An Phríomh-Oifig Staidrimh
Central Statistics Office

Standard Report on Methods and Quality for 2020 Survey on Income and Living conditions (EU-SILC)

Standard Report on Methods and Quality for the 2020 Survey on Income and Living conditions (EU-SILC)

This documentation applies to the reporting period:

2020

Last edited: 30/06/2022

CENTRAL STATISTICS OFFICE

Skehard Road, Cork

021 4545000

www.cso.ie

Table of Contents

1 Overview

The primary focus of the Survey on Income and Living Conditions (SILC) is the collection of information on the income and living conditions of different types of households in Ireland, to derive indicators on poverty, deprivation and social exclusion. It is a voluntary (for selected households) survey of private households. It is carried out under EU legislation (Council Regulation No 1177/2003) and commenced in Ireland in June 2003.

Information is collected from households by a team of interviewers using Computer Assisted Personal Interviewing (CAPI) on tablet computers (using a Blaise application).

2 General Information

2.1 Statistical Category

Primary Statistical Survey

2.3 Organisational Unit Responsible, Persons to Contact

SILC is part of the Social and Demographic Statistics Directorate, headed by Richard McMahon, Assistant Director General. The work of the SILC section is divided into two areas – a SILC Data Collection Unit (DCU) and a SILC Report, Analysis and Publication (RAP) unit. Gerry Reilly is the senior statistician over the analysis unit and Fiona O'Riordan is the senior statistician over the SILC 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/

SILC Analysis queries:

Gerry Reilly	Tel: +353 21 453 5700	Email: gerard.reilly@cso.ie
Kathryn Foskin	Tel: +353 21 453 5302	Email: kathryn.foskin@cso.ie
Eva O'Regan	Tel: +353 21 453 5243	Email: eva.oregan@cso.ie
Trish Brew	Tel: +353 21 453 5148	Email: tricia.brew@cso.ie
Lianora Bermingham	Tel: +353 21 453 5665	Email: lianora.bermingham@cso.ie

SILC Data Collection Unit queries:

Fiona O'Riordan	Tel: +353 21 453 5277	Email: fiona.oriordan@cso.ie
Caitriona O'Brien	Tel: +353 21 453 5777	Email: caitriona.obrien@cso.ie
Mark O'Brien	Tel: +353 21 453 5304	Email: mark.obrien@cso.ie

2.4 History, Objectives and Purpose

The EU-Statistics on Income and Living Conditions (EU-SILC) instrument is used as the EU reference source for comparative statistics on income distribution and social inclusion at national and European level. It provides two types of annual data for the 28 European Union countries, Iceland, Norway, Switzerland and Turkey:

- Cross-sectional data pertaining to a given time or a certain time period with variables on income, poverty, social exclusion and other living conditions, and

- Longitudinal data pertaining to individual-level changes over time, observed periodically over a two, three and four-year period.

Across Europe, EU-SILC does not rely on a common questionnaire or a survey but on the idea of a "framework". The latter defines the harmonised lists of target primary (annual) and secondary (every four years or less frequently) variables to be transmitted to Eurostat; common guidelines and procedures; common concepts (household and income) and classifications aimed at maximising comparability of the information produced.

SILC data is collected and compiled under Regulation (EC) No 1177/2003 of the European Parliament and of the Council of 16 June 2003 concerning Community statistics on income and living conditions. Comparability of data between Member States is a fundamental objective. (See Eurostat's Income and Living Conditions homepage for more information http://ec.europa.eu/eurostat/web/income-and-living-conditions/overview .

The official Irish Government approved poverty measure is "consistent" poverty. The Economic and Social Research Institute (ESRI) originally developed the measure of "consistent" poverty in 1987. This measure was further refined and developed in 2007. The National Action Plan for Social Inclusion was updated in February 2017 for the period 2015 – 2017. Progress towards these targets is reported in the Social Inclusion Monitor (SIM) published by the Department of Social Protection. The purpose of the SIM is to report officially on progress towards the national social target for poverty reduction, including the sub-target on child poverty and Ireland's contribution to the Europe 2020 poverty target. (For more information, see https://www.gov.ie/en/collection/156b21-social-inclusion-monitor/)

Prior to EU-SILC, from the period 1994-2004, income, poverty, social exclusion, and standards of living were measured across the European Union (EU) using the European Community Household Panel (ECHP) survey as the main data source. The Living in Ireland Survey (LIS), conducted and compiled by the ESRI, served as the Irish component of the ECHP. (For a more detailed discussion on the differences between the LIS and EU-SILC approaches, see: http://www.cso.ie/en/media/csoie/releasespublications/documents/eusilc/2003/eusilc_2003.pdf and *Reconfiguring the measurement of deprivation and consistent poverty in Ireland*, Maitre B., Nolan B. and Whelan C.T., ESRI, Dublin, 2006).

The SILC survey was launched in 2003. Ireland was one of six member states (Belgium, Denmark, Greece, Ireland, Luxembourg and Austria) and Norway that carried out SILC in 2003. The 2003 results are based on data collected in the 6-month period from June 2003 to December 2003. The results were published in January 2005 (see http://www.cso.ie/en/media/csoie/releasespublications/documents/eusilc/2003/eusilc_2003.pdf).

The start date for the EU-SILC instrument under the Framework Regulation was 2004 for 12 Member States (Belgium, Denmark, Ireland, Greece, Spain, France, Italy, Luxembourg, Austria, Portugal, Finland and Sweden), Estonia, Norway and Iceland. The first official Irish SILC statistics based on twelve months of data were published in December 2005 with 2004 as the reference year. A derogation was provided in the cases of Germany, the Netherlands, the UK and nine of the then ten new Member States (all except Estonia) permitting them to begin in 2005. Bulgaria and Turkey started the full implementation of the EU-SILC instrument in 2006 while Romania and Switzerland began to implement the instrument in 2007. Croatia conducted SILC for the first time in 2011.

CSO's SILC data and derived statistics are used nationally and internationally to also measure income, inequality and social exclusions for other official purposes, for example:

- the United Nations International Children's Emergency Fund's (UNICEF) recent report *Innocenti Report Card 14* used Irish SILC data, see:

  https://www.unicef-irc.org/files/documents/d-3943-RC14_factsheet_FINAL.pdf

- The Review of Ireland, by the United Nations Committee on the Rights of the Child Geneva – 14th January 2016, used CSO's SILC data to measure Ireland's adherence to the UN Convention on the Rights of the Child.
- 2.5 Periodicity

Up until 2019 the SILC income reference period was the 12-month period immediately preceding the sample household's interview date. This resulted in a 24-month income reference period for each annual SILC survey. Commencing with the 2020 SILC publication, the SILC income reference period will be T-1. Furthermore, also up until 2019 SILC was a four-year rotational panel survey, i.e. respondents remained in the survey for four consecutive years, with respondents from wave 1 to 4 in any given year. Given the demand that new regulation puts on precision requirements for key indicators, and a need to boost the sample size, the rotation pattern has been increased to a five-year rotation pattern. Therefore, 2020 is the first year in which five waves have been included in the survey. From 2022 the rotation pattern will be increased to six waves.

SILC is conducted using a rotational sample design, which is outlined in more detail in section 3.6.2. Prior to 2019 there were 4 waves in each year. However, in 2020 a 5th wave was introduced, with the intention of progressing to 6 waves in 2022. The rotational sample design in 2020 results in three additional datasets consisting of:

a) a two-year panel data set that contains households and individuals that are in both the 2020 and 2019 cross-sectional data sets,
b) a three-year panel data set that contains households and individuals that are in the 2020, 2019 and 2018 cross-sectional data sets,
c) a four-year panel data set that contains households and individuals that are in the 2020, 2019, 2018 and 2017 cross-sectional data sets and
d) a five-year panel data set that contains households and individuals that are in the 2020, 2019, 2018, 2017 and 2016 cross-sectional data sets

The four panel datasets are represented schematically in figures 2.5a-d below. The rotational group (RG) indicates the year a household was first selected for the sample. RG5 (Wave 1) households were introduced for the first time in the sample in 2020 and will remain in the sample until 2025. In 2020 RG1 (Wave 5) represents the households that were first introduced into the sample in 2016 and these households were in the sample for the final time in 2020.

Figure 2.5a

The Two-Year Panel Dataset																
Rotational Group	Observations	2020 Dataset			2019 Dataset			2018 Dataset			2017 Dataset			2016 Dataset		
		Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3
RG5	1															
	2															
	3															
RG2	4	2 Year Panel Data Set (2020 and 2019)														
	5															
	6															
RG3	7															
	8															
	9															
RG4	10															
	11															
	12															
RG1	13															
	14															
	15															
RG2	16															
	17															
	18															
RG3	19															
	20															
	21															
RG4	22															
	23															
	24															

Figure 2.5b

The Three-Year Panel Dataset																
Rotational Group	Observations	2020 Dataset			2019 Dataset			2018 Dataset			2017 Dataset			2016 Dataset		
		Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3
RG5	1															
	2															
	3															
RG2	4															
	5															
	6															
RG3	7	3 Year Panel Data Set (2020, 2019 and 2018)														
	8															
	9															
RG4	10															
	11															
	12															
RG1	13															
	14															
	15															
RG2	16															
	17															
	18															
RG3	19															
	20															
	21															
RG4	22															
	23															
	24															

Figure 2.5c

The Four-Year Panel Dataset															
Rotational Group	Observations	2020 Dataset			2019 Dataset			2018 Dataset			2017 Dataset			2016 Dataset		
		Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3
RG5	1															
	2															
	3															
RG2	4															
	5															
	6															
RG3	7															
	8															
	9															
RG4	10	4 Year Panel Data Set (2020, 2019, 2018 and 2017)														
	11															
	12															
RG1	13															
	14															
	15															
RG2	16															
	17															
	18															
RG3	19															
	20															
	21															
RG4	22															
	23															
	24															

Figure 2.5d

The Five-Year Panel Dataset															
Rotational Group	Observations	2020 Dataset			2019 Dataset			2018 Dataset			2017 Dataset			2016 Dataset		
		Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3	Var1	Var2	Var3
RG5	1															
	2															
	3															
RG2	4															
	5															
	6															
RG3	7															
	8															
	9															
RG4	10															
	11															
	12															
RG1	13	5 Year Panel Data Set (2020, 2019, 2018, 2017 and 2016)														
	14															
	15															
RG2	16															
	17															
	18															
RG3	19															
	20															
	21															
RG4	22															
	23															
	24															

2.6 Client

- The public
- Income and Living Conditions Division (F4), Eurostat
- The Technical Advisory Group (TAG), established under the National Action Plan for Social Inclusion 2007-2017
- Department of Social Protection - Social Inclusion Monitor
- Department of Children and Youth Affairs
- United Nations
- Organisation for Economic Co-ordination and Development (OECD)

2.7 Users

A broad range of interested groups in society use EU-SILC statistics. The topics in SILC cover, amongst other things, income, inequality, poverty and social exclusion. It is of interest to economists, social scientists, government departments, policy advocates, central bankers, trade unions and the media. The statistics are used to compare outcomes across several different demographic breakdowns.

Below is a list, not exhaustive, of some of the users of SILC statistics:

- Income and Living Conditions Division (F4), Eurostat
- European Commission, primarily DG Health and Consumers (SANCO), DG Employment, Social Affairs and Inclusion (EMPL) and DG Regional Policy (REGIO).
- The Technical Advisory Group (TAG), established under the National Action Plan for Social Inclusion 2007-2017
- Department of the Taoiseach
- Department of Social Protection - Social Inclusion Monitor
- Department of Children and Youth Affairs
- Department of Finance
- Department of Health
- Department of the Environment, Community, & Local Government
- Department of Education and Skills
- Department of Justice and Equality
- Department of Public Expenditure and Reform
- Department of Agriculture, Food and the Marine
- The Central Bank of Ireland
- United Nations (International Labour Organisation)
- Organisation for Economic Co-ordination and Development (OECD)
- Euromod
- National Economic & Social Development Office
- Pobal
- Irish Human Rights and Equality Commission
- The Housing Agency
- National Disability Authority
- Focus Ireland
- Economic and Social Research Institute
- European Anti-Poverty Network Ireland
- Nevin Economic Research Institute (NERI)
- Institute of Public Health Ireland
- Health Service Executive
- TUSLA
- Teagasc
- The Irish Farmers' Association
- The Irish Cattle & Sheep Farmers' Association (ICSA)
- Irish Government Economic and Evaluation Service (IGEES)
- The Irish Social Science Data Archive (ISSDA)
- Social Justice Ireland
- Society of St. Vincent de Paul
- Simon Communities in Ireland
- Barnardos, Ireland
- Age Action Ireland
- Alone

- ICTU
- Threshold
- IBEC
- Publicpolicy.ie
- Low Pay Commission
- Pension Authority
- Members of the Oireachtas, Councillors, MEPs and other members of political parties and groupings
- County Councils
- Local, national and international media
- Other research agencies and advocacy groups interested in monitoring poverty, income and social exclusion.
- Other CSO divisions and surveys, including: Quarterly National Household Survey, Irish Health Survey, Household Budget Survey, National Accounts etc.
- Economic and social science researchers based in national and international universities and research institutes.

2.8 Legal basis

SILC is a voluntary survey of randomly selected private households. The survey is carried out to meet Ireland's commitments under specific EU legislation. The central piece of legislation, which establishes EU statistics on income and living conditions (EU-SILC), was the framework Council Regulation No 1177/2003, issued in June 2003. In 2021 the European legislative basis (Regulation No 1177/2003) to produce statistics on income and living conditions has been repealed by Regulation 2019/1700. This new framework regulation establishes a common framework for European statistics relating to persons and households, based on data at individual level collected by samples. For more information see https://ec.europa.eu/eurostat/web/income-and-living-conditions/legislation. The 2020 targeted module relates to 'over indebtedness, consumption and wealth as well as labour'. In addition, each year, additional variables are collected as part of a non-binding European Statistical System Committee (ESSC) Agreement.

Over and above our strict legal obligations, the CSO produces and disseminates key national statistics for the Department of Employee Affairs and Social Protection's SIM report and other national poverty reduction monitors. It should be noted that there is no formal legal basis for the dissemination of national statistics other than meeting Ireland's commitments under specific EU legislation outlined above.

3 Statistical Concepts, Methods

3.1 Subject of the Statistics

SILC is concerned with the measurement of income and living conditions of both households and individuals in Ireland. SILC collects timely cross-sectional and longitudinal data on income and on the level and composition of poverty and social exclusion 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. Up until 2019 in defining a 'household', the national SILC used an 'address' concept (i.e. all persons living at the same address treated as a single household). From 2020 the national SILC definition of a household will use a shared income and expenditure concept. Flatmates or housemates that do not share expenditure will now be considered as separate households, and students living away from home and substantially supported by their parents will be considered members of the parent household.

Household data is collected from the nominated head of household 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 private dwellings, taken from the population of private dwellings. A dwelling may contain multiple 'households', and all houses within the dwelling are invited to participate. If a household is to be included then data is collected on everyone within the household. The sample excludes individuals living in institutions or communal accommodation and persons of no fixed abode.

Four main types of unit data collected are:

i. Variables measured at the household level. These variables are collected from the head of household;

ii. Information on household size, household composition and the basic characteristics of household members are also collected from the head of household;

iii. Income and other more complex variables termed 'basic variables' (education, basic labour information and second job) measured at the personal level, but normally aggregated to construct household-level variables. These variables are collected by personal interview from all household members aged 16 and over; and

iv. Variables collected and analysed at the person-level 'the detailed variables' (health, access to health care, detailed labour information, activity history and calendar of activities'). These variables are collected by personal interview from all household members aged 16 and over.

3.3 Data Sources

The annual SILC survey is the main data source for SILC. Information is collected from the head of household and all household members, aged 16 and over, on tablet computers by trained

interviewers, using Computer-Assisted Personal Interview (CAPI) or Computer-Assisted Telephone Interview (CATI) software.

In addition, the CSO has access to various administrative micro data sources. These include the Department of Social Protection (DSP) social welfare data and Revenue Commissioners' employee and self-employed income data. The Administrative Data Centre (ADC) division within the CSO securely manage the ownership of these data sources and SILC's Data Collection Unit (DCU) has only limited access to the data. The CSO works with the DSP and Revenue, on a continuing basis, to ensure good quality data is available on a timely basis.

Other sources of administrative data include:

- Direct payments paid to farmers e.g. Common Agriculture Policy (CAP) entitlements provided by the Department of Agriculture, Food and the Marine (DAFM) thus enabling the CSO to capture these payments as part of the SILC income calculation.[1]
- Student Universal Support Ireland (SUSI) provides Ireland's single national awarding authority for all higher and further education grants.[2]
- Local Property Tax (LPT) data which is liable on all residential properties in Ireland.[3]
- Residential Tenancies Board (RTB) provides private residential rental income data.[4]
- Housing Assistance Payment (HAP) provides social housing support provided by all local authorities.[5]

The CSO is continuously expanding the use of administrative data for SILC.

3.4 Reporting Unit/Respondents

All 'usual residents' in responding households are surveyed (including students living away from home and substantially supported by parents). Information on the household and certain household members' information is collected from the designated head of household.

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 interviewers using face-to-face Computer-Assisted Personal Interviewing (CAPI) on tablet computers (using a Blaise application). The duration of the fieldwork is six months. In Ireland, the fieldwork begins in January and runs until the end of June.

[1] https://www.ifa.ie/basic-payment-scheme/
[2] https://susi.ie/
[3] https://www.revenue.ie/en/property/local-property-tax/index.aspx
[4] https://www.rtb.ie/
[5] http://hap.ie/

Due to the impact of the COVID-19 pandemic in March 2020 SILC interviews were moved to Computer Assisted Telephone Interviews (CATI) in April 2020. Furthermore, the data collection period needed to be extended, with wave 5 interviews conducted in December 2020 into early January 2021 to help achieve the required sample size.

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 extensive editing and data cleaning is conducted. Once a full dataset is available, the cross-sectional weighting of the sample is completed around March. Revenue employee and self-employed data, along with social welfare payments data from the DSP are also entered into the DMS system. A key determinant of the timeliness of SILC is the availability of DSP and Revenue data.

A 'clean' dataset was provided to the SILC analysis team in mid-October 2021 and this dataset is finalised after extensive macro-editing. Quality approved micro-data was transmitted to Eurostat by end of November 2021, after which the national SILC statistics are published shortly after.

In October 2019, the European Parliament and the Council adopted Regulation 2019/1700 establishing a common framework for European statistics relating to persons and households, based on data at individual level collected from samples (IESS Regulation). The Regulation and its implementing and delegated acts provide for multiple changes to EU-SILC data collection from 2021.

3.6 Characteristics of the Sample/Process

3.6.1 Population and Sampling Frame

The sampling frame for 2020 SILC is the register of all private dwellings occupied on the night of the 2016 Census of Population for waves 1, 2 and 3 and the 2011 Census of Population for waves 4 and 5. There was a change for the new sampling frame for 2018 and the Household Survey Collection Unit (HSCU) moved away from using Small Areas (for the 2011 Census sampling frame) to using Census Enumeration Areas (EAs) as blocks (for the 2016 Census sampling frame). EAs are designed by Census for their enumeration of the Census and generally comprise of 2/3 small areas. There were 4,660 EAs on the Census 2016 sampling frame, however the HSCU excludes all blocks that have been previously selected in any CSO household sample over the previous three years. The reasons for excluding these dwellings are twofold:

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

The Census team also provided a list of all the Island communities to be 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[6]) 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 SILC in its complex sample design. The sample frame also has a limited number of categorical variables available for quality-assuring the design sample. 'Level of education' was the variable used as a proxy for the SILC design variables of the 'at risk of poverty' indicator and income.

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 dwellings is taken from the population and data is then collected on everyone within a 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.

3.6.2 Sampling Design

The SILC sample is a rotational sample. In 2014, SILC introduced both a new sample and a new sampling methodology. The sample is designed to ensure every household in the target population has a known, non-zero and equal probability of being included in the sample.

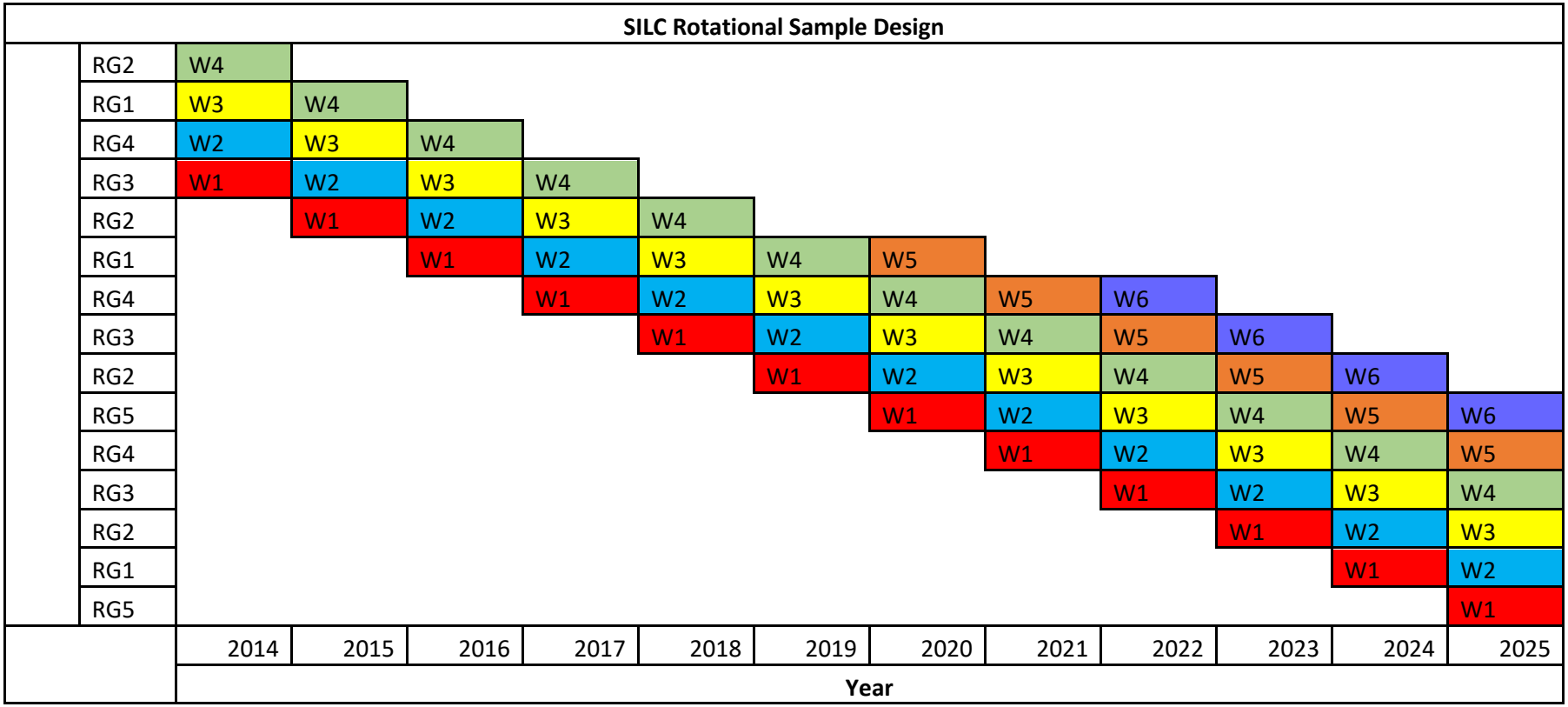
There is both a cross-sectional and a longitudinal element to the SILC sample. Figure 3.6.2 illustrates the rotational sample design adopted by the CSO. Households interviewed for the first time are Wave 1 households. Households who are interviewed in subsequent years are Wave 2 households (2nd year in the sample), Wave 3 households (3rd year in the sample), Wave 4 (4th year in the sample) or Wave 5 (5th and final year in the sample).

