

INSTITUTO NACIONAL DE ESTADISTICA



Population Continuous Statistics

Technical Project

Sub-Directorate General of Demographic Statistics

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1 Identification of the Operation

The operation known as Population Continuous Statistics (ECP, per its Spanish initials)—with code 8893 in the National Statistical Plan (PEN, per its Spanish initials), and with code 30282 in the Inventory of Statistical Operations (IOE, per its Spanish initials)—is audited for opinion issuance by the Higher Council of Statistics.

The unit responsible for its compilation is the Sub-directorate General for Demographic Statistics of the National Statistics Institute.

The ECP is a new operation, although it is worth noting that this operation replaces the old Population Figures operation¹ (with IOE code 30321 and last PEN code No. 8865), with the results provided by both operations coinciding until 1 January 2021, when they will also coincide with the population figures resulting from the 2021 Population and Housing Census (with IOE code 30243 and PEN code 8861). In short:

- PEN code and name of the statistics operation submitted for issuance of opinion.

8893 Population Continuous Statistics

- Unit responsible for the operation.

Sub-Directorate General of Demographic Statistics (INE).

- Collaborating units/bodies, if applicable.

Not applicable

- Background of the operation, specifying whether the operation is new or has been previously audited due to undergoing significant methodological modifications.

It is a new operation

- Date of the last audit opinion, if applicable.

Not applicable

- Reason behind the audit request, outlining the reasons leading the unit to a new audit opinion request.

It is a new operation

2 Origin of the Demand and Grounds for Its Need

The need for the creation of this new statistical operation is explained and justified below. The reasons are as follows:

¹ Last publication of the Population Figures of 18 November 2022.

2.1 CREATION OF A NEW SYSTEM OF DEMOGRAPHIC STATISTICS BASED ON ANNUAL POPULATION CENSUSES

The new ECP operation creation is part of a wider reform covering several of the current demographic statistics.

Although this new system of demographic operations is not, in itself, the subject of this document, it is worth highlighting some aspects to explain the necessity and timeliness of the new ECP operation.

- **The fundamental pillar of the new system—comprised of consistent demographic statistics—is the availability of annual census information.**

After the 2021 Population and Housing Censuses publication¹, a paradigm shift in demographic statistics took place, given that the methodology used in the 2021 census—which in its first instance was based entirely on the exploitation of administrative records—allows for the process to be replicated each year thus providing annual population censuses².

Thus, the annual population census will be published at the end of the year, with the reference date of 1 January of the same year.

Traditionally, with the publication of the ten-year censuses, after each census, a statistical population series would commence. Specifically, as of the 2011 Population and Housing Censuses, and starting in the year 2012, the Population Figures statistical series was published, estimated through the accounting of demographic events (births, deaths, internal and external migrations and acquisitions of a Spanish nationality by the foreign population).

In addition, the publication of a new census every ten years entailed a correction of the population data series for the entirety of the previous decade, up to the previous census (traditionally known as intercensal estimates).

Given the availability of annual censuses, it seemed appropriate to create this new operation, the ECP, whose methodology (detailed in the section below) is based on a new approach:

- For definitive data, the best possible populations are obtained at a given date (stocks on 1 January of the censuses), and *a posteriori* demographic phenomena are derived between two consecutive censuses, ensuring consistency between the census data and the quarterly population estimates of the ECP.
- For provisional data, starting from the latest published annual census, an estimate of the recent evolution of the population is made based mainly on

¹ Publication of the Population and Housing Census on 30 November 2022.

² Upcoming operation Population Census with IOE code 8892, to be published for the first time in December 2023. This first edition will be done retrospectively, so the censuses as of 1 January 2022 and 2023 will be published at the same time. Each year thereafter, the census will be published in December of each year, including up to 1 January of that year.

the variations of the Municipal Register and on the estimates of weekly deaths (EDeS, per its Spanish initials), and on the estimates of monthly births (EMN, per its Spanish initials).

- Just as with previous censuses, after the 2021 Census publication, the entire previous decade's population data will undergo correction, up to the 2011 census, as usually published in the Population Figures operation. This correction, which is not the subject of this opinion, will be properly transferred to the new ECP operation.
- **In the context of this new demographic statistics system, the current duplication of existing demographic information will be eliminated**

Currently, two sets of population statistics are published every year: the ones derived from the Register and the ones we could label “statistics,” which are developed out of the 2011 census.

More specifically, two sets of population stock statistics are currently being published:

- The Population Figures, once every six months
- The Continuous Register Statistic, once every year

The strategy scheduled for 2023 onwards contemplates the discontinuation of both operations and the implementation of the new short-term stock statistics, the ECP, which is entirely coherent with the annual Population Censuses.

In this way, census information will be made available as at 1 January of each year, and will include the greatest territorial detail and quarterly population estimates, very swiftly, on a provincial level, and will be entirely coherent with the census figures.

