



EU-SILC UK 2006

Quality Report

Office for National Statistics

Francis Jones
David Matthews
Liam Murray
Juwaria Rahman
Steven Rogers

Office for National Statistics
Government Buildings
Cardiff Rd
Newport
NP10 8XG
Email: ghs@ons.gsi.gov.uk

© Crown copyright

Table of Contents

	Page
Preface	4
1. Common cross-sectional European Union indicators	5
2. Accuracy	8
2.1 Sampling design	8
2.1.1 Type of sampling	8
2.1.2 Sampling units (one stage, two stages)	8
2.1.3 Stratification and sub-stratification criteria	8
2.1.4 Sample size and allocation criteria	9
2.1.5 Sample selection schemes	9
2.1.6 Sample distribution over time	9
2.1.7 Renewal of sample: rotational groups	10
2.1.8 Weightings	11
2.1.8.1 Design Factor	11
2.1.8.2 Non-response adjustments	11
2.1.8.3 Adjustments to external data (level, variables used and sources)	12
2.1.8.4 Final cross-sectional weight	13
2.1.9 Substitutions	14
2.2 Sampling errors	14
2.2.1 Standard errors and effective sample size	14
2.3 Non-sampling errors	17
2.3.1 Sampling frame and coverage errors	17
2.3.2 Measurement and processing errors	18
2.3.2.1 Measurement errors	18
2.3.2.2 Processing errors	18
2.3.3 Non-response errors	18
2.3.3.1 Achieved sample size	19
2.3.3.2 Unit non-response	19
2.3.3.3 Distribution of households	20
2.3.3.4 Distribution of substituted units	21
2.3.3.5 Item non-response	21
2.3.3.6 Total item non-response	24
2.4 Mode of data collection	29
2.5 Interview duration	29
2.6 Imputation procedure	30
2.7 Imputed rent	31
2.8 Company cars	31

3.	Comparability	32
3.1	Basic concepts and definitions	32
3.2	Components of income	35
3.2.1	Differences between the national definitions and standard EU-SILC definitions, and an assessment, of the consequences of the differences mentioned	35
3.2.2	The source or procedure for the collection of income variables	37
3.2.3	The form in which income variables at component level have been obtained	37
3.2.4	The method used for obtaining income target variables in the required form	38
4.	Coherence	38
4.1	Comparison of income target variables and the number of persons who receive income from each 'income component', with external sources	38

Index of Tables

Table		Page
1.1	Laeken-Indicators EU-SILC 2006	5
2.1	Distribution of the EU-SILC UK sample over time	10
2.2	Renewal of sample: Rotational groups	11
2.3	Variables included in the logistic regression model of household attrition in 2006	12
2.4	Mean, total number of observations and standard errors for income components (unweighted)	14
2.5	Mean, total number of observations and standard errors for income components (weighted)	16
2.6	Contact at address	18
2.7	Sample size and accepted interviews	19
2.8	Distribution of original units by 'record of contact at address'	20
2.9	Distribution of address contacted by 'household questionnaire result' and by household interview acceptance	21
2.10	Distribution of item non-response (before imputation)	21
2.11	Distribution of item non-response (after imputation)	23
2.12	Number of observations and total item non-response	24
2.13	Distribution of RB250 and RB260	29
2.14	Distribution of household members aged 16 and over by 'RB250'	29
2.15	Distribution of household members aged 16 and over by 'RB260'	29
2.16	Interview duration in minutes (mean)	29
2.17	Average carbon dioxide (CO ₂) emission by Cylinder Capacity	32
2.18	Band price of a motor vehicle based on Cylinder Capacity and average carbon dioxide (CO ₂) emissions	32
2.19	Tax rate based on carbon dioxide (CO ₂) emission rate (per cent)	32

Annexes		39
Annex 1	Government Office Region regional stratifier	39
Annex2	Socio-economic groups (Operational categories and sub-categories of NS-SEC)	39

Preface

According to article 16 of the Regulation (EC) no. 1177/2003 of the European Parliament and of the Council of 16 June 2003 concerning Community statistics on income and living conditions (EU-SILC), Member States and the Commission (Eurostat) will produce the following reports:

Member states shall produce by the end of the year $n+1$ (2006+1) an intermediate quality report relating to the common cross-sectional EU indicators based on the cross-sectional component of 2006.

Note on UK Data and Intermediate Quality Report for the 2006 Cross-sectional Operation

Please note that the data associated with this Quality Report have been updated since the first release of this document, consequently some of the figures in this Report may be out-of-date. The UK will update this Quality Report to reflect these amendments at the earliest opportunity.

1. Common cross-sectional European Union indicators

In accordance with Eurostat regulation, only cross-sectional indicators have been provided within this report.

Table 1.1 Laeken-Indicators EU-SILC 2006

Indicator	Value	Achieved sample size	Total item non response
At-risk-of-poverty rate after social transfers – total	19.22	23365	32%
At-risk-of-poverty rate after social transfers – men total	18.24	11255	32%
At-risk-of-poverty rate after social transfers – women total	20.15	12110	32%
At-risk-of-poverty rate after social transfers – 0–15 years	24.14	4789	32%
At-risk-of-poverty rate after social transfers – 16-24 years	20.7	2236	32%
At-risk-of-poverty rate after social transfers – 25-49 years	13.61	7802	32%
At-risk-of-poverty rate after social transfers – 50-64 years	16.5	4554	32%
At-risk-of-poverty rate after social transfers – 65+ years	27.95	3984	32%
At-risk-of-poverty rate after social transfers – 16+ years	18.04	18576	32%
At-risk-of-poverty rate after social transfers – 16-64 years	15.69	14592	32%
At-risk-of-poverty rate after social transfers – 0-64 years	17.62	19381	32%
At-risk-of-poverty rate after social transfers – men 16-24 years	18.77	1081	32%
At-risk-of-poverty rate after social transfers – men 25-49 years	12.83	3696	32%
At-risk-of-poverty rate after social transfers – men 50-64 years	16.19	2226	32%
At-risk-of-poverty rate after social transfers – men 65+ years	24.81	1838	32%
At-risk-of-poverty rate after social transfers – men 16+ years	16.58	8841	32%
At-risk-of-poverty rate after social transfers – men 16-64 years	14.86	7003	32%
At-risk-of-poverty rate after social transfers – men 0-64 years	17.18	9417	32%
At-risk-of-poverty rate after social transfers – women 16-24 years	22.72	1155	32%
At-risk-of-poverty rate after social transfers – women 25-49 years	14.36	4106	32%
At-risk-of-poverty rate after social transfers – women 50-64 years	16.8	2328	32%
At-risk-of-poverty rate after social transfers – women 65+ years	30.4	2146	32%
At-risk-of-poverty rate after social transfers – women 16+ years	19.42	9735	32%
At-risk-of-poverty rate after social transfers – women 16-64 years	16.52	7589	32%
At-risk-of-poverty rate after social transfers – women 0-64 years	18.05	9964	32%
Employment status			
At-risk-of-poverty rate after social transfers – employed	7.81	9651	
At-risk-of-poverty rate after social transfers – unemployed	57.15	261	
At-risk-of-poverty rate after social transfers – retired	28.09	4199	
At-risk-of-poverty rate after social transfers – other inactive	34.18	2641	
Gender			
At-risk-of-poverty rate after social transfers – men, employed	8.08	4920	
At-risk-of-poverty rate after social transfers – men, unemployed	61.96	157	
At-risk-of-poverty rate after social transfers – men, retired	26.02	1827	
At-risk-of-poverty rate after social transfers – men, other inactive	34.74	837	
At-risk-of-poverty rate after social transfers – women, employed	7.51	4731	
At-risk-of-poverty rate after social transfers – women, unemployed	49.25	104	
At-risk-of-poverty rate after social transfers – women, retired	29.57	2372	
At-risk-of-poverty rate after social transfers – women, other inactive	33.89	1804	