Up until 2019 SILC was a four-year rotational panel survey, i.e. respondents remained in the survey for four consecutive years, with respondents from Wave 1 to 4 in any given year. Given the demand that new regulation puts on precision requirements for key indicators, and a need to boost the sample size, the rotation pattern has been increased to a five-year rotation pattern. Therefore, 2020 is the first year in which five waves have been included in the survey. From 2022 the rotation pattern will be increased to six waves.

The rotational group (RG) indicates the year a household was first selected for the sample. In 2020 RG1 (Wave 5) represents the households that were first introduced into the sample in 2016 and these households were in the sample for the final time in 2020. RG5(Wave 1) households were introduced for the first time in the sample in 2020 and will remain in the sample until 2025.

[6] The 31 administrative counties as of 2016.

Figure 3.6.2


SILC Rotational Sample Design
RG2 W4
RG1 W3 W4
RG4 W2 W3 W4
RG3 W1 W2 W3 W4
RG2 W1 W2 W3 W4
RG1 W1 W2 W3 W4 W5
RG4 W1 W2 W3 W4 W5 W6
RG3 W1 W2 W3 W4 W5 W6
RG2 W1 W2 W3 W4 W5 W6
RG5 W1 W2 W3 W4 W5 W6
RG4 W1 W2 W3 W4 W5
RG3 W1 W2 W3 W4
RG2 W1 W2 W3
RG1 W1 W2
RG5 W1
2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
Year

3.6.2.1 Sample design

In 2014, a new sampling methodology was introduced to improve the robustness of the SILC Sample. The sample methodology takes into account response rates and attrition rates to ensure the CSO achieves the required effective sample size required by Eurostat. The following is an overview of the revised SILC sample methodology:

- The SILC sample is a multi-stage cluster sample resulting in all occupied households in Ireland having an equal probability of selection.
- The sample is designed to meet Eurostat's cross-sectional and longitudinal effective sample size requirements. Eurostat require for Ireland a minimum effective sample size[7] of 3,750 households in the cross-sectional sample. Eurostat require for Ireland a minimum effective sample size of 2,750 households in the longitudinal sample.
- The sample is stratified by LAU level 1 and quintiles derived from the Pobal HP Deprivation Index.
- The HSCU sample 1,200 blocks from the total population of blocks available using a probability proportional to size (PPS) methodology. The number of occupied households within a block on Census night determines the size of the block.
- HSCU provide a datafile containing the selected blocks and the address listing of 100 households within the selected blocks to SILC DCU. SILC DCU then selects the SILC sample from the datafile from HSCU.
- Households within the selected blocks are then selected using a simple random sampling without replacement (SRS) for inclusion in the SILC sample.

3.6.3 Sample Implementation

The data collection period spans the 6 months of the year from January to June. The sample allocation is distributed evenly throughout the surveying period. The sample design is based on the availability of 100 permanent interviewers and 10 field coordinators/supervisors[8]. 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. Each field co-ordinator manages 10 field interviewers. Permanent field interviewers are allocated 16 SILC 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.

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. Basic household information is collected from all sample households including non-responding households. The SILC DCU team 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

[7] Eurostat are moving away from specifying precision requirements in terms of effective sample sizes and will in the future specify precision requirements in terms of the standard error of key variables of interest.
[8] These field resources are shared with other household surveys.

interviewer's level. It is proving increasingly difficult to gain access to certain households in apartment blocks and gated communities. This is especially true in Wave 1 interviews when no phone or e-mail contact information is available.

Each quarter, the Field Administration Unit (FAU) organises one-day training meetings with each of the ten interviewer groups. SILC DCU and occasionally SILC Analysis participate in these training days where modifications to the questionnaire, new SILC modules and any issues around the sample implementation are discussed. These training days form part of the open communication policy that exists between the SILC interviewer field force and the SILC DCU team.

3.7 Survey Technique/Data Transfer

The annual SILC survey is the main data source for SILC. Information is collected from all household members on tablet computers by trained interviewers, using Computer-Assisted Personal Interview (CAPI) software. In March 2020, interviewers were unable to conduct interviews in person due to COVID-19 restrictions, and began doing interviews over the telephone using the CAPI questionnaire. 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 daily basis using the REACH interface.

In addition, the CSO has two primary micro data sources. These are the Department of Employee Affairs and Social Protection (DEASP) social welfare data and Revenue Commissioners' employee and self-employed income data. The CSO continues to work with DEASP and Revenue to ensure data is available on a timely basis.

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

3.8 Questionnaire (including explanations)

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

- Gender
- Nationality
- Age
- Income
- Material deprivation
- social exclusion
- Economic status
- Industry of employment
- Employment status
- Occupation
- Education level
- Health
- Housing conditions
- Child care
- Quality of life
- Access to services
- Well-being

The average time taken to fill out the household dimension of the questionnaire is 19 minutes. The personal interviews for those aged 16 and over take on average 12.5 minutes. The element of the questionnaire that relates to individuals aged under 16 (completed by the head of household) takes on average two minutes. Therefore, the overall time to complete the questionnaire is a function of the household composition. We can conclude that on average a single occupancy household will complete the SILC questionnaire in approximately half an hour.

The questionnaire is reviewed annually. As part of the review the previous module(s) is dropped and the new module is added to the questionnaire. At this stage, any updates to the questionnaire are also implemented. The CSO SILC team completed a full questionnaire review in 2019 to guarantee the integrity of the questionnaire, to standardise questions and answers across national household surveys and to remove any redundant questions.

3.8.1 SILC 2020 Questionnaire Review and Standardised Variables

The CSO SILC team completed questionnaire review in 2019 to guarantee the integrity of the questionnaire, to standardise questions and answers across national household surveys and to remove any redundant questions from the 2020 SILC questionnaire.

Eurostat issued implementing guidelines for 38 social variables common to the several datasets under Regulation (EU) 2019/1700. The standardised variables are

(1) Sex
(2) Age in completed years
(3) Household grid
(4) Partners living in the same household
(5) Household size
(6) Household type
(7) Tenure status of the household
(8) Main activity status (self-defined)
(9) Full- or part-time main job (self-defined)
(10) Permanency of main job
(11) Educational attainment level
(12) Participation in formal education and training (student or apprentice) in
(13) Level of the current or most recent formal education or training activity
(14) Country of birth
(15) Country of main citizenship
(16) Country of birth of the father
(17) Country of birth of the mother
(18) Country of residence
(19) Duration of stay in the country of residence in completed years
(20) Region of residence
(21) Degree of urbanisation
(22) Status in employment in main job
(23) Economic activity of the local unit for main job
(24) Occupation in main job
(25) Self-perceived general health
(26) Long-standing health problem
(27) Limitation in activities because of health problems
(28) Net current monthly household income

(29) Existence of previous employment experience
(30) Size of the local unit for main job
(31) Supervisory responsibilities in main job
(32) Year in which the person started working for his or her current employer or as self-employed in main job
(33) Year when the highest level of education was successfully completed
(34) Field of the highest level of education successfully completed
(35) Interviewing mode used
(36) Nature of participation in the survey
(37) Stratum
(38) Primary sampling unit

In order to satisfy implementing guidelines related to these standardised variables, some questions in the 2020 SILC questionnaire were changed. For example, standardised variable No 29 'Existence of previous employment experience' has now 3 answer modalities with an associated definition for 'occasional work'

(1) Person has never been in employment
(2) Person has employment experience limited to occasional work
(3) Person has employment experience other than occasional work

In 2020 changes were made to questions on 'previous employment experience' in the national SILC questionnaire. These changes were required to ensure compliance with the implementing guidelines.

Detailed guidelines on EU-SILC are published each year by Eurostat. The guidelines are available in Doc 065 'Description of target variables' and can be found on CIRCABC:
https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp

3.9 Participation in the Survey

Ireland's commitment to provide SILC data to Eurostat is governed by the regulations outlined in Section 2.8. However, it is worth noting that 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. Income data is collected at individual level but is aggregated up to household level before being distributed evenly, based on equivalence scales (see 3.10.1.6), amongst each member of the household. See 3.10.1.7 for more details. Income is analysed at both household & equivalised individual level. The at risk of poverty and enforced deprivation rates are analysed at the personal level.

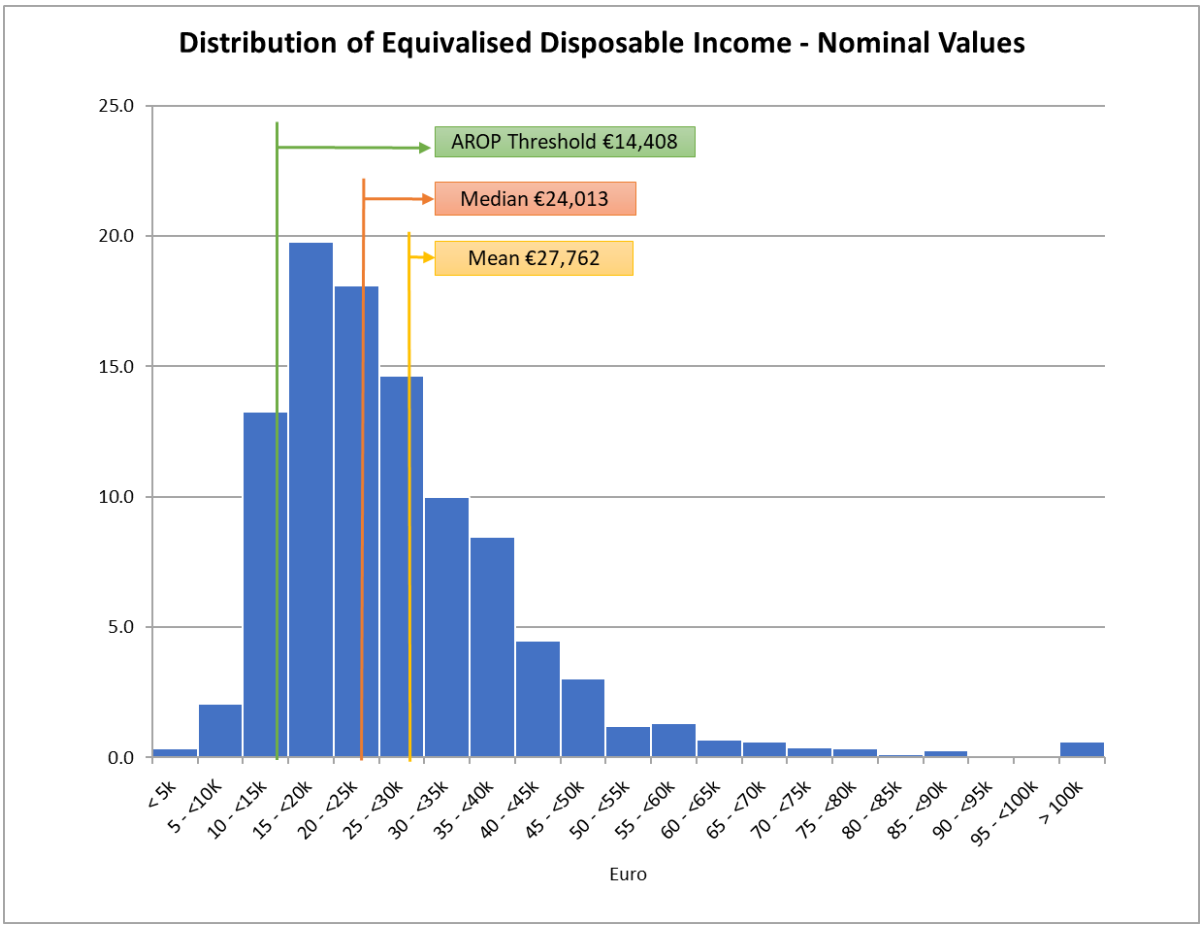
The primary analytical variable is household income and the primary characteristic of the variable analysed is the distribution. Income is positively skewed and not normally distributed, see Figure 3.10a. Therefore, it is more appropriate to summarise the central tendency of income using the median. The mean is provided for comparison purposes. In 2020, approximately 63% of individuals had equivalised disposable incomes below the mean. Income is analysed at both real (adjusted for inflation) and nominal values.

Income statistics are primarily presented at national level, but they are also broken down by year and the following demographic characteristics;

- Sex
- Age Group
- Principal Economic Status
- Highest Education Level Attained
- Household Composition
- Number of Persons at Work in the Household
- Tenure Status
- Urban/Rural Location
- Region

Average income is also broken down by the composition of income. Further distribution analysis of income is conducted through the calculation of the Gini coefficient, the quintile share ratio (QSR), quintile analysis and decile analysis.

Figure 3.10a



The main poverty and social exclusion statistics presented are the 'at risk of poverty' (AROP) rate, the deprivation rate and the consistent poverty rate. A number of other key national indicators of poverty and social exclusion are also presented. For full details of the results published, see the electronic release at:

https://www.cso.ie/en/statistics/socialconditions/surveyonincomeandlivingconditionssilc/

All previously published SILC statistics are available on the CSO's Databank.

2004-2019: https://data.cso.ie/product/silc

2020 onwards: https://data.cso.ie/product/silc2020

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

3.10.1 Definitions of Income

3.10.1.1 Gross income

Income details are collected at both a household and individual level in SILC. In analysis, each individual's income is summed up to household level and in turn added to household level income components to calculate *gross household income*.

3.10.1.2 Market Income:

- Employee income
    - Gross employee cash or near cash income
    - Gross non-cash employee income
- Employer's social insurance contributions and pension contributions
- Self-employment income
    - Self-Employment income other than farm income
    - Farm Income[9] (includes direct payments received from the DAFM e.g., Common Agriculture Policy (CAP) entitlements).
- Private and occupational pension income
- Other market income
    - Income from rental of property or land
    - Regular inter-household cash transfers received
    - Interests, dividends, profit from capital investments in unincorporated business
    - Income received by people aged under 16
    - Foreign social transfers
    - Retirement or redundancy lump sums from employers
    - Other income not included in the national definition of social transfers

3.10.1.3 Social Transfers:

Refers to cash benefits received from local and state government.

- Jobseekers related payments
- Old-age payments (note that this includes unemployment and survivor benefits paid to those aged 66 and over)
- Family/children related allowances:
    - Maternity/paternity/adoptive benefit
    - Child benefit
    - One-parent family payment
    - Carers' payments
- Housing allowances:
    - Rent supplement
    - Rental Accommodation Scheme (RAS)
    - Housing Assistance Payment (HAP)
    - Household benefit package

[9] Direct payments included in market income as they are subject to tax.

- Exceptional needs payments
- Other Social transfers:
  - Survivor's benefits
  - Sickness benefits
  - Disability benefits
  - Education related allowances
  - Social exclusion not elsewhere classified

3.10.1.4 Disposable income

Tax and social insurance contributions are also summed to household level and subtracted from the gross household income to calculate the *total disposable household income*. The components of disposable household income are gross household income *less*:

- Employer's social insurance contributions and pension contributions
- Regular inter-household cash transfer paid
- Tax (including USC) on employment income and social insurance contributions
- Tax on pension income
- Tax on retirement and redundancy lump sums
- Tax on rental income
- Tax on interest, dividends, profit from capital investments in unincorporated business
- Personal pension contributions to private and occupational pensions
- Local property tax

3.10.1.5 Real/Nominal income

Both nominal and real income figures are included in the release. Real income figures have been adjusted for inflation by applying a deflator to the nominal income figures. The deflator is derived from the monthly CPI and takes into account the rolling nature of the income data collected by SILC.

3.10.1.6 Equivalence scales

Equivalence scales are used to calculate the *equivalised household size* in a household. Although there are numerous scales, we focus on the national scale in this release. The national scale attributes a weight of 1 to the first adult, 0.66 to each subsequent adult (aged 14+ living in the household) and 0.33 to each child aged less than 14. The weights for each household are then summed to calculate the *equivalised household size*.

3.10.1.7 Equivalised disposable Income

Disposable household income is divided by the *equivalised household size* to calculate equivalised disposable income for each person, which essentially is an approximate measure of how much of the income can be attributed to each member of the household. This *equivalised income* is then applied to each member of the household.

3.10.2 Classifications

3.10.2.1 Principal Economic Status

From 2020 the question on Principal Economic Status was standardised under Regulation (EU) 2019/1700. The categories are:

- Employed
- Unemployed
- Retired
- Unable to work due to long-standing health problems
- Student, pupil
- Fulfilling domestic tasks

3.10.2.2 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

3.10.2.3 Highest Level of Education Completed

From 2020, the highest level of education achieved is mapped using the International Standard Classification of Education (ISCED 2011) coding system and categorised as follows:

ISCED code	Highest Level of Education Classification
000 Less than primary education	Primary or below
100 Primary education	
200 Lower secondary education	Lower secondary (including transition year)
300 Upper secondary education (not further specified)	Upper secondary
343 Level completion, without direct access to tertiary education	
300 Upper secondary education (not further specified)	
344 Level completion, with direct access to tertiary education	
300 Upper secondary education (not further specified)	
450 Vocational education	Post leaving certificate
400 Post-secondary non-tertiary education (not further specified)	
500 Short cycle tertiary	Third level non-degree
600 Bachelor or equivalent	Third level degree or higher
700 Master or equivalent	
800 Doctorate or equivalent	

3.10.2.4 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 three categories;

- Owner-occupied
- Rented or rent free

3.10.2.5 Urban/rural location

From 2014 onwards due to the new sampling methodology, areas are now classified as Urban or Rural based on the following population densities derived from Census of Population 2011:

- Urban
    - Population >100,000
    - Population 50,000 – 99,999
    - Population 20,000 – 49,999
    - Population 10,000 – 19,999
    - Population 5,000 – 9,999
    - Population 1,500– 4,999
- Rural
    - Population up to 1,499
    - Rural areas in counties

3.10.2.6 Regional Breakdown

The regional classifications in this release are based on the NUTS (Nomenclature of Territorial Units) classification used by Eurostat. The NUTS boundaries were amended on 21st November 2016 under Regulation (EC) No.2066/2016 and took effect from 1st January 2018. Results are presented at NUTS 2 level.

The composition of the regions is set out in Table 3.12 below:

Table 3.12

NUTS2 Code	NUTS 2 Name	NUTS3 Code	NUTS 3 Name	County
IE04	Northern & Western	IE041	Border	Donegal
				Sligo
				Leitrim
				Cavan
				Monaghan
		IE042	West	Galway
				Mayo
				Roscommon
IE05	Southern	IE051	Mid-west	Clare
				Tipperary
				Limerick
		IE052	South East	Waterford
				Kilkenny
				Carlow
				Wexford
		IE053	South-West	Cork
				Kerry
IE06	Eastern & Midland	IE061	Dublin	Dublin
		IE062	Mid-East	Wicklow
				Kildare
				Meath
				Louth
		IE063	Midlands	Longford
				Westmeath
				Offaly
				Laois

3.10.3 Differences between Eurostat EU-SILC and national SILC definitions

The key differences between the national and EU definitions of income are:

- The EU definition of gross income does not include non-cash employee income except for company car benefit-in-kind, nor does it include employer's social insurance contributions such as PRSI and employer pension contributions.
- All contributions to pension plans, except for those to private pension plans, are deducted from gross income when calculating disposable income under the EU definition. All

contributions to pension plans, including for those to private pension plans, are deducted from gross income when calculating disposable income under the national definition.

For EU at risk of poverty rates, the equivalised disposable income for each person is calculated as the household total net income divided by the equivalised household size according to the modified OECD scale (which gives a weight of 1.0 to the first adult, 0.5 to other persons aged 14 or over who are living in the household and 0.3 to each child aged less than 14).

In the CSO publication, the national equivalence scale and definition of income are used to calculate at risk of poverty rates. The national equivalence scale used to obtain the equivalised household size attributes a weight of 1 to the first adult in a household, 0.66 to each subsequent adult (aged 14+ living in the household) and 0.33 to each child aged less than 14.

3.10.3.1 Definitions of Income Formulae

Gross Household income

1. Eurostat definition:

HY010 = PY010 + PY021 + PY050 + PY080 + PY090 + PY100 + PY110 + PY120 + PY130 + PY140 + HY040 + HY050 + HY060 + HY070 + HY080 + HY090 + HY110

2. National definition (up to 2019):

nat_totinc = PY010 + PY020 + PY030 + PY050 + PY070 + PY080 + PY090 + PY100 + PY110 + PY120 + PY130 + PY140 + HY040 + HY050 + HY060 + HY070 + HY080 + HY090 + HY110

3. National definition (2020 onwards):

nat_gross_hh_inc = PY010 + PY020 + PY030 + PY050 + PY080 + PY090 + PY100 + PY110 + PY120 + PY130 + PY140 + HY040 + HY050 + HY060 + HY070 + HY080 + HY090 + HY110

Disposable Household income

1. Eurostat definition:

HY020 = HY010 – HY120G – HY130G – HY140G.

2. National definition (up to 2019):

nat_dispinc = nat_totinc - PY030 - HY130 - HY140 - (PY080G - PY080N) + employee pension contribution (adds back pension contributions contained in HY140)

3. National definition (2020 onwards):

nat_disp_hh_inc = nat_gross_hh_inc - PY030 - HY120 - HY130 - HY140 – other pension contributions not contained in HY140

4 Production of the Statistics, Data Processing, Quality Assurance

4.1 Data Capture

The annual SILC survey is the main data source for SILC. SILC information before the onset of COVID-19 was collected from all household members (aged 16 years and older) by trained CSO interviewers, using Computer-Assisted Personal Interview (CAPI) in the respondents' homes. In March 2020, the CSO developed a SILC data collection instrument suitable for conducting SILC longitudinal interviews by telephone (Computer-Assisted Telephone Interview (CATI)). The data is captured using Blaise software for both CAPI and CATI interviews. The Blaise dataset is available in the form of relational tables in SQL and these are converted into a SAS dataset before being further processed. Certain variables are transferred into the CSO's Data Management System (DMS) where some editing and data cleaning is conducted.

In addition, the CSO has access to a number of primary micro data sources. These include the Department of Social Protection (DSP) social welfare data, Department of Agriculture, Food and the Marine (DAFM) direct farm payments data and Revenue Commissioners' employee and self-employed income data all of which are used in the SILC income calculation. In addition to this, administrative data is also available regarding residential tenancies (from the RTB), HAP tenancies, Local Property Tax (from the Revenue Commissioners) and income from student grants (from SUSI). The Administrative Data Centre (ADC) division within the CSO owns these data sources and SILC's DCU has limited access to them. The CSO works with the DSP, DAFM, SUSI, the RTB and Revenue, on an ongoing basis, to ensure good quality data is available i in a timely manner. Data from these administrative sources are incorporated into the SAS data processing system in the DCU.

4.2 Coding

The coding of SILC variables is outlined in detail in the SILC questionnaires manual, available on the European Commission Communication and Information Resource Centre for Administrations, Businesses and Citizens (CIRCABC) website:
https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:_idcl=FormPrincipal:left-menu-link-lib-closed&FormPrincipal_SUBMIT=1&javax.faces.ViewState=jLhwYgcmoesyj1O7LW7uoaVjwJD738CLOTPU4yIOTe2JFV5nuEXBSgnHdr4lQk%2Fko76Sixj3zjmWVZibV%2BTTkyVXW14e%2FkjqLFBKG3FuDX4cMLWXCmlDW6YfJiN3%2F141Rd0nhBCPrHP%2BszWWFFjJ7iTPu%2Bo%3D

Occupation and Industry text strings are captured in the field and coded to the relevant classifications (see Section 3.11) using a coding application once survey data has been returned to the office. The codes assigned are then subsequently checked for quality purposes. Field of education data is likewise captured in the field and then coded to the relevant classification (see Section 3.11) while the region of place of residence is coded using the 31 administrative counties (see Sections 3.11 and 3.12). Detailed guidelines on the coding of EU-SILC variables are published in Eurostat's SILC guidelines, i.e. Doc 065 *'Description of target variables'* and this document can be found on CIRCABC: https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp

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 of relevant respondents. In addition, invalid responses are prevented at the point of capture and there are certain points in the questionnaire where interviewers are prevented from proceeding with the interview unless valid answers are provided This ensures that the capture of implausible data is prevented and that only completed interviews are returned.

