

- Full view -

Census Quality Report 2016

National Reference Metadata in Euro SDMX Metadata Structure (ESMS)

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Eurostat metadata

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For any question on data and metadata, please contact: [EUROPEAN STATISTICAL DATA SUPPORT](#)

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1.1. Contact organisation	Central Statistics Office Ireland	
1.2. Contact organisation unit	Census Division	
1.3. Contact name	Cormac Halpin	
1.4. Contact person function	Senior Statistician	
1.5. Contact mail address	Central Statistics Office, Swords Business Campus, Balheary Road, Swords, Co Dublin, K67 D2X4 Ireland	

1.6. Contact email address	cormac.halpin@csso.ie
1.7. Contact phone number	35318951343
1.8. Contact fax number	35318951398

2. Metadata update Top	
2.1. Metadata last certified	31/01/2018
2.2. Metadata last posted	28/03/2018
2.3. Metadata last update	31/01/2018

3. Statistical presentation Top	
3.1. Data description	
<p>The census provides information on the key demographic and socio economic characteristics of the population - e.g. age, sex, marital status, residence, nationality, religion, ethnicity, commuting, education, employment status, industry and occupation. Information is also provided on the housing characteristics of private households, i.e. accommodation type, year built, nature of occupancy, type of dwelling, heating, water, sewerage facilities and P.C. and internet access.</p>	
3.2. Classification system	
ISCO-08 COM, NACE Rev. 2	
3.3. Coverage - sector	
<p>The target collection is all persons present in the State on Census Night (24 April 2016), in both private households and communal establishments. Most of the key analyses relate to individuals; analyses are also provided on household composition and families and housing type and tenure.</p>	
3.4. Statistical concepts and definitions	
<p>The census questionnaire (form) covers a wide range of demographic, social, and economic topics.</p> <p>Questions asked in respect of individuals included: name, sex, relationship to others in the household, date of birth, place of birth, usual residence, usual residence one year ago, ever lived abroad, marital status, number of children given birth to, ability to speak the Irish language, use of other language(s) in the home, religion, ethnicity, disability, means of travel to work, school or college, time of travel, distance travelled, time taken, provision of caring, age education ceased, level of education, third level qualifications, economic status, employment status, occupation, industry and name and address of place of work.</p> <p>Information is also provided on the household's accommodation, i.e. type, age, ownership status, size, heating source/type, water and sewerage supply, as well as vehicle and PC ownership and internet access.</p> <p>Usual Residence</p> <p>Usual residence means the place where a person normally spends the daily period of rest. Persons usually resident but absent, or expected to be absent, at the time of the census [for less than one year] are considered temporarily absent and thus included in the total usually resident population. Persons</p>	

living or expected to live outside the place of enumeration for one year or more shall not be considered temporarily absent and shall therefore be excluded from the total population. Persons who are enumerated but do not meet the criteria for usual residence in the place of enumeration, are considered temporarily present and therefore not counted in the total usually resident population. The census form included **specific guidance** on what constituted the usual residence. Householders were also required to complete questions relating to persons usually resident but absent on census night; individuals absent for less than 12 months outside the State were included as usual residents; where an entire household was absent on census night, household members out of the country on the night were not counted.

Sex

Question 2 required respondents to indicate their sex, either '1 – Male' or '2 –Female'. In instances where the question is not correctly answered or left blank, the sex of the person is determined through a manual inspection of other information provided on the census form, particularly the list of persons present and name.

Age

The age reached at the reference date (in completed years).

Marital status

Marital status is the (legal) conjugal status of an individual in relation to the marriage laws of the country (de jure status). A person shall be classified according to his/her most recently acquired legal marital status at the reference date (24/04/2016). For Census 2016, this question was amended slightly to reflect the introduction of same-sex civil partnerships. Whereas no one piece of law defines legal marital statuses in Ireland, they are referred to in several legislative acts, e.g. [Article 41 of the Irish Constitution](#), the [Family Law \(Divorce\) Act 1996](#), the [1870 Matrimonial Causes and Marriage Law Act](#), the [Civil Partnership and Certain Rights and Obligations of Cohabitants Act 2010](#), and the [Marriage Act 2015](#), which makes marriage available to same-sex couples. The minimum age for marriage and same-sex civil partnerships is 18.

Family Status

The *family nucleus* is defined as two or more persons who belong to the same household and who are related as husband and wife, as partners in a registered partnership, as partners in a consensual union, or as parent and child. Thus, *a family comprises a couple without children, or a couple with one or more children, or a lone parent with one or more children*. This family concept limits relationships between children and adults to direct (first-degree) relationships, that is between parents and children.

Child (son/daughter) refers to a blood, step- or adopted son or daughter (regardless of age or marital status) who has usual residence in the household of at least one of the parents, and who has no partner or own children in the same household. Foster children are not included. A son or daughter who lives with a spouse, with a registered partner, with a partner in a consensual union, or with one or more own children, is not considered to be a child. A child who alternates between two households (for instance if his or her parents are divorced) shall consider the one where he or she spends the majority of the time as his or her household. Where an equal amount of time is spent with both parents the household shall be the one where the child spends census night.

The term *couple* shall include married couples, couples in registered partnerships, and couples who live in a consensual union.

'Skip-generation households' (households consisting of a grandparent or grandparents and one or more grandchildren, but no parent of those grandchildren) are not included in the definition of a family. Relationships between household members and family status were identified using the relationship question, i.e. Persons 2, 3, 4, and 5 were required to indicate their relationship to each preceding person, while Person 6 indicated their relationships to Persons 1-4. In relation to absent persons, their relationship to Person 1 is identified. There were 12 relationship options available, of which one was selected. The individual families and the relationships within each family is either coded automatically or manually by an operator using the Family Nucleus Coding station.

Household Status

In the Irish Census, a household is defined according to the **housekeeping concept**. The precise definition of a household used is: ***One person living alone, or A group of related or unrelated people living at the same address with common housekeeping arrangements, i.e. sharing at least one meal a day/sharing a living or sitting room.*** Relationships and family status were identified as described above (Family Status).

Current Activity Status

'Current activity status' is the current relationship of a person to ***economic activity***, based on a reference period of one week, which may be either a specified, recent, fixed, calendar week, or the last complete calendar week, or the last seven days prior to enumeration. The 'currently economically active population' comprises all persons who fulfil the requirements for inclusion among the employed or the unemployed.

'Employed' persons comprise all persons aged 15 years or over who during the reference week performed at least one hour of work for pay or profit, in cash or in kind, or were temporarily absent from a job in which they had already worked and to which they maintained a formal attachment, or from a self-employment activity.

The **'unemployed'** comprise all persons aged 15 years or over who were 'without work', that is, were not in wage employment or self-employment during the reference week; and 'currently available for work', that is, were available for wage employment or self-employment during the reference week and for two weeks after that; and 'seeking work', that is, had taken specific steps to seek wage employment or self-employment within four weeks ending with the reference week.

The category **'Currently not economically active'** includes persons below the national minimum age for economic activity. In ascribing a single activity status to each person, priority is given to the status of 'employed' in preference to 'unemployed', and to the status of 'unemployed' in preference to 'not economically active'. The reference week in the question on Present Principal Status was the week leading up to the night of enumeration, i.e. Sunday April 24th 2016. Persons aged under 15 were instructed not to respond to this question. If they did respond to the question, the response was removed during processing.

Respondents were required to choose from one of eight response options, one of which ('Other') allowed them to write in an answer. The text captured from this option was subsequently coded to 'Other' or to one of the other seven options where applicable. Where current activity status was left blank by the respondent a value was imputed using other information on the form and rotation files whose current activity profile was based on sectors of the general population.

Occupation

'Occupation' refers to the type of work done in a job (that is the main tasks and duties of the work).

Persons doing more than one job are allocated an occupation based on their main job, which is identified according to the time spent on the job or, if not available, to the income received. The breakdown by occupation will be available for persons aged 15 or over that were either employed during the reference week, or unemployed during the reference week, but have ever been in employment.

Persons are classified according to the occupation they had during their *most recent employment*. The categories included in the breakdown 'occupation' correspond to the major groups of the **ISCO-08 (COM)** classification. Persons under the age of 15 years, as well as persons aged 15 or over that were either not economically active during the reference week, or unemployed, never worked before (i.e. they have never been employed in their lives) are classified under 'not applicable'. The allocation of a person within the breakdowns of the topics 'Occupation', 'Industry' and 'Status in employment' is based on the same job.

Industry

Industry (branch of economic activity) is the kind of *production or activity* of the establishment (or similar unit) in which the job of a currently economically active person is located. Persons doing more than one job shall be allocated an industry (branch of economic activity) based on their main job, which is to be identified according to the *time spent* on the job or (if not available) the *income received*. The breakdown by industry is available for persons aged 15 or over that were either employed during the reference week, or unemployed during the reference week, but have ever been in employment. Persons are classified according to the industry they worked in during their most recent employment. The categories included in the breakdown 'industry' list the 21 sections of the NACE Rev. 2 classification and appropriate aggregates.

Persons under the age of 15 years, as well as persons aged 15 or over that were either not economically active during the reference week, or unemployed, and have never worked before (i.e. have never been employed in their lives) are classified under 'not applicable'. The allocation of a person within the breakdowns of the topics 'Occupation', 'Industry' and 'Status in employment' is based on the same job.

Status in employment

An '*employee*' is a person who works in a 'paid employment' job, that is a job where the explicit or implicit contract of employment gives the incumbent a basic remuneration, which is independent of the revenue of the unit for which s/he works.