At-risk-of-poverty rate after social transfers – single, <65 years	23.03	1413	
At-risk-of-poverty rate after social transfers – single, 65+ years	35.89	1355	
At-risk-of-poverty rate after social transfers – single, male	26.06	1202	
At-risk-of-poverty rate after social transfers – single, female	30.94	1566	
At-risk-of-poverty rate after social transfers – single, total	28.73	2768	
At-risk-of-poverty rate after social transfers – 2 adults, no children, both <65	9.78	4004	
At-risk-of-poverty rate after social transfers – 2 adults, no children, at least one 65+	23.02	2752	
At-risk-of-poverty rate after social transfers – other households without children	12.93	2110	
At-risk-of-poverty rate after social transfers – single parent, at least one child	41.96	1658	
At-risk-of-poverty rate after social transfers – 2 adults, 1 child	14.34	2103	
At-risk-of-poverty rate after social transfers – 2 adults, 2 children	14.09	3580	
At-risk-of-poverty rate after social transfers – 2 adults, 3+ children	25.62	1845	
At-risk-of-poverty rate after social transfers – other households with children	17.01	1450	
At-risk-of-poverty rate after social transfers – households without children	18.03	11634	
At-risk-of-poverty rate after social transfers – households with children	20.76	10636	
At-risk-of-poverty rate after social transfers – owner or rent-free	13.94	17533	
At-risk-of-poverty rate after social transfers – tenant	33.07	5818	
At-risk-of-poverty rate after social transfers – households without children, $w = 0^1$	40.1	1634	
At-risk-of-poverty rate after social transfers – households without children, $0 < w < 1$	14.24	1902	
At-risk-of-poverty rate after social transfers – households without children, $w = 1$	4.66	5129	
At-risk-of-poverty rate after social transfers – households with children, $w = 0$	60.64	1470	
At-risk-of-poverty rate after social transfers – households with children, $0 < w < 0.5$	38.16	334	
At-risk-of-poverty rate after social transfers – households with children, $w = 1$	9.72	6764	
Median of the equivalised disposable household income			
At-risk-of-poverty threshold – single	11066.29		32%
At-risk-of-poverty threshold – 2 adults, 2 children	23239.22		32%
Inequality of income distribution S80/S20 income quintile share ratio	5.389	23365	32%
Relative median at-risk-of-poverty gap – total	22.69	4465	32%
Relative median at-risk-of-poverty gap – men total	23	2050	32%
Relative median at-risk-of-poverty gap – women total	22.51	2415	32%
Relative median at-risk-of-poverty gap – 0-15 years	19.91	1133	32%
Relative median at-risk-of-poverty gap – 16-64 years	25.73	2263	32%
Relative median at-risk-of-poverty gap – 65+ years	19.25	1069	32%
Relative median at-risk-of-poverty gap – 16+ years	23.46	3332	32%
Relative median at-risk-of-poverty gap – men, 16-64 years	27.4	1027	32%
Relative median at-risk-of-poverty gap – men, 65+ years	17.92	439	32%
Relative median at-risk-of-poverty gap – men, 16+ years	24.53	1466	32%
Relative median at-risk-of-poverty gap – women, 16-64 years	24.15	1236	32%
Relative median at-risk-of-poverty gap – women, 65+ years	20.24	630	32%

Relative median at-risk-of-poverty gap – women, 16+ years	22.77	1866	32%
Median income below the at-risk-of-poverty threshold – total			
Median income below the at-risk-of-poverty threshold – men total			
Median income below the at-risk-of-poverty threshold – women total			
Median income below the at-risk-of-poverty threshold – 0-15 years			
Median income below the at-risk-of-poverty threshold – 16-64 years			
Median income below the at-risk-of-poverty threshold – 65+ years			
Median income below the at-risk-of-poverty threshold – 16+ years			
Median income below the at-risk-of-poverty threshold – men, 16-64 years			
Median income below the at-risk-of-poverty threshold – men, 65+ years			
Median income below the at-risk-of-poverty threshold – men, 16+ years			
Median income below the at-risk-of-poverty threshold – women, 16-64 years			
Median income below the at-risk-of-poverty threshold – women, 65+ years			
Median income below the at-risk-of-poverty threshold – women, 16+ years			
Dispersion around the risk-of-poverty threshold – 40%	6.31	23365	32%
Dispersion around the risk-of-poverty threshold – 50%	11.88	23365	32%
Dispersion around the risk-of-poverty threshold – 70%	27.24	23365	32%
Before social transfers except old-age and survivor's benefits			
At-risk-of-poverty rate before social transfers – total	42.23	23365	32%
At-risk-of-poverty rate before social transfers – men total	39.26	11255	32%
At-risk-of-poverty rate before social transfers – women total	45.07	12110	32%
At-risk-of-poverty rate before social transfers – 0-15 years	42.82	4789	32%
At-risk-of-poverty rate before social transfers – 16-64 years	30.28	14592	32%
At-risk-of-poverty rate before social transfers – 65+ years	91.96	3984	32%
At-risk-of-poverty rate before social transfers – 16+ years	42.09	18576	32%
At-risk-of-poverty rate before social transfers – men, 16-64 years	27.34	7003	32%
At-risk-of-poverty rate before social transfers – men, 65+ years	90.7	1838	32%
At-risk-of-poverty rate before social transfers – men, 16+ years	38.29	8841	32%
At-risk-of-poverty rate before social transfers – women, 16-64 years	33.18	7589	32%
At-risk-of-poverty rate before social transfers – women, 65+ years	92.93	2146	32%
At-risk-of-poverty rate before social transfers – women, 16+ years	45.68	9735	32%
Before social transfers including old-age and survivors' benefits			
At-risk-of-poverty rate before social transfers – total	30.23	23365	32%
At-risk-of-poverty rate before social transfers – men total	28.22	11255	32%
At-risk-of-poverty rate before social transfers – women total	32.15	12110	32%
At-risk-of-poverty rate before social transfers – 0-15 years	42.01	4789	32%
At-risk-of-poverty rate before social transfers – 16-64 years	25.41	14592	32%
At-risk-of-poverty rate before social transfers – 65+ years	35.89	3984	32%
At-risk-of-poverty rate before social transfers – 16+ years	27.42	18576	32%
At-risk-of-poverty rate before social transfers – men, 16-64 years	23.43	7003	32%
At-risk-of-poverty rate before social transfers – men, 65+ years	30.87	1838	32%
At-risk-of-poverty rate before social transfers – men, 16+ years	24.71	8841	32%
At-risk-of-poverty rate before social transfers – women, 16-64 years	27.38	7589	32%
At-risk-of-poverty rate before social transfers – women, 65+ years	39.81	2146	32%

At-risk-of-poverty rate before social transfers – women, 16+ years	29.98	9735	32%
Gini coefficient	32.353	23365	32%
Mean equivalised disposable income	21449.82	23365	32%
Gender pay gap			

2. ACCURACY

Accuracy: denotes the closeness of computations or estimates to the exact or true population values.

2.1 Sampling design

2.1.1 Type of sampling

Data for EU-SILC UK 2006 is collected from two sources. First, data is collected by the Office for National Statistics (ONS), using the General Household Survey. Second, to ensure that EU-SILC is representative of the UK, a sample of approximately 300 households is collected by NISRA (Northern Ireland Statistics and Research Agency) using the Continuous Household Survey (CHS). This small additional sample represents the (approximately) 2% of the UK population that live in Northern Ireland. All of the data analysis and processing is undertaken by ONS.

In 2006, 13,857 addresses were sampled. EU-SILC UK aims to interview all adults aged 16 or over at every household at the sampled address. EU-SILC UK uses a probability, stratified two-stage sample design.

2.1.2 Sampling units (one stage, two stages)

Households are sampled from the small users Postcode Address File (PAF). This is an up to date list of all addresses maintained by the UK Post Office. The Postcode address file is ordered by postcode sector, which are similar in size to a UK electoral ward area. The postcode sectors are the Primary Sampling Units (PSU-1) for EU-SILC and the Secondary Sampling Units (PSU-2) are addresses within those sectors.

2.1.3 Stratification and sub-stratification criteria

Stratification involves the division of the population into sub-groups, or strata, from which independent samples are taken. This ensures that a representative sample is drawn with respect to the stratifiers (i.e. the proportion of units sampled from any particular stratum will equal the proportion in the population with that characteristic). Stratification of a sample can lead to substantial improvements in the precision of survey estimates.

Initially, postcode sectors were allocated to 30 major strata. These were based on the 10 Government Office Regions in England (sub-divided between the former Metropolitan and non-Metropolitan counties. In addition London was subdivided into quadrants (Northwest, Northeast, Southwest and Southeast) with each quadrant being divided into inner and outer areas (Annex 1). Using a finer division of London

significantly improves the precision of estimates), 5 subdivisions in Scotland, 2 in Wales and 1 in Northern Ireland.

Within each major stratum, postcode sectors were then stratified according to selected indicators taken from the 2001 Census. Sectors were initially ranked according to the proportion of households with no car, then divided into three bands containing approximately the same number of households. Within each band, sectors were re-ranked according to the proportion of households with a household reference person in socio-economic groups 1 to 5 and 13 (Annex 2), and these bands were then subdivided into three further bands of approximately equal size. Finally, within each of these bands, sectors were re-ranked according to the proportion of people who were pensioners.

Major strata were then divided into minor strata with equal numbers of addresses, the number of minor strata per major strata being proportionate to the size of the major stratum. The sampling frame was divided into 576 minor strata and one PSU selected from each. Of the 576 PSUs selected, 48 were randomly allocated to each month of the year. Each PSU formed a quota of work for an interviewer. Within each PSU, 23 addresses were randomly selected.

2.1.4 Sample size and allocation criteria

Member states have to achieve a Minimum Effective Sample size which for the UK is 7,500 households and 13,750 persons aged 16 or older.

In 2006, 13,857 addresses were selected for survey, yielding a sample of 9,902 eligible households.

Within these households 23,365 people were residents of which 18,563 were eligible for a personal interview (aged at least 16 years of age).

We estimate that these numbers correspond to effective sample sizes of 7,921 households, and 14,850 adults over the age of 16 (assuming a design effect of 1.25).

2.1.5 Sample selection schemes

EU-SILC UK uses a two-stage sampling scheme:

1. Selection of a Primary Sampling Units (PSUs) utilising a probability proportional to size sampling scheme.
2. Systematic random sampling of 23 addresses within a PSU.

2.1.6 Sample distribution over time

Household interviews for EU-SILC UK are spread evenly throughout the calendar year. Typically a small number of interviews will be completed in January of the following year, however in the 2006 survey, due to a shortage of interviewers, a larger number of interviews and re-issues remained unallocated, and so the field period was extended until April 2007.

