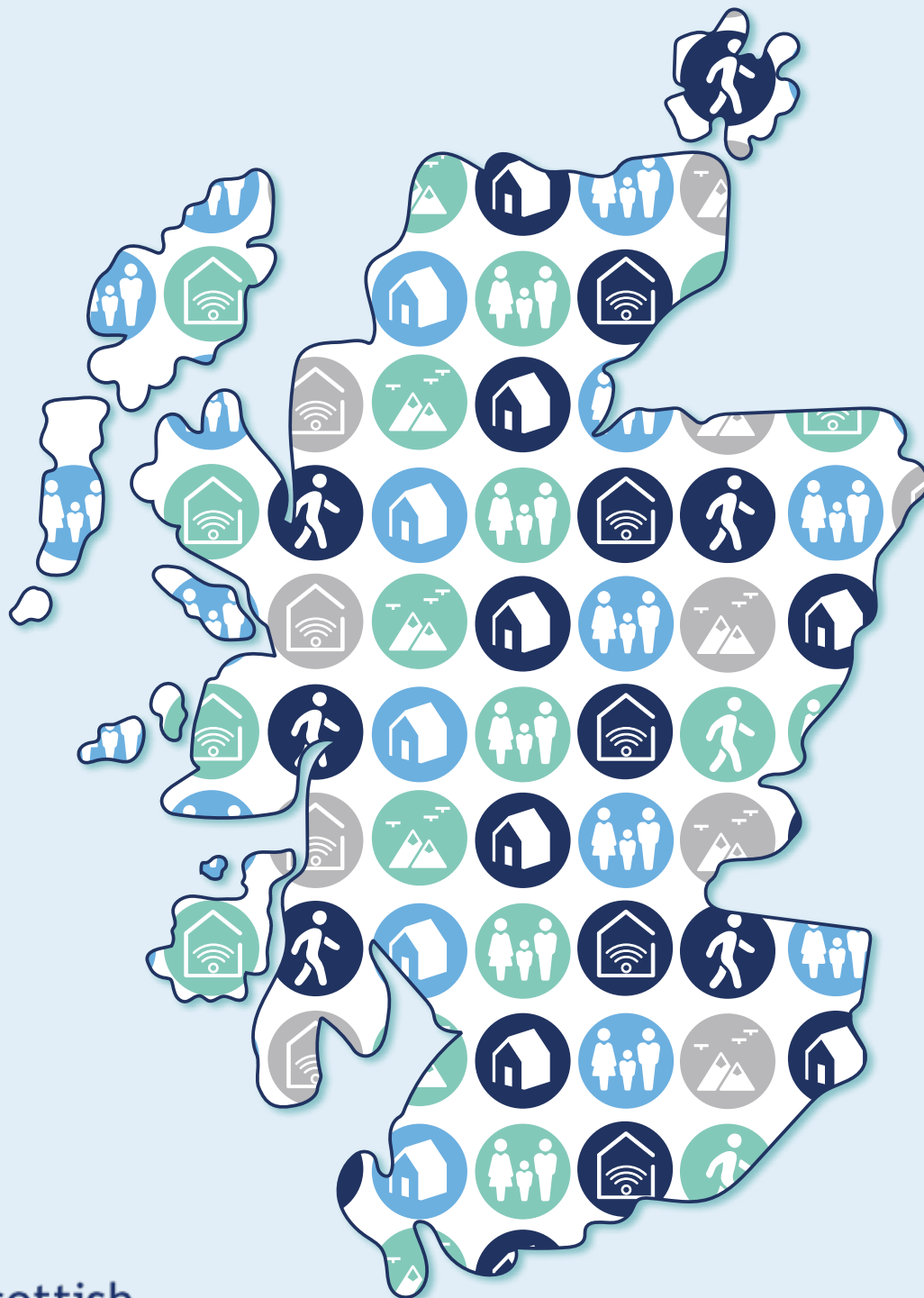


# Scottish Household Survey

## 2021: methodology and fieldwork outcomes

An Experimental Statistics Publication for Scotland



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# Survey overview

The Scottish Household Survey (SHS) is an annual survey based on a sample of the general population in private residences in Scotland.

It is designed to provide reliable and up-to-date information on the characteristics, attitudes and behaviour of Scottish households and individuals, both nationally and at a sub-national level, and to examine the physical condition of Scotland's homes. It covers a wide range of topics. The specific aims of the survey are:

- Produce high quality data, in accordance with the Code of Practice for Official Statistics, that is suitable for the production of National Statistics publications.
- Meet central and local Government needs for policy relevant data across a broad range of topics.
- Enable detection of trends over time, and continue monitoring of trends from previous sweeps of the survey.
- Be flexible enough to respond to different data needs regarding geography and frequency (e.g. to provide some data annually at local authority level, and some biennially at a national level).
- Enable disaggregation of data both geographically (e.g. by local authority) and in terms of population subgroups (e.g. equality groups), combining data across survey sweeps where necessary to achieve an adequate sample.
- Align with other surveys and data vehicles (in particular in relation to the Scottish Surveys Core Questions, which are also included in the Scottish Health Survey and the Scottish Crime and Justice Survey).

The survey is funded by the Scottish Government and run through a consortium led by Ipsos.

The survey started in 1999, and up to 2011 followed a fairly consistent survey design. The data was collected over two years and the local authority level data was available only after the two-year cycle was completed.

From 2012 onwards, the survey was substantially redesigned to include elements of the [Scottish House Condition Survey](#) (SHCS) including the follow-up physical survey component. The new SHS went in to the field with a substantially restructured sample design, integrating the previous SHCS. The new survey uses a fully unclustered core and modular structure with some questions asked of the full sample and others of a one-third sub-sample.

The overall sample size has reduced from around 14,000 household interviews to about 10,000 though improvements in efficiency of the survey design mean it is possible to obtain local authority estimates on an annual basis where sample sizes produce robust estimates. This also means that any set of years can be combined to create larger samples, where necessary. While the overall sample size of the

survey has reduced, the survey design improvements have meant that the precision of estimates has not been affected significantly.

In March 2020, fieldwork was suspended in response to the Covid-19 pandemic. Only a small proportion of the 2020 survey had been completed. The approach was adapted and the remainder of the 2020 social survey fieldwork was carried out using remote (telephone or video) interviewing, instead of the usual face-to-face interviewing. The 2021 SHS continued to use remote interviewing.

Following the suspension of face-to-face interviewing in March 2020, there was no further physical survey data collection in 2020. The 2021 physical survey was carried out by an external-only inspection.

# Sample design

## Requirements

The sample for the 2021 Scottish Household Survey (SHS) was designed by the Scottish Government. From 2012, [the sample design has been coordinated with the sample designs for the Scottish Health Survey \(SHeS\) and the Scottish Crime and Justice Survey \(SCJS\)](#), as part of a survey efficiency project to allow the samples of the three surveys to be pooled for further analysis.

