



An  
Phríomh-Oifig  
Staidrimh

Central  
Statistics  
Office

# Standard Report on Methods and Quality for Household Finance and Consumption Survey (HFCS)

2018

# Standard Report on Methods and Quality for the 2018 Household Finance and Consumption Survey (HFCS)

This documentation applies to the reporting period:

**2018**

Last edited: 02/09/2020

CENTRAL STATISTICS OFFICE

Skehard Road, Cork

021 4535000

[www.cso.ie](http://www.cso.ie)

## Contents

1. Overview .....	6
2. General Information .....	6
2.1 Statistical Category .....	6
2.2 Area of Activity.....	6
2.3 Organisational Unit Responsible, Persons to Contact .....	6
2.4 Objectives and Purpose; History .....	7
2.5 Periodicity .....	8
2.6 Client .....	8
2.7 Users .....	8
2.8 Legal basis .....	8
3 Statistical Concepts and Methods.....	8
3.1 Subject of the Statistics.....	8
3.2 Units of Observation/Collection Units/Units of Presentation .....	8
3.3 Data Sources .....	9
3.4 Reporting Unit/Respondents .....	9
3.5 Type of Survey/Process.....	9
3.6 Characteristics of the Sample/Process .....	10
3.6.1 Population and Sampling Frame.....	10
3.6.2 Sampling Design .....	11
3.6.3 Sample Implementation.....	11
3.7 Survey Technique/Data transfer .....	12
3.8 Questionnaire .....	12
3.9 Participation in the Survey.....	12
3.10 Characteristics of the Survey/Process and its Results .....	13
3.10.1 Definitions and Concepts .....	14
3.10.1.1 Median .....	14
3.10.1.2 Quintiles.....	14
3.10.1.3 Net Wealth Deciles .....	14
3.10.1.4 Equivalised income and wealth. ....	14
3.10.1.5 Household .....	15
3.10.1.6 Household reference person .....	15
3.10.1.7 Household main residence .....	16
3.10.1.8 Gross income .....	16

3.10.1.9 Publicly traded shares.....	17
3.10.1.10 Valuables.....	17
3.10.1.11 Self-employment business.....	17
3.10.1.12 Savings .....	17
3.10.1.13 Mutual funds.....	17
3.10.1.14 Bonds .....	17
3.10.1.15 Voluntary pensions and life assurance .....	17
3.10.1.16 Gross wealth .....	18
3.10.1.17 Net wealth.....	18
3.10.1.18 Debt-asset ratio .....	18
3.10.1.19 Debt-income ratio.....	18
3.10.1.20 Debt service-income ratio.....	18
3.10.1.21 Mortgage debt service- income ratio .....	18
3.10.1.22 Loan- Value ratio of HMR.....	18
3.10.1.23 Net liquid assets to income.....	18
3.11 Classifications Used.....	18
3.11.1 Household Composition.....	18
3.11.2 Tenure Status .....	19
3.11.3 Region .....	19
3.11.4 Percentile of Household Income.....	20
3.11.5 Age of Reference Person.....	20
3.11.6 Work Status of Reference Person .....	20
3.11.7 Education of Reference Person.....	20
3.12 Regional Breakdown of Results .....	20
4 Production of the Statistics, Data processing, Quality Assurance .....	21
4.1 Data Capture .....	21
4.2 Coding .....	21
4.3 Data Editing.....	21
4.4 Imputation (for Non-Response or Incomplete Datasets) .....	22
4.5 Grossing Weighting.....	23
4.5.1 Weighting.....	23
4.5.2 Replicate weights .....	24
4.6 Computation of Outputs and Estimation Methods Used .....	24
4.6.1 Participation in Real and Financial Assets.....	25

4.6.2 Median Values of Real and Financial Assets, Conditional on Participation.....	25
4.6.3 Participation in Debt .....	25
4.6.4 Median Values of Debt, Conditional on Participation .....	25
4.6.5 Net and Gross Wealth.....	25
4.6.6 Credit Constraints .....	25
4.6.7 Debt Burden.....	25
4.6.8 Net Wealth Deciles.....	26
4.6.9 Gini Coefficient.....	26
4.7 Other Quality Assurance Techniques Used.....	26
5. Quality.....	27
5.1 Relevance .....	27
5.2 Accuracy and Reliability .....	27
5.2.1 Sampling Effect and Representivity .....	27
5.2.1.1 Precision Estimation.....	27
5.2.1.2 Measuring the precision of a wave-on-wave change .....	29
5.2.1.3 Comparing the HFCS Sample size with other CSO household samples .....	31
5.2.1.4 Representivity .....	31
5.2.2 Non-Sampling Effects.....	34
5.2.2.1 Quality of the Data Sources used (other than survey register) .....	34
5.2.2.2 Register Coverage .....	35
5.2.2.3 Non-response (Unit and Item) .....	35
5.2.2.4 Measurement Errors.....	36
5.2.2.5 Processing Errors.....	36
5.2.2.6 Model-related Effects .....	36
5.3 Timeliness and Punctuality .....	36
5.3.1 Provisional Results .....	36
5.3.2 Final Results .....	36
5.4 Coherence .....	37
5.5 Comparability.....	38
5.5.1 Comparing national statistics over time .....	38
5.5.1 Comparing Irish HFCS statistics with other European countries .....	38
5.6 Accessibility and Clarity.....	38
5.6.1 Assistance to Users, Special Analyses .....	38
5.6.2 Revisions .....	39

5.6.3 Publications..... 39

    5.6.3.1 Releases, Regular Publications..... 39

    5.6.3.2 Statistical reports ..... 39

    5.6.3.3 Internet ..... 39

5.6.4 Confidentiality..... 40

6. Additional Documentation and Publications ..... 40

## 1. Overview

The primary focus of the Household Finance and Consumption Survey (HFCS) is the collection of information on the assets and liabilities of different types of households in Ireland, in order to derive indicators on wealth. It is a voluntary (for selected households) survey of private households. The HFCS is collected under the auspices of the European Central Bank's (ECB) Household Finance and Consumption Network (HFCN) which designed the survey for use in the Eurozone.

Information is collected from households by a team of interviewers using Computer Assisted Personal Interviewing (CAPI) on tablet computers (using a Blaise application). The total 2018 sample is 13,200 households. The actual achieved sample is dependent on the level of response. The achieved sample is outlined in section 5.2.

## 2. General Information

### 2.1 Statistical Category

Primary Statistical Survey

### 2.2 Area of Activity

Social conditions. Income, consumption and wealth

### 2.3 Organisational Unit Responsible, Persons to Contact

HFCS is part of the Social and Demographic Statistics Directorate, headed by Richard McMahon, Assistant Director General. The work of the HFCS section is largely divided into two areas – a Data Collection Unit (DCU) and a HFCS processing/analysis/publication unit. Gerry Reilly is the senior statistician over the analysis unit and Fiona O'Riordan is the senior statistician over DCU. For more information on the structure of the CSO's senior management group, see:

<http://www.cso.ie/en/aboutus/organisation/organisationstructure/> and

<http://www.cso.ie/en/aboutus/organisation/organisationstructure/adg-socialdemographic/>

#### **HFCS Analysis queries:**

Stephen Lee                      Tel: +353 21 453 5045                      Email: [stephen.lee@cso.ie](mailto:stephen.lee@cso.ie)

Gerry Reilly                      Tel: +353 21 453 5700                      Email: [gerard.reilly@cso.ie](mailto:gerard.reilly@cso.ie)

#### **HFCS Data Collection Unit queries:**

Fiona O'Riordan                      Tel: +353 21 453 5277                      Email: [fiona.oriordan@cso.ie](mailto:fiona.oriordan@cso.ie)

## 2.4 Objectives and Purpose; History

The HFCS collects household-level data on households' finances and consumption in the Eurozone area. Some non-Eurozone countries also participate, such as Poland. The fieldwork took place for most countries in 2010 and 2011 for the first wave, between 2013 and the first half of 2015 for the second wave and 2017 for the third wave. Ireland took part in waves two and three with data collection for wave two taking place in 2013 and for wave three in 2018. Anonymised microdata from the first, second and third wave were made available to the researchers respectively in April 2013 (Ireland not included), December 2016 and March 2020.

The HFCS is conducted at the national level. In view of the considerable cultural and institutional differences between euro area countries, there needs to be some flexibility in the formulation of the questions for the individual countries in order to obtain comparable data. The participating institutions produce harmonised output (i.e. survey data) for their respective country, but do not necessarily use identical questionnaires. However, a common template questionnaire serves as a benchmark for the country questionnaires, as well as for establishing the output desired.

The participating institutions report a set of commonly agreed output variables for their respective country. 'Core' output variables are to be delivered for all participating countries. A set of 'non-core variables' has also been defined, with the participating institutions being free to decide which of these non-core variables they collect and report for their respective country. Ireland does not collect any of these non-core variables, although other variables of national interest are collected. The collection of standardised variables will ensure cross-country comparability.

The HFCS questionnaire consists of two main parts:

1. questions relating to the household as a whole, including questions on real assets and their financing, other liabilities/credit constraints, private businesses, financial assets, intergenerational transfers and gifts, and consumption and saving;
2. questions relating to individual residents of the household's dwelling, covering demographics (for all household members), employment, future pension entitlements and income (for household members aged 16 and over).

The main aim of the HFCS is to gather micro-level structural information on euro area households' assets and liabilities. The survey also collects other information in order to analyse the economic decisions taken by households.

Survey data are key to:

- understanding both individual behaviour and developments in aggregate variables;
- evaluating the impact of shocks, policies and institutional changes, both for households and for different institutional structures;
- better understanding the implications of shocks for macroeconomic variables;
- building and calibrating realistic economic models incorporating heterogeneous agents;
- gaining important insights into issues such as monetary policy transmission and financial stability.

Gathering information on the behaviour of sub-populations of households is essential. For instance, the financial crisis of 2008 has demonstrated that a relatively small percentage of households – those who are highly indebted – can have a major impact on market outcomes. Another example of

an influential sub-group is the top wealthiest households. Though small in number, these have a highly disproportionate effect on aggregate statistics.

## 2.5 Periodicity

In Ireland, waves one and two of the HFCS were carried out on an ad-hoc basis. Future waves of the HFCS will synchronise with data collection periods of other countries from 2020 onwards. The survey periodicity will be every three years from then on. For HFCS 2018, information was collected from April 2018 to January 2019 with household interviews being conducted on a weekly basis. The income reference period for HFCS is the twelve months immediately prior to date of interview. Therefore, the income reference period differs from household to household (depending on the interview date) and overall within the 2018 dataset we have income data spanning from April 2017 to January 2019.

