

# SCOTLAND'S PEOPLE

SCOTTISH HOUSEHOLD SURVEY FIELDWORK OUTCOMES 2005/2006



# ***SCOTTISH HOUSEHOLD SURVEY***

***Fieldwork outcomes 2005/2006***

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# 1. Survey overview

## Background to the SHS

The Scottish Household Survey (SHS) is a major cross-sectional survey that was first commissioned by the Scottish Executive in 1998 to provide reliable and up-to-date information on the composition, characteristics and behaviour of Scottish households, both nationally and at a sub-national level.

The specific aims of the survey are as follows:

- to provide household and individual information previously unavailable in Scotland, particularly to support the work of the Scottish Executive's transport, communities and local government policy areas and the work of the Scottish Parliament
- to permit disaggregation of such information both geographically and in terms of population sub-groups (such as families with children or the elderly)
- to allow the relationships between social variables within households to be examined. This will support cross-departmental and inter-departmental policies such as those on social justice
- to allow early detection of national trends
- to allow detailed follow-up surveys of sub-samples from the main survey sample, if required.

Since 1999, the SHS has been carried out by a team from Ipsos MORI Scotland and TNS Social. The same team was reappointed when the survey was subject to tender in 2002.

Detailed Technical Reports have been published annually covering the survey methodology, fieldwork outcomes and the questionnaire used. To provide users with the information they require and to limit unnecessary duplication, these three aspects of the survey have been split into three separate documents.

**Scottish Household Survey: Methodology 2005/2006** - includes information about the sample size and design (e.g. stratification and clustering within local authorities), data collection methods and instruments, the limitations of the data, and the Scottish MOSAIC classification.

**Scottish Household Survey: Fieldwork outcomes 2005/2006** - includes information about response rates, weighting factors, establishing the quality of the SHS results (by comparing them with those of the Census and other surveys), the survey's design factors and complex standard errors.

**Scottish Household Survey: Questionnaire January to December 2006** - shows all the questions (apart from repetitive details within the Travel Diary, and sections which identify and correct errors), to whom they relate, and the circumstances in which certain questions are not asked.

This document deals with fieldwork outcomes and data quality for 2005.

*Reporting conventions*

In tables showing percentages as whole numbers, zero values are displayed as a dash (-), values between 0% and 0.5% are displayed as 0% and values between 0.5% and 1% are rounded to 1%. Where percentages are shown to one or more decimal place, the final digit will have been rounded up or down. As a result of rounding within tables, the sum of individual items may not equal the totals for rows or columns.

## 2. Fieldwork targets and outcomes

The requirements of the sample for the survey are as follows:

- it should provide an achieved national sample of 31,000 interviews over two years
- interviews should be spread evenly across the 24 months of interviewing
- the sample should be fully national in character (i.e. covering the whole of mainland Scotland and the Islands) and each quarter should produce nationally representative results
- results as reliable as those of a simple random sample of 500 should be available for the larger local authorities on an annual basis and for all local authorities (regardless of size) after 2 years
- the sample should be capable of producing data representative both of Scottish households and the adult (aged 16+) population resident in private households.

With the sample designed to meet these objectives, these represent the key performance criteria for the survey. The survey's administration procedures are designed to minimise the impact of problems such as potential respondents not being at home or being unable to take part because of communication difficulties. Interviewers are required, for example, to make a minimum of 6 calls at each address on different days and at different times before it is considered 'no contact'. Even then, addresses will be reissued at a later stage in the fieldwork. Similarly 'soft' refusals such as 'too busy' or 'going out' are reissued.

Where interviewers are unable to conduct interviews in English or because the respondent is blind or partially sighted, these addresses will be revisited by an interviewer accompanied by an interpreter and, if appropriate, with showcards printed in a range of languages to minimise the extent to which language and communication barriers prevent people from taking part.

Nevertheless, participation in surveys is voluntary and some potential respondents refuse to take part. Similarly, no contact may be made at an address. This often reflects combinations of household types (single adults of working age), lifestyles (long working hours, active social lives), particular types of neighbourhoods and passive refusal (reluctance to open doors to strangers).

### Sample performance

#### *Ineligible addresses*

The sampling for the survey<sup>1</sup> makes assumptions about the proportion of addresses that will be ineligible for interview in each local authority. Ineligible addresses would include derelict, vacant and non-

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<sup>1</sup> See *Scottish Household Survey: Methodology 2005/2006*

residential addresses. The allowance for ineligible addresses is based on the proportion that was actually identified in the course of the 1999/2000 SHS fieldwork, the most recent two-year sweep when the sample was being designed in 2002. The extent to which these assumptions are accurate has an important bearing on the survey outcomes. If there are more 'deadwood' addresses, the interviewers have a smaller pool of addresses from which to achieve the target number of interviews. Conversely, a smaller proportion of 'deadwood' addresses should make it easier to achieve the target number of interviews but this target will be met with a lower response rate. Thus, overall, if the proportion of deadwood differs from the sampling assumptions this might have some impact on achieving the interview target and the target response rate.

Table 2-1 shows the proportion of deadwood addresses assumed in each local authority when sampling for 2005/2006 and compares this with the proportion recorded by interviewers in the field.

**Table 2-1: Deadwood rate assumptions and actual deadwood**  
Sorted in descending order of deviation (absolute value) between actual and assumption

	1999/2000 deadwood (assumption for sampling 2005/2006) (%)	2005/2006 actual deadwood (%)	Deviation (% points)
Eilean Siar	11.5	19.1	7.6
Perth and Kinross	7.6	12.0	4.4
Dundee City	13.0	9.6	-3.4
West Lothian	6.6	3.3	-3.3
Renfrewshire	10.1	7.3	-2.8
West Dunbartonshire	6.5	9.1	2.6
South Lanarkshire	6.8	4.2	-2.6
Shetland Islands	13.4	11.0	-2.4
Falkirk	4.7	6.8	2.1
Edinburgh, City of	9.2	7.3	-1.9
Orkney Islands	15.5	13.7	-1.8
Clackmannanshire	5.8	4.1	-1.7
Aberdeenshire	9.7	8.1	-1.6
Glasgow City	12.9	11.3	-1.6
Highland	13.0	11.5	-1.5
Scottish Borders	10.5	9.1	-1.4
Argyll and Bute	16.4	17.4	1.0
North Ayrshire	9.1	10.0	0.9
Fife	6.5	7.4	0.9
South Ayrshire	7.2	6.3	-0.9
Inverclyde	11.4	10.5	-0.9
Moray	9.9	10.7	0.8
Angus	6.2	7.0	0.8
Dumfries and Galloway	8.0	8.8	0.8
North Lanarkshire	6.6	6.1	-0.5
East Dunbartonshire	3.0	3.4	0.4
East Renfrewshire	5.5	5.1	-0.4
East Ayrshire	7.6	7.3	-0.3
East Lothian	7.3	7.0	-0.3
Aberdeen City	9.8	9.6	-0.2
Midlothian	4.2	4.3	0.1
Stirling	6.4	6.4	0.0
<b>All areas</b>	<b>9.1</b>	<b>8.5</b>	<b>-0.6</b>

This shows that overall, and in many local authorities, the level of deadwood recorded by interviewers was close to that used as the basis for the survey sampling. There is, of course, some deviation from the assumptions, reflecting sampling variability in both the base data used for sampling and the sampled addresses and the passage of time since 2000. In spite of the deviation from assumptions, using different deadwood assumptions in individual local authorities rather than previous practice of a uniform 10% in all areas improves the structure of the sample and should contribute to meeting fieldwork targets. Where the experience differs from the assumptions this is likely to reflect a combination of factors such as:

- housing regeneration and redevelopment, which leads to demolition and vacant properties (increasing deadwood) and properties being brought back into use (lowering deadwood).
- expansion of holiday properties and second homes, which are ineligible for inclusion in the survey, raising deadwood.