An '*employer*' is a person who, working on his or her own account or with a small number of partners, holds a 'self-employment' job and, in this capacity, on a continuous basis (including the reference week) has engaged one or more persons to work for him/her as 'employees'. If a person is both employer and employee, s/he shall be allocated to only one group according to the time spent on the job or (if not available) the income received.

An '*own-account worker*' is a person who, working on his/her own account or with one or a few partners, holds a '*self-employment job*' and has not engaged, on a continuous basis (including the reference week), any 'employees'.

A '*contributing family worker*' is a person who holds a 'self-employment' job in a market-oriented establishment operated by a related person, living in the same household, and cannot be regarded as a partner (that is an employer or own-account worker) because the degree of commitment to the operation of the establishment, in terms of working time or other factors to be determined by

national circumstances, is not at a level comparable to that of the head of the establishment.

A '*member of a producers' cooperative*' is a person who holds a 'self-employment' job in an establishment organised as a cooperative, in which each member takes part on an equal footing with other members in determining the organisation of production, sales and/or other work, the investments and the distribution of the proceeds among the members.

In the Irish Census, persons who identified themselves as either working, unemployed or retired were required to answer the employment status question. There were **four** employment status options, one of which was chosen. The census does not identify persons who are both employers and employees.

Place of work

The location of the place of work is the geographical area in which a currently employed person does his/her job. The place of work of those mostly working at home is the same as their usual residence. The term 'working' refers to work done as an 'employed person' as defined under the topic 'Current activity status'. 'Mostly' working at home means that the person spends all or most of the time working at home, and less, or no, time in a place of work other than at home.

Educational attainment

'Educational attainment' refers to the ***highest level successfully completed*** in the educational system of the country where the education was received. All education which is relevant to the completion of a level is taken into account even if this was provided outside schools and universities. Persons aged 15 years or over are classified under only one of the categories according to their educational attainment (highest completed level). Persons under the age of 15 years are classified under 'not applicable'.

Size of the locality

A locality is defined as a ***distinct population cluster***, that is an area defined by a population living in neighbouring or contiguous buildings. Such buildings may either form a continuous built-up area with a clearly recognisable street formation; or though not part of such a built-up area, comprise a group of buildings to which a locally recognised place name is uniquely attached; or though not meeting either of the above two criteria, constitute a group of buildings, none of which is separated from its nearest neighbour by more than 200 metres.

Place of Birth

Place of birth was directly asked on the Irish census form. The question required persons to write in their ***county*** (if in Ireland) or ***country*** of birth. Respondents were advised (in the question body) that the place of birth should be the place where the ***person's mother lived at the time of the birth*** (or, if not available, the place of birth is defined as the place in which the birth took place). Information on the country of birth is based on the international boundaries existing on **1 January 2016**.

'***EU Member State***', in particular, means a country that is a member of the European Union on 1 January 2016. The list of countries in the breakdown 'country/place of birth' serves only for statistical purposes.

The category '***Information not classifiable according to current borders***' covers those persons whose country of birth existed at the time of the birth, but no longer exists at the time of the census, and who cannot be allocated uniquely to one country existing at the time of the census, i.e. according to current borders.

The category '***outside any country***' covers persons for whom the usual residence of the mother at the

time of the birth is not known and who were born outside the borders of any country, for example at sea or in the air.

Country of citizenship

Citizenship is defined as the particular legal bond between an individual and his/her State, acquired by birth or naturalisation, whether by declaration, option, marriage or other means according to the national legislation. There was no question in the Irish Census on citizenship. However, there was a question on nationality. The question required persons to indicate whether they have Irish nationality, a non-Irish nationality or no nationality. Persons who indicated that they had a non-Irish nationality were required to write in this nationality; persons who had more than one nationality are required to write in each of their non-Irish nationalities. A person with two or more citizenships is allocated to only one country of citizenship, to be determined in the following order of precedence:

- reporting country; or if the person does not have the citizenship of the reporting country: other EU Member State;
- if the person does not have the citizenship of another EU Member State: other country outside the European Union.

'*EU Member State*' means a country that is a member of the European Union on 1 January 2016. The list of countries in the breakdown 'Country of citizenship' shall only apply for statistical purposes. Persons who are neither citizens of any country nor stateless and who have some but not all of the rights and duties associated with citizenship shall be classified under 'recognised non-citizens'.

Year of arrival in the country

The year of arrival is the calendar year in which a person most recently established usual residence in the country. The data for 2016 refer to the time span between 1 January 2016 and the reference date.

Residence one year before

The question was asked of persons aged 1 year or over, i.e. 'Where did you usually live one year ago?' This indicates the relationship between the current place of usual residence and the place of usual residence one year prior to the census. Children under one year of age are classified under 'Not applicable'.

For all persons that have changed their usual residence more than once within the year prior to the reference date, the previous place of usual residence is the last usual residence from which they moved to their current place of usual residence. *Three possible options* were provided, from which one was selected, i.e. same as now, elsewhere in Ireland, elsewhere abroad (with the latter two being write-in boxes). If persons indicated that their usual residence one year ago was the 'same as now', it was coded to the geography at which they were enumerated. The write-in answers were subsequently coded during processing to a lookup containing county and country codes.

Housing arrangements

The topic '*Housing arrangements*' covers the whole population and refers to the type of housing in which a person usually resides at the time of the census. This covers all persons who are usual residents in different types of living quarters, or who do not have a usual residence and stay temporarily in some type of living quarters, or who are roofless, sleeping rough or in emergency shelters, when the census is taken. Occupants are persons with their usual residence in the places listed in the respective category.

'Conventional dwellings' are structurally separate and independent premises at fixed locations which are designed for permanent human habitation and are, at the reference date, either used as a residence, or vacant, or reserved for seasonal or secondary use.

'Separate' means surrounded by walls and covered by a roof or ceiling so that one or more persons can isolate themselves.

'Independent' means having direct access from a street or a staircase, passage, gallery or grounds.

'Other housing units' are huts, cabins, shacks, shanties, caravans, houseboats, barns, mills, caves or any other shelter used for human habitation at the time of the census, irrespective if it was designed for human habitation.

'Collective living quarters' are premises which are designed for habitation by large groups of individuals or several households and which are used as the usual residence of at least one person at the time of the census.

'Occupied conventional dwellings', 'other housing units' and 'collective living quarters' together represent **"living quarters"**. Any 'living quarter' must be the usual residence of at least one person. The sum of occupied conventional dwellings and other housing units represents **'housing units'**.

The **homeless** (persons who are not usual residents in any living quarter category) can be persons living in the streets without a shelter that would fall within the scope of living quarters (primary homelessness) or persons moving frequently between temporary accommodation (secondary homelessness).

Type of family nucleus

The **family nucleus** is defined as two or more persons who belong to the same household and who are **related** as husband and wife, as partners in a registered partnership, as partners in a consensual union, or as parent and child.

Size of family nucleus

The family nucleus is defined as two or more persons who belong to the same household and who are related as husband and wife, as partners in a registered partnership, as partners in a consensual union, or as parent and child.

Type of private household

The Irish Census operates on the **'housekeeping'** definition of households. According to the housekeeping concept, a private household is either:

- A **one-person household**, that is a person who lives alone in a separate housing unit or who occupies, as a lodger, a separate room (or rooms) of a housing unit but does not join with any of the other occupants of the housing unit to form part of a multiperson household or
- A **multiperson household**, that is a group of two or more persons who combine to occupy the whole or part of a housing unit and to provide themselves with food and possibly other essentials for living. Members of the group may pool their incomes to a greater or lesser extent.

Households are the basic unit of enumeration in the census. Each household received a separate census form and all details pertaining to each member of that household were completed within that form. When more than one household resided in a single dwelling unit, additional census forms were distributed to each separate household. This ensured that the data of household members could be linked throughout the processing and during publication and analysis of the results.

Primary homeless persons in the Irish Census are referred to as 'Rough sleepers'.

Size of private household

Private households may be defined according to the 'housekeeping concept' or the 'household-dwelling' concept. The Irish Census operates on the 'housekeeping' definition of households.

Tenure status of household

The topic '*Tenure status of households*' refers to the arrangements under which a private household occupies all or part of a housing unit. Categorisation of occupied dwellings by ownership type in the Census was based on the answer to Questions H3 and H4 on the [census form](#), which asked respondents to identify whether they owned (outright or with a mortgage) or rented their accommodation. If rented, households were asked to identify the landlord type (private/local authority/voluntary or cooperative housing body) and rent amount. These were *the only dwelling ownership types* reported in the census. Households that are in the process of paying off a mortgage on the housing unit in which they live or purchasing their housing unit over time under other financial arrangements are classified under 'Households of which at least one member is the owner of the housing unit'. Households of which at least one member is the owner of the housing unit and at least one member tenant of all or part of the housing unit are classified under category 'Households of which at least one member is the owner of the housing unit'.

Type of living quarter

'*Conventional dwellings*' are structurally separate and independent premises at fixed locations which are designed for permanent human habitation and are, at the reference date, either used as a residence, or vacant, or reserved for seasonal or secondary use.

'*Separate*' means surrounded by walls and covered by a roof or ceiling so that one or more persons can isolate themselves.

'*Independent*' means having direct access from a street or a staircase, passage, gallery or grounds.