The SHS sample has been designed to allow annual publication of results at Scotland level and for local authorities. To meet these requirements, the target sample size for Scotland was 10,450 household interviews with a minimum local authority target of 250. From 2012, the physical survey of the Scottish House Condition Survey (SHCS) has been incorporated into the SHS. The SHCS has a required sample size of 3,004 for Scotland and a minimum of 80 for each local authority.

## Sample design and assumptions

The Scottish Household Survey has a single-stage unclustered sample design. In order to provide annual local authority results without specifying an excessive overall sample size, the sample was disproportionately stratified by local authority (smaller local authorities have a higher sample proportion relative to their populations than the larger local authorities).

To deliver the required local authority precision, the minimum sample size for each local authority was set at 250. In order to estimate the annual target achieved sample size for each local authority, analysis of design effects from the 2007-08 survey was undertaken, since the effective sample size is equal to the achieved sample size divided by the design effect.

As rural areas of local authorities were clustered in the 2007-08 survey, for the 2021 unclustered sample the median design effect from a range of variables for the unclustered parts of local authority samples were assumed for the entire areas in 2021. This allowed the calculation of the target achieved sample size for each local authority, as shown in Table 1.

Normally, the sampling assumptions about eligibility and response rates are based on historic data at the local authority level from multiple previous waves of the face-to-face SHS. In order to provide the full number of social interviews (10,450) across Scotland, and to meet the local authority targets as far as possible, the sampling approach was adjusted to reflect the lower anticipated response rate compared to the traditional face to face approach.

The sample was drawn in two batches. Assumptions used to draw the sample for the first 6 months of fieldwork were based on data from the 2020 telephone pilot. These were revised before drawing the sample for the remaining 6 months, based on initial outcomes from the 2021 fieldwork. The revised assumptions also took into

account that telephone matching, which was used for the 2020 fieldwork and the first half of 2021, would not be used for the second half of the 2021 fieldwork.

Table 1: Social survey target sample sizes and selected addresses

Local authority	Target	Sampled	Local authority	Target	Sampled
Aberdeen City	357	3,511	Highland	362	2,451
Aberdeenshire	372	2,501	Inverclyde	250	2,237
Angus	250	2,574	Midlothian	250	2,605
Argyll and Bute	250	2,199	Moray	250	1,605
Clackmannanshire	250	2,065	North Ayrshire	250	2,379
Dumfries and Galloway	250	2,056	North Lanarkshire	506	5,676
Dundee City	250	2,908	Orkney	250	1,711
East Ayrshire	250	2,224	Perth and Kinross	250	2,283
East Dunbartonshire	250	1,578	Renfrewshire	283	2,530
East Lothian	250	1,617	Scottish Borders	250	1,404
East Renfrewshire	250	1,843	Shetland	250	1,626
Edinburgh City	783	5,255	South Ayrshire	250	1,873
Na h-Eileanan Siar	250	2,018	South Lanarkshire	486	5,001
Falkirk	250	2,284	Stirling	250	1,698
Fife	559	4,936	West Dunbartonshire	250	3,407
Glasgow City	985	10,180	West Lothian	257	1,929

## Telephone matching

A telephone matching exercise was undertaken to help increase the number of completed surveys. This involved matching names and telephone numbers to addresses using publicly available sources, such as the electoral register and the telephone directory. Telephone matching was undertaken for all the the entire 15,400 addresses remaining in the 2020 sample when face-to-face fieldwork was stopped.

Two different suppliers were engaged to undertake the telephone matching. The process involved linking the addresses, sampled from the PAF, with databases they held to attempt to match in a name of someone within the household and then, if possible, a telephone number. Overall, telephone matches was successful for 34% of addresses. As the initial sampling of addresses had assumed a matching rate of 23% (the success rate for the 2020 addresses not worked when the pandemic hit) only a proportion of these telephone number were used.

Table 2: Matching rates – 2021 H1 sample

	N	%
No match	17,563	66%
Match from Supplier 1	1,863	7%
Match from Supplier 2	4,043	15.2%
Match from both suppliers	3,142	11.8%
<b>Total</b>	<b>26,611</b>	<b>100%</b>

The sample was drawn in two stages – H1 at the start of the fieldwork year, and H2 mid way through the fieldwork year. A review of the data was undertaken prior to the H2 sample being drawn. Overall, while the telephone matched data resulted in a higher response rate than the opt-in only sample, the profile of the achieved sample was further from previous estimates, and it was decided to not undertake telephone matching in the second half of the sample.

### Physical survey sub-sample

Completion of the physical survey requires that selected households respond to the main social survey and agree to a follow-up visit for the physical survey to be completed. Similar to the social survey, all assumptions underpinning the sampling approach had to be revised. Pre-pandemic, sample targets were set using estimates of conversion rate from household interview to physical survey by local authority.

However, the 2020 Push to telephone/video suggested that owner-occupiers were more likely to take part than those in the private or social rented sectors. Rather than allocating an address to the SHCS before the interview as had been done previously, sampling was done within the interview after tenure had been established rather than the selection being done prior to the fieldwork. The social survey interview script routed a certain proportion into the physical survey based on tenure and local authority.

For the first half of the 2021 all non-owner-occupiers were routed into the SHCS and asked to allow a surveyor visit. For owner-occupiers, the sampling fraction differed by local authority.



Table 3: Proportion of social interviews routed into the SHCS elements – first half of 2021 fieldwork

<b>Local authority</b>	<b>Owner-occupier</b>	<b>Non-owner-occupiers</b>	<b>Local authority</b>	<b>Owner-occupier</b>	<b>Non-owner-occupiers</b>
Aberdeen City	35.4%	100%	Highland	35.3%	100%
Aberdeenshire	35.7%	100%	Inverclyde	48.8%	100%
Angus	45.3%	100%	Midlothian	46.1%	100%
Argyll and Bute	46.5%	100%	Moray	48.6%	100%
Clackmannanshire	45.4%	100%	North Ayrshire	47.4%	100%
Dumfries and Galloway	42.3%	100%	North Lanarkshire	36.9%	100%
Dundee City	44.8%	100%	Orkney	42.1%	100%
East Ayrshire	45.6%	100%	Perth and Kinross	44.5%	100%
East Dunbartonshire	46.9%	100%	Renfrewshire	43.8%	100%
East Lothian	47.5%	100%	Scottish Borders	48.8%	100%
East Renfrewshire	47.9%	100%	Shetland	41.6%	100%
Edinburgh City	36.4%	100%	South Ayrshire	48.0%	100%
Na h-Eileanan Siar	45.4%	100%	South Lanarkshire	37.4%	100%
Falkirk	46.3%	100%	Stirling	45.5%	100%
Fife	34.1%	100%	West Dunbartonshire	46.2%	100%
Glasgow City	37.3%	100%	West Lothian	44.6%	100%

The sample fractions were revised in the second half of 2021 based on updated projections of likely number of returns, with a fixed proportion of all tenures being routed into the SHCS elements.

