Scottish Social Attitudes 2021/22

Core module - Technical information

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At **ScotCen Social Research** we believe that social research has the power to make life better. By really understanding the complexity of people's lives and what they think about the issues that affect them, we give the public a powerful and influential role in shaping decisions and services that can make a difference to everyone. And as an independent, not for profit organisation we're able to put all our time and energy into delivering social research that works for society.

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Technical Details of the Survey

1. The Scottish Social Attitudes series

1.1 The Scottish Social Attitudes (SSA) survey was launched by ScotCen Social Research in 1999, following the advent of devolution. Based on annual rounds of interviews of between 1,000 to 1,500 people drawn using probability sampling (based on a stratified, clustered sample)[1], it aims to facilitate the study of public opinion and inform the development of public policy in Scotland. In this it has similar objectives to the British Social Attitudes (BSA) survey, which was launched by ScotCen's parent organisation, NatCen Social Research in 1983. While BSA interviews people in Scotland, these are usually too few in any one year to permit separate analysis of public opinion in Scotland (see http://www.bsa.natcen.ac.uk/ for more details of the BSA survey).

1.2 For the first time this year, SSA was conducted as a telephone survey rather than face-to-face, as a result of coronavirus restrictions in place at the time fieldwork was conducted. This maintained the random probability sample design - with addresses selected at random from the postcode address file (PAF) - but invited those sampled to opt-in to a telephone interview (further details in Section 3 and 4). Similar transformations were undertaken across many large-scale surveys in Scotland, the UK and beyond with data previously collected via face-to-face interviews moving to various combinations of telephone, web and paper data collection. This year the sample was un-clustered as clustering is only required for face-to-face fieldwork. The change in design and the resulting level of response and sample composition means data from the 2021/22 survey cannot be straightforwardly compared with other years in the series. For further detail on the representativeness of the sample compared to previous years see Section 8.

1.3 SSA has been conducted annually each year since 1999, with the exception of 2008, 2018 and 2020. The survey has a modular structure. In any one year it will typically contain a range of modules on different topics (a full module is considered to be 40 questions). Funding for its first two years came from the Economic and Social Research Council, while from 2001 onwards different bodies have funded individual modules each year. These bodies have included the Economic and Social Research Council (ESRC), the Scottish Government, NHS Health Scotland, the Equality and

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[1] Like many national surveys of households or individuals, in order to attain the optimum balance between sample efficiency and fieldwork efficiency the sample was clustered. The first stage of sampling involved randomly selecting postcode sectors. The sample frame of postcode sectors was also stratified (by urban-rural, region and the percentage of people in non-manual occupations) to improve the match between the sample profile and that of the Scottish population.

Human Rights Commission, and various charitable and grant awarding bodies such as the Nuffield Foundation and Leverhulme Trust.

2. The 2021/22 survey

2.1   The 2021/22 survey contained questions on the following topics: all of which were funded by the Scottish Government:

- Attitudes towards Government (Core Module)
- Attitudes towards Scotland's handling of the coronavirus pandemic
- Attitudes towards accessing healthcare services digitally
- Attitudes towards people with problem drug use

2.2   Data from SSA 2021/22 will be deposited with the UK Data Archive in 2023. Separate programmes of reporting and dissemination are planned for each of the modules. This technical annex covers the methodological details of the survey.

2.3   As the fieldwork period for this survey ended up spanning several months of both 2021 and 2022 (see Section 5 of this report for further detail) for the purpose of reporting this survey is referred to as SSA 2021/22.

3. Question design

3.1   The set of 30 questions on public attitudes towards the government, the economy, the NHS as well as on political engagement in Scotland remained largely the same as the questions asked on previous years of SSA. As such the questions on this module were all well-established and therefore did not require cognitive testing or piloting.

4. Sample design

4.1   From 1999 to 2015, the survey was conducted with adults aged 18 or over. In 2016, the age range for the survey was extended to include 16- and 17-year-olds to reflect the lowering of the age limit for voting in Scottish elections.

4.2   The survey is designed to yield a representative sample of adults aged 16 or over living in private households in Scotland. The sample frame is the Postcode Address File (PAF), a list of postal delivery points compiled by the Post Office. Due to the change in survey mode for SSA 2021/22 from face-to-face to push-to-telephone, the sampling design was adjusted. Without face-to-face fieldwork, it was not necessary to cluster the sample. Instead, a stratification design was implemented to over-sample more rural areas and the most deprived SIMD 2020 quintile. The detailed procedure for selecting the 2021/22 sample was as follows:

i. The sampling frame was first divided into twelve sampling strata as listed below. These were based on Scottish Index of Multiple Deprivation 2020 quintiles and the Scottish Government's 6-fold urban-rural classification[2].