'*Other housing units*' are huts, cabins, shacks, shanties, caravans, houseboats, barns, mills, caves or any other shelter used for human habitation at the time of the census, irrespective if it was designed for human habitation.

'*Collective living quarters*' are premises which are designed for habitation by large groups of individuals or several households and which are used as the usual residence of at least one person at the time of the census.

'Occupied conventional dwellings', 'other housing units' and 'collective living quarters' together represent "*living quarters*". Any 'living quarter' must be the usual residence of at least one person.

Occupancy status

'*Occupied conventional dwellings*' are conventional dwellings which are the usual residence of one or more persons at the time of the census. '*Unoccupied conventional dwellings*' are conventional dwellings which are not the usual residence of any person at the time of the census. Conventional dwellings with persons present but not included in the census are classified under the category 'Dwellings reserved for seasonal or secondary use'.

Having visited each dwelling, **one of 9 dwelling statuses** was attributed to it by the enumerator, i.e.

- Occupied
- Temporarily absent
- Vacant house/communal establishment
- Vacant flat
- Holiday home

- Under construction
- Derelict
- Commercial only
- Does not exist.

Type of ownership

The topic 'Type of ownership' refers to the ownership of the *dwelling* and not to that of the land on which the dwelling stands.

'*Owner-occupied dwellings*' are those where at least one occupant of the dwelling owns parts or the whole of the dwelling.

'*Cooperative ownership*' refers to ownership within the framework of a housing cooperative.

'*Rented dwellings*' are those where at least one occupant pays a rent for the occupation of the dwelling, and where no occupant owns parts or the whole of the dwelling.

Number of occupants

The number of occupants of a housing unit is the number of people for whom the housing unit is the usual residence.

Useful floor space

Useful floor space is defined as the floor space measured *inside the outer walls* excluding non-habitable cellars and attics and, in multi-dwelling buildings, all common spaces; or the total floor space of rooms falling under the concept of 'room'.

A '*room*' is defined as a space in a housing unit enclosed by walls reaching from the floor to the ceiling or roof, of a size large enough to hold a bed for an adult (4 square metres at least) and at least 2 metres high over the major area of the ceiling.

Number of rooms

The question included *guidance* on what constitutes a room for the purposes of census (e.g. conservatory but not bathrooms/toilets). A 'room' is defined as a space in a housing unit enclosed by walls reaching from the floor to the ceiling or roof, of a size large enough to hold a bed for an adult (4 square metres at least) and at least 2 metres high over the major area of the ceiling. Householders were asked to identify the number of rooms available for *sole use* by the household.

Density standard (floor space)

'Density standard' relates to the *useful floor space in square metres* or the *number of rooms to the number of occupants*, as specified above. Data report on the density standard measured by the 'useful floor space', or, if not possible, by the 'number of rooms'. The density standard variable in the Irish Census was computed by taking the number of rooms available for use to a household and dividing it by the number of usual residents in the household.

Density standard (number of rooms)

'Density standard' relates to the useful floor space in square metres or the number of rooms to the number of occupants, as specified above. Data report on the density standard measured by the 'useful floor space', or, if not possible, by the 'number of rooms'.

Water supply system

Question H7 on the census [form](#) required the householder to indicate the type of piped water supply in the household, by marking one of *five options*, i.e.

- Connection to a public main

- Connection to a group water scheme with a local authority source of supply
- Connection to a group water scheme with a private source of supply (e.g. borehole, lake, etc.)
- Connection to other private source (e.g. well, lake, rainwater tank etc.)
- No piped water supply.

Toilet facilities

Householders are asked to identify the type of sewerage facilities in use in the household by choosing one of *five options*, i.e.

- Public sewerage scheme
- Individual septic tank
- Individual treatment system other than a septic tank
- Other sewerage facility
- No sewerage facility.

Bathing facilities

No information was directly collected on bathing facilities in the Irish Census, however CSO will derive a variable on bathing facilities from existing census data on water supply and make this available through the relevant hypercubes.

Type of heating

A housing unit is considered as centrally heated if heating is provided either from a community heating centre or from an installation built in the building or in the housing unit, established for heating purposes, without regard to the source of energy.

Type of building

The topic 'Dwellings by type of building' refers to the number of dwellings in the building in which the dwelling is placed.

Period of construction

The topic 'Dwellings by period of construction' refers to the year when the building in which the dwelling is placed was completed.

3.5. Statistical unit

Census 2016 results include data on *persons, private households, family nuclei, conventional dwellings and living quarters*.

3.6. Statistical population

Persons enumerated in the 2016 census are those who were usually resident in the territory of the reporting country at the census reference date. **Usual residence** means the place where a person normally spends the daily period of rest, regardless of temporary absences for purposes of recreation, holidays, visits to friends and relatives, business, medical treatment or religious pilgrimage.

3.7. Reference area

The census data relates to the entire territory of the **Republic of Ireland**. Data are available at different *levels* of geographical detail: national, NUTS2, NUTS3 and local administrative units (LAU2)

3.8. Coverage - Time

All data pertains to **Sunday, April 24th 2016**. [The previous census was held in April 2011.]

3.9. Base period

Not Applicable

4. Unit of measure

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Counts of **statistical units**, i.e. everyone present in the State on Census Night (24 April 2016) - 4.7 million people. The census form also requested information on a number of characteristics on the **accommodation** of each household in the country - some 1.7 million occupied households.

5. Reference Period

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The census took place on 24 April 2016.

6. Institutional Mandate

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6.1. Institutional Mandate - legal acts and other agreements

Section 8 of the [Statistics Act 1993](#) established the Central Statistics Office to exercise the functions set out in (Section 10 of) the Act, i.e. "the collection, compilation, extraction and dissemination for statistical purposes of information relating to economic, social and general activities and conditions in the State".

Census 2016 was taken under Section 26 of the Act and the [Statistics \(Census of Population\) Order 2015](#)

6.2. Institutional Mandate - data sharing

Not Applicable

7. Confidentiality

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7.1. Confidentiality - policy

The [Statistics Act 1993 \(Part V, Section 32\)](#) guarantees that all information collected in the census is used only for statistical compilation and analysis purposes.

[Section 33](#) guarantees that no census data which could identify an individual will be released.

[Section 35](#) provides that the confidentiality requirements pertaining to a Census of Population will expire 100 years after the relevant Census.

All staff working on the census must become **Officers of Statistics**, thereby making a legal commitment to protect the confidentiality of census information, as provided for in [Part II \(Sections 20 to 22\) of the Statistics Act](#).

The Act ([Sections 38 and 39](#)) provides that Officers of Statistics who abuse their position or misuse the information provided them in the course of their duties shall be guilty of an offence, and liable to penalties in that regard (as set out in [Section 44](#)).

7.2. Confidentiality - data treatment

All census data which is disseminated into the public domain is in accordance with the non-disclosure guarantee given in [Section 33](#) of the Statistics Act 1993. When compiling census data for

dissemination, cells that are found to be disclosive of either individuals' identities or individuals' attributes are either suppressed or aggregated with other cells, thereby removing the disclosure. Unique identifiers are removed from research microdata files and categorical variables are top coded where necessary.

8. Release policy

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8.1. Release calendar

The Irish Census was held on **Sunday 24 April 2016**. The [Preliminary Results](#) were published on **14 July 2016** (12 weeks later). The first detailed results were published in **April 2017** (12 months after census night). Further results were published on a rolling basis up to and including **December 2017** (20 months after census night). All Census 2016 results were made freely available and released via the Central Statistics Office (CSO) [website](#)

8.2. Release calendar access

The [release calendar](#) for the Census 2016 results was published in advance on the CSO website, and was also made available as an online calendar to which interested parties could subscribe.

8.3. Release policy - user access

All Census 2016 results were made available on the CSO [website](#) at 11.00am on the morning of release, and are free to access and download.

Simultaneously tables of data related to each report were also released on the CSO's online [Statbank](#) (PC-Axis).

The title and release date of each release was provided in the [release calendar](#), which was published in advance on the CSO website and as an online calendar.

Press releases were issued to national and local media to accompany each report. The reports were made available to all users simultaneously. Press briefings were arranged for the Census 2016 Summary Report [Part 1](#) and [Part 2](#), which included a preview of the reports for key stakeholders (including in government departments); however this was done under a curfew that lasted until the report was made publicly available.

Metadata supplied to Eurostat will also be made available to users via hyperlinks on the CSO's website.

A research microdata file with place of work school or college data (POWSCAR) is made available to bonafide researchers who fulfill the criteria as detailed on the CSO's [website](#)

9. Frequency of dissemination

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Ireland conducts a census of population every five years. In 2016, the census was held on Sunday 24 April. Preliminary results were published within 12 weeks, and detailed results were disseminated on a rolling basis from approximately a year of the date of the census. All of the detailed Census 2016 [releases](#) were published between April and December 2017.

10. Accessibility and clarity

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10.1. Dissemination format - News release

Press releases were issued with all of the Census 2016 publications, and made available on the Central Statistics Office website (cso.ie) at the same time as the census results.

10.2. Dissemination format - Publications

The Central Statistics Office (CSO) published 2 summary reports and 11 thematic reports based on Census 2016 data. These were in line with the reports published after Census 2011. The Office produced a limited number of hard copies of the Summary Reports. They, and the 11 thematic reports, were made fully available on the CSO website. Full details of the titles and release dates of the 13 reports may be found in the [release calendar](#)

10.3. Dissemination format - online database

Census data tables were released simultaneously with the publications. The data tables are available online on the CSO website's [Statbank](#) data repository, which is built using a PC-Axis framework. Statbank allows data to be manipulated and downloaded by users free of charge in several formats including .xls, .csv, .txt and .html.