Much of the income micro-data comes directly from administrative sources such as Revenue and the Department of 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. This also reduces the burden on the SILC DCU section in micro-editing these complex variables.

1. Four SILC DCU staff work part time on editing the SILC data in Q2 and Q3 of the year. Editing of the SILC data begins at the earliest opportunity. The first stage of editing takes place when the data is entered in the DMS. Detailed instructions are in the section manual outlining how these edits are to be resolved. Below is a list of the DMS edits:

1. If respondent indicated that they had employee income then the employee gross income field or the employee gross income estimate field must be filled.
2. If respondent indicated that they had directors fee income then the directors fee income field must be filled or the directors fee estimate field must be filled.
3. If the respondent indicated that they had self employed farming income then the gross farm income field must be filled or the gross farm income estimate field must be filled.
4. If the respondent indicated that they had self employed farming income then the size of the farm in Hectares must be filled.
5. If the respondent indicated that they had self employed farming income then the farm system variable must have a value of one of the following (1, 2, 3, 4, 5, 6).
6. If the respondent indicated that they had non-farming self employed income then the gross self employed income must be filled or the gross self employed income estimate must be filled.
7. If the respondent indicated that they had self employed income then the size of their firm (in number of people working there) must be filled.
8. If the respondent has said that they are working, then the number of hours worked must be filled.
9. If the respondent indicated that they had a second job then then number of hours worked in the second job must be filled.
10. The PPS number needs to be checked and validated.
11. Check if person is under 18 and either married, widowed, divorced, separated?
12. Age must be entered for respondent.
13. Date of birth must be entered for respondent.
14. If respondent is working the NACE sector must not me missing.
15. If respondent is working the NACE code must be valid.
16. If respondent is working the occupation must not be missing.
17. If respondent is working the occupation code must be valid.
18. If respondent has indicated that they have a foreign pension then the amount must be filled.

19. If respondent indicated that they have pension income then the pension type must be entered.
20. If respondent has indicated that they have income from an occupational pension then the amount must be filled.
21. If the respondent has indicated that they have income from a private pension then the amount must be filled.
22. If farm income > €200,000 check that it is not a miskey.
23. If self employed income > €200,000 check that it is not a miskey.
24. If foreign pension income > €200,000 check that it is not a miskey.
25. If gross occupational pension income > €200,000 check that it is not a miskey.
26. If gross private pension income > €200,000 check that it is not a miskey.
27. If directors fee income > €200,000 check that it is not a miskey.
28. If the interview is a proxy interview then the proxy ID must be filled.
29. If PPSN status is set to confirmed the PPSN must be filled.
30. Check cases where PPSN is entered but status is not confirmed.
31. If PPS number is confirmed then date of birth must be entered.
32. If respondent is an employee then the size of the firm (in no. of people working there) must be filled.
33. If respondent has indicated that they have directors fees but has not provided an amount then there must be an estimate entered in one of the income estimate categories 1 to 20.
34. If respondent has indicated that they have self employed income but has not provided an amount then there must be an estimate entered in one of the income estimate categories 1 to 20.
35. If respondent has indicated that they have self employed Farm income but has not provided an amount then there must be an estimate entered in one of the income estimate categories 1 to 20.
36. If the respondent has indicated that they work as an employee the Full Time/Part Time indicator must be filled.

Once the data is cleaned using the edits above, more detailed checking of data is conducted using SAS. At this stage, outliers in the micro-data are reviewed and inconsistencies in the longitudinal data are further investigated. The cleaned data is then forwarded to the SILC Analysis section where extensive macro-editing is completed to benchmark SILC results against Revenue and Department of Social Protection aggregated data thus ensuring coherency with these known figures. At this final stage, any discovered anomalies in the data (or process) are reviewed and resolved where possible.

4.4 Imputation (for Non-Response or Incomplete Data Sets)

No imputation for unit non-response currently takes place for Wave 1 households in the SILC sample. For Wave 2-4 households, weights are adjusted at both the household and individual level to take account of non-response based on the characteristics of the non-respondents from the previous Wave.

Item non-response is primarily only conducted for missing direct income values and missing housing/utilities costs. For missing private sector pay, a form of hot-decking is employed to impute

missing data. In the case of public sector pay, estimation of missing pay is based on public sector pay scales utilising information on grade and years of service. Due to the ready availability of PPSNs for SILC respondents and administrative income data very few imputations are required for direct income variables.

For the 2020 reference year a new imputation system was introduced to estimate for item non-response for rent paid, utility costs, home insurance and home maintenance costs variables. The system uses "Proc survey impute" to perform "hot deck" imputation in SAS to estimate missing values for these variables.

Proxy interviews are allowed to obtain data for respondents who are not present in the house at time of interview. Up to 50% of interviews are proxy interviews where information has been provided by another resident of the household due to unavailability of the person in question. There are known issues with the quality of data for proxy responses for certain variables. For example, while a proxy respondent may know the age of other residents in the household, they may not know how long they have worked with their current employer (particularly in shared households where residents are not related).

Imputed rent (HY030) is estimated for the use of Eurostat and other researchers. Imputed rent is calculated for households that report themselves as not paying full rent, i.e. owner-occupiers or accommodation rented at below the market price or accommodation provided rent-free.

4.5 Grossing and Weighting

4.5.1 Weighting

The calculation of the SILC weights is carried out in accordance with the Eurostat requirements outlined in Doc-065. According to the Commission Regulation on sampling and tracing rules (EC No 1982/2003, §7.4): *Weighting factors shall be calculated as required to take into account the units' probability of selection, non-response and, as appropriate, to adjust the sample to external data relating to the distribution of households and persons in the target population, such as by sex, age (five-year age groups), household size and composition and region (NUTS II level), or relating to income data from other national sources where the Member States concerned consider such external data to be sufficiently reliable*.

A design weight is assigned to each household which is calculated as the inverse proportion to the probability with which the household was sampled. For SILC, the probability of the selection of a household is based on two elements; the probability of the selection of a block and the probability of selection of a household within that block. The design weights were calculated for Wave 1 households each year as outlined above.

Design weights are adjusted each year, for each wave separately, for non-response to bring the weights up to the current year. These weights are combined and scaled back and then calibrated to population totals for the current year. For Wave 1 households, the design weights were calculated as outlined above and adjusted to be proportional to the population as a whole. For Wave 2-5 households, base weights were calculated by firstly adjusting the personal weights from the previous year for non-response. The Weight Share Method was then applied to calculate a base weight for the household. These design weights were then adjusted to be proportional to the original population.

4.5.2 Non-response

Design weights are adjusted for non-response based on response propensities using a logistic regression model. Census data is used for wave 1 households and previous years SILC data for waves 2-5.

4.5.3 Calibration

In accordance with Eurostat recommendation, the SAS CALMAR2-macro[10], developed in the French Statistical Office (INSEE), is used to calibrate the household cross-sectional weights. The purpose of calibration is to match certain SILC auxiliary variables to known population totals, i.e., consistency with respect to known totals. This should have the advantage of comparability and may also improve precision and reduce bias. Benchmark information from the Labour Force Survey (LFS) was used to calibrate the data to known population estimates.

The benchmark estimates were based on:

- Age by sex: Individual population estimates are generated from population projections from census data. Age is broken down into four categories: 0-14, 15-34, 35-64 and 65 and over.
- Region: Household population estimates in each of the eight NUTS3 regions are generated using LFS data.
    - Border - Margin 1
    - Midland - Margin 2
    - West - Margin 3
    - Dublin - Margin 4
    - Mid-East - Margin 5
    - Mid-West - Margin 6
    - South-East - Margin 7
    - South-West - Margin 8
- Household composition: Household composition estimates are also generated from the LFS. The following categories are used:
    - One adult, no children – Margin 1
    - Two adults, no children – Margin 2
    - Three or more adults, no children – Margin 3
    - One adult, one or more children – Margin 4
    - Two adults, one to three children – Margin 5
    - Other households with children – Margin 6

The calibration method used within CALMAR is the bounded Logit Method, with lower bounds for the ratio of the weights adjusted to achieve calibration to external totals while keeping the final weight as close as possible to the design weight. Due to the "integrative" calibration method, the personal weight generated in CALMAR2 is equal to the household weight. Because there is no individual non-response within a household, the weights for personal cross-sectional respondents aged 16 and over are the same as the overall personal weight.

[10] Calmar is an acronym for **CAL**ibration on **MAR**gins, an adjustment technique which adjusts the margins (estimated from a sample) of a contingency table of two or more qualitative variables to the known population margins.

4.5.4 Longitudinal weights

Separate longitudinal weights are calculated for each set of panel data, i.e., the two-year, three-year, four-year and five-year panels.

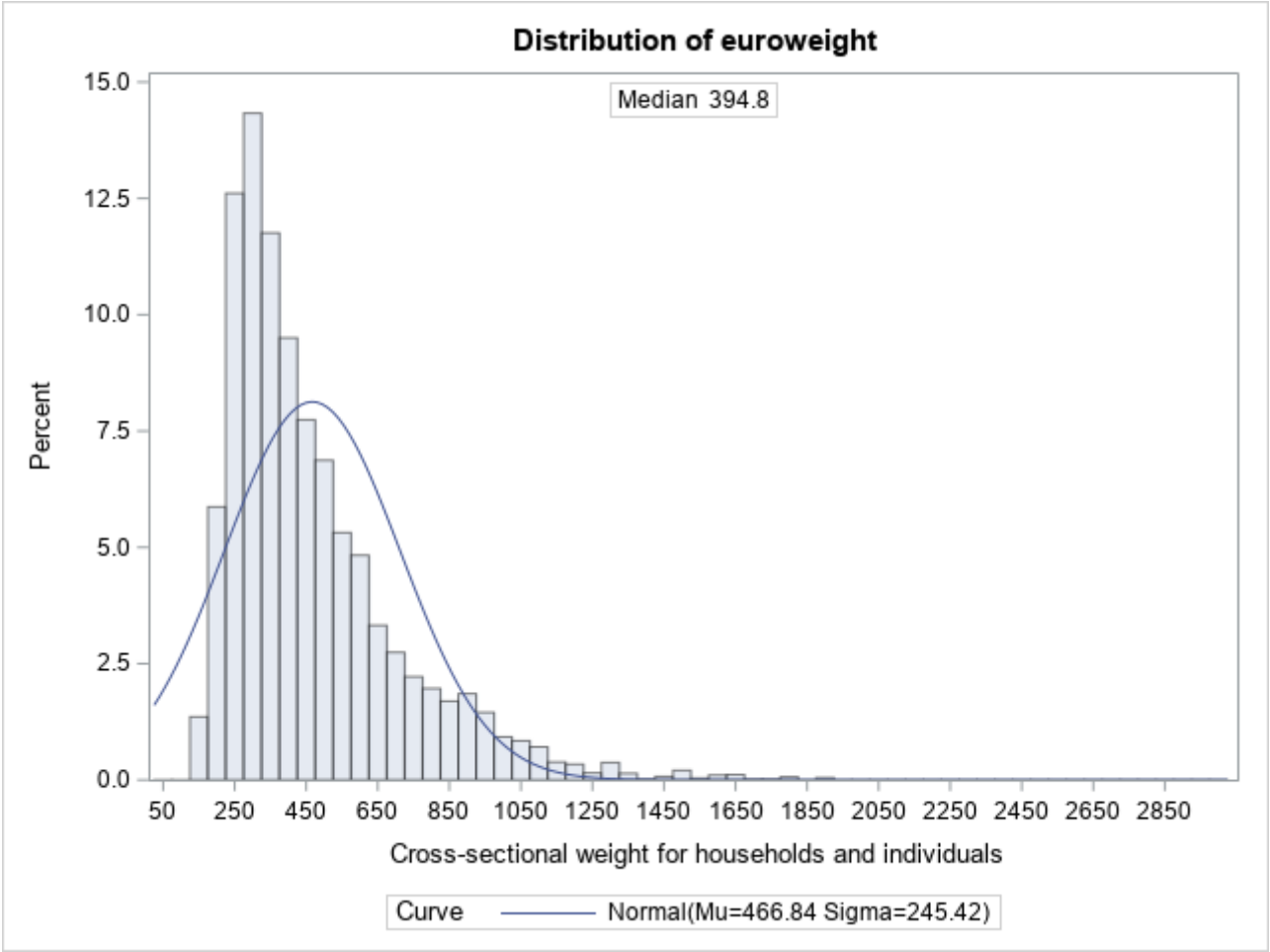
4.5.3 A statistical summary of the weights

In 2020 we reviewed the weighting and calibration process, which reduced the variance of the weights from previous years. The average weight was 466 and the mean was 378, with a standard error of 2.6.

Table 4.5.3a: Summary statistics for weight

SILC weight summary statistics 2020	
N	10,683
Sum	4,987,282
Mean	467
Median	395
StdDev	245
s.e.	2.4
Min	129
Max	1,900
Range	1,771

Table 4.5.3b Distribution of SILC weight



4.6 Computation of Outputs, Estimation Methods Used

4.6.1 At risk of poverty rate

This is the share of persons with an equivalised income below a given percentage (usually 60%) of the national median income. It is also calculated at 40%, 50% and 70% for comparison. The rate is calculated by ranking persons by equivalised income from smallest to largest and then extracting the median or middle value. Anyone with an equivalised income of less than 60% of the median is considered *at risk of poverty at a 60% level.*

4.6.2 Deprivation rate

Households that are excluded and marginalised from consuming goods and services which are considered the norm for other people in society, due to an inability to afford them, are considered to be deprived. The identification of the marginalised or deprived is currently achieved on the basis of a set of eleven basic deprivation indicators:

1. Two pairs of strong shoes
2. A warm waterproof overcoat
3. Buy new (not second-hand) clothes
4. Eat meal with meat, chicken, fish (or vegetarian equivalent) every second day
5. Have a roast joint or its equivalent once a week
6. Had to go without heating during the last year through lack of money
7. Keep the home adequately warm
8. Buy presents for family or friends at least once a year
9. Replace any worn out furniture
10. Have family or friends for a drink or meal once a month
11. Have a morning, afternoon or evening out in the last fortnight for entertainment

Individuals who experience two or more of the eleven listed items are considered to be experiencing enforced deprivation. This is the basis for calculating the deprivation rate.

4.6.3 Consistent poverty

An individual is defined as being in 'consistent poverty' if they are:

- Identified as being at risk of poverty and
- Living in a household deprived of two or more of the eleven basic deprivation items listed above

4.6.4 Relative at risk of poverty gap

This is the difference between the median equivalised income of persons below the at risk of poverty threshold and the at risk of poverty threshold itself, expressed as a percentage of the at risk of poverty threshold. The purpose of the indicator is to measure how far below the poverty threshold the median income of people at risk of poverty is. The closer the median income of those at risk of poverty is, to the at risk of poverty threshold, the smaller the percentage will be.

4.6.5 At risk of poverty rate before social transfers

This indicator is calculated based on an alternative measure of equivalised income, excluding all social transfers. From 2020, social transfers in the national SILC publication refers to income from Department of Employment Affairs and Social Protection (DEASP) sources such as unemployment related benefits, state pension, family or children related allowances, etc., as well as education related allowances and housing related supports. Any person with an equivalised income before social transfers of less than 60% of the median **after** social transfers is considered at risk of poverty before social transfers (i.e. the same threshold is used for calculating the rate before and after social transfers).

4.6.6 At risk of poverty after rent and mortgage interest

This indicator is calculated based on an alternative measure of equivalised income, excluding the total rent paid and mortgage interest. The total rent paid includes housing supports such as the Housing Assistance Payment (HAP), Rent Supplement, Rental Assistance Scheme (RAS) which were included in the household income. Any person with an equivalised income after rent and mortgage interest of less than 60% of the median before rent and mortgage interest is considered at risk of poverty after rent and mortgage interest (i.e. the same threshold is used for calculating the rate before and after rent and mortgage interest is deducted).

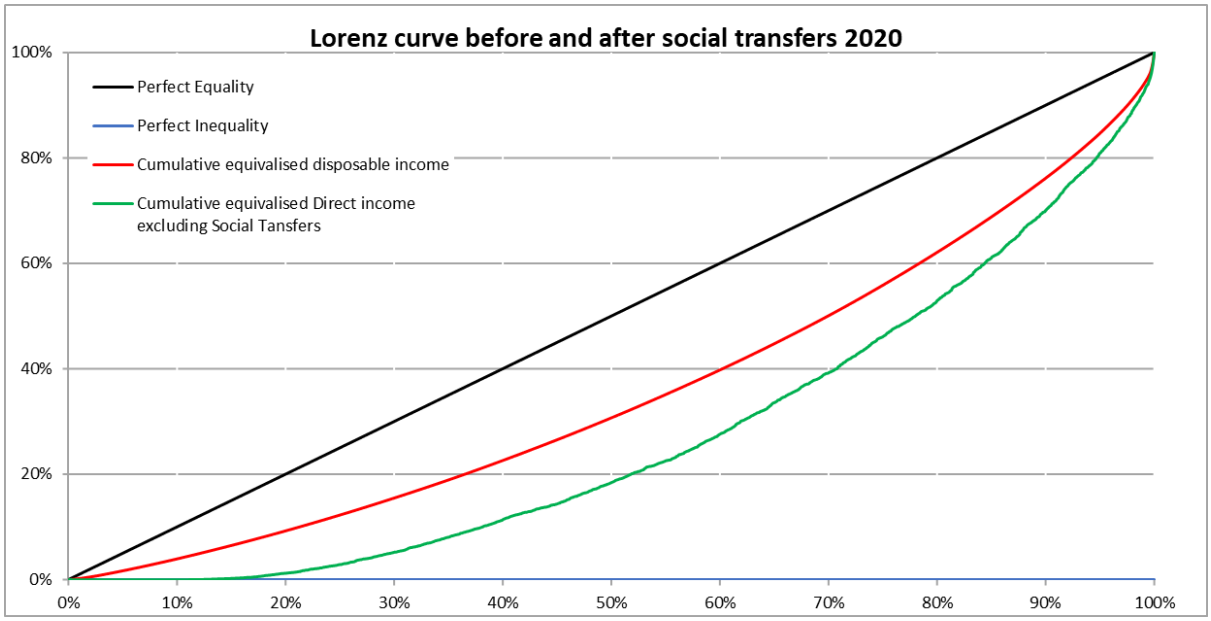
4.6.7 At risk of poverty rate anchored at a moment in time

For a given year, the “at risk of poverty rate anchored at a moment in time” is the share of the population whose income in a given year is below the at risk of poverty threshold calculated in the standard way for a previous base year and then adjusted for inflation. The purpose of this indicator is to get some indication of the changes in ‘absolute poverty’ over time. The deflator is derived from the monthly CPI and takes into account the rolling nature of the income data collected by SILC.

4.6.7 Gini coefficient

This is the relationship between cumulative shares of the population (ranked according to the level of income from lowest to highest) and the cumulative share of total income received by them, i.e. the Lorenz Curve. Figure 4.6.7 shows the Lorenz curve before and after social transfers. 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 2020 was 28.5%.

Figure 4.6.7



Calculation of the Gini Coefficient

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

Wgt_i = *Final calibrated weight per individual*

Eq_Inc_i= *Equivalised disposable income*

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

4.6.8 Inequality of income distribution (S80/S20) quintile share ratio

This is the ratio of the average equivalised income received by the 20% of persons with the highest income (top quintile) to that received by the 20% of persons with the lowest income (lowest quintile).

For detailed descriptions of the derived EU-SILC statistics and their calculation methodology for Eurostat purposes see:

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_statistics_on_income_and_living_conditions_(EU-SILC)_methodology_-_monetary_poverty

4.7 Other Quality Assurance Techniques Used

A Review of the Sampling and Calibration Methodology of the Survey on Income and Living Conditions (SILC) 2010-2013 was published in 2014 by the CSO's Methodological Division. This paper is available on the CSO's website at:
http://www.cso.ie/en/media/csoie/methods/surveyonincomeandlivingconditions/ReviewsamplingcalibrationmethodologySILC2010-2013.pdf

A standard level agreement (SLA) exists between the analysis section and the DCU sections of SILC to enable clear communication and ensure the smooth transfer of data from DCU. Similarly, 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 more importantly secure availability of administrative data.

Detailed documentation in the form of a section manual exists in the SILC DCU outlining the routine tasks, duties and responsibilities of section members. This document deals with issues as diverse as the CSO's confidentiality protocols to running weekly quality reports to handling edits on the DMS system. A detailed methodology and quality manual also exists for both the DCU and Analysis section on Lotus Notes, the CSO's document management system.

Process maps for both the DCU and Analysis section were first created in 2011 as part of the initial Lean Six Sigma project in the SILC area. Updated versions were created during 2020. A second Lean Six Sigma project was completed in 2012 that looked specifically at the SILC DCU code. This resulted in code that was more streamlined, reliable and transparent. The SAS code in the Analysis section has also been streamlined and most previous statistics can now be repeated by the application of simplified SAS macros. The SILC processing code in both the DCU and RAP sections were again reviewed and updated in 2021 with the move to the new SILC 2020 questionnaire.

Each quarter the Field Administration Unit (FAU) organises one-day training meetings with each of the ten interviewer groups. SILC DCU and occasionally SILC Analysis participate in these training days where modifications to the questionnaire, new SILC modules and any issues around the sample implementation are discussed. These training days form part of the open communication policy that exists between the SILC interviewer field force and the SILC DCU team. 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.

The only incentives SILC offers interviewees are token gifts, branded with the CSO logo and the words "Household Surveys" such as:

- Foldable shopping bag
- Biro
- Key ring with a shopping trolley token
- Pack of 12 colouring pencils for households with children
- Sticky note pads

Since 12th March 2020 very few token gifts have been used. Due to COVID protocols direct contact and handing over of items from interviewers to householders was restricted. Gift card incentives did apply as follows:

January to March 2020 inclusive as SILC & HBS were combined a €30 gift card issued to each household member that filled out the HBS diary and while technically not a SILC incentive as respondents had to complete the HBS diary to receive it, there may have been some influence regarding participation.

April to June 2020 inclusive was SILC only as HBS was pulled from the field. A single €20 gift card was issued to any wave 1 SILC household that completed the survey

January to June 2021 inclusive the €20 gift card remained for SILC wave 1 households.

5 Quality

5.1 Relevance

SILC provides a wealth of information in the areas of income, poverty, inequality, well-being and social exclusion. A wide range of individuals and organisations in society and politics use the data in the form of statistics and micro-data. The relevance of the information is greatly enhanced by the CSO's impartiality and independence as an organisation.

The main users of EU-SILC are:

- Institutional users like other Commission services, other European institutions (such as the ECB), national administrations (mainly those in charge of the monitoring of social protection and social inclusion), or other international organisations;
- Statistical users in Eurostat or in Member States National Statistical Institutes to feed sectoral or transversal publications such as the Annual Progress Report on the Lisbon Strategy (structural indicators), the Sustainable Development Strategy monitoring report, the Eurostat yearbook and various pocketbooks, among other reports;
- Researchers having access to microdata;
- End users - including the media - interested in living conditions and social cohesion in the EU.

For a more detailed description of users of CSO's SILC data see section 2.7 and for a more detailed description of the legal basis for EU-SILC see section 2.6.

Two important statistics usually presented when measuring income, poverty and social exclusion are not included in the national release, namely

- Persistent Poverty
- Transition of the population between income deciles – Income mobility.

The reason these measures have been excluded from the national release is that the longitudinal sample has not been robust enough to provide reliable estimates of the statistics at national level.

The relevance of SILC data does however suffer somewhat from issues of timeliness. Overcoming these timeliness failings is one of the main driving forces behind Eurostat's revision of the EU-SILC legal basis. Under Regulation No 1177/2003 the SILC cross sectional data transmission deadline from the Member States to the Commission (Eurostat) for a data collection year T was November 30 of year T+1. From 2022, under Regulation 2019/1700 there will be improved timeliness, with shorter deadlines for SILC data submission, the new transmission deadline being December 31 of year T (the current survey year)[11].