Table 2.1 Distribution of the EU-SILC UK sample over time¹

Date of interview	Number of households
01/01/06 – 31/01/06	737
01/02/06 – 28/02/06	826
01/03/06 – 31/03/06	901
01/04/06 – 30/04/06	777
01/05/06 – 31/05/06	856
01/06/06 – 30/06/06	849
01/07/06 – 31/07/06	800
01/08/06 – 31/08/06	889
01/09/06 – 30/09/06	805
01/10/06 – 31/10/06	810
01/11/06 – 30/11/06	867
01/12/06 – 31/12/06	631
01/01/07 – 31/01/07	111
01/02/07 – 28/02/07	33
01/03/07 – 31/03/07	4
01/04/07 – 30/04/07	5
Missing	0
Total	9902

¹ Information based on data presented in the Household Data file.

The survey was carried out using Computer Assisted Personal Interviewing (CAPI) on laptop computers by face-to-face interviewers. In addition, some telephone interviewers were used to convert EU-SILC UK proxy interviews to full interviews.

2.1.7 Renewal of sample: rotational groups

In the UK, 2005 was the initial year for the EU-SILC survey. In 2005, the GHS adopted a new sample design in line with EU-SILC requirements, changing from a cross-sectional to a longitudinal design.

The new sample design follows a four-yearly sample rotation in which households remain in the sample for four years (waves) and one quarter of the sample is replaced each year. Each quarter of the sample is known as a replication.

Once the system is fully established (from year 4 onwards - 2008) the sample for any one year consists of 4 replications which have been in the survey for 1, 2, 3 or 4 years. As 2006 is the second year of this longitudinal design, this sample contains households being re-interviewed for the first time (approximately 67% of households were from sample replications 2, 3 and 4).

Table 2.2 Renewal of sample: Rotational groups

Sample replication	Year 1 (2005)	Year 2 (2006)	Year 3 (2007)	Year 4 (2008)	Year 5 (2009)	Year 6 (2010)
1	1st					
2	1st	2nd				
3	1st	2nd	3rd			
4	1st	2nd	3rd	4th		
5		1st	2nd	3rd	4th	
6			1st	2nd	3rd	4th
7				1st	2nd	3rd
8					1st	2nd
9						1st

2.1.8 Weightings

This section describes the methods used to calculate weights for the UK EU-SILC 2006 survey. The methods are broadly consistent with those recommended by EUROSTAT.

2.1.8.1 Design factor

The design factor, or defl, of an estimate p is the ratio of the standard error of p compared to that, that would have resulted had the survey design been a simple random sample of the same size.

The design weight is calculated with reference to the design of the sample to take into account the inclusion probability of the selection unit. Within the UK, direct sampling of addresses is used, but no extra weighting is applied to account for sampling households within addresses. The design weight, is defined as the inverse of the probability of selection. This is derived indirectly by dividing the population size or individuals by the sample size of individuals (this last sentence doesn't make sense).

2.1.8.2 Non-response adjustments

All surveys accept that there will be some degree of non-response, although great efforts are made to keep it to a minimum.

The aim of non-response weights is the reduction of bias caused by unit non-response at a household level. The correction of this bias requires knowledge of the response probability of each of the responding households. The households can then be re-weighted by the inverse of this probability.

Weighting for unit non-response involves giving each respondent a weight so that they represent the non-respondents who are similar to them in terms of survey characteristics. To be able to use this method, information about non-respondents is needed. By their very nature, however, non-responding households yield very little information.

Within-household non-response inflation factor, which is related to Eurostat’s recommendation in PB040 (i.e. spreading the original weight a non-responder receives across responding members of their household), has not been supplied. However, a household non-response inflation factor has been provided based on household non-response weights.

The decennial Census was found to be the most appropriate source of information about non-responding addresses on EU-SILC UK. Unlike EU-SILC UK, which relies upon voluntary co-operation from respondents, the Census is mandatory, therefore non-response is kept to an absolute minimum. By matching Census addresses with the sampled addresses of EU-SILC UK it was possible to match the address details of the EU-SILC UK respondents as well as the non-respondents with corresponding information gathered from the Census for the same address. It was then possible to identify any types of household that were being under-represented in the survey.

Attrition is a form of non-response found on longitudinal surveys between waves. The 2006 EU-SILC is the survey’s second year in the UK; this meant that approximately three-quarters of sampled households had been surveyed in 2005. As these sampled households had previously participated in the survey, details of respondents and non-respondents were linked back to their corresponding Wave 1 information. Logistic regression was utilised to model the likelihood of response to Wave 2 against the characteristics of households at their Wave 1 interview. A variety of household variables such as household type, socioeconomic class, region and car ownership were tested for inclusion. Characteristics determined as significant by the logistic regression (at the five per cent significance level) were used to weight for this attrition. The variables which were included in the attrition model are shown in the table below (Table 2.3).

Table 2.3 Variables included in the logistic regression model of household attrition in 2006

Variable	p-value
Accommodation type	0.000
Household composition	0.000
Socio-economic category of the household reference person	0.024
Education level of the household reference person	0.000
Year of arrival into the United Kingdom of the household reference person	0.000
The household reference person is in receipt of personal income benefits	0.000

2.1.8.3 Adjustments to external data (level, variables used and sources)

Adjustments, in general, are made to improve the accuracy of data, meaning the closeness of survey-based estimations or computations to the “true” values.

The EU-SILC sample is based on private households, which means that the population totals used in the weighting need to relate to people in private households. These totals are the same as those used on the British Labour Force Survey (LFS).

The LFS derives household population estimates by excluding residents of institutions from population projections based on mid-year estimates.

The population information and EU-SILC UK data were grouped into twenty-eight age by sex categories within six regional categories to form weighting classes. The weighting consists of adjusting the existing weights (including factors for design and non-response) so that the final weights ensure that the weighted totals for the above demographic categories match the population totals.

Age-group by sex

0-4	Males and Females		
5-15	Males and Females		
16-19	Males	16-19	Females
20-24	Males	20-24	Females
25-29	Males	25-29	Females
30-34	Males	30-34	Females
35-39	Males	35-39	Females
40-44	Males	40-44	Females
45-49	Males	45-49	Females
50-54	Males	50-54	Females
55-59	Males	55-59	Females
60-64	Males	60-64	Females
65-69	Males	65-69	Females
70-74	Males	70-74	Females
75+	Males	75+	Females

Regions

- Metropolitan
- Non-metropolitan
- London
- South East
- Wales
- Scotland
- Northern Ireland

This procedure, also known as population based weighting or grossing, was carried out using the GES SAS macro. This method ensures that all individuals within a household are given the same final weights.

2.1.8.4 Final cross-sectional weight

The final cross-sectional weight was obtained after “integrative” calibration. Integrative calibration can use calibration variables defined at the individual and household level (only individual variables were used in this instance).

Eurostat recommend using NUTSII. EU-SILC UK has not used NUTSII, instead, a Region variable used on the British General Household Survey (GHS) has been

utilised. A detailed classification like NUTSII poses the problem of small cells (when there are not enough respondents within a calibration group).

2.1.9 Substitutions

In 2006, no substitutions were made.

2.2 Sampling errors

Sampling errors: refers to the variability that occurs at random because of the use of a sample rather than a census.

2.2.1 Standard errors and effective sample size

Table 2.4 Mean, Total Number of Observations and Standard Errors for Income Components (unweighted).

Income Component	Mean	Number of Observations	Standard Error
Total household income variables			
Total household gross income	32933.11	9902	368.96
Total disposable household income	24750.23	9902	236.87
Total disposable household income before social transfers other than old-age and survivor benefits	22532.10	9902	247.26
Total disposable household income before social transfers including old-age and survivors' benefits	17641.44	9902	249.41
Net income components at household level			
Income from rental of a property or land	188.659	9902	17.28
Family/child related allowances	807.724	9902	19.60
Social exclusion not elsewhere classified	427.58	9902	16.05
Housing allowances	401.97	9902	14.10
Regular inter-household cash transfer received	117.94	9902	11.60
Interest, dividends, etc.	756.74	9902	33.38
Interest repayments on mortgage	Not supplied	Not supplied	Not supplied
Income received by people aged under 16	Not supplied	Not supplied	Not supplied
Regular taxes on wealth	Not supplied	Not supplied	Not supplied
Regular inter-household cash transfer paid	Not supplied	Not supplied	Not supplied
Tax on income and social contributions	Not supplied	Not supplied	Not supplied
Repayments/receipts for tax adjustment	Not supplied	Not supplied	Not supplied
Gross income components at household level			
Income from rental of a property or land	232.26	9902	21.62
Family/child related allowances	674.00	9902	16.95
Social exclusion not elsewhere classified	367.21	9902	14.98
Housing allowances	401.97	9902	14.10

Regular inter-household cash transfer received	117.94	9902	11.61
Interest, dividends, etc.	946.24	9902	43.23
Interest repayments on mortgage	1651.00	9812	48.56
Income received by people aged under 16	11.40	9902	1.65
Regular taxes on wealth	923.85	9902	7.31
Regular inter-household cash transfer paid	137.74	9902	12.54
Tax on income and social contributions	7121.29	9902	134.45
Net income components at personal level			
Employee cash or near cash income	8166.54	18563	108.02
Non-cash employee income	139.06	18563	6.13
Contributions to individual private pension plans	Not supplied	Not supplied	Not supplied
Cash benefits or losses from self-employment	1098.48	18563	57.17
Value of goods produced for own-consumption	0	18563	0
Pension from individual private plans	13.91	18562	2.23
Unemployment benefits	35.16	18563	2.83
Old-age benefits	2581.63	18563	59.22
Survivor's benefits	27.18	18563	3.79
Sickness benefits	144.75	18563	6.27
Disability benefits	94.45	18563	4.91
Education-related allowances	35.48	18563	4.74
Gross income components at personal level			
Employee cash or near cash income	11280.00	18563	162.09
Non-cash employee income	202.65	18563	9.27
Contributions to individual private pension plans	152.32	18182	9.34
Cash benefits or losses from self-employment	1440.93	18563	83.96
Value of goods produced for own consumption	0	18563	0
Pension from individual private plans	17.74	18562	2.90
Unemployment benefits	35.86	18563	3.05
Old-age benefits	2835.95	18563	68.30
Survivor's benefits	30.67	18563	4.38
Sickness benefits	144.75	18563	6.27
Disability benefits	94.45	18563	4.91
Education-related allowances	35.48	18563	4.74
Gross monthly earnings for employees	1571.73	18563	20.12

Table 2.5 Mean, Total Number of Observations and Standard Errors for Income Components (weighted).