Large Urban Area – SIMD quintile 1
Large Urban Area – SIMD quintiles 2 to 5
Other Urban Area – SIMD quintile 1
Other Urban Area – SIMD quintile 2 to 5
Accessible Small Town – SIMD quintile 1
Accessible Small Town – SIMD quintiles 2 to 5
Remote or Very Remote Small Town - SIMD quintile 1
Remote or Very Remote Small Town - SIMD quintile 2 to 5
Accessible Rural Area - SIMD quintile 1
Accessible Rural Area - SIMD quintile 2 to 5
Remote or Very Remote Rural Area - SIMD quintile 1
Remote or Very Remote Rural Area - SIMD quintile 2 to 5

ii. The number of addresses to be drawn from each stratum were calculated based on differential response rates to SSA 2019 by SIMD quintile and urban-rural classification, with a target of at least 150 responses from each urban-rural category and SIMD quintile.

iii. Invitations to take part were issued to the 21,619 addresses selected and any adult in the household was invited to opt-in to take part in the survey. Up to 2 eligible adults were able to take part per household. The total number of invitations issued consisted of a main sample of 11,071 addresses, a reserve sample of 3,129 addresses, and an additional sample of 7,575 addresses. An assumption was made, based on longstanding evidence from a range of previous face-to-face surveys which used PAF as a sampling frame, that 10% of addresses were ineligible to take part in this survey, as it is not possible with the survey methodology (opt-in approach) to ascertain eligibility for all issued addresses. Addresses that are ineligible or out of scope include: empty / derelict addresses, buildings under construction, holiday homes, businesses, other non-residential buildings (such as schools, offices and institutions), and addresses that had been demolished. Students were included at either their main term-time or their main out-of-term address.

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[2] See Scottish Government Urban Rural Classification for details.

5. Fieldwork

5.1   Fieldwork for the 2021/22 survey ran between 21st October 2021 and 27th March 2022. As this was the first time SSA had used this methodology and as a result of the ongoing circumstances of the coronavirus pandemic, there was some uncertainty around the likely response rates that would be achieved. Initially due to complete within two months, the fieldwork period was extended to five months due to issues with response and the need to issue additional sample to secure a minimum number of interviews.

5.2   A letter and information leaflet were sent to each address inviting up to two adults who were resident there,[3] and aged 16 or over, to take part. The letter explained how potential respondents could opt-in by providing their telephone number either via secure online portal, email or contacting the survey freephone telephone helpline. Interviewers from ScotCen's Telephone Unit then contacted those who had opted in to conduct the survey interview or arrange a time to do so. Where possible, interviews were sought with two eligible members of each participating household. Up to two reminder letters were sent out to all households in the sample who had not opted in. Individuals were offered a £10 Love2Shop gift voucher for taking part.

5.3   All interviews were conducted over the telephone using computer assisted telephone interviewing (a process which involves the use of a laptop computer, with questions appearing on screen and interviewers directly entering respondents' answers into the computer).

5.4   Survey invitations were initially issued to 11,071 households. The sample size was set with the aim of achieving 1,200 interviews. It assumed that 10% of households would opt-in (the opt-in rate), that 90% of opted-in households would go on to complete an interview (the response rate) and that enough second interviews would be achieved across all households to deliver an average rate of 1.22 interviews per achieved household (the per household interview/PHI rate)[4]. Due to a lower than anticipated opt-in rate, response rate and per household interview rate, after 6 weeks of fieldwork a reserve sample of 3,129 cases was issued. Whilst the opt-in rate marginally improved, response rate and PHI rate remained lower than expected. Thus, to fully assure an acceptable number of interviews, a further reserve of 7,575 address was issued.

5.5   After the intended two-month fieldwork period had lapsed due to lower than expected response rates, in an attempt to improve the opt-in rate, an

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[3] Only one adult was able to opt-in per household, although they were informed that two adults can take part. Once the opt-in adult completed the interview they were asked if any other adults were able to take part or arrange a time to take part in the survey.

[4] These assumptions were based primarily on figures from the Scottish Health Survey, which was delivering a similar approach, but also on a range of other UK push-to-telephone surveys.

additional mailing was issued to households in the original sample who had neither opted-in nor opted-out or had opted in but could not be reached to do the survey. This letter offering an increased incentive (£20 gift voucher) for taking part. The same was offered to those who had opted-in but could not be reached by the telephone interviewers. This additional mailing resulted in 173 interviews – 15% of the total achieved – which, whilst a significant increase, was not enough to avoid issuing the additional reserve sample.

6. Response rates

6.1   Of the addresses issued and assumed eligible, 7% opted in. The overall response rate among opted-in households was 77%. Table 1 (below) summarises the opt-in rate and response rate for SSA 2021/22.

Table 1: Scottish Social Attitudes survey opt-in and response rates, 2021/22

	No.	% of eligible sample	
Addresses issued[1]	21775	100%	
Assumed vacant, derelict and other out of scope[2]	2178	10%	
Achievable or 'in scope'	19598	90%	
Opted-in	1349	Opt-in rate (assumed ineligible included)	6.2%
		Opt-in rate (assumed ineligible excluded)	7%
	No.	**% of opted-in households (1349)**	
Total interviews achieved[3]	1130	-	
Productive households	1043	77%	
1st adults in households who said another eligible adult lived in household[4]	126	9.3%	
2nd adults in households who took part	87	6.5% (of opted-in households) (69% of households who said another eligible adult lives in household)	
Reasons for interview not achieved	**No.**	**% of opted in household**	
Refusals[5]	49	3.6%	
Non-contact (household level)[6]	197	14.6%	
Other unproductive[7]	18	1.3%	

Notes to table:

[1]These addresses were all sent a letter inviting them to opt-in to take part.

