Affordability of Communications Services

Consumer research technical annex

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Background

A1.1   We have been tracking consumers' attitudes and behaviours since June 2020 via monthly telephone interviews among c.1,100 UK households. The research focuses on affordability issues and asks about actions respondents have taken to help afford communications services in the month prior to interview. In April 2022 we switched to quarterly data collection.

A1.2   The 'September 2022 Affordability Report' primarily reports survey data from the July 2022 wave of research where sample sizes allow. It also uses combined data from waves of research in December 2021, February 2022, April 2022 and July 2022 to understand affordability issues among some subgroups, particularly those eligible for broadband social tariffs. This December 2021 to July 2022 combined data set was also used to conduct the segmentation analysis on respondents in a household that is eligible for social tariffs.

Analysis notes

A1.3   **Income analysis**: Analysis by income (e.g., the lowest household income category) is indicative only as a relatively high proportion (34% in July 2022) of respondents were not willing to reveal this information. Non-response levels are higher in C2 and DE socio-economic groups. Therefore, it is possible that affordability issues among the lowest income category are understated.

A1.4   **Age, ethnicity and working status:** These data points are based on the decision-maker for communications services in the household and do not necessarily reflect the make-up of the household. We do not collect these data for all members of the household.

A1.5   **Comparison with DWP data**: The proportion of the sample allocated to categories of benefit receipt[1] (20%) is lower than expected when compared to Ofcom analysis of data reported by the Department for Work and Pensions ("DWP").

A1.6   However, indications suggest benefits recipients are correctly represented in the overall sample, even if they have not identified themselves as being in receipt of benefits. For example, socio-economic group E is well-represented in the data among both older (65+) and younger (under 65) age groups; the non-response rate to this question was low (0.2%); and 6% of respondents stated they were only in receipt of an 'other' benefit not listed – potentially a means-tested benefit. It is also possible that some respondents in receipt of benefits may have been reluctant to share this information with interviewers, given the sensitivities.

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[1] Respondents are asked the following question: Could you please tell us whether you or anyone in your household currently receives any of the following benefits? Codes include 'none of these' as an option.

Statistical significance testing

A1.7   When comparing survey results obtained from sub-groups of the sample, we factor in sampling error margins by conducting two-tailed statistical tests[2] and we only report significant differences at the 95% confidence level.[3] When comparing results between one wave of research and another, we conduct two-tailed statistical tests and only report significant differences at the 99% confidence level. This higher significance level is used to account for any slight differences in methodology across waves.

Overview of methodology

A1.8   **Methodology:** CATIbus (Computer Assisted Telephone Interview) survey run by Ipsos MORI.

A1.9   **Core objective:** To provide Ofcom with continued understanding of consumer affordability issues in the UK communications markets (covering mobile, landline, fixed broadband, pay TV and on-demand TV services).

A1.10   **Sample size:** 1097 (July 2022)

A1.11   **Fieldwork period:** The fieldwork for the data referenced in this report was carried out during July 2022. Fieldwork generally takes place in the first week of each month and therefore experiences largely reflect those of the previous month e.g., July fieldwork will largely reflect experiences in June.

A1.12   **Sample definition:** UK adults aged 18+, identifying those who are either the sole or joint decision-maker for communications services in their household and/or those who personally use a mobile phone, for the main survey. Quotas are set on age, gender, working status and geographical regions. This sample also included a Northern Ireland boost, which was subsequently down weighted in the UK representative results.

A1.13   **Sampling process:** Respondents were identified using random digit dialing. The unweighted split between mobile and landline interviews from (July 2022) was 79% mobile and 21% landline and the weighted split was 78% and 22% respectively.

A1.14   **Weighting:** The overall data is based on, and weighted to be representative of the UK adult population (including non-telephone owning households) for the key demographic variables of; gender by age, region, social grade and working status. While the profile of the UK adult population is distinct from the profile of UK households, the questions were answered by a single person in the household and largely relate to what they, or anyone in their household has done or experienced. Therefore, we did not consider it necessary to

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[2] If we compare whether one demographic group is significantly different from another, two-tailed tests indicate whether the demographic group is significantly higher or lower than the comparison group. This differs from one-tailed tests, which explicitly test for differences in one direction. Therefore, if we hypothesised one group was significantly higher than the comparison and used a one-tailed test to assess this, if it turns out that group was significantly lower than the comparison, this would not be flagged.