Income Component	Mean	Number of Observations (000's)	Standard Error
Total household income variables			
Total household gross income	32695.20	25,528,775	356.19
Total disposable household income	24558.66	25,528,775	229.58
Total disposable household income before social transfers other than old-age and survivor benefits	22239.54	25,528,775	240.17
Total disposable household income before social transfers including old-age and survivors' benefits	17965.36	25,528,775	224.04
Net income components at household level			
Income from rental of a property or land	178.95	25,528,775	16.74
Family/child related allowances	784.39	25,528,775	13.21
Social exclusion not elsewhere classified	448.31	25,528,775	15.99
Housing allowances	447.41	25,528,775	18.06
Regular inter-household cash transfer received	113.59	25,528,775	10.91
Interest, dividends, etc.	669.57	25,528,775	28.98
Interest repayments on mortgage	Not supplied	Not supplied	Not supplied
Income received by people aged under 16	Not supplied	Not supplied	Not supplied
Regular taxes on wealth	Not supplied	Not supplied	Not supplied
Regular inter-household cash transfer paid	Not supplied	Not supplied	Not supplied
Tax on income and social contributions	Not supplied	Not supplied	Not supplied
Repayments/receipts for tax adjustment	Not supplied	Not supplied	Not supplied
Gross income components at household level			
Income from rental of a property or land	219.90	25,528,775	20.80
Family/child related allowances	651.81	25,528,775	11.79
Social exclusion not elsewhere classified	386.84	25,528,775	15.14
Housing allowances	447.41	25,528,775	18.06
Regular inter-household cash transfer received	113.59	25,528,775	10.91
Interest, dividends, etc.	838.13	25,528,775	37.11
Interest repayments on mortgage	1664.35	25,297,519	44.60
Income received by people aged under 16	9.85	25,528,775	1.42
Regular taxes on wealth	893.02	25,528,775	6.70
Regular inter-household cash transfer paid	143.76	25,528,775	14.57
Tax on income and social contributions	7099.76	25,528,775	129.61
Net income components at personal level			
Employee cash or near cash income	8338.77	48,247,157	96.99
Non-cash employee income	132.43	48,247,157	5.70
Contributions to individual private pension plans	Not supplied	Not supplied	

Cash benefits or losses from self-employment	1069.66	48,247,157	52.84
Value of goods produced for own-consumption	0	48,247,157	0
Pension from individual private plans	11.39	48,245,750	1.76
Unemployment benefits	42.88	48,247,157	3.84
Old-age benefits	2237.19	48,247,157	33.61
Survivor's benefits	24.38	48,247,157	3.34
Sickness benefits	151.94	48,247,157	6.79
Disability benefits	97.29	48,247,157	5.33
Education-related allowances	46.01	48,247,157	7.78
Gross income components at personal level			
Employee cash or near cash income	11485.51	48,247,157	149.23
Non-cash employee income	191.81	48,247,157	8.55
Contributions to individual private pension plans	144.28	47,268,384	9.67
Cash benefits or losses from self-employment	1399.12	48,247,157	76.97
Value of goods produced for own consumption	0	48,247,157	0
Pension from individual private plans	14.55	48,245,750	2.28
Unemployment benefits	43.60	48,247,157	4.14
Old-age benefits	2446.59	48,247,157	40.88
Survivor's benefits	27.28	48,247,157	3.78
Sickness benefits	151.94	48,247,157	6.79
Disability benefits	97.29	48,247,157	5.33
Education-related allowances	46.00	48,247,157	7.78
Gross monthly earnings for employees	1555.35	48,247,157	19.43

2.3 Non-sampling errors

Survey results are subject to various sources of error. The total error in a survey estimate is the difference between the estimate derived from the sample data collected and the true value for the population.

2.3.1 Sampling frame and coverage errors

The target population of EU-SILC UK is all private households and their current members at the time of data collection. Persons living in collective households and in institutions are excluded from the target population.

There are no known coverage errors associated with EU-SILC UK.

Table 2.6 Contact at address

	Frequency	Percent	Cumulative percent
Address contacted (11)	12806	92.4	92.4
Address cannot be located (21)	12	0.1	92.5
Address unable to access (22)	3	0.0	92.5
Address does not exist or is non-residential or is unoccupied or not principal address (23)	475	3.4	95.9
Missing	561	4.0	100
Total	13857	100	100

2.3.2 Measurement and processing errors

2.3.2.1 Measurement errors

Measurement error occurs when data are consistently biased in a certain way, such that the variation from the true values for the population will not average to zero over repeats of the survey. For example, if a certain section of the population is excluded from the sampling frame, estimates may be biased because non-respondents to the survey have different characteristics to respondents. Another cause of bias may be that interviewers systematically influence responses in one way or another. Substantial efforts have been made to avoid measurement errors, for example, through extensive interviewer training and by weighting the collected data for non-response. With regards interviewer training, face-to-face and telephone interviewers who work on EU-SILC UK are recruited only after careful selection procedures after which they take part in an initial training course. Before working on EU-SILC they attend a briefing and new recruits are always supervised either by being accompanied in the field by a Field Manager or monitored by a Telephone Interviewing Unit supervisor (TIUs). All interviewers who continue to work on EU-SILC are observed regularly in their work.

2.3.2.2 Processing errors

Data collection is carried out by face-to-face interviewers using Computer Assisted Personal Interviewing (CAPI) on laptop computers. Blaise software (developed by Statistics Netherlands) is used, which is an integrated system for survey processing. The use of Blaise enables a reduction in processing-errors as data can be “checked” as it is entered by interviewers. For example, all income data is “checked” at the point of collection to make sure that Net values are not greater than Gross values for an individual.

Data is converted from Blaise to SPSS and is edited using this software. At this stage there is further checking for the consistency and plausibility of data.

2.3.3 Non-response errors

There are two main types of non-response errors - unit non-response and item non-response.

In strictly controlled circumstances, interviewers are allowed to conduct a proxy interview with a close household member to reduce unit non-response errors. Proxy interviews are only used where it has proved impossible, despite repeated calls, to contact a particular member of a household in person. In these cases, some questions are omitted, for example those which are more subjective such as those relating to health.

Further effort is directed towards reducing item non-response by converting these proxy interviews to full interviews. Attempts are made to contact the household member, who was unavailable during the initial face-to-face interview, and ask them the questions that were omitted from the proxy interview. It was established through extensive research that the most efficient way of re-contacting these respondents was by employing Telephone Unit (TIU) interviewers who could contact a widely dispersed population more efficiently than would be possible by conducting face-to-face interviews.

A problem specific to the UK concerns missing income data for some respondents. In the 2005 and 2006 surveys, respondents were allowed to refuse to answer all income questions (this option was removed from the questionnaire in January 2007). As such, information for these respondents is missing (approximately 300 individuals). In addition, proxy respondents are not asked any income questions, apart from one question relating to 'total personal disposable income' (this has also been rectified, since November 2007 proxy respondents have been asked to provide full-income information).

As a consequence of this, for the survey years 2005, 2006 there are a relatively large number of individuals for whom income information has been wholly imputed. In 2005, income information was wholly imputed for 11% of individual respondents, and in 2006 the corresponding rate was 13%. These rates of personal non-response should reduce to some extent in 2007, and reduce significantly from 2008 onwards.

2.3.3.1 Achieved sample size

Table 2.7 Sample size and accepted interviews

	Total
Persons 16 years and older	18563
Number of accepted personal questionnaires	18563
Accepted household interviews	9902

2.3.3.2 Unit non-response

Household non-response rates (NRh):

$$NRh = (1 - (Ra * Rh)) * 100$$

Ra = Number of addresses successfully contacted / Number of valid addresses selected.

Rh = Number of household interviews completed and accepted for data base / number of eligible households at contacted addresses.

$$Ra = 12806 \text{ (DB120 = 11)} / 13857 \text{ (DB120 = all)} - 475 \text{ (DB120 = 23)}.$$

$$Ra = 0.96$$

$$Rh = 9902 \text{ (DB135 = 1)} / 13857 \text{ (DB130 = all)}.$$

$$Rh = 0.71$$

$$NRh = (1 - (0.96 * 0.71)) * 100$$

$$NRh = 32\%$$

Individual non-response rates (NRp):

$$NRp = (1 - (Rp)) * 100$$

Rp = Number of personal interviews completed / number of eligible individuals in the household whose interviews were completed and accepted for the database.

$$Rp = 18563 \text{ (RB250 = 11 + 12 + 13)} / 18563 \text{ (RB245 = 1 + 2 + 3)}$$

$$Rp = 1$$

Overall individual non-response rates (NRp):

$$NRp = (1 - (0.96 * 0.71 * 1)) * 100$$

$$NRp = 32\%$$

2.3.3.3 Distribution of households

Table 2.8 **Distribution of original units by ‘record of contact at address’**

	Number	Percentage
Total (DB120 = 11 to 23)	13296	100
Address contacted (DB120 = 11)	12806	96.3
Address non-contacted (DB120 = 21 to 23)	490	3.7
Total address non-contacted (DB120 = 21 to 23)	490	100
Address cannot be located (DB120 = 21)	12	2.4
Address unable to access (DB120 = 22)	3	0.6
Address does not exist or is non-residential or is unoccupied or not principal residence (DB120 = 23)	475	96.9

Table 2.9 Distribution of address contacted by ‘household questionnaire result’ and by household interview acceptance.