[11] https://www.cso.ie/en/releasesandpublications/in/silc/informationnote-breakintimeseriessilc2020/

5.2 Accuracy and Reliability

5.2.1. Sampling effect & representivity

5.2.1.1 Precision estimation

The precision estimates and the confidence intervals for SILC were calculated formally for the first time in 2013. The estimates were calculated in SAS using the Jackknife and the Taylor Linearisation methodology. For the Mean equivalised net disposable income, the 'At Risk of Poverty' rate, the 'Deprivation' rate and the 'Consistent Poverty' rate, the Jackknife Method in PROC SURVEYMEANS was used. The Taylor Linearisation Method in PROC SURVEYMEANS was used to measure the precision of the quantiles.

SAS routines and macros were developed to calculate the precision of the more complex statistics, i.e. the Gini Coefficient and the Quintile Share Ratio (QSR), using the Jackknife Method. The variance of the Gini and the QSR was estimated using the methodology outlined in Lohr[12] Ch. 9 (Variance Estimation in Complex Surveys).

The calculations of the precision estimates took into account the weighting, the structure of the sample, i.e. the fact that the sample was a cluster sample as opposed to a simple random sample and other complications arising from the complex nature of the methods adopted. The precision estimates for 2020 are provided in Table 5.2.1.1.

The methods used to calculate the precision estimates for the main SILC statistics are based on a methodology approved by the Income and Living Conditions Division (F4), Eurostat. However there is a possibility that the variance is being over-estimated as the weights are not being re-calibrated after each replication of the Jackknife method. It is worth noting that in 2016 2,059 replications were completed as part of the Jackknife method. Eurostat's requirements with regard to precision estimates in SILC are detailed in their 2013 working paper '*Standard error estimation for the EU–SILC indicators of poverty and social exclusion'* which is available to download at,

http://ec.europa.eu/eurostat/documents/3888793/5855973/KS-RA-13-024-EN.PDF/cfef2973-4675-4df4-bf6d-e15ef1d3c060

5.2.1.2 Design Effect

Cluster sampling is adopted to reduce the financial cost of sampling. However, cluster sampling does have a statistical cost in terms of a loss in precision. In SILC, a two-Stage cluster sample is used with the initial stratification of the sample actually providing a gain in precision. However, the subsequent clustering erodes these gains. The overall loss or gain in precision when adopting a particular sampling method other than a simple random sample (SRS) is measured using *design effect*.

The design effect is a basic quality assurance metric used to measure the efficiency of a sampling plan. In SILC it is measured as:

$$d_{effect} = \frac{\text{the variance achieved using the cluster sample of size k}}{\text{the variance achieved using a simple random sample of size k}}$$

[12] Sampling: Design and Analysis, 2nd Edition, Sharon L. Lohr (2010).

Table 5.2.1.1

Precision estimates 2020*								
Nominal Equivalised Disposable Income								
		95% Conf Int			Design	Standard		Sample
	Estimate	Lower CL	Upper CL	CV	Effect	Error	Variance	Number
Mean	27,762	26,944	28,579	0.0	4.17	416.7	173,676	10,683
Quartile 1	17,362	16,873	17,850	0.0	.	249.1	62,031	10,683
Median	24,007	23,376	24,637	0.0	.	321.5	103,332	10,683
Quartile 3	33,533	32,760	34,307	0.0	.	394.4	155,568	10,683
Not AROP	86.8	85.4	88.2	0.0	4.97	0.7	0.53	10,683
AROP	13.2	11.8	14.7	0.1	4.97	0.7	0.53	10,683
Not Deprived	85.7	84.1	87.2	0.0	5.51	0.8	0.63	10,683
Deprived	14.3	12.8	15.9	0.1	5.51	0.8	0.63	10,683
Not in Consistent Poverty	95.3	94.4	96.3	0.0	5.16	0.5	0.21	10,683
Consistent Poverty	4.7	3.8	5.6	0.1	5.16	0.5	0.21	10,683
Gini	28.5	26.9	30.0	0.0	.	0.8	0.61	10,683
QSR	4.1	3.8	4.4	0.0	.	0.2	0.02	10,683

*Mean, Median, etc. refer to equivalised disposable income.

The design effect for SILC, in 2020, was found to be in the range of 4.17 to 5.51 - depending on the statistic being investigated. A design effect of 4.17 means that 4.17 times as many observations were needed in the SILC 2020 cluster sample to achieve the same level of precision than from a similarly sized simple random sample. The Irish SILC design effects are not unusual when compared with those of other member states with similar sampling methodologies. The design effects for years 2013-2020 are illustrated in Figure 5.2.1.2 below.

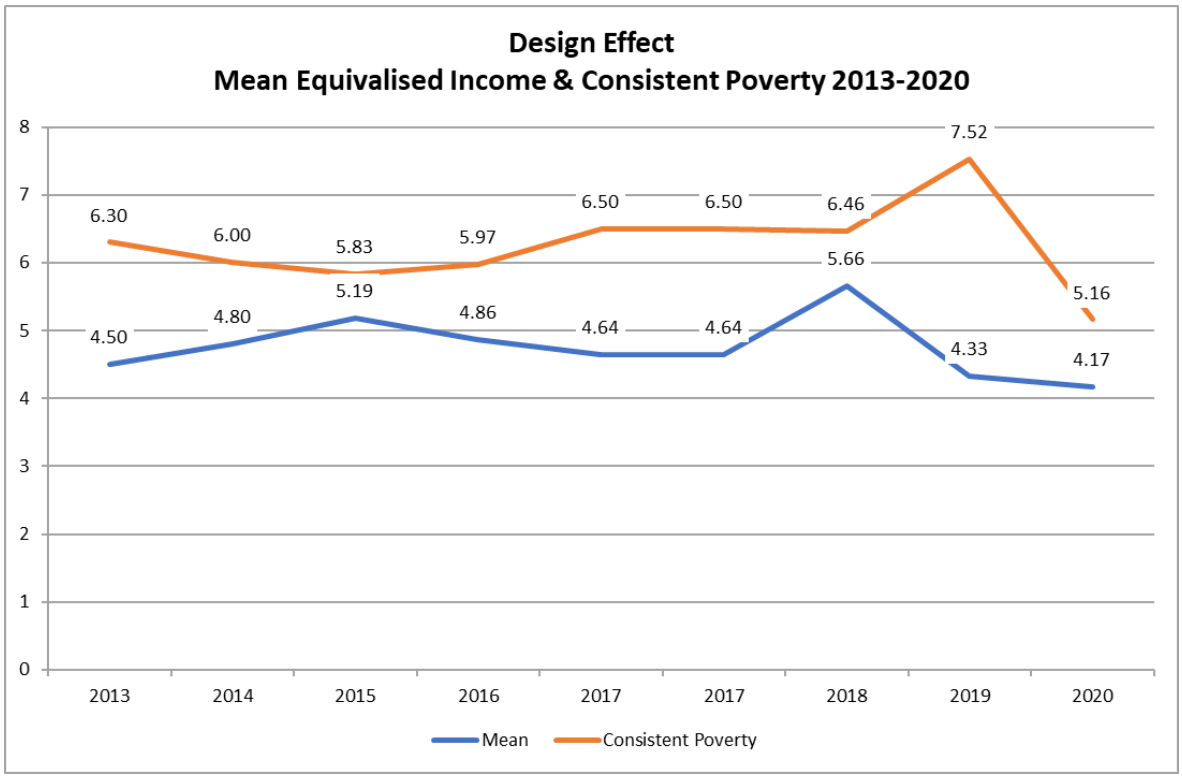


Figure 5.2.1.2

5.2.1.3 Measuring the precision of a year-on-year change

When measuring whether the year-on-year change for a particular statistic in SILC is statistically significant the matter is complicated by the fact the samples are not independent. The sample design is a 4 wave rotational sample. Therefore, when measuring the year on year change of a statistic consideration must be given to the variance of the statistic in each year (sample) and the covariance of the statistic between samples. We measure the change in a statistic (Y) simply as:

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

The variance of the change is:

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

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

$$95\%CI = \Delta Y \pm 1.96\sqrt{VAR(\Delta Y)} \qquad (3)$$

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*).

The covariance was more difficult to estimate because the samples were dependent. In fact, a further complication is that they were only partially dependent as each sample contained observations that are not present in the other sample due to new observations moving onto the sample and older observations dropping off. Therefore, to measure the variance of the change taking into account covariance, an approximation was used based on the Office of National Statistics (ONS) methods used in such circumstances (ONS: Labour Force Survey User Guide Volume 1 – LFS Background and Methodology 2011, p. 51 eq(1)). Therefore, the following approximation of equation 2 above was used as follows:

$$VAR(\Delta Y) = [VAR(Y_T) + VAR(Y_{T-1})[1 - r.k] \quad (4)$$

Where r is the correlation coefficient between the matched portion of the sample and k is the sample overlap.

Due to a break in series in 2020, year on year changes are not presented.

5.2.1.4 Coefficient of Variation

The coefficient of variation (CV) is a relative measure of precision. The statistic is calculated as follows:

$$CV = \frac{standard\ error}{statistic}$$

Figure 5.2.1.4 a

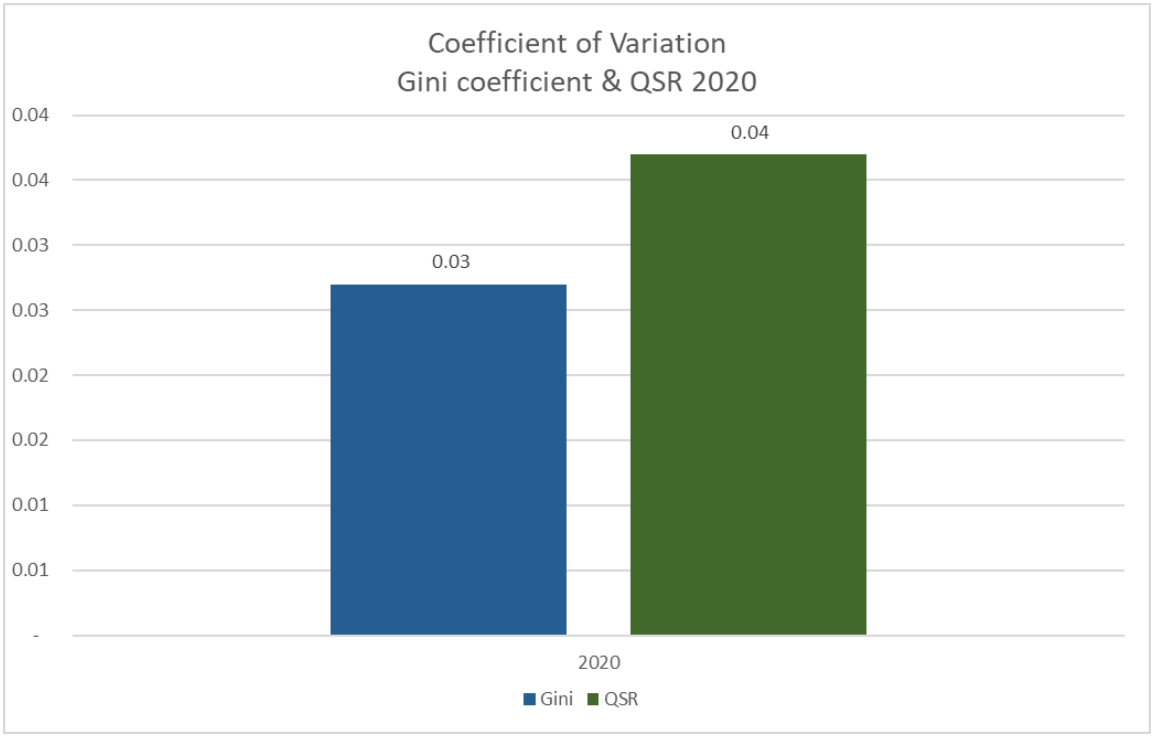
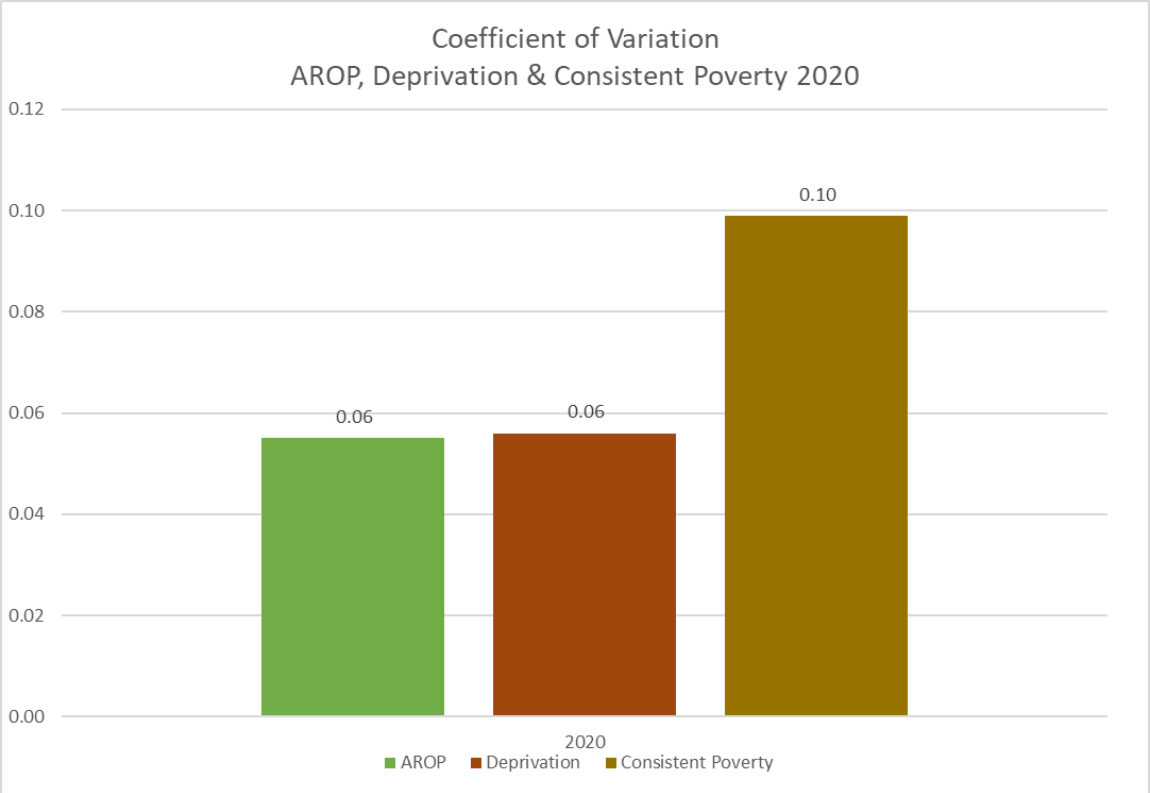


Figure 5.2.1.4 b

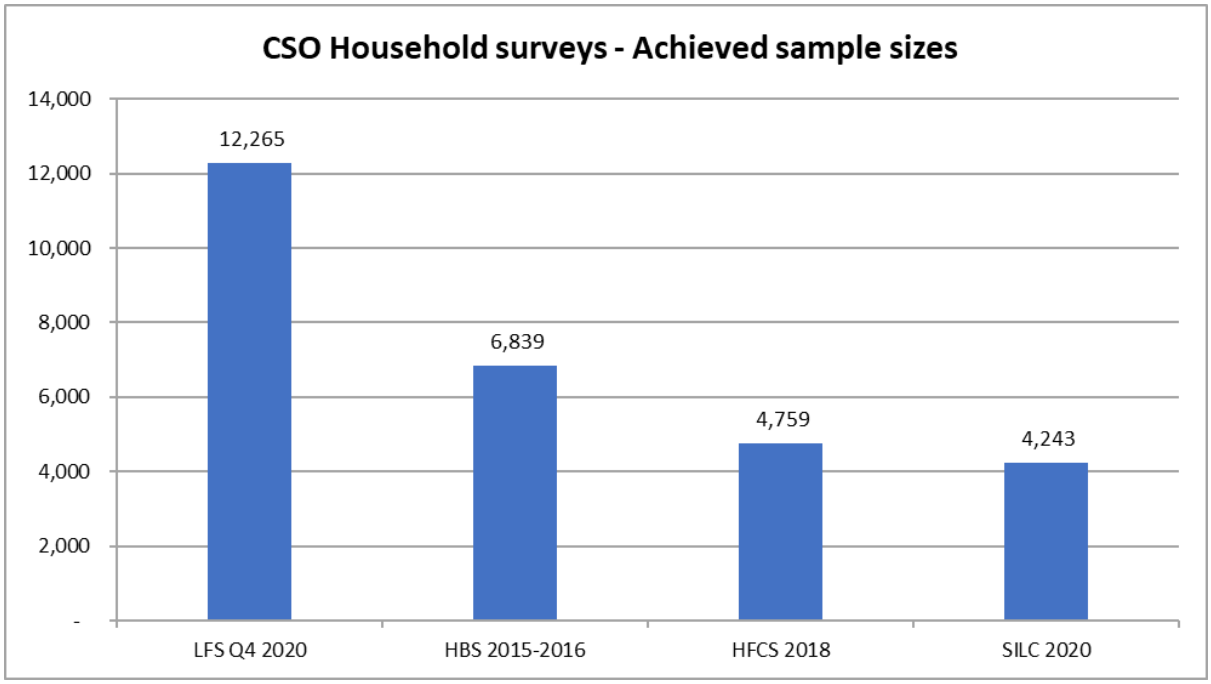


5.2.1.5 Comparing the SILC Sample size with other CSO household samples

To get an idea of the level of precision and robustness possible from the SILC sample, it is worth comparing the achieved SILC sample with some other household samples conducted by the CSO, see Figure 5.2.1.5 below. 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 Household Budget Survey (HBS) sample, 2015-2016 achieved a sample of 6,839 households and the Household Finance and Consumption Survey (HFCS), 2018, achieved a sample of 4,759 households. In 2020, the achieved SILC sample is slightly smaller at 4,243 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. Furthermore, see figure 4.5.3a to see how the SILC sample has changed in recent years.

Figure 5.2.1.5



5.2.1.6. 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. SILC 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.

Table 5.2.1.6a

	Achieved Sample Numbers									
		Households in the Sample				Individuals in the Sample				
SILC Variable	classification	2018	2019	2020	Change 2019-2020	2018	2019	2020	Change 2019-2020
interview_hh = '1'/interview = '1'	State	4,382	4,183	4,243	60	11,130	10,698	10,683	-15
sex = 1	a Male	1,928	1,820	1,929	109	5,478	5,224	5,179	-45
sex = 2	b Female	2,454	2,363	2,314	-49	5,652	5,474	5,504	30
agen < 18	0-17	-	-	-	-	2,875	2,773	2,649	-124
17 < agen < 35	18-34	378	343	311	-32	1,645	1,538	1,509	-29
34 < agen < 50	35-49	1,322	1,269	1,248	-21	2,381	2,302	2,291	-11
49 < agen < 65	50-64	1,231	1,164	1,234	70	2,061	1,982	2,030	48
agen > 64	65+	1,451	1,407	1,449	42	2,168	2,103	2,204	101
pes = 1	1. Employed	2,135	2,016	2,046	30	4,404	4,164	4,108	-56
pes = 2	2. Unemployed	185	173	149	-24	404	381	334	-47
pes = 3	3. Retired	1,119	1,108	1,267	159	1,637	1,627	1,911	284
pes = 4	4. Unable to work due to long-standing health problems	264	242	288	46	451	440	482	42
pes = 5	5. Student, pupil	44	33	28	-5	656	614	703	89
pes = 6	6. Fulfilling domestic tasks	591	566	384	-182	943	895	664	-231
	7. Other	44	45	81	36	2,635	2,577	2,481	-96
high_edlevel = 1	a No formal education/primary	841	742	585	-157	1,294	1,169	919	-250
high_edlevel = 2	b Lower secondary	602	585	509	-76	1,443	1,409	1,166	-243
high_edlevel = 3	c Higher secondary	716	660	625	-35	1,756	1,667	1,708	41
high_edlevel = 4	d Post leaving cert	562	519	483	-36	1,080	969	865	-104
high_edlevel = 5	e Third level non degree	700	633	501	-132	1,229	1,111	877	-234
high_edlevel = 6	f Third level degree or above	927	1,008	1,517	509	1,699	1,816	2,730	914
	g Other	34	36	23	-13	2,629	2,557	2,418	-139
hhtype_18c = 1a	a1 1 adult aged 65+, no children under 18	715	676	675	-1	715	676	675	-1
hhtype_18c = 1b	a2 1 adult aged <65, no children under 18	557	514	550	36	557	514	550	36
hhtype_18c = 2a	b1 2 adults, at least 1 aged 65+, no children under 18	698	679	753	74	1,396	1,358	1,505	147
hhtype_18c = 2b	b2 2 adults, both aged <65, no children under 18	527	493	511	18	1,054	986	1,012	26
hhtype_18c = 3	c 3+ adults, no children under 18	420	421	430	9	1,432	1,434	1,478	44
hhtype_18c = 4	d 1 adults, 1+ children under 18	213	178	158	-20	611	496	439	-57
hhtype_18c = 5	e 2 adults, 1-3 children under 18	912	905	828	-77	3,609	3,581	3,282	-299
hhtype_18c = 6	f Other households with children under 18	340	317	338	21	1,756	1,653	1,742	89
no_work_h = 0	No person at work in household	1,683	1,622	1,686	64	2,866	2,766	2,808	42
no_work_h = 1	Oner person at work in the household	1,291	1,205	1,236	31	3,243	3,067	3,048	-19
no_work_h = 2	Two people at work in the household	1,177	1,155	1,138	-17	4,042	4,040	4,029	-11
no_work_h > 2	Three or more people at work in the household	231	201	183	-18	979	825	798	-27
tenure = 1	Owned	3,316	3,152	3,285	133	8,272	7,875	8,258	383
tenure = 2,3	Rented or rent free	1,066	1,031	958	-73	2,858	2,823	2,425	-398
urb_rur = 1	1 Urban	2,682	2,625	2,606	-19	7,016	6,912	6,593	-319
urb_rur = 2	2 Rural	1,700	1,558	1,637	79	4,114	3,786	4,090	304
NUTS2 = 1	Northern and Western	898	847	778	-69	2,048	2,007	1,852	-155
NUTS2 = 2	Southern	1,603	1,469	1,575	106	3,980	3,611	3,835	224
NUTS2 = 3	Eastern and Midland	1,881	1,867	1,890	23	5,102	5,080	4,996	-84

Table 5.2.1.6b

Achieved Sample Composition						
	Households in the Sample			Individuals in the Sample		
classification	2018	2019	2020	2018	2019	2020
State	100.0%	100%	100%	100.0%	100%	100%
a Male	44.0%	43.5%	45.5%	49.2%	48.8%	48.5%
b Female	56.0%	56.5%	54.5%	50.8%	51.2%	51.5%
0-17	0.0%	0.0%	0.0%	25.8%	25.9%	24.8%
18-64	28.1%	27.8%	29.1%	18.5%	18.5%	19.0%
65+	33.1%	33.6%	34.2%	19.5%	19.7%	20.6%
a At work	48.7%	48.2%	48.2%	39.6%	38.9%	38.5%
b Unemployed	4.2%	4.1%	3.5%	3.6%	3.6%	3.1%
c Student	25.5%	26.5%	29.9%	14.7%	15.2%	17.9%
d Home duties	6.0%	5.8%	6.8%	4.1%	4.1%	4.5%
e Retired	1.0%	0.8%	0.7%	5.9%	5.7%	6.6%
f Ill/disabled	13.5%	13.5%	9.1%	8.5%	8.4%	6.2%
a No formal education/primary	19.2%	17.7%	13.8%	11.6%	10.9%	8.6%
b Lower secondary	13.7%	14.0%	12.0%	13.0%	13.2%	10.9%
c Higher secondary	16.3%	15.8%	14.7%	15.8%	15.6%	16.0%
d Post leaving cert	12.8%	12.4%	11.4%	9.7%	9.1%	8.1%
e Third level non degree	16.0%	15.1%	11.8%	11.0%	10.4%	8.2%
f Third level degree or above	21.2%	24.1%	35.8%	15.3%	17.0%	25.6%
a1 1 adult aged 65+, no children under 18	16.3%	16.2%	15.9%	6.4%	6.3%	6.3%
a2 1 adult aged <65, no children under 18	12.7%	12.3%	13.0%	5.0%	4.8%	5.1%
b1 2 adults, at least 1 aged 65+, no children under 18	15.9%	16.2%	17.7%	12.5%	12.7%	14.1%
b2 2 adults, both aged <65, no children under 18	12.0%	11.8%	12.0%	9.5%	9.2%	9.5%
c 3+ adults, no children under 18	9.6%	10.1%	10.1%	12.9%	13.4%	13.8%
d 1 adults, 1+ children under 18	4.9%	4.3%	3.7%	5.5%	4.6%	4.1%
e 2 adults, 1-3 children under 18	20.8%	21.6%	19.5%	32.4%	33.5%	30.7%
f Other households with children under 18	7.8%	7.6%	8.0%	15.8%	15.5%	16.3%
No person at work in household	38.4%	38.8%	39.7%	25.8%	25.9%	26.3%
Oner person at work in the household	29.5%	28.8%	29.1%	29.1%	28.7%	28.5%
Two people at work in the household	26.9%	27.6%	26.8%	36.3%	37.8%	37.7%
Three or more people at work in the household	5.3%	4.8%	4.3%	8.8%	7.7%	7.5%
Owned	75.7%	75.4%	77.4%	74.3%	73.6%	77.3%
Rented at market rate	24.3%	24.6%	22.6%	25.7%	26.4%	22.7%
1 Urban	61.2%	62.8%	61.4%	63.0%	64.6%	61.7%
2 Rural	38.8%	37.2%	38.6%	37.0%	35.4%	38.3%
Northern and Western	20.5%	20.2%	18.3%	18.4%	18.8%	17.3%
Southern	36.6%	35.1%	37.1%	35.8%	33.8%	35.9%
Eastern and Midland	42.9%	44.6%	44.5%	45.8%	47.5%	46.8%

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 questions not capturing the desired information accurately. Non-sampling error is far more difficult to measure than sampling error and no formal estimate of non-sampling error is available in SILC.