Table 4: Proportion of social interviews routed into the SHCS elements – second half of 2021 fieldwork

Local authority	Owner-occupier	Non-owner-occupiers	Local authority	Owner-occupier	Non-owner-occupiers
Aberdeen City	24.6%	28.4%	Highland	16.5%	27.8%
Aberdeenshire	26.2%	26.9%	Inverclyde	16.1%	18.2%
Angus	32.8%	43.4%	Midlothian	39.5%	63.9%
Argyll and Bute	35.4%	38.8%	Moray	19.7%	32.3%
Clackmannanshire	14.8%	54.8%	North Ayrshire	34.1%	30.9%
Dumfries and Galloway	23.5%	64.4%	North Lanarkshire	27.7%	14.1%
Dundee City	31.3%	49.1%	Orkney	34.9%	39.2%
East Ayrshire	32.2%	53.4%	Perth and Kinross	32.2%	49.0%
East Dunbartonshire	26.1%	29.0%	Renfrewshire	33.4%	1.9%
East Lothian	32.0%	96.9%	Scottish Borders	22.3%	57.2%
East Renfrewshire	39.2%	65.0%	Shetland	36.2%	40.6%
Edinburgh City	14.7%	27.1%	South Ayrshire	48.8%	35.8%
Na h-Eileanan Siar	45.1%	89.2%	South Lanarkshire	29.7%	16.2%
Falkirk	22.3%	64.9%	Stirling	33.1%	25.0%
Fife	16.0%	24.6%	West Dunbartonshire	23.7%	49.0%
Glasgow City	17.7%	8.3%	West Lothian	10.4%	60.5%

## Sample selection

The Royal Mail's small user Postcode Address File (PAF) was used as the sample frame for the address selection. The advantages of using the small user PAF are as follows:

- It has previously been used as the sample frame for Scottish Government surveys, so previously recorded levels of ineligible addresses can be used to inform sample design assumptions.
- It has excellent coverage of addresses in Scotland.
- The small user version excludes the majority of businesses.

The PAF does still include a number of ineligible addresses, such as small businesses, second homes, holiday rental accommodation and vacant properties. A

review of the previous performance of individual surveys found that they each recorded fairly consistent levels of ineligible address for each local authority. This meant that robust assumptions could be made for the expected levels of ineligible addresses in the sample size calculations.

As the samples for the SHS, SHeS and SCJS have been selected by the Scottish Government since 2012 onwards, addresses selected for any of the surveys are removed from the sample frame for a minimum of 4 years, so that they cannot be re-sampled for another survey. This helps to reduce respondent burden and facilitates the development of the pooled sample.

Systematic random sampling was used to select the addresses from the sample frame, with the addresses ordered by urban-rural classification, SIMD rank and postcode.

A small number of addresses have only one entry in the PAF but contain multiple dwelling units. Such addresses are identified in the PAF by the Multiple Occupancy Indicator (MOI). To ensure that households within MOI addresses had the same probability of selection as other households, the likelihood of selecting the addresses were increased in proportion to the MOI. For addresses flagged as having multiple dwellings in the PAF, the dwelling to interview was randomly selected as part of the sample selection process.

As the survey is intended to collect information both about the structure and characteristics of Scottish homes and about the people who occupy them, the interview has a two-part structure. The respondent for the first part of the interview must be a householder – generally the Highest Income Householder or their spouse or partner<sup>1</sup>. For the second part of the interview, one adult (aged 16+) member of the household is selected at random by the CAPI script<sup>2</sup>.

Finally, addresses were grouped into batches for effective fieldwork. This was done by minimising the distance required to visit each address in a batch. Batches were then allocated to a particular fieldwork quarter. All quarters had, as far as possible, the same number of batches in each local authority to help ensure that the fieldwork was carried out throughout the year.

To meet the need for modularisation, all sampled addresses were randomly assigned to one of 12 sub-samples or interview streams, which could be used as the basis for assigning sub-samples of respondents to particular blocks of

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<sup>1</sup> This must be a person in whose name the accommodation is owned or rented or who is otherwise responsible for the accommodation. The Highest Income Householder (HIH) is taken as the household reference person for the first part of the interview. In households with more than one householder, the person with the highest income is taken as the household reference person. If householders have exactly the same income, the older or oldest is taken as the household reference person.

<sup>2</sup> The selection of the random adult is slightly more complex than this. The random adult needs to be one of the adult household members who is aged 16 years or over, is normally resident during term time (if a student) or has not been living outside of the household for 6 months or more.

questions. The [published version of the questionnaire](#) indicates where streaming is used.

Households are usually assigned to take part in the physical survey based on streams. However, in 2021, households from all streams of the social survey were asked to take part in the physical survey, with a set proportion from each tenure being asked to take part. This attempted to compensate for the over-representation of owner occupiers in the social survey when it was carried out over the telephone, and the knock-on effect this would have on the tenure profile of the physical survey sample.

# Data collection methods and instruments

## Computer Aided Personal Interviewing (CAPI)

In common with many other large-scale government surveys, the SHS social interview is carried out using Computer Aided Personal Interviewing (CAPI). This offers a number of important advantages over traditional pen-and-paper interviewing for a survey of this kind.

CAPI programming is integral to ensuring high quality data. The main parameters of the data are defined within the programme, such as; the acceptable range of responses to a question; the acceptable relationships between questions – or, the routing; and the relationships between responses given at different questions.

## Social survey questionnaire structure

The social questionnaire is in two parts:

- Household – Information is collected about the composition and characteristics of the household from the Highest Income Householder or their spouse/partner. This allows the SHS to produce information representative of Scottish households. A ‘random school child’ is also selected, and the household respondent answers questions about the school that child attends and how the child travels there.
- Random adult – Information is collected focusing on the attitudes and experiences of a randomly selected adult member of the household. This element also covers the ‘Travel Diary’ component which asks about travel behaviours on the day previous to that of the interview day. This produces data representative of the Scottish adult population resident in private households.

The questionnaire has been designed to give flexibility in terms of topic, frequency and geography. For example, questions asked of the full sample and asked on an annual basis would be able to provide local authority level estimates on an annual basis. Similarly, questions might be asked of 1/3 of the sample on a biennial basis (i.e. asked every second year). Such questions would provide national level estimates.

The 2021 questionnaire is provided as a supporting document to this publication.

## Physical survey

At the end of the household component of the survey, the household respondent is asked if they would be willing to have the follow-up component ‘physical survey’ of the dwelling arranged. These are conducted by professional surveyors through a visual inspection of the dwelling, to assess the condition, design and energy efficiency of the home. Physical survey appointments are generally made for between 7 and 14 days after the interview date.