### **Fieldwork performance**

The profile of the sample selected and the level of deadwood are primarily qualities of the sampling frame and the assumptions used to sample. Inaccuracy and bias in these can have a knock-on effect on fieldwork performance. The other elements of fieldwork performance reflect:

- survey administration procedures and interviewer performance
- the availability of members of the public to be interviewed
- the ability of members of the public to participate in the interview
- the willingness of members of the public to participate in the survey.

Performance on each of these elements (as well as deadwood) is recorded as part of interviewers' attempts to secure interviews although there is, inevitably, interaction between these different aspects of performance. Overall, performance is summarised in the survey response rate and this is shown below for the 2005/2006 sample. This takes account of the continuous nature of the survey. The data file for each year will contain a small proportion of interviews conducted on samples drawn in previous years. Similarly some of the addresses issued during any year will not be carried out until after the data file has been closed for analysis. These interviews are carried into the next data file. The response rates therefore report the outcomes for addresses sampled for a given period regardless of when the interview was carried out.

**Table 2-2: Summary of outcomes at issued addresses for 2005/2006 sample**

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>
Complete interview	31,013	63.1	69.1
Interview / partial interview achieved but data deleted	236	0.5	0.4
No contact with anyone at the address	5,308	10.8	12.2
Office refusal	979	2.0	2.4
Refusal by selected respondent	5,713	11.6	11.6
Refusal by proxy	445	0.9	1.3
Broken appointment, no recontact	225	0.5	0.6
Ill at home during survey period	350	0.7	0.9
Away/in hospital during survey period	309	0.6	0.8
Language	16	0.0	0.0
Other non-response	316	0.6	0.7
<b>Total eligible for inclusion in the survey</b>	<b>44,910</b>	<b>91.4</b>	<b>100.0</b>
Not yet built/under construction	31	0.1	
Demolished/derelict	505	1.0	
Vacant/empty	1,862	3.8	
Non-residential address	528	1.1	
Communal establishment/institution	52	0.1	
Address out of scope	764	1.6	
Insufficient address/no trace	304	0.6	
Other ineligible	169	0.3	
<b>Total ineligible</b>	<b>4,215</b>	<b>8.6</b>	
<b>Total issued addresses</b>	<b>49,125</b>	<b>100.0</b>	

*Trends in response rates*

The response rate of 69.1% in 2005/2006 is very slightly higher than the 68.9% achieved in the 2003/2004 sweep of the survey and also higher than the previous two-year sweeps of the SHS. In 1999/2000 the overall response rate was 66% and in 2001/2002 was 67%. The table below shows the rates for each local authority.

**Table 2-3: Trends in SHS response rates 1999 to 2006**

	Response rate 1999/2000 (%)	Response rate 2001/2002 (%)	Response rate 2003/2004 (%)	Response rate 2005/2006 (%)	Change 2003/2004 to 2005/2006 (% points)	Average 1999-2006
Aberdeen City	65	67	66	66	0	66
Aberdeenshire	68	70	74	73	-1	71
Angus	67	73	75	73	-2	72
Argyll and Bute	71	69	73	74	1	72
Clackmannanshire	66	62	71	77	6	69
Dumfries and Galloway	69	69	73	72	-1	71
Dundee City	62	66	67	69	2	66
East Ayrshire	69	71	75	71	-4	72
East Dumbartonshire	68	69	73	69	-4	70
East Lothian	67	63	67	67	0	66
East Renfrewshire	59	63	66	63	-3	63
Edinburgh, City of	64	60	63	66	3	63
Eilean Siar	79	81	79	78	-1	79
Falkirk	66	65	74	72	-2	69
Fife	65	65	75	76	1	70
Glasgow City	62	63	60	59	-1	61
Highland	68	71	70	71	1	70
Inverclyde	68	69	73	69	-4	70
Midlothian	66	66	68	67	-1	67
Moray	72	72	76	76	0	74
North Ayrshire	70	63	69	66	-3	67
North Lanarkshire	61	64	67	70	3	65
Orkney Islands	70	80	80	77	-3	77
Perth and Kinross	70	68	67	71	4	69
Renfrewshire	64	65	71	62	-9	65
Scottish Borders	68	71	78	78	0	74
Shetland Islands	70	78	80	76	-4	76
South Ayrshire	67	68	71	70	-1	69
South Lanarkshire	64	65	67	67	0	66
Stirling	68	71	77	80	3	74
West Dumbartonshire	63	64	67	67	0	65
West Lothian	65	65	71	71	0	68
<b>Total</b>	<b>66</b>	<b>67</b>	<b>69</b>	<b>69</b>	<b>0</b>	<b>68</b>

The most notable change between 2003/2004 and 2005/2006 is the decline of 9 percentage points in the response rate achieved in Renfrewshire. The issue in this particular local authority appears to be both high rates of non-contact and refusal which have reduced the overall response rate, although compared with the long-run trend, the decline is quite small.

The highest response rates were achieved in island and largely rural authorities. Over the two years, response was highest in Stirling (80%), Scottish Borders, Eilean Siar (both 78%), Orkney and Clackmannanshire (both 77%). The lowest response rates were in Glasgow City (59%), Renfrewshire (62%), East Renfrewshire (63%), the City of Edinburgh and North Ayrshire (both on 66%). Glasgow stands out as the only local authority with a consistently low and declining response rate.

*Achieved interviews compared with targets – household interviews*

The number of interviews compared with the target, and the corresponding response rates, are the principal measures of survey performance although issues of data quality and bias also need to be considered. The table below compares interview targets and achievement in each local authority.

**Table 2-4: Household interview targets and numbers achieved in each local authority, 2005/2006**

	<b>Target</b>	<b>Achieved</b>	<b>% of target achieved</b>	<b>Over / under achieved</b>
Aberdeen City	1,313	1,236	94	-77
Aberdeenshire	1,224	1,236	101	12
Angus	612	620	101	8
Argyll & Bute	594	595	100	1
Clackmannanshire	588	648	110	60
Dumfries and Galloway	849	816	96	-33
Dundee City	860	910	106	50
East Ayrshire	667	655	98	-12
East Dunbartonshire	572	526	92	-46
East Lothian	588	549	93	-39
East Renfrewshire	550	548	100	-2
Edinburgh City	2,733	2,641	97	-92
Eilean Siar	585	508	87	-77
Falkirk	792	791	100	-1
Fife	1,969	2,144	109	175
Glasgow City	3,665	3,285	90	-380
Highland	1,192	1,184	99	-8
Inverclyde	576	532	92	-44
Midlothian	576	554	96	-22
Moray	600	615	103	15
North Ayrshire	804	713	89	-91
North Lanarkshire	1,716	1,845	108	129
Orkney Islands	582	624	107	42
Perth & Kinross	758	703	93	-55
Renfrewshire	1,031	924	90	-107
Scottish Borders	624	662	106	38
Shetland Islands	598	611	102	13
South Ayrshire	636	626	98	-10
South Lanarkshire	1,650	1,642	100	-8
Stirling	576	643	112	67
West Dunbartonshire	517	516	100	-1
West Lothian	876	911	104	35
<b>Total</b>	<b>31,473</b>	<b>31,013</b>	<b>99</b>	<b>-460</b>

The highest levels of under-achievement were in Glasgow City, Renfrewshire and the City of Edinburgh. Taken together, these authorities account for 52% of the total shortfall (i.e. the sum of all the authorities where the interviews achieved is short of target). The highest percentage shortfalls were in Eilean Siar (87% achieved), North Ayrshire (89%), Glasgow City and Renfrewshire (both 90%).