	Number	Percentage
Total	12806	100
Household questionnaire completed (DB130 = 11)	9902	77.3
Interview not completed (DB130 = 21 to 24)	2904	22.7
Total interview not completed (DB130 = 21 to 24)	2904	100
Refusal to co-operate (DB130 = 21)	2188	75.3
Entire household temporarily away for duration of fieldwork (DB130 = 22)	0	0.0
Household unable to respond (illness, incapacity) (DB130 = 23)	191	6.6
Other reasons (DB130 =24)	525	18.1
Household questionnaire completed (DB135 = 1+2)	9902	100
Interview accepted for database (DB135 = 1)	9902	100
Interview rejected (DB135 = 2)	0	0

2.3.3.4 Distribution of substituted units

No substituted units were used as part of EU-SILC 2006.

2.3.3.5 Item non-response

All income variables provided for EU-SILC 2006 (UK) have been fully imputed.

Table 2.10 Distribution of item non-response (before imputation)

Variable	Full Information		Missing Value	
	Count	Per cent	Count	Per cent
Household gross income	6145	62.1	3757	37.9
Total disposable household income	5986	60.5	3916	39.5
Total disposable household income before social transfers other than old-age and survivor’s benefits	5986	60.5	3916	39.5
Total disposable household income before social transfers including old-age and survivors’ benefits	5986	60.5	3916	39.5
Net income components at household level				
Income from rental of a property or land	8177	82.6	1725	17.4
Family/child related allowances	8077	81.6	1825	18.4
Social exclusion not elsewhere classified	8097	81.8	1805	18.2
Housing allowances	9771	98.7	131	1.3
Regular inter-household cash transfer received	8262	83.4	1640	16.5
Interest, dividends etc.	7469	75.4	2433	24.6
Income received by people aged under 16	Not supplied	Not supplied	Not supplied	Not supplied
Regular taxes on wealth	Not supplied	Not supplied	Not supplied	Not supplied
Regular inter-household cash transfer paid	Not supplied	Not supplied	Not supplied	Not supplied
Tax on income and social	Not	Not	Not	Not

contributions	supplied	supplied	supplied	supplied
Repayments / receipts for tax adjustment	Not supplied	Not supplied	Not supplied	Not supplied
Gross income components at household level				
Income from rental of a property or land	8240	83.2	1662	16.8
Family/child related allowances	8078	81.6	1824	18.4
Social exclusion not elsewhere classified	8101	81.8	1801	18.2
Housing allowances	9771	98.7	131	1.3
Regular inter-household cash transfer received	8262	83.4	1640	16.6
Interest, dividends etc	7469	75.4	2433	24.6
Interest repayments on mortgage	9812	99.1	90	0.9
Income received by people aged under 16	9902	100.0	0	0
Regular inter-household cash transfer paid	8271	83.5	1631	16.5
Tax on income and social contributions	6445	65.1	3457	34.9
Net income components at personal level				
Employee cash or near cash income	15810	85.2	2755	14.8
Non-cash employee income	18563	100.0	0	0
Contributions to individual private pension plans	Not supplied	Not supplied	Not supplied	Not supplied
Cash benefits or losses from self-employment	16247	87.5	2316	12.5
Value of goods produced for own-consumption	18563	100	0	0
Pension from individual private plans	16227	87.4	2336	12.6
Unemployment benefits	16250	87.5	2313	12.5
Old-age benefits	15677	84.5	2886	15.5
Survivor's benefits	16526	89.0	2037	11.0
Sickness benefits	16156	87.0	2407	13.0
Disability benefits	16383	88.3	2180	11.7
Education-related allowances	16253	87.6	2310	12.4
Gross income components at personal level				
Employee cash or near cash income	15374	82.9	3189	17.2
Non-cash employee income	18563	100	0	0
Contributions to individual private pension plans	18178	97.9	385	2.1
Cash benefits or losses from self-employment	16242	87.5	2321	12.5
Value of goods produced for own-consumption	18563	100	0	0
Pension from individual private plans	16066	86.5	2497	13.5
Unemployment benefits	16250	87.5	2313	12.5
Old-age benefits	15682	84.5	2881	15.5
Survivor's benefits	16506	88.9	2057	11.1
Sickness benefits	16156	87.0	2407	13.0
Disability benefits	16383	88.3	2180	11.7
Education-related allowances	16253	87.6	2310	12.4
Gross monthly earnings for employees	15416	83.0	3147	17.0

Table 2.11 Distribution of item non-response (after imputation).

Variable	Full Information		Missing Value	
	Count	Per cent	Count	Per cent
Household gross income	9902	100	0	0
Total disposable household income	9902	100	0	0
Total disposable household income before social transfers other than old-age and survivor's benefits	9902	100	0	0
Total disposable household income before social transfers including old-age and survivors' benefits	9902	100	0	0
Net income components at household level				
Income from rental of a property or land	9902	100	0	0
Family/child related allowances	9902	100	0	0
Social exclusion not elsewhere classified	9902	100	0	0
Housing allowances	9902	100	0	0
Regular inter-household cash transfer received	9902	100	0	0
Interest, dividends etc.	9902	100	0	0
Income received by people aged under 16	Not supplied	Not supplied	Not supplied	Not supplied
Regular taxes on wealth	Not supplied	Not supplied	Not supplied	Not supplied
Regular inter-household cash transfer paid	Not supplied	Not supplied	Not supplied	Not supplied
Tax on income and social contributions	Not supplied	Not supplied	Not supplied	Not supplied
Repayments / receipts for tax adjustment	Not supplied	Not supplied	Not supplied	Not supplied
Gross income components at household level				
Income from rental of a property or land	9902	100	0	0
Family/child related allowances	9902	100	0	0
Social exclusion not elsewhere classified	9902	100	0	0
Housing allowances	9902	100	0	0
Regular inter-household cash transfer received	9902	100	0	0
Interest, dividends etc	9902	100	0	0
Interest repayments on mortgage	9902	100	0	0
Income received by people aged under 16	9902	100	0	0
Regular inter-household cash transfer paid	9902	100	0	0
Tax on income and social contributions	9902	100	0	0
Net income components at personal level				
Employee cash or near cash income	18563	100	0	0
Non-cash employee income	18563	100	0	0
Contributions to individual private pension plans	Not supplied	Not supplied	Not supplied	Not supplied
Cash benefits or losses from self-employment	18563	100	0	0
Value of goods produced for own-consumption	18563	100	0	0

Pension from individual private plans	18562	100	1	0
Unemployment benefits	18563	100	0	0
Old-age benefits	18563	100	0	0
Survivor's benefits	18563	100	0	0
Sickness benefits	18563	100	0	0
Disability benefits	18563	100	0	0
Education-related allowances	18563	100	0	0
Gross income components at personal level				
Employee cash or near cash income	18563	100	0	0
Non-cash employee income	18563	100	0	0
Contributions to individual private pension plans	18182	97.9	381	2.1
Cash benefits or losses from self-employment	18563	100	0	0
Value of goods produced for own-consumption	18563	100	0	0
Pension from individual private plans	18563	100	0	0
Unemployment benefits	18563	100	0	0
Old-age benefits	18563	100	0	0
Survivor's benefits	18563	100	0	0
Sickness benefits	18563	100	0	0
Disability benefits	18563	100	0	0
Education-related allowances	18563	100	0	0
Gross monthly earnings for employees	10163	100	0	0

2.3.3.6 Total item non-response

Table 2.12 Number of observations and total item non-response

	Number of sample observations	Number of sample observations not taken into account due to item non-response	Non-response at individual level (if applicable)	Non-response at household level
At-risk-of-poverty after social transfers – total	23365	0	0%	32%
At-risk-of-poverty after social transfers – men total	11255	0	0%	32%
At-risk-of-poverty after social transfers – women total	12110	0	0%	32%
At-risk-of-poverty after social transfers – 0-15 years	4789	0	0%	32%
At-risk-of-poverty after social transfers – 16-24 years	2236	0	0%	32%
At-risk-of-poverty after social transfers – 25-49 years	7802	0	0%	32%
At-risk-of-poverty after social transfers – 50-64 years	4554	0	0%	32%
At-risk-of-poverty after social transfers – 65+ years	3984	0	0%	32%
At-risk-of-poverty after social transfers – 16+ years	18576	0	0%	32%
At-risk-of-poverty after social transfers – 16-64 years	14592	0	0%	32%
At-risk-of-poverty after social transfers –	19381	0	0%	32%