[2]This includes empty / derelict addresses, buildings under construction, holiday homes, businesses, other non-residential (such as schools, offices and institutions), and addresses that had been demolished. Based on previous face-to-face surveys which had used PAF as a sampling frame, it was assumed that 10% of addresses would fall into this category.

[3]The total interviews achieved is higher than the no. of productive households because up to 2 eligible adults were able to take part per household.

[4]At the end of the interview the first adult in the household (generally the adult who opted-in to take part) was asked if there were any other adults (aged 16 and

over) living at the address who could take part. If the respondent stated that there was another adult who could take part then the interviewer was either put through to speak to the second respondent or an appointment was booked to interview them at a different time. This can be compared to the number of second adults in the household who did take part.

[5]Refusals include any households who did not take part in the survey after having opted-in to take part including: refusals to the office; refusal by the selected person; 'proxy' refusals made by someone on behalf of the respondent; and broken appointments after which a respondent could not be re-contacted.

[6]These are the number of households (out of those who had opted-in to take part in the survey) whom the Telephone Unit interviewers had not been able to make contact with during the fieldwork period. In total contact was made with 1276 individuals (who had opted-in to take part or for whom another adult they live with who had completed the interview had suggested they might like to take part) which is 82% of productive households interviewed.

[7]'Other unproductive' includes people who were not available during fieldwork which may have been for a variety of reasons (such as being ill at home or in hospital during the survey period or away for most or all of the fieldwork period), people who were unable to participate due to physical or mental health issues or where a language barrier made recruitment too difficult (despite some translation and interpreting services being offered). This also includes those who were contacted in error (where a wrong number had been given during the opt-in) and those deceased.

6.2   Table 2 below shows the achieved sample size for the full SSA sample (all respondents) for all previous years.

Table 2: Scottish Social Attitudes survey sample size by year

Survey year	Achieved sample size
1999	1482
2000	1663
2001	1605
2002	1665
2003	1508
2004	1637
2005	1549
2006	1594
2007	1508
2009	1482
2010	1495
2011	1197
2012	1229
2013	1497
2014	1501
2015	1288
2016	1237
2017	1234
2019	1022
2021/22	1130

7. Weighting

7.1   All percentages cited in SSA reports are based on weighted data. The weights applied to the SSA 2021/22 data are intended to correct for potential sources of bias in the sample including differential selection probabilities due to deliberate over-sampling of rural areas and the most deprived SIMD quintile as well as non-response.

Due to the change in survey mode for SSA 2021/22 from face-to-face to push-to-telephone, the weighting design required adjustments. In 2021/22 it consisted of three stages:

- Selection weighting
- Modelling participation within households
- Calibration

The first stage, selection weighting, controlled for the effects of the sampling design. Issued cases received a weight adjusting for the differential probability of selection by sampling strata. The 12 sampling strata are listed in section 3.2.

The second stage, within-household participation weighting, consisted of modelling the probability that households with more than 1 eligible adult would provide 2 responses. A logistic regression model was fitted for households with more than 1 eligible adult with number of responses as the outcome measure and variables associated with participation as the covariates. Area-level census variables and survey variables harmonised at household level were tested for association with number of responses per household. Stepwise logistic regression was used to fit the model for within-household participation.

The final model included the following variables: harmonised household income, quintiles of population density, quintiles of population aged over 55, and quintiles of population in a BME group. From this model, the predicted propensity to provide one or two responses was estimated for households with at least one eligible adult. Households with only one eligible adult were assigned a probability of 1. The within-household non-response weights were calculated as the reciprocal of these propensities.

The third stage was calibration weighting, which adjusts the weights so that characteristics of the weighted achieved sample match population estimates. The selection and non-response weights were combined and rescaled to the mid-year population estimate for adults aged 16 or above in Scotland prior to calibration. The calibration variables used in 2021/22 were age by sex categories and SIMD quintiles. After calibration, the

weights were trimmed at the 1st and 99th percentiles to remove outliers and improve weighting efficiency.

The final weighting efficiency for 2021/22 was 50% with an effective sample size of 565. The reduction in weighting efficiency compared with SSA 2017 and 2019 reflects the lower response rate and higher level of bias within the 2021/22 responding sample. The weighting adjustments were chosen in order to balance the requirements of maximising efficiency and minimising residual bias in key variables and those in the most deprived SIMD quintile.