## 2.6 Client

- The Public
- The Central Bank of Ireland
- The Household Finance and Consumption Network (HFCN) of the European Central Bank

## 2.7 Users

The main users of HFCS statistics are The Central Bank of Ireland and the Household Finance and Consumption Network of The European Central Bank. There is potential for the HFCS dataset to be used by a broad range of groups including economists, social scientists, government departments, policy advocates, central bankers, trade unions and the media.

## 2.8 Legal basis

There is no statutory requirement for the collection of HFCS data.

# 3 Statistical Concepts and Methods

## 3.1 Subject of the Statistics

HFCS is concerned with the measurement of 'wealth' of households in Ireland. HFCS collects cross-sectional data on assets, liabilities and income, as well as some non-core variables depending on user requirements, nationally.

## 3.2 Units of Observation/Collection Units/Units of Presentation

The basic units of observation are individuals normally resident in Ireland and Irish households. Household data is collected from the household reference person (the most financially knowledgeable member) and personal data is collected from individuals. In some cases, personal data is aggregated to household level prior to analysis. The survey population is all private households and their current members residing in the state at the time of the data collection. The initial sample is a sample of households, taken from the population of households. However, data is collected on each individual within the household. The sample excludes individuals living in institutions or communal accommodation and persons of no fixed abode.

Three main types of unit data collected are:

- i. Variables measured at the household level. These variables are collected from the household reference person;
- ii. Information on household size, household composition and the basic characteristics of household members are also collected from the head of household; and
- iii. Income and other more complex variables (education, basic labour information and second job) measured at the personal level. These variables are collected by personal interview from all household members aged 16 and over

### 3.3 Data Sources

The HFCS survey instrument is the main data source for HFCS. Information is collected from the household reference person and all household members, aged 16 and over, on tablet computers by trained interviewers, using Computer-Assisted Personal Interview (CAPI) software.

In addition, the CSO has access to other primary micro data sources. These are the Department of Employment Affairs and Social Protection (DEASP) social welfare data, Revenue Commissioners' employee income data, Residential Tenancies Board (RTB) tenancy data, SUSI student grants data and Local Authority HAP data. The Department of Agriculture, Food and the Marine (DAFM) provide to the CSO Direct payments paid to farmers e.g. Common Agriculture Policy (CAP) entitlements thus enabling the CSO to capture these payments as part of the HFCS income calculation. Also provided are animal movement details enabling the calculation of an estimate for the value of livestock held by farming households.

The Administrative Data Centre (ADC) division within the CSO securely manage the ownership of these data sources and HFCS has only limited access to the data. The CSO works with the DSP, Revenue and other data providers on a continuing basis, to ensure good quality data is available on a timely basis.

### 3.4 Reporting Unit/Respondents

All 'usual residents' in responding households are surveyed. Information on the household and certain household members' information is collected from the designated household reference person.

Detailed personal information, income information and more complex information is collected from all household members aged 16 and over. Where a particular individual is not available for interview, information can be provided by another member of the household in some circumstances via a proxy interview. A proxy interview refers to data which is collected from another member of the household due to the unavailability of the specific respondent at the time of the interview.

### 3.5 Type of Survey/Process

The survey is a sample survey. Information is collected in the field by a team of face-to-face interviewers using Computer Assisted Personal Interviewing (CAPI) on tablet computers (using a Blaise

application). The duration of the fieldwork (i.e. the period in which interviews take place) was different in Ireland from other participating countries. In Ireland, the fieldwork began in early April 2018 and ran until early January 2019. Most other countries conducting the survey completed the fieldwork in 2017. In 2020 the CSO plans to limit the duration of the fieldwork to 6 months. This 6-month fieldwork period will run from July to January 2021.

Once data was transmitted from the interviewer tablets to the CSO office, mapping of survey data to core variables was completed. Flag variables which indicate the reason why a value might be missing, if a value has been imputed and the source of the value (either from the survey or administrative) were also created at this time. The data is checked for errors and any editing was completed by May 2019. Administrative data was added, and multiple imputation was performed on missing values throughout the processing phase in 2019. HFCS statistics were published in January 2020.

### 3.6 Characteristics of the Sample/Process

#### 3.6.1 Population and Sampling Frame

The sampling frame for the 2018 HFCS was the register of all private households occupied on the night of the 2016 Census of Population. Census Enumeration Areas (EAs) were used as blocks for the 2016 Census sampling frame. EAs are designed by Census for their enumeration of the Census and generally comprise of two to three small areas. There were 4,660 EAs on the Census 2016 sampling frame, however all blocks that have been previously selected in any CSO household sample over the previous three years are excluded. The reasons for excluding these households are twofold:

1. To reduce response burden on individual households
2. To maintain reasonable response rates.

Island communities are excluded from the sampling frame. As a result, certain island communities were not included when building the HSCU EAs. The generation of HSCU EA data was performed using PHP code and a SQLITE database. The complex nature of the processing meant that SAS was not the appropriate software tool to deliver this work. The output of this work is the creation of the HSCU EA sampling file which contains 3,556 EAs (or blocks).

This HSCU SA sampling file is linked with the Census data and An Post's Geo-Directory to provide the overall sample frame. Two variables, County/NUTS4 (the 31 administrative counties<sup>1</sup>) and the [Pobal HP \(Haase and Pratschke\) Deprivation Index](#) (aggregated to quintiles), exist on the sample frame and they form the basis for the stratification of the population adopted by HFCS in its complex sample design.

The survey population is all private households and their current members residing in the state at the time of the data collection. A sample of households is taken from the population and data is then collected on each individual within the household. The sample therefore excludes individuals living in public institution (e.g. prisons, hospitals, nursing homes, etc.), communal accommodation and persons of no fixed abode.

---

<sup>1</sup> The 31 administrative counties as of 2016.

### 3.6.2 Sampling Design

A sample based on the 2016 Census of Population was selected for the HFCS. The sample is stratified using administrative county and the Pobal HP (Haase and Pratschke) Deprivation Index. A two-stage sample design is used. In the first stage 1,200 blocks are selected using Probability Proportional to Size (PPS) sampling. In the second stage households are selected using Simple Random Sampling (SRS). This ensures each household in the sample frame has an equal probability of selection.

As HFCS 2018 was run for 3 quarters, from Q2 to Q4 2018, the sample will contain 900 blocks with 12 dwellings per block. This results in a total sample of 10,800 households. The actual achieved sample will vary depending on the level of response.

The survey results are weighted to agree with population estimates broken down by age, sex and region and are also calibrated to national totals. This makes the results from the achieved sample representative of the target sample and the population.

Due to the general under-estimation of total population wealth in surveys of this nature, it is recommended to oversample wealthier households. This is achieved by including a higher proportion of wealthier households in the sample. The oversample is a separate sample that specifically targets wealthier blocks. For HFCS in 2018, 18% of the total sample was from the oversample.

The oversample was chosen by assigning a 'wealth' variable (Local Property Tax (LPT) median \* Home Ownership Rate) to each block in the Dublin area. This variable is used to create 5 strata with stratum 1 having the lowest perceived wealth and stratum 5 having the highest. We then use a proportional allocation to select 100 blocks from each of the strata. The proportions are 5%, 5%, 10%, 30% and 50% from strata 1, 2, 3, 4 and 5. This results in an oversample size of 2,400 households. The actual achieved sample will vary depending on the level of response and available field staff resources.

Combining the initial sample and oversample, the total sample size for HFCS 2018 is 13,200 households.

### 3.6.3 Sample Implementation

The data collection period spanned nine months of the year from April 2018 to January 2019. The sample allocation was distributed evenly throughout the nine-month period. The sample design is based on the availability of 100 permanent interviewers and 10 field coordinators/supervisors. Back-up interviewers were used whenever possible to cover areas where no permanent interviewer was available. Each field co-ordinator manages 10 field interviewers. Permanent field interviewers were allocated 12 HFCS interviews per month. This allocation may be reduced due to, for example, planned leave when some of the allocation may be assigned to a back-up interviewer if one is available. Permanent interviewers also conducted other household surveys, such as SILC and LFS, at the same time as HFCS.

The oversample was covered by a temporary team of 10 interviewers. Each interviewer had 6 months to conduct 240 interviews. These interviewers conducted only HFCS interviews.

To minimise non-response at least three attempts are made to contact each house to get a response. In many cases, households that are difficult to contact are revisited several times. The Data collection Unit (DCU) proactively manage the sample and detailed activity reports are produced each week to monitor the progress of the sample implementation. Each quarter detailed quality reports on the performance of the field force are generated and any issues are addressed at the individual interviewer's level. It is proving more and more difficult to gain access to certain households in apartment blocks and gated communities.

Each quarter, the Field Administration Unit (FAU) organises one-day training meetings with each of the ten interviewer groups.

### 3.7 Survey Technique/Data transfer

Information is collected from all household members, on tablets, by trained interviewers, using Computer-Assisted Personal Interview (CAPI) software. The questionnaire is completed using the Blaise application and data is transferred to the CSO's head office in Cork via a 'secure tunnel'. To ensure security and confidentiality encrypted data is synchronised on a weekly basis using the REACH interface.

Survey data is then processed using a number of software tools including the CSO's Data Management System (DMS) and SAS.

### 3.8 Questionnaire

The HFCS questionnaire contains questions on a range of topics relating to both the household and individual respondents. Topics measured in the questionnaire include:

- gender
- nationality
- age
- income
- industry of employment
- employment status
- occupation
- education level
- real assets and their financing
- financial assets including pensions
- debt
- credit constraints
- intergenerational transfers and gifts
- consumption

The median length of interview was 42 minutes.