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 on an ad-hoc basis (this practice is currently under review in an attempt to formalise these call-back procedures and to stipulate a minimum percentage of call-backs).

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 (including the use of video recording of training interviews) and debriefings – for example, suggestions are invited from field staff regarding the wording of certain questions. Proxy responses are not allowed for certain questions (for example some personal deprivation items). Comprehension errors - most of the terms used by the survey are readily understood, although some issues occasionally arise.

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

The availability of administrative data from the Revenue and the DEASP has greatly improved the reliability of SILC data. Measurement errors in the overall income levels of individual respondents have greatly reduced and the reliability of the overall social welfare income for each individual on the dataset has also greatly improved. The variable that allows all of this data to be linked is the PPSN[13]. Anomalies may still arise in these data sources and these are identified and resolved using SILC DCU's comprehensive micro-editing system.

A major issue for SILC with these two data sources is the timely availability of the data. This issue is not unique to Ireland and a resolution to this problem is one of the main driving forces behind Eurostat's current task force on the review of the EU-SILC legal basis. Timeliness is also a key concern with the Farm Payment Scheme data provided by the Department of Agriculture, Food and the Marine (DAFM).

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 sample based on this sample frame was introduced in 2014 and was fully in effect in 2019.

5.2.2.3 Non-response (Unit and Item)

The unit response rates for 2019 are:

- 44% overall
- 29% Wave 1 (cross-sectional)
- 70% Wave 2-4 (longitudinal)

Table 5.2.2.3 provides a summary of the response rates for the years 2014-2019. The 2019 figures are provisional. The final response rates are calculated by using the issued sample (minus the vacant dwellings) as the denominator.

[13] The CSO assigns an 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 individual's data.

Table 5.2.2.3

SILC 2020 Response Rates			
	Wave 1 Households	Wave 2-5 Households	Total Households
Issued sample	**6,195**	**3,989**	**10,184**
Interview	1,586	2,657	4,207
Refusal	769	299	1,068
Entire household temporarily absent	54	64	118
Household unable to respond (illness, incapacity…)	56	36	92
Vacant	211	39	250
Other	3,519	894	4,413
% Interviewed	25.6%	66.6%	41.3%
% Refused	12.4%	7.5%	10.5%
% Temporarily absent	0.9%	1.6%	1.2%
% Unable to respond (illness, incapacity…)	0.9%	0.9%	0.9%
% Vacant	3.4%	1.0%	2.5%
% Other	56.8%	22.4%	43.3%

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. Basic household information is collected from all sample households including non-responding households. The SILC 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 generated and circulated for discussion. 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 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 increasingly difficult to access. This is especially true in Wave 1 interviews when no contact information is available.

5.2.2.5 Processing Errors

Data capture errors are minimised by logic checks and limits on values that are keyed for each question in the electronic questionnaire at the data collection point. Checks are in place to minimise these coding errors, particularly with respect to occupational coding. The coding is initially performed in the field (interviewers using the Blaise application) with checks on this work then performed in the survey area.

On-going process improvements are reducing the possibility of any major process errors and extensive macro-editing is ensuring process errors are being highlighted and resolved.

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.

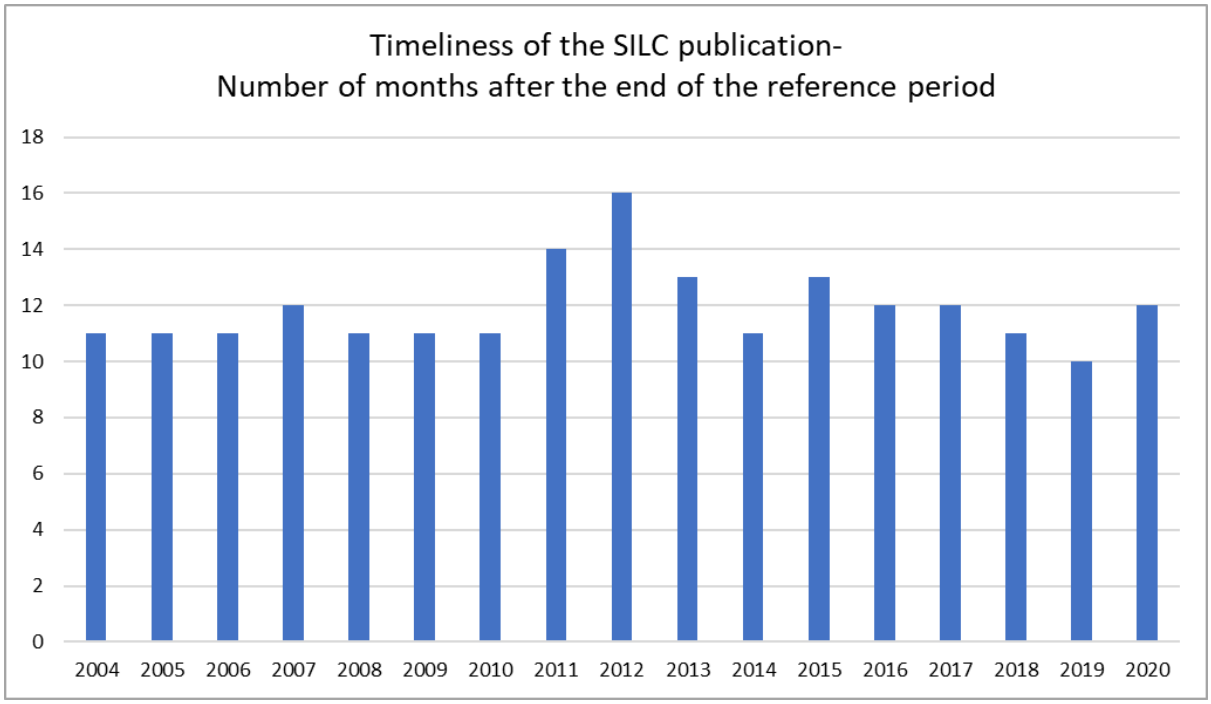
5.3.2 Final Results

It is important to take into account a number of factors when comparing the timeliness of the Irish results with those of other countries. These factors include; the timing and duration of the data collection fieldwork, the availability of administrative data and the exact reference year of the data collected. For example, most EU member states' SILC fieldwork is completed by July of the reference year. Also, most EU member states use income data from the previous year (T-1) as a proxy for current (T) annual income.

From 2004 to 2019, the income referenced in Ireland's SILC data was a function of the date of the household interview and therefore income data in the 2019 dataset covers a period from January 2018 (for those interviewed in January 2019) to December 2019 (for those interviewed in December 2019). From 2020, then income refence period is the calendar year T-1. For SILC 2020 the income reference period is the calendar year 2019.

Figure 5.3.2 presents the history of the time lag (in months) between the survey reference period and the publication date for SILC. SILC 2020 was published on 17th December 2021.

Figure 5.3.2



5.4 Coherence

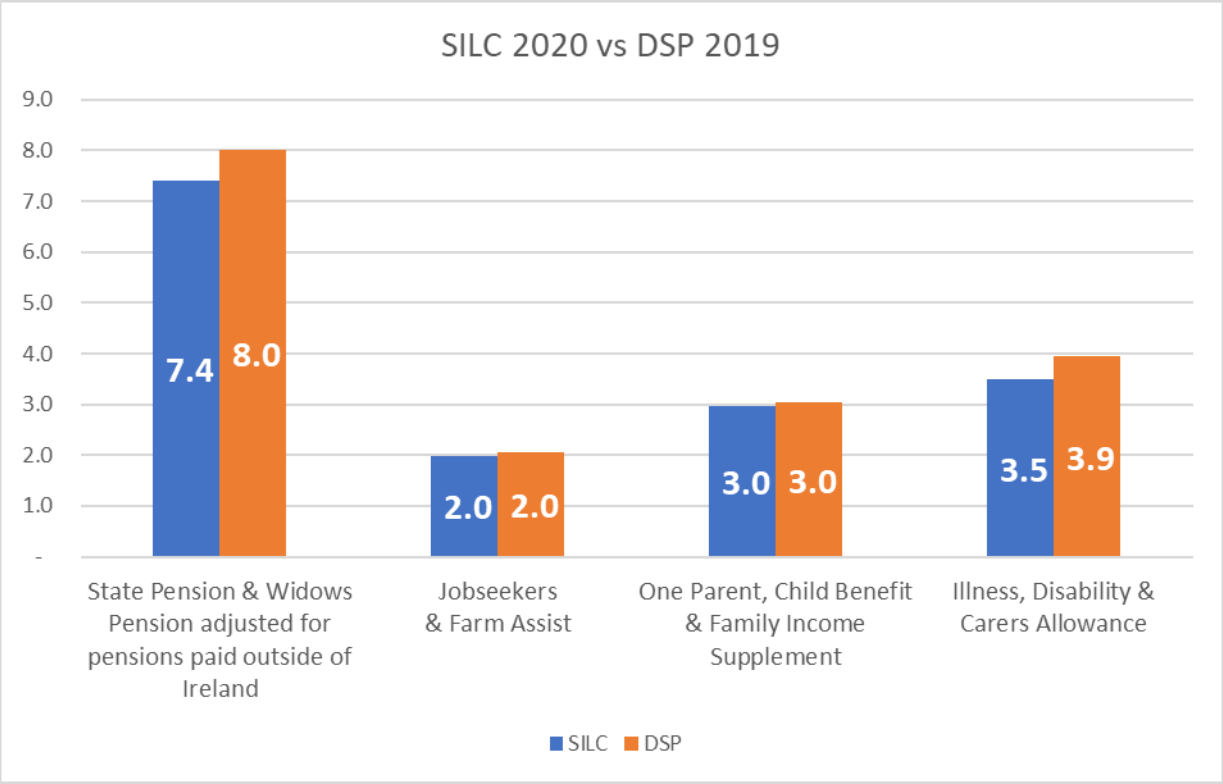
Much of the income micro-data comes directly from administrative sources such as Revenue and the Department of Social Protection. This has reduced the burden of data editing considerably.

The Jobless household figures derived from SILC are high in comparison to those figures derived from the LFS and internationally. It should be noted that the LFS is the official source of data for the jobless household indicator. The CSO advises that because of differences in sampling and collection practices, the use of the LFS jobless household indicator in conjunction with the SILC poverty indicators should be done with great caution. Further discussion on this issue may be found in the CSO publication: '*A Review of the Sampling and Calibration Methodology of the Survey on Income and Living Conditions (SILC) 2010-2013*'. The CSO's Methodological Division published this paper in 2014. This paper is available on the CSO's website at http://www.cso.ie/en/media/csoie/methods/surveyonincomeandlivingconditions/ReviewsamplingcalibrationmethodologySILC2010-2013.pdf

5.4.1 SILC social protection transfers coherence with published Department of Social Protection statistics

In the figure 5.4.1 below 2020 SILC weighted Pension, jobseeker, family and illness supports social transfers are compared with published DSP statistics[14] for calendar year income 2019 (t-1 income reference period).

Figure 5.4.1



[14] https://www.gov.ie/en/publication/02f594-annual-sws-statistical-information-report/

5.4.2 SILC employee income compared with Revenue P35 income

When comparing SILC employee income with Revenue administrative employee income, the Revenue variable used in the comparison was the Gross Pay (for USC purposes). SILC income for 2020 was compared to the Revenue income for calendar year 2019 (t-1 income reference period). Revenue income where the Class of PRSI paid was S, K or M classes was not considered when comparing SILC employee income with Revenue administrative employee income.

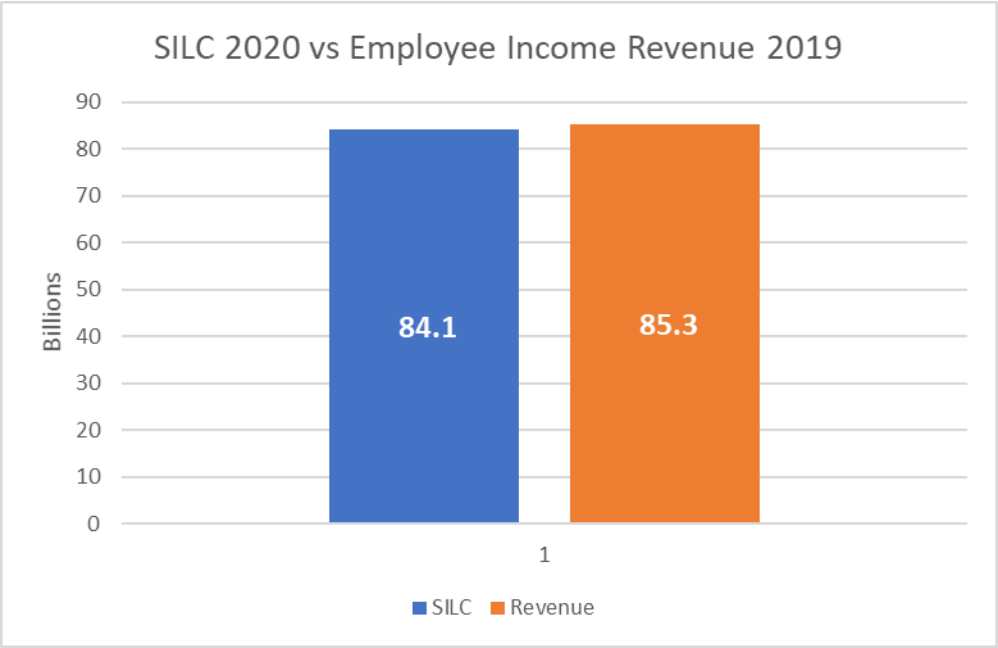


Figure 5.4.2

5.5 Comparability

5.5.1 Comparing national SILC statistics over time

All SILC publications are available on the CSO website in publication format. In addition data is made available via the CSO's main databank dissemination tool and is also hosted on the CSO website in Excel format. All previously published core SILC statistics are available on the CSO's PxStat.
2004-2019: https://data.cso.ie/product/silc
2020 onwards: https://data.cso.ie/product/SILC2020

The graphs below show the main national SILC statistics from 2020[15].

[15] Break in time series information notice:
https://www.cso.ie/en/releasesandpublications/in/silc/informationnote-breakintimeseriessilc2020/

