Technical details

The 2020 British Social Attitudes (BSA) survey was undertaken differently from its predecessors because of the public health measures introduced in the wake of the COVID-19 pandemic. Instead of interviews being conducted face-to-face by an interviewer as was the practice for previous years of BSA (see Curtice et al, 2020 for details), letters were sent to a random sample of addresses inviting up to two household members to complete the survey online, with an option to be interviewed by telephone if preferred. This chapter provides details of the design of the BSA 2020 survey, and how it differed from previous years of BSA.

Most questions on the 2020 survey were asked of the full sample (3,964 respondents). Some questions were asked of a random third of the sample (1,332 respondents).

Sample design

The BSA survey is designed to yield a representative sample of adults aged 18 or over. Since 1993, the sampling frame for the survey has been the Postcode Address File (PAF), a list of addresses (or postal delivery points) compiled by the Post Office.

For practical reasons, the sample is confined to those living in private households. People living in institutions (though not in private households at such institutions) are excluded, as are households whose addresses were not on the PAF.

Before 2020 a geographically clustered and stratified sample of addresses was selected. Interviewers then called at each address. If there were more than one dwelling unit (DU) or household at the issued address, a random selection of one household was made at which to seek an interview.

The sampling and selection method used in 2020 is different from previous years, because of the change in survey mode from face-to-face to primarily online.

Selection of addresses and dwelling units

In 2020 an unclustered sample of addresses was drawn from the PAF. Addresses located north of the Caledonian Canal and on the Isles of Scilly were excluded in order to be consistent with previous years of BSA. Prior to selection, all PAF addresses within England, Scotland and Wales were sorted by: (a) region; (b) population density; and (c) tenure profile (% owner occupation). A systematic (1 in N) random sample of addresses was then drawn.

The list of sampled addresses was then split into a main sample and two reserve samples, the latter of which were to be issued if necessary to meet the target number of around 4,000 completed interviews (18,450 addresses in the main sample and 3,690 in each reserve sample). The main sample and first reserve sample were issued. In total, 22,140 addresses were issued. Every issued address was sent an invitation letter and up to two reminder letters.

The initial invitation to participate in the online survey was made by post. Consequently, in instances where the selected address contained more than one DU or household it was not possible to make a random selection of a single DU/household. Instead, the selected household was effectively the one which first opened the invitation letter.

Selection of individuals

Prior to BSA 2020 one eligible respondent per household was selected by the interviewer using a computer-generated random selection procedure. In 2020, where a selected household contained more than one person aged 18 and over it was decided not to attempt to select at random one person to be interviewed. Although it is possible to provide instructions to randomly select one person per household in a push-to-web survey, studies have shown that respondent compliance with the instructions is poor which introduces the risk of self-selection bias. Instead, the invitation and reminder letters contained two unique access codes that allowed any two adults aged 18 or over living within the household to log in and complete the questionnaire.

The 2020 questionnaire and fieldwork

The questionnaire

Each address was allocated at random to one of six versions of the questionnaire.

For each version of the questionnaire the mean interview length when completed online was:

- Version 1: 32 minutes
- Version 2: 31 minutes
- Version 3: 34 minutes
- Version 4: 33 minutes
- Version 5: 37 minutes
- Version 6: 36 minutes

Communication strategy

The principles for designing the invitation and reminder letters were based on the Tailored Design Method (Dillman, 2014), an approach to designing postal, web and telephone surveys based on social exchange theory, that has the goal that the respondent believes that the expected benefits of responding outweigh the costs, therefore increasing the likelihood of response. The main aim of the letters was to provide all the relevant information a respondent requires to complete the survey, and to answer immediate questions they might have had. The communications were designed to ensure that each successive contact built on the previous one, varying the motivational statements to increase the likelihood of converting non-responders.

1. Invitation letter

A letter was sent to each sampled address inviting adults aged 18 or over and resident at the household to take part in the survey. As noted earlier, up to two adults could take part in each household and two sets of unique login details were provided to each address. The letter explained

the purpose of the study, how the address was selected, and stressed the importance of taking part. The letter also confirmed that the respondent would receive a £10 shopping voucher on completing the survey as a thank you for taking part. The invitation letter mainly directed respondents to taking part online, merely presenting the telephone interview as an option in the frequently asked questions.

2. First reminder letter
About a week after the invitation letter was mailed, sampled addresses were sent a reminder letter. Owing to the lead-in time for producing and printing this letter, it was sent to all sampled addresses. The reminder letter built on the invitation letter by informing respondents of the advantages of taking part, and provided details of how to access the survey. As in the invitation letter, respondents were directed mainly towards taking part online.

3. Second reminder letter
About a week after the first reminder letter, a second reminder letter was sent to all households where no-one had taken part, or only one person had done so. Households that had opted out of the survey by contacting the office were also excluded from this mailing. This letter differed from the invitation and first reminder letters by making it clearer that respondents could telephone the office to complete a telephone interview. In the first reminder and invitation letter this information was only included within the frequently asked questions on the reverse of the letter. The second reminder letter was sent to 17,977 of 18,450 addresses that formed part of the main sample. During fieldwork a decision was made to issue 3,690 addresses from the reserve sample, in order to meet the target number of interviews. Owing to the compressed fieldwork period for the reserve sample, the second reminder was sent to all 3,690 addresses in the reserve sample.

Fieldwork

Fieldwork was carried out between 30th October and 7th December 2020. A mixed-mode design was used. Sampled addresses were sent letters inviting up to two respondents per household to complete the online survey. Up to two reminder letters were sent to addresses where no-one or only one person had so far taken part. While respondents were encouraged to complete the survey online, they were given the option of conducting the survey by telephone. This was to ensure that the offline population, and those who are less likely to take part online, still had the opportunity of taking part. The fieldwork period was the same for both modes.

Telephone interviews were conducted by interviewers drawn from The National Centre for Social Research's regular panel. Before fieldwork began, interviewers attended a briefing conference to familiarise themselves with the questionnaire.

Response rate

Interviews were completed with 3,964 adults in 2,898 households.