The Office also released comprehensive Census [Small Area](#) data. Small Areas are polygons typically containing between 50 and 200 dwellings. They were generated by researchers in the University of Maynooth and Ordnance Survey Ireland and fully incorporated into the census for the first time in 2011. They facilitate data comparisons between similarly sized geographical areas across the country. Data on Small Areas is available for the following thematic areas:

- Sex, age & marital status
- Migration, ethnicity and religion
- Irish language
- Families
- Private households
- Housing
- Communal establishments
- Principal economic status
- Social class and socio-economic group
- Education
- Commuting
- Disability, carers and general health
- Occupation
- Industries
- PC and internet access.

The CSO also makes available a bespoke online tool, [SAPMAP](#), which allows users to view a standard census report for a wide range of geographies from small area (average 100 households) up to State level. Small area (and higher level geographies) thematic data is provided for Census 2016 results.

The Office has formed a partnership with the All-Island-Research Observatory (AIRO) who have a

lot of expertise in thematic mapping of data. Data is provided - under a confidentiality agreement - a week before release to AIRO and is released by AIRO at the same time as CSO. AIRO have provided a wide range of [mapping tools](#) allowing thematic mapping of 130+ census counts, vacant dwellings and travel to work data. They have also made available specialised maps aimed at [Regional and Local Authorities](#) for use in their planning process.

Census 2016 datasets have also been combined with Ordnance Survey Ireland's (OSi) official boundary data as part of a collaborative project between the Central Statistics Office (CSO) and OSi to [link geography and statistics](#).

10.4. Dissemination format - microdata access

Two census microdata files are made available. [POWSCAR](#) (Place of work, school and college anonymised record) contains anonymised records for all workers resident in Ireland and Irish resident students aged 5 and over. It includes key socio-economic variables and information on the origin and destination of the journeys to work, school or college. The dataset is topcoded to ensure anonymity is retained. Access to the data is strictly controlled through a formal application procedure and confidentiality contract and is available exclusively to bona fide researchers resident in Ireland.

The [IPUMS](#) dataset is an anonymised sample of 10% of households enumerated on census night and 10% of persons who spend census night in a communal establishment. The dataset contains a wide selection of census variables which are selectively topcoded to prevent disclosure. The dataset will be available only to researchers approved by the IPUMS organisation from Summer 2018.

10.5. Dissemination format - other

Census Small Area Population Statistics (SAPS) are available across a [wide range of variables](#). The data are based on Small Areas which are polygons typically containing between 50 and 200 dwellings. These Small Areas were generated by researchers in the University of Maynooth and Ordnance Survey Ireland. SAPS data is disseminated both in .csv and graphical formats. The graphical interface, [SAPMAPS](#), was made available on the CSO website free of charge at the same time as the .csv data is released.

10.6. Documentation on methodology

On completion, the census quality reporting and metadata will be made available on the Central Statistics Office [website](#)

10.7. Quality management - documentation

Census quality reporting is made available on the CSO [website](#)

11. Quality management

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11.1. Quality assurance

There were several aspects of quality assurance contained within the Census process.

Census forms

Census forms were subject to [quality testing](#) during printing to reduce the possibility of printing errors which could affect scanning and data capture. The quality checking was performed both *in-house* by the company responsible for printing the forms *and by the CSO* on receipt of the forms. The checking was performed on a random selection of pages both from printed reels and completed boxes of forms. It involved a range of visual inspections on colour, blemishes, alignment and page

order, colour checking with a densitometer, form drop out on scanning and testing of barcodes.

Enumeration

All Enumerators were given a list of dwellings in their Enumeration Area (contained in an *Enumerators Record Book – ERB*) which were also printed on a corresponding map to help them locate the dwellings. These dwellings were taken from the An Post Geodirectory, a database of property addresses in Ireland. In advance of the census, the Central Statistics Office (CSO) estimated that up to 2% of actual dwellings may be missing from the Geodirectory. In order to ensure that dwellings which were not on the Geodirectory were not missed during enumeration, the CSO facilitated the addition of unlisted dwellings by Enumerators. In order to incentivise Enumerators to add these unlisted dwellings, an additional fee was paid for finding ‘new’ dwellings which did not appear on the ERB/map. In total enumerators found 1.5% dwellings which were not listed on the Geodirectory. The location of all new dwellings were digitised from the marked up enumeration maps.

Enumerator performance management

All Census Enumerators were subject to a structured quality assessment within days of taking up the job. This assessment was conducted by their immediate supervisor, the Field Supervisor, and was subject to oversight by the next line of management, the Regional Supervisor, and was documented on a specific printed Quality booklet. The assessment involved the Field Supervisor observing the enumerator’s work at first hand and making an assessment on their ability to follow selected field procedures. Enumerators who did not meet the expected quality levels were required to receive additional training and would be subject to further monitoring by the Field Supervisor. Enumerators who could not correctly follow procedures after further monitoring were subject to dismissal and replacement.

Census enumerators were required to send SMS messages using an app on the phone each day during delivery and collection of census questionnaires, providing information on the cumulative number of dwellings to which they had delivered forms to or collected forms from up to that day as well as the number of additional ‘unlisted’ dwellings they had added to their map & Enumerator Record Book (ERB). This information was made available to Field Supervisors on a web application. The Field Supervisors could then use the data to monitor how each of their enumerators was progressing and to facilitate early intervention for enumerators who were falling behind. CSO also monitored the progress of enumerators and regularly issued reports to Field and Regional Supervisors containing the names of enumerators who were falling significantly behind in their progress and requesting intervention.

Assistance to public

Detailed [videos](#) were produced to provide instruction to both the public and enumerators on issues such as the census process, how to complete the census form, and delivery, collection and return of the forms. A translation of the census form was provided in [21 different languages](#), to assist those whose first language was not English to correctly complete their census form (however, the **form could only be completed in English or Irish**). The translations were provided by an agency, and verified by relevant embassies and national statistical bodies before final printing.

A Helpdesk facility was provided to handle public queries and requests for assistance, which generated a text message to the relevant enumerator informing him/her of the request (e.g. for delivery/collection of a census form).

The census [website](#) served as a comprehensive source of information and assistance, as did the

census social media channels ([Facebook](#), [Twitter](#), [YouTube](#), census app).

Dwelling status (unoccupied dwellings)

After several (unsuccessful) visits to a dwelling an enumerator could decide that the dwelling was unoccupied. In order to verify this, enumerators were instructed to seek information about the dwelling from neighbours as well as to call back after census night to ensure that the dwelling was still unoccupied. If contact was made at this stage, a census form was issued to the household with instruction to complete it. The instruction to carry out multiple visits to apparently unoccupied dwellings and to speak to neighbours was intended to reduce the possibility of occupied dwellings being missed in the census count. Enumerators performed a 'doorstep check' on the collected census form in the presence of the householder once the form was handed over. This check ensured that all persons present in the household on Census Night were accounted for on the form (enumerators had recorded the number of males and females expected on census night at the form delivery contact) and that the relevant questions for each person were correctly completed. It was designed to limit occurrences of unit no-information. Provision was made for dwellings which were known by the enumerator to be occupied, but where the householder could either not be contacted or refused to complete a form.

Coverage

Under Irish [legislation](#), all householders present in the country on Census Night were obliged to complete a census form. In rare cases where a completed form could not be collected, intervention from Field and Regional Supervisors was required, usually concluding in a visit in person from the Regional Supervisor to the householder to make him/her aware of the legal obligation to complete the census form. For any occupied dwelling where a census enumerator failed to collect a completed census form, the enumerator was required to complete a Reconciliation Form detailing basic demographic information (sex, age & nationality) about each member of the household. This information was usually sourced from contacting neighbours. In order to further discourage use of this procedure, enumerators who completed a Reconciliation Form in respect of an occupied dwelling were paid one third of the amount they would have received for collecting a completed census form from the householder.

Processing

Several stations in the Census **Eflow processing system** were designed to eradicate and repair poor quality text strings and data (see 18.4). In addition supervisors had the facility to view operators' screens and watch while they worked, the supervisor could record operator work sessions and replay to train operators where they were making errors such as coding errors.

Analysis was also done whereby the code profile of data was compared across users to identify operators who were inclined to bucket code or who displayed any bias. Data exported to the Oracle database file from Eflow was further subject to quality macro checking and analysis by CSO statistical staff using SAS software. This checking took the form of comparing aggregates to 2011 data and cross-tabulation of related variables to ensure consistency of data (*see 13.3 Processing Error*).

11.2. Quality management - assessment

No dedicated coverage assessment was carried out. However, the use of Reconciliation Forms to collect information on occupied dwellings for which no census form was collected was done to reduce possible undercoverage. A total of 20,414 households and 44,689 persons were enumerated

on Reconciliation Forms.

There were also a number of checks to ensure that all persons in the household on Census Night were reflected in the data. **Three separate counts** were checked against each other, i.e.

- (a) the number of males, females and persons in the household recorded by the enumerator on the front of the form (obtained by a manual count of persons on the form)
- (b) the number of persons listed as being present in the household on page 3 of the form (obtained by doing an Optical Mark Recognition (OMR) count of rows where a person's name was entered)
- (c) the number of persons for which data was entered by the householder.

