

Throughout this report we have identified variations in response by age, particularly in the mobile internet section. Age, however, may be a proxy for underlying attitudes and behaviours. To test this hypothesis, we have analysed a number of questions by both age and level of agreement with the two attitudinal statements included in the questionnaire:

- Q94a: "I try to keep up with technology"
- Q94b: "My friends tend to come to me if they have questions about the internet"

Analysis of variance has been used to identify which of these two statements and also age are most significant in affecting responses. One question and one set of utilities were selected from each of the DTT and mobile internet sections, as follows:

- Q16: Awareness of internet services and apps accessed through the TV (this requires the consumer to have a broadband connection to their set-top box)
- Utilities for premium content (3 separate variables)
- Q31a: Roughly how much a month do you pay your mobile phone company to connect to the internet via a mobile phone network using a laptop, tablet or mobile phone? (Please include the total cost you pay including rental, voice calls, text and data)
- Utilities for size of monthly bill (4 separate variables)

The results of this analysis are as follows:

Question	Q94a	Q94b	Age
Q16: awareness of internet TV	**.000**	.086	**.000**
Utility: no premium content	**.003**	.617	**.000**
Utility: 20 channels/£15	.247	.125	**.000**
Utility: 40 premium channels / £50	.082	**.003**	**.027**
Monthly mobile bill	**.000**	.133	**.000**
Utility: £15 monthly bill	**.001**	.741	**.000**
Utility: £20 monthly bill	**.019**	.951	**.000**
Utility: £25 monthly bill	.141	.634	**.000**
Utility: £30 monthly bill	.094	.263	**.000**

The numbers in the table are the significance of the variable as a driver of the question concerned. Any figure below 0.050 is significant at the 5% level. As can be seen:

- Age is a significant driver for all nine items and significant at better than 0.1% for eight of the nine
- Q94b – “My friends tend to come to me if they have questions about the internet” - is a significant driver for just one of the nine items
- Q94a - “I try to keep up with technology” - is a significant driver for half of the items, but is less significant than age (the number is usually larger)

Based on this analysis, we suggest that age is therefore is likely to be an important driver of the three variables considered here. The attribute in question 94a – “I try to keep up with technology” – appears to be an important supplementary driver.

H. Omnibus study of DTT preferences

This annex was written by Ofcom

In addition to the main online UHF survey run by BDRC Continental, Ofcom commissioned a face to face omnibus survey, including a selection of the questions about television services, to understand if the responses were similar amongst DTT viewers who do not have the internet, to those who do. Some of the (non conjoint) questions that were asked in the main survey were repeated, in order to test whether people who did not have the internet at home had different views to the rest of the sample. We concluded that opinions do not differ substantially. Below are some of the key points from the omnibus results.

Omnibus sample and demographics

- The survey was conducted by GFK NOP between 27 October – 1 November 2011
- The survey was conducted face to face with 1823 UK adults aged 16+
- 68% of the omnibus sample with Freeview on a main or secondary set had the internet at home.
- Across the omnibus sample, there was a skew in attitudes towards technology – those with the internet appeared to be more interested in technology e.g. when asked on a 1-10 scale their agreement that 'they try to keep up with technology', 38% of respondents without internet access at home said '1', compared to 6% of online households.
- In addition, those with the internet at home skewed towards the AB social group (26%) – compared to 10% of respondents without the internet.
- The omnibus sample had a higher proportion of respondents in older age groups (27% aged 65+) compared to the main UHF sample (18% aged 65+), and a higher proportion in the DE socio-economic group (10% compared to 25% in the main UHF research).
- Amongst omnibus respondents, those who had the internet at home were more likely to be younger (14% were over 65, compared to 58% of those without the internet) and more likely to be from the AB socio-economic group (26% compared to 10% of those without the internet). This will in part explain the findings set out below – i.e. where there are significant variations between those who have the internet and those who do not, this is likely to have been driven by age and SEG, as those without the internet were skewed towards older age groups and the C2DE socio-economic groups.

Responses to key DTT questions

- Awareness and ownership

Presented with the same list of TV services as in the main online research, respondents' awareness of these was generally lower amongst homes without the internet; for VoD, 3DTV, Catch-up TV, internet services/ apps and interactive services there is more than a 20 percentage points difference in awareness compared to those with the internet. Amongst omnibus respondents who had the internet at home, awareness of TV functions and services was similar to the online panel in the main UHF research.