## Survey fieldwork

The social survey fieldwork for the 2021 sample began in April 2021 and completed in March 2022. The physical survey fieldwork began in May 2021 and completed in April 2022.

All interviews were undertaken remotely by telephone or video. There was no travel by interviewers.

Households were sent a letter and leaflet outlining the purpose of the survey and the importance of participation. Participants were directed to an online portal where they could log in using a unique reference and then submit their name and contact details.

In the first half of the fieldwork, telephone matching was carried out, matching names and telephone numbers to addresses using publicly available sources, such as the electoral register and the telephone directory. Matching was successful for 34% of addresses. Analysis carried out during 2021, comparing the 2019 and 2020 results for variables we would expect to be relatively stable, found that the estimates from the 2020 telephone matched sample generally were substantially further from the 2019 figures than those from the 2020 opt-in sample. Therefore, telematching was not used for the second half of the 2021 fieldwork.

With no interviewer travel allowed, gaining consent for interview came either from respondents opting-in on receipt of the advance materials, or in response to an approach by telephone. After the initial mail-out, addresses where a phone number had been obtained were followed up by a telephone call. Interviewers made at least 8 attempts to call each telephone number.

For those where we were unable to obtain a telephone number, two reminders were sent after the initial mail-out, a postcard reminder followed by a letter reminder. Towards the end of the fieldwork year, a fourth reminder mail-out was sent to 35,000 of the addresses that did not opt-in in response to first three approaches.

To encourage participation, respondents were given a conditional incentive of £20 for completing the interview.

The tote bag incentive experiment that was running in the first half of the 2020 wave was restarted in 2021. Tote bags were included with the first letter to half of the sample of addresses for which Ipsos was unable to obtain a telephone number. The results of this experiment are available on the supporting documents page.

# Physical fieldwork and physical survey form

## Physical survey team

The physical survey team comprised 60 surveyors and 4 Regional Managers. The Regional Managers also acted as surveyors.

Surveyors are required to be fully professionally qualified. They were recruited from a variety of different dwelling-related professions: chartered surveyors, architects, civil and structural engineers, environmental health officers and building control officers.

New recruits attend a five-day residential training course, including fieldwork practice, so that they are fully proficient with the methodology used in the SHCS.

The role of the Regional Manager is to ensure the quality of the surveyor data. They oversee the work of each of their surveyors, and accompany all new surveyors on at least two inspections.

## Types of physical survey

There are usually three different types of physical survey:

- Full surveys - A visual inspection of both the inside and outside of a property. The surveyor is required to complete all parts of the physical survey form. Surveyors take four photographs to accompany each full physical survey: one each of the front and the back of the property, and two of the surrounding area.
- Dwelling description - A short physical survey that provides a summary of the property only, and one photograph. This is carried out if the dwelling is vacant or a second/holiday home, if no contact with the householder has been possible, or if the householder completed the social survey but after at least 4 attempts a full physical survey cannot be completed.
- Abbreviated dwelling description - Collects information on the age and type of dwelling only. This is carried out if the householder refuses to take part in the social survey.

However, in 2021, no dwelling descriptions or abbreviated dwelling descriptions were carried out, and full surveys were replaced with 'external+' surveys. Surveyors did not enter dwellings, or internal common parts of common blocks such as tenement stairs. A visual inspection of the outside of the property was supplemented with data from Energy Performance Certificates and householders providing information to surveyors over the telephone.

The physical fieldwork took place in COVID protection levels 0, 1 and 2 only. Households living in level 3+ areas were still be invited to participate in the external physical survey, but the appointment was banked and carried out only once the

area has returned to a lower protection level. No summary surveys (Dwelling Descriptions and Abbreviated Dwelling Descriptions) were collected.

## **Physical survey form**

The SHS physical survey is a dwelling-based survey of the home and surrounding area and uses a paper form formatted for use with digital pens.

The physical survey form can be found in the [technical reports section of the current SHCS website](#). The survey form included sections relating to:

- type, age and size of the dwelling
- types of defects
- basic amenities
- heating systems and insulation
- dwelling measurements
- external construction and materials used
- external repairs required
- Statutory Action and Tolerable Standards



# Data processing

## Social data processing

The raw data was initially split into 3 files. Data from the 'other (write in)' variables and open-ended data was extracted for coding separately. Additionally, the variables used to produce NS-SEC variables were extracted into a separate file for coding<sup>3</sup>.

The main data file was subject to checks and editing involving:

- Range checks, confirming that all variables were within the acceptable limits established for the question concerned.
- Simple logic checks ensuring the relationships between questions were logical. For example, that the number of people answering a filtered question is equal to the number of people giving the appropriate response at the filtering question.
- Complex logic checks. These involved examining the relationships between variables and assessing the logic of combinations of responses. Combinations of age and working status, age and relationships to other household members, for example, were checked to assess the logic of someone aged over 60 years and coded as the child of another household member.

The data then underwent two additional processes. Firstly, the calculation of derived variables such as the household type, and secondly, the imputation of household income, housing costs and childcare costs. Details of the derived and imputed variables are provided in the supporting documents to this report. The edited data was delivered to the Scottish Government, who ran further checks on the data. Any data issues identified by the Scottish Government were discussed and, where necessary, corrected, and the data processing routines were amended.

## Physical survey data validation

The data from the physical survey forms were uploaded into the physical survey validation system together with the photographs of each dwelling.

The validation system worked by applying a set of rules (the same rules as used in previous years) provided by the Scottish Government, to the raw data, to ensure the accuracy and validity of each item of data entered. This included range checks on all fields, detailed consistency checks making use of the redundancy built into the survey schedule and plausibility checks on all appropriate items. Rules cross-reference different parts of the survey form (e.g. if the dwelling is a house, then

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<sup>3</sup> NS-SEC can also be automatically assigned to SEG codes, which allow a degree of backward compatibility with Socio-economic Group.

aspects of common dwelling section should not be completed; if the house is a flat, then details for common parts should be present).

Surveyors were shown a list of all the errors picked up by the validation program. Additionally, they were shown a list of all the entered data, with a description of the variable next to each bit of data, and with the data split into representations of each page of the form. The validation system showed the data and the failed edits as well as showing the photographs of the property.

Corrections were then made and each form rechecked until it passed all edits. Changes to the data were made simply by overtyping the incorrect data where it was displayed. Once a surveyor had completed validation, the data was forwarded to their Regional Manager for sign-off. Validation of each form was completed when all errors had been eliminated or a supervisor had determined that the dwelling genuinely falls outside the validation criteria. An audit trail of changes made to the data was kept.

# Survey response

## Scotland level

The final number of social survey interviews achieved was 9,952. This is lower than the target of 10,450 interviews and represents an overall response rate of 11%.

Normally response rates are reported as total interviews over eligible addresses. However, it is not possible to get accurate estimates of deadwood (ineligible addresses) from the alternative SHS approaches (since without face-to-face visits, we cannot identify what proportion of addresses were vacant or derelict or otherwise ineligible). The best comparison between the different approaches is to use total interviews achieved divided by all addresses. This is sometimes referred to as the “unadjusted response rate”.