A person was considered to exist by the system if data was detected in any of the key fields Name (OMR), Sex (OMR), Date of Birth (Intelligent Character Recognition). If the number of persons present from the three counts were inconsistent a message was displayed to operators during census processing.

In cases where a person was counted in b) but not in c), a male or female was added to the household depending on the sex of the person's name. Date of birth and other key fields were imputed. If c) was greater than b) and a person had been generated by noise on the form, for example where a person had written not applicable across the form, this 'phantom' person was deleted.

12. Relevance

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12.1. Relevance - User Needs

Census data is used extensively across all areas of Government and by public bodies at national, regional and local level, as well as by private sector businesses and organisations, and by various interest groups and community and voluntary bodies.

At **national** level, current population statistics are essential for identifying changing demands for and planning the provision of vital public services such as health care, education, transport, employment / training services etc.

Regional figures are critical for determining regional policy and for the operation of regional authorities.

The detailed population figures at **local** level provided by the census are integral in helping to identify current and future demands for public facilities such as schools and hospitals, as well as areas of relatively high unemployment, the best location for new shops etc.

The Irish Constitution (Bunreacht na hÉireann, [Article 16.2](#)) provides that the total membership of Dáil Éireann (national parliament) depends on the population as measured by the census (i.e. 1 TD - member of parliament - per 20,000 to 30,000 persons). [Constituency reviews](#) normally take place once the definitive results of the census have been published. The census is also the only means of accurately measuring the exact extent of migration.

Following Census 2011, the Central Statistics Office (CSO) consulted users on whether there should be a census in 2016. The responses were overwhelmingly in favour, with many users emphasising how important census data is to them in planning and implementing their activities. Ordinarily, in advance of each census the CSO consults with the public, all government departments, and various interest/user groups on the (questions/topics to be included in the) census questionnaire. Following

this consultation, proposals for new questions or changes to existing questions would be tested in a pilot survey, with the results examined by a Census Advisory Board before being accepted.

However, for budgetary reasons, no such consultation took place prior to Census 2016.

A full [public consultation](#) on the questionnaire for Census 2021 took place at the end of 2017. A pilot census is planned for September 2018 to test new/amended questions on foot of that process.

The Census Enquiries Section deals with queries and special requests from users on an ongoing basis. An analysis of the type of requests from between the 2011 and 2016 census was carried out and used to inform tables that were produced for the 2016 census.

A consultation was held with users on their requirements for data at small area level and for the POWSCAR research microdata file.

12.2. Relevance - User Satisfaction

Subsequent to Census 2011, the CSO requested the views of users on (i) whether Ireland should hold a census in 2016, and (ii) their use of census data. The responses emphasised both the need for a census and the importance of the census results to the respondents.

As noted above, the CSO requests views and submissions from users of the census data and the general public on the content of the census form prior to each new census, and proposals for changes to questions / addition of new questions etc. are considered and where relevant trialled in a pilot survey. The CSO also regularly receives (unsolicited) submissions and suggestions on the content of the census, and these are recorded and the authors are included in the consultation process prior to each new census. While there was no such public consultation in advance of Census 2016, the views and submissions provided to the CSO were noted.

In total, 425 submissions, with suggestions for new/amended questions, were received in response to the [public consultation](#) on the Census 2021 questionnaire. These submissions are being considered by an advisory group, and a pilot 'mini-census' including selected new/amended questions, will be carried out in September 2018.

12.3. Completeness

No relevant regulations/guidelines. **The census field operation is designed to ensure that every household is visited and accounted for**, and enumerators' pay includes specific incentives in that regard (as detailed in 11.1 above).

13. Accuracy

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13.1. Accuracy - overall

Given the way the Irish Census is conducted without a target population, adjustment for under or overcoverage or a post-enumeration survey, it is impossible to provide an objective measure of accuracy. However, the measures outlined in 11.1 above were also designed to improve the accuracy and completeness of the census count and the data collected. Enumerators had to account for all dwellings in their area either with a completed census form or a Reconciliation Form accounting for the reason a completed census form was not returned. They were required to continuously call back to households which were occupied on census night to get a return from the householder. Enumerators also received a terminal bonus of €500 on the successful completion of their enumeration work. This acted as a cash incentive to ensure that they pursued householders to the fullest extent possible.

13.2. Sampling error

Not applicable

13.3. Non-sampling error

The Irish Census is conducted using a traditional field methodology whereby every enumerator (4,660 persons) physically calls to every habitable dwelling in the State. This means there is no target population or sampling errors. Measures (outlined in 11.1) were also designed to improve the accuracy and completeness of the census count and the data collected. Enumerators had to account for all dwellings in their area either with a completed census form or a Reconciliation Form accounting for the reason a completed census form was not returned. They were required to call back numerous times to households which were occupied on census night to get a return from the householder. Enumerators also received a terminal bonus of €500 on the successful completion of their enumeration work. This acted as an incentive to ensure that they pursued householders to the fullest extent possible.

No dedicated coverage assessment was carried out. However, the use of Reconciliation Forms to collect information on occupied dwellings for which no census form was collected was undertaken to reduce possible undercoverage. A total of 20,414 households and 44,689 persons (0.93% of the defacto population) were enumerated on Reconciliation Forms. There were also a number of checks to ensure that all persons in the household on Census Night were reflected in the population count.

Three separate counts were checked against each other –

- a. The number of males, females and persons in the household recorded by the enumerator on the front of the form (obtained by a manual count of persons on the form)
- b. The number of persons listed as being present in the household on page 3 of the form (obtained by doing an Optical Mark Recognition (OMR) count of rows where a person's name was entered)
- c. The number of persons for which data was entered by the householder.

A person was considered to exist by the system if data was detected in any of the key fields Name (OMR), Sex (OMR), Date of Birth (Intelligent Character Recognition), relationship to person 1. If the number of persons present from the three counts were inconsistent a message was displayed to operators during census processing.

In cases where a person was counted in b) but not in c) a male or female was added to the household depending on the sex of the person's name. Date of birth and other key fields were imputed. If c) was greater than b) and a person had been generated by noise on the form, for example where a person had written not applicable across the form this 'phantom' person was deleted.

Coverage error

The census field operation is carried out from first principles. No register information feeds into the process apart from the use of the GeoDirectory – the national address database. The points indicated on the map are GeoDirectory points. The enumerator checks these and assigns a numeric code (D number) to each household visited.

Where GeoDirectory points do not exist and the enumerator discovers a household s/he annotates the map with a dot and allocates a D number. The census does not set out to assess the coverage of the GeoDirectory.

Measurement error

There is no post-census coverage survey conducted following the census in Ireland, and so no

measurement errors for the census as a whole are available. The core set of demographic and socio-economic questions on the questionnaire (form) are carried over and repeated from census to census. Normally, after each census, the Central Statistics Office invites input on the census questions (including changes/additions/deletions), and any changed/new questions that arise from that process are then tested in a pilot census. However, due to budgetary constraints, a public consultation was not carried out prior to Census 2016.

The responses to the census questionnaires are provided by **individuals in private households and communal establishments** throughout the country. The census forms are personally delivered to each household/communal establishment by Census Enumerators, who are provided with training, including detailed manuals, in advance of commencing delivery.

The enumerators are managed by supervisors who are also provided with training and manuals, and are managed by Census Liaison Officers, who also receive training from Census HQ staff. When the enumerator collects the completed census forms s/he is instructed to check that the information provided is accurate. A critical check is to ensure that every person who spent census night in the household or establishment is properly enumerated. The enumerator is also instructed to check through the form to discover areas of potential error and to have them corrected with the agreement of the householder. In no case can an enumerator alter the information provided on the census form. The Field Supervisors also check a sample of the collected forms to ensure that the enumerator is carrying out his/her duties in a thorough way.

Unit Non-response error

No dedicated coverage assessment was carried out. However, as referenced in 11.1 above, the use of Reconciliation Forms to collect information on occupied dwellings for which no census form was collected was done to reduce possible undercoverage. A total of 20,414 households and 44,689 persons (0.93% of the defacto population) were enumerated on Reconciliation Forms.

Item Non-response error

For the defacto population, item non-response rates varied across the range of questions on the census form. For instance, a low item non-response rate was recorded in Q4 'What is your relationship to Person1?' at 0.8%. Alternatively, a non-response rate was recorded within Q17 'Do you have any difficulty in doing any of the following?' for the element 'Working at a job or business or attending school or college Y/N' at 15.3%. A high non-response rate was recorded for the sub-group of the population that indicated that they had ceased their education but didn't indicate the age at which their education ceased (23.3% of the cohort).

Processing error

Completed census questionnaires for all **4,660 Enumeration Areas** were returned by local field staff to Census HQ where they were registered, sorted and shelved by EA within counties. The questionnaires were then put into batches (average 15 forms per batch), guillotined and passed through a high speed IBML scanner. Images from the scanner were passed to **Eflow** (an automatic forms processing product designed by Top Image Systems) to capture the responses made by householders and convert them into electronic data. Almost 16,000 boxes were returned from the field, containing **2.1 million census forms** which represented almost 41 million pages. Over 140,000 batches were created from these forms for guillotining and scanning.

The purpose of Eflow was to **recognise, clean, repair and code the electronic data** before exporting it in XML format to an Oracle database where it would be compiled into a final file to be

used for census dissemination and publications. **Validation** was ongoing through the processing system with **404 fatal edit checks, 153 warning error checks and other checks** operating on data captured from the collected and scanned census forms.