Response rates for push-to-web surveys are not necessarily directly comparable with those achieved in face-to-face surveys. Whereas the BSA face-to-face survey aimed to select at random one individual per household to take part, the push-to-web approach allowed up to two people per

household to participate. Therefore, the closest comparison that can be made is between the household-level response rate in the push-to-web survey (that is, the proportion of households from which at least one fully productive case was achieved), and the overall response on a face-to-face survey. For BSA 2020, the household-level response rate was 13.1%. However, information on non-responding addresses is not fully captured in push-to-web surveys, so it is not possible to record accurately the number of selected addresses which were not eligible because for example they were unoccupied or not a main residence. If we assume the proportion of ineligible addresses was the same in 2020 as in the 2019 BSA survey (9%), the estimated household-level response rate in 2020 was 14.4%. The household-level response rate was therefore somewhere between 13.1% and 14.4% (see Table 1).

Table 1 BSA 2020 household-level response rate

Issued addresses	22,140
Estimated number of ineligible addresses*	9%
Eligible addresses	20,147
Number of addresses with at least one complete	2,898
Unadjusted response rate	13.1%
Adjusted response rate	14.4%

***** *Estimate based on BSA 2019 % of ineligible addresses*

On the 2019 face-to-face BSA survey the household response rate was between 44.3% and 44.8%. The response rate in 2020 was therefore considerably lower than in 2019 (as would be expected given a push-to-web survey mode).

It is also possible to estimate an individual-level response rate for the push-to-web survey. This relies on estimating the number of eligible adults per eligible address. If we assume that this figure is 1.89,[1] a total of 38,078 adults were eligible to respond. Given that 3,964 survey responses were received, this means the individual level response rate was 10.4%.

Weighting

It is known that certain subgroups in the population are less likely than others to respond to surveys. This is referred to as differential non-response. These groups can end up being under-represented in the sample, which can bias the survey estimates. Weights are applied to the BSA survey that correct for these biases. Such non-response could occur within households as well as at the level of the selected postal address. As explained above, every address had an equal probability of being selected, while at each address up to two people in one household were invited to take part. Weighting was therefore required to adjust for differential non-response by households and by individuals within households. Separate non-response models were constructed to deal with each of these elements of non-response. Finally, calibration weighting was used to adjust the profile of the

[1] This estimate is derived from the ONS Labour Force Survey (ONS, 2021)

responding sample so that it matched the population in terms of age, sex, education, tenure, ethnicity and region. The different stages of the weighting scheme are outlined in detail below.

Non-response model

As already noted, given that up to two people per household could respond in 2020, non-response could occur at the household level, when no one from the selected address responds, or within households, when only one person responds in households with two or more adults. Where information is available about non-responding addresses, the propensity for households (at selected addresses) to respond can be modelled, and the results used to generate a non-response weight. Similarly, where information is available about responding households, the expected number of responses within these households can also be modelled. Hence there are two components to the non-response weights – one for between household non-response and one for within household non-response. These are intended to reduce bias in the responding sample resulting from differential response to the survey.

Between household response was modelled using logistic regression, with the dependent variable indicating whether or not someone at each selected address responded to the survey. Responding addresses were coded 1 and non-responding addresses were coded 0. A number of variables that described the character of the area in which a selected address was located, including aggregated census data and deprivation indices, were considered for possible inclusion in the response model. The model generated an estimated probability of responding for each selected address. From this model, the between household non-response weight was calculated as the inverse of this estimated probability of responding for each responding address.

The variables found to be related to household response, once the other predictors included in the model have been controlled for, were: region, ONS 2011 Area Classification (ONS 2011), the percentage of residents with a degree in the postcode sector (in tertiles), the percentage of ethnic minority residents in the postcode sector (in tertiles), and the percentage of owner-occupied properties (in tertiles). The model shows that the likelihood of response increases with higher rates of home ownership, higher percentages of ethnic minority residents and higher rates of degree level education. The full model is shown in Table 2.

Table 2 Model of level of between household response

Variable	Odds	Significance (p value)
Region		0.018
North East	(Reference)	
North West	0.940	0.604
Yorkshire and the Humber	1.049	0.701
East Midlands	1.186	0.173
West Midlands	1.058	0.649
East of England	0.947	0.658
London	0.805	0.106
South East	1.014	0.905
South West	1.144	0.269
Scotland	1.089	0.487
Wales	0.928	0.594
ONS output area classification		0.001
Rural residents	(Reference)	
Cosmopolitans	1.106	0.429
Ethnicity central	0.881	0.394
Multicultural metropolitans	0.758	0.014
Urbanites	1.005	0.952
Suburbanites	0.949	0.497
Constrained city dwellers	0.761	0.021
Hard pressed living	0.829	0.032
Percentage with degree (tertiles)		0.000
1 (lowest)	(Reference)	
2	1.221	0.000
3 (highest)	1.652	0.000
Percentage ethnic minority (tertiles)		0.032
1 (lowest)	(Reference)	
2	1.137	0.017
3 (highest)	1.172	0.028
Percentage owner-occupied (tertiles)		0.000
1 (lowest)	(Reference)	
2	1.358	0.000
3 (highest)	1.373	0.000
Constant	0.093	0.000

The level of non-response within households was also modelled using logistic regression, with the dependent variable indicating whether each responding address had one response to the survey or two. Addresses that contained only one adult and addresses from which there was not any response were not included in this stage of the non-response modelling. As well as the area-level information used before, additional household-level variables (gathered from the responses that were received) such as household size, tenure, whether anyone in the household has a degree and income were also considered for possible inclusion in the model. The predicted probability from the model of two people responding (rather than one) was used to estimate the expected number of completed surveys in responding households. This was calculated as (1-p) + 2p = 1+p, where p is the probability of two responses. The within household non-response weight was calculated as the ratio of the number of adults in the household (capped at 4) divided by the expected number of responses for each responding household, i.e. numad / (1+p), where numad is the number of adults in the household (capped at 4).

The variables found to be related to the probability of receiving two responses once the other predictors included in the model have been controlled for were: region, index of multiple deprivation rank (halves in Scotland and Wales, tertiles in England), total pre-tax household income, the percentage of ethnic minority residents in the postcode sector (in tertiles), household tenure, whether anyone in the household has a degree or a higher educational qualification, the percentage of economically active residents in the postcode sector (in tertiles) and whether there were any children under 16 in the household. The model shows that the likelihood of having two respondents per household increases with higher percentages of ethnic minority and economically active residents in the local area and decreases in rented households and in households with children and on the lowest level of income. The full model is shown in Table 3.