Table 5: Unadjusted response rates by year and sub-sample

	2018	2019	2020	2021
All	56.3%	57.2%	19.7%	11.0%
Opt-in	n/a	n/a	14.5%	10.0%
Telephone-matched	n/a	n/a	37.1%	25.2%

The response to the opt-in only sample reduced over time, from 12-13% in the earlier waves to 10% in the later waves.

Table 6: Unadjusted response rates by wave and sub-sample

	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	Total
Portal / telephone opt-ins	14.0%	15.6%	14.3%	11.8%	12.9%	11.2%	10.1%	9.2%	9.6%	11.3%	11.8%
Opt-ins resulting in interviews	85.0%	83.0%	78.8%	88.6%	87.5%	85.4%	82.5%	85.8%	87.2%	86.8%	85.1%
Overall unadjusted response rate	11.9%	13.0%	11.2%	10.5%	11.3%	9.5%	8.3%	7.9%	8.4%	9.8%	10.0%

The conversion from household interview to random adult completion was 91.5% in 2021 (compared to 92% in 2019 and 2020).

## Local authority level

Table 7: Unadjusted response and interview numbers by local authority

Local authority	Response rate – Opt-in	Response rate – Telephone-matched	Response rate - overall	Household interviews	Random adult interviews
Aberdeen City	8.4%	14.8%	8.9%	311	298
Aberdeenshire	11.7%	19.9%	12.6%	315	283
Angus	9.3%	21.6%	9.9%	256	231
Argyll and Bute	11.6%	19.7%	12.1%	267	244
Clackmannanshire	9.9%	33.5%	12.1%	249	233
Dumfries and Galloway	11.1%	21.1%	11.9%	244	219
Dundee City	7.4%	20.5%	7.9%	229	206
East Ayrshire	9.3%	17.1%	9.8%	219	200
East Dunbartonshire	13.4%	29.5%	14.6%	231	197
East Lothian	14.0%	24.6%	15.0%	242	214
East Renfrewshire	13.1%	25.2%	14.1%	259	242
Edinburgh City	14.1%	28.9%	15.0%	788	725
Na h-Eileanan Siar	9.1%	38.1%	11.0%	221	209
Falkirk	8.9%	23.5%	9.9%	227	202
Fife	9.7%	30.8%	11.3%	556	500
Glasgow City	8.4%	18.1%	8.8%	900	825
Highland	12.8%	34.0%	14.6%	359	329
Inverclyde	8.6%	24.0%	10.0%	223	200
Midlothian	9.0%	19.2%	9.6%	250	223
Moray	13.3%	26.8%	14.5%	233	216
North Ayrshire	8.7%	23.1%	9.7%	231	208

North Lanarkshire	6.9%	23.7%	7.9%	447	398
Orkney	12.4%	35.7%	14.1%	242	222
Perth and Kinross	11.5%	26.1%	12.2%	278	258
Renfrewshire	9.9%	25.2%	10.7%	270	238
Scottish Borders	14.3%	42.0%	17.2%	242	222
Shetland	12.9%	33.1%	14.4%	234	211
South Ayrshire	11.0%	29.6%	12.7%	238	208
South Lanarkshire	8.7%	24.8%	9.7%	486	441
Stirling	14.0%	27.6%	15.0%	254	233
West Dunbartonshire	6.3%	21.2%	7.0%	238	208
West Lothian	9.9%	18.9%	11.0%	213	191
TOTAL	10.0%	25.2%	11.0%	9952	9034

## Physical survey

Table 8 shows the percentage and number of those asked to take part in the physical survey who went on to complete it. There was a target of at least 80 completed physical surveys for each local authority along with a target of 3,004 surveys for Scotland. The total number of completed physical surveys was 3,174, exceeding the target of 3,004.

The conversion rate from household survey to physical survey was 80% overall. This is considerably high than normal because of the change of approach to the social and physical survey. Overall, 83% of eligible households taking part in the social survey agreed to a surveyor appointment and 96% of these resulted in an External+ physical survey being achieved.

Table 8: Conversion to full physical survey

Local authority	Physical surveys	Conversion rate	Local authority	Physical surveys	Conversion rate
Aberdeen City	82	76%	Highland	89	82%
Aberdeenshire	82	74%	Inverclyde	79	81%
Angus	85	86%	Midlothian	91	82%
Argyll and Bute	100	81%	Moray	80	82%
Clackmannanshire	88	87%	North Ayrshire	92	79%
Dumfries and Galloway	69	77%	North Lanarkshire	124	82%
Dundee City	92	81%	Orkney	100	86%
East Ayrshire	75	82%	Perth and Kinross	103	82%
East Dunbartonshire	76	84%	Renfrewshire	87	86%
East Lothian	94	77%	Scottish Borders	89	76%
East Renfrewshire	80	74%	Shetland	81	86%
Edinburgh City	201	76%	South Ayrshire	86	80%
Na h-Eileanan Siar	80	67%	South Lanarkshire	122	73%
Falkirk	80	78%	Stirling	87	87%
Fife	144	84%	West Dunbartonshire	77	77%
Glasgow City	286	80%	West Lothian	73	79%

# Weighting

## Introduction

Weighting aims to ensure that the Scottish Household Survey results represent the population of Scotland as a whole. The procedures for the implementation of the weighting methodology were developed by the Scottish Government working with the Methodology Advisory Service at the Office for National Statistics. The weighting procedures for the SHS incorporate:

- Selection weighting to address unequal selection probabilities resulting from the sampling methods.
- Calibration weighting to correct for non-response bias. Calibration weighting derives weights such that the weighted survey totals match known population totals. For the 2021 SHS, the population totals used were the National Records of Scotland's (NRS) [Mid-2021 Population Estimates Scotland](#). For households, the NRS [Households and Dwellings in Scotland, 2021](#) estimates were used and these were also used for the physical survey. The NRS [Mid-2021 Small Area Population Estimates for 2011 Data Zones](#) and the 2021 [Small Area Statistics on Households and Dwellings](#) were used for population and household totals by SIMD quintile and Urban Rural Classification.
- To undertake the calibration weighting the ReGenesees Package for R was used. Within this, to execute the calibration, a linear distance function was implemented.

## Changes to weighting approach for 2020 and 2021

Up to and including the 2019 SHS, results had been weighted in broadly the same way. However, the shift from face-to-face to remote interviewing in 2020 was associated with changes in the profile of the achieved sample that were unlikely to reflect real changes in Scotland's population. These included:

- Tenure type – increase in owner-occupation and a decrease in rented housing, particularly social rented housing.
- Length of time at property – increase in the proportion of respondents who had lived at their address for over 15 years.
- Property type – increase in houses, decrease in flats.
- Age – increase in household and random adult respondents aged 60+.
- Highest educational attainment – increase in random adults with a degree or professional qualification, decrease in adults with Level 1 qualifications or no educational qualifications.
- SIMD quintile – skew towards lower deprivation, with an increase in respondents from the two least-deprived quintiles.