[3] The confidence interval represents a range in which, if we repeated the survey 100 times, we would expect 95 of 100 samples' confidence intervals to contain a value that is equal to the actual number of households experiencing this issue.

reweight the data to be representative of UK households as we expect the decision maker sample to be representative of UK households.

A1.15   Full details of the sampled and weighted profile of the sole or joint decision-maker for communications services in their household and/or those who personally use a mobile phone are included below.

Full sample and weighting for combined dataset – July 2022

	Interviews achieved	Weighted
Total[4]	1097	1097
Gender		
Male	543 (49%)	530 (48%)
Female	545 (50%)	558 (51%)
Age groups		
18-24	98 (9%)	116 (11%)
25-34	157 (14%)	189 (17%)
35-44	164 (15%)	173 (16%)
45-54	200 (18%)	191 (17%)
55-64	199 (18%)	171 (16%)
65-74	156 (14%)	144 (13%)
75+	121 (11%)	112 (10%)
Regions		
North East	41 (4%)	42 (4%)
Yorkshire and Humberside	85 (8%)	91 (8%)
East Midlands	66 (6%)	78 (7%)
Eastern	89 (8%)	104 (9%)
Greater London	143 (13%)	141 (13%)
South East	124 (11%)	148 (14%)
South West	89 (8%)	95 (9%)
West Midlands	87 (8%)	98 (9%)
North West	95 (9%)	122 (11%)
Wales	61 (6%)	52 (5%)
Scotland	116 (11%)	94 (9%)
Northern Ireland	101 (9%)	33 (3%)
Socio-economic group		
A	52 (5%)	54 (5%)
B	226 (21%)	236 (22%)
C1	406 (37%)	262 (24%)
C2	132 (12%)	229 (21%)
D	83 (8%)	154 (14%)
E	115 (10%)	101 (9%)
Working status		
Any working	661 (60%)	648 (59%)
Any not working	432 (39%)	445 (41%)

[4] When totals in these categories do not sum to 100%, this is because some respondents chose not to answer this question, or a non-standard answer was provided. We omitted this category from this section as less than 100 people gave this answer. Data based on latest Office for National Statistics ("ONS") population estimates.

Population estimates quoted in the report

In this report we have included population estimates based on percentages from the July 2022 *Communications Affordability Tracker* and Office for National Statistics ("ONS") estimates on the number of households in the UK.

A1.16   These population estimate from the July 2022 *Communications Affordability Tracker* is:

a)   the number of households that experienced an affordability issue with any communications services 'in the last month' (29% of total UK households in July – see table below).

A1.17   As we cannot know exactly how many households in the UK are experiencing an issue, alongside each population estimate, we provide a 95% confidence interval. Confidence intervals indicate the range within which we are 95% sure contains the 'real' number of households in the UK in a particular group. These confidence intervals are given in the form of a range around the midpoint value (e.g., +/- 500,000 households) in the main report footnotes, and as an estimate of the upper or lower bound number of households in a particular group in the tables below.

A1.18   We generate these by calculating a confidence interval around the estimated number of households that are in our population of interest, and then multiplying these upper and lower bounds by the number of households in the UK.

A1.19   All generated household estimates and confidence intervals are reported to the nearest 100,000 and use the latest ONS population estimates. This is the standard rounding that Ofcom use in producing population estimates from survey data with a sample size of around 1100. Larger samples sizes are required in order to provide more precision.

	July 2022	ONS - number of households in UK[5]	Estimated number of households (rounded to nearest 100,000)
% and population estimate of UK households experiencing any affordability issue (in the last month)	**29%**	28,100,000	**8,000,000**
Upper bound	31%		8,800,000
Lower bound	26%		7,300,000
Overall Population Estimate			
8,000,000 +/- 800,000			

Broadband social tariff eligibility analysis

A1.20   We have undertaken analysis looking at the demographics of those eligible for a social tariff in comparison to those not eligible. The benefits that were included in the analysis to

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[5] Office for National Statistics, Families and households in the UK: 2021.

qualify as eligible were Income Support, Income-based Jobseeker's Allowance, Pensions Credit (Guaranteed Credit), Employment and Support Allowance (ESA), Universal Credit (and household has other earnings), Universal Credit (and household has no other earnings) and Personal Independence Payment (PIP).

A1.21 To give us a sufficiently robust data set of those currently eligible, we combined the last four waves of the *Communications affordability tracker* (December 2021, February, April and July 2022). This gave a total sample of 4406 respondents, of which 800 were eligible for a broadband social tariff and formed the basis of our analysis.