8. Comparing sample profile to previous years

8.1   In order to assess the potential impact of the change in survey mode from face-to-face to telephone and to inform the approach to reporting on the findings of the SSA 2021/22 Core module, a comparability analysis was undertaken. The analysis compared the weighted sample in 2021/22 with previous face-to-face SSA weighted samples on profile characteristics that tend to remain relatively stable over time and are associated with attitudes measured on the Core including:

- Highest level of education
- Level of political engagement
- Scottish Parliament Election (2021) turnout and vote choice
- Views on Scottish independence / who Scotland should be governed by

8.2   The key findings were as follows:

- Those holding at least degree-level education were overrepresented in the SSA 2021/22 telephone survey compared with previous years face-to-face surveys
- The 2021/22 sample showed a higher level of political engagement than previous SSA surveys
- SNP and independence supporters were overrepresented in the SSA 2021/22 sample. Whilst this has been a common tendency evident in previous face-to-face SSA surveys, this was more pronounced this year

The final bullet point is of particular relevance to the Core Report, given it contains various questions concerning evaluations of government and that responses to these questions tend to be associated with party affiliation and views on independence. Therefore, by reporting on these measures in comparison with previous years, any change in the evaluation of government reported could be interpreted as being the result of a more heavily pro-SNP/independence sample than is usually the case.

Appendix B of this report provides the tables illustrating the key sample profile differences described above.

8.3   As a result of these findings, ScotCen held an internal review of the weighting undertaken on the survey and the reasons for the differences in the achieved sample profile. The NatCen Statistics Team tested a range of different approaches to the weighting in order to find the optimum approach given the low response rate and unweighted sample characteristics. As has been the case with previous face-to-face SSA surveys there is a within age group bias in the political composition of the sample[5] that was exacerbated in the SSA 2021/22 sample due to the lower response associated with the change in survey mode and the resulting age profile. Given the additional complexities of weighting in surveys that have changed mode there will be further exploration of the most efficient approach for future years as well as exploring means through which a more even age profile may be achieved when adopting web and telephone-based survey designs.

It was concluded that the differences in the sample profile in 2021/22 were largely due to the very low response rate (the opt-in rate in particular) and that adopting a different approach to the weighting, such as to reduce the bias in pro-SNP/independence leanings would make the sample less representative in terms of age, sex and SIMD. Further discussion of the technical considerations of weighting and alternative approaches to weighting the data will be discussed in the user guide accompanying the dataset.

8.4   Based on the findings of the analysis it was agreed that the SSA 2021/22 Core report would focus solely on the 2021/22 data rather than reporting on this as a continuation of the time series, given the concern over the validity of such a comparison. Thus, the SSA 2021/22 Core report focussed more in-depth than previous years on factors, such as attitudes towards the handling of the pandemic in Scotland, that have driven the attitudes measured on the Core module in 2021/22 (see Section 10 for more detail). As with other face-to-face surveys in Scotland and the UK that had to transform to a different data collection mode (such as the Scottish Health Survey 2020), the SSA 2021/22 survey findings will not be reported in future years' Core reports and will be viewed as an exception in the time series due to the sample profile differences.

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[5] This refers to the variation in the average weight by age group due to the non-response model used to derive weights

9. Analysis variables

9.1   Most of the analysis variables were taken directly from the questionnaire and are self-explanatory. The variables set out below require explanation.

Scottish Index of Multiple Deprivation (SIMD)

9.2   The Scottish Index of Multiple Deprivation (SIMD)[6] measures the level of deprivation across Scotland – from the least deprived to the most deprived areas. It is based on 38 indicators in seven domains of: income, employment, health, education skills and training, housing, geographic access and crime. SIMD is presented at data zone level, enabling small pockets of deprivation to be identified. The data zones were ranked from most deprived (1) to least deprived (6,976) on the overall SIMD and on each of the individual domains. The result is a comprehensive picture of relative area deprivation across Scotland.

9.3   The analysis in this report used a variable created from SIMD 2020 data indicating the level of deprivation of the data zone in which the respondent lived in quintiles, from most to least deprived[7].

The Scottish Social Attitudes Survey two-fold urban-rural classification (urbanac)

9.4   The 2-fold version of the urban-rural classification is included on the dataset (urbanac). Areas in this version were classified as 'urban' (codes 1-3 below) and 'rural' (codes 4-6 below):

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[6] See Scottish Index of Multiple Deprivation 2020 for further details on the SIMD.
[7] These variables were created by the ScotCen/NatCen Statistics Unit. They were based on SIMD scores for all datazones, not just those included in the sample – so an individual who lives in the most deprived quintile of Scotland will also be included in the most deprived quintile in the SSA dataset.

	Area type	
1	Large Urban Areas	Settlements of 125,000 or more people.
2	Other Urban	Settlements of 10,000 to 124,999 people.
3	Accessible small towns	Settlements 3,000 to 9,999 people and within 30 minutes' drive of a settlement of 10,000 or more.
4	Remote small towns	Settlements of 3,000 to 9,999 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.
5	Accessible rural	Areas with a population of less than 3,000 people and within a 30 minute drive time of a settlement of 10,000 or more.
6	Remote rural	Areas with a population of less than 3,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.

National Statistics Socio-Economic Classification (NS-SEC)

9.5 The most commonly used classification of socio-economic status used on government surveys is the National Statistics Socio-Economic Classification (NS-SEC). SSA respondents were classified according to their own occupation, rather than that of the 'head of household'. Each respondent was asked about their current or last job, so that all respondents, with the exception of those who had never worked, were classified. The seven NS-SEC categories are:

- Employers in large organisations, higher managerial and professional
- Lower professional and managerial; higher technical and supervisory
- Intermediate occupations
- Small employers and own account workers
- Lower supervisory and technical occupations
- Semi-routine occupations
- Routine occupations

9.6 The remaining respondents were grouped as 'never had a job' or 'not classifiable'.

9.7 NS-SEC is not included as breakdowns within the tables or report on this topic but will be included within the archived dataset (available via UKDS).