As a result, alternative weighting methods to those used pre-2020 were developed. The changes to the weighting methodology for the 2020 SHS, and the rationale behind these, are described in detail in the 2020 methodology report. The main change was to add the proportion of the population living in each SIMD quintile and 6-fold rural-urban classification as calibration targets, to address the more pronounced under-representation of households from urban and deprived areas than in previous years. A separate weight for use with the housing data was also created, which added calibration targets for tenure based on the SSCQ 2019 data. This gave more feasible results for a range of housing related measures including dwelling type, number of bedrooms, housing views and aspirations, and households on a housing list.

Due to the methodology used to collect the 2021 SHS data, the profile of the achieved sample differed from 2019 and earlier in a similar way to the 2020 SHS data. When weighting the 2021 data, two primary approaches were considered. One was to use the 2019 (and earlier) calibration models, while the second was to use the 2020 calibration models. Both approaches produced similar results. For all of the key measures that would be expected to remain broadly stable in the population, there were no statistically significant differences between the 2020 results and the 2021 results when weighting using either approach. However, the differences between the 2020 and 2021 achieved samples were least when the 2020 approach was used. Therefore, to maximise comparability with the 2020 results, the 2021 results were weighted using the 2020 approach.

The weight for use with the 2021 housing data includes calibration targets for tenure based on the SSCQ 2019 data. There are two issues associated with this. First, to a degree this effectively calibrates the SHS data against itself, as a large proportion of the SSCQ data is comprised of that collected through the SHS. Second, tenure data from the 2019 SSCQ are now two years older than the SHS data. However, due to the lack of complete administrative data or data from a recent census on household tenure, there was no ideal alternative if we wished to consider a calibration model that included household tenure.

## **Household weights**

This weight is for use with variables that relate to the household. There were three steps to creating the household weight:

### **1) Selection weights**

The address selection weights were calculated to compensate for unequal probabilities of selection of addresses in different survey strata. For the SHS there were 32 strata – one for each local authority. The address selection weight for each stratum was calculated as the proportion of Scottish households (from NRS estimates) in the stratum, divided by the proportion of all responding addresses in the stratum. Though the SHS sample was drawn in two halves, with telephone matching used for the first half of the sample but not the second, results for 2021 are being presented by combining the two halves of the sample. Therefore, the selection probabilities have been averaged across the two halves of the sample.



## 2) Calibrated household weight

The stratum selection weight was applied to the survey data to act as entry weights for the calibration. The execution of the calibration step then modified the entry weights so that the weighted total of all members of responding households matched NRS population totals for age bands and sex within each local authority. Similar to the [weighting of the 2020 survey](#), SIMD quintiles and Urban-Rural Classification were also included in the calibration at local authority level.

As with the 2020 survey, an alternative method was used to produce weights for housing related questions. A constraint was added to ensure that households matched percentage estimates by household tenure (owner occupied households and all other tenures combined) within each local authority based on estimates from the [Scottish Survey Core Questions \(SSCQ\) 2019](#).

## 3) Households adjustment

The calibration step ensured that survey totals matched the population totals for local authorities but not the household totals. To make the sample representative of households at local authority level, a scaling factor was applied so that the weighted number of households from the sample matched the NRS local authority household estimates.

## Random adult weights

Within responding households a random adult was selected to answer individual questions. There were three stages to creating the random adult weights:

### 1) Stratum selection weight

A new stratum selection weight is required for the random adults as the reference population is all adults within the stratum. Also, not all random adults in households that completed the household section responded to the survey. The stratum selection weight was calculated as the proportion of Scottish adults in the stratum (from NRS estimates) divided by the proportion of all responding adults in the stratum.

### 2) Adult selection weight

The probability of an adult within a household being selected for the random adult interview was inversely proportional to the number of adults within a household – i.e. in a single adult household the only adult resident must be sampled but in a three adult household each adult only has a one in three chance of being selected. To correct for this unequal probability of selection an adult selection weight equal to the number of adults in the household was applied.

### 3) Calibrated weight

The stratum selection weight and adult selection weight were multiplied together and applied to the survey data. The execution of the calibration step then modified

these combined entry weights so that the weighted total of responding random adults matched NRS adult population totals for age bands and sex within each local authority. Similar to the household weights, SIMD quintiles, Urban-Rural Classification and household tenure (housing related questions) were also included in the calibration at local authority level.

## **Random schoolchild weights**

A separate weight was required for information collected about a random schoolchild within responding households. The weighting procedures for the random schoolchild were similar to those for the random adult:

### 1) Stratum selection weights

Stratum selection weights were calculated as the proportion of Scottish school age children in the stratum (from NRS estimates), divided by the proportion of all responding school children in the stratum.

### 2) Random schoolchild selection weight

As with the random adult weight, only one child was selected within each household so a selection weight equal to the number of eligible children in the household was required.

### 3) Calibration weight

Population estimates for the number of schoolchildren resident in each local authority are not available. Available population estimates are for child age, and the school census gives the local authority totals for place of schooling rather than residence. Therefore, the population of schoolchildren was estimated using the survey data by applying the household grossing weight to calculate the total number of pupils in each local authority by age group. The selection weights were then combined and applied to the data before the calibration was run to match the random schoolchild totals to the target populations by age group and local authority. Similar to the household and random adult weights, SIMD quintiles, Urban-Rural Classification and household tenure (housing related questions) were also included in the calibration at Scotland level.

## **Travel diary weight**

The travel diary questions were asked as part of the random adult interview. The travel diary collects information on all travel undertaken on the day prior to interview. Over the fieldwork period significantly fewer interviews took place on Fridays, Saturdays and Sundays when compared to other days.

The working status of respondents was also found to vary across day of response, with disproportionately more adults in full-time employment interviewed at the weekend.

These factors resulted in two stages of rescaling the random adult weights for travel diary analysis:

1) To ensure the travel diary was representative of travel patterns for the week as a whole, the random adult weights were rescaled so that the weighted number of interviews was equal for each day of the week. The scaling factor was given by dividing the total number of interviews by 7, and then dividing by the weighted (using the random adult weight) total interviews on that day:

$$\text{Day } i \text{ scaling factor} = \frac{\left( \text{Total interviews} / 7 \right)}{\text{Weighted (using rand ad weight) total of interviews on day } i}$$

To ensure the travel diary was representative of working status across each day, a second scaling factor was derived such that the working status breakdown for each day was equal.