Edits were essentially checks built into the processing software to ensure that all dwellings were accounted for with either the appropriate census form or a Reconciliation Form and that the data captured was logical. When data failed an edit check, it was required to be either **verified** in the case of warning edits **or corrected** by the operators. Final data validation was performed by analysing a series of tables generated from the compiled census data. The tables included cross-tabulations on all census variables, comparison tables with Census 2011 data, comparison tables with external sources (e.g. surveys & administrative data sets) and tables displaying data pertaining to the processing of census data.

These tables were analysed by statistical staff for possible anomalies and inconsistencies in the data. Where such potential issues arose, the source data was re-examined. This could be done on a macro level through interrogating the census data set using SAS, and on a micro level by identifying individual census returns and re-opening them through dedicated viewing software to ensure the forms had been correctly captured and coded. Where miscoding or erroneous data capture was detected, data was amended either on a micro form by form level or by macro editing using SAS. If any data on a form was changed the entire suite of 404 Fatal edit checks was re-run on that household to ensure that no erroneous data got through the system.

14. Timeliness and punctuality

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14.1. Timeliness

The [Preliminary Results](#) from Census 2016 were published on 14 July, i.e. less than 3 months after Census Night (24 April 2016). The first [detailed results](#) from Census 2016 were published in April 2017 (12 months after census night). [Further results](#) (in total, two Summary Reports and 11 thematic reports) were published on a rolling basis up to and including 14th December 2017 (20 months after census night).

14.2. Punctuality

0 (All releases delivered on schedule).

15. Coherence and comparability

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15.1. Comparability - geographical

There are a number of **definitional issues** relating to variables which could compromise geographical comparability, e.g.:

- **Usual residence** - Primary, second level and third level students were instructed to consider their family homes rather than their term time address as their place of usual residence
- **Current activity status** - The reference week in the Present Economic Status question on the census form was the week leading up to the date of enumeration, Sunday April 24th 2016. This was implicit in the question and may not have been clear in the previous submission.
- **Country of citizenship** - The words *citizenship and nationality are used interchangeably in Irish social statistics*. Country of citizenship data from the Irish Census is based upon the

census question which asks for the respondent's nationality rather than country of citizenship. Dual nationality / citizenship is captured, coded and published.

All geography relating to the location of the household or the location of a person's usual residence, a person's place of work, school or college are based on data that was geocoded to latitude and longitude. Geography was derived by overlaying accurate geographic boundaries in a GIS or oracle spatial query.

15.2. Comparability - over time

The model used in the field (visual enumeration followed by enumerator delivery and collection) for the Irish Census is a long-standing one. Factors that can influence comparability over time are therefore *changes to the way questions are asked, changes to the way the data is processed and changes in classifications*. There is a constant tension between comparability over time on the one hand and the representativeness and continued relevance of a question wording on the other. The balance between the two has to be carefully monitored and managed. It is well known that changes to question wordings will have an impact on the comparability of results from census to census. As noted elsewhere, Census 2016 was run as a **no change census**, i.e. the questions on the census form remained the same as in 2011, other than the question on marital status. Accordingly, as previously noted, no pre-census pilot was carried out prior to Census 2016.

Following the public consultation carried out at the end of 2017, a census pilot survey will be conducted in September 2018. This will trial proposed changes to questions / new questions. The purpose of the census pilot is primarily to assess whether the revised question works and leads to believable results.

15.3. Coherence - cross domain

Numerous statistics from the census are reconcilable with data from other surveys, internal to CSO as well as externally, e.g. occupations. Where the information can be directly reconciled between the two sources, the census would be deemed to be very accurate in such instances as it has no target population. The Central Statistics Office (CSO) is currently documenting formally coherence procedures it has in place, reviewing and updating these procedures annually. This will form part of the Quality Report of the census going forward.

Areas where coherence issues have been formally identified and documented to date include:

Labour force and unemployment rate differences between the Labour Force Survey (LFS) and Census 2016

The following table illustrates the differences in rates calculated between the census in 2011 and 2016 and the corresponding LFS quarterly results.

	Census (PES)		LFS (PES)		LFS (ILO)	
	Q2 2011	Q2 2016	Q2 2011	Q2 2016	Q2 2011	Q2 2016
	Percentage					
Labour Force Rate	61.9	61.4	61.5	60.5	62.3	62.6
Unemployment Rate	19.0	12.9	16.9	10.3	15.3	9.1

One of the main reasons for the differences is that the LFS uses an International Labour Organisation (ILO) classification, which is based on a wider range of questions than used in the census to identify economic status. Under the ILO criteria,

In Employment: Persons who worked in the week before the survey for one hour or more for payment or profit, including work on the family farm or business and all persons who had a job but were not at work because of illness, holidays etc. in the week

Unemployed: Persons who, in the week before the survey, were without work and available for work within the next two weeks, and had taken specific steps, in the preceding four weeks, to find work.

Inactive Population (not in labour force): All other persons

In contrast the census uses a self-declared *Principal Economic Status (PES)* question based on eight tick options, as set out below.

How would you describe your present principal status?

[Mark one box only]

- 1 Working for payment or profit
- 2 Looking for first regular job
- 3 Unemployed
- 4 Student or pupil
- 5 Looking after home/family
- 6 Retired from employment
- 7 Unable to work due to permanent sickness or disability
- 8 Other, write in

Furthermore, the census form is completed by a responsible adult in each household throughout the State in respect of everyone present in the household on Census Night, while the LFS is by face to face or telephone interview.

The census relates to the defacto population at the time of the census (enumeration of entire population) while the LFS covers persons usually resident in Ireland in a sample survey.

Coherence checks will continue to ensure differences in rates do not fluctuate as the contrasts have been relatively consistent over time for recent censuses and LFS findings.

Number of unpaid carers in the State as per the Census and the Irish Health Survey

The percentage of the population that indicated there were unpaid carers as per Census 2016 was 4.1%, while the equivalent figure for the Irish Health Survey (2015) was 10%.

The difference between the reported number of unpaid carers as per Census 2016 (1 in 25 of the population) and the 2015 Irish Health Survey (1 in 10) could be attributable to a number of elements, such as the wording of the questions and different methodology used.

In addition, it is also suggested that the Census question was interpreted as whether an individual is providing unpaid care on a long-term basis while the Irish Health Survey may have been interpreted as being currently a carer.

Similar differences have also been recorded in other English-speaking countries of the European Health Interview Survey (of which the Irish Health Survey is the Irish version), and their respective census results. These countries (Northern Ireland, Scotland, England and Wales) have also recorded a notably higher proportion of carers in EHIS than in each of the censuses.

As a developmental and investigate measure, a new wording of the carer question is being tested in the Census Pilot 2018 to ascertain if it is possible to encompass more individuals providing care as part of future census methodology.

15.4. Coherence - internal

Not applicable

16. Cost and Burden

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The budget allocation to conduct Census 2016 was **€55 million** over a 5 year period (2013-2017). This equates to approx. €32 per household or €11 per person over 5 years. In order to ensure cost effectiveness, several measures were undertaken:

- All expense claims from Field Supervisors, Regional Supervisors and Census Liaison Officers were subject to scrutiny and sign-off by the claimant's immediate manager, as well as a dedicated payments team in Census HQ. Running totals of expenses were available at an individual level for all members of field staff to allow early identification of possible excessive claims. By careful monitoring, CSO came in over €100,000 under budget for field travel.
- All field staff were instructed to source free accommodation to conduct recruitment and training activities. In instances where this was not possible, rigorous scrutiny was applied by their immediate managers to ensure value for money was attained in securing accommodation.
- By using basic but adequately functioning mobile phone handsets for use by fieldstaff, the cost of provision of these and associated data costs came in €400,000 under budget.
- One of the largest costs covers the processing system for the census questionnaires. The tender process for this resulted in a cost for provision of this in excess of budgeted costs. A decision was made to reject this first tender and re-tender. This resulted in a second successful tender being awarded over €1,000,000 less than the first tender.

The burden on households/individuals remained the same as in 2011. Each individual present in the State on Census Night was required to complete/be included in the relevant sections of the [census form](#). There were a **maximum of 30 questions (3 pages)** for each person present in the household/communal establishment, with fewer questions depending on the individual's age and economic status.

17. Data revision

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17.1. Data revision - policy

Where errors are discovered in published data the data is corrected and a note of the correction highlighted on the CSO [website](#).

17.2. Data revision - practice

Revisions to census results can come about through errors made during data capture and coding. It is the policy of Census Division to correct any errors in published data as soon as they become apparent.

18. Statistical processing

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18.1. Source data

Ireland conducts a conventional census which requires **all households present on a designated**

night to complete a set of questions in respect of every individual in the household. The dataset compiled from the information contained in the completed questionnaires (forms) is the sole source of data for all statistical units. The data on the location of the dwelling is derived from building co-ordinates on the Geodirectory in 98.5% of cases. The location for the other 1.5% is digitised from the position of the dwelling marked on the enumeration area map by the enumerator.

18.2. Frequency of data collection

Ireland conducts a national census **every 5 years**. Census 2016 was held on 24 April 2016. The next census is due to be held in 2021.

18.3. Data collection

Data was collected by means of a **conventional census**, i.e. through questionnaires distributed to and collected from every household in Ireland between 23 March and 23 May 2016, to be completed on the night of 24 April (Census Night). Under Irish legislation - [Statistics Act 1993](#) and [Statistics \(Census of Population\) Order 2015](#) - participation in the census was compulsory for every household in the State on Census Night. The Order also required the managers of communal establishments to co-operate with and facilitate the distribution and collection of individual forms to persons who spent Census Night in the establishment.