Table 3 Model of number of responses per household

Variable	Odds	Significance (p value)
Region		0.000
North East	(Reference)	
North West	0.801	0.382
Yorkshire and the Humber	0.725	0.226
East Midlands	0.688	0.177
West Midlands	0.916	0.744
East of England	0.543	0.022
London	0.359	0.000
South East	0.449	0.002
South West	0.705	0.182
Scotland	0.647	0.158
Wales	0.328	0.002
Index of Multiple Deprivation*		0.026
Most deprived in England	(Reference)	
Middle deprived in England	0.747	0.024
Least deprived in England	0.969	0.812
Most deprived in Wales	2.190	0.050
Most deprived in Scotland	1.212	0.513
Total household income (pre-tax)		0.000
Prefer not to answer	(Reference)	
Less than £1,410 per month	0.362	0.000
1,411 - £2,560 per month	0.977	0.884
2,561 - £4,350 per month	0.821	0.206
4,351 per month or more	0.877	0.431
Percentage ethnic minority (tertiles)**		0.001
1 (lowest)	(Reference)	
2	1.200	0.115
3 (highest)	1.636	0.000
Household tenure		0.012
Ownership -outright	(Reference)	
Ownership - mortgage/shared	0.865	0.207
Renting/other	0.696	0.003
Degree educated (or above) in household		0.091
Yes	(Reference)	
No	1.179	0.091
Percentage economically active (tertiles)		0.037
1 (lowest)	(Reference)	
2	1.043	0.716
3 (highest)	1.338	0.020
Children under 16 in household		0.036
No	(Reference)	
Yes	0.799	0.036
Constant	1.762	0.033

** There were 3 categories in the model in England (most, middle, least) and 2 categories in Wales and Scotland (most, least). The 'least deprived' categories in Wales and Scotland are not shown because the sample size in these two categories was too small for a regression coefficient to be computed once all the other variables were controlled for.*

*** It is worth noting that this does not indicate a higher response rate among Black and Minority Ethnic groups overall, as they were underrepresented in the unweighted sample (see Table 4).*

Calibration weighting

The final stage of weighting was to adjust the composite non-response weight so that the composition of the weighted sample was in line with the best available population estimates of the characteristics of adults in Britain.

Only adults aged 18 or over living in Great Britain were eligible to take part in the survey. Consequently the data have been weighted to the British population aged 18 and over according to the 2019 mid-year population estimates published by the Office for National Statistics/General Register Office for Scotland (ONS, 2020) for age, sex and region, and the latest ONS Labour Force Survey (ONS, 2021) for education, ethnicity and housing tenure. The demographic composition of the original and finally weighted sample, and how this compares with the population estimates, is shown in Table 4.

Table 4 Demographic characteristics of the BSA 2020 sample

	GB population aged 18 and over	Unweighted respondents	Respondents weighted by final weight
Region	%	%	%
North East	4.2	3.9	4.2
North West	11.3	10.8	11.3
Yorkshire and Humber	8.5	8.6	8.5
East Midlands	7.5	8.2	7.5
West Midlands	9.0	9.2	9.0
East of England	9.5	9.4	9.6
London	13.5	10.3	13.5
South East	14.1	15.4	14.1
South West	8.8	10.4	8.8
Wales	4.9	4.3	4.9
Scotland	8.7	9.3	8.7
Sex and age	%	%	%
M 18–24	5.5	2.2	5.5
M 25–34	8.6	6.1	8.6
M 35–44	7.9	7.1	7.9
M 45–54	8.5	7.2	8.5
M 55–64	7.6	8.6	7.6
M 65-69	3.1	4.6	3.1
M 70+	7.7	9.2	7.7
F 18–24	5.2	3.8	5.2
F 25–34	8.5	9.8	8.5
F 35–44	8.0	9.5	8.0
F 45–54	8.7	9.2	8.7
F 55–64	7.9	10.4	7.9
F 65-69	3.3	4.9	3.3
F 70+	9.5	7.6	9.5
Age and education	%	%	%
18-34 Degree/equivalent	11.1	11.9	11.1
18-34 other qualification	15.7	9.3	15.6
35-54 Degree/equivalent	13.6	16.8	13.6
35-54 other qualification	17.9	15.0	17.9
55-69 Degree/equivalent	5.5	11.6	5.5
55-69 other qualification	13.7	15.0	13.7
70+	17.1	16.8	17.2
Tenure	%	%	%
Owned outright	34.1	41.9	34.1
Mortgage owned	33.7	31.6	33.7
Rent or other	32.2	26.5	32.1
Ethnicity	%	%	%
White	89.0	91.2	89.1
Black and Minority Ethnic	11.0	8.8	10.9
Base	*51,220,471*	*3,964*	*3,964*

The calibration weight (BSA20_wt_new) is the final weight used in the analysis of the 2020 survey; this weight has been scaled so that the total sample size is unchanged. The weights range from a minimum of 0.17 to a maximum of 5.37.

Weighting efficiency and effective sample size

The effect of the sample design on the precision of the survey estimates is indicated by the effective sample size (neff). The effective sample size measures the size of an (unweighted) simple random sample that would achieve the same precision (standard error) as the design that has been

implemented. If the effective sample size is close to the actual sample size, then we have an efficient design with a good level of precision. The lower the effective sample size is, the lower the level of precision. The efficiency of a sample is given by the ratio of the effective sample size to the actual sample size. The average effective sample size (neff) of BSA 2020 after weighting is 2,914 with an efficiency of 74%. How this compares with earlier BSA years is discussed in the BSA 2020 sample quality review section below.

Weighted bases

All the percentages presented in this report are based on weighted data. The unweighted bases are presented in the tables. Details of weighted and unweighted bases for standard demographic variables are shown in Table 5.