The Libertarian – Authoritarian scale (LibAuth)

9.8   Since 1999, the Scottish Social Attitudes survey has included an attitude scale which is designed to ascertain whether respondents are more inclined to the libertarian or the authoritarian end of the ideological spectrum. The scale consists of six statements to which the respondent is invited to "agree strongly", "agree", "neither agree nor disagree", "disagree" or "disagree strongly". The statements are as follows:

1) Young people today don't have enough respect for traditional British values

2) People who break the law should be given stiffer sentences

3) For some crimes, the death penalty is the most appropriate sentence

4) Schools should teach children to obey authority

5) The law should always be obeyed, even if a particular law is wrong

6) Censorship of films and magazines is necessary to uphold moral standards

The scores to all the questions in the scale are added and then divided by the number of items in the scale, giving indices ranging from 1 to 6. A derived variable was produced for the purpose of analysis in which these indices (from 1 to 6) were divided into terciles with the 33% with the lowest scores categorised as 'Libertarian', the 33% with the middle scores as 'Neither' and the 33% with the highest scores as 'Authoritarian.'

The Left – Right scale (LeftRigh)

9.9   Since 1999, the Scottish Social Attitudes survey has included an attitude scale which aims to measure respondents' underlying political views and whether these are situated to the left or right of the political spectrum. The scale consists of five statements to which the respondent is invited to "agree strongly", "agree", "neither agree nor disagree", "disagree" or "disagree strongly". The statements are as follows:

1) Government should redistribute income from the better off to those who are less well off

2) Big business benefits owners at the expense of workers

3) Ordinary working people do not get their fair share of the nation's wealth

4) There is one law for the rich and one law for the poor

5) Management will always try to get the better of employees if it gets the chance

The scores to all the questions in the scale are added and then divided by the number of items in the scale, giving indices ranging from 1 (left) to 5 (right). A derived variable was produced for the purpose of analysis in which these indices (from 1 to 5) were divided into terciles with the 33% with the lowest scores categorised as 'Left', the 33% with the middle scores as 'Neither' and the 33% with the highest scores as 'Right.'

Attitudes towards pandemic handling scale (Panscale3)

9.10   A module of questions on the 2021/22 survey asked about attitudes towards Scotland's handling of the coronavirus pandemic. Given the relevance of public perceptions of how effectively the Scottish Government has managed the pandemic to overall trust in the Scottish and UK Governments it was considered essential to analyse the latter views by an index of the former. To this end a derived variable was created to index overall views on Scotland's handling of the pandemic which combined the following 7 questions that were asked in the pandemic handling module that were found to be highly correlated:

- "How much, if at all, did you trust the data that was made available during the pandemic about the spread of coronavirus in Scotland? (A great deal, Quite a lot, Somewhat, Not very much, Not at all)

- "How much have you trusted the information provided by scientists during the pandemic?" (Just about always, Most of the time, Only some of the time, Almost never)

- "And how much have you trusted the information provided by the Scottish Government during the pandemic?" (Just about always, Most of the time, Only some of the time, Almost never)

- "In general, how well or badly do you think the Scottish Government understood the impact of the coronavirus restrictions on the lives of people like yourself?" (Very well, Fairly well, Neither well nor badly, Fairly badly, Very badly)

- "In general, how good or bad do you think the Scottish Government have been at listening to the views of people like yourself about how best to handle the coronavirus pandemic?" (Very good, Fairly good, Neither good nor bad, Fairly bad, Very bad)

- "During the coronavirus pandemic to what extent, if at all, would you say the Scottish Government had the interest of people like yourself at heart?" (A great deal, Quite a lot, Somewhat, Not very much, Not at all)

- "Say that in five years' time there was another pandemic like COVID19. How confident are you, if at all, that Scotland would be properly

prepared to deal with it?" (Not at all confident, Not very confident, Fairly confident, Very confident)

Items on some of the above questions were reversed so that a lower score indicates a more positive view towards Scotland's handling of the pandemic and higher scores indicate a more negative view. As with the Libertarian-Authoritarian and Left-Right scales this combined scale was divided into terciles for the purpose of analysis with the 33% with the lowest scores categorised as 'Positive to pandemic handling', the 33% with the middle scores as 'Neutral' and the 33% with the highest scores as 'Negative towards pandemic handling.'

10. Analysis techniques

Significance testing

10.1   Where reports authored by ScotCen Social Research discuss differences between two percentages (such as two different groups of people within a single year), this difference is significant at the 95% level or above, unless otherwise stated. Differences between groups within a given year are tested using logistic regression analysis, which shows the factors and categories that are significantly (and independently) related to the dependent variable. Analysis is carried out in IBM SPSS Statistics v.25, using the CS logistic function to take account of the sample design in calculations.