Segmentation analysis

Overview

A1.22 To further understand the demographics within the eligible group, we ran a segmentation on the same combined dataset (December 2021 to July 2022). We used latent class analysis, a statistical procedure that looks at how individuals respond to certain survey questions/categorical indicator variables and separates them into groups based on their responses. Individuals who answer the questions in a similar way will be placed in the same group, while those with different responses will be placed into the other groups.

A1.23 Our objective with this research was to find individuals with similar, identifiable demographics experiencing similar affordability issues across all communication services and with fixed broadband. Finding such groups would enable us to understand who might be at more risk of suffering an affordability issue and therefore be more likely to benefit from a broadband social tariff. This approach distinguishes the characteristics that would potentially make them identifiable to broadband providers for targeted advertisements.

A1.24 To create the latent groups in this instance we looked at responses to several indicator variables covering demographic characteristics and experience of affordability issues. This analysis found that separating out the eligible sample into four different groups was the optimal solution for creating coherent segments. Each respondent was then assigned to the group they were most likely to be aligned with. We then looked at how members of each group differed on each of the indicator variables used to create the segments, and additionally on further variables of interest, to understand what differentiated the groups. The table below shows the results of this analysis, while the rest of this section goes into more detail of the steps involved in conducting this analysis.

Group	Eligible households (%)	Any communications affordability issues (%)	Broadband affordability issues (%)	Description – from variables used to create the segments
Group 1	36%	3%	0%	Lower income, older, not working (many retired), 1 or 2 adults in household, no children in household
Group 2	24%	22%	2%	Middle to upper incomes, young or middle aged, working, half with children in household but more people in larger households, AB to C2 socio-economic groups
Group 3	27%	50%	15%	Lower income, younger, with children and in larger households, half working, more likely part-time, predominantly from DE socio-economic group
Group 4	14%	100%	39%	Lower income, mostly younger to middle age, no children and in smaller households. Half have someone in the household with a limiting condition. Most not working, from DE socio-economic group

Latent class analysis

A1.25   Latent class analysis is a statistical procedure used to identify subgroups of an overall population. To find these groups, patterns of response across categorical survey questions are discovered and respondents with similar patterns of response are grouped together.[6]

Sample

A1.26   This analysis was conducted on survey respondents from waves December 2021 to July 2022 that were eligible for a broadband social tariff due to them or a member of their household receiving at least one benefit included in eligibility criteria. This produced an unweighted sample size of 800 respondents. The demographics of this group are provided in the table below.

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[6] Weller, et al., Latent Class Analysis: A Guide to Best Practice.

Eligible sample of benefit recipients – December 2021 to July 2022

	Interviews achieved	Weighted
Total	800	872
Gender		
Male	329 (41%)	332 (38%)
Female	458 (57%)	526 (60%)
Age groups		
18-24	99 (12%)	111 (13%)
25-34	132 (17%)	167 (19%)
35-44	114 (14%)	146 (17%)
45-54	124 (16%)	140 (16%)
55-64	145 (18%)	128 (15%)
65-74	111 (14%)	107 (12%)
75+	75 (9%)	73 (8%)
Socio-economic group		
A	16 (2%)	16 (2%)
B	82 (10%)	95 (11%)
C1	207 (26%)	148 (17%)
C2	119 (15%)	179 (21%)
D	125 (16%)	202 (23%)
E	202 (25%)	196 (23%)
Working status		
Any working	319 (40%)	351 (40%)
Any not working	478 (60%)	518 (59%)

Variables used

A1.27   To produce groups that met our objectives for this analysis, we used the characteristics set out in the table below.

A1.28   When preparing the data for entry into the model, we made the following changes to some of the variables:

- We combined some response categories into broader groups. This allowed for ease of interpretability of the model and prevented respondents from being spread very thinly over many groups.
- Coded missing or 'don't know/refuse' responses into explicit groups. The model cannot deal with missing data, and so individuals who answered, 'don't know', 'refuse' or 'did not provide an answer' to a question were placed into a 'Don't know/refuse' category. Variables without a 'Don't know/refuse' group did not have anyone answering the question in this way.