### 3.9 Participation in the Survey

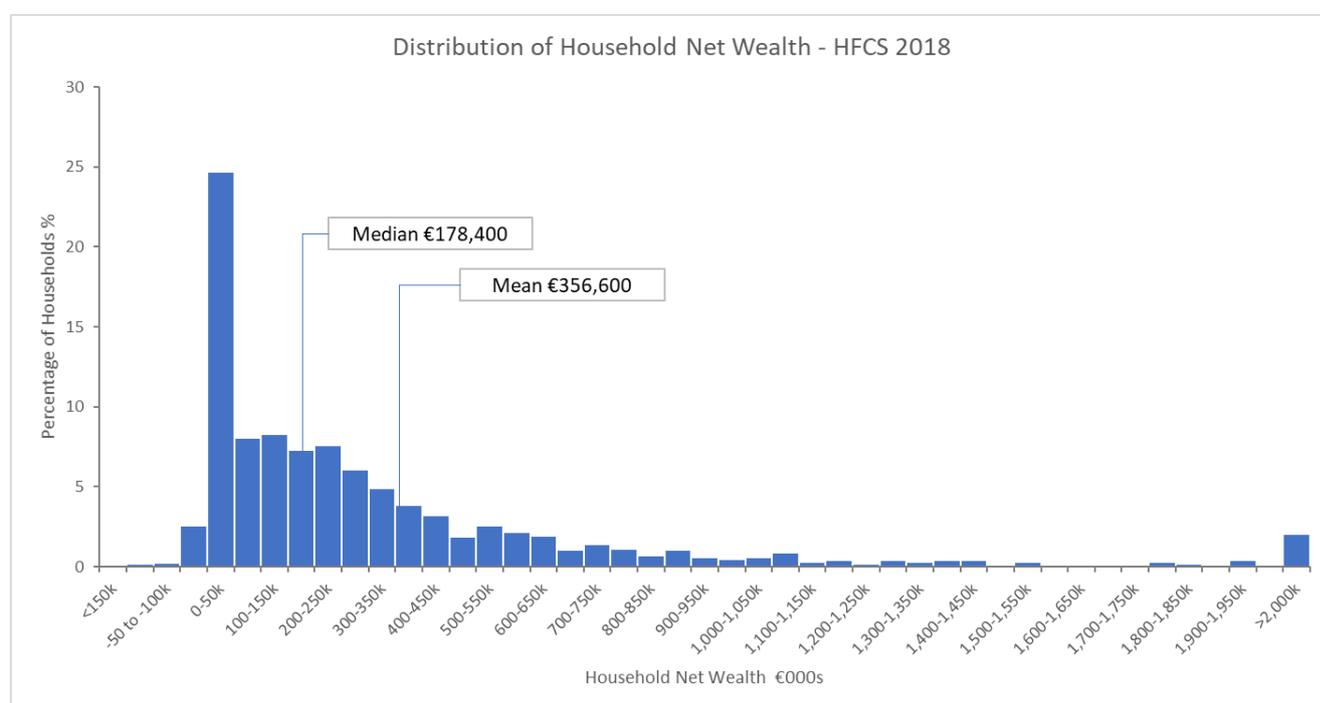
Participation in the survey, on the part of the household, is voluntary.

### 3.10 Characteristics of the Survey/Process and its Results

Data is collected at both household and individual level. Assets, liabilities and consumption are collected at the household level. Pensions and income data are collected at individual level but is aggregated up to household level.

The primary analytical variable is net wealth and the primary characteristic of the variable analysed is the distribution. Wealth is positively skewed and not normally distributed, see Figure 3.10a. Therefore, it is more appropriate to summarise the central tendency of income using the median. The mean is provided for comparison purposes. In 2018, approximately 62% of individuals had net wealth below the mean.

Figure 3.10a



A number of other key indicators are also provided including participation rates in real and financial assets, participation rates in debt, median values of real and financial assets, median values of debt, debt sustainability measures and credit constraint rates. For full details of the results published, see the electronic release at:

<https://www.cso.ie/en/releasesandpublications/ep/p-hfcs/householdfinanceandconsumptionsurvey2018/>

All published HFCS statistics are available on the CSO's Databank:

[https://statbank.cso.ie/px/pxeirestat/Database/eirestat/Household%20Finance%20and%20Consumption%20Survey/Household%20Finance%20and%20Consumption%20Survey\\_statbank.asp?SP=Household%20Finance%20and%20Consumption%20Survey&Planguage=0](https://statbank.cso.ie/px/pxeirestat/Database/eirestat/Household%20Finance%20and%20Consumption%20Survey/Household%20Finance%20and%20Consumption%20Survey_statbank.asp?SP=Household%20Finance%20and%20Consumption%20Survey&Planguage=0)

Some definitions of the primary variables and concepts are given below.

### 3.10.1 Definitions and Concepts

#### 3.10.1.1 Median

This is a common concept used in this report. The median value is the value below which 50 per cent of the observations lie. Because financial and income data is often highly skewed, it is often preferred as a measure compared to the mean, which may be affected by a small number of very high values. For example, in the dataset 1, 4, 10, 20 and 100, the median value is 10 but the mean value is 27.

#### 3.10.1.2 Quintiles

The wealth or income quintile groups are five equal-sized groups of households, each group containing 20% of households. The income quintile “Less than 20” also referenced in this publication as “First (or bottom) income quintile” contains the fifth of households with the lowest gross household income, group “20-39” contains the fifth of households with the next lowest gross household income etc. The group “80-100” also referenced in this publication as “Fifth (or top) income quintile” contains the fifth of households with the highest gross household income. Likewise, the wealth quintile “Less than 20” or “First (or bottom) net wealth quintile” contains the fifth of households with the lowest net household wealth (and so on).

#### 3.10.1.3 Net Wealth Deciles

The net wealth decile groups are ten equal-sized groups of households, each group containing 10% of households. The first (bottom) decile contains the tenth of households with the lowest net household wealth, whereas the tenth (top) decile contains the tenth of households with the highest net household wealth.

#### 3.10.1.4 Equivalised income and wealth.

When conducting joint distributional analysis differences in household composition and size should be accounted for. As a household’s size increases then the potential sources of income increase as does the consumption needs of the household. To account for differences in household size and composition an equivalised household size was calculated for each HFCS household. The first adult in each household was attributed a weight of 1, each subsequent adult (aged 14+ living in the household) was attributed a weight of 0.66 and each child aged less than 14 was attributed a weight of 0.33. The weights for the individuals in each household were then summed to calculate the equivalised household size. Gross household income was then divided by the equivalised household size to calculate equivalised gross income for each person. Likewise, household net wealth was divided by the equivalised household size to calculate equivalised net wealth for each person in the household. Essentially these equivalised income and wealth values are approximate measures of how much of the household income and wealth can be attributed to each member of the household. When considering wealth as an economic resource that may be used to support current consumption, the OECD in the ‘Framework for Statistics on the Distribution of Household Income,

Consumption and Wealth' publication advise that it is appropriate to equalise wealth with the same equivalence scales used to equalise income<sup>2</sup>.

In the HFCS income information was only collected on gross household income. Ideally net income should be used when conducting joint distributional analysis as net income supports consumption. The SILC survey collects information on both gross and net income. Analysis of 2018 SILC gross and net equivalised income shows that over 80% of individuals are in the same equivalised gross and net income quintiles. 86.5% of SILC individuals in the top net equivalised quintile were also in the top gross equivalised income quintile, the remainder (13.5%) were in the fourth gross equivalised income quintile.

#### *3.10.1.5 Household*

A household is defined as a person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living, such as catering arrangements. The household members defined in this fashion are usually, but not necessarily, related by blood or by marriage. Any other individual or group of people living in the same dwelling constitutes a separate household.

Persons usually resident, but temporarily absent from the dwelling for a period of less than six months (for reasons of holiday travel, work, education or similar) are included as household members.

Persons financially dependent and not having their private household somewhere else (like students studying away from home, persons away for work regularly returning and considering the sampled dwelling as their main place of residence) are included as household members even if their length of absence may exceed six months.

Persons with usual residence in the dwelling but not sharing expenditures (e.g. lodgers, tenants, etc.) are treated as separate households. Consequently, in some specific cases there can be more than one household in a dwelling.

#### *3.10.1.6 Household reference person*

This person is considered to be the person who is most knowledgeable about the financial situation of the household and provides the financial information for the whole household, since this information is collected together for the whole household instead of by individual members. This is done to both minimise response burden and to avoid duplications (since many assets and liabilities are shared between household members).

No specific direction is given as to who is to be taken as the reference person of the household, but it has to be an adult member. It is left to individual households to determine who the appropriate person is. There is no problem in normal family-type situations. In other cases (e.g. man, wife and a married child with family) decisions made depend on the circumstances and the approach followed

---

<sup>2</sup> <https://www.oecd-ilibrary.org/docserver/9789264194830-11-en.pdf?expires=1578313093&id=id&accname=guest&checksum=CEF33026B5DEB03A5272119994166D29>

is to take the person whom the household regards as its reference person. This person was also known as the financially responsible person.

#### *3.10.1.7 Household main residence*

This is defined as the dwelling where the members of the household usually live, typically a house or an apartment. A household can only have one main residence at any given time, although they may share the residence with people not belonging to the household.

#### *3.10.1.8 Gross income*

Household income includes all money receipts which accrue to the household regularly at annual or more frequent intervals. The gross receipts, (i.e. before subtraction of income tax and social insurance deductions) of individual household members are combined to give the average income for the households. The components of gross income are direct income and social transfers.

Direct income is composed of employee income and gross cash benefits or losses from self-employment. It also includes pensions from individual private plans, income from rental of property or land, regular inter-household cash transfers received, interests, dividends and profit from capital investments in unincorporated business. Social transfers include Jobseekers payments, state pensions and family/children related allowances such as maternity/adoptive benefit, child benefit, one-parent family payments and carers' payments). It also includes housing allowances such as rent supplement, free phone/electricity etc, fuel allowances and exceptional needs payments. Other social transfers include survivors' payments, sickness payments, disability payments, education-related allowances and social exclusion not elsewhere classified.

Gross household income excludes certain receipts which are generally of an irregular and non-recurring nature. The principal exclusions are receipts for sale of possessions, withdrawals from savings, loans obtained, loan repayments received, windfalls, prizes, retirement gratuities, maturing insurance policies etc. Furthermore, transfers of money between household members (e.g. pocket money, housekeeping money etc.) are ignored since the household is treated as a single unit.

Most respondents aged 16 years and over supplied the CSO with their Personal Public Service Number (PPS No). In these cases, the Department of Social Protection supplied the CSO with detailed information regarding state transfer payments received by the respondent in the interview week and in the 12-month period prior to the interview date. Revenue supplied the CSO with detailed information regarding income received by the respondent in the 12-month period prior to the interview date.

Calculations for farming income was based on UAA (Utilised Agriculture Area) = The number of hectares of land owned + number of hectares rented in – the number of hectares let out – number of hectares in bog land – number of hectares in woodland – number of hectares in other areas e.g. lakes. The Farm Accountancy Data Network (FADN code) for the farm was derived from the detailed questions asked regarding the hectares of farmland under different crop types and activity (i.e. stock on farm).

The Irish Agriculture and Food Development Authority Teagasc provided the CSO with Standard Outputs (SOs) for each hectare of crop and for each type of animal. Farms were then classified into groups, according to the proportion of total SO which came from each enterprise. Farm income was

then estimated by applying the relevant income co-efficient (supplied by Teagasc). Coefficients were supplied for different farm classifications of different 'Utilised Agriculture Area' size.

#### *3.10.1.9 Publicly traded shares*

Publicly traded shares are shares that are listed on a stock exchange or other form of secondary market, i.e. they can be bought and sold there.

#### *3.10.1.10 Valuables*

This includes items such as jewellery, works of art, antiques etc.

#### *3.10.1.11 Self-employment business*

These are businesses in which somebody in the household is either self-employed in or has an active part in running the business. Examples would include a self-employed plumber, partner in an accounting firm or the director and part-owner of a haulage company.