Multiple logistic regression analysis

10.2   Additional logistic regression analysis was conducted across each of the chapters in the Core module report. Full models were run using all of the fifteen analysis variables in the report: age, gender, long-term illness/disability, household income, education, SIMD, urban-rural, perceptions of ability to live on present income, position on SSA's left-right scale, position on SSA's libertarian-authoritarian scale, party political identification, constitutional preference, attitudes towards Britain's membership of the EU, level of interest in politics and attitudes towards the handling of the pandemic. Once the full models were run, those analysis variables that were found not to have significant relationships with the outcome variables in the model were excluded and a 'reduced' model using only the significant variables was run. The variables that were included in the reduced model varied from question to question, but where logistic regression results are discussed in the main report, the variables included in the relevant reduced model are reported in a footnote.

Logistic regression analysis is a method of summarising the relationship between a binary 'outcome' variable and one or more 'predictor' variables. It allows us to estimate the odds of an individual having a score of '1' on

the outcome variable (as opposed to '0') from their responses to the predictor variables (i.e. demographic and other key attitudinal variables).

The Supplementary Tables to the main report (Tables 1-10) show the results of logistic regression analysis of factors associated with the following attitudes (with the following table explaining for each of these what the Odds Ratios indicates):

Supplementry tables key and Odds Ratio presented

Table no. / title	Odds Ratio presented
Table 1 - How much do you trust the UK government to work in Scotlands best long-term interest?	Odds of thinking the UK Government works in the best interests of Scotland 'just about always' or 'most of the time'
Table 2 - How much do you trust the Scottish Government to work in Scotland's best interests?	Odds of thinking the Scottish Government works in the best interests of Scotland 'just about always' or 'most of the time'
Table 3 - How good would you say the UK government is at listening to people's views before it takes decisions?	Odds of saying that the UK Government is 'very/quite good' at listening to people's views before taking decisions
Table 4 - How good would you say the Scottish Government is at listening to people's views before it takes decisions?	Odds of saying that the Scottish Government is 'very/quite good' at listening to people's views before taking decisions
Table 5 - Think having a Scottish Parliament is giving ordinary people more say, less say or no difference?	Odds of saying that the Scottish Parliament was giving ordinary people more say
Table 6 - Which of the following do you think has most influence over the way Scotland is run?	Odds of stating that the Scottish Government has the most influence over the way Scotland is run
Table 7 - And which do you think ought to have most influence over the way Scotland is run?	Odds of stating that the Scottish Government ought to have the most influence over the way Scotland is run
Table 8 - If it had to choose, should government reduce/increase/maintain levels of taxation and spending?	Odds of stating that the government should increase taxes and spend more on public services
Table 9 - All in all, how satisfied or dissatisfied would you say you are with the way in which the National Health Service runs nowadays?	Odds of stating that they were very or quite satisfied with the way in which the NHS runs
Table 10 - Would you say that most people can be trusted, or that you can't be too careful in dealing with people?	Odds of saying that 'most people can be trusted'

Tables 1 to 10 show how the odds for each category of each predictor variable compared with the odds for the reference category. An odds ratio of greater than 1 indicates that, holding all other factors constant, there is an increased likelihood of an individual in that category being in the category '1' for the outcome variable as explained in the table above (e.g., for Table 9 feeling satisfied with the way in which the National Health Service is run nowadays) compared with an individual in the base category. For example, in Table 9, the odds ratio of 4.34 for the category 'Positive to pandemic handling' means that those who felt more positive about Scotland's handling of the pandemic are more likely than those who felt 'Negative to pandemic handling' (base category) to feel satisfied with the way in which the National Health Service is run nowadays (and the odds of someone who is 'Positive to pandemic handling' holding this belief are 4.34 times those for someone who feels 'Negative to pandemic handling', holding all other factors constant). Conversely, an odds ratio of below 1 means they have lower odds of holding this belief than respondents in the reference category.

Because data are taken from a sample, we recognise that the odds ratios are only estimates, so we also include confidence intervals around each estimate. If the survey were to be repeated, we would expect the true value to fall within these odds ratios 95 times out of 100.

Two measures of statistical significance are provided. The first is for the comparison between a particular category and the base category, while the second is for the variable as a whole. Where the independent variable has just two categories, these are the same. A significance level of 0.05 or less indicates that there is less than a 5% chance we would have found these differences between the categories just by chance if in fact no such difference exists, hence we can say that we are 95% sure there is a relationship between the predictor and outcome variables. A level of <0.001 indicates that there is a less than 0.1% chance, so we can say that we are 99.9% sure that the relationship exists. For the purposes of Tables 1-10, we described a level of significance of less than 0.01 as "highly significant" and of between 0.01 and 0.05 as "moderately significant."

The Nagelkerke R2 value provided at the bottom of each table is a rough indication of the proportion of variation in the outcome variable explained by the predictor variables in the model. Nagelkerke's R2 is most often quoted in logistic regression as a measure of strength of association ranging from 0 to 1. The closer the R2 value is to 1, the better the model is at accurately predicting the value of the outcome variable. A value closer to 0, suggests that there are important explanatory factors which are not included in the model. This varies between 0.10 (Table 6) and 0.60 (Table 4) which is fairly typical for this type of analysis.