*Achieved interviews – the random adult*

The two-part structure of the SHS interview requires the selection of a random adult within the household who completes the second half of the interview. This represents a second opportunity for potential

respondents to withdraw from the interview either because they refuse to take part or are unable, unavailable or not contactable for interview.

There is inevitably a degree of attrition between the household and random adult sections of the interview, especially where the person selected is not the same as the household respondent. This aspect of the survey has deteriorated since 1999/2000 when a random adult interview was achieved in 94% of households in which a household interview was completed. In 2005/2006, random adult interviews were achieved at 91% of households where a household interview was completed. The participation rate varied from 86% in Dundee and 88% in Aberdeen and North Lanarkshire to 99% in Orkney and 96% in Moray and Shetland. A participation rate of 91% means that while the overall household response rate was 69%, the random adult response rate was 63%. As with the household response rate, this is still higher than the rates of 62% in both the 1999/2000 and 2001/2002 sweeps although slightly lower than the 2003/2004 rate of 64%. Across local authorities, there is some variation in the random adult response rate, with rates of 52% in Glasgow and 57% in East Renfrewshire. This compares with rates of 75% in Stirling and 76% in Orkney.

**Table 2-5: Random adult (RA) response rates, 2005/2006**

	Valid addresses	Household interviews	Random adult interviews	RA interviews as % of valid addresses	RA interviews as % of household interviews
Aberdeen City	1,873	1,236	1,089	58	88
Aberdeenshire	1,687	1,236	1,145	68	93
Angus	855	619	572	67	92
Argyll and Bute	804	594	555	69	93
Clackmannanshire	846	648	604	71	93
Dumfries and Galloway	1,135	817	785	69	96
Dundee City	1,321	912	784	59	86
East Ayrshire	921	655	613	67	94
East Dumbartonshire	765	526	476	62	90
East Lothian	820	549	493	60	90
East Renfrewshire	863	548	494	57	90
Edinburgh City	3,984	2,635	2,365	59	90
Eilean Siar	653	509	475	73	93
Falkirk	1,103	791	706	64	89
Fife	2,805	2,148	2,014	72	94
Glasgow City	5,553	3,284	2,882	52	88
Highland	1,660	1,185	1,100	66	93
Inverclyde	773	531	493	64	93
Midlothian	828	554	498	60	90
Moray	804	615	588	73	96
North Ayrshire	1,084	713	677	62	95
North Lanarkshire	2,642	1,846	1,624	61	88
Orkney	808	624	616	76	99
Perth and Kinross	984	704	629	64	89
Renfrewshire	1,502	924	866	58	94
Scottish Borders	849	663	599	71	90
Shetland	800	611	584	73	96
South Ayrshire	898	626	575	64	92
South Lanarkshire	2,450	1,642	1,489	61	91
Stirling	808	642	605	75	94
West Dumbartonshire	771	516	476	62	92
West Lothian	1,282	910	790	62	87
<b>Total</b>	<b>44,931</b>	<b>31,013</b>	<b>28,261</b>	<b>63</b>	<b>91</b>

### 3. Weighting

Two types of weighting are potentially necessary with a sample of this kind. The first is intrinsic to the survey design and represents weights necessary to compensate for unequal probabilities of selection for individuals, households or other units of analysis. The second may be necessary to counteract the effects of non-response bias. Although these represent two distinct rationales for weighting, in terms of analysis the different weights are combined into a single weighting variable for each unit of analysis.

In the SHS, there are five weights that can be used – four in the main survey dataset and one specific to the travel diary. However, LA\_WT and IND\_WT are used for most analyses, with the others used for smaller specific subsets of the sample.

- LA\_WT which is used for analysis of data about the household and data collected from or about the HIH and spouse. This includes all variables asked in the first part of the interview, apart from the questions about the random schoolchild and the random child receiving childcare.
- IND\_WT which is used for analysis of data in derived variables about the random adult or collected from the random adult. This includes all variables in the second part of the interview.
- KID\_WT which is used for analysis of questions related to the random schoolchild – HE9 to HE17N inclusive (see *Questionnaire*).
- RANKIDWT which is used for question HE5 where a child receiving childcare is selected at random from all the children receiving childcare in the household.
- TRAV\_WT, contained in the travel diary data, which is used for analysing that data.

#### Design weighting

##### *Weighting for analysis based on household data*

The weight for analysis of household data, LA\_WT, has two main elements. Firstly, it is necessary to ‘weight up’ those local authorities which were under-sampled and ‘weight down’ those which were over-sampled (this is a weight of the first type mentioned above, which adjusts for unequal probabilities of selection). Secondly, the weight addresses any disproportionality introduced by response rates differing from the target for each local authority. The combination of these two elements is shown in Table 3-1. (The weights for some local authorities vary between one quarter and the next because the number of achieved interviews fluctuates between quarters.) The final weighted sample profile across the two years should, therefore, correctly reflect the distribution of households across Scotland’s local authorities.

Weights are calculated for each local authority so that each quarterly data file the data is nationally representative in each quarter. This should allow any published findings to be reproduced by selecting the relevant quarter’s data. In practice, however, it may not be possible to reproduce exactly some of the

results from earlier publications if the data for that quarter were subsequently changed (e.g. to correct errors that were identified later) and because there is some overlap between the quarter in which interviews take place and the quarter's data with which it is processed. For example, the data processed as Q4 2005 contained data from interviews carried out in the first quarter of 2006 so although they were weighted as Q4, they have a value of 1 for the Quarter variable.

**Table 3-1: Weights to account for disproportionate sampling and differences in household response rates by local authority and quarter, 2005/2006**