The full list of variables used in the segmentation and their response categories are given below:

Variable	Categories of this variable
Age	- 18-24 - 45-64 - 65+
Income	- <£15,600 per year - £15,600-£36,399 per year - £36,400+ per year - Don't know/refuse
Presence of children in the household	- Has a child in the household - Has no children in the household
Number of people in the household	- 1 - 2 - 3 - 4+ - Don't know/refuse
Working Status	- Working - Not working - Don't know/refuse
Socioeconomic group	- AB - C1 - C2 - DE
Presence of someone with a limiting condition in the household	- Limiting condition in household - No limiting condition in household
Experience of an affordability issues with any communications service	- Experienced any type of communications affordability issue in the last month - Experienced no communications affordability issues in the last month
Experience of an affordability issues with fixed broadband	- Experienced an affordability issue with their fixed broadband service in the last month - Experience no affordability issues with their fixed broadband service in the last month

Model and model fit

A1.29 This latent class analysis was carried out using the R package poLCA, on unweighted data. To find how many groups were in the data we ran the analysis and created models containing 2 to 8 groups. We then assessed which model fit the data best by comparing the value of the Bayesian Information Criterion (BIC)[7] across the models, with a lower value indicating better fit. The model with the lowest BIC contained 4 groups, and this was therefore chosen as the final model for interpretation.

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[7] The Bayesian information criterion is a criterion used to select the best fitting model along a finite set of models. Its value is a trade-off between how well the model fits the data, and the number of parameters or groups included in the model. Lower values indicate better fit.

A1.30   The BIC value for each of the models fitted (from 2 to 8 groups) are given in the table below.

Number of groups in model	BIC statistic value
2	12478.97
3	12415.36
4	12409.61
5	12439.91
6	12487.50
7	12560.16
8	12656.37

Conditional probabilities of segment defining variables

A1.31   Another output of the model is the conditional probabilities of a member of each group belonging to each level of the indicator variables provided in the table below. These are used to understand the characteristics of each group considering what demographic and affordability groups they are most likely to belong to.

	Group 1	Group 2	Group 3	Group 4
Estimated prevalence in the sample	38%	25%	23%	14%
Income				
<£15,600	27%	0%	22%	33%
£15,600-£35,599	23%	26%	28%	28%
£36k+	6%	55%	3%	1%
DK/Refuse	45%	19%	47%	37%
Age				
18-44	16%	50%	83%	40%
45-64	35%	46%	15%	40%
65+	50%	4%	3%	21%
Working status				
Works	11%	87%	45%	23%
Doesn't work	87%	13%	55%	74%
DK	3%	0%	0%	2%
Child in Household				
Has a child	0%	45%	90%	0%
No children	100%	55%	10%	100%
Social Grade				
AB	11%	27%	4%	4%
C1	21%	43%	15%	24%
C2	11%	20%	17%	12%
DE	63%	7%	54%	49%

	Group 1	Group 2	Group 3	Group 4
DK/refuse	4%	2%	10%	12%
Affordability issue (any service)				
Had an issue	8%	26%	47%	100%
Did not have an issue	91%	74%	53%	0%
Fixed broadband affordability issue				
Had an issue	0%	2%	11%	27%
Did not have an issue	100%	98%	89%	73%
Limiting condition in Household				
Limiting condition	29%	22%	30%	47%
No limiting condition	70%	78%	69%	49%
Dk refuse	1%	0%	1%	4%
Number in Household				
1	49%	5%	0%	49%
2	40%	21%	20%	31%
3	7%	27%	31%	18%
4+	3%	47%	50%	1%
Refused	0%	1%	0%	2%

Additional analysis into the characteristics of the segments

A1.32   After this initial summary of the characteristics of each segments, we extracted each respondent's group membership as an additional variable. From here we ran some additional analysis to further understand the characteristics of each segment. This analysis was run on the weighted data, and looked at more granular versions of the variables used to define the segments (e.g. income and age), as well as additional variables that were not used in the segmentation analysis process (e.g. types of affordability issues experienced).

	Group 1	Group 2	Group 3	Group 4	Average
Prevalence in the total sample	36%	24%	27%	14%	NA
Base Size	309	210	232	120	NA
Affordability issues					
Cancelled service	2%	6%	19%	38%	12%
Made changes to service	1%	14%	24%	39%	16%
Reduced spend elsewhere	2%	11%	28%	52%	18%
Missed payment	0%	1%	10%	16%	5%
Made changes to payment method	0%	1%	12%	20%	6%
Any affordability issues	3%	22%	50%	100%	34%