0-64 years				
At-risk-of-poverty after social transfers – men 16-24 years	1081	0	0%	32%
At-risk-of-poverty after social transfers – men 25-49 years	3696	0	0%	32%
At-risk-of-poverty after social transfers – men 50-64 years	2226	0	0%	32%
At-risk-of-poverty after social transfers – men 65+ years	1838	0	0%	32%
At-risk-of-poverty after social transfers – men 16+ years	8841	0	0%	32%
At-risk-of-poverty after social transfers – men 16-64 years	7003	0	0%	32%
At-risk-of-poverty after social transfers – men 0-64 years	9417	0	0%	32%
At-risk-of-poverty after social transfers – women 16-24 years	1155	0	0%	32%
At-risk-of-poverty after social transfers – women 25-49 years	4106	0	0%	32%
At-risk-of-poverty after social transfers – women 50-64 years	2328	0	0%	32%
At-risk-of-poverty after social transfers – women 65+ years	2146	0	0%	32%
At-risk-of-poverty after social transfers – women 16+ years	9735	0	0%	32%
At-risk-of-poverty after social transfers – women 16-64 years	7589	0	0%	32%
At-risk-of-poverty after social transfers – women 0-64 years	9964	0	0%	32%
At-risk-of-poverty after social transfers – employed	9651			
At-risk-of-poverty after social transfers – unemployed	261			
At-risk-of-poverty after social transfers – retired	4199			
At-risk-of-poverty after social transfers – other inactive	2641			
At-risk-of-poverty after social transfers – men, employed	4920			
At-risk-of-poverty after social transfers – men, unemployed	157			
At-risk-of-poverty after social transfers – men, retired	1827			
At-risk-of-poverty after social transfers – men, other inactive	837			
At-risk-of-poverty after social transfers – women, employed	4731			
At-risk-of-poverty after social transfers – women, unemployed	104			
At-risk-of-poverty after social transfers – women, retired	2372			
At-risk-of-poverty after social transfers – women, other inactive	1804			
At-risk-of-poverty after social transfers – single, <65 years	1413			
At-risk-of-poverty after social transfers – single, 65+ years	1355			

At-risk-of-poverty after social transfers – single, male	1202			
At-risk-of-poverty after social transfers – single, female	1566			
At-risk-of-poverty after social transfers – single, total	2768			
At-risk-of-poverty after social transfers – 2 adults, no children, both <65	4004			
At-risk-of-poverty after social transfers – 2 adults, no children, at least one 65+	2752			
At-risk-of-poverty after social transfers – other households without children	2110			
At-risk-of-poverty after social transfers – single parent, at least one child	1658			
At-risk-of-poverty after social transfers – 2 adults, 1 child	2103			
At-risk-of-poverty after social transfers – 2 adults, 2 children	3580			
At-risk-of-poverty after social transfers – 2 adults, 3+ children	1845			
At-risk-of-poverty after social transfers – other households with children	1450			
At-risk-of-poverty after social transfers – households without children	11634			
At-risk-of-poverty after social transfers – households with children	10636			
At-risk-of-poverty after social transfers – owner or rent-free				
At-risk-of-poverty after social transfers – owner or rent-free	17533			
At-risk-of-poverty after social transfers – tenant				
At-risk-of-poverty after social transfers – tenant	5818			
At-risk-of-poverty after social transfers – households without children, w=0¹				
At-risk-of-poverty after social transfers – households without children, w=0 ¹	1634			
At-risk-of-poverty rate after social transfers – households without children, 0<w<1				
At-risk-of-poverty rate after social transfers – households without children, 0<w<1	1902			
At-risk-of-poverty after social transfers – households without children, w=1				
At-risk-of-poverty after social transfers – households without children, w=1	5129			
At-risk-of-poverty after social transfers – households with children, w=0				
At-risk-of-poverty after social transfers – households with children, w=0	1470			
At-risk-of-poverty after social transfers – households with children 0<w<0.5				
At-risk-of-poverty after social transfers – households with children 0<w<0.5	334			
At-risk-of-poverty after social transfers – households with children, w=1				
At-risk-of-poverty after social transfers – households with children, w=1	6764			
Median of the equivalised disposable household income				
Median of the equivalised disposable household income				
At-risk-of-poverty threshold – single				
At-risk-of-poverty threshold – single	23365	0	0%	32%
At-risk-of-poverty threshold – 2 adults, 2 children				
At-risk-of-poverty threshold – 2 adults, 2 children	23365	0	0%	32%
Inequality of income distribution S80/S20 income quintile share ratio				
Inequality of income distribution S80/S20 income quintile share ratio	23365	0	0%	32%
Relative median at-risk-of-poverty gap – total				
Relative median at-risk-of-poverty gap – total	4465	0	0%	32%
Relative median at-risk-of-poverty gap – men total				
Relative median at-risk-of-poverty gap – men total	2050	0	0%	32%

Relative median at-risk-of-poverty gap – women total	2415	0	0%	32%
Relative median at-risk-of-poverty gap – 0-15 years	1133	0	0%	32%
Relative median at-risk-of-poverty gap – 16-64 years	2263	0	0%	32%
Relative median at-risk-of-poverty gap – 65+ years	1069	0	0%	32%
Relative median at-risk-of-poverty gap – 16+ years	3332	0	0%	32%
Relative median at-risk-of-poverty gap – men, 16-64 years	1027	0	0%	32%
Relative median at-risk-of-poverty gap – men, 65+ years	439	0	0%	32%
Relative median at-risk-of-poverty gap – men, 16+ years	1466	0	0%	32%
Relative median at-risk-of-poverty gap – women, 16-64 years	1236	0	0%	32%
Relative median at-risk-of-poverty gap – women, 65+ years	630	0	0%	32%
Relative median at-risk-of-poverty gap – women, 16+ years	1866	0	0%	32%
Median income below the at-risk-of-poverty threshold – total				
Median income below the at-risk-of-poverty threshold – men total				
Median income below the at-risk-of-poverty threshold – women total				
Median income below the at-risk-of-poverty threshold – 0-15 years				
Median income below the at-risk-of-poverty threshold – 16-64 years				
Median income below the at-risk-of-poverty threshold – 65+ years				
Median income below the at-risk-of-poverty threshold – men, 16-64 years				
Median income below the at-risk-of-poverty threshold – men, 65+ years				
Median income below the at-risk-of-poverty threshold – women, 16-64 years				
Median income below the at-risk-of-poverty threshold – women, 65+ years				
Median income below the at-risk-of-poverty threshold – women, 16+ years				
Dispersion around the risk-of-poverty threshold – 40%	23365	0	0%	32%
Dispersion around the risk-of-poverty threshold – 50%	23365	0	0%	32%
Dispersion around the risk-of-poverty threshold – 70%	23365	0	0%	32%
At-risk-of-poverty rate before social transfers – total	23365	0	0%	32%
At-risk-of-poverty rate before social transfers – men total	11255	0	0%	32%
At-risk-of-poverty rate before social transfers – women total	12110	0	0%	32%

At-risk-of-poverty rate before social transfers – 0-15 years	4789	0	0%	32%
At-risk-of-poverty rate before social transfers – 16-64 years	14592	0	0%	32%
At-risk-of-poverty rate before social transfers – 65+ years	3984	0	0%	32%
At-risk-of-poverty rate before social transfers – 16+ years	18576	0	0%	32%
At-risk-of-poverty rate before social transfers – men, 16-64 years	7003	0	0%	32%
At-risk-of-poverty rate before social transfers – men, 65+ years	1838	0	0%	32%
At-risk-of-poverty rate before social transfers – men, 16+ years	8841	0	0%	32%
At-risk-of-poverty rate before social transfers – women, 16-64 years	7589	0	0%	32%
At-risk-of-poverty rate before social transfers – women, 65+ years	2146	0	0%	32%
At-risk-of-poverty rate before social transfers – women, 16+ years	9735	0	0%	32%
Before social transfers including old-age and survivors' benefits				
At-risk-of-poverty rate before social transfers – total	23365	0	0%	32%
At-risk-of-poverty rate before social transfers – men total	11255	0	0%	32%
At-risk-of-poverty rate before social transfers – women total	12110	0	0%	32%
At-risk-of-poverty rate before social transfers – 0-15 years	4789	0	0%	32%
At-risk-of-poverty rate before social transfers – 16-64 years	14592	0	0%	32%
At-risk-of-poverty rate before social transfers – 65+ years	3984	0	0%	32%
At-risk-of-poverty rate before social transfers – 16+ years	18576	0	0%	32%
At-risk-of-poverty rate before social transfers – men, 16-64 years	7003	0	0%	32%
At-risk-of-poverty rate before social transfers – men, 65+ years	1838	0	0%	32%
At-risk-of-poverty rate before social transfers – men, 16+ years	8841	0	0%	32%
At-risk-of-poverty rate before social transfers – women, 16-64 years	7589	0	0%	32%
At-risk-of-poverty rate before social transfers – women, 65+ years	2146	0	0%	32%
At-risk-of-poverty rate before social transfers – women, 16+ years	9735	0	0%	32%
Gini coefficient				
Gini coefficient	23365	0	0%	32%
Mean equivalised disposable income				
Mean equivalised disposable income	23365	0	0%	32%
Gender pay gap				
Gender pay gap				

2.4 Mode of data collection

Table 2.13 Distribution of RB250 and RB260

	Total
RB250 – Data Status	
Information completed only from interview (11)	18563
Interview completed only from registers (12)	0
Total	18563
RB260 – Type of interview	
Face-to-face CAPI (2)	16467
Proxy interview (5)	1832
Missing	264
Total	18563

Table 2.14 Distribution of household members aged 16 and over by ‘RB250’

Household Members 16+ (RB245 = 1 to 3)

	Total	RB250 = 11	RB250 = 12	RB250 = 13	RB250 = 21	RB250 = 22	RB250 = 23	RB250 = 31	RB250 = 32	RB250 = 33
Total	18563	18563	0	0	0	0	0	0	0	0
%	100	100	0	0	0	0	0	0	0	0

Household Members 16+ (RB245 = 2)

EU-SILC 2006 (UK) did not use substituted respondents.