This is a response to user demand—both external and internal to the INE—to consolidate the population figures into a single coherent series at all geographical levels, thereby eliminating uncertainty as to which batch of figures to use.

2.2 MEETING THE DEMOGRAPHIC INFORMATION REQUIREMENTS OF THE UPCOMING EUROPEAN REGULATION ON POPULATION AND DWELLINGS

At present, the ECP is governed by the same regulation that governs the current Population Figures, i.e., Regulation 1260/2013 of the European Parliament and of the Council on European Demographic Statistics.

However, an upcoming Regulation of the European Parliament and of the Council on European statistics on population and housing, which would repeal the Regulations on population censuses (763/2008) and on demographic statistics (1260/2013), is already in its advanced stage.

This new European population regulation will probably demand more frequent and more timely information on the population and the associated demographic phenomena.

This need for more frequent and faster demographic information, which already existed in society, has been increased by the events of recent years (Brexit, the COVID-19 pandemic, the war in Ukraine, etc.). In relation to these events, with the current information requirements, it was found that it took too long to determine their demographic impact.

In short, the ECP will not only provide a provisional population estimate on a quarterly basis (up to now it has been available once every six months), but will do so with much greater timeliness (with a delay of a maximum of 45 days from the reference date). This is one of the significant differences with the Population Figures, where the population was provided only on 1 January and 1 July of each year, and with a 5-6 month delay, approximately.

2.3 EXPANDING THE DEMOGRAPHIC INFORMATION PROVIDED BY TAKING ADVANTAGE OF STATISTICAL PROCESSES ALREADY IN PLACE

At the INE, quarterly population estimates are already being generated because they are necessary in order to calculate the population in family homes and the number of households, which are in turn used in the calibration of household surveys, mainly the EPA.

For this reason, given that it is similar, the provisional estimates methodology of the ECP and the rest of the series is fairly consolidated and is usable.

2.4 PROPORTIONALITY

This new statistic is based entirely on administrative data—mainly derived from the Municipal Register. However, it will also use data from other statistics, previously developed for specific parts of the process, which are themselves based on administrative data as well. Thus, it will not pose a burden on reporters.

2.5 DATA USAGE

A country's population figures are a basic pillar of official statistics. Not only are they important in their own right, but they are also the denominator for all the rates calculated in several different areas. In any event, some noteworthy specific uses are:

- a) International bodies:
 - Eurostat, to whom data are sent on a regular basis, although some data are also sent on an *ad hoc* basis. They use them for dissemination on their website (<https://ec.europa.eu/eurostat/data/database>, Demography, population, stock

and balance section), either directly or once they have undergone conversion through indicator production. Data is also used internally for the calculation of other statistics, such as its population projections.

- United Nations
- OECD
- Other countries' statistics institutions

b) National bodies:

- Ministry of Finance and Public Administration, System of Financial Redistribution Among the Autonomous Regions of Spain.
- Other Ministries
- Autonomous Communities Statistics Offices. Some of them make regular requests on the provisional quarterly populations that are expected to be published with this new statistic.
- Bank of Spain
- CSIC (Spanish National Research Council) and other research centres
- Universities
- Private institutions

c) For other statistics:

- For the calibration of home surveys, such as EPA.
- For calculations within other statistical operations, such as Spanish Accounts, Basic Demographic Indicators, etc.

d) Individual users

3 Project Objectives

The objectives of the Population Continuous Statistics are:

- To provide, on a quarterly basis, a quantitative measurement of the population with a primary residence in Spain, in each Autonomous Community and in each province (or island in the case of island provinces), on 1 January, 1 April, 1 July and 1 October of each year, as from the year 2021, broken down by sex, year of birth, age, country of nationality and country of birth.
- To provide the number of family home residents out of the aforementioned population figures.
- To provide the number of households where the population resides in family homes, according to size (number of members) and province.

- To provide information on the main nationalities' external migrations, which facilitates better explanations of the reasons behind population variation throughout the quarter.
- To comply with the European legislative framework governed by Regulation 1260/2013 of the European Parliament and of the Council on European Demographic Statistics, and to adapt to the upcoming regulation that will replace it.

4 Type of Operation

The Population Continuous Statistics is an actual statistic which is going to measure the levels of the statistical units represented by the different series, that is to say:

- Population residing in Spain
- Population residing in family dwellings
- Number of homes
- External migrations of main nationalities

It will provide aggregated results in the form of tables, which will outline the levels of the different concepts listed above, broken down by different classification variables.

The classification variables' disaggregation will be different in the definitive data and in the provisional data. It will be larger for the series of the population residing in Spain and with definitive data.

Nevertheless, depending on user needs and on the quality the data is found to have, there will be a possibility of moving forward with the disaggregation and including other tables in its tabulation plan.