	2005				2006			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Aberdeen City	1.13	1.19	1.30	1.02	1.14	1.25	1.19	1.16
Aberdeenshire	1.14	1.13	0.92	1.13	1.17	1.01	0.86	1.30
Angus	0.85	1.35	1.03	1.18	0.98	1.08	1.23	1.64
Argyll and Bute	0.88	1.12	0.84	0.95	0.98	1.16	0.76	1.18
Clackmannanshire	0.49	0.52	0.39	0.34	0.41	0.42	0.42	0.45
Dumfries and Galloway	0.91	1.41	1.26	1.47	1.00	0.97	1.12	1.34
Dundee City	0.97	1.07	1.14	1.20	0.97	1.18	1.02	1.03
East Ayrshire	0.92	0.85	1.05	1.96	1.00	1.17	0.85	1.30
East Dunbartonshire	1.11	0.97	1.13	0.78	1.04	1.00	1.31	0.99
East Lothian	1.24	0.75	1.18	1.26	0.96	0.98	0.90	1.15
East Renfrewshire	0.69	1.04	0.85	0.83	0.99	0.69	0.99	0.91
Edinburgh City	1.21	0.94	1.19	0.96	1.03	1.01	1.18	0.99
Eilean Siar	0.32	0.38	0.30	0.30	0.46	0.44	0.31	0.31
Falkirk	1.01	0.98	0.93	0.93	1.18	1.30	1.12	0.99
Fife	0.91	1.11	0.97	1.15	1.00	1.08	0.97	0.98
Glasgow City	1.22	1.17	1.16	1.21	1.22	1.16	1.23	1.00
Highland	0.94	1.20	1.11	1.34	1.13	1.17	1.05	1.17
Inverclyde	1.38	0.98	0.82	1.01	1.22	0.97	1.19	0.84
Midlothian	0.84	0.85	0.86	0.93	0.75	0.70	0.85	0.96
Moray	0.77	0.82	0.78	0.93	0.82	0.81	0.68	1.05
North Ayrshire	1.35	0.81	1.20	1.47	1.10	0.95	1.26	1.07
North Lanarkshire	1.21	1.01	1.11	1.02	0.95	0.99	1.12	0.97
Orkney	0.19	0.21	0.16	0.19	0.23	0.26	0.15	0.26
Perth and Kinross	1.11	1.29	1.40	0.87	1.50	1.33	1.35	1.03
Renfrewshire	1.15	1.24	1.00	0.85	1.12	1.12	1.04	1.18
Scottish Borders	0.81	1.07	1.32	0.71	0.98	1.09	1.11	0.97
Shetland	0.17	0.21	0.17	0.25	0.26	0.20	0.22	0.23
South Ayrshire	1.17	1.00	0.97	1.14	1.11	1.06	1.13	1.23
South Lanarkshire	1.07	1.27	1.13	1.05	1.14	1.10	1.01	1.14
Stirling	0.93	0.72	0.80	0.73	0.68	0.72	0.74	0.91
West Dunbartonshire	1.09	0.99	1.12	1.48	1.05	0.99	1.28	0.96
West Lothian	1.34	0.85	1.08	1.03	0.79	1.00	1.25	0.86

No other weight is applied across all cases in order to compensate/adjust for the unequal probabilities of selection. Strictly speaking, however, a corrective weight should be applied in those cases in which the Multiple Occupancy Indicator (MOI) on the Postcode Address File (PAF) is found to be inaccurate. The reason for this is that a property-type bias might otherwise be introduced. For example, if tenement properties were consistently found to contain multiple dwellings when the MOI had indicated that they contained just one, each achieved interview at such an address should be given a weight proportional to the actual number of dwellings, to compensate for the reduced probability of selection for each dwelling at that address. All properties within that local authority area should then be weighted back down slightly in order that the actual and weighted sample sizes remain the same.

In practice, the MOI has been found to be inaccurate in only about 2% of cases. The impact of weighting to correct for these would have been negligible so it was decided not to weight by the MOI in order to avoid additional complexity in the weighting scheme for the survey.

Similarly, in theory an additional weight should be applied in cases where a dwelling contains more than one household, only one of which is interviewed, in order to adjust for the lower probability of selection for each of the households in that dwelling. In practice, however, as only a very small number of dwellings were found to contain more than one household, the use of such a weight would make very little difference to the overall results, and it was therefore felt that it was not worthwhile introducing further complication to the weighting calculations.

#### *Weighting for analysis based on individual (random adult) data*

Using the Postcode Address File produces a sample of households, so for analysis of individual level data it is also necessary to weight the responses of the random adult by the number of adults resident in the household who were eligible for interview.<sup>2</sup> The reason for this is that individuals living in larger households have a lower probability of selection than adults in, for example, single adult households where that one person must be sampled.

As a result of this, the *unweighted* profile of 'random adult' respondents will tend to be skewed towards those sections of the population most likely to live in households with fewer adults (older people and older females in particular) and away from those likely to live in households with larger numbers of adults (younger people). Once the data are weighted by the number of eligible adults in the household, however, one should see the profile correct itself significantly. In most surveys of this kind, however, some under-representation of younger people and males, and over-representation of older people and females, is likely to remain because of the effects of non-response bias. Depending on the extent of the remaining skew, it may be necessary to adopt further corrective measures but this has not been the case so far.

Analysis of data based on the random adult also requires a further weight to take account of differences between the number of such interviews completed in each local authority area and the actual adult population of such areas. Like the element of the household data weight which adjusts for differences in fieldwork outcomes by local authority, this is intended not to compensate for unequal probabilities of selection but to ensure that the final profile of 'individual' data correctly reflects the relative populations of the different local authority areas once variations in fieldwork outcomes have been assessed. This is not identical to the weight described for analysis of household data, since variation in response rates for the second part of the interview may have produced a slightly different distribution from that of 'householder' interviews. The weights required for each local authority (which are then multiplied by the number of

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<sup>2</sup> This weight incorporates the local authority weight described earlier. This is necessary for all analyses (whether of households or individuals) if the Scottish population resident in private households is to be represented accurately. The way in which weights are combined is further described later in this section.

adults in the household to create the weight for each case, which is then scaled so that the number of weighted cases is the same as the total number of random adult interviews) are summarised below.

**Table 3-2: Weights to account for disproportionate sampling and differences in random adult response rates by local authority and quarter, 2005/2006**

	2005				2006			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Aberdeen City	1.10	1.28	1.22	1.11	1.21	1.25	1.21	1.21
Aberdeenshire	1.10	1.02	0.86	1.05	1.15	0.86	0.81	1.07
Angus	0.87	1.39	1.13	1.14	0.92	1.10	1.20	1.56
Argyll and Bute	0.87	1.13	0.87	0.88	1.00	1.16	0.76	0.99
Clackmannanshire	0.46	0.49	0.38	0.36	0.37	0.39	0.41	0.42
Dumfries and Galloway	0.76	1.43	1.23	1.52	0.93	0.90	1.07	1.12
Dundee City	1.07	1.34	1.23	1.57	1.01	1.32	1.16	1.13
East Ayrshire	0.92	0.84	1.14	1.68	0.93	1.13	0.78	1.22
East Dunbartonshire	1.09	0.86	1.03	0.69	1.12	0.96	1.23	0.84
East Lothian	1.28	0.79	1.32	1.29	1.09	1.11	1.00	1.30
East Renfrewshire	0.61	0.89	0.78	0.77	1.00	0.60	0.96	1.06
Edinburgh, City of	1.32	1.03	1.22	1.03	1.12	1.08	1.31	1.06
Eilean Siar	0.28	0.37	0.31	0.27	0.48	0.39	0.29	0.29
Falkirk	0.97	0.97	0.96	0.92	1.16	1.36	1.21	1.06
Fife	0.89	1.03	0.96	1.08	0.97	1.05	0.98	0.97
Glasgow City	1.31	1.20	1.12	1.28	1.33	1.39	1.37	1.14
Highland	0.95	1.27	1.31	1.28	1.05	1.16	1.00	1.10
Inverclyde	1.35	0.92	0.71	1.08	1.34	0.87	1.14	0.91
Midlothian	0.73	0.84	0.77	1.04	0.71	0.65	0.84	0.90
Moray	0.67	0.72	0.76	0.85	0.75	0.67	0.63	0.99
North Ayrshire	1.35	0.83	1.27	1.31	1.08	0.93	1.17	0.95
North Lanarkshire	1.26	0.95	1.17	1.01	1.05	0.99	1.13	1.01
Orkney	0.20	0.19	0.15	0.17	0.19	0.22	0.13	0.23
Perth and Kinross	1.29	1.44	1.43	1.02	1.57	1.37	1.47	1.11
Renfrewshire	1.07	1.20	0.90	0.76	1.04	1.13	0.93	1.01
Scottish Borders	0.75	1.09	1.52	0.76	1.12	1.15	1.12	1.07
Shetland	0.19	0.20	0.17	0.23	0.21	0.20	0.18	0.20
South Ayrshire	1.16	1.06	0.99	1.05	1.23	1.07	1.25	1.25
South Lanarkshire	1.08	1.27	1.11	0.99	1.06	1.11	0.96	1.15
Stirling	1.05	0.72	0.82	0.73	0.61	0.74	0.71	0.77
West Dunbartonshire	1.62	1.06	1.10	1.51	0.96	0.98	1.31	0.94
West Lothian	1.14	0.79	1.12	1.14	0.78	0.94	1.33	0.93