Appendix A - Questions

The following are the questions asked as part of the Core module on SSA 2021/22.

"Thinking back over the last twelve months, that is since {Textfill: month of interview} 2020, would you say that since then the **standard of the health service** in Scotland has increased or fallen?"

1. Increased a lot
2. Increased a little
3. Stayed the same
4. Fallen a little
5. Fallen a lot

"What do you think this has been mainly the result of…?"

1. Mainly the result of the UK government's policies at Westminster
2. Mainly the result of the Scottish Government's policies
3. For some other reason
4. Spontaneous: 'Both Westminster and Scottish Government'

"Thinking back over the last 12 months, that is since {month of interview} 2020, would you say that since then the **general standard of living** in Scotland has increased or fallen?"

1. Increased a lot
2. Increased a little
3. Stayed the same
4. Fallen a little
5. Fallen a lot

"What do you think this has been mainly the result of?"

1. Mainly the result of the UK government's policies at Westminster
2. Mainly the result of the Scottish Government's policies
3. For some other reason
4. Spontaneous: 'Both Westminster and Scottish Government'

"And what about **Scotland's economy**? Has it got stronger or weaker since {month of interview} 2020?"

1. A lot stronger
2. A little stronger
3. Stayed the same
4. A little weaker
5. A lot weaker

"What do you think this has been mainly the result of?"

1   Mainly the result of the UK government's policies at Westminster
2   Mainly the result of the Scottish Government's policies
3   For some other reason
4   Spontaneous: 'Both Westminster and Scottish Government'

"Here is a list of things the Scottish Government could try and achieve. Which do **you** think should be its highest priority, that is the **most important** thing it should try and do?"

1   Improve standards of education
2   Improve housing
3   Improve the economy
4   Improve people's health
5   Cut crime
6   Reduce environmental problems
7   Improve public transport
8   Reduce inequality
9   Other (SPECIFY)

"In general, how good would you say the **Scottish Government** is at listening to people's views before it takes decisions?"

1   Very good
2   Quite good,
3   Not very good
4   Not at all good

"And in general, how good would you say the **UK government** is at listening to people's views before it takes decisions?"

1   Very good
2   Quite good
3   Not very good
4   Not at all good

"And in general, how good would you say your **Local Council** is at listening to people's views before it takes decisions?"

1   Very good,
2   Quite good,
3   Not very good,
4   Not at all good

"How much do you trust the **UK Government** to work in Scotland's best interests?"

  1 Just about always
  2 Most of the time
  3 Only some of the time
  4 Almost never

"How much do you trust the **Scottish Government** to work in Scotland's best interests?"

  1 Just about always
  2 Most of the time
  3 Only some of the time
  4 Almost never

"How much do you trust the **UK government** to make fair decisions? (By fair decisions I mean decisions that are fair to different groups of people in the UK)."

  1 A great deal
  2 Quite a lot
  3 Some
  4 Not very much
  5 Not at all

"How much do you trust the **Scottish Government** to make fair decisions? (By fair decisions I mean decisions that are fair to different groups of people in Scotland)."

  1 A great deal
  2 Quite a lot
  3 Some
  4 Not very much
  5 Not at all

"How much do you trust your **Local Council** to make fair decisions? (By fair decisions I mean decisions that are fair to different groups of people in your local area)"

  1 A great deal
  2 Quite a lot
  3 Some
  4 Not very much
  5 Not at all

"Which of the following do you think **has** most influence over the way Scotland is run...?

    1   The Scottish Government
    2   The UK Government at Westminster
    3   Local councils in Scotland
    4   The European Union

"And which do you think **ought** to have most influence over the way Scotland is run...?"

    1   The Scottish Government
    2   The UK Government at Westminster
    3   Local councils in Scotland
    4   The European Union

"Do you think that having a Scottish Parliament is giving Scotland…?"[8]

    1   A stronger voice in the United Kingdom
    2   A weaker voice in the United Kingdom
    3   Or is it making no difference

"From what you have seen and heard so far, do you think that having a Scottish Parliament is giving Scotland…?"

    1   A stronger voice in the United Kingdom,
    2   A weaker voice in the United Kingdom
    3   Or is it making no difference

"Do you think that having a Scottish Parliament is giving ordinary people…?"[9]

    1   More say in how Scotland is governed
    2   Less say
    3   Or, is it making no difference

"From what you have seen and heard so far, do you think that having a Scottish Parliament is giving ordinary people...?"

    1   More say in how Scotland is governed
    2   Less say
    3   Is it making no difference

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[8] Half of the respondents were asked this question and the other half were asked VoiceUKb
[9] Half of the respondents were asked this version and the other half were asked SayInGv3b

"Now some statements about voting in elections. Some people say that it's very important to vote in elections, while some people say it is not important at all. How important do you think it is to vote in Scottish Parliament elections?"

    1 Very important
    2 Fairly important
    3 Not very important
    4 Not important at all

"How important do you think it is to vote in elections to the UK House of Commons?"