#### *3.10.1.12 Savings*

This includes items such as all types of deposit and savings accounts as well as positive balance on current accounts

#### *3.10.1.13 Mutual funds*

Money market funds (MMF) are defined as those collective investment undertakings the shares/units of which are, in terms of liquidity, close substitutes for deposits. They are funds primarily invested in money market instruments, MMF shares/units and in other transferable debt instruments with a residual maturity of up to and including one year.

#### *3.10.1.14 Bonds*

These are bearer instruments, are usually negotiable but do not grant the holder any ownership rights to the institutional unit issuing them. They provide the holder with the unconditional right to a fixed or contractually determined variable money income in the form of coupon payments (interest) and/or a stated fixed sum on a specified date or dates or starting from a date fixed at the time of issue. The issuer owes the holders a debt and is obliged to repay the principal and interest (the coupon) at a later date, termed maturity. A bond is generally transferrable from one person to another. For the purposes of HFCS, Post Office savings bonds and prize bonds are classified as 'Bonds'.

#### *3.10.1.15 Voluntary pensions and life assurance*

These are personal (voluntary) plans, access to which is not linked to an employment relationship. Individuals independently purchase and select material aspects of the arrangements without intervention of their employers. Some personal plans may have restricted membership (e.g. to the self-employed, to members of a particular craft or trade association, to individuals who do not already belong to an occupational plan, etc).

Holders of life insurance policies, both with profit and without profit, make regular payments to an insurer (there may be just a single payment), in return for which the insurer guarantees to pay the policy holder an agreed minimum sum or an annuity, at a given date or at the death of the policy holder, if this occurs earlier. Term life insurance, where benefits are provided in the case of death but in no other circumstances, is excluded here

#### *3.10.1.16 Gross wealth*

This is defined as the sum of real and financial assets.

Only certain assets and liabilities are included. In particular, the present value of all future, expected defined benefit pensions is excluded, which can be a sizable portion of the wealth of many households. The present value of future, voluntary, expected defined contribution pensions is included.

#### *3.10.1.17 Net wealth*

This is defined as gross wealth less total debt.

#### *3.10.1.18 Debt-asset ratio*

This is the ratio between total liabilities and total gross assets for indebted households. It is expressed as the (weighted) median. Households with zero debt are excluded from the calculation.

#### *3.10.1.19 Debt-income ratio*

This is the ratio between total liabilities and total gross income for indebted households. It is expressed as the (weighted) median. Households with zero debt are excluded from the calculation.

#### *3.10.1.20 Debt service-income ratio*

This is the ratio between total monthly debt payments and household gross monthly income for indebted households. Households with zero debt are excluded from the calculation.

#### *3.10.1.21 Mortgage debt service- income ratio*

This is the ratio between the mortgage debt service repayments of a household to the income of that household, for households with mortgage debt. Households with zero income are excluded from the calculation.

#### *3.10.1.22 Loan- Value ratio of HMR*

This is the ratio between the remaining debt on the household main residence to the value of that main residence, for households with mortgage debt.

#### *3.10.1.23 Net liquid assets to income*

Net liquid assets are calculated as the sum of value of deposits, mutual funds, bonds, non-self-employment business wealth, (publicly traded) shares and managed accounts net of overdraft debt, credit card debt and other non-mortgage debt. This is calculated for all households excluding those with zero income.

### 3.11 Classifications Used

#### 3.11.1 Household Composition

For the purposes of deriving household composition, a child was defined as any member of the household aged 17 or under. Households were analysed as a whole, regardless of the number of family units within the household. The categories of household composition are:

- 1 adult aged 65+
- 1 adult aged <65
- 2 adults at least 1 aged 65+
- 2 adults, both aged <65

- 3 or more adults
- 1 adult, with children aged under 18
- 2 adults with 1-3 children aged under 18
- Other households with children aged under 18

### 3.11.2 Tenure Status

Tenure status refers to the nature of the accommodation in which the household resides. The status is provided by the respondent during the interview and responses are classified into the following two categories;

- Owner-occupied
- Rented or rent free

### 3.11.3 Region

Ireland is divided into three NUTS2 regions. Nomenclature of Territorial Units (NUTS)

- Eastern and Midland
- Northern and Western
- Southern

Table 3.10.2.3

NUTS 2-4 Regional Breakdown of Ireland		
Northern and Western	Southern	Eastern and Midland
<b>Border</b> Cavan Donegal Leitrim Monaghan Sligo  <b>West</b> Galway City Galway County Mayo Roscommon	<b>Mid-West</b> Clare Limerick City and County Tipperary  <b>South-East</b> Carlow Kilkenny Waterford City and County Wexford  <b>South-West</b> Cork City Cork County Kerry	<b>Dublin</b> Dublin City Dun Laoghaire-Rathdown Fingal South Dublin  <b>Mid-East</b> Kildare Meath Wicklow Louth  <b>Midland</b> Laois Longford Offaly Westmeath
		NUTS 2
		NUTS 3
		NUTS 4

#### 3.11.4 Percentile of Household Income

All households are arranged by amount of household income, from lowest to highest and divided into 5 equal sized groups. The 20% of households with the lowest income are classified as 'Less than 20', the next group are '20-39' and so on. The 20% with the highest income are classified as '80-100'.

- Less than 20
- 20-39
- 40-59
- 60-79
- 80-100

#### 3.11.5 Age of Reference Person

Households are classified depending on the age of the reference person.

- Under 35
- 35-44
- 45-54
- 55-64
- 65+

#### 3.11.6 Work Status of Reference Person

Households are classified depending on the employment, or work status of the reference person.

- At work
- Unemployed
- Home Duties
- Retired
- Other

#### 3.11.7 Education of Reference Person

Households are classified depending on the level of education of the reference person using International Standard Classification of Education (ISCED) - 2011

- Primary or below
- Lower secondary
- Higher secondary
- Post leaving cert
- Third level non-degree
- Third level degree or above

### 3.12 Regional Breakdown of Results

Regional breakdowns are provided for all published statistics at NUTS 2 level (Eastern & Midlands, Southern, Northern & Western). There are variations in wealth statistics by region in Ireland with the Eastern & Midland region generally having highest wealth figures and Northern & Western the lowest. As the Eastern & Midland region contains large urban areas, home ownership rates tend to

be lower with more rented accommodation there. Land ownership and self-employment rates are lower due to less agricultural activity and vehicle ownership rates are also lower. Median values of real assets tend to be higher in the Eastern & Midland region due to higher property prices in that region. Participation rates and median values of financial assets tends to be higher in the Eastern & Midland region. Participation and median value of debt also tends to be higher in the Eastern & Midland region primarily due to higher value mortgages there.

## 4 Production of the Statistics, Data processing, Quality Assurance

### 4.1 Data Capture

Information is collected from all household members on tablet computers by trained interviewers, using Computer-Assisted Personal Interview (CAPI) software. The data is captured using Blaise software. The Blaise dataset is available as an ASCII file and this is converted into a SAS dataset before being further processed. Certain variables are transferred into the CSO's Data Management System (DMS) where some editing is conducted.

### 4.2 Coding

The coding of HFCS variables is outlined in detail in the HFCS Core and derived variables catalogue, available on the HFCN website:

[https://www.ecb.europa.eu/home/pdf/research/hfcn/HFCS\\_Core\\_and\\_derived\\_variables\\_Wave2.pdf](https://www.ecb.europa.eu/home/pdf/research/hfcn/HFCS_Core_and_derived_variables_Wave2.pdf)

Occupation and Industry text strings are captured in the field by interviewers using the Blaise application and is subsequently mapped to isco08 2-digit codes. Education data is captured and coded in the field to the relevant classification (see Section 3.10.2). The classification of industry is captured using text strings in the field and this is subsequently mapped to NACE Rev. 2.

### 4.3 Data Editing

Many questions only allow answers to be entered to a limited set of predefined categories and therefore the number of edits required is limited. Questionnaire routing is used to ensure questions are only asked to relevant respondents. In addition, invalid responses are prevented at the point of capture where appropriate and this ensures that implausible data is prevented from being captured.

Much of the income micro-data comes directly from administrative sources such as Revenue and the Department of Employee Affairs and Social Protection. The availability of such good quality micro-data considerably reduces the possibility of measurement error in the measurement of direct income and social transfers.

The following post interview edits are performed.

1. Student households that are dependent on private transfers from other households are removed.
2. Partial interviews are checked for possibility of inclusion depending on level of non-response.
3. If a respondent has given a categorical answer as 'other' then the text response is checked and subsequently mapped to the correct category if possible.

4. 'Other assets' text responses are checked and mapped to the correct asset type if appropriate.
5. Current and saving accounts are checked for outliers and duplications within households.
6. Total consumption versus components of consumption are checked for coherence.
7. Dwelling size is checked for plausibility.
8. Unusual valuations of dwellings are checked against online sources such as [www.daft.ie](http://www.daft.ie) and [www.propertyregister.ie](http://www.propertyregister.ie)
9. Time in main job is checked versus age and total time in employment.
10. Hours per week in main job is checked for plausibility.
11. Total time in employment is checked versus age.
12. Age at which expecting to stop working for pay is checked versus age.
13. Bonds and Post office bonds are checked for duplicates across bonds questions and duplicate personal questionnaire responses.
14. Sum of mutual funds is checked versus individual components of mutual funds.
15. Values of financial assets are checked for outliers.
16. Values of real assets are checked for outliers.
17. Years living in residence is checked versus age and property acquisition date.
18. House price expectations distribution of score is checked for summing to 10.
19. House value at time of acquisition is checked versus current value and year acquired.
20. Inheritances are checked for duplicates of HMR and 2<sup>nd</sup> properties.
21. Leasing payments are checked for outliers
22. Monthly rent is checked for plausibility.
23. Mortgage variables on main residence and other properties (amount borrowed, interest rate, term, monthly payment, outstanding balance and remaining maturity) are checked for plausibility and outliers.
24. Loan variables (amount borrowed, interest rate, term, monthly payment and outstanding balance) are checked for plausibility and outliers.
25. Number of years contributing to pension plan is checked versus age.

#### 4.4 Imputation (for Non-Response or Incomplete Datasets)

This is a process to assign values to missing data. While unit non-response (i.e. the complete record is missing) was dealt with by the weighting procedure, item non-response (where the respondent has either refused to answer a question or doesn't know the answer) had to be assigned a value. Certain variables are defined by the HFCN as requiring a 100% response so where the answer could not be derived from other sources this nonresponse was corrected by imputation.

Multiple Imputation (based on Gibbs sampling) and Hot deck methodology are used to impute missing values. With these methods, five imputed values based on different random draws are provided to the user for each missing value, resulting in five copies of the complete dataset. Gibbs sampling is an iterative Markov procedure of successive simulation of the distribution of variables conditioned on both observed data and distributions of variables previously simulated in the same iteration. The model imputes each missing observation using a maximal set of covariates (from the list determined by the user) from the appropriate subpopulation. For example, in the imputation of the value of bonds, only households that have bonds are considered. This is the preferred method of

imputation for HFCS. For variables where multiple imputation was not possible, a Hot-deck imputation procedure was used. Hot-deck imputation is where a missing value is imputed from a randomly selected similar record.