*Weighting for analysis based on the 'random schoolchild'*

Data relating to the information collected about a 'random schoolchild' needs to be weighted so that this information will represent correctly the population of schoolchildren resident within households. If not, it will proportionately over-represent the characteristics and experiences of 'only' children and under-represent those of children from larger families. The weight for the random schoolchild case is created by combining the number of schoolchildren in the household and the relevant local authority weight, and scaling the result so that the number of weighted cases is the same as the total number of random schoolchildren about whom the questions were asked.

*Weighting for the selection of a random child receiving childcare*

In households with more than one child using some form of childcare, one child is selected randomly by the CAPI script and questions about the use of childcare are asked in relation to that person. This data needs to be weighted to account for the lower probability of each child being selected in households with multiple children. The weight for the random child is created by combining the number of children in the household using childcare and the relevant local authority weight, and scaling the result so that the number of weighted cases is the same as the total number of children about whom the questions were asked.

*Weighting for analysis based on the Travel Diary*

Examination of the SHS data suggests that significantly fewer interviews take place on Fridays, Saturdays and Sundays than on other days of the week. As differences in the proportions of adults interviewed on each day of the week will affect the Travel Diary data's representativeness of travel patterns for the week as a whole, it was decided to introduce a weight to compensate for this. This simply 'up-weights' interviews carried out on days of the week on which fewer than one-seventh of all interviews have taken place and 'down-weights' those carried out on days on which more than one-seventh of all interviews have been completed.

It is also apparent that the distribution of interviews by the day of the week differs for certain sub-sections of the adult population. For example, disproportionately more adults in full-time employment are interviewed at the weekend (due to their greater availability then), thus yielding an inaccurate picture of the travel patterns of those in full-time employment. The Travel Diary weighting factor is therefore refined to compensate for this.

The weight created for any analysis of the Travel Diary combines the above weighting factors and the existing 'random adult' weights. Further information about the Travel Diary, including a comparison to the National Travel Survey, is available in the Travel Diary User Guide.<sup>3</sup>

**No additional corrective weighting**

The weighting scheme for the SHS is intentionally simple. This reflects, in part, a desire to keep the processes of the survey straightforward so that the data can be made available for analysis as quickly as possible. It also reflects the limited extent to which the SHS data differs substantially from comparator data, as shown below. Thus, no additional corrective weighting has ever been applied to the data beyond that required to account for sample design and differential response rates between local authorities.

This aspect of the survey has been subject to review by the Office for National Statistics as part of a major study comparing non-respondents to the SHS with Census data.<sup>4</sup> This study concluded that while

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<sup>3</sup> <http://www.scotland.gov.uk/Topics/Statistics/16002/4712>

comparison with the Census showed some bias in the SHS, this was not substantial although some corrective weighting would be recommended. Further work looking at the scope for corrective weighting has been undertaken and this is likely to be developed further with revised weighting arrangements developed for the 2007-2010 phase of the survey.

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<sup>4</sup> Freeth, S and Sparks, J (2004) *The Scottish Household Survey: Report of the 2001 Census-linked study of survey non-response*. Full report available at <http://www.scotland.gov.uk/topics/statistics/16002/22861>

## 4. Data quality

The issue of bias arises in every survey of the population. There are a number of sources of bias, some of which reflect aspects of the survey design (such as the sampling frame or who is deemed eligible for interview). However, bias is also a reflection of those aspects of fieldwork outcomes mentioned above:

- the quality of survey administration procedures
- whether potential respondents can be found at home at times when interviewers call
- whether they are able to participate in the interview i.e. not restricted by ill health, disability or communication barriers
- the willingness of members of the public to participate in the survey.

A high response rate is generally viewed as one of the key measures of data quality and, all other things being equal, a high response rate and a large sample should ensure accurate estimates. However, to the extent that non-response to the survey is not spread evenly, either geographically or between sub-groups of the population, the resulting bias will limit the accuracy of the survey's estimates. The question of bias is considered by comparing key results from the SHS with comparator data. Since the publication of the 2001 Census, this source is the most accurate comparator for population data and in spite of being a few years behind the current SHS, population measures such as age distribution and household types change little from year-to-year.

### *Household type, property type, tenure and number of bedrooms*

Single adult and large adult households are under-represented, and single pensioner and older smaller households over-represented, when household types in the 2005/2006 SHS are compared with the Census (Table 4-1).

**Table 4-1: Comparison of household types in the 2001 Census and the 2005/2006 SHS**

	<b>2001 Census</b>	<b>2005/2006 SHS *</b>
	%	%
	(n=2,192,246)	(n=30,013)
Single adult	17.9	16.3
Small adult	16.9	17.1
Single parent	5.6	5.7
Small family	13.3	13.4
Large family	7.1	6.7
Large adult	11.2	9.2
Older smaller	13.0	15.0
Single pensioner	15.0	16.5

\* SHS data weighted by local authority size only

As Table 4-2 shows, the sample appears robust in terms of the variables associated with accommodation/property characteristics. Compared with the 2001 (which is four or five years older than the data in the SHS) there is a slight over-representation of houses and under-representation of flats and, reflecting this, over-representation of owners who own their property outright relative to the Census and under-representation rented and 'other' tenures.

**Table 4-2: Comparison of key variables in the 2001 Census and the 2005/2006 SHS**

	2001 Census (n= 2,192,246)	2005/2006 SHS (n=31,013)
	%	%
<b>Property type* ‡</b>		
House or bungalow	64	66
<i>Detached</i>	20	21
<i>Semi-detached</i>	23	23
<i>Terraced</i>	20	22
Flat, Maisonette or Apartment	35	34
Other	1	0
<b>Tenure* †</b>		
Own outright	23	29
Own with mortgage	39	37
Rent	35	32
<i>Local authority/Scottish Homes<sup>††</sup></i>	22	17
<i>Housing Association/Co-operative</i>	6	8
<i>Private rented</i>	7	7
Other	4	2

\* SHS data weighted by local authority size only

‡ includes households in shared dwellings

† Pays part rent and mortgage (shared ownership) included in 'Own with mortgage'

†† Although Scottish Homes no longer exists and had largely disposed of its rented housing stock the reference is retained in the questionnaire in case some tenants continue to think Scottish Homes is their landlord.