Figure 5.5.1a

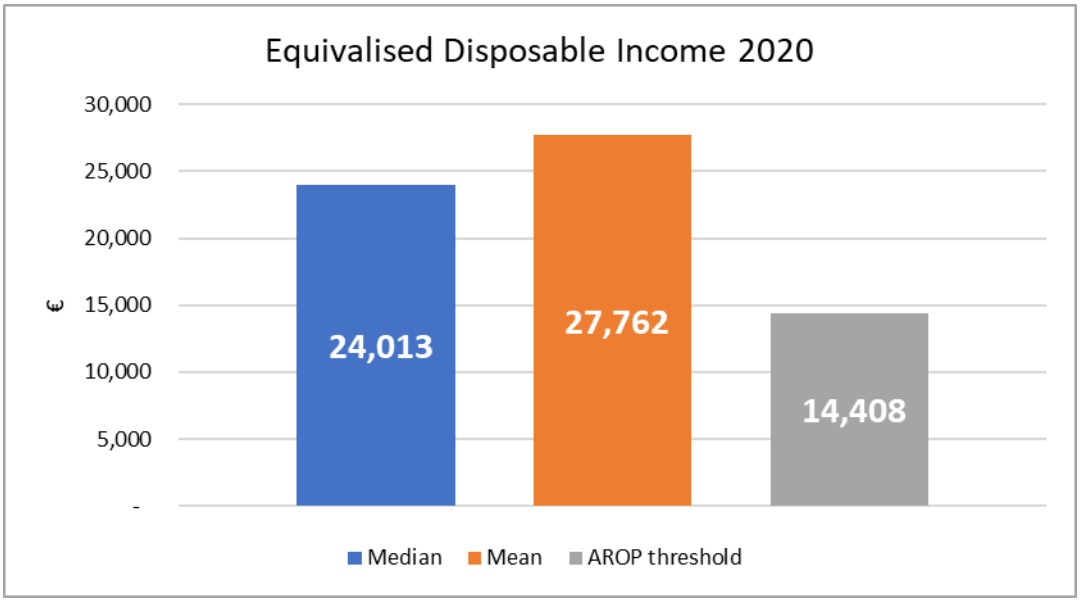


Figure 5.5.1b

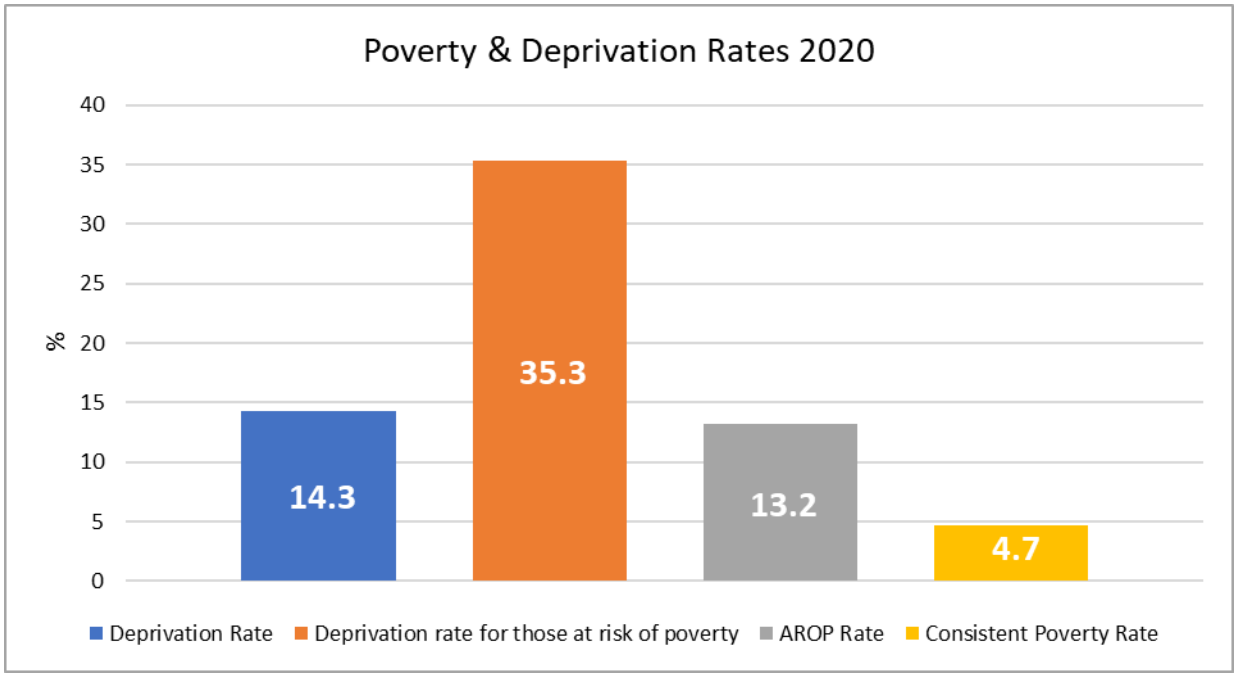


Figure 5.5.1c

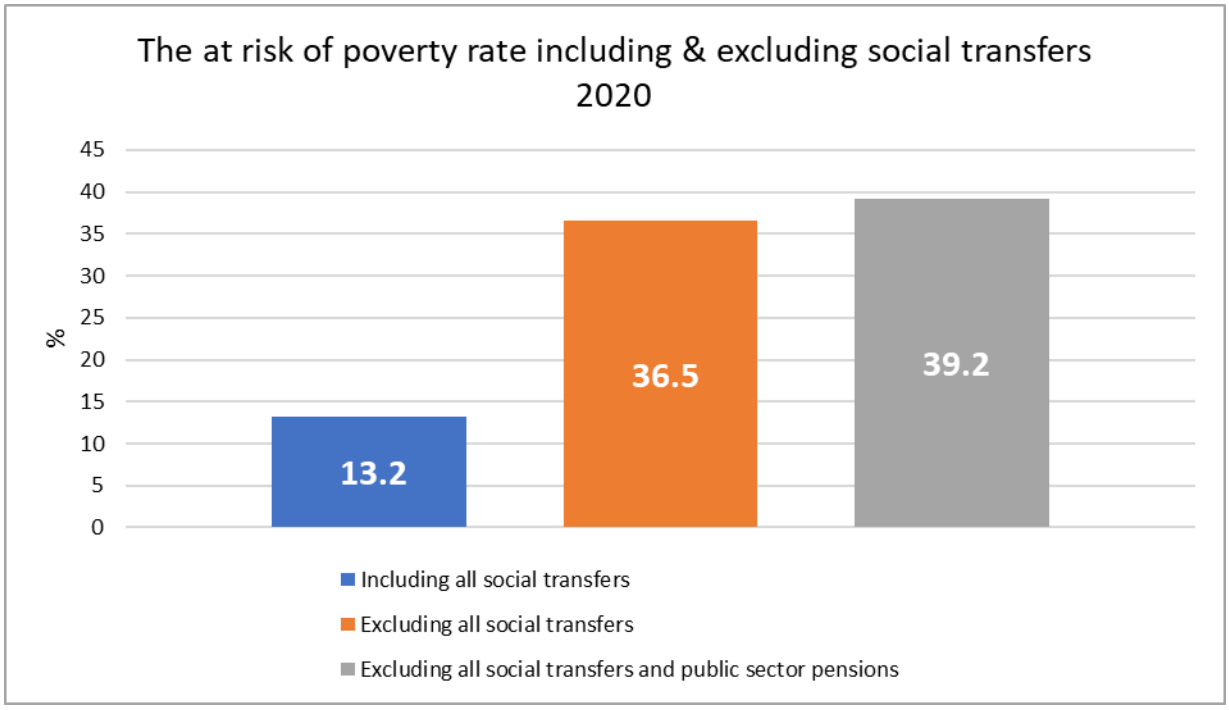


Figure 5.5.1d

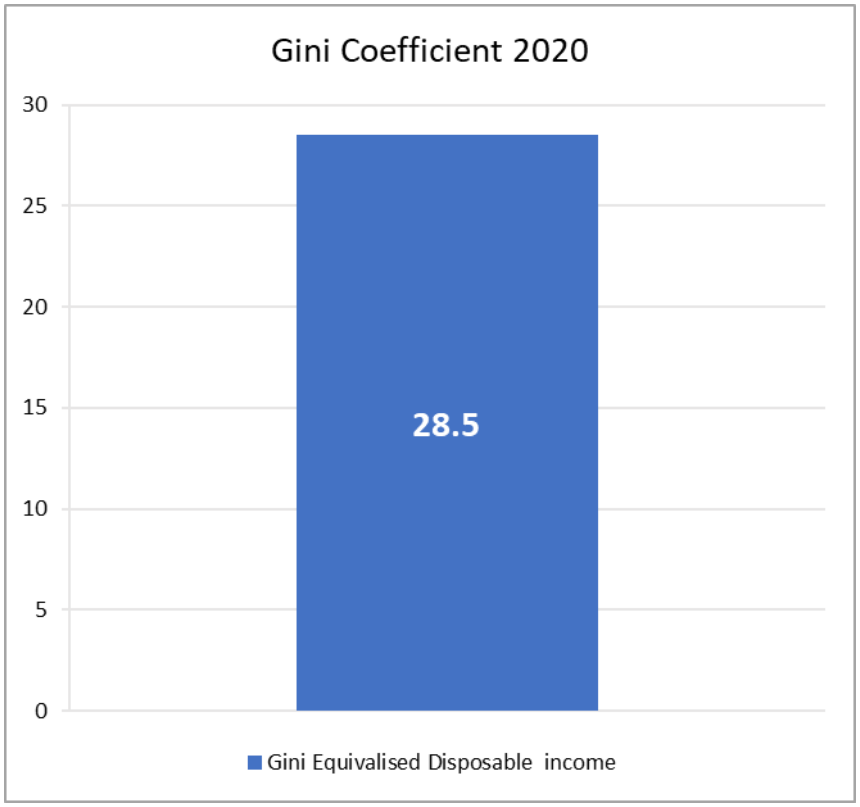


Figure 5.5.1e

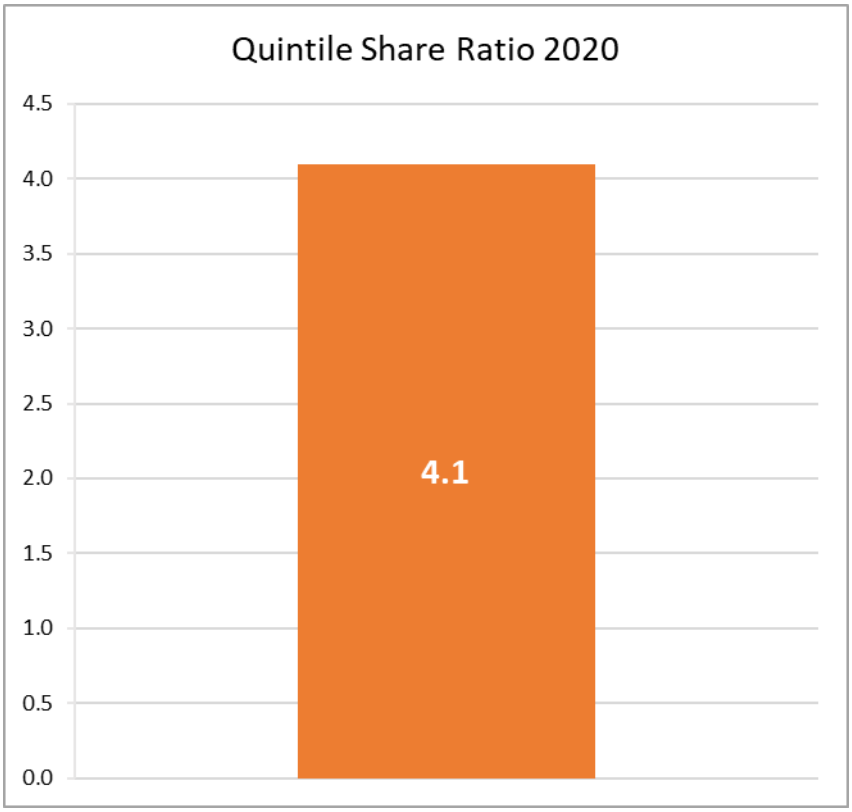
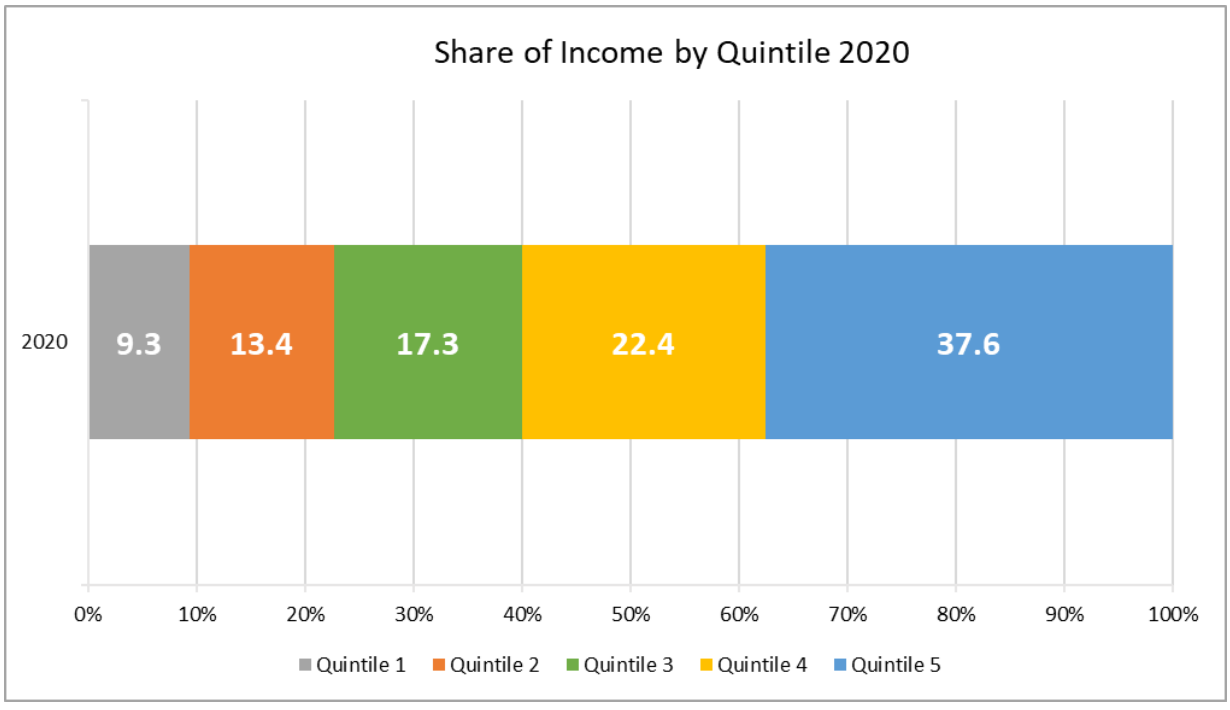


Figure 5.5.1f



5.5.2 Comparing Irish SILC statistics with other European countries

Eurostat disseminate their own statistics using EU-SILC data. The definitions adopted by Eurostat differ slightly from national definitions and concepts[16]. Therefore, when making international comparisons to ensure consistency Eurostat SILC statistics should be used. The central repositories for Eurostat information and data are located at:

http://ec.europa.eu/eurostat/web/income-and-living-conditions/overview

http://ec.europa.eu/eurostat/web/income-and-living-conditions/data/main-tables

5.5.3 A consistency check between five EU-SILC indicators compiled from EU-SILC 2010 and HBS 2010

5.5.3.1 Introduction

This note provides a comparison between five EU-SILC indicators compiled from two independent data sources, i.e. the 2010 EU-SILC data and the 2010 HBS data. The SILC analysis/publication unit in 2018 compared these indicators using 2017 EU-SILC and 2017 HBS data. The aim of this comparison was to evaluate the reliability and validity of the 2010 indicators compiled from Ireland's EU-SILC data and to evaluate the performance of Ireland's EU-SILC data in comparison with our peers in other European countries.

The data sources are independent in the sense they are taken from two separately selected random samples. The samples are not necessarily comparable in terms of size and other quality measures.

It is worth noting that the main focus of the HBS is consumption expenditure and the main focus of EU-SILC is the measurement of income, poverty, social exclusion and living conditions. Although the HBS is not designed to provide estimates of the five indicators examined in this study, it is possible to derive estimates based on the HBS data. The comparisons are for 25 European countries. For more information on the data sources see: Household Budget Survey - 2010 Wave – EU Quality Report Doc. LC/142/15/EN Eurostat (2015).

Earlier in 2015 the Central Statistics Office (CSO) conducted a similar type of comparison between the 2013 Household Finance and Consumption data and 2013 EU-SILC data (CSO, 2015a). This comparison between the two data sources found an average gross weekly equivalised household income of €538.06 for the HFCS while the corresponding figure for SILC 2013 was €537.66, a difference of only 40 cents. In other countries which have conducted both the HFCS and SILC survey, estimates of HFCS gross income per household as a percentage of SILC income per household range from 81% for Slovenia to 112% for Belgium but most countries are reasonably close to 100%.

[16] See section 3.10.3 of this report

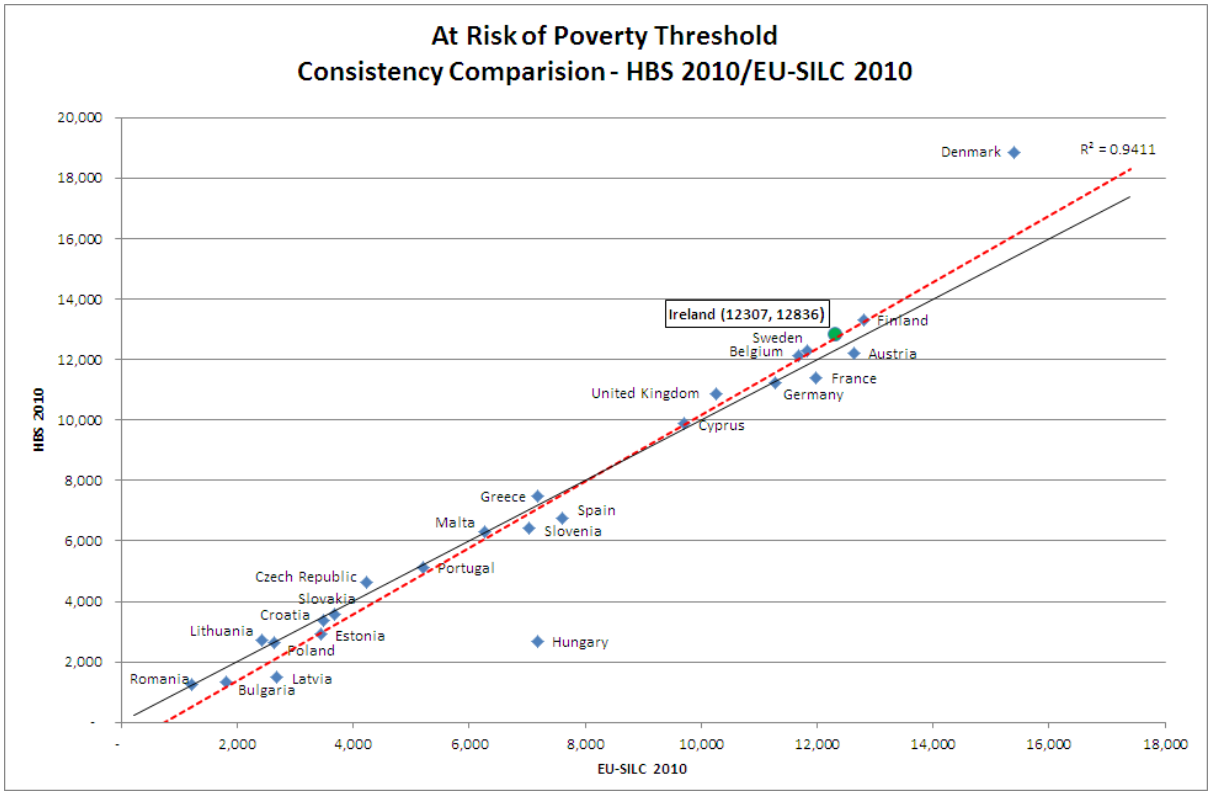
5.5.3.2 At risk of poverty threshold:

At risk of poverty threshold: This is 60% of the national median income. The threshold is calculated by ranking persons by income[17] from smallest to largest and the median value is extracted. Anyone with an income of less than 60% of the median is considered at risk of poverty at a 60% level.

Figure 5.5.3.2 plots the HBS estimate of the 'at risk of poverty threshold' versus that of EU-SILC for 25 European countries. The black line is the line of equality (if a country's estimate from HBS is exactly equal to the estimate from EU-SILC the data point will fall on this line). Countries below the line of equality produced a HBS figure that underestimates the EU-SILC figure. Similarly, countries above the line of equality produced a HBS figure that overestimates the EU-SILC figure. The red trend line is the least square regression line and represents the average consistency achieved across the 25 countries.

It is clear from the figure below that the difference between the two survey estimates for Ireland is similar to those experienced by other European countries, on average. Denmark and Hungary are clear outliers; in the case of Denmark, the HBS estimate is much higher than that of EU-SILC and the opposite is true for Hungary.

Figure 5.5.3.2



5.5.3.3 At risk of poverty rate:

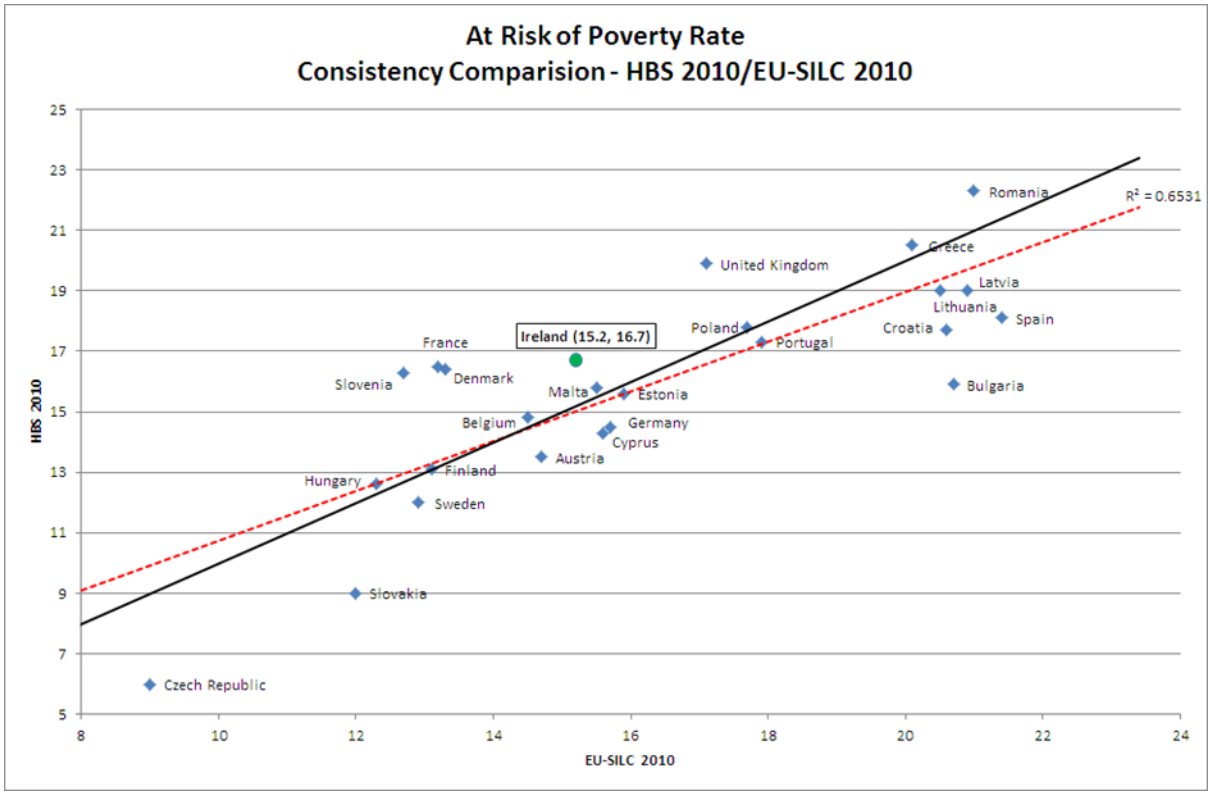
At risk of poverty rate: This is the share of persons with an income below a given percentage (usually 60%) of the national median income.

Figure 5.5.3.3 plots the HBS estimate of the 'at risk of poverty rate' versus that of EU-SILC for 25 European countries. The interpretation is similar to that of the previous graph.

[17] Income and other variables are defined in accordance with Eurostat requirements and these may differ slightly from national definitions. See section 3.10.3 of this report.

Again, the difference for Ireland between the EU-SILC estimate and that from the HBS is similar to the differences observed in most other countries. However, for a number of countries the estimates diverge considerably e.g., Czech Republic and Slovakia.

Figure 5.5.3.3



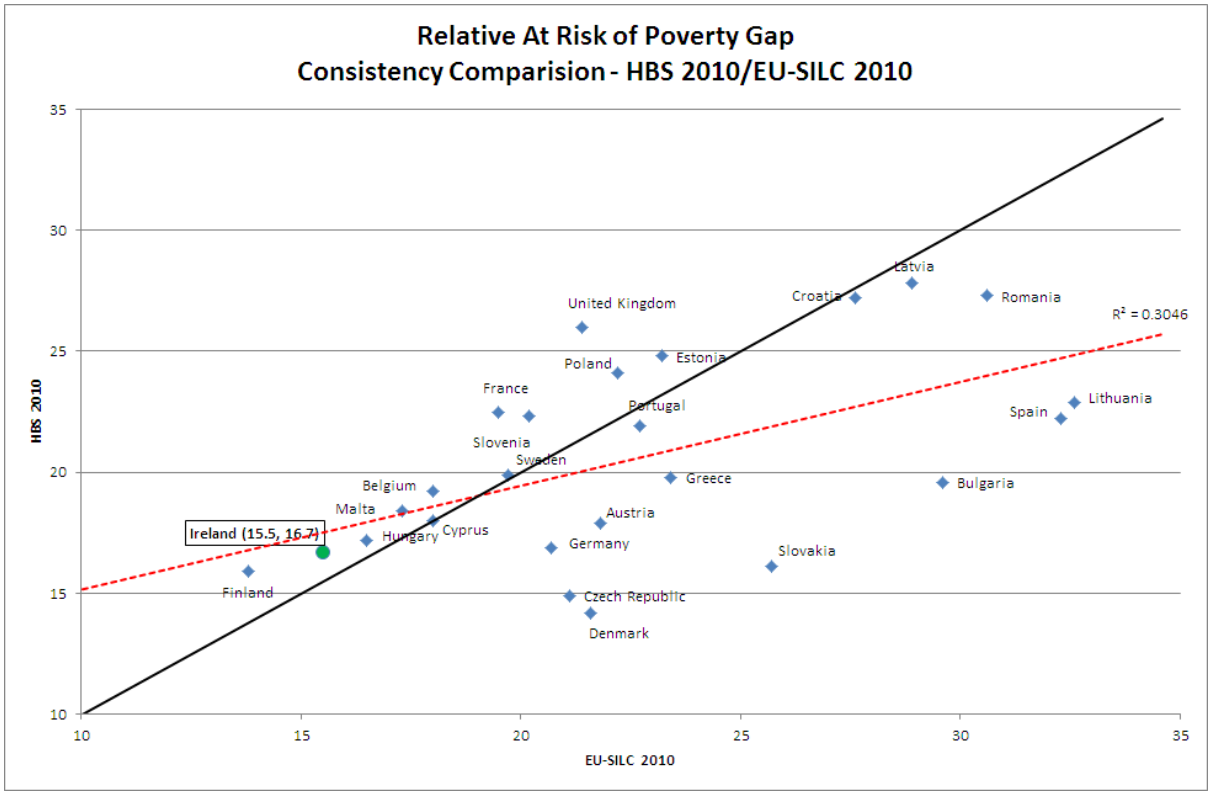
5.5.3.4 Relative at risk of poverty gap:

Relative at risk of poverty gap: This is the difference between the median income of persons below the at risk of poverty threshold and the at risk of poverty threshold, expressed as a percentage of the at risk of poverty threshold.

Figure 5.5.3.4 plots the HBS estimate of the 'relative at risk of poverty gap' versus that of EU-SILC for 25 European countries. The interpretation is similar to that of the previous graphs. The overall consistency between the two surveys is more evident for the 'at risk of poverty threshold' and the 'at risk of poverty rate' than for 'relative at risk of poverty gap.'

In comparison to many other European countries, Ireland performs particularly well in providing a consistent measure of the 'relative at risk of poverty gap' using the HBS and EU-SILC 2010 datasets.

Figure 5.5.3.4



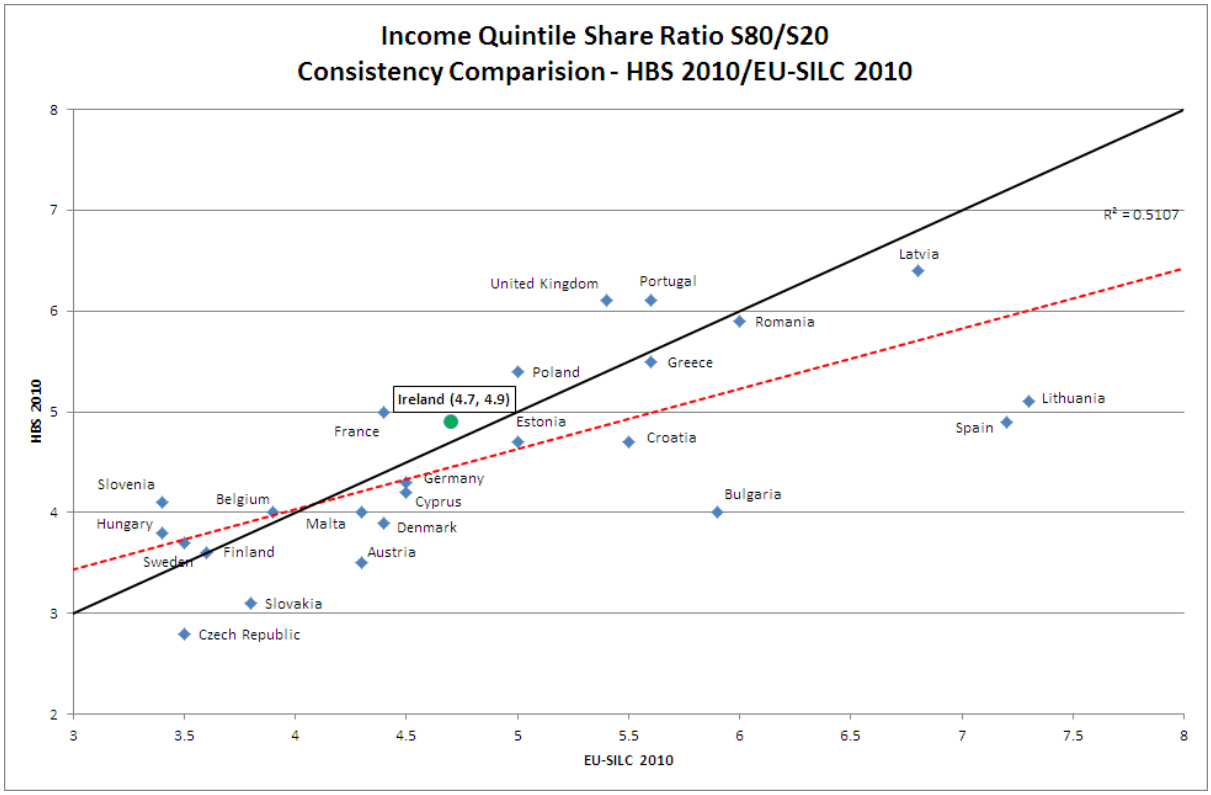
5.5.3.5 Inequality of income distribution (S80/S20 quintile share ratio):

Inequality of income distribution (S80/S20 quintile share ratio): This is the ratio of total income received by the 20% of persons with the highest income (top income quintile) to that received by the 20% of persons with the lowest income (lowest income quintile).