    1 Very important
    2 Fairly important
    3 Not very important
    4 Not important at all

"How important do you think it is to vote in local council elections?"

    1 Very important
    2 Fairly important
    3 Not very important
    4 Not important at all

"And now for a new topic.
The next few questions are about your views on how public service organisations (such as GP surgeries, hospitals, or the police) and private companies (such as supermarkets, online retailers, or banks) use your personal data. By 'personal data' we mean information such as your name, address, and health or credit records.

How much do you trust public service organisations to use your personal data only for acceptable purposes?"[10]
HELP: What are public service organisations? "Public service organisations' include GP surgeries, hospitals, and the police."
(HELP: What are personal data? "By 'personal data' we mean information such as your name, address, and health or credit records."

    1 A great deal
    2 Quite a lot
    3 Somewhat
    4 Not very much
    5 Not at all

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[10] Half of the respondents were asked PDPublicA followed by PDPrivatA and the other half were asked PDPrivatB followed by PDPublicB

"And how much do you trust private companies to use your personal data only for acceptable purposes?"
(HELP: What are private companies? "'Private companies' include supermarkets, online retailers, and banks."
(HELP: What are personal data? "By 'personal data' we mean information such as your name, address, and health or credit records."

1   A great deal
2   Quite a lot
3   Somewhat
4   Not very much
5   Not at all

"How much do you trust private companies to use your personal data only for acceptable purposes?"
(HELP: What are private companies? "'Private companies' include supermarkets, online retailers, and banks."
(HELP: What are personal data? "By 'personal data' we mean information such as your name, address, and health or credit records."

1   A great deal
2   Quite a lot
3   Somewhat
4   Not very much
5   Not at all

"And how much do you trust public service organisations to use your personal data only for acceptable purposes?"
(HELP: What are public service organisations? "Public service organisations' include GP surgeries, hospitals, and the police."
(HELP: What are personal data? "By 'personal data' we mean information such as your name, address, and health or credit records."

1   A great deal
2   Quite a lot
3   Somewhat
4   Not very much
5   Not at all

"How much say, if any, should 11-to 15-year olds in Scotland have in decisions that affect their lives?"

1   A great deal
2   Quite a lot
3   Some
4   Not very much
5   None at all

"How much say, if any, should 16-to 18-year olds in Scotland have in decisions that affect their lives?"

1   A great deal
2   Quite a lot
3   Some
4   Not very much
5   None at all

"Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"

1   Most people can be trusted
2   Can't be too careful in dealing with people

"Please tell me how strongly you agree or disagree with the following statement: 'I feel that there are people in this area I could turn to for advice and support.'" HELP: Who is meant by 'people' for advice and support? "Advice and support refers to advice and support from friends/relatives/neighbours, NOT professional help."

1   Agree strongly
2   Agree
3   Neither agree nor disagree
4   Disagree
5   Disagree strongly

Appendix B – Key sample profile comparisons

The following tables show the key sample profile differences (described in Section 8) between the SSA 2021/22 telephone survey sample and samples of previous SSA face-to-face surveys.

Educational Qualifications:

	2015	2016	2017	2019	2021/22
Degree/Equivalent	22	23	26	31	58
No Quals	19	18	15	15	4

Political Engagement – Scottish Parliament Election

	2016	2021/22
Reported Vote	70	87
Actual Vote	56	63
Error	+14	+24

Political Party Voted For – Scottish Parliament Election

	2016		2021/22	
	Constituency	List	Constituency	List
CON	18 (22)	18 (23)	14 (22)	16 (23)
LAB	21 (23)	20 (19)	15 (22)	13 (18)
LIB DEM	6 (8)	5 (5)	8 (7)	7 (5)
SNP	52 (47)	46 (42)	57 (48)	39 (40)
GREEN	3 (1)	9 (7)	5 (1)	20 (8)
OTHERS	1 (1)	2 (4)	1 (1)	3 (5)
MEAN ERROR	2.17	2.33	4.8	4.2

(Bracketed Figure is Actual Vote – Non-bracketed is reported vote)

Independence – ScotPar2

	2016	2017	2019	2021 - Panel	2021/22 – Phone
Independence	46	45	51	52	56
Devolution	42	41	36	38	35
No Parliament	8	8	7	8	8

Full question (ScotPar2):

Which of these statements comes closest to your view?

1	Scotland should become independent, separate from the UK and the European Union
2	Scotland should become independent, separate from the UK but part of the European Union
3	Scotland should remain part of the UK, with its own elected parliament which has **some** taxation powers

4   Scotland should remain part of the UK, with its own elected parliament which has no taxation powers

5   Scotland should remain part of the UK without an elected parliament

First two response categories are 'independence', categories 3 and 4 are 'devolution' and 5 is 'no Parliament'.

Independence – Vote intention

	2016	2017	2019	2021 - Panel	2021/22 - Phone
Yes	44	42	53	55	56
No	45	47	36	43	40
Not sure	8	8	7	*	2
Definitely won't vote	2	3	2	1	0
DK/Refused	1	0	1	*	3

	2016	2017	2019	2021/22 - Panel	2021/22 - Phone
Yes – excluding DK	50	48	60	56	59

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