5 Content

5.1 POPULATION UNDER STUDY

Because of the fact that the ECP has several series to be published, each one of them has a different subject-matter population which, in short, will be people and homes:

- **Residing population:** The population under study is all of the population residing in Spain.

- **Population residing in family homes:** The population under study is the entire population residing in Spain in family homes. That is to say, the population residing in collective lodgings, such as residences or prisons, is disregarded.
- **Households:** The population under study are all households inhabited by the population residing in Spain.
- **External migrations:** The populations under study are the set of people who primarily reside in Spain and emigrate abroad and, similarly, the set of people who, coming from abroad, settle down in Spain with a primary residence.

5.2 GEOGRAPHICAL OR TERRITORIAL SCOPE

The geographical scope is the entire national territory, disaggregated by Autonomous Communities and cities, provinces and islands. The scope of the islands will be available, *a priori*, for the definitive data of the population residing in Spain series. As regards the provisional data and the series of population in family homes or number of homes, it is under study.

Greater geographical detail can be found for the data as at 1 January of each year within the population censuses which, although they will be included in a different operation, the data at the beginning of the year will coincide in both (in the aggregate form in the ECP).

5.3 REFERENCE PERIOD OF THE DATA

The ECP is a short-term operation. As of reference date 1 January 2021, its frequency will be quarterly. The historical series prior to 1 January 2021 shall have a six-monthly frequency, the same frequency as the current Population Figures.

The reference dates of the Population Continuous Statistics will be:

- **Up to 1 January 2021:** Twice a year, that is, on 1 January and 1 July of each year, at the same time as the reference dates of the Population Figures operation.
- **From 1 January 2021:** Four times a year, that is, on 1 January, 1 April, 1 July and 1 October.

5.4 STUDY AND CLASSIFICATION VARIABLES

The study variables are relative to the different series mentioned above:

- Resident population
- Population residing in family homes
- Number of homes
- External migration

The classification variables will be:

- Sex
- Age
- Year of birth
- Country of nationality
- Country of birth

6 Characteristics of the Project

The methodology for the calculation of the total population series will be different for definite and provisional data:

- a) **Definitive data:** Populations as at 1 January will match those of the annual censuses. This way, when a new census is published, the definitive quarterly populations of the year before are calculated (on 1 April and July, October) working backwards between the latest two censuses, which will correct provisional populations that were published previously during prior periods.

This calculation is based on the figures relating to the censuses for every 1 January, and on the register movements that take place every quarter for the intermediate year dates. In addition, it will be necessary to resort to births and deaths derived from the Vital Statistics for better data accuracy.

- b) **Provisional data:** The starting point will be the population published during the latest census, and from there, the evolution observed in the main source will be applied—that is, the variations recorded in the Municipal Register—along with an estimate on births and deaths from the EMN and EDeS statistics, for better data accuracy.

Each time a new quarter is published, the entire provisional series published will be updated as of the last census, because the data is more and more consolidated each time. This will allow for corrections of populations to be progressive, leading to smaller leaps when a correction takes place as a result of a new census.

The Population Figures also offered an estimate on the population on 1 July of each year (the first publication included provisional data, which became definitive in later publications). However, they differed methodologically from the new statistic in that we had no annual census with which to correct them; instead, a revision was conducted every 10 years, once the new census (the commonly so-called inter-census estimates) was available to us. For this reason, the development of said populations was based on flows or carried forward (applying the demographic phenomena of a period to a population's starting point so as to obtain the resulting population at the end of the period), for both provisional and definitive data.

However, the new approach is based on stocks or backward for definitive data: the best possible populations on a given date are obtained (censuses) and, *a posteriori*, the demographic phenomena between two consecutive censuses are reconciled. For provisional data, an estimate is made of the recent evolution, mainly based on the administrative data of the Municipal Register, as mentioned above.

The methodology for the calculation of the population residing in family homes and households series will be obtained by applying a proportion of the groups observed in the censuses:

- Definitive data (for intermediate year dates): By means of an interpolation of the proportions observed in the two consecutive censuses.
- Provisional data: By extrapolating the proportions from the last census.

6.1 OBSERVATION UNITS TO WHICH THE PRIMARY DATA REFER

There are different types of observation units:

- As regards the population series, the observation units are persons who, depending on the characteristics of the data observed in the different sources, those with primary residence in Spain will be taken into account and, in addition, where appropriate, those residing in family homes.
- In the household series, the units are census households, understanding the concept as home-household, that is, a group of people who share the same address.
- In the migration series, the units are the persons who come from abroad and establish their primary residence in Spain or, similarly, the persons who, residing in Spain, go on to establish their primary residence abroad.

6.2 DATA COLLECTION METHODOLOGY

Population Continuous Statistics are actual statistics, based on administrative data or on mixed type data, as they also use the results of other statistics that have already been developed. It does not derive from a sample.