Table 5 Weighted and unweighted bases for standard demographic variables

Variable	Weighted base	Unweighted base
Sex		
Male	*1936*	*1781*
Female	*2016*	*2168*
Age		
18-24	*423*	*236*
25-34	*678*	*629*
35-44	*633*	*658*
45-54	*682*	*650*
55-59	*288*	*336*
60-64	*316*	*400*
65+	*934*	*1040*
Ethnicity		
White	*3471*	*3564*
Black and Minority Ethnic	*434*	*349*
Class group (NSSEC)		
Managerial & professional occupations	*2166*	*2415*
Intermediate occupations	*462*	*452*
Employers in small org; own account workers	*240*	*230*
Lower supervisory & technical occupations	*307*	*268*
Semi-routine & routine occupations	*540*	*421*
Highest educational qualification		
Degree	*1424*	*1838*
Higher education below degree	*648*	*589*
A level or equivalent	*679*	*520*
Qualifications below A levels (such as GCSEs/O Levels)	*795*	*694*
Other	*77*	*68*
No qualification	*315*	*227*
Marital status		
Married or in a civil partnership	*2056*	*1411*
Separated or divorced after marrying or civil partnership	*409*	*282*
Widowed/surviving partner from a civil partnership	*158*	*354*
Not married	*1280*	*717*

BSA 2020 sample quality review

As outlined above, in 2020 the COVID-19 pandemic meant that the face-to-face approach traditionally used on BSA was not feasible. In order to continue to deliver the survey and capture key attitudinal data during the pandemic, the 2020 BSA was conducted using a push-to-web design, with the option of responding by telephone if respondents preferred.

Changing the way a survey is conducted brings a risk of both selection and measurement effects. Selection effects are a form of non-response bias that arise because different ways of collecting data have different coverage and response rates, meaning that the profile of people who complete a survey in one mode may differ from the profile of people who complete the survey in another mode. Measurement effects arise because people may answer the same question in different ways depending on how the question was administered, e.g. face-to-face, online, etc.

At the same time, as outlined above the response rate obtained for BSA 2020 (between 13.1% and 14.1%) was considerably lower than that for BSA 2019 (between 44.3% and 44.8%). The lower response rate for BSA 2020 increases the risk of non-response bias in the BSA 2020 sample.

Because of these effects, it is possible that differences between the estimates obtained by BSA 2020 and those of earlier years could be a consequence of the change of methodology rather than a true change in attitudes. Meanwhile, the COVID-19 pandemic meant that it was not possible to run a face-to-face survey at the same time as the push-to-web survey, which would have enabled a direct comparison to be made that could unpick the selection and measurement effects. Consequently, some caution is needed when interpreting changes in estimates over time.

However, efforts have been made to control and limit these effects through the application of the weighting scheme outlined above.

Aims and approach

The aims of this review are to analyse the representativeness of the sample generated by the push-to-web approach and to identify any parts of the population which are underrepresented. Comparisons are made with the 2019 BSA sample – the most recent survey conducted using the face-to-face mode – and with the known national profile. The analysis compares how well the 2020 BSA and the 2019 BSA represent the adult population, and whether, as a result, there is any apparent risk that the 2020 BSA weighted sample is materially different from the 2019 BSA weighted sample.

Weighted comparison

Differences in the sample design between BSA 2019 and BSA 2020 mean that differences between the unweighted samples for both surveys are to be expected. In particular, in BSA 2019 a single adult per household was selected for interview, whereas in BSA 2020 up to two adults per household could take part. This means that the BSA 2019 unweighted sample is biased towards single person households.

In BSA weighting is used to correct for any unequal probability of selection (of addresses or individuals) and for any biases caused by differential non-response. A calibration weight is calculated

so that the weighted sample in each year is in line with the best available population estimates of the characteristics of adults in Great Britain. The BSA weighting scheme for BSA 2020 is described above, and that for BSA 2019 in the Technical details for BSA 2019 (Curtice et al 2020).

This review therefore focuses on the extent to which the fully weighted 2019 and 2020 BSA samples are comparable with each other and with the best available national profile data.

In contrast to the figures in the main body of this report, the figures for the BSA surveys are those obtained after excluding participants who said ‘don’t know’ or ‘prefer not to say’.

The 2020 push-to-web BSA uses a slightly different approach to calibration weighting than the face-to-face 2019 BSA. Whereas the face-to-face BSA is weighted to match the population profile of age within sex and region the push-to-web survey has been weighted to a more detailed population profile, including by education, tenure and ethnicity as well as by age, sex and region.

Table 6 outlines the weighted profiles for key demographic variables of both the 2019 and 2020 BSA surveys. As would be expected, the corrective weighting produces sample profiles which are generally in line with the national estimates from which the calibration targets have been sourced.
However, even with this corrective weighting, some notable residual misrepresentation remains. Both the face-to-face and push-to-web designs underrepresent those in employment. The face-to-face design overrepresents those who rent their accommodation (at the expense of those with mortgages), and those without qualifications (at the expense of those with degrees). The push-to-web design, in contrast, overrepresents those on higher incomes.

Table 6 Profile of achieved sample (after final weights) BSA 2019 and 2020

	National	BSA 2019	BSA 2020
Sex*	%	%	%
Male	48.9	48.9	49.0
Female	51.1	51.1	51.0
Unweighted base		*3,224*	*3,949*
Age*			
18-24	10.7	10.9	10.7
25-34	17.1	17.2	17.2
35-44	16.0	16.0	16.0
45-54	17.2	17.5	17.2
55-59	8.4	8.2	7.3
60-64	7.1	7.0	8.0
65+	23.5	23.1	23.6
Unweighted base		*3,218*	*3,949*
Interlocked age/sex*			
Male: 18-24	5.5	5.5	5.5
Male: 25-34	8.6	8.6	8.7
Male: 35-44	7.9	7.9	8.0
Male: 45-54	8.5	8.6	8.5
Male: 55-59	4.1	4.1	3.4
Male: 60-64	3.5	3.5	4.2
Male: 65+	10.8	10.6	10.8
Female: 18-24	5.2	5.4	5.2
Female: 25-34	8.5	8.6	8.5
Female: 35-44	8.0	8.1	8.0
Female: 45-54	8.7	8.9	8.7
Female: 55-59	4.2	4.2	3.9
Female: 60-64	3.6	3.5	3.8
Female: 65+	13	12.5	12.8
Unweighted base		*3,218*	*3,936*
Number of adults per household**			
Mean	1.9	2.1	2.3
Ethnicity***			
White	89.0	85.3	88.9
Black and minority ethnic	11.0	14.7	11.1
Unweighted base		*3,218*	*3,913*
Region*			
North East	4.2	4.2	4.2
North West	11.3	11.3	11.3
Yorkshire & the Humber	8.5	8.5	8.5
East Midlands	7.5	7.5	7.5
West Midlands	9	9.0	9.0
East	9.5	9.6	9.6
London	13.5	13.5	13.5
South East	14.1	14.1	14.1
South West	8.8	8.8	8.8
Wales	4.9	4.9	4.9
Scotland	8.7	8.7	8.7
Unweighted base		*3,224*	*3,964*