The level of item non-response for certain variables was:

Variable Description	HFCN Code	% of values imputed
Current value of the household main residence (HMR)	HB0900	13.4
Amount still owed on the mortgage on HMR	HB1701	19.5
Total value of cars	HB4400	3.4
Amount of outstanding credit line/overdraft balance	HC0220	31.7
Amount outstanding on private loans	HC0361	5.8
Value of self-employment business	HD0801	38.5
Value of deposit accounts	HD1110	33.4
Value of savings accounts	HD1210	27.5
Amount of outstanding credit card balance	HC0320	18.2

The variable with the highest imputation rate was the value of a self-employment business that a household member had an interest in. However, the difficulty in collecting accurate data from households for this variable has been noted in many of the national HFCS surveys carried out in the Eurozone previously.

## 4.5 Grossing Weighting

### 4.5.1 Weighting

In order to provide national results, the survey results were weighted to represent the entire population. The process was implemented in SAS as follows:

- Firstly, design weights were calculated for all units selected in the initial sample and are computed as the inverse of the selection probability of the unit. The purpose of design weights is to eliminate the bias induced by unequal selection probabilities, which was relevant here as we oversampled wealthy areas.
- Next the design weights were adjusted for non-response. This eliminated the bias introduced by discrepancies caused by non-response between the initial sample and the achieved sample, particularly critical when the non-responding households are different from the responding ones in respect to some survey variables as this may create substantial bias in the estimates. Design weights are adjusted for non-response by calibrating to Census 2016, comparing the attributes of households that responded vs. attributes of households that did not respond.
- Next weights were calculated for the oversample. The census of population was used to find the total population in the administrative counties used for the oversample. The design weights were adjusted for non-response the adjusted weights were rescaled to census known

totals. Both samples are combined by identifying households that could be in both sampling frames and adjusting the weights appropriately.

- To obtain the final household weights for the results, after the previous steps were carried out, the distribution of households by deprivation, NUTS3 region, home ownership by age of household reference person, household size, household type, sex and age was calibrated to the population of households in Q2, Q3 and Q4 2018 (as derived from the Labour Force Survey). The CALMAR2-macro, developed by INSEE and shared with the HFCN, was used for this purpose and both household and individual external information was used in a single-shot calibration at household level. The final weights are included in the HFCS data as a core variable and are distributed to the external users as a part of the HFCN micro data. There are no personal weights provided for the HFCS.

#### 4.5.2 Replicate weights

- To estimate variance for the HFCS replicate weights using a bootstrap replication method was used. The variant of bootstrap for the HFCS is the rescaling bootstrap of Rao and Wu (1988), as further specified by Rao, Wu, and Yue (1992). The rescaling provides consistent variance estimates in case of non-smooth statistics such as distribution quantiles.
- The HFCS data has a separate file (W-file) that includes the replicate weights which take into account sampling design features in the estimation of the sampling variances. In the bootstrap procedure, a with-replacement sample of primary sampling units (PSU) from each stratum is selected. The number of replicates in the HFCS data is 1000.
- The formula for the variance of an estimator can be obtained by using the replicate weights as follows:

$$V(\hat{\theta}) = \frac{1}{H} \sum_h (\hat{\theta}_h - \bar{\theta})^2,$$

where  $H$  is the number of replicates,  $h$  the index of the replicate sample and  $\bar{\theta}$  the weighted estimate obtained in replicate sample  $h$ .

- Since the final survey weights are adjusted for non-response and calibrated, the replicate weights are adjusted as well according to the same procedure described in chapter 4.5.1. This is to ensure that the replicate estimates are close to unbiased in each replicate sample.

#### 4.6 Computation of Outputs and Estimation Methods Used

The HFCS uses multiple imputation for item non-response which needs to be taken into consideration when computing survey estimates. There are 5 imputations available for selected core variables, which leads to 5 separate datasets. The datasets can be identified using the variable IM0100 (numeric 1 to 5). Suppose the interest lies in a point estimate of some parameter  $Y$  (e.g. mean, median, regression parameter) and that for each of the five imputed datasets we have obtained an estimate of  $Y$  (using standard complete-data methods), denoted  $\hat{Y}_i$ . The MI point estimate of  $Y$ ,  $\bar{Y}$ , is the average of the five complete data estimates:

$$\bar{Y} = \frac{1}{5} \sum_{i=1}^5 \hat{Y}_i$$

The statistical concept used in HFCS is the median value. The median value is the value below which 50 per cent of the observations lie. Because financial and income data is often highly skewed, it is often preferred as a measure compared to the mean, which may be affected by a small number of very high values. For example, in a data series of 1,4,10,20 and 100, the median value is 10 but the mean value is 27.

#### 4.6.1 Participation in Real and Financial Assets

These outputs are the percentage of households that own a particular real (such as household main residence, property, vehicles etc.) or financial asset (shares, bonds pension, etc.)

#### 4.6.2 Median Values of Real and Financial Assets, Conditional on Participation

These are the median values of a particular assets, includes only households that own the assets.

#### 4.6.3 Participation in Debt

These outputs are the percentage of households that have a particular type of debt such as mortgage, loan, credit card etc.

#### 4.6.4 Median Values of Debt, Conditional on Participation

These are the median amounts of types of debt, includes only households that have that particular type of debt.

#### 4.6.5 Net and Gross Wealth

Gross wealth of a household is the value of all real assets owned plus the value of all financial assets owned. Net wealth is gross wealth less any debt.

#### 4.6.6 Credit Constraints

A household is considered 'Credit Constrained' if they have applied for credit in the last 3 years but did not receive the amount requested or did not apply for credit due to a perceived credit constraint.

#### 4.6.7 Debt Burden

**Debt-asset Ratio:** this is the ratio between total liabilities and total gross assets for indebted households. It is expressed as the (weighted) median. Households with zero debt are excluded from the calculation.

**Debt-income Ratio:** this is the ratio between total liabilities and total gross income for indebted households. It is expressed as the (weighted) median. Households with zero debt are excluded from the calculation.

**Debt Service-income Ratio:** this is the ratio between total monthly debt payments and household gross monthly income for indebted households. Households with zero debt are excluded from the calculation.

**Mortgage Debt Service-income Ratio:** this is the ratio between the mortgage debt service repayments of a household to the income of that household, for households with mortgage debt. Households with zero income are excluded from the calculation.

Loan-Value Ratio of HMR: this is the ratio between the remaining debt on the household main residence to the value of that main residence, for households with mortgage debt.

Net Liquid Assets to Income: net liquid assets are calculated as the sum of value of deposits, mutual funds, bonds, non-self-employment business wealth, (publicly traded) shares and managed accounts net of overdraft debt, credit card debt and other non-mortgage debt. This is calculated for all households excluding those with zero income.

#### 4.6.8 Net Wealth Deciles

The net wealth decile groups are ten equal-sized groups of households, each group containing 10% of households. The first (bottom) decile contains the tenth of households with the lowest net household wealth, whereas the tenth (top) decile contains the tenth of households with the highest net household wealth.

#### 4.6.9 Gini Coefficient

This is the relationship between cumulative shares of the population (ranked according to the level of wealth from lowest to highest) and the cumulative share of total wealth owned by them. If there was perfect equality, (i.e. each person receives the same income) the Gini coefficient would be 0%. A Gini coefficient of 100% would indicate there was total inequality and the entire national income was in the hands of one person. The Gini coefficient in 2018 was 0.66.

Calculation of the Gini Coefficient

$$Gini = \frac{2(\sum_{i=1}^n Wgt_i * Wealth_i * \sum_{j=1}^i Wgt_j) - \sum_{i=1}^n (Wgt_i)^2 * Wealth_i}{(\sum_{i=1}^n Wgt_i) * \sum_{i=1}^n (Wgt_i * Wealth_i)} - 1$$

$Wgt_i =$  Final calibrated weight per individual

$Wealth_i =$  Wealth

$$\sum_{j=1}^i Wgt_j = \text{Cumulative Wealth}$$

#### 4.7 Other Quality Assurance Techniques Used

The CSO has established a Memorandum of Understanding with Revenue and a Memorandum of Agreement with the Department of Social Protection to ensure the efficient and secure availability of administrative data. In HFCS processing, administrative data is used when available and where possible.

Each quarter the Field Administration Unit (FAU) organises one-day training meetings with each of the ten interviewer groups. Members of DCU participate in these training days where modifications to the questionnaire and any issues around the sample implementation are discussed. These training

days form part of the open communication policy that exists between the HFCS interviewer field force and DCU. Detailed management reports are used to monitor and improve (if necessary) the performance of the interviewer field force. Level of completion payments are also linked to the response rates achieved by interviewers.

## 5. Quality

### 5.1 Relevance

There is no legal basis for the HFCS therefore it is not under the remit of Eurostat. The survey is run under the auspices of the European Central Bank (ECB) who are the main users of the data along with the Central Bank of Ireland. Several researchers also have access to the HFCS RMF.

Although the focus for HFCS is on household assets, it is the only household survey carried out by the CSO that includes data on assets, income and consumption. More detailed data on income can be found in the SILC, whereas more detailed data on consumption can be found in the HBS.

### 5.2 Accuracy and Reliability

#### 5.2.1 Sampling Effect and Representivity

##### 5.2.1.1 Precision Estimation

Variance estimation is an essential element in the use of survey data, as it allows researchers to distinguish between a statistically significant phenomenon and a spurious result caused by the random nature of the sample. Variance needs to be estimated, since the true value of the variance of an estimator can only be known if the whole population is observed. Underestimating the variance of an estimate may lead to incorrect conclusions, while overestimating the variance decreases the apparent usefulness of the data, as fewer outcomes are statistically significant.

The HFCS data has a separate file (W-file) that includes the replicate weights to enable users taking into account sampling design features in the estimation of the sampling variances. The variance estimation method for the HFCS data is Rao-Wu rescaling bootstrap (see Rao and Wu 1988 and Rao et al. 1992). In the bootstrap procedure, a with-replacement sample of primary sampling units (PSU) from each stratum is selected. The number of PSUs per unit does not need to be constant. The number of replicates (bootstrap samples), as well as the number of PSUs sampled in each replicate, can be chosen by the analyst. The number of replicates in the HFCS data is 1000.

The formula for the variance of an estimator  $\hat{\theta}$  can be obtained by using the replicate weights as follows:

$$v(\hat{\theta}) = \frac{1}{H} \sum_h (\hat{\theta}_h - \bar{\theta})^2,$$

where  $H$  is the number of replicates,  $h$  the index of the replicate sample and  $\bar{\theta}$  the weighted estimate obtained in replicate sample  $h$ .