Figure 5.5.3.5 plots the HBS estimate of the quintile share ratio versus that of EU-SILC for 25 European countries. The interpretation is similar to that of the previous graphs.

For many countries, the HBS consistently underestimates the quintile share ratio. However, once again, Ireland seems to be providing consistent measures across both data sources.

Figure 5.5.3.5



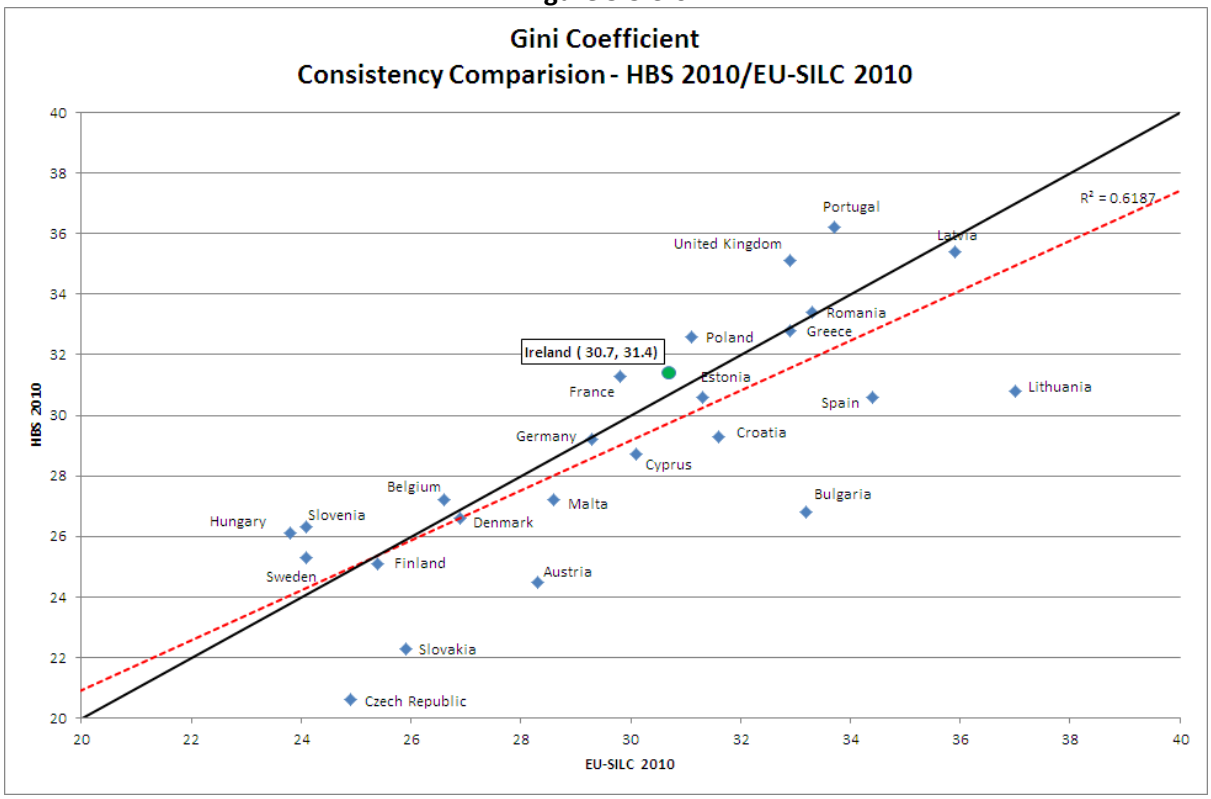
5.5.3.6 Gini coefficient:

Gini coefficient: This is the relationship between cumulative shares of the population arranged according to the level of income and the cumulative share of total income received 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 income was in the hands of one person.

Figure 5.5.3.6 plots the HBS estimate of the Gini coefficient versus that of EU-SILC for 25 European countries. The interpretation is similar to that of the previous graphs.

Ireland provides a very consistent measure of the Gini coefficient across both data sources. In some countries such as the UK and Portugal, the HBS overestimates the Gini coefficient. In many countries, most notably in the Czech Republic, Slovakia, Austria, Bulgaria and Lithuania, the HBS underestimates the Gini coefficient.

Figure 5.5.3.6



5.5.3.7 Conclusion

The comparisons outlined in section 5.5.3 provide evidence that in Ireland's case EU-SILC data yields robust and reliable measures of income, poverty, social exclusion and living conditions. When compared to its European peers Ireland's performance is reassuring. The information outlined in section 5.5.3 is taken from a Eurostat study and when coupled with the results from the earlier comparison conducted between the 2013 Household Finance and Consumption and 2013 EU-SILC data sources, there appears to be growing evidence that in Ireland's case EU-SILC data is coherent, reliable and robust.

Table A: Comparison HBS 2010/EU-SILC 2010

	At-risk-of-poverty		At-risk-of-poverty		Relative at-risk-of		Income quintile		Gini Coefficient	
	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS
Austria	12,635	12,213	14.7	13.5	21.8	17.9	4.3	3.5	28.3	24.5
Belgium	11,678	12,129	14.5	14.8	18	19.2	3.9	4	26.6	27.2
Bulgaria	1,810	1,326	20.7	15.9	29.6	19.6	5.9	4	33.2	26.8
Cyprus	9,708	9,881	15.6	14.3	18	18	4.5	4.2	30.1	28.7
Germany	11,278	11,211	15.7	14.5	20.7	16.9	4.5	4.3	29.3	29.2
Denmark	15,401	18,836	13.3	16.4	21.6	14.2	4.4	3.9	26.9	26.6
Czech Rep	4,235	4,626	9	6	21.1	14.9	3.5	2.8	24.9	20.6
Estonia	3,436	2,914	15.9	15.6	23.2	24.8	5	4.7	31.3	30.6
Spain	7,600	6,732	21.4	18.1	32.3	22.2	7.2	4.9	34.4	30.6
Finland	12,809	13,305	13.1	13.1	13.8	15.9	3.6	3.6	25.4	25.1
France	11,976	11,395	13.2	16.5	19.5	22.5	4.4	5	29.8	31.3
Greece	7,178	7,486	20.1	20.5	23.4	19.8	5.6	5.5	32.9	32.8
Croatia	3,486	3,358	20.6	17.7	27.6	27.2	5.5	4.7	31.6	29.3
Hungary	7,178	2,678	12.3	12.6	16.5	17.2	3.4	3.8	24.1	26.3
Ireland	**12,307**	**12,836**	**15.2**	**16.7**	**15.5**	**16.7**	**4.7**	**4.9**	**30.7**	**31.4**
Lithuania	2,418	2,698	20.5	19	32.6	22.9	7.3	5.1	37	30.8
Latvia	2,682	1,486	20.9	19	28.9	27.8	6.8	6.4	35.9	35.4
Malta	6,261	6,299	15.5	15.8	17.3	18.4	4.3	4	28.6	27.2
Poland	2,643	2,623	17.7	17.8	22.2	24.1	5	5.4	31.1	32.6
Portugal	5,207	5,132	17.9	17.3	22.7	21.9	5.6	6.1	33.7	36.2
Romania	1,222	1,254	21	22.3	30.6	27.3	6	5.9	33.3	33.4
Sweden	11,825	12,303	12.9	12	19.7	19.9	3.5	3.7	24.1	25.3
Slovenia	7,042	6,412	12.7	16.3	20.2	22.3	3.4	4.1	23.8	26.1
Slovakia	3,670	3,586	12	9	25.7	16.1	3.8	3.1	25.9	22.3
United Ki	10,263	10,875	17.1	19.9	21.4	26	5.4	6.1	32.9	35.1

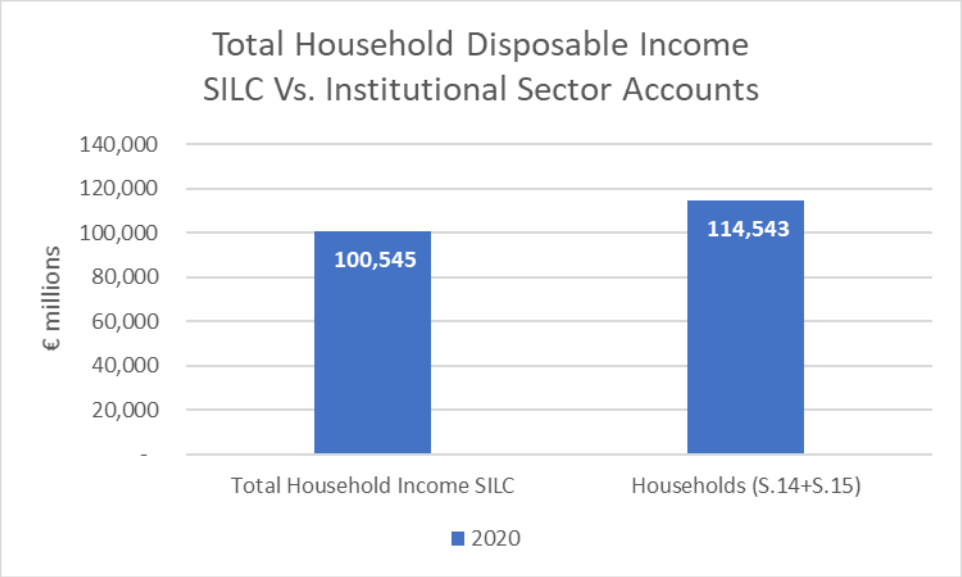
Source: Eurostat 'Household Budget Survey 2010 Wave EU Quality Report'. Doc. LC/142/15/EN

5.5.4 Comparing SILC income statistics to Gross Household Disposable Income as calculated in the Institutional Sector Accounts

It is internationally recognised that there exists a gap between disposable household income as measured under the national accounts framework and as measured in micro sources such as SILC. At the centre of this measurement gap is the concept of household income. In the national account concept, disposable income takes into account additional income in the form of social transfers in kind (STik). STiK are expenditures on individual goods and services of general government and Non-Profit Institutions Serving Households that directly benefit households. Examples of STiKs include the provision of healthcare and education. SILC on the other hand is concerned more with 'spendable' income as outlined in section 3.10.1. For further information see the joint OECD Eurostat publication 'A cross-country comparison of household income, consumption and wealth between micro sources and national accounts aggregates' - **http://ina.bnu.edu.cn/docs/20140604155637336452.pdf**

The graph below highlights the similarities and differences of the competing measures of household disposable income.

Figure 5.5.4.1



5.6 Accessibility and Clarity

5.6.1 Assistance to Users, Special Analyses

All publications are 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 SILC publication, a press conference is held annually to coincide with the release to enable users and commentators to fully understand the data or seek further clarification. Ad-hoc analysis is also produced on request.

Anonymised microdata for each year is made available to researchers via the Irish Social Science Data Archive (ISSDA). Such data is accessible by researchers applying directly to the ISSDA. For further information see: https://www.ucd.ie/issda/

Access to a Research Microdata Files (RMFs) can be requested from the CSO under the CSO's microdata access policy. The research community makes extensive use of this facility. See https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/dataforresearchers/ for more information.

5.6.2 Revisions

5.6.2.1 Revision to the 2020 SILC data

Results from SILC 2020 were updated on 6th May 2022 to better reflect the tenure distribution of Irish households[18]. In SILC, weights are applied to the data to ensure the results are reflective of the population as a whole. The survey weights for 2020 SILC results were adjusted to better reflect the estimated household distribution within the rental sector. While this did not impact the overall at risk of poverty rate (unchanged at 13.2%), it did result in a reduction in the consistent poverty rate (4.7% compared with 5.0%).

Table 5.6.2.1.1 Main result changes due to revision

	Published 2020	Revised 2020
Income	**€**	**€**
Nominal household disposable income		
Median	43,101	43,915
Mean	52,539	52,941
Nominal equivalised disposable income per individual		
Median	23,675	24,013
Mean	27,595	27,762
At risk of poverty threshold		
(60% of median income)	14,205	14,408
Poverty & deprivation rates	**%**	**%**
At risk of poverty rate	13.2	13.2
Deprivation rate[1]	15.6	14.3
Deprivation rate for those at risk of poverty	38.3	35.3
Consistent poverty rate	5.0	4.7
Income equality indicators		
Gini coefficient (%)	28.8	28.5
Income quintile share ratio	4.1	4.1

5.6.2.2 Revision to the 2012, 2013, 2014,2015 and 2016 SILC data

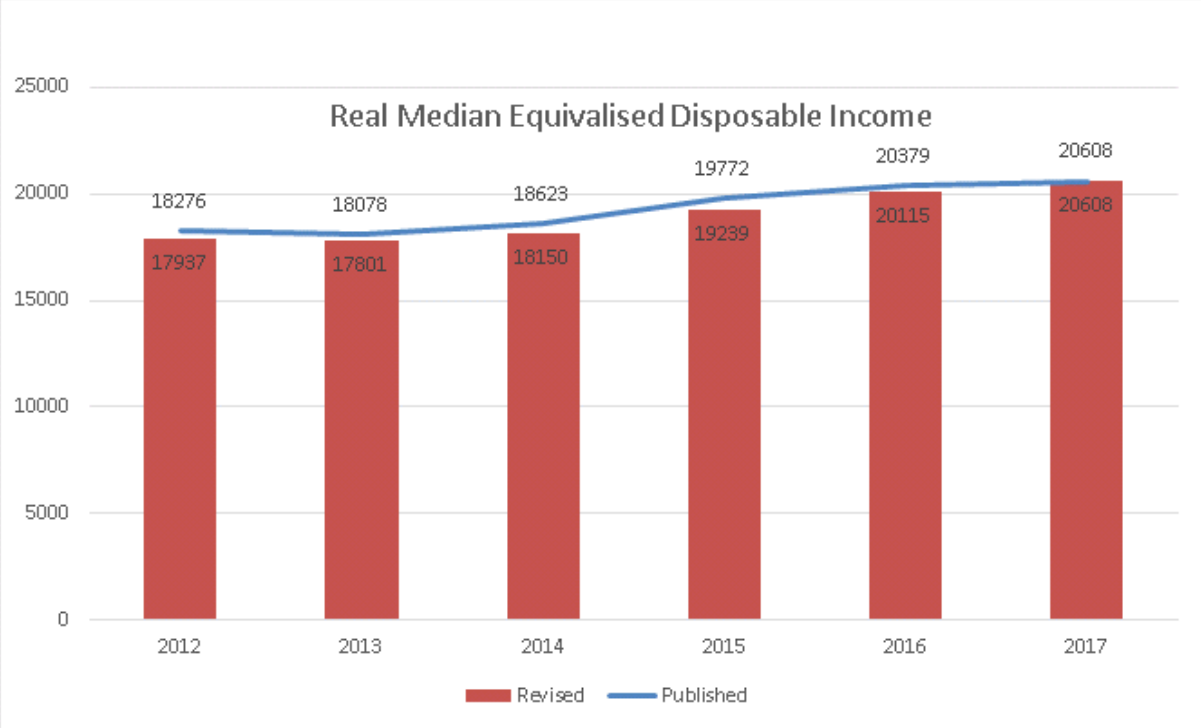
Data for 2012, 2013, 2014, 2015 and 2016 was revised and released alongside the SILC 2017 data on 17th December 2018.

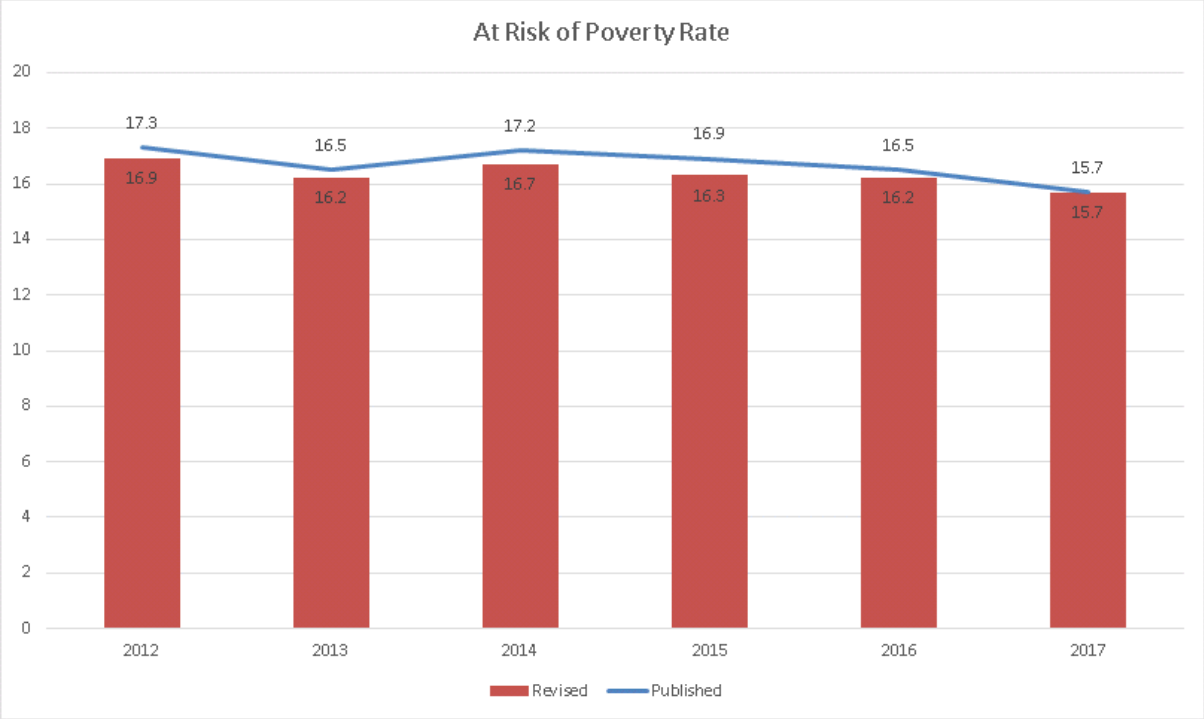
The NUTS boundaries were amended on 21st November 2016 under Regulation (EC) No.2066/2016 and took effect from 1st January 2018[19]. As the CSO weight results in the SILC using NUTS3 groups, survey estimates have been revised to take account of these changes. The reweighted data from 2012 to 2016 inclusive is published with the SILC 2017 results and users should note that there is a break in the regional data series from 2012, as the results for the period 2004 to 2011 are published using the old NUTS groupings.

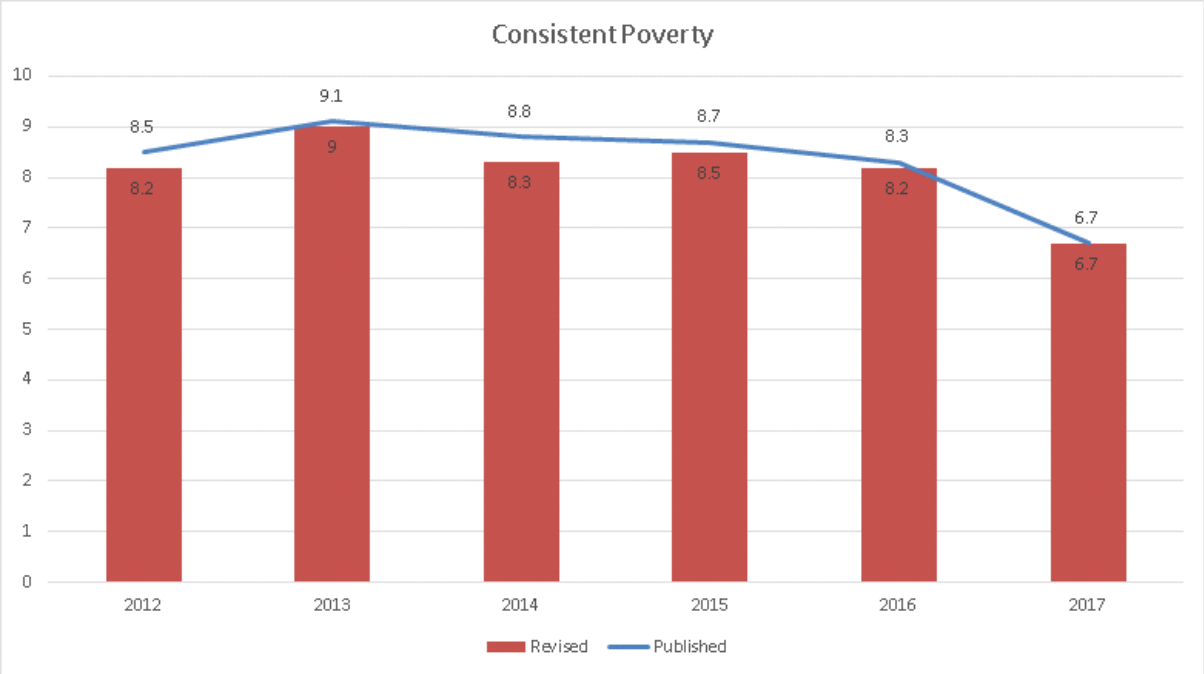
[18] Information note on revision SILC 2020:
https://www.cso.ie/en/releasesandpublications/in/silc/informationnote-revisiontosilc2020/
[19] Please see http://ec.europa.eu/eurostat/web/nuts/history for further details

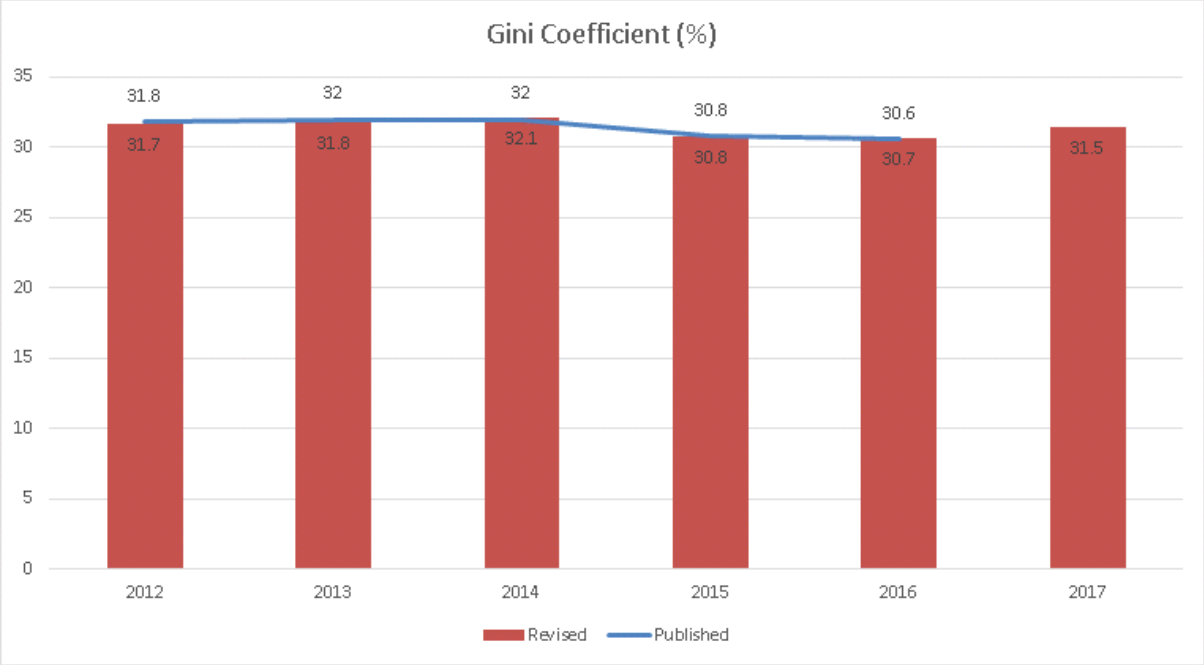
As the SILC is a sample survey, independent estimates of population and numbers of households are required each year to provide a weighting basis for the statistics produced from the SILC. When the results from a new Census of Population are published, the quarterly population estimates back to the previous Census of Population are revised. The results published for the SILC 2019 incorporate the new population estimates (as calculated from the Census of Population 2016) for each year from 2012 onwards into the weighting methodology.