Household Members 16+ (RB245 = 3)

EU-SILC 2006 (UK) did not use substituted respondents.

Table 2.15 Distribution of household members aged 16 and over by ‘RB260’

Household Members 16+ (RB245 = 1 to 3) and RB250 = 11 or 13

	Total	RB260 = 1	RB260 = 2	RB260 = 3	RB260 = 4	RB260 = 5	Missing
Total	18563	0	16467	0	0	1832	5066
%	100	0	70.5	0	0	7.8	21.7

Household Members 16+ (RB245 = 2) and RB250 = 11 or 13

EU-SILC 2006 (UK) did not use substituted respondents.

Household Members 16+ (RB245 = 3)

EU-SILC 2006 (UK) did not use substituted respondents.

2.5 Interview duration

Table 2.16 Interview duration in minutes (mean)

Questionnaire	Frequency	Mean (minutes)
Household Questionnaire	9902	16
Individual Questionnaire	18563	51
Total (Household + Individual)	9902	67

2.6 Imputation procedure

The strategy used to impute UK EU-SILC was consistent with the options proposed in the following Eurostat task-force documents associated with donor-based imputation methodology:

EU-SILC 74/02
EU-SILC 136/04
EU-SILC 154/05

The UK EUSILC Imputation Strategy was developed with the primary aims of imputing for all item level missingness, resolving inconsistencies, and preserving both cross-sectional and longitudinal relationships in the responses for the households and persons affected. The strategy was also designed to preserve the maximum amount of observed data.

Meeting the aims of the strategy was not trivial as the cross-sectional and longitudinal correlations were both nested and complex. In any one year, the UK EUSILC dataset contained over 400 routing and income variables: routing variables indicated whether or not the respondent received an amount, whilst the amount itself was specified by one or more consecutive variables. Missing values were present in both the routing and the amounts collected.

Further complications included:

- legal constraints which make some combinations of the routing variables invalid;
- highly correlated relationships amongst subsets of the variables, for example: earnings before and after taxation followed by an associated time period for which the payment relates;
- panel aspects of the survey that introduced further correlations between years in addition to those within year.

To meet the aims of the imputation strategy the ONS implemented an iterative, two-stage imputation process: Stage 1 focused on the imputation of missing routing; Stage 2 focused on the imputation of missing amounts and time periods.

The imputation process was supported by statistical tools and used standard statistical techniques for panel data, including:

- SAS (Statistical Analysis System) – to facilitate deductive imputation. This was applied to correct for missing values by implementing propositional relationships in the data based on logical rules and legal constraints. Methods included the application of growth factors (ratio imputation) formed from each variable by calculating ratios for both the current year and previous year which were then weighted together. Asymmetric trimming was also applied as a refinement to remove outlying values which might have otherwise caused excessive influence on the ratio. Trimming was applied using a robust method, based on the median and the inter-quartile range.
- SPSS AnswerTree - to identify key predictors to partition the data into homogeneous classes for subsequent imputation.

- CANCEIS (CANadian Census Edit and Imputation System) - for stochastic imputation. CANCEIS implements a highly efficient nearest neighbour imputation method that preserves the shape of the distribution whilst also estimates and maintains observed relationships and distributional parameters. Stochastic imputation ensures less distortion in the estimates of variance.

The quality of the final data was validated in two ways: by calculating expected values; and comparing pre and post-imputation distributions.

2.7 Imputed rent

Imputed rent was not calculated as part of EU-SILC 2006.

2.8 Company cars

EU-SILC UK asks several questions about company cars. First, the survey establishes whether the household has any company cars. Second, it establishes what the manufacturer's list price for the vehicle was when it was new. If the respondent is unable to provide an answer, they are asked which price band they think the company car sits in. If the respondent gives a band price the answer is translated into a mid-point price. For example, a Mazda saloon with a band price between £10001 – 13000 would be given a 'list' price of £11,500. Third, the make, model and engine size are established for each vehicle.

The estimation of the value of using a company car for private purposes (excluding payment of fuel) is done using the following elements:

1. Type of fuel used
2. Data from VCA (Vehicle Certification Agency, UK).
3. Price of the car.

Once the price of the car is known (using one of the methods described above) a factor based on fuel type and emissions of the engine is applied to that list price. However, this is problematic as EU-SILC UK has no way of identifying what the cylinder capacity (cc) of the car in question is and therefore no real idea about what the car emissions would be. Although data on the make and model of each car is collected, the quality of answers given by respondents is extremely variable, for instance, answers such as 'a red ford' offer little value to a calculation.

Nevertheless cylinder capacity and emissions information is obtained by using data from the VCA. The VCA provide data on approximately 770 car types registered in the UK.

The 770 car types are banded together into three cylinder capacity engine group sizes in an attempt to get an average emission for each band.

Table 2.17 Average CO₂ emission by Cylinder Capacity

Cylinder Capacity	Average CO ₂ emission
Up to 1400	155
1401 to 2000	197
2001 to 4000	252

Once this process is completed an assumption is made that the cylinder capacity of a car is linked to the price of the car.

The data for 2005/06 is shown in table 2.18.

Table 2.18 Band price of a motor vehicle based on CC and average CO₂ emissions

Cylinder Capacity	Average CO ₂ emissions	Car price (£)
Up to 1400cc	155	0 – 11,999
1401 to 2000cc	197	12,000 – 24,999
2001 to 4000cc	252	25,000 – 99,999

Cars that fall into a price band are given the appropriate cylinder capacity and the data in the table 2.19 is used to apply an appropriate tax rate (the tax rate used by Her Majesties Revenue and Customs to value the benefit for tax purposes).

Table 2.19 Tax rate based on CO₂ emission rates (per cent)

2005/2006	CO ₂ tax emission rate (percentage rate)
155	17
200	26
245	35

These percentage rates are the factor that is applied to the car price to produce a monetary benefit for each company car in a household..

$$\text{Car benefit} = (\text{car price}) * \text{CO}_2 \text{ tax emission rate}$$

3. Comparability

This section reports on the differences between EUROSTAT definitions and the definitions the UK applied in EU-SILC 2006. It also reports on the impact of these differences with regards to comparability.

3.1 Basic concepts and definitions

Reference population

No difference to the common definition.

Private household

A household is defined as:

“a single person or a group of people who have the address as their only or main residence and who either share one meal a day or share the living accommodation” (General Household Survey 2006).

A group of people is not counted as a household solely on the basis of a shared kitchen or bathroom.

The household membership

A person is in general regarded as living at an address if he or she (or the informant) considers the address to be his or her main residence. There are however, certain rules which take precedent over this criterion.

Children aged 16 or over who live away from home for the purposes of either work or study and come home only for holidays are not included at the parental address under any circumstances.

Children of any age away from the home in a temporary job and children under 16 at boarding school are always included in the parental household.

Anyone who has been away from the address continuously for 6 months or longer is excluded.

Anyone who has been living continuously at the address for 6 months or longer is included even if she has his or her main residence elsewhere.

Addresses used only as second homes are never counted as a main residence.

Income reference period

EU-SILC UK, like all other official income surveys in UK, uses continuous interviewing with interviews spread evenly throughout the year. The survey measures current income. So for example, for income from earnings and benefits, respondents will provide figures which relate most commonly to the last week, two weeks, or month. With earnings in particular, respondents are asked for usual earnings. These figures, which represent current (and usual) incomes are then annualised (weekly estimates multiplied by 52, monthly by 12 etc). Income from self-employment can be reported for a variety of periods, but it is always uprated (using the UK's average earnings index) to the interview date. For income from investment and employee non-cash income respondents are most likely provide their most recent annual or half-yearly income that they received from this source. This income would be annualised, although there is no uprating.

This approach is adopted in the UK because it is much easier for respondents to provide estimates of current income, than income for a specific reference period, say the most recent financial year. In the UK only a relatively small proportion of the adult population fill in tax returns, and the rest of the population probably never actually calculate what their annual income is. For this reason, it would be very difficult to collect an estimate of annual income corresponding to a fixed reference year.

So the estimates of income do not correspond strictly to an income reference year. However we can regard each household's estimate of annualised current income, as corresponding to a 12 month period centred around the interview date. So for a household interviewed in early January 2006, we can regard their income as being measured for the period July 2005 to June 2006, and similarly for a household interviewed in December 2006, the income estimate can be regarded as referring to the period July 2006 to June 2007. Since interviews are spread evenly throughout the year, for any one survey year, the interview reference periods collectively, are centred around the calendar year. And therefore it is reasonable to regard aggregate statistics produced from the full annual datasets, as measuring annual income in the current survey year. So the EU-SILC UK 2006 survey, measures current annual income in 2006.

In the UK, household income statistics, and especially aggregate statistics such as those that are produced from EU-SILC, are generally used and interpreted on the assumption that this distinction between annualised current income, and what might be called a 'true' annual income, is small¹.

The period for taxes on income and social insurance contributions

As above.