Since the final survey weights are adjusted for non-response, post-stratified or calibrated, the replicate weights are adjusted as well according to the same procedure (for example by running CALMAR calibration program with the same margins on each of the replicate weights). This can be considered as an additional rescaling factor. For instance, after drawing the sample and rescaling the weights, the weights are further rescaled to satisfy post-stratification or calibration constraints for each replicate. This is to ensure that the replicate estimates are close to unbiased in each replicate sample.

Table 5.2.1.1

Precision estimates 2018								
Variable	Statistic	Estimate	95% Conf Int		Standard Error	Coefficient of Variation	Variance	Sample Number
			Lower CL	Upper CL				
Net Wealth	Median	178,400	168,478	188,322	5,062	0.03	25,626,340	4,793
Net Wealth	Mean	356,600	331,969	381,231	12,567	0.04	157,919,436	4,793
Gross Wealth	Median	235,900	227,554	244,246	4,258	0.02	18,132,250	4,793
Gross Wealth	Mean	419,700	389,538	449,862	15,389	0.04	236,821,321	4,793
Household Main Residence (HMR)	Participation	68.8	68.8	68.8	0.0	0.00	0.0	4,793
Land	Participation	8.9	7.7	10.1	0.6	0.07	0.4	4,793
Other Real Estate Property	Participation	13.6	12.5	14.7	0.6	0.04	0.3	4,793
Self Employment Business Wealth	Participation	17.7	16.2	19.2	0.8	0.04	0.6	4,793
Vehicles	Participation	78.8	77.5	80.1	0.7	0.01	0.4	4,793
Valuables	Participation	79	77.0	81.0	1.0	0.01	1.0	4,793
Savings	Participation	94.6	93.8	95.4	0.4	0.00	0.2	4,793
Bonds or Mutual Funds	Participation	10	9.0	11.0	0.5	0.05	0.3	4,793
Shares	Participation	10.4	8.4	12.4	1.0	0.10	1.0	4,793
Voluntary Pension	Participation	15.8	14.6	17.0	0.6	0.04	0.4	4,793
Other Financial Asset	Participation	5.9	5.1	6.7	0.4	0.07	0.2	4,793
Mortgage on HMR	Participation	26.1	24.9	27.3	0.6	0.02	0.4	4,793
Mortgage on Other Property	Participation	7.3	6.5	8.1	0.4	0.06	0.2	4,793
Non-mortgage loans	Participation	30.4	28.4	32.4	1.0	0.03	1.0	4,793
Overdraft	Participation	7.9	6.7	9.1	0.6	0.08	0.4	4,793
Credit Card	Participation	12.7	10.7	14.7	1.0	0.08	1.1	4,793
Household Main Residence (HMR)	Median	250,000	240,950	259,050	4,617.5	0.02	21,320,932	4,793
Land	Median	319,400	265,838	372,962	27,327.8	0.09	746,808,653	4,793
Other Real Estate Property	Median	240,600	202,379	278,821	19,500.6	0.08	380,273,400	4,793
Self Employment Business Wealth	Median	19,300	14,194	24,406	2,604.8	0.13	6,785,241	4,793
Vehicles	Median	8,000	7,489	8,511	260.7	0.03	67,985	4,793
Valuables	Median	5,000	4,307	5,693	353.5	0.07	124,994	4,793
Savings	Median	5,000	4,474	5,526	268.5	0.05	72,072	4,793
Bonds or Mutual Funds	Median	10,000	5,151	14,849	2,474.1	0.25	6,120,932	4,793
Shares	Median	10,000	6,805	13,195	1,629.9	0.16	2,656,497	4,793
Voluntary Pension	Median	49,600	39,512	59,688	5,146.9	0.10	26,490,858	4,793
Other Financial Asset	Median	10,000	4,902	15,098	2,601.2	0.26	6,766,041	4,793
Mortgage on HMR	Median	124,900	116,855	132,945	4,104.7	0.03	16,848,714	4,793
Mortgage on Other Property	Median	153,900	120,905	186,895	16,834.4	0.11	283,397,023	4,793
Non-mortgage loans	Median	6,200	5,288	7,112	465.1	0.08	216,325	4,793
Overdraft	Median	800	675	925	63.6	0.08	4,041	4,793
Credit Card	Median	1,300	901	1,699	203.6	0.16	41,462	4,793
Applied for credit	Participation	30.6	28.6	32.6	1.0	0.03	1.1	4,793
Refused or Reduced Credit	Participation	9.6	8.9	10.3	0.4	0.04	0.1	4,793
Not Applied for Credit	Participation	6.5	5.6	7.4	0.4	0.07	0.2	4,793
Credit Constrained	Participation	8.0	7.0	9.0	0.5	0.06	0.3	4,793
Debt to asset ratio	Median	22.7	20.0	25.4	1.4	0.06	1.9	4,793
Debt to income ratio	Median	65.9	54.3	77.5	5.9	0.09	34.9	4,793
Debt Service to income ratio	Median	12.2	11.3	13.1	0.4	0.04	0.2	4,793
Mortgage debt service to income	Median	13.1	12.0	14.2	0.5	0.04	0.3	4,793
Loan to value of HMR ratio	Median	47.1	44.7	49.5	1.2	0.03	1.5	4,793
Net liquid assets to income ratio	Median	8.1	6.7	9.5	0.7	0.09	0.5	4,793

### 5.2.1.2 Measuring the precision of a wave-on-wave change

Precision estimates have also been calculated for the 2013 wave of the HFCS. When measuring the year on year change of a statistic, consideration must be given to the variance of the statistic in each year. We measure the change in a statistic (Y) simply as:

$$\Delta Y = Y_T - Y_{T-1}$$

The variance of the change is:

$$VAR(\Delta Y) = VAR(Y_T) + VAR(Y_{T-1}) - 2COV(Y_T, Y_{T-1})$$

To see if the change is significant, the 95% confidence interval (CI) for the change can be calculated using the formula:

$$95\%CI = \Delta Y \pm 1.96\sqrt{VAR(\Delta Y)}$$

If the 95% CI (i.e. a range) contains 0 then we can conclude that the year on year difference is statistically no different than 0 (or the change is not *statistically significant*).

As the 2013 and 2018 samples are independent the covariance is equal to zero.

Table 5.2.1.2 presents the wave-on-wave (WOW) changes between 2013 & 2018 along with the relevant confidence intervals.

Table 5.2.1.2

Measuring the statistical significance wave on wave change, Change 2013/2018						
Variable	Statistic	Diff	Var_Diff	SE_Diff	95% CL	
					LCL	UCL
Net Wealth	Median	75,800	14,881,976	1,784	63,980	87,620
Net Wealth	Mean	137,900	112,477,947	5,826	109,949	165,851
Gross Wealth	Median	63,400	10,647,167	1,522	53,480	73,320
Gross Wealth	Mean	129,000	181,109,740	7,925	95,477	162,523
Household Main Residence (HMR)	Participation	-1.7	0.0	0.0	-1.7	-1.7
Land	Participation	-1.9	-0.1	-0.1	-3.7	-0.1
Other Real Estate Property	Participation	-0.2	0.0	0.0	-1.8	1.4
Self Employment Business Wealth	Participation	-2.5	0.2	0.1	-4.5	-0.5
Vehicles	Participation	-3.7	0.1	0.0	-5.5	-1.9
Valuables	Participation	18.0	-0.7	-0.3	14.8	21.2
Savings	Participation	6.0	-0.1	-0.1	4.7	7.3
Bonds or Mutual Funds	Participation	2.5	0.1	0.1	1.2	3.8
Shares	Participation	-2.7	0.7	0.5	-4.9	-0.5
Voluntary Pension	Participation	5.8	0.2	0.2	4.3	7.3
Other Financial Asset	Participation	-0.4	0.0	0.0	-1.6	0.8
Mortgage on HMR	Participation	-7.8	0.0	0.0	-9.4	-6.2
Mortgage on Other Property	Participation	1.4	0.0	0.0	0.3	2.5
Non-mortgage loans	Participation	0.8	0.5	0.3	-1.6	3.2
Overdraft	Participation	-1.4	0.2	0.2	-2.9	0.1
Credit Card	Participation	-4.8	0.7	0.4	-7.1	-2.5
Household Main Residence (HMR)	Median	100,000	-20,695,756	-1,865	84,401	115,599
Land	Median	-29,500	47,946,557	892	-104,023	45,023
Other Real Estate Property	Median	100,600	362,875,754	15,330	61,514	139,686
Self Employment Business Wealth	Median	9,300	3,955,817	923	3,223	15,377
Vehicles	Median	2,000	53,446	140	1,437	2,563
Valuables	Median	1,800	94,670	179	1,028	2,572
Savings	Median	500	42,856	98	-124	1,124
Bonds or Mutual Funds	Median	-2,000	2,413,376	549	-8,145	4,145
Shares	Median	6,000	2,376,617	1,101	2,641	9,359
Voluntary Pension	Median	4,900	19,576,916	2,517	-6,428	16,228
Other Financial Asset	Median	8,000	6,576,669	2,166	2,831	13,169
Mortgage on HMR	Median	-4,100	-4,206,512	-484	-16,167	7,967
Mortgage on Other Property	Median	13,900	192,890,657	7,321	-24,000	51,800
Non-mortgage loans	Median	1,200	181,244	278	217	2,183
Overdraft	Median	-200	420	3	-372	-28
Credit Card	Median	-100	37,871	144	-516	316
Applied for credit	Participation	2.5	0.6	0.3	0.1	4.9
Refused or Reduced Credit	Participation	-11.7	0.0	0.0	-12.7	-10.7
Not Applied for Credit	Participation	-5.9	-0.1	-0.1	-7.3	-4.5
Credit Constrained	Participation	-6.7	0.0	0.0	-8.2	-5.2
Debt to asset ratio	Median	-15.0	-0.4	-0.1	-19.0	-11.0
Debt to income ratio	Median	-34.5	2.1	0.2	-50.6	-18.4
Debt Service to income ratio	Median	-2.3	0.1	0.1	-3.3	-1.3
Mortgage debt service to income	Median	-2.7	0.2	0.2	-3.9	-1.5
Loan to value of HMR ratio	Median	-26.4	-5.2	-1.4	-32.0	-20.8
Net liquid assets to income ratio	Median	0.6	0.1	0.1	-1.2	2.4

WOW change is significant	WOW Change is not significant
---------------------------	-------------------------------

#### *5.2.1.3 Comparing the HFCS Sample size with other CSO household samples*

To get an idea of the level of precision and robustness possible from the HFCS sample, it is worth comparing the achieved HFCS sample (4,793 households) with some other household samples conducted by the CSO. By far the largest household sample conducted by the CSO is the Labour Force Survey (LFS) sample. The LFS is a quarterly sample and each quarter 80% of the households were in the sample the previous quarter. This level of overlap ensures that the quarter-on quarter changes in the LFS are measured with increased precision due to the covariance of the sample in a quarter compared to the previous one. The LFS had an achieved sample of 14,400 in Q2 2019.