Table 6 Profile of achieved sample (after final weights) BSA 2019 and 2020 (continued)

	National	BSA 2019	BSA 2020
Respondent income (quartiles)****			
Less than £1100 p.m.	18.4	18.4	12.7
£1101 - 1,830 p.m.	25.3	25.3	23.3
£1,831 - 2,890 p.m.	21.1	21.1	25.1
£2,891 or more p.m.	18.4	18.4	25.8
Refused information	11.6	11.6	13.0
Don't know	5.2	5.2	-
Unweighted base		*573*	*2,211*
Tenure***			
Owned outright	34.1	32.2	33.7
Mortgage owned/shared ownership	33.7	29.7	33.9
Rent/other	32.2	38.1	32.3
Unweighted base		*3,209*	*3,941*
Highest educational qualification***			
Degree or equivalent	30.1	25.4	30.2
Other qualification	47.3	47.1	47.3
No qualifications	5.4	10.8	5.4
Age 70+	17.1	16.7	17.1
Unweighted base		*3,173*	*3,940*
Economic activity***			
1 In employment	61.9	57.8	57.0
2 ILO unemployed	3.2	5.1	5.4
3 Inactive	34.9	37.1	37.5
Unweighted base		*3,224*	*3,949*

** Source of national figures: ONS mid-year population estimates (mid-2019) (ONS, 2020)*

*** Source of national figures: ONS mid-year population estimates (mid-2019) (ONS, 2020); ONS Labour Force Survey (ONS, 2021). Please note that the national figure is for UK*

**** Source of national figures: ONS Labour Force Survey (ONS, 2021)*

***** Source of national figures: BSA 2019 (weighted)*

Summary of differences

To summarise the differences in the representativeness of the samples generated in the face-to-face and push-to-web modes, and to analyse the impact of corrective weighting, one measure that can be used is the index of dissimilarity. (Duncan & Duncan, 1955)

For this purpose, for each geodemographic variable we use the following formula:

$D = ½ \Sigma n(BSA_i – MYE \text{ or } LFS_i)$[1]

Where n = number of categories; BSAi = percentage in category i in the relevant BSA survey, and MYE/LFSi = percentage in category i in the mid-year estimates (MYEs) (ONS, 2020) or Labour Force Survey (LFS) (ONS, 2021).

[1] This formula is sourced from Koch & Achim, 2018.

The index of dissimilarity (D) measures the percentage of respondents that would need to move between the categories of a variable to produce the same distribution as the target population (in this instance the MYEs or LFS). For each variable it produces a score between 0 and 100, where 0 indicates that there is no dissimilarity between the BSA and the target population and 100 means that there is complete dissimilarity. This measure is non-directional, showing the total error, not the direction of that error.

Table 7 shows the indices of dissimilarity for all nine geo-demographic variables included in Table 6. This shows that the weighted 2019 and 2020 surveys have similar levels of dissimilarity from the target population. For the 2019 survey the mean value of D across all nine variables is 0.6. That means that, on average 0.6% of respondents would have to change categories to achieve the target distribution. The comparable figure for the 2020 survey is 0.4%.

Table 7 Index of dissimilarity

Variable	BSA 2019	BSA 2020
Sex	0.0	0.0
Age	0.1	0.2
Interlocked age/sex	0.0	0.1
Ethnicity	1.9	0.1
Region	0.0	0.0
Income	0.0	1.7
Tenure	1.0	0.1
Education	1.3	0.0
Economic activity	1.4	1.6
Mean	**0.6**	**0.4**

It is reassuring to note that the weighted BSA 2020 data are at least as representative on these characteristics overall as the weighted BSA 2019 data.

However, while it is possible to use weighting to make the final sample look like the population it is drawn from, weighting cannot reduce any bias that arises from differential non-response within the categories by which the data have been weighted, so it may well not compensate entirely for all discrepancy between the sample and the population.

Weighting efficiency and effective sample size

If the discrepancies between the sample and the population are large, some weights will also be large and will increase the variance of estimates. It is therefore useful to consider the extent to which the weighting that has been applied impacts on the weighting efficiency.

One measure of the representativeness of a survey sample is its 'weighting efficiency' after calibration weighting has been applied. A perfectly representative sample will have a weighting efficiency of

100%, indicating that there were no differences between demographic groups in their probability of responding to the survey. In contrast, a weighting efficiency of 50% indicates that a lot of difference in the likelihood of different groups responding was observed and the compensatory weighting was extensive. Although extensive weighting of this type will usually reduce nonresponse bias, it will also usually reduce the stability of the survey estimates (i.e. the standard errors will be wider because the effective sample size will be reduced.).

Table 8 presents the design factor, design effect, effective sample size and weighting efficiency for the 2020 push-to-web survey as well as 2019 face-to-face survey. This shows that the weighting efficiency of the push-to-web survey (74%) is similar to that of the 2019 face-to-face surveys (77%).

Table 8 Weighting efficiency and effective sample size comparison

	BSA 2019	BSA 2020
Achieved sample	3,224	3,964
Design factor	1.14	1.17
Design effect	1.29	1.36
Effective sample size	2,498	2,914
Weighting efficiency	77%	74%

That means therefore that the push-to-web survey was more or less as efficient as the face-to-face survey, so there is no reason to believe that in general the confidence intervals associated with the 2020 survey are larger than those for the 2019 BSA. In this respect it could be argued that the change of methodology and lower response rate have not unduly damaged the representativeness of the responding sample.