Census form

The census [questionnaire](#) (form) covered a range of demographic, social and economic topics. The census questionnaires were specially designed to facilitate scanning and to allow for the automatic capture of data by the processing software. Coloured drop-out ink was used in the printing of the questionnaires and the positioning, dimensions and number of tick and write in boxes was decided with scanning and optimal character recognition in mind. The design process also had to ensure that the information presented on the questionnaire was as readable as possible. Several different questionnaire types were designed to cater for multiple household types, communal establishments and (the legal requirement to provide) questionnaires in the Irish language. The questionnaire types produced were as follows:

- **English Household Form** (24 page standard household form containing 3 pages of census questions for up to 6 persons in a single household. It also contained space to transcribe the dwelling address and census geography, information about the census, instructions on completing the form, a page for listing persons present and absent from the household and a signature box)
- **Irish Household Form** (The English Household Form translated into the Irish language);
- **English Individual Form** (Four page form containing census questions to be completed by additional individuals in households of more than 6 persons, and by all individuals in communal establishments)
- **Irish Individual Form** (The English Individual Form translated into the Irish language);
- **English Listing Form** (A form to be completed by managers of communal establishments, listing all residents of the communal establishment on Census Night and indicating the type of Communal Establishment)
- **Irish Listing Form** (The English Listing Form translated into the Irish language).

Enumeration Areas

For the purposes of the census, the country was divided into **4,660 geographical Enumeration Areas (EA)**, each containing an average of 400 dwellings. The addresses of these dwellings were

sourced from the An Post (Irish postal service) Geodirectory, a national database of addresses.

A Census **Enumerator** was assigned to each of the EAs and was responsible for the delivery and collection of questionnaires to every occupied dwelling in their area as well as accounting for all unoccupied dwellings.

The enumerators were supervised by 430 locally based **Field Supervisors**. In turn they reported to 44 **Regional Supervisors**, who were based in regional offices throughout the country. The top level of field management were 6 **Census Liaison Officers** who supervised the Regional Supervisors and were based in Census headquarters in Dublin.

Every dwelling in each EA was allocated a 4-digit “D Number”, which was unique to each EA within a county. The D numbers for dwellings identified on the Geodirectory were pre-printed on a map of each EA at the location of the dwelling. They were also listed in ascending order on an associated Enumerator’s Record Book (ERB). The ERB was annotated by enumerators to build a complete record of their visits to each dwelling.

The map and ERB were the key tools for enumerators in the field and they were given detailed training and documentation on how to use them correctly. The D numbers were also linked to underlying X,Y co-ordinates on the Geodirectory which facilitated production of fully flexible geographic outputs after the census data had been collected and processed. Data is published nationally at a number of levels of administrative geography including Province, County, NUTS, Electoral Division, Small Area, Dáil Constituencies, Gaeltacht Areas, Local Electoral Areas, Municipal Districts and Settlements.

Enumeration

The enumerators began their work on Wednesday March 23rd 2016, approximately five weeks before Census Night. They were instructed to complete a full visual enumeration of their area before commencing form delivery. This entailed traversing every street, road and publicly accessible thoroughfare in the EA to identify every dwelling in it.

There were **two objectives** of the visual enumeration. First, to ensure that the enumerator could locate every dwelling which appeared on his/her map and ERB. Second, to identify dwellings which may have been missing from the map/ERB.

In advance of the field operation, the Central Statistics Office (CSO) estimated that approximately 2% of actual dwellings were missing from the Geodirectory and would therefore not appear on the map/ERB. In order to produce a full count of households and persons, these missing dwellings had to be added to the map and ERB. On finding a dwelling which was missed on the map & ERB, enumerators were instructed to allocate a new unused D number to the dwelling and to mark it in both their map and ERB. The locations of these new dwellings were digitised from the maps returned by the enumerators. Once visual enumeration was complete, enumerators were instructed to make contact with every household in their area and to issue the appropriate questionnaire if the household would be present in the dwelling on Census Night.

On handing the census questionnaire to the householder, the enumerator was required to transcribe the dwelling address as well as the county, EA and Small Area code onto the form as well as the D number. In instances where more than one household occupied a dwelling, enumerators were instructed to issue a new D number for the second household, to mark it on their map and ERB and to enumerate it separately to the first household (i.e. with a different census form). The locations of new households were also digitised from the enumerator maps.

Dwellings which were not occupied were recorded on a Reconciliation Form (see below), and allocated to one of eight categories. This was done to ensure there was a record for every dwelling in the State, occupied or not.

For households who indicated that the entire household would be temporarily absent elsewhere in Ireland on census night, enumerators took the address details of where each member of the household would be staying and through a web-based tracking system made contact with the enumerator of the EA in which the household member would be staying as a verification check.

For households who indicated that they would be absent abroad on census night, enumerators were required to look for proof of the trip abroad (e.g. travel tickets, proof of accommodation booking etc.). Where only some household members were absent on census night certain details of the absent members were collected at the back of the census form.

Enumerators were instructed that any new dwellings added to their map and ERB which were not on the Geodirectory list could not be allocated dwelling statuses of *Under Construction*, *Derelict*, *Commercial Only* or *Does Not Exist*. This meant **only habitable dwellings** which were not on the Geodirectory were added.

In the case of ***vacant houses***, flats/apartments and holiday homes, enumerators were required to visit the dwelling on multiple occasions both before and after Census Night to ensure that they had not missed the householder on a previous visit. They were also directed to leave a 'calling card' at the dwelling with instructions on how the householder could contact the enumerator. Enumerators were also instructed to make contact with neighbours to verify that the dwelling was not occupied.

In rare instances where an enumerator could not collect a completed form from an occupied dwelling after multiple visits, a **Reconciliation Form** was used to capture sex, age and nationality details of the persons in the dwelling. This was permissible only after intervention from the Regional Supervisor.

For **communal establishments** (i.e. managed residential accommodation including hotels, prisons, hospitals, nursing homes etc.) enumerators made contact with the manager of the establishment and requested that s/he list all persons residing in the establishment on Census Night on a Listing Form. The manager was then required to distribute Individual Census Forms to every person spending the night in the establishment. Each completed Individual Form and the Listing Form were then collected by the enumerator after Census Night. Top priority was given to these early on the morning after Census Night to ensure that persons leaving hotels etc. returned a completed Individual Form. Several **field aids** were made available to enumerators in order to maximise the number of households contacted and forms delivered. These included mobile phones for contacting householders, translations of the census questionnaire into 21 foreign languages, large print and braille forms, tapes and MP3 sound tracks of the form for the visually impaired.

In order to monitor the progress of the field operation in each EA, enumerators were required to send an SMS message each day to a central database via their mobile phones, detailing the number of forms they had delivered, the number collected and the number of new dwellings added to their map/ERB. This information was collated by the CSO daily and published on a website accessible to Field and Regional Supervisors. It provided them with a record of how each enumerator was progressing and whether intervention was required. These statistics were closely monitored at census headquarters and supervisors were emailed reports weekly detailing enumerators who were falling behind so that remedial action could be taken.

Publicity

The census field operation was supported by a **nationwide advertising and Public Relations campaign** to raise awareness of the census. Advertisements were run on national and local broadcast and print media for several weeks prior and subsequent to Census Night, as well as online and outdoor. CSO staff conducted several interviews with print and broadcast media at national and local level, and contributed interviews and articles to print and online publications.

The CSO also worked with several **organisations** representing minority/hard to reach groups (e.g. travellers, immigrants, carers, students) to ensure that the importance of every household/individual being included in the census was conveyed and to facilitate full enumeration of persons belonging to these groups. This included the production and distribution of tailored (including translated) publicity materials among these communities.

Supervisory staff were provided with **publicity materials** (posters, leaflets etc.) to display in their local areas. Publicity materials were also provided directly to important locations in local areas, e.g. public libraries, schools, third-level institutions.

A census [website](#) was developed including information on completing the census form, the benefits of the census and a facility to log requests for help. Government Departments, local authorities and public bodies were encouraged to include a link to this website on their own sites.

In conjunction with this, a **national LoCall number** was established to facilitate members of the public in calling for advice on all matters related to the census, including if the household had not received a form or their form had not been collected.

Form collection

Collection of the completed census questionnaires began on Monday April 25th and ran until Monday May 23rd 2016. Enumerators were required to call back to every household and Communal Establishment to which they had delivered a questionnaire, on multiple occasions if required, and also to revisit dwellings categorised as vacant in order to confirm that they were unoccupied on Census Night.

On collecting the forms from householders, enumerators were required to perform a “**doorstep check**” on the form to ensure that no members of the household had been omitted or double counted. Having collected all the completed forms for their area, enumerators performed a manual summary, sending the total number of males, females, households and dwellings by dwelling status separately for each Small Area of their EA to the CSO.

On receiving this data from all of the Enumeration Areas, CSO collated the data and published a [preliminary population count](#) for 3,441 Electoral Divisions within three months of Census Night. Having completed their manual summary, enumerators boxed and returned their completed forms to Census HQ for scanning and processing in order to generate the definitive census results.

18.4. Data validation

Completed census questionnaires for all 4,660 Enumeration Areas (EA) were returned by local field staff to Census HQ where they were registered, sorted and shelved by EA within counties. The questionnaires were then put into batches (average 15 forms per batch), guillotined and passed through a high speed IBML scanner. Images from the scanner were passed to **Eflow** (an automatic forms processing product designed by Top Image Systems) to capture the responses made by householders and convert them into electronic data.