The Household Budget Survey (HBS) sample, 2015 achieved a sample of 6,839 households and the SILC 2018 achieved a sample of 4,388 households. The HFCS 2013 achieved a sample of 5,545 households. All of these samples are cluster samples and size alone is not a good measure of precision. Other factors to consider are the homogeneity of the clusters (within), the benefits from stratification and the variables being measured.

#### *5.2.1.4 Representivity*

The sample is designed to be a randomly selected cluster sample with each household in the target population having an equal and known probability of selection. Non-response has the potential to introduce bias into the sample. HFCS sample implementation procedures are designed to minimise non-response. The sample is designed for a full-time field force of 100 interviewers. Adequate monitoring and management of the field-force availability is critical in assuring a high-quality representative sample. An on-going issue with all CSO household samples is the availability of field interviewers. When any of the interviewers are not available due to holidays, sickness or retirement, the interviewers are replaced by temporary interviewers (back-ups) whenever possible.

As the HFCS uses an oversample of wealthier households, described in more detail in section 3.6.2, these households will have higher representation in the dataset than what would be expected if no oversample was used. The method of choosing the oversample changed between 2013 and 2018 with the 2018 method being more effective at selecting wealthier households. This should be noted when directly comparing 2013 representivity with 2018.

Table 5.2.1.4a

Classification	Achieved Sample Numbers					
	Households in the Sample*			Individuals in the Sample		
	2013	2018	Change	2013	2018	Change
State	5,419	4,793	-626	14,546	12,778	-1,768
Male	2,509	2,121	-388	7,242	6,311	-931
Female	2,910	2,672	-238	7,304	6,467	-837
0-15	0	0	0	3,610	2,892	-718
16-64	4,347	3,306	-1,041	9,267	7,567	-1,700
65+	1,072	1,487	415	1,669	2,319	650
Eastern & Midland	2,665	2,572	-93	7,209	7,032	-177
Southern	1,770	1,434	-336	4,763	3,736	-1,027
Northern & Western	984	787	-197	2,574	2,010	-564
1 adult aged 65+	472	645	173	472	645	173
1 adult aged <65	893	562	-331	893	562	-331
2 adults, at least 1 aged 65+	549	787	238	1,098	1,574	476
2 adults, both aged <65	915	638	-277	1,830	1,276	-554
3 or more adults	573	574	1	2,000	2,026	26
1 adult with children aged under 18	293	176	-117	800	493	-307
2 adults with 1-3 children aged under 18	1,255	995	-260	4,906	3,989	-917
Other households with children aged under 18	469	416	-53	2,547	2,213	-334
Owner-occupied	3,803	3,616	-187	10,619	9,642	-977
Rented or rent free	1,616	1,177	-439	3,927	3,136	-791
Less than 20	1,102	838	-264	1,663	1,112	-551
20-39	998	928	-70	2,469	2,052	-417
40-59	1,035	907	-128	2,935	2,621	-314
60-79	1,083	976	-107	3,272	3,026	-246
80-100	1,201	1,144	-57	4,207	3,967	-240
Under 35	1,089	539	-550	7,199	5,469	-1,730
35-44	1,294	941	-353	2,274	1,748	-526
45-54	1,082	928	-154	1,870	1,689	-181
55-64	882	898	16	1,534	1,553	19
65+	1,072	1,487	415	1,669	2,319	650
At work	2,998	2,502	-496	5,760	5,246	-514
Unemployed	674	223	-451	1,339	442	-897
Home duties	534	519	-15	948	850	-98
Retired	991	1,269	278	1,511	1,927	416
Other	222	280	58	5,078	4,313	-765
Under 16/Unknown	38	0	-38	3,687	3,007	-680
Primary or below	599	672	73	1,041	1,107	66
Lower secondary	852	601	-251	1,947	1,435	-512
Higher secondary	1,088	854	-234	2,673	2,296	-377
Post leaving cert	804	527	-277	1,519	989	-530
Third level non degree	576	269	-307	1,002	474	-528
Third level degree or above	1,462	1,870	408	2,677	3,470	793

\* by household reference person

Table 5.2.1.4a

Achieved Sample Composition				
Classification	Households in the Sample*		Individuals in the Sample	
	2013	2018	2013	2018
State	100%	100%	100%	100%
Male	46%	44%	50%	49%
Female	54%	56%	50%	51%
0-15	0%	0%	25%	23%
16-64	80%	69%	64%	59%
65+	20%	31%	11%	18%
Eastern & Midland	49%	54%	50%	55%
Southern	33%	30%	33%	29%
Northern & Western	18%	16%	18%	16%
1 adult aged 65+	9%	13%	3%	5%
1 adult aged <65	16%	12%	6%	4%
2 adults, at least 1 aged 65+	10%	16%	8%	12%
2 adults, both aged <65	17%	13%	13%	10%
3 or more adults	11%	12%	14%	16%
1 adult with children aged under 18	5%	4%	5%	4%
2 adults with 1-3 children aged under 18	23%	21%	34%	31%
Other households with children aged under 18	9%	9%	18%	17%
Owner-occupied	70%	75%	73%	75%
Rented or rent free	30%	25%	27%	25%
Less than 20	20%	17%	11%	9%
20-39	18%	19%	17%	16%
40-59	19%	19%	20%	21%
60-79	20%	20%	22%	24%
80-100	22%	24%	29%	31%
Under 35	20%	11%	49%	43%
35-44	24%	20%	16%	14%
45-54	20%	19%	13%	13%
55-64	16%	19%	11%	12%
65+	20%	31%	11%	18%
At work	55%	52%	39%	41%
Unemployed	12%	5%	9%	3%
Home duties	10%	11%	6%	7%
Retired	18%	26%	10%	15%
Other	4%	6%	35%	34%
Under 16/Unknown	1%	0%	25%	24%
Primary or below	11%	14%	7%	9%
Lower secondary	16%	13%	13%	11%
Higher secondary	20%	18%	18%	18%
Post leaving cert	15%	11%	10%	8%
Third level non degree	11%	6%	7%	4%
Third level degree or above	27%	39%	18%	27%

\* by household reference person

### 5.2.2 Non-Sampling Effects.

In addition to known sampling errors, any survey will be subject to other non-sampling errors; for example, measurement errors arising from different interviewing techniques or comprehension of questions. Non-sampling error is far more difficult to measure than sampling error and no formal estimate of non-sampling error is available in HFCS.

Information on the interviews is collected and analysed to help minimise non-sampling effects (including, for example, when interviews were conducted and their duration). This information is compared across the interview team to ensure no unusual variation in interviewer performance exists. Co-ordinators, as an additional check on the quality of the interviewer's work, call back to some households to check the quality of the collected data.

No formal evaluation of sources of error is available, although measures are in place to minimise error. The quality of the data collected is improved using regular field staff training and debriefings. Comprehension errors – there are terms used in the survey that may not be understood by all respondents, but this is unavoidable in such a survey. Interviewers are provided with a book of definitions that list unfamiliar terms and their meanings with references to the question where the term is used.

#### *5.2.2.1 Quality of the Data Sources used (other than survey register)*

Measurement errors in the overall levels of individual respondent's employment income and social welfare income have been reduced due to the reliability of the administrative data from Revenue and DEASP. There are some cases where a match cannot be found in these administrative sources. This may be due to CSOPPSN coding errors such as incorrect PPSN provided, possible misclassification of employment status in survey response, or error in the register. (The CSOPPSN is a unique number derived from the PPSN used to link data. This number is derived and managed by the CSO's Administrative Data Centre (ADC) to ensure added security and confidentiality around individual's data.) The Revenue and DEASP registers are considered reliable and of high quality. The same can be said of DAFM datasets in relation to animal movements and farm payments, which are used to estimate livestock value and farm income.

There were various levels of success with matching to other administrative data sources. The HFCS dataset contains households that own other property that is rented but these households are not in the residential tenancies board (RTB) dataset. The same issue arose when matching to SUSI and HAP datasets. The reasons for this remain unclear.

### 5.2.2.2 Register Coverage

The sampling frame is not a household register. The sampling frame is a combination of the 2016 Census file and An-Post's GeoDirectory (see <https://www.geodirectory.ie/> ). The vast majority of dwellings in Ireland are included in the frame.

### 5.2.2.3 Non-response (Unit and Item)

Please see section 4.2 for more information on item non-response.

There were 4,793 respondent households and a response rate of 45.1% when vacant properties and properties that were not attempted are excluded. No interview was attempted at 15% of properties due to resourcing issues.

**Table 5.2.2.3 Summary of outcomes**

Status	Number of households
Complete Interviews	4,759
Partial Interview	59
No contact with anyone at sampled dwelling	2,014
Contact made at sampled dwelling/household, but not with any responsible resident known to live at the address	18
Refusal at introduction/before interview (either by desired respondent or by proxy)	3,255
Away / at hospital during survey period	124
Physically or mentally unavailable/incompetent/ Ill at home during survey period	112
Language barrier	33
Other non-response	101
Not attempted	1,927
Inaccessible	116
Unknown whether address contains residential housing; other unknown eligibility	41
Non-residential address/ business purpose / Communal establishment/institution	12
Vacant /empty	604
Address occupied, but no resident household (not the main residency – it is only used as a secondary home)	25

To minimise non-response every household is revisited at least three times to get some response from occupied household. In many cases, households that are difficult to contact are revisited several more times. The DCU team proactively manage the sample and detailed quality reports are produced each week to monitor the progress of the sample implementation. Each quarter, detailed feedback in the form of a report on each interviewer's progress is reviewed. Level of completion payments are also linked to the response rates achieved by interviewers.

The sample design is based on the availability of 100 permanent interviewers and 10 field coordinators/supervisors. In 2018 there was an additional team of 9 interviewers hired temporarily to cover the oversample. In recent years, sample implementation has suffered from a shortage of interviewers. Back-up interviewers are used whenever possible to cover areas where no permanent interviewer is available.

Certain households in apartment blocks and gated communities are proving more and more difficult to access.

#### *5.2.2.4 Measurement Errors*

The HFCS questionnaire is based on the template questionnaire provided by the HFCN. Questions are worded as closely as possible to those provided in the template allowing for linguistic and national distinctions. As such, there may be terms used in the questionnaire that are unfamiliar to respondents. Interviewers were provided with a dictionary of financial terms used in the questionnaire so as to familiarise themselves with meanings and definitions of any unusual terms that may be questioned by the respondent.

Various edit checks are performed on selected variables in the survey instrument as data is being entered. This helps to prevent miskeying of data while it is being entered.