As results for the SILC from 2012 through to 2016 are being revised due to the new NUTS3 region classifications and the post Census 2016 population and household estimates, the Income, Consumption and Wealth (ICW) division in the CSO took the opportunity to increase the use of administrative data in the SILC process. The process changes mostly relate to increased usage of administrative data for employee income variables and this has improved the quality of the data from 2012 onwards. While applying the process changes to the periods in question a number of corrections were made to further improve the quality of the data. The revised estimates for 'at risk of poverty', 'consistent poverty', 'enforced deprivation', Gini coefficient and quintile share ratio are not statistically significantly different from the pre-revision estimates




At Risk of Poverty Rate
20
18
16
14
12
10
8
6
4
2
0
17.3
16.5
17.2
16.9
16.5
15.7
16.9
16.2
16.7
16.3
16.2
15.7
2012
2013
2014
2015
2016
2017
Revised
Published


Consistent Poverty
10
9
8
7
6
5
4
3
2
1
0
8.5
9.1
8.8
8.7
8.3
6.7
8.2
9
8.3
8.5
8.2
6.7
2012
2013
2014
2015
2016
2017
Revised
Published


Gini Coefficient (%)
35
30
25
20
15
10
5
0
31.8
32
32
30.8
30.6
31.7
31.8
32.1
30.8
30.7
31.5
2012
2013
2014
2015
2016
2017
Revised
Published

5.6.2.3 Revision to the 2012, 2013 and 2014 SILC data

Before the 2017 revisions to SILC reference years 2012 to 2014, the results for these years had already been revised. These revisions arose following the identification of a processing error during the production of data for 2015. This processing error related to the method used to calculate Universal Social Charge (USC) and Pay Related Social Insurance (PRSI). The error resulted in disposable income being under estimated over the period (2012-2014). However, trends observed in the revised series mirror those of the previously published data. Earlier years are not affected. See Figures 5.6.1 to 5.6.5 below.

Figure 5.6.1: Revisions to Real Median Equivalised Income

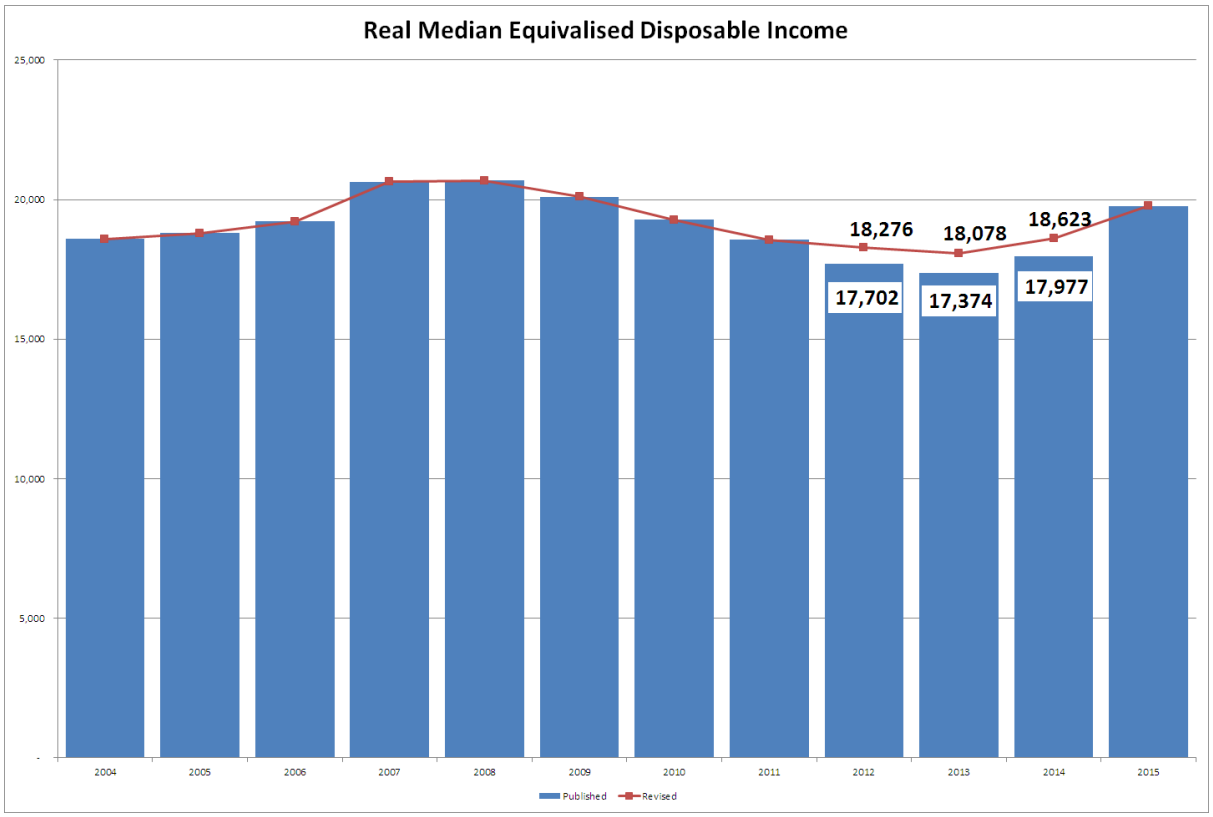


Figure 5.6.2: Revisions to the At Risk of Poverty Rate

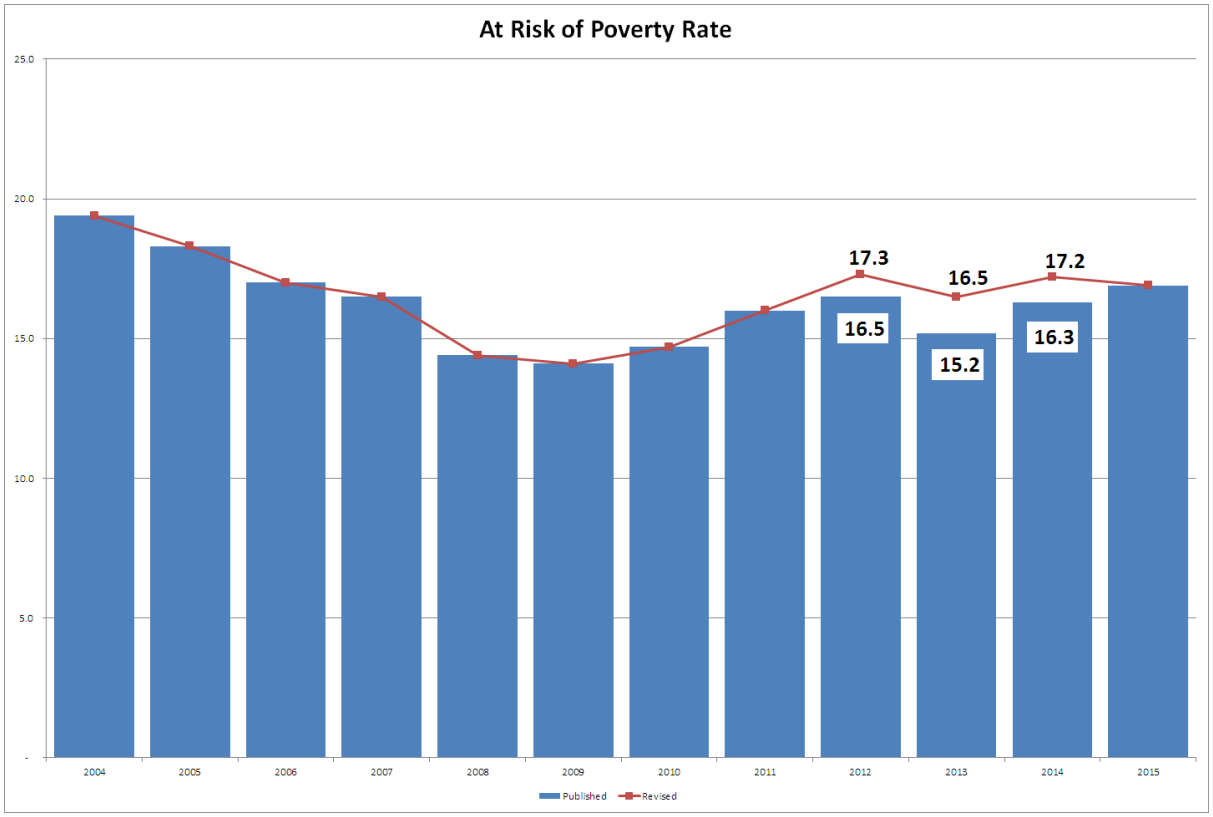


Figure 5.6.3: Revisions to the Consistent Poverty Rate

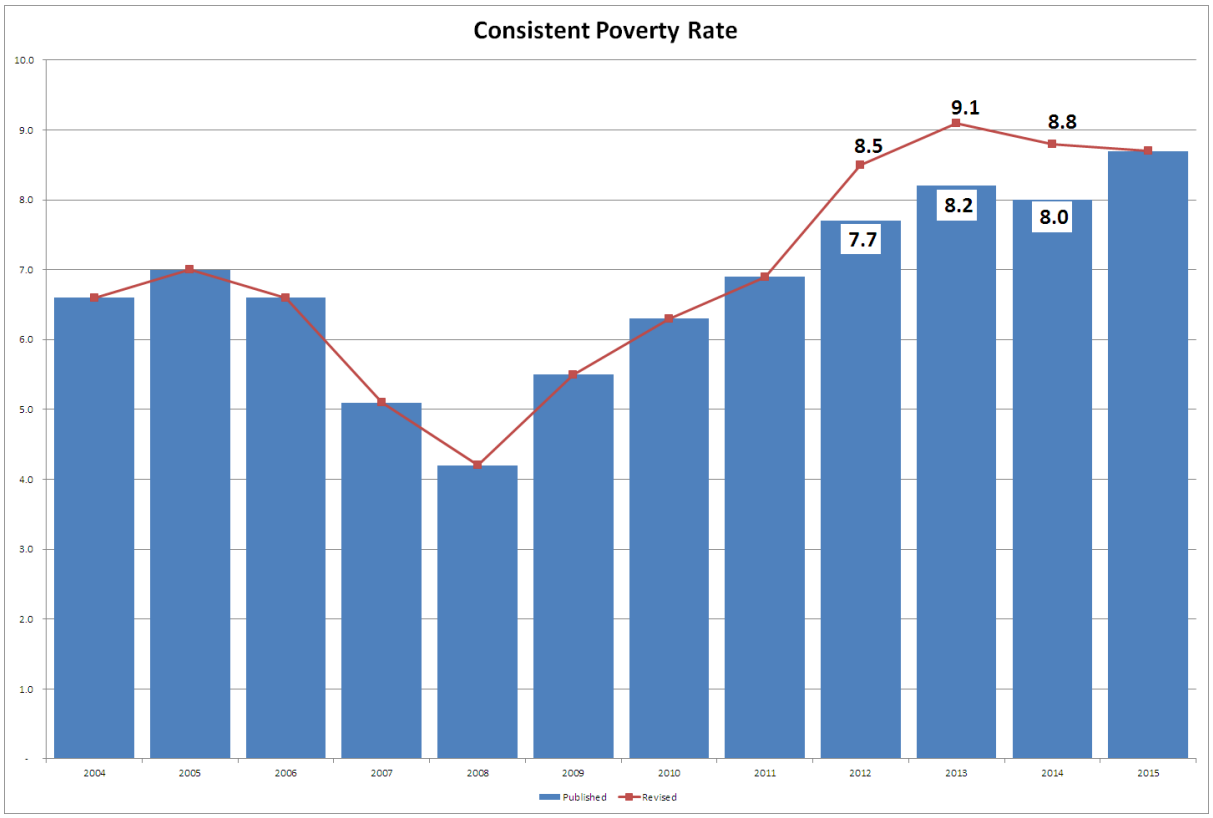


Figure 5.6.4: Revisions to the Gini Coefficient

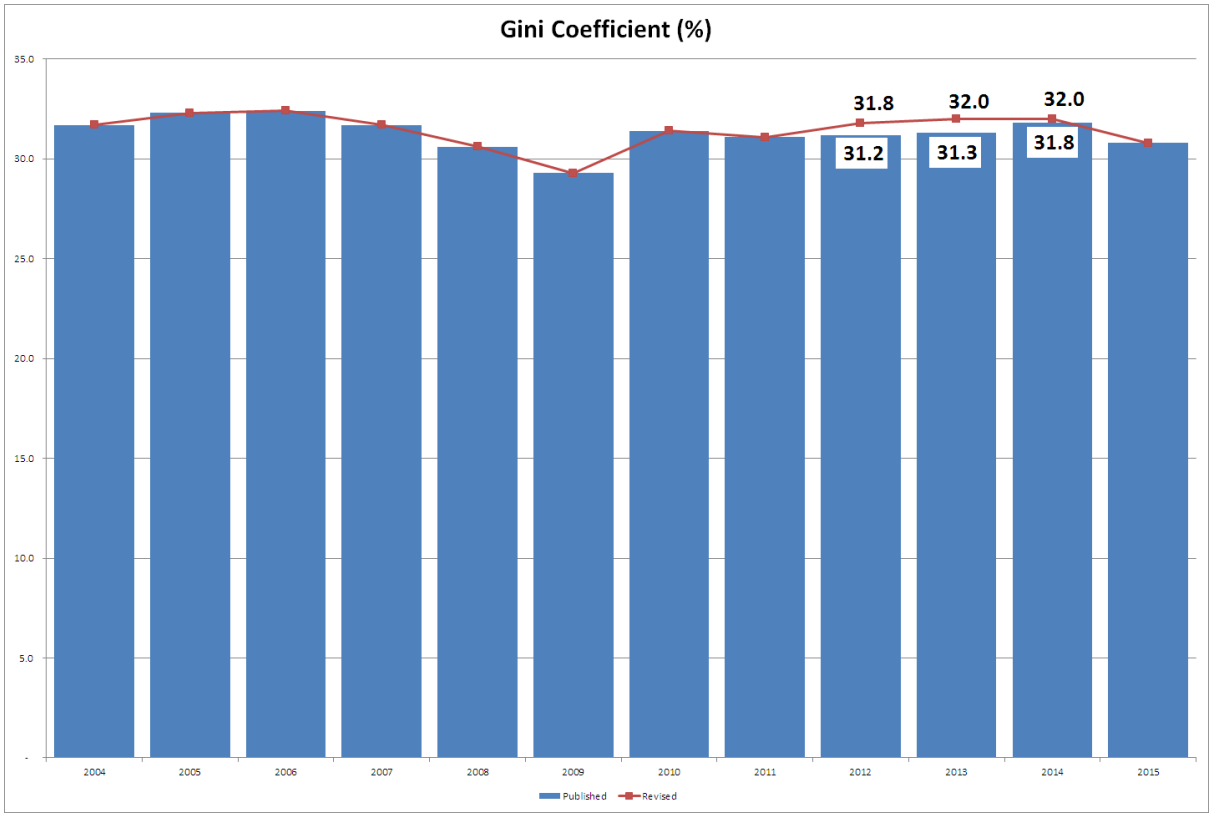
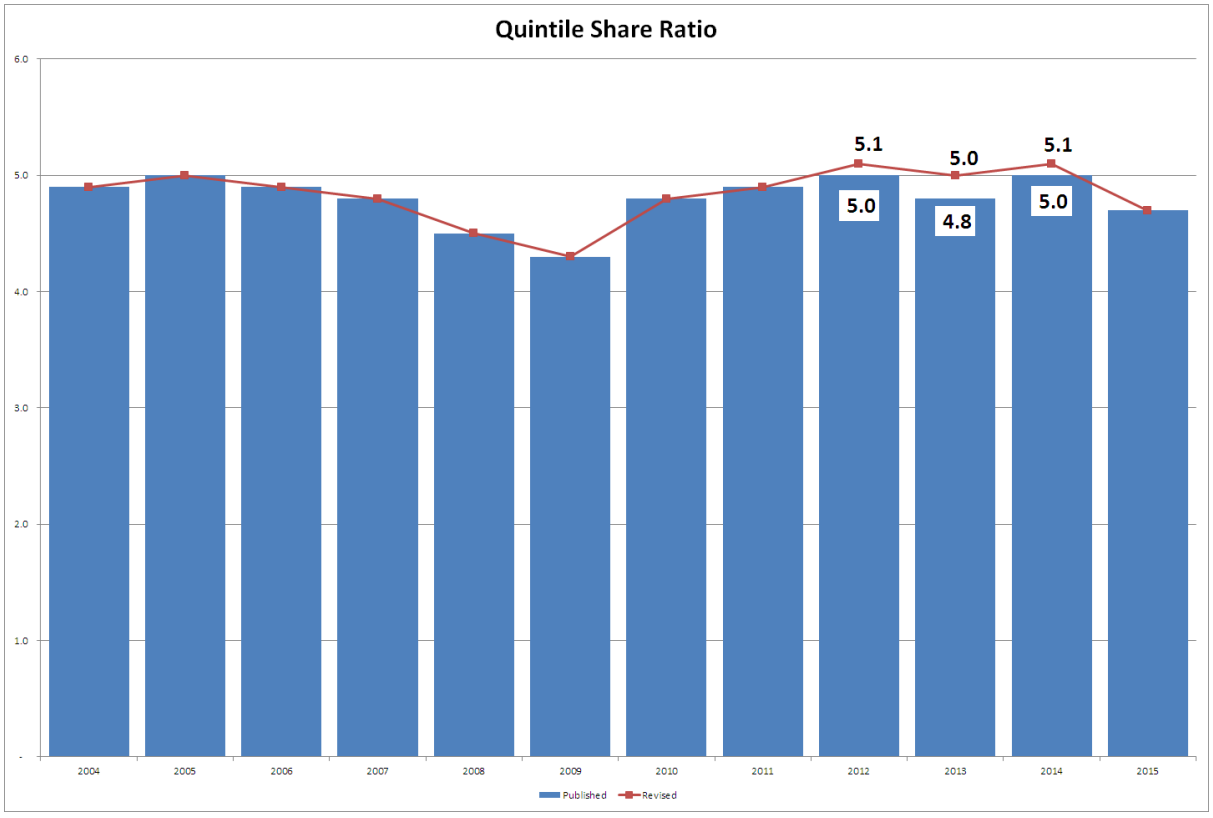


Figure 5.6.5: Revisions to the Quintile Share Ratio



5.6.2.4 Revision to the 2010 SILC data

The 2010 SILC results were amended following extensive investigation of anomalies in the data. In 2010, changes had been made to the processing of the data which resulted in an incorrect treatment in some cases of tax, income and pension contributions. This became clear when unusual trends in certain categories between 2010 and 2011 were further analysed. The revisions were carried out as a result of a processing error. The main effects of the amendment was a change in the 'at risk of poverty threshold' and in the 'at risk of poverty rate' (15.8% to 14.7%). There was no significant change in the deprivation and consistent poverty rates. Indicators of income inequality decreased e.g. the Gini coefficient went from 33.9% to 31.6%. Earlier years were not affected. The changes in the main indicators are shown in Table 5.6.2 below.

Table 5.6.2: Revisions to the Main SILC 2010 Results

	Original 2010	Amended 2010
Income	€	€
Annual average household disposable income (per household)	43,333	43,151
Annual average equivalised disposable income (per individual)	22,168	22,138
At risk of poverty threshold (60% of median income)	10,831	11,155
Income inequality		
Gini coefficient	33.9%	31.6%
Quintile share ratio	5.5	4.9
Poverty & deprivation rates	%	%
At risk of poverty rate	15.8	14.7
Deprivation rate[1]	22.5	22.6
Consistent poverty rate	6.2	6.3

[1] Experienced two or more types of enforced deprivation

5.6.2.5 Revision to the 2003 SILC data

The first SILC results from the CSO were for the reference year 2003 and were published in January 2005. These results were revised following the application of improved re-weighting and calibration methods in line with EU recommendations. The effect of the revisions were to lower both the risk of poverty (from 22.7% to 19.7%) and consistent poverty (from 9.4% to 8.8%) measures. The comparability of year on year changes were affected in some cases by some adjustments to the survey procedures (see background notes of http://www.cso.ie/en/media/csoie/releasespublications/documents/eusilc/2004/eusilc_2004.pdf

for more information). This was particularly the case with estimates for relatively small sub-populations, where relatively large sampling errors should be taken into account in interpreting trends.

5.6.2.6 Regular inter-censal revisions

Inter-censal revisions had not been completed for SILC after the 2006, 2011 and 2016 Census of Population. Tests were run to see if the revised population totals had any effect on the main SILC

statistics and it was found they remained unchanged. However, the fact that these revisions have not taken place means that population and sub-population totals in SILC cannot be published as they do not correspond with the official CSO estimates. This is most notable when comparing year-on-year numbers.

5.6.3 Publications

5.6.3.1 Releases, Regular Publications

For full details of the core results published, see the electronic release at https://www.cso.ie/en/statistics/socialconditions/surveyonincomeandlivingconditionssilc/

Additional ad-hoc reports are published when resources allow, see https://www.cso.ie/en/statistics/socialconditions/

5.6.3.2 Statistical Reports

SILC contributes data to a number of statistical releases in the office such as 'Men and Women in Ireland', 'Measuring Ireland's Progress' and the CSO Yearbook.

Eurostat uses SILC data to produce their own statistics and publications. Many of these additional publications are based on the annual modules in SILC. See http://ec.europa.eu/eurostat/web/income-and-living-conditions/publications for a full list of Eurostat's SILC publications.

5.6.3.3 Internet

All SILC publications are available on the CSO website in publication format. In addition, data is made available via the CSO's main databank dissemination tool and is also hosted on the CSO website in Excel format. All previously published SILC statistics are available on the CSO's Databank
All previously published SILC statistics are available on the CSO's Databank.

2004-2019: https://data.cso.ie/product/silc

2020 onwards: https://data.cso.ie/product/silc2020

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 laptops 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, age groupings are provided instead of single year of age.

To ensure confidentiality, SILC DCU does not have direct access to the complete Revenue or DEASP files. The ownership of these files rest with the CSO's Administrative Data Centre (ADC). Only selected variables are made available to the SILC DCU and these variables are only provided for those individuals on the SILC 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. Furthermore, when SILC DCU transfer data to the SILC Analysis section, any information that would allow an individual to be identified is stripped from the final data sets to provide added security.

6 Additional documentation and publications

6.1 CSO Publications

The main CSO SILC homepage can be found at the following link:
https://www.cso.ie/en/statistics/socialconditions/surveyonincomeandlivingconditionssilc/

6.2 Eurostat Publications

Eurostat issue releases and statistics that use SILC data. The central repositories for Eurostat information and data are located at:

http://ec.europa.eu/eurostat/web/income-and-living-conditions/overview

http://ec.europa.eu/eurostat/web/income-and-living-conditions/data/main-tables

6.3 DSP Publications

The Department of Social Protection publish the Social Inclusion Monitor annually. The purpose of the Social Inclusion Monitor is to report officially on progress towards the National Social Target for Poverty Reduction, including the sub-target on child poverty and Ireland's contribution to the Europe 2020 poverty target. This annual Monitor uses the latest statistical data available from the SILC and from Eurostat (SILC micro-data) to analyse trends in official poverty measures and other supporting indicators.

See https://www.gov.ie/en/collection/156b21-social-inclusion-monitor/ for more information.