#### *Age and sex profile of the 'random adult' sample*

When a single adult is randomly selected within households, the unweighted sample of adults always under-represents those living in multi-adult households, since they have a smaller chance of selection for interview. As Table 4-3 shows, weighting to equalise probabilities of selection generally has the effect of bringing the profile of the 'random adult' sample closer to that of the adult population. The SHS data shown have been weighted both by the number of adults resident in the household and by the local authority weight described in the previous section. These two weights tend to act in the same direction, since those larger local authority areas which are 'weighted up' also tend to be ones with a higher average household size.

**Table 4-3: Comparison of weighted and unweighted age and sex profile of 2005/2006 SHS data with 2001 Census estimates**

	Census estimates for 2001	SHS random adults unweighted	SHS random adults weighted*	SHS all adults weighted**
	%	%	%	%
<b>Male</b>				
16 – 24	7.0	3.5	4.9	6.4
25 – 59	29.3	25.3	26.7	27.9
60 plus	11.0	13.9	13.0	12.5
<b>Total</b>	<b>47.3</b>	<b>42.7</b>	<b>44.5</b>	<b>46.8</b>
<b>Female</b>				
16 – 24	6.9	4.5	5.7	6.7
25 – 59	30.7	31.5	32.4	30.7
60 plus	15.1	21.3	17.7	15.9
<b>Total</b>	<b>52.7</b>	<b>57.6</b>	<b>55.5</b>	<b>53.2</b>
<b>All adults</b>		(n=28,261)	(n=28,261)	(n=56,175)
16 – 24	13.9	8.0	10.9	13.1
25 – 59	60.1	56.8	58.9	58.6
60 plus	26.1	35.2	30.2	28.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

\* Weighted by number of adults and local authority size

\*\* Weighted by local authority size

However, even after this design weighting has been applied, the weighted random adult sample for 2005/2006 still does not match the profile of the adult population suggested by the Census estimates with, as expected, under-representation of younger people in general and 16-24 year olds in particular. Consequently, older people are over-represented in the random adult sample.

#### *Driving and transport*

In relation to driving and transport, the survey results also look broadly in line with what one might expect from other sources such as the National Travel Survey and the differences which exist are, again, comfortably within the confidence intervals associated with the two surveys. Mode of travel comparisons with other sources are less conclusive, though methodological or classification differences may be playing a part here.

**Table 4-4: Comparison of key variables relating to driving and transport**

	<b>2004/2005 National Travel Survey</b> (n= 1,594 households)	<b>2001 Census</b> (n= 2,192,246 households)	<b>2005/2006 SHS</b>
	%	%	%
<b>% adults with full driving licences</b>			(n=28,039) *
Males aged 17 +	78		77
Females aged 17 +	58		57
Total	67		66
<b>Mode of travel to school<sup>†</sup></b>			(n=3,279) **
Walking	54	51	52
Car	23	20	21
Bus	20	25	24
Other	3	3	3
<b>% households with regular use of cars<sup>††</sup></b>			(n=31,008) ***
No car	31	34	32
1 car	43	43	44
2 or more cars	22	22	24
		<b>2001 Census</b>	<b>2005/2006 SHS*</b>
		%	%
<b>Mode of travel to work or study</b> <i>incl. those who work at / from home</i>			(n=13,674)
Car or motorcycle		64	60
Bus, minibus, coach or taxi		13	11
Train, underground		3	3
Other means (e.g. walking and cycling)		14	14
Working at or from home		6	11
	<b>2005</b>	<b>2006</b>	<b>2005/2006</b>
	<b>Labour Force Survey, Sep-Nov, 2005 and Oct-Dec 2006</b>		<b>SHS*</b>
	%	%	%
<b>Mode of travel to work</b> <i>excl. those who work at / from home</i>			(n=12,112)
Car, van, minibus, works van	68	69	67
Bicycle	2	1	2
Bus, coach, private bus	12	12	11
Rail (incl Underground)	4	4	3
Walk	13	11	14
Other (incl Taxi)	2	2	2

\* SHS weighted by number of adults and local authority size

\*\* SHS weighted by local authority size and number of school children in household

\*\*\* SHS weighted by local authority size only

† Census figures are for method of travel to place of study, age 5-17

†† the National Travel Survey figures relate to 2004 alone, and were produced from the combined Scottish results of the NTS, the General Household Survey and the Expenditure and Food Survey. The Census figures relate to cars and vans available for private use.

*Ethnicity*

When comparing the ethnic composition of all household members with that of the population as a whole (as recorded in the 2001 Census), there is good agreement between the Census and the 2005/2006 SHS. For example, in the Census, 98.0% of the population is recorded as White. In the 2005/2006 SHS, 97.6% of all household members are recorded as White. Within the detailed non-White categories the differences between the SHS and the Census suggest that Black and Asian groups represent a higher proportion of household members. The largest difference between the Census and the SHS is in the proportions recorded as White Scottish and White Other British.

**Table 4-5: Comparison of ethnicity in Census 2001 and 2005/2006 SHS**

	% of Census population 2001	% of all household members 2005/2006 SHS
<b>White</b>	<b>98.0</b>	<b>97.6</b>
Scottish	88.1	86.1
Other British	7.4	9.0
Irish	1.0	0.7
Any other White background	1.5	1.7
<b>Mixed</b>	<b>0.2</b>	<b>0.2</b>
Any mixed background	0.2	0.2
<b>Asian, Asian Scottish or Asian British</b>	<b>1.3</b>	<b>1.6</b>
Indian	0.3	0.3
Pakistani	0.6	0.7
Bangladeshi	0.0	0.1
Chinese	0.1	0.2
Any other Asian background	0.3	0.3
<b>Black, Black Scottish or Black British</b>	<b>0.1</b>	<b>0.3</b>
Caribbean	0.0	0.0
African	0.1	0.3
Any other Black background.	0.0	0.0
Other ethnic group	0.2	0.2

*Urban/rural classification*

Analysis of the Scottish Household Survey makes extensive use of the Scottish Executive's classification of areas into different degrees of urbanity and rurality. This classifies settlements according to their size and for settlements with a population of less than 10,000, their proximity to a settlement with a population of 10,000 or more.<sup>5</sup>

Table 4-6 compares the urban/rural classification of the SHS sample for 2005/2006 with the profile of all addresses sampled for the survey, the profile of eligible addresses and participating households. This shows that the addresses sampled in 2005/2006 (column 2) under-represent urban areas and over-

<sup>5</sup> Full details available in Scottish Executive (2006) *Scottish Executive Urban Rural Classification 2005-2006* available at <http://www.scotland.gov.uk/Publications/2006/07/31114822/0>

represent rural areas but when disproportionate sampling is taken into account by weighting, the profile matches the population.

**Table 4-6: Comparison of all Scottish households, all sampled households, all eligible households and participating households by urban rural classification**

	All Scottish addresses*	All sampled addresses (unweighted)	All sampled addresses**	All eligible households**	All participating households***
Large urban areas	40	40	40	40	41
Other urban	29	27	29	30	29
Small accessible towns	10	9	9	9	9
Small remote towns	3	5	4	4	4
Accessible rural	12	10	11	11	12
Remote rural	6	9	7	6	6

\* Weighted by number households within each unit postcode

\*\* Weighted to reflect disproportionate sampling across local authorities

\*\*\* Weighted to reflect disproportionate sampling and non-response across local authorities

Comparison of the households at which SHS interviews were achieved and the classification of all households sampled at a local authority level shows that there is a good match between the two within local authorities although overall, large urban areas are under-represented. Table 4-7 compares the proportion of households in each local authority in each type of area.