Conclusion

This analysis shows that, based on a selection of measurable geo-demographic variables, the change in methodology for BSA 2020 has not unduly damaged the overall representativeness and precision of the sample.

It is clear that the weighting that has been applied to BSA 2020 has corrected for the observed error in the geo-demographic variables analysed in this chapter without substantially increasing the variance of the survey estimates. However, there may still be bias within the categories by which the 2020 data have been weighted. That is, while the survey may be demographically representative (after weighting to correct for sampling, coverage and non-response errors) based on known characteristics, weighting will not reduce any bias that may exist within the categories by which the data have been weighted. Respondents may be behaviourally or attitudinally different to the target population. This risk of bias is present in all surveys but in so far as we can tell from the analysis in this report, this may be no more the case with the 2020 survey than its predecessors.

Analysis variables

A number of standard analysis variables have been used in some of the chapters in this report. The analysis variables requiring further definition are set out below. Where relevant the name given to the relevant analysis variable is shown in square brackets – for example [EmpOcc]. In 2020, some questions underwent small changes of wording in order to optimise the questions for administration over the web and by telephone

Region

The BSA dataset identifies 11 regions, formerly the Government Office Regions (South East, London, North West, East of England, West Midlands, South West, Yorkshire and the Humber, East Midlands, North East, Wales and Scotland).

National Statistics Socio-Economic Classification (NS-SEC)

It is important to note that NS-SEC was derived differently this year from previous BSAs, for which information may be found in the Technical details for the 2019 survey (Curtice et al., 2019).

For the 2020 survey, respondents were asked to self-code their current or last job into an eight-category variable [EmpOCC]. An employment status variable that summarises information on employment status and size of organisation was also derived [EmplStatDV] from questions on whether an individual is:

- an employer, self-employed or an employee [Empstat];
- size of organisation [employ]; and
- supervisory status [Superv].

The National Statistics Socio-Economic Classification (NS-SEC) was derived from a combination of the information on occupation and employment status [RclassGP]. This allows respondents to be classified into the following socio-economic groups:

- Managerial and professional occupations
- Intermediate occupations
- Small employers and own account workers
- Lower supervisory and technical occupations
- Semi-routine and routine occupations

Those who have never had a job are coded as “not classifiable”.

Party identification

Respondents are classified as identifying with a particular political party on one of three counts: if they consider themselves supporters of that party; closer to it than to others; or more likely to support it in the event of a general election. Responses are derived from the following questions:

> ***Generally speaking, do you think of yourself as a supporter of any one political party? [Yes/No]***
> ***[If “No”/“Don’t know”]***
> ***Do you think of yourself as a little closer to one political party than to the others? [Yes/No]***
> ***[If “Yes” at either question or “No”/“Don’t know” at 2nd question]***

Which one?/If there were a general election tomorrow, which political party do you think you would be most likely to support?
[Conservative; Labour; Liberal Democrat; Scottish National Party; Plaid Cymru; Green Party; UK Independence Party (UKIP); Brexit Party; Other party; None; Refused to say]

Income

In 2020, the BSA dataset includes a measure of household income [HHIncome] in which respondents were asked to place themselves into banded income quartiles. The bandings used are designed to be representative of those that exist in Britain and are taken from the Family Resources Survey (DWP, 2021). In addition, respondents currently in work were asked to place themselves within estimated earnings quartiles.

Attitude scales

Since 1986, the BSA surveys have included two attitude scales which aim to measure where respondents stand on certain underlying value dimensions – left–right and libertarian–authoritarian.[1] Since 1987 (except in 1990), a similar scale on 'welfarism' has also been included. Some of the items in the welfarism scale were changed in 2000–2001. The current version of this scale is shown below.

A useful way of summarising the information from a number of questions of this sort is to construct an additive index (Spector, 1992; DeVellis, 2003). This approach rests on the assumption that there is an underlying – 'latent' – attitudinal dimension which characterises the answers to all the questions within each scale. If so, scores on the index are likely to be a more reliable indication of the underlying attitude than the answers to any one individual question.

Each of these scales consists of a number of statements to which the respondent is invited to "agree strongly", "agree", "neither agree nor disagree", "disagree" or "disagree strongly".

The items are:

Left–right scale

Government should redistribute income from the better off to those who are less well off [Redistrb]
Big business benefits owners at the expense of workers [BigBusnN]
Ordinary working people do not get their fair share of the nation's wealth [Wealth][2]
There is one law for the rich and one for the poor [RichLaw]
Management will always try to get the better of employees if it gets the chance [Indust4]

Libertarian–authoritarian scale

Young people today don't have enough respect for traditional British values. [TradVals]

[1] Because of methodological experiments on scale development, the exact items detailed in this section have not been asked on all versions of the questionnaire each year.
[2] In 1994 only, this item was replaced by: Ordinary people get their fair share of the nation's wealth *[Wealth1].*

People who break the law should be given stiffer sentences. [StifSent]
For some crimes, the death penalty is the most appropriate sentence. [DeathApp]
Schools should teach children to obey authority. [Obey]
The law should always be obeyed, even if a particular law is wrong. [WrongLaw]
Censorship of films and magazines is necessary to uphold moral standards. [Censor]

Welfarism scale

The welfare state encourages people to stop helping each other. [WelfHelp]
The government should spend more money on welfare benefits for the poor, even if it leads to higher taxes. [MoreWelf]
Around here, most unemployed people could find a job if they really wanted one. [UnempJob]
Many people who get social security don't really deserve any help. [SocHelp]
Most people on the dole are fiddling in one way or another. [DoleFidl]
If welfare benefits weren't so generous, people would learn to stand on their own two feet. [WelfFeet]
Cutting welfare benefits would damage too many people's lives. [DamLives]
The creation of the welfare state is one of Britain's proudest achievements. [ProudWlf]

The indices for the three scales are formed by scoring the leftmost, most libertarian or most pro-welfare position, as 1 and the rightmost, most authoritarian or most anti-welfarist position, as 5. The "neither agree nor disagree" option is scored as 3. The scores to all the questions in each scale are added and then divided by the number of items in the scale, giving indices ranging from 1 (leftmost, most libertarian, most pro-welfare) to 5 (rightmost, most authoritarian, most anti-welfare). The scores on the three indices have been placed on the dataset.[1]

The scales have been tested for reliability (as measured by Cronbach's alpha). The Cronbach's alpha (unstandardised items) for the scales in 2020 are 0.84 for the left–right scale, 0.81 for the libertarian–authoritarian scale and 0.90 for the welfarism scale. This level of reliability can be considered 'good' for the left–right, libertarian and welfarism scales (DeVellis, 2003: 95–96).