#### *5.2.2.5 Processing Errors*

Data capture errors are minimised by logic checks and limits on values that are keyed for specific question in the electronic questionnaire at the data collection point. Occupational and Industry coding is performed post-interview by the data collection unit (DCU) using text strings entered by the interviewer.

The HFCS makes use of flag variables which indicate whether a response was valid or not collected due to non-response, survey error, survey design or if the question was skipped due to filtering. The flags also indicate if a response was edited, estimated or derived from administrative data. The flag variables provide a logical test as to the validity of data. Before data is accepted by the HFCN for publication it must pass various validation and quality checks performed by the HFCN team at the ECB. These checks involve examining flag variables for logical consistency and examining outliers for erroneous values. A validation report is provided by the HFCN highlighting inconsistencies or values that need to be confirmed as valid. For 2018, Recommendations within the report were acted upon before the final datasets were submitted to the HFCN for publication.

#### *5.2.2.6 Model-related Effects*

Does not apply.

### 5.3 Timeliness and Punctuality

#### 5.3.1 Provisional Results

No provisional outputs are published.

#### 5.3.2 Final Results

The first sending of datasets to the HFCN was in December 2019. The HFCN then performed validation checks and the final validated datasets were sent in early January 2020 which was within the submission deadlines for the HFCN's March 2020 HFCS publication. Although Ireland's datasets were submitted relatively late, there was quick turnaround from the end of the data collection period in January 2019. Most other countries fieldwork was carried out in 2017.

National results were published and RMFs (Research Microdata Files) made available on 30<sup>th</sup> January 2020. Results published by the CSO were based on data that had no SDC (statistical disclosure control) editing performed on it. Datasets sent to the HFCN contained SDC editing on selected variables.

#### 5.4 Coherence

The income data in the HFCS can be compared to the income collected in the SILC, (Survey on Income and Living Conditions), an annual household survey conducted by the CSO. Comparisons can be seen in the table below. Gross household income includes social welfare payments. As both SILC and HFCS income comes directly from administrative sources, a high level of coherence would be expected. Details of SILC coherence with institutional sector accounts and other data sources can be found in the SILC quality report for 2018 at the following link:

<https://www.cso.ie/en/methods/qualityreports/surveyonincomeandlivingconditions/>

Comparison of HFCS and SILC income	Mean	Median
HFCS gross household income (€)	65,400	47,900
SILC gross household income (€)	64,133	46,678
Difference (%)	2.0	2.6

HFCS data can be compared to the Quarterly Financial Accounts published by the Central Bank of Ireland which contain data on financial assets and liabilities of Irish households. HFCS and QFA are not directly comparable as QFA also includes non-profit institutions serving households (NPISH), non-incorporated enterprises, sole-traders and partnerships which are not large enough to be considered quasi corporations and institutionalized households. Although they cannot be compared directly, QFA figures consist mostly of private household wealth as defined in the HFCS so an approximate comparison can be made. Comparisons between HFCS and QFA for Q4 2018 can be seen in the following table.

HFCS	€bn	QFA Q4 2018	€bn
Sights and savings deposits	40.4	Currency and Deposits	144.0
Bonds	4.7	Securities other than shares	0.8
Shares	13.4	Listed Shares	9.7
Mutual Funds	10.5	Investment Fund Shares	2.7
Loans	114.6	Loans	137.5

There are some improvements in coherence between HFCS and QFA in the 2018 survey compared to the 2013 wave, most notably in deposit amounts and loans. Reasons for differences between HFCS in 2018 and QFA in Q4 2018 remain unclear but, although improved, are consistent with HFCS 2013 differences. (A research paper published in 2018 provides details on differences between 2013 HFCS and QFA here: [https://www.centralbank.ie/docs/default-source/publications/research-technical-papers/11rt18--macro-and-micro-estimates-of-irish-household-wealth-\(cussen-lydon-and-o'sullivan\).pdf?sfvrsn=4](https://www.centralbank.ie/docs/default-source/publications/research-technical-papers/11rt18--macro-and-micro-estimates-of-irish-household-wealth-(cussen-lydon-and-o'sullivan).pdf?sfvrsn=4) ). Differences between deposits and loan amounts may be due to under-reporting by survey respondents which is a trend that is also seen in other countries where HFCS is carried out. Attempts were made in 2018 HFCS to capture more detailed deposit amounts by including separate questions on Post office savings and by asking this block of questions to each adult in the

household rather than just the most financially knowledgeable person. These changes came at the cost of increased response burden but did not have any significant impact on the coherence of deposit amounts with QFA.

## 5.5 Comparability

### 5.5.1 Comparing national statistics over time

An indicator of the representation of the wealthy in the final sample is the “effective oversampling rate of the wealthy” and should be taken into consideration when making comparisons between 2013 and 2018 HFCS data. It indicates the extent to which the share of wealthy households in the sample exceeds their share in the population. A new method of choosing the “wealthy oversample” was designed for the 2018 HFCS. This is outlined in chapter 3.6.2. For HFCS 2013 the oversampling rate for the top 10% wealthy households was 10, for HFCS 2018 it has increased to 72. The interpretation of this figure is as follows: if the share of wealthy households in the net sample is exactly 10%, the effective oversampling rate of the top 10% is 0. If the share of households in the wealthiest decile is 20%, the effective oversampling rate is 100, meaning that there are 100% more wealthy households in the sample than there would be if all households had equal weights.

The 2018 oversampling design has enriched the sample with a higher proportion of households with high asset values, or less common financial assets compared to 2013. A higher effective oversampling rate means that the analyses of wealthy households – and accordingly of aggregate wealth and wealth inequality indicators – are more efficient leading to the assumption that the 2018 HFCS has more precise estimates of wealth compared to the 2013 HFCS.

Another consideration when making comparisons between 2013 HFS data and 2018 data is how missing values due to non-response were imputed. In the 2013 dataset a single imputation was provided for a missing value on selected variables. The imputed value was derived using a hot-decking procedure. In 2018, multiple imputation was used, outlined in chapter 4.4. This method provides five imputations for a missing value on selected variables. The method used in 2018 could be considered as the more reliable method for imputation.

### 5.5.1 Comparing Irish HFCS statistics with other European countries

The HFCN published results for each participating country in March 2020. As part of the submission process, details of deviations from the core variable definitions are provided by each country and subsequently published. Any differences between data collection methods, processing methods and variable interpretations between countries are outlined in the methodological report on the HFCN homepage:

<https://www.ecb.europa.eu/pub/pdf/scpsps/ecb.sps35~b9b07dc66d.en.pdf?8fcb3cd59213bac0784168618a9b5fb3>

## 5.6 Accessibility and Clarity

### 5.6.1 Assistance to Users, Special Analyses

The HFCS 2018 publication is available on the CSO website. Information on methodology is also available on the website. The background notes on the publication provide some detail on the survey.

For the HFCS 2018 publication, a media briefing was held to coincide with the release to enable and commentators to fully understand the data or seek further clarification. Ad-hoc analysis is produced on request.

Access to a Research Microdata Files (RMFs) can be requested from the CSO under the CSO's microdata access policy.

<https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/dataforresearchers/>

### 5.6.2 Revisions

On 4th June 2020 the statistics from the HFCS 2018 publication, including figures available on the Statbank Ireland database, were revised. Due to the nature of the data revision, the majority of figures available from these sources changed from the originally published figures. Information notes were placed in the introduction of the publication on the CSO website along with a link to page detailing the nature of the revision. A pop-up information note was also added to the Statbank tables informing any user of the revisions along with a link to the revision details.

The HFCS for 2018 has a sample size of 4,793 randomly chosen households. In order to provide national results, survey data is weighted to represent the total population of Ireland. Since results were first published in January 2020, new weights were calculated for the HFCS dataset. This was due to coherence issues with other CSO data sources. As population statistics are derived using the weights, they are liable to change if a new weight is used. On the 4th June 2020 revised results for HFCS 2018 were published using the new weights. The recalculated weights incorporate an additional level of calibration, that of home ownership rate by the age of reference person. As a consequence of recalculating the weights, missing values required re-imputation. The sum of weights (i.e. the total number of households in Ireland in 2018) was also revised upwards by approximately 46,000 households.

### 5.6.3 Publications

#### 5.6.3.1 Releases, Regular Publications

- CSO HFCS 2018 publication:
  - <https://www.cso.ie/en/releasesandpublications/ep/p-hfcs/householdfinanceandconsumptionsurvey2018/>
- HFCN Publication
  - <https://www.ecb.europa.eu/pub/pdf/scpsps/ecb.sps36~0245ed80c7.en.pdf?bd73411fbeb0a33928ce4c5ef2c5e872>

#### 5.6.3.2 Statistical reports

The main user of the HFCS data is the Central Bank and any reports making use of the HFCS data can be found on the website: <https://www.centralbank.ie/publication/research-technical-papers>

#### 5.6.3.3 Internet

- CSO HFCS website:
  - <https://www.cso.ie/en/statistics/housingandhouseholds/householdfinanceandconsumptionsurvey/>

- Statbank HFCS 2018 data tables:
  - [https://statbank.cso.ie/px/pxeirestat/Database/eirestat/Household%20Finance%20and%20Consumption%20Survey/Household%20Finance%20and%20Consumption%20Survey\\_statbank.asp?SP=Household%20Finance%20and%20Consumption%20Survey&Planguage=0](https://statbank.cso.ie/px/pxeirestat/Database/eirestat/Household%20Finance%20and%20Consumption%20Survey/Household%20Finance%20and%20Consumption%20Survey_statbank.asp?SP=Household%20Finance%20and%20Consumption%20Survey&Planguage=0)

#### 5.6.4 Confidentiality

The confidentiality of all information provided to the CSO by individual respondents is guaranteed by law under the 1993 Statistics Acts. All CSO office and field personnel become "Officers of Statistics" on appointment and are liable to penalties under this Act if they divulge confidential information to any outside person or body. Extreme precautions are taken to ensure that there are no violations of this principle throughout the survey process. The tablets on which the data was collected are encrypted and contain several layers of password protection. Data are only published in aggregate form and care is taken to ensure that the data are aggregated to avoid the indirect identification of respondents. Confidentiality is also ensured within the anonymised micro-data by using coded variables instead of original values for key characteristics. For example, variables such as income are randomly rounded, variables are categorised and outliers are suppressed or recoded to a maximum or minimum value.

To ensure confidentiality, HFCS processing team do not have direct access to the raw administrative datasets. The ownership of these files rest with the CSO's Administrative Data Centre (ADC). Only selected variables are made available and these variables are only provided for those individuals in the HFCS sample. The CSO assigns a unique number derived from the PPSN to link data. This number is derived and managed by the ADC section to ensure added security and confidentiality around individuals' data.

## 6. Additional Documentation and Publications

Additional documentation relating to the HFCS can be found at the HFCN homepage:

[https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher\\_hfcn.en.html](https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn.en.html)