**Table 4-7: Comparison of 2005/2006 SE urban rural classification of eligible addresses and 2005/2006 participating households**

Row percentages, all eligible addresses shown in bold, participating households in plain text

	Large urban areas	Other urban areas	Accessible small towns	Remote small towns	Accessible rural	Remote rural	Total
<b>Aberdeen City</b>	<b>94</b>		<b>4</b>		<b>2</b>		<b>100</b>
Aberdeen City	94		3		2		100
<b>Aberdeenshire</b>		<b>25</b>	<b>7</b>	<b>15</b>	<b>39</b>	<b>13</b>	<b>100</b>
Aberdeenshire		23	8	16	39	14	100
<b>Angus</b>	<b>7</b>	<b>57</b>	<b>17</b>		<b>19</b>	<b>1</b>	<b>100</b>
Angus	7	56	16		19	1	100
<b>Argyll and Bute</b>		<b>19</b>		<b>37</b>	<b>4</b>	<b>40</b>	<b>100</b>
Argyll and Bute		18		36	4	42	100
<b>Scottish Borders</b>		<b>30</b>	<b>21</b>	<b>4</b>	<b>37</b>	<b>9</b>	<b>100</b>
Scottish Borders		32	19	4	38	7	100
<b>Clackmannanshire</b>		<b>57</b>	<b>28</b>		<b>15</b>		<b>100</b>
Clackmannanshire		58	26		15		100
<b>Dumfries and Galloway</b>		<b>30</b>	<b>16</b>	<b>11</b>	<b>24</b>	<b>19</b>	<b>100</b>
Dumfries and Galloway		29	15	11	26	19	100
<b>Dundee City</b>	<b>100</b>				<b>0</b>		<b>100</b>
Dundee City	100				0		100
<b>East Ayrshire</b>		<b>38</b>	<b>35</b>	<b>2</b>	<b>20</b>	<b>6</b>	<b>100</b>
East Ayrshire		34	38	2	21	6	100
<b>East Dumbartonshire</b>	<b>58</b>	<b>29</b>	<b>7</b>		<b>5</b>		<b>100</b>
East Dumbartonshire	60	30	6		5		100
<b>East Lothian</b>	<b>24</b>		<b>34</b>	<b>15</b>	<b>13</b>	<b>12</b>	<b>100</b>
East Lothian	22		31	17	15	15	100
<b>East Renfrewshire</b>	<b>86</b>		<b>10</b>		<b>4</b>		<b>100</b>
East Renfrewshire	85		11		4		100
<b>Edinburgh City</b>	<b>96</b>		<b>2</b>		<b>1</b>		<b>100</b>
Edinburgh City	97		2		1		100
<b>Falkirk</b>		<b>83</b>	<b>4</b>		<b>12</b>		<b>100</b>
Falkirk		82	5		14		100
<b>Fife</b>		<b>67</b>	<b>19</b>		<b>14</b>		<b>100</b>
Fife		66	20		14		100
<b>Glasgow City</b>	<b>100</b>				<b>0</b>		<b>100</b>
Glasgow City	100				0		100
<b>Highland</b>		<b>24</b>	<b>3</b>	<b>25</b>	<b>9</b>	<b>39</b>	<b>100</b>
Highland		24	3	24	10	40	100
<b>Inverclyde</b>		<b>89</b>	<b>5</b>		<b>6</b>		<b>100</b>
Inverclyde		88	5		7		100
<b>Midlothian</b>		<b>63</b>	<b>17</b>		<b>20</b>		<b>100</b>
Midlothian		62	18		20		100
<b>Moray</b>		<b>27</b>	<b>19</b>	<b>13</b>	<b>24</b>	<b>16</b>	<b>100</b>
Moray		28	20	13	24	16	100
<b>North Ayrshire</b>		<b>70</b>	<b>17</b>		<b>7</b>	<b>6</b>	<b>100</b>
North Ayrshire		67	17		9	8	100
<b>North Lanarkshire</b>	<b>67</b>	<b>16</b>	<b>11</b>		<b>7</b>		<b>100</b>
North Lanarkshire	67	15	11		7		100
<b>Orkney</b>				<b>33</b>		<b>67</b>	<b>100</b>
Orkney				33		67	100
<b>Perth and Kinross</b>		<b>33</b>	<b>9</b>	<b>12</b>	<b>34</b>	<b>12</b>	<b>100</b>
Perth and Kinross		31	8	12	37	12	100
<b>Renfrewshire</b>	<b>79</b>	<b>9</b>	<b>8</b>		<b>4</b>		<b>100</b>
Renfrewshire	78	9	8		5		100
<b>Shetland</b>				<b>33</b>		<b>67</b>	<b>100</b>
Shetland				33		67	100
<b>South Ayrshire</b>		<b>71</b>	<b>3</b>	<b>7</b>	<b>16</b>	<b>3</b>	<b>100</b>
South Ayrshire		69	3	7	18	3	100
<b>South Lanarkshire</b>	<b>22</b>	<b>57</b>	<b>8</b>		<b>12</b>	<b>1</b>	<b>100</b>
South Lanarkshire	22	56	9		13	1	100
<b>Stirling</b>		<b>54</b>	<b>7</b>		<b>31</b>	<b>8</b>	<b>100</b>
Stirling		53	7		32	8	100
<b>West Dumbartonshire</b>	<b>51</b>	<b>48</b>			<b>1</b>		<b>100</b>
West Dumbartonshire	49	50			1		100
<b>West Lothian</b>		<b>66</b>	<b>21</b>		<b>13</b>		<b>100</b>
West Lothian		64	22		15		100
<b>Eilean Siar</b>				<b>21</b>		<b>79</b>	<b>100</b>
Eilean Siar				20		80	100
	<b>40</b>	<b>30</b>	<b>9</b>	<b>4</b>	<b>11</b>	<b>6</b>	<b>100</b>
	40	29	9	4	11	6	100

Rows may not always add to 100% because of rounding.

*Economic activity*

One area where the results of the SHS indicate significant differences from other sources is in relation to indicators of economic activity. As the following table shows, the most recent results from the Labour Force Survey (LFS) suggest that the SHS may be under-representing people in employment, and over-representing the economically inactive. It should be emphasised, however, that the information from the SHS shown here is based on the respondent's own classification of their economic activity (collected at the start of the interview)<sup>6</sup>, rather than on the full International Labour Organisation definition, which is not classified by the respondent and is the basis for official estimates of unemployment. The SHS is not an official source of statistics on employment (see *Methodology*, section 4 on limitations of the data).

**Table 4-8: Comparison of economic activity variables among adults of working age**

	<b>2005 Annual Population Survey</b>	<b>2005/2006 SHS *</b>
	%	%
<b>Males</b>	(n=15,985)	(n=9,003)
Employed	77.6	74.7
Unemployed	5.2	6.1
Economically inactive	17.2	19.3
<b>Females</b>	(n=16,259)	(n=10,120)
Employed	72.1	67.4
Unemployed	3.3	3.1
Economically inactive	24.5	29.6
<b>All adults</b>	(n=32,244)	(n=9,545)
Employed	74.9	70.8
Unemployed	4.3	4.5
Economically inactive	20.8	24.7

\* weighted by number of adults and local authority size

Figures in this table have been calculated using all working age people as the denominator, headline unemployment statistics are not calculated on this basis

Annual Population Survey data are sourced from quarterly Labour Force Survey data and the annual Labour Force Survey boost data.