Almost 14,500 boxes were returned from the field, containing **2.2 million census forms** which

represented almost 41 million pages. Over 136,000 batches were created from these forms for guillotining and scanning. Validation was ongoing through the processing system with **404 fatal edit checks, 153 warning error checks** and **other checks** operating on data captured from the collected and scanned census forms. Edits were essentially checks built into the processing software to ensure that all dwellings were accounted for with either the appropriate census form or a Reconciliation Form and that the data captured was logical.

When data failed an edit check, it was required to be either verified in the case of warning edits or corrected by the operators. Final data validation was performed by **analysing a series of tables** generated from the compiled census data. The tables included cross-tabulations on all census variables, comparison tables with Census 2011 data, comparison tables with external sources (e.g. surveys & administrative data sets) and tables displaying data pertaining to the processing of census data.

These tables were analysed by statistical staff for possible anomalies and inconsistencies in the data. Where such potential issues arose, the source data was re-examined. This could be done on a macro level through interrogating the census data set using SAS, and on a micro level by identifying individual census returns and re-opening them through dedicated viewing software to ensure the forms had been correctly captured and coded. Where miscoding or erroneous data capture was detected, data was amended either on a micro form by form level or by macro editing using SAS. If any data on a form was changed the entire suite of 404 Fatal edit checks was re-run on that household to ensure that no erroneous data got through the system.

Eflow

The purpose of Eflow was to **recognise, clean, repair and code the electronic data** before exporting it in XML format to an Oracle database where it would be compiled into a final file to be used for census dissemination and publications. Eflow consisted of several 'stations' in a work flow, through which each captured batch of data passed and was subject to checks and edits. When data in the batch was not automatically recognised by Eflow, where it failed edits or where an automatic code could not be attributed, the data was presented to a manual operator for coding, validation or amendment before the batch could pass to the next station in the flow. The data presented to the operator varied depending on the station, but generally consisted of scanned images of a census questionnaire which the operator viewed before making a decision on whether to amend the captured data. The Eflow stations (including a brief description of their functions) were as follows:

File portal

Imported scanned batches of households into Eflow.

Form ID

The Form ID station attempted to **match** each individual image to a specific EFI (empty form image) and **checked** page and form sequencing. Once the correct page and form had been associated with the image Eflow knew where to find the data on the page and the data type and rules associated with that field.

Manual ID

Operators identified any questionnaire **pages which had not been automatically identified** in Form ID.

Process

The Process station's role was to **read data** from the form. It relied on the page being identified in the previous stations (Form ID and Manual ID). With this information, the station knew where to

look on each page for the relevant data. After receiving a batch, the Process station processed it and sent it to the Tile station. The Process station was also responsible for character recognition, leaving any unrecognisable data for the manual completion process.

It was a standard EFlow station but CorrectText and Exorbyte were integrated into it to improve automatic coding of specified text write-in fields. Standard EFlow processing occurred first using the virtual engines associated with each field. The processed text for selected fields was then presented to CorrectText. If CorrectText was unable to code the unrepaired text for the selected fields, then the text was presented to Exorbyte.

The Process station involved the following stages:

- Field image enhancement
- Field segmentation
- Optical character recognition (OCR) and JOMR intelligent character recognition (ICR)
- Voting for optimal results.

All identification fields on the front of the form and date of birth were flagged for a higher recognition accuracy threshold during processing reflecting the high relative impact that false positives have on these fields.

Tile

The Tile station was used to identify **numbers** that had been identified correctly and those which had not, on a number by number basis. The station displayed the numbers in a tile format, which allowed the operator to quickly browse through each number and accept it or reject it. All numbers were grouped together to allow for easy identification. By presenting all of the same numbers together on a screen it was easier to spot those that had been wrongly recognised (i.e. false positives).

[By clicking on a number in the tile window the image of the relevant page was seen in the right hand window. This allowed the user to manually change any inaccurate numbers or replace the numbers with ‘*’ to flag the errors to the Repair and Code station.] All numeric write-in fields were verified in the Tile station. Tiling of alpha field was unnecessary because the automated coding routines could automatically code the bulk of alpha strings even with false positives and still give the correct code.

HRN integrity

This station ensured that the **geography coding** was correct across all forms relating to a household and that the sequence of forms within a batch was correct. Manual intervention was permitted where a batch failed these checks.

Repair and Code

The majority of the **data coding and correction** was performed in this station. Most write-in alpha fields (e.g. usual residence, nationality, ethnicity, religion) were assigned codes against pre-defined lookup code lists, either automatically or, where the text was unrecognised or failed an edit, by manual operator intervention.

CE exceptions - Repaired data associated with communal establishments.

Family Nucleus Coding

This station identified **families** of persons within households and assigned a family nucleus code to each person. If this could not be done automatically, it was presented to an expert operator for manual coding.

Industry Station

This station assigned an **occupation and industry code** based on the occupation and industry descriptions and the enterprise name and address written on the census questionnaire. Each text string was first processed automatically for both coding and edit rule validations. If a code could not be automatically assigned based on a pre-defined lookup list or if an edit rule was failed, the data was presented to an operator for coding.

Reconciliation repair

Operators performed repairs where required on **Reconciliation Forms**.

ERB processing

This station ensured that an **ERB** (Enumerator Record Book) **entry** existed for every dwelling in each EA and matched it to the census questionnaires for that dwelling. If necessary, repairs were made to deficient data.

ERB Reconciliation

The penultimate station **matched** all census forms to the corresponding entry in the ERB and ensured there was a form for each household listed by the Enumerator in the ERB.

Export

From this station, the data in the repaired and coded batches were **written** to the outputs database. The captured images of the census questionnaires and metadata about the batch were stored in a separate repository.

Census Document Management System (CDMS)

This application was not part of the Eflow workflow, but allowed operators to **view** scanned questionnaires and the associated data and permitted **amendment** of the captured data if required. All modifications made to data in CDMS were subject to the full suite of edit checks. All changes made in CDMS were output to the final database. Data written to the output database was then subject to the data validation described.

About 50% of place of work and school coding took place when coding the industry code in the Industry Station. The remaining place of work addresses and address of school and college was done using a **bespoke CSO application** outside of Eflow. The application matched address strings against the Geodirectory and re-output the matched addresses onto the census master file for each record. The industry station was a computer assisted coding station. Unrepaired company name address and strings were matched against a register using the fuzzy matching software Exorbyte using both the address string and the geo-coordinates of the place of residence and also the company on the register to allow proximity to improve the matching. The operator was presented with the 10 closest matches and either selected the correct one or changed the text to repeat the match. In a number of cases external searches such as Google were used to locate the correct place of work.

18.5. Data compilation

No grossing or weighting applies. **The source of data in the census is the returned completed census forms.** In exceptional cases, an imputed form will be constructed by the enumerator on behalf of a household where contact could not be made but reliable data could be gleaned from neighbours. In such cases, key demographic data only are recorded. In addition, in the case of completed census forms where some of the data is missing, the relevant missing data is imputed for date of birth, marital status and principal economic status, using distributions from the previous census. [Also, as noted previously, some imputation may be carried out following checking of the

three separate counts.]

The data is captured, coded and edited using automated forms processing software. For Census 2016 the CSO used **Eflow 5.1**. Imputation was also carried out within the Eflow 5.1 software. The data is first scanned, and then recognised using Optical Character Recognition technology. As the census forms pass through the Eflow 5.1 software each data field is validated using rules provided. If a data field has been identified for imputation then this field is routed to the imputation station, within the Eflow 5.1 software. Missing values for date of birth, marital status and principal economic status are imputed, in strict sequence during processing, i.e.

1. Missing values for Date Of Birth are imputed
2. Family nucleus codes are assigned
3. Missing values for Marital Status are imputed (which uses the family nucleus codes)
4. Missing values for Principal Economic Status are imputed.

The imputation rules check for certain conditions and depending on the result a value is assigned off a rotation file. The rotation files are lists of values that represent the distribution of values for a particular combination of demographic characteristics. The values are selected off the rotation files one by one and when the end of the file is reached it should start back at the beginning. The general rules are as follows:

- Date of birth - If the any of the DOB fields, DD, MM, and YYYY are blank a value is imputed. Imputed values are held in a derived "DOB" field and "age" is calculated using the values in the derived DOB field. Year is imputed first, followed by month, followed by day.
- Marital Status - This is based on the Family Nucleus Code (FNC) which has been assigned automatically by the system. The process uses age, sex and relationship codes, along with the family codes of the person whose marital status is being imputed and also the family code of related persons in the household. For example a person may have ticked that they are the husband / wife of another person but may have left marital status blank and so would be imputed to be "married". If FNC has not been assigned automatically then marital status is not automatically imputed; it is assigned manually by the operator during a later stage of processing.
- Principal Economic Status (current activity status) - This is imputed for all missing values for persons aged 15 or greater. Rules are used that look at captured text in the field (for example if the text is "housewife" then a code of 5 is assigned). Education, employment status and age are also used. If there is any entry in either the industry or occupation fields then no imputation is done, it is passed to an operator to be manually assigned.

Imputation rate

As key census variables, both marital status and principal economic status are imputed in the Irish census for non-response, using distributions found in the general population. Regarding marital status, 3.2% of the defacto population required imputation, while for present economic status it was 3.8%.

18.6. Adjustment

N/A

19. Comment[Top](#)

N/A