The scaling factor was given by dividing the total number of responses for each working status by 7, and then dividing by the weighted (using the random adult weight) total interviews for that working status on that day:

$$\text{Status } j \text{ and day } i \text{ scaling factor} = \frac{\left( \text{Total responses of status } j / 7 \right)}{\text{Weighted (using scaled rand ad weight) total of status } j, \text{ day } i \text{ interviews}}$$

The final travel diary weight was then calculated as the random adult weight multiplied by the day scale factor multiplied by the day and working status factor:

$$\begin{aligned} &\text{Travel diary weight} \\ &= (\text{Random adult weight}) \times (\text{Day scale factor}) \\ &\times (\text{Day and working status factor}) \end{aligned}$$

## Physical survey weight

A subsample of the total SHS sample was allocated to the physical survey. This subsample completed a specific module of the SHS in the main interview. The physical survey usually involves a visual inspection of the inside and outside of the property. However, due to Covid-19 restrictions the 2021 physical survey was carried out by an external-only inspection, supplemented with alternative sources of data, e.g. from the Energy Performance Certificate (EPC), and the householder providing information to surveyors via telephone:

1) Selection weights

The address selection weights were calculated to compensate for unequal probabilities of selection of addresses in different survey strata. Usually, for the physical survey there were 32 strata – one for each local authority. The address selection weight for each stratum is calculated as the proportion of Scottish households (from NRS estimates) in the stratum divided by the proportion of eligible selected addresses in the stratum. For 2021, the selection probability depended on the local authority and household tenure, the latter obtained as part of the social survey interview. The approach was adapted with a different selection weight applied for owner occupiers and renters within each local authority to account for the unequal probabilities of selection based on household tenure.

Though the SHS sample was drawn in two halves, with telephone matching used for the first half of the sample but not the second, results for 2021 are being presented by combining the two halves of the sample. Therefore, the selection probabilities have been averaged across the two halves of the sample.

## 2) Calibration

The stratum selection weight was applied to the survey data to act as entry weights for the calibration. The execution of the calibration step then modified the entry weights so that the weighted total of responding households matched:

- a) The number of households in each local authority
- b) Dwelling age at Scotland level
- c) Dwelling type at Scotland level
- d) Urban-rural classification at Scotland level
- e) SIMD quintile at Scotland level
- f) Household tenure at Scotland level

In previous years, the totals for targets (b) and (c) were generated from the sample itself. This was possible because for almost all of the addresses in the physical survey sample, even where an interview or physical survey were not completed, a visual inspection of the selected address was conducted to record information on dwelling type and age. The Scotland-level targets were then generated from the frequencies for dwelling age and type from the sample weighted with the selection weight. A similar process is normally used to set calibration targets for (d), which can be determined from the address information in the sample. Since it was not possible to gather this summary information in 2021, the targets based on the 2019 survey were re-scaled to the updated household estimates to produce the targets for (b), (c) and (d). As with the weighting of the social survey, SIMD quintiles and household tenure were also included in the calibration of the physical survey weights.

Table 10: Physical survey calibration targets for dwelling type

<b>Dwelling type</b>	<b>Calibration target</b>
Detached	583,535
Semi	500,334
Terrace/corner	531,583
Tenement	594,586
Other flat	318,787
Total	2,528,824

Table 11: Physical survey calibration targets for dwelling age

<b>Dwelling age</b>	<b>Calibration target</b>
Pre-1919	485,695
1919-1944	276,804
1945-1964	525,319
1965-1982	555,560
1983-2002	386,072
Post 2002	299,373
Total	2,528,824

# Data quality and limitations

## Introduction

Surveys provide estimates of population characteristics rather than exact measures. Survey error is the difference between the true value of a population characteristic, and the estimate of that characteristic provided by the survey. There are two main types of survey error – sampling and non-sampling. Non-sampling errors can be divided into representation errors (including non-response error and coverage error) and measurement errors.

## Sampling error

Sampling error results from the variability inherent in using a sample of the population for estimation, rather than collecting information from every member of the population.

All samples can differ from the population by chance. In principle, many samples could be drawn and each would give different results, because each sample would be made up of different people, who would give different answers to the questions asked. The spread of these results is the sampling variability, which generally reduces with increasing sample size.

The likely extent of sampling variability can be quantified by calculating the 'standard error' associated with an estimate. The standard error of the estimate of a percentage depends upon several things:

- The value of the percentage itself
- The size of the sample (or sub-sample) from which it was calculated i.e. the number of sample cases corresponding to 100%
- The sampling fraction i.e. the fraction of the relevant population that is included in the sample
- The 'design effect' associated with the way in which the sample was selected. For example, a clustered random sample would be expected to have larger standard errors than a simple random sample of the same size).

Although the SHS has a large sample that covers the whole of Scotland, it has some geographical limitations because of the sample sizes in small local authorities and because it is designed to be representative only at national and local authority level.

This means:

- users need to be mindful of the sampling errors for analysis, especially when this is based on breakdowns within a single local authority

- it is not appropriate to undertake geographical analysis below local authority level, since the sampling techniques used in some local authorities cannot guarantee representativeness in smaller areas.

## **Confidence intervals and statistical significance**

A confidence interval is a range of values, defined by a lower and upper bound, that indicates the variability of an estimate. If we drew 20 random samples and calculated a 95% confidence interval for each sample using the data in that sample, we would expect that, on average, 19 out of the 20 (95%) resulting confidence intervals would contain the true population value and 1 in 20 (5%) would not.'

The margin of error is the standard error multiplied by 1.96. The upper bound of the confidence interval is calculated by adding the margin of error to the estimate. The lower bound is the estimate minus the margin of error. The Excel workbooks published as supporting documents to the SHS 2021 key findings report provide margins of error for a range of estimates and sample sizes, incorporating a design factor of 1.32 for the housing results and 1.24 for all other results to account for the complex survey design. Where the exact value of interest is not given in the table, user can use the closest value in the table, or can derive more precise estimates through using standard formulas for confidence intervals from survey estimates, incorporating the design factor.

Because the survey's estimates may be affected by sampling errors, apparent differences of a few percentage points between sub-samples may not reflect real differences in the population. It might be that the true values in the population are similar but the random selection of households for the survey has, by chance, produced a sample which gives a high estimate for one sub-sample and a low estimate for the other.

A difference between two estimates is significant if it is so large that a difference of that size (or greater) is unlikely to have occurred purely by chance. Conventionally, significance is tested at the five per cent level, which means that a difference is considered significant if it would only have occurred once in 20 different samples.

Testing significance involves comparing the difference between the two estimates with the standard errors for each of the two estimates. In general, if the difference is smaller than the larger of the two margins of error, it could have occurred by chance and is not significant. A difference that is greater than the sum of the margins of error is significant.

If the difference is greater than the larger of the two margins of error, the difference might be significant, although the test is more complex. Statistical sampling theory suggests that the difference between the two estimates is significant if it is greater than the square root of the sum of the squares of the margins of errors for the two estimates.