<sup>6</sup> This further complicated by the fact that where the household respondent is not subsequently selected as the random adult, the classification is given by the household respondent and attributed to the random adult.

## 5. Survey design factors and complex standard errors

Data collected in surveys are always an estimate of the true proportions in the population. The accuracy of these estimates – the sampling error – can be calculated for any estimate in the survey using information about the proportion of people giving the response and the number of people in the sample (or sub-sample). The sampling error can be expressed as a ‘confidence interval’, which can be added to and subtracted from the survey estimate to give a range within which it is fairly certain that the true value lies.

Since the SHS is not a simple random sample (SRS) design, the confidence intervals need to take account of the impact of clustering and stratification. The SHS, therefore, has what is known as a ‘complex standard error’. While for some variables the design of the sample improves the precision of the survey estimates compared with a simple random sample, the overall effect of the survey design is to reduce the precision of the estimates. The relationship between the complex standard error and the theoretical simple random sample standard error for a sample of the same size is summarised in the ‘design factor’.

The Taylor Expansion Method was used to calculate the complex standard errors for a series of results in the study. This is a well-established technique for working through the effects of stratification and clustering. As can be seen from Table 5-1, these ranged from 1.06 to 1.79. The overall average is 1.27, but that should not be taken as a ‘typical’ value, given the distribution of values across different variables. However, it suggests that the original assumption of a design effect of 1.1-1.2 was not unreasonable and using a value of 1.3 as a ‘rule of thumb’ for adjusting the standard errors of the survey data would account for the design factors associated with most variables in the survey.

The 95% confidence intervals shown are based on complex standard errors.

**Table 5-1: Design factors and confidence intervals for key variables in 2005/2006 data**

Characteristics	Estimate	95% Confidence Intervals		SRS error for the same size of sample	SHS Complex Standard Error	Design Factor
		Lower	Upper			
<b>Tenure</b>						
Owner-occupied	65.6	64.8	66.3	0.27	0.38	1.40
Social-rented Sector	24.9	24.2	25.6	0.24	0.36	1.48
Privately rented	7.5	7.1	7.9	0.15	0.19	1.27
<b>Below bedroom standard</b>	2.7	2.5	2.9	0.09	0.10	1.06
<b>Property type</b>						
Detached house	21.2	20.3	22.0	0.24	0.43	1.79
Semi-detached house	22.5	21.9	23.2	0.24	0.34	1.42
Terraced house	22.0	21.3	22.8	0.23	0.40	1.71
Flat/maisonette	33.9	33.1	34.7	0.26	0.40	1.49
<b>Economic status of working age adults</b>						
Full time employee	49.3	48.5	50.1	0.36	0.41	1.15
Part time employee	13.7	13.1	14.2	0.25	0.28	1.13
Self-employed	6.5	6.1	7.0	0.18	0.21	1.17
Unemployed	4.5	4.1	4.8	0.16	0.17	1.08
<b>HIH or partner has a bank/building society account</b>	91.1	90.7	91.4	0.16	0.18	1.14
<b>Marital status of all adults</b>						
Married/cohabiting	49.4	48.9	49.8	0.19	0.23	1.21
Separated/divorced	6.0	5.9	6.2	0.09	0.10	1.12
Single/never married	37.8	37.4	38.2	0.18	0.20	1.11
Widowed	6.8	6.6	7.0	0.10	0.11	1.20
Access to the internet	52.7	51.9	53.4	0.30	0.38	1.29
Travel to work in a car	60.0	59.1	60.9	0.42	0.47	1.13
Require regular care or help	11.7	11.3	12.1	0.18	0.20	1.12
Reporting long-standing illness, disability or health problem	33.8	33.2	34.4	0.27	0.32	1.18

HIH = Highest income householder

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The aim of the Statistical Service is to provide relevant and reliable statistical information, analysis and advice that meet the needs of government, business and the people of Scotland.

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3. **To work effectively with users and providers by**
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  - Involving users and providers in planning developments in outputs and processes
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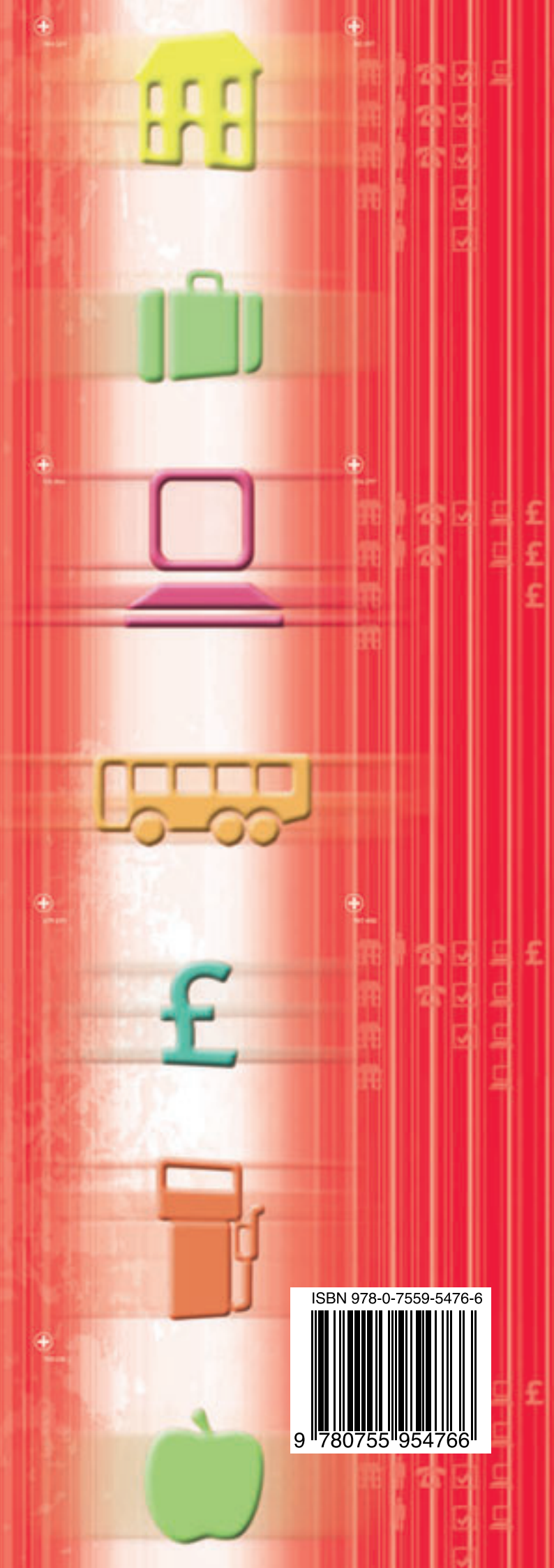
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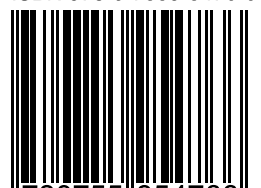
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