	Group 1	Group 2	Group 3	Group 4	Average
Affordability issues – service[8]					
Fixed broadband	0%	2%	15%	39%	10%
Landline	0%	0%	5%	26%	4%
Mobile	0%	10%	26%	22%	13%
Pay TV	3%	7%	24%	56%	17%
On Demand	1%	8%	18%	47%	15%
Income					
Up to £10,399	14%	0%	11%	24%	11%
10,399-15,599	12%	0%	10%	12%	9%
15,600-25,999	18%	17%	19%	25%	19%
26,000-36,399	7%	11%	12%	7%	9%
36,400-51,999	1%	23%	0%	1%	6%
52,000-77,999	2%	19%	1%	0%	5%
78k+	1%	12%	0%	0%	3%
Don't know	29%	10%	33%	22%	24%
Refuse	17%	8%	14%	10%	13%
Benefits Received					
Income support	5%	5%	17%	8%	8%
Job seekers allowance	7%	5%	3%	4%	5%
Pensions credit guaranteed	35%	12%	3%	15%	18%
Pensions credit no guaranteed credit	3%	1%	0%	1%	1%
ESA	15%	11%	6%	28%	13%
Universal credit (other earnings)	16%	33%	56%	36%	34%
Universal credit (no other earnings)	11%	7%	22%	15%	14%
PIP	39%	44%	26%	38%	37%
Carers' allowance	7%	11%	15%	9%	10%
Other	9%	6%	16%	11%	10%
Working status					
Full time	6%	57%	12%	12%	20%
Part time (8-29 hrs)	5%	12%	24%	9%	12%
Part time (<8 hrs)	0%	5%	1%	0%	2%
Housewife	2%	5%	17%	0%	6%
Self employed full time)	1%	12%	1%	2%	4%

[8] For all of the specific service statistics, the base is those in the group that own or recently owned (cancelled in the last month) the service, rather than all members of the group.

	Group 1	Group 2	Group 3	Group 4	Average
Self-employed (part time)	1%	6%	2%	3%	2%
Full time student	2%	3%	8%	8%	5%
Still at school	0%	0%	0%	2%	0.2%
Unemployed and seeking work	9%	2%	12%	11%	8%
Retired	52%	1%	4%	21%	23%
Not in paid work due to long term illness or disability	18%	0%	10%	27%	13%
Not in paid work for other reason	5%	1%	10%	7%	5%
Age					
18-24	5%	11%	24%	18%	13%
25-34	7%	23%	36%	12%	19%
35-44	7%	24%	25%	14%	17%
45-54	13%	24%	11%	18%	16%
55-64	21%	16%	2%	20%	15%
65-74	26%	3%	2%	14%	12%
75+	21%	1%	1%	4%	8%

Definitions

Any affordability issue: Households who experienced at least one affordability issue with a communications service. Some households experienced more than one affordability issue either with a given service and/or across multiple services. The nets for 'any affordability issue' only count multiple issues/services once to avoid double counting.

Impacting or limiting conditions: These are households with a resident that has any conditions that impact or limit their use of communication services. These can include, but are not restricted to, problems with hearing, eyesight, mobility, mental abilities or mental health.

Currently unemployed and looking for work: These are respondents who when asked about their current work status, answered that they are currently unemployed and seeking work.

Receive at least one benefit: These are households who receive one or more of the following benefits: income support, income-based job seeker's allowance, pensions credit (guaranteed credit), pensions credit (no guaranteed credit), employment and support allowance (ESA), universal credit (both with and without earnings in addition to this), personal independence payment (PIP), carer's allowance, or 'other' form of benefit. Those who receive more than one form of benefit are not double counted.

Receive means tested benefits, zero earnings: These are households who receive one or more of the following benefits: income support, income-based job seeker's allowance, employment and

support allowance (ESA), universal credit (without earnings in addition to this). Those who receive more than one form of these benefits are not double counted.

Receive means tested benefits: These are households who receive one or more of the following benefits: income support, income-based job seeker's allowance, employment and support allowance (ESA), universal credit (both with and without earnings in addition to this). Those who receive more than one form of these benefits are not double counted.

Eligible for social tariffs: These are households who receive one or more of the following benefits: income support, income-based job seeker's allowance, employment and support allowance (ESA), pensions credit – guaranteed credit, universal credit (both with and without earnings in addition to this) or personal independence payment (PIP). Those who receive more than one form of these benefits are not double counted.

DE socio-economic group: Households where the chief income earner (CIE) falls within one of the following categories: semi-skilled and unskilled manual workers, state pensioners, casual and lowest grade workers, unemployed with state benefits only[9].

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[9] This definition is provided by the National Readership Survey.