Ownership of TV services was significantly lower among those households without the internet at home for HD ready TV (26% compared to 48% of respondents in homes with the internet), Catch-up TV (10% vs. 46%) and Digital Video Recorders (DVR) (14% vs. 36%).

- Current importance of TV products and services

Questions were asked about the importance respondents attach to these TV products and services, on a scale of 1-10 (where 10 is the most important). As with the main online research, the mean scores for this measure correlated with ownership levels, and thus respondents without the internet attached lower importance to the services than those with the internet e.g. the mean score for importance of HD ready TV was 3.46 for those without the internet, compared to 4.9 for those with the internet at home. **However, the services which ranked as most and least important were very similar across respondents with and without the internet**.

The top three most important services among homes with the internet were:

- DVR
- Catch-up TV
- HD ready TV

(This correlates with findings from the same question in the main online research).

Among homes without the internet, the top three most important services were:

- More Standard Definition TV channels
- HD ready TV
- DVR

As with the main UHF research, the *least* important services were the same amongst those with and without the internet – 3DTV, Ultra high definition, and Internet services and apps.

When comparing the mean scores for importance of TV services between those who have the internet at home, and those who do not, the largest difference was for catch-up TV (watching programmes broadcast in the previous week or so), where importance was lower amongst

those who do not have the internet at home. The mean score for those with the internet was 5.1, compared to 3.1 for those without the internet (as they would have had less exposure to services such as iPlayer, 4oD etc.). There were also smaller differences in the mean scores for the importance of DVRs and VoD – with these being marginally less important for non-internet households.

- Interest in use of TV services in the future

When we asked about '*interest in the use of these TV services in the future*' on a scale of 1-10, the responses, in terms of services there was most and least interest in, were largely consistent across households with and without the internet. Amongst those with the internet, consistent with the main UHF study, services with highest mean scores were DVR (5.9), catch-up TV (5.9) and HD ready TV (5.5). Amongst those without the internet at home, HDTV (4.2), more SD channels (3.9), and DVRs (3.6) had the highest mean scores.

- Most important TV product/ service over the next 10 years

In the omnibus, when respondents were asked to rank (first, second, third) what would be *the most important feature of TV over the next 10 years*, 'lots of SD channels' was the most frequent cited 'first' option for households with and without the internet, with 29% and 32% citing this respectively. The same was true in the main online UHF research. The results were very similar across those with the internet and those without, apart from for catch-up TV, with 20% of those with the internet putting this of first importance, compared to 8% of those without the internet at home (as they would have had less exposure to this service). The ability to record and pause/ rewind live TV was the most cited 'second' choice, and catch-up TV the top 'third' choice amongst internet and non-internet homes alike.

Overall, in the omnibus research, while awareness and ownership of TV functions/ services is lower among offline households, those who do not have the internet at home have very similar responses to those with the internet in terms of the interest in and importance placed on TV services/ functions. Therefore, while BDRC Continental's online sample does not include respondents who do not have the internet at home, our omnibus results show that opinions do not differ substantially amongst consumers with no internet, with the exception of level of interest in catch up TV services.

Extra question – aerial requirement causing switching

Ofcom also needed to understand what proportion of Freeview viewers would consider switching to a different TV platform if faced with the prospect of having to change their aerial

i.e. to understand if the prospect of incurring the costs or hassle of changing receiving antennas would mean they would consider moving to satellite or cable platforms.

We therefore asked an extra question on the omnibus (not included in the original main research):

In future, it could be that changes to how Freeview is broadcast will become necessary. This could cause the loss of reception for some or all Freeview channels in your home. To avoid this problem, you would need a new type of TV aerial on your roof. This normally involves the visit of an engineer which would cost about £100. If you live in a block of flats, you may also need agreement with your neighbours to install the new aerial. If you were going to lose reception of most Freeview channels unless you arrange and pay for changing your rooftop TV aerial, how likely or unlikely would you be to consider changing to a different type of television (such as satellite TV through sky or Freesat, or cable TV through virgin media)?

The responses were:

- Very likely: 11%
- Fairly likely: 22%
- Neither unlikely or likely: 23%
- Fairly unlikely: 15%
- Very unlikely: 29%

The data tables, summarising surveys responses, can be found here: [link]