It should be noted that the published estimates have been rounded to the nearest whole number, and this can affect the apparent significance of some of the results. For this reason, caution should be exercised where differences are on the margins of significance.

## Non-response error

Social survey samples are normally designed so that if everyone responded, the sample would be an accurate representation of the whole population of interest. Non-response bias is where those who take part in a survey are different from those who do not. This can mean that the survey participants are not representative of the whole population of interest. An example of this would be if interviewers only approached households during working hours. In this case, the likelihood of obtaining interviews with retired people would be considerably higher than the likelihood of interviewing the employed population, leading to skewed data.

Research that is dependent upon voluntary participation is always vulnerable to this type of bias, and surveys such as the Scottish Household Survey are designed to reduce the potential for non-response bias. This is done by maximizing the response rate and trying to ensure that it is not more difficult for some groups than others to take part.

A high response rate does not necessarily create a quality, unbiased survey sample. Instead, it depends on the patterns of who participates. For example, Groves and Peytcheva (2008) make a distinction between data that is 'missing at random' and 'non-ignorable'.

Data is 'missing at random' when there is a common cause for both nonresponse and key output variables. For example, being young may cause nonresponse, and it may also mean a person is likely to participate in sport. Therefore, if young people are less likely to respond, people who participate in sport will be under-represented.

'Non-ignorable' missing data happens when there is a consistent reason for non-response, and therefore a danger of excluding this subgroup from the sample, creating non-response bias. For example, if the reason for non-response is because some of the respondents cannot read, then this is non-ignorable, as illiterate people are now excluded from the sample. Similarly, if people who participate in sport are less likely to be contacted by interviewers (because they are at home less often) then this would also be 'non-ignorable'.

Good weighting strategies help to correct for patterns of differential response. However, weighting can only correct data 'missing at random', not 'non-ignorable' missing data.

The higher the response rate, the less potential there is for non-response bias. While the traditional SHS approach was subject to non-response bias, weighting ensured that estimates were comparable with those from other robust sources. Moreover, because the SHS approach and response rate was relatively consistent over time prior to 2020, the effect of non-response bias was likely to be reasonably consistent between waves, and would therefore not affect analysis of trends over time.



## Coverage error

Coverage error, like non-response error, has the potential to affect the representativeness of the survey data. It is bias that occurs when the sampling frame does not coincide with the target population.

The target population of the SHS is all adults living in private households in Scotland. The survey uses Royal Mail's small user Postcode Address File (PAF) as the sampling frame. Overall, the PAF is a good record of all private households in Scotland. The PAF does not include accommodation in hospitals, prisons, military bases, larger student halls etc. Therefore, the SHS provides a sample of private households rather than all households.

Samples of the general population exclude prisons, hospitals and military bases. While prisons and hospitals do not generally have significant numbers of private households, the same may not be true of military bases. These are classified as special enumeration districts (EDs) in the Census and account for just 0.5 per cent of the population. Interviewing on military bases would pose fieldwork problems relating to access and security so they are removed from the PAF before sampling.

The following types of accommodation are excluded from the survey if they are not listed on the Small User file of the PAF:

- Nurses' homes
- Student halls of residence
- Other communal establishments (e.g. hostels for the homeless and old people's homes)
- Mobile homes
- Sites for travelling people.

Households in these types of accommodation are included in the survey if they are listed on the Small User file of the PAF and the accommodation represents the sole or main residence of the individuals concerned. People living in bed and breakfast accommodation are similarly included if the accommodation is listed on PAF and represents the sole or main residence of those living there<sup>4</sup>.

Students' term-time addresses are taken as their main residence (in order that they are counted by where they spend most of the year). However, since halls of residence are generally excluded, there will be some under-representation of students in the SHS.

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<sup>4</sup> The target population of the old SHCS excludes "dwellings without foundations". So, for example, mobile homes would not be eligible for the physical survey. However, these dwellings are eligible for the social survey. In order to work around this, such dwellings are still included in the social interview but are then streamed past questions on surveyor appointments, thus avoiding surveyors being called out to static caravans or houseboats.

## Measurement error and comparability with other sources

Measurement error is the difference between a respondent's answer and the true value.

As a multi-purpose survey of households, the SHS is not designed to provide the kinds of information about economic activity and household income that can be obtained from more specialised surveys such as the Family Resources Survey. We have published the results of a project that assessed in detail [how accurately the SHS measures household income](#).

The Scottish Household Survey (SHS) is not the official source of statistics on all of the topics it collects information on. The SHS has questions on these topics:

- To explore differences between groups when analysing other topics e.g. to look at how internet use varies by income.
- To contribute to the [Scottish Surveys Core Questions](#) (SSCQ) pooled sample.

Table 12: Alternative preferred data sources

Topic	Preferred source
Age, sex	<a href="#">NRS mid-year population estimates</a>
Religion, ethnicity, sexual orientation	<a href="#">Scottish Surveys Core Questions</a>
Disability/long term health condition, self-assessed health, smoking, unpaid caring	<a href="#">Scottish Health Survey</a>
Perceptions of crime, confidence in the police	<a href="#">Scottish Crime and Justice Survey</a>
Household income	<a href="#">Family Resources Survey</a>
Employment, unemployment and economic activity	<a href="#">Annual Population Survey</a>

## Comparability with previous SHS years

The results of the 2020 and 2021 SHS telephone surveys have been published as experimental statistics. They are not directly comparable to SHS face-to-face survey results for previous years. For key measures that we would expect to remain broadly stable in the population, the 2021 telephone survey results differed from the face-to-face survey results from 2019 and earlier.

It is not possible to determine whether differences between the 2020 and 2021 telephone survey results and previous years represent genuine changes in views and experiences, or are due to changes in how the survey was carried out. Response rates for the telephone survey were lower than usual, and there was a change in the profile of respondents (e.g. people with degree level qualifications were over-represented). There are also potential mode effects (respondents

answering differently over the telephone than they would face-to-face). The [SHS 2020 methodology report](#) provides more detail on how the change in approach may have impacted the results.

The results from 2020 and 2021 are broadly comparable. For key measures that we would expect to remain broadly stable in the population, there were no statistically significant differences between the 2020 and 2021 weighted results.

However, 2020 data was collected in October 2020 and January-March of 2021, while the 2021 data was collected over the course of a whole year, between April 2021 and March 2022. So users should consider potential seasonal effects when making comparison between the two survey years.

In addition, some of the social survey housing results (presented in Excel tables 1.16-1.23, 1.30 and 1.44-1.48) are generated from the physical survey sub-sample. As explained in the sample design section of this report, the 2021 physical survey sampling attempted to compensate for the over-representation of owner occupiers in the social survey when it was carried out over the telephone, and the knock-on effect this would have on the tenure profile of the physical survey sample. This means that this sub-sample includes a greater proportion of responses from rented households compared to other survey questions. The survey weighting has only partially adjusted for this, but we assess that this has had minimal impact on the results presented for these questions.

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