Other analysis variables

These are taken directly from the questionnaire and to that extent are self-explanatory. The principal ones are:

- Sex
- Age
- Economic position
- Religion
- Highest educational qualification obtained
- Marital status
- Whether receiving any benefits or tax credits

[1] In constructing the scale, a decision had to be taken on how to treat missing values ("Don't know" and "Not answered"). Respondents who had more than two missing values on the left–right scale and more than three missing values on the libertarian–authoritarian and welfarism scales were excluded from that scale. For respondents with fewer missing values, "Don't know" was recoded to the midpoint of the scale and "Not answered" was recoded to the scale mean for that respondent on their valid items.

Sampling errors

No sample precisely reflects the characteristics of the population it represents, because of both sampling and non-sampling errors. If a sample was designed as a random sample (if every adult had an equal and independent chance of inclusion in the sample), then we could calculate the sampling error of any percentage, *p*, using the formula:

$$s.e.(p) = \sqrt{\frac{p(100-p)}{n}}$$

where *n* is the number of respondents on which the percentage is based. Once the sampling error had been calculated, it would be a straightforward exercise to calculate a confidence interval for the true population percentage. For example, a 95% confidence interval would be given by the formula:

$$p \pm 1.96 \times s.e.(p)$$

Clearly, for a simple random sample (srs), the sampling error depends only on the values of *p* and *n*. However, simple random sampling is almost never used in practice, because of its inefficiency in terms of time and cost.

In BSA 2020, although the sample of addresses is not clustered geographically (in contrast to previous BSAs), because more than one adult is able to take part per address responses are clustered at the household level. Consequently with a complex design like this the sampling error of a percentage giving a particular response is not simply a function of the number of respondents in the sample and the size of the percentage, but it also depends on how that percentage response is spread within and between households.

This design may be assessed relative to simple random sampling by calculating a range of design factors (DEFTs) associated with it, where:

$$DEFT = \sqrt{\frac{Variance\ of\ estimator\ with\ complex\ design, sample\ size\ n}{Variance\ of\ estimator\ with\ srs\ design, sample\ size\ n}}$$

and represents the multiplying factor to be applied to the simple random sampling error to produce its complex equivalent. A design factor of one means that the complex sample has achieved the same precision as a simple random sample of the same size. A design factor greater than one means the complex sample is less precise than its simple random sample equivalent. If the DEFT for a particular characteristic is known, a 95% confidence interval for a percentage may be calculated using the formula:

$$p \pm 1.96 \times complex\ sampling\ error\ (p) = p \pm 1.96 \times DEFT \times \sqrt{\frac{p(100-p)}{n}}$$

Table 9 gives examples of the confidence intervals and DEFTs calculated for a range of different questions. Most background questions were asked of the whole sample, whereas many attitudinal questions were asked only of a third or two-thirds of the sample.

Table 9 Complex standard errors and confidence intervals of selected variables

	% (p)	Complex standard error of p	95% confidence interval		DEFT	*Base*
			Lower	Upper		
Classification variables						
Party identification (full sample)						
Conservative	32.5	0.9	30.7	34.3	1.254	*1349*
Labour	33.4	1.0	31.5	35.4	1.318	*1281*
Liberal Democrat	7.6	0.5	6.7	8.6	1.175	*349*
Scottish National Party	3.8	0.3	3.1	4.5	1.135	*152*
Plaid Cymru	0.5	0.1	0.3	0.8	1.084	*20*
Green Party	5.8	0.5	4.9	6.9	1.332	*248*
Conservative	32.5	0.9	30.7	34.3	1.254	*1349*
None	11.3	0.7	10.0	12.8	1.436	*363*
Housing tenure (full sample)						
Owns	67.3	1.1	65.1	69.4	1.461	*2890*
Rents from local authority	5.8	0.6	4.7	7.0	1.520	*165*
Rents privately/HA	21.3	1.0	19.4	23.2	1.498	*750*
Highest educational qualification (full sample)						
Degree or above	35.9	0.9	34.2	37.7	1.194	1838
Other Higher Education	16.4	0.7	15.0	17.8	1.185	*589*
A levels or equivalent	17.1	0.8	15.6	18.8	1.366	*520*
Qualifications below A levels e.g. GCSEs	20.1	0.8	18.6	21.6	1.215	*694*
No qualifications	7.9	0.6	6.8	9.2	1.393	*227*
Do you receive any state benefits or tax credits? (full sample)						
Yes	44.4	1.0	42.5	46.4	1.277	*1749*
No	54.7	1.0	52.7	56.7	1.279	*2184*

Table 9 Complex standard errors and confidence intervals of selected variables (continued)

	% (p)	Complex standard error of p	95% confidence interval		DEFT	*Base*
			Lower	Upper		
Attitudinal variables						
Opinions differ about the level of benefits for unemployed people. Which comes closest to your own view (full sample)						
...benefits for unemployed people are too low and cause hardship	51.3	1.0	49.2	53.3	1.299	*2066*
…benefits for unemployed people are too high and discourage them from finding jobs	41.7	1.0	39.7	43.7	1.291	*1579*
Neither	2.3	0.3	1.8	2.8	1.068	*101*
How much interest do you generally have in what is going on in politics… (full sample)						
A great deal	14.6	0.6	13.3	15.9	1.144	*655*
Quite a lot	31.4	0.9	29.7	33.2	1.195	*1347*
Some	32.8	0.9	31.1	34.6	1.189	*1268*
Not very much	15.0	0.7	13.6	16.5	1.273	*515*
None at all	6.1	0.5	5.2	7.3	1.382	*177*
Censorship of films and magazines is necessary to uphold moral standards (full sample)						
Agree	43.3	1.0	41.3	45.2	1.251	*1719*
Neither agree nor disagree	22.5	0.8	20.9	24.1	1.218	*870*
Disagree	33.7	0.9	31.9	35.6	1.261	*1358*
The government should redistribute income from the better off to the less well-off (full sample)						
Agree	46.2	1.0	44.2	48.1	1.271	*1838*
Neither agree nor disagree	23.2	0.8	21.6	24.9	1.249	*869*
Disagree	30.3	0.9	28.6	32.1	1.239	*1244*
How satisfied or dissatisfied are you with the way the NHS runs nowadays? (run on one third of the sample)						
Satisfied	53.7	1.8	50.2	57.1	1.270	*689*
Neither satisfied nor dissatisfied	21.8	1.4	19.2	24.7	1.218	*267*
Dissatisfied	24.2	1.5	21.4	27.4	1.269	*316*