The reference period for taxes on wealth

The reference period for taxes on wealth is based on data provided for the financial years April 2005–March 2006 and April 2006–March 2007. All interviewing for EU-SILC UK took place between January 2006 and April 2007.

The lag between income reference period and current variables

Since the survey measures current income, there is no lag between the income variables and the other variables.

The total duration of the data collection of the sample

EU-SILC UK makes use of continuous interviewing with data collection being evenly spread over complete calendar years. In practice a small number of interviews are not completed until early the following year. In 2006, 98.5% of interviews took place between 1st January 2006 and 31st December 2006, with the remaining interviews completed between 1st January 2007 and 10th April 2007.

Basic information on activity status during the income reference period

Basic information on activity status is collected using a rolling (moving) 12-month period. Therefore, respondents are asked to provide their current activity status and their activity status for the 12-month period preceding this interview.

¹ A Comparison of Current and Annual Measures of Income in the British Household Panel Survey; Journal of Official Statistics, Vol. 22, No. 4, 2006, pp. 733–758

3.2 Components of income

3.2.1 Differences between the national definitions and standard EU-SILC definitions, and an assessment, if available, of the consequences of the differences mentioned

This section describes the major differences between the national definitions and standard EU-SILC definitions. The ‘national definition’ of household income is taken to be the Before Housing Costs (BHC) measure of income used in the Department for Work and Pensions (DWP) publication Household’s Below Average Income (HBAI), the source for national poverty statistics.

Total disposable household gross income (HY010)

Total disposable household income (HY020)

Total disposable household income before social transfers other than old-age and survivor’s benefits (HY022)

Total disposable household income before social transfers including old-age and survivor’s benefits

Differences between the national definition and the EU-SILC definition of income have been described below, for each of the components of EU-SILC income..

Imputed rent (HY030G/N)

Imputed rent is not included in the national definition of household income. This variable was not provided as part of the 2006 EU-SILC data delivery as it is only mandatory from 2007 onwards.

Income from rental of a property or land (HY040G/N)

No major differences between the national and EU-SILC definition.

Family/children related allowances (HY050G/N)

The national definition of income includes the cash value of free school meals provided to children from disadvantaged homes. This is not included in the EU-SILC definition of income.

Social exclusion not elsewhere classified (HY060G/N)

No major differences between the national and EU-SILC definitions.

Housing allowances (HY070G/N)

No major differences between the national and EU-SILC definitions.

Regular inter-household cash transfer received (HY080G/N)

No major differences between the national and EU-SILC definitions.

Interest, dividends, profit from capital investments in unincorporated business (HY090G/N)

No major differences between national and EU-SILC definitions.

Interest repayments on mortgage (HY100G/N)

Interest repayments on mortgages are not included as deductions within either the national or EU-SILC definitions of income, because neither includes imputed rent.

Income received people aged under 16 (HY110G)

The national definition of income includes income received by people aged under 16, as does the EU-SILC definition of income.

Regular taxes on wealth (HY120G)

No difference between the national and EU-SILC definitions.

Regular inter-household cash transfer paid (HY130G/N)

No major differences between the national and EU-SILC definitions.

Tax on income and social contributions (HY140G)

In the national definition of income, contributions to private pensions are deducted from income. In the EU-SILC definition of income, contributions to private pensions are not deducted, rather they are considered as a use of disposable income.

Repayments/receipts for tax adjustments (HY145N)

This component of income is included in the national definition of income. In EU-SILC, this component is not measured directly. For most components of income, gross and net incomes are collected separately, with taxes computed as the difference between gross and net incomes. Repayments/receipts for tax adjustments are assumed to be captured as part of this difference between gross and net incomes, and hence recorded under HY140G.

Cash or near-cash employee income (PY010G/N)

No major differences between the national and EU-SILC definitions.

Non-cash employee income (PY020G/N)

The national definition does not include non-cash employee income, whereas EU-SILC includes an estimate for company cars (although not any fuel provided by the employer).

Cash profits or losses from self-employment (including royalties) (PY050G/N)

No conceptual differences between the national and EU-SILC definitions.

Value of goods produced for own consumption (PY070G/N)

This component of income is assumed to be zero in the UK in both the national definition, and in UK EU-SILC.

Unemployment benefits (PY090G/N)

No major differences between the national and EU-SILC definitions.

Old-age benefits (PY100G/N)

All benefits included as old-age benefits are also included in the national definition of income. However in the national definition, income from private pensions is included whereas in EU-SILC, income from private pensions will only be included in the definition of income from 2007 onwards. In addition, the national definition also includes the value free television licences provided to those over the age of 75.

Survivors' benefits (PY110G/N)

No major differences between the national and EU-SILC definitions.

Sickness benefits (PY120G/N)

No major differences between the national and EU-SILC definitions.

Disability benefits (PY130G/N)

No major differences between the national and EU-SILC definitions.

Education-related allowances (PY140G/N)

In the national definition of income, student loans are included as income, and student loan repayments are deducted from income. However in EU-SILC, student loans are not treated as income, and loan repayments are not deducted from income.

Gross monthly earnings for employees (PY200G/N)

No major differences between the national and EU-SILC definitions.

3.2.2 The source or procedure for the collection of income variables

All income variables are collected at the point of interview. Respondents are not asked to provide any documentation to support their answers. Increasingly interviewers are being encouraged to ask respondents whether it is possible to consult their payslip (if they are working), however this is not mandatory.

No information is collected from registers.

3.2.3 The form in which income variables at component level have been obtained

For most income components which are subject to taxation and/or social security contributions, respondents are asked to provide net and gross amounts. The only exception to this is income from interest, dividends, and capital investments, which is collected either gross or net, and for which tax paid is then estimated.

Total income for an individual/household refers to income at the time of the interview. If the last pay packet/cheque was unusual, for example it included holiday pay in advance or a tax refund, the respondent is asked for usual pay. No account is taken of whether a job is temporary or permanent.

3.2.4 The method used for obtaining income target variables in the required form

Gross and net income variables were asked separately, if applicable.

See section 2.6 for more detail.

4. Coherence

Coherence refers to the comparison of target variables with external sources. The target variables in EU-SILC UK are a set of compulsory variables, defined by EUROSTAT.

4.1 Comparison of income target variables and the number of persons who receive income from each ‘income component’, with external sources

Results from two other survey sources have been used to validate EU-SILC results – the family resources survey, and the expenditure and food survey.

Family Resources Survey

The Family Resources Survey (FRS) collects information on the incomes and circumstances of private households in the United Kingdom (or Great Britain before 2002-03).

The survey is sponsored by the Department for Work and Pensions.

The FRS is used primarily to validate the indicators of poverty and social exclusion. Before the introduction of EU-SILC, the Laeken and Pensions indicators were produced using data from the FRS. Comparisons between EU-SILC and FRS-based indicators continue so that any apparent differences between national poverty estimates and EU-SILC estimates can be explained. This work will be ongoing, and in the first two years of EU-SILC, has served as a useful way of validating the new EU-SILC data, and highlighting any possible problems that there might be with the EU-SILC data.

Expenditure Food Survey

The Expenditure and Food Survey is a comprehensive overview of all aspects of household expenditure and income for the year 2005-2006 derived from a survey of around 7,000 households in the UK. It contains analyses of household expenditure on goods and services by household income, composition, size, type and location. The results are widely seen as providing one of the most accurate pictures available of what households in the UK spend their money on today.

EU-SILC income variables have been compared with the detailed income information collected through the EFS, particularly that which is published in the ONS report ‘The Effects of Taxes and Benefits on Household Income’. This validation takes place at a relatively disaggregated level – below the level of EU-SILC income components.

Annexes

Annex 1

Government Office Region regional stratifier

The Government Office Region regional stratifier:

1. North East Metropolitan
2. North East Non-Metropolitan
3. North West Metropolitan
4. North West Non-Metropolitan
5. Merseyside
6. Yorkshire and Humberside Metropolitan
7. Yorkshire and Humberside Non-Metropolitan
8. East Midlands
9. West Midlands Metropolitan
10. West Midlands Non-Metropolitan
11. Eastern Outer Metropolitan
12. Eastern Other
13. Inner London North-East
14. Inner London North-West
15. Inner London South-East
16. Inner London South-West
17. Outer London North-East
18. Outer London North-West
19. Outer London South-East
20. Outer London South-West
21. South East Outer Metropolitan
22. South East Other
23. South West
24. Wales 1 – Glamorgan, Gwent
25. Wales 2 – Clwydd, Gwynedd, Dyfed, Powys
26. Highlands, Grampian, Tayside
27. Fife, Central, Lothian
28. Glasgow Metropolitan
29. Strathclyde (excluding Glasgow)
30. Borders, Dumfries, Galloway

Annex 2.

Socio-economic groups (Operational categories and sub-categories of NS-SEC)

Group	Operational categories and sub-categories
1	Employers in large organisations
2	Higher managerial occupations
3	Higher professional occupations
4	Lower professional and higher technical occupations
5	Lower managerial occupations
6	Higher supervisory occupations
7	Intermediate occupations
8	Employers in small organisations
9	Own account workers
10	Lower supervisory occupations
11	Lower technical occupations
12	Semi-routine occupations
13	Routine occupations
14	Never worked and long-term unemployed
15	Full-time students
16	Occupations not stated or inadequately described
17	Not classifiable for other reasons

The category names used for NS-SEC (National Statistics – Socio-Economic Classification) do not refer to ‘skill’. This is quite deliberate since the classification is not based on skill levels.