The table shows that most of the questions asked of all sample members have a margin of error of around plus or minus two to three of the survey percentage. This means that we can be 95% certain that the true population percentage is within two to three percentage points (in either direction) of the percentage we report. However, sampling errors for percentages based only on respondents to just one of the versions of the questionnaire, or on subgroups within the sample, are larger than they would have been had the questions been asked of everyone.

Analysis techniques

Regression

Regression analysis aims to summarise the relationship between a 'dependent' variable and one or more 'independent' variables. It shows how well we can estimate a respondent's score on the dependent variable from knowledge of their scores on the independent variables. It is often undertaken to support a claim that the phenomena measured by the independent variables *cause* the phenomenon measured by the dependent variable. However, the causal ordering, if any, between the variables cannot be verified or falsified by the technique. Causality can only be inferred through special experimental designs or through assumptions made by the analyst.

All regression analysis assumes that the relationship between the dependent and each of the independent variables takes a particular form. In *linear regression*, it is assumed that the relationship can be adequately summarised by a straight line. This means that a one percentage point increase in the value of an independent variable is assumed to have the same impact on the value of the dependent variable on average, irrespective of the previous values of those variables.

Strictly speaking the technique assumes that both the dependent and the independent variables are measured on an interval-level scale, although it may sometimes still be applied even where this is not the case. For example, one can use an ordinal variable (e.g. a Likert scale) as a *dependent* variable if one is willing to assume that there is an underlying interval-level scale and the difference between the observed ordinal scale and the underlying interval scale is due to random measurement error. Often the answers to a number of Likert-type questions are averaged to give a dependent variable that is more like a continuous variable. Categorical or nominal data can be used as *independent* variables by converting them into dummy or binary variables; these are variables where the only valid scores are 0 and 1, with 1 signifying membership of a particular category and 0 otherwise.

The assumptions of linear regression cause particular difficulties where the *dependent* variable is binary. The assumption that the relationship between the dependent and the independent variables is a straight line means that it can produce estimated values for the dependent variable of less than 0 or greater than 1. In this case it may be more appropriate to assume that the relationship between the dependent and the independent variables takes the form of an S-curve, where the impact on the dependent variable of a one-point increase in an independent variable becomes progressively less the closer the value of the dependent variable approaches 0 or 1. *Logistic regression* is an alternative form of regression which fits such an S-curve rather than a straight line. The technique can also be adapted to analyse multinomial non-interval-level dependent variables, that is, variables which classify respondents into more than two categories.

The two statistical scores most commonly reported from the results of regression analyses are:
A measure of variance explained: This summarises how well all the independent variables combined can account for the variation in respondents' scores in the dependent variable. The higher the measure, the more accurately we are able in general to estimate the correct value of each respondent's score on the dependent variable from knowledge of their scores on the independent variables.

A parameter estimate: This shows how much the dependent variable will change on average, given a one-unit change in the independent variable (while holding all other independent variables in the model constant). The parameter estimate has a positive sign if an increase in the value of the independent variable results in an increase in the value of the dependent variable. It has a negative sign if an increase in the value of the independent variable results in a decrease in the value of the dependent variable. If the parameter estimates are standardised, it is possible to compare the relative impact of different independent variables; those variables with the largest standardised estimates can be said to have the biggest impact on the value of the dependent variable.

Regression also tests for the statistical significance of parameter estimates. A parameter estimate is said to be significant at the 5% level if the range of the values encompassed by its 95% confidence interval (see also section on sampling errors) are either all positive or all negative. This means that there is less than a 5% chance that the association we have found between the dependent variable and the independent variable is simply the result of sampling error and does not reflect a relationship that actually exists in the general population.

Factor analysis

Factor analysis is a statistical technique which aims to identify whether there are one or more apparent sources of commonality to the answers given by respondents to a set of questions. It ascertains the smallest number of *factors* (or dimensions) which can most economically summarise all of the variation found in the set of questions being analysed. Factors are established where respondents who gave a particular answer to one question in the set tended to give the same answer as each other to one or more of the other questions in the set. The technique is most useful when a relatively small number of factors are able to account for a relatively large proportion of the variance in all of the questions in the set.

The technique produces a *factor loading* for each question (or variable) on each factor. Where questions have a high loading on the same factor, then it will be the case that respondents who gave a particular answer to one of these questions tended to give a similar answer to each other at the other questions. The technique is most commonly used in attitudinal research to try to identify the underlying ideological dimensions which apparently structure attitudes towards the subject in question.

Table and figure conventions

The following conventions are used for tables and figures throughout the report.

1. Data in the tables are from the 2020 British Social Attitudes survey unless otherwise indicated.
2. Tables are percentaged as indicated by the percentage signs.
3. In tables, '*' indicates less than 0.5 % but greater than zero, and '–' indicates zero.
4. When findings based on the responses of fewer than 100 respondents are reported in the text, reference is made to the small base size. These findings are excluded from line charts, but included in tables.
5. Percentages equal to or greater than 0.5 have been rounded up (e.g. 0.5 % = 1 %; 36.5 % = 37 %).
6. In many tables the proportions of respondents answering "Don't know" or not giving an answer are not shown. This, together with the effects of rounding and weighting, means that percentages will not always add up to 100 %.
7. The unweighted bases shown in the tables (the number of respondents who answered the question) are printed in small italics.
8. In time series line charts, survey readings are indicated by data markers. While the line between data markers indicates an overall pattern, where there is no data marker the position of the line cannot be taken as an accurate reading for that year.

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