In order to calculate the data series contained in the Population Continuous Statistics, the following sources of information will be used:

a) Administrative data:

- Register variations, to reflect the population's evolution in each quarter.

b) Statistics:

- Population and Housing Census up to 2021: As the final reference point to estimate the definitive populations of the years in-between two censuses.

- Population Census from 2022 onwards: As the final reference point to estimate the definitive populations of the previous year, or as a starting point for provisional population estimates.
- VS: Birth Statistics.
- VS: Death Statistics.
- Monthly Estimates of Births.
- Estimates of Weekly Deaths (EDeS).

6.3 MEANS OF DATA COLLECTION AND PROCESSING

The INE already has, on a regular basis, the data used for these statistics—which are administrative data or data from other previously compiled statistics—and they have generally already been processed previously for other purposes:

- **Register variations:** These data are already filtered and validated for the register base maintenance and management, as well as for the development of population censuses.
- **Population Censuses:** The final result is used, which means fully processed data is used.
- **Births and deaths:** They are already filtered and validated previously for the compilation of the VS, the EMN and the EDeS statistics. In these cases, some imputation of the “nationality” variable for births is necessary, due to the fact that they have a high degree of “No record.” Therefore, in certain cases, the most likely nationality for a newborn is imputed on the basis of the nationality and country of birth of the parents, pursuant to the provisions of the laws and agreements with the different countries.

6.4 DATA COLLECTION FREQUENCY

The frequency of collection or availability of the data is monthly, both for the census data and for the data on births and deaths within the different statistics, except for the population censuses, which as of 2022 are annual.

However, the calculation and publication of the statistics is quarterly, so that the data received every month is used for monitoring and analysis.

7 Dissemination plan and frequency

7.1 DISSEMINATION PLAN

The initial tabulation plan intended for the different series is specified below, but it is subject to change and is therefore provisional. It may even evolve over time, undergoing updates in response to different user demands that may arise:

a) Resident population:

- Definitive data: The dissemination plan for the definitive resident population data shall be the same as the current Population Figures tabulation plan, with the same tables and breakdown by variables. Except for the fact that the ECP will be published quarterly instead of half-yearly. In short, it will consist of a series of tables with different cross tabulation between the most significant classification variables at the different geographical levels. The details can be consulted in Annex I.

The breakdown level for each of the classification variables is expanded to the maximum in the case of data referring to the entire territory, and it is grouped when the geographical scope are Autonomous Communities, provinces or islands.

- Provisional data: The level of detail will be reduced for provisional data, compared to final data. For example, at most, two categories will be available for the variables "Nationality" and "Country of birth", that is, "Spain / foreign." In turn, "age / year of birth" will in principle be provided aggregated in groups, rather than in single categories.

b) Population residing in family dwellings:

As far as the population in family homes is concerned, a tabulation and disaggregation will be offered, which shall be similar to the provisional data of the total population.

c) Number of homes

A small number of simple tables will be provided showing the number of homes by province, by household size (1, 2, 3, 4 members and more) and average household size.

d) Migrations

A small number of simple tables will be provided showing external migration by main nationalities.

7.2 DISSEMINATION FREQUENCY (A, B, C AND D TYPES)

The ECP is a short-term statistic, which will be published every three months, whereas the statistic it is replacing, the CP (per their Spanish initials), was structural, as it was published twice a year. In general, it will be published within no more than 45 days of the data reference date.

8 Implementation schedule

The implementation schedule will be as follows:

- **Year 2022:** Development of population estimates between the 2011 and 2021 censuses, and work on the development of the new methodology.
- **January - May 2023:** Final decision-making regarding methodology and tabulation plan.
- **February 2023:** Drafting of the technical project and submission to the Higher Council of Statistics.
- **23 May 2023:** First publication. It will contain a revision of the different historical series with the following reference dates:
 - Periods prior to 1 January 2012: No series are revised; those currently published in Population Figures are maintained.
 - From 1 July 2012 to 1 January 2021: Reconstruction of the population series currently published, which corrects the Population Figures for the same period. In other words, intercensal population estimates are made.
 - From 1 April 2021 to 1 April 2023: Start of the ECP quarterly series, with retrospective data from the 2021 census. Initially, the entirety of this series will be provisional.

The series of population in family homes and number of homes shall not commence with this first publication, given they will be based on household census data of 2021, which will not be published until June 2023.

- **8 August 2023:** Second release, which will contain the series from the first release, extended by one quarter—up to 1 July—along with the revision of all provisional data (from 1 April 2021).
- **7 November 2023:** Third release, containing the series of the previous release, extended by one quarter—up to 1 October—along with the revision of all provisional data (from 1 April 2021). The series on population in family homes and number of homes will be added retrospectively from 1 January 2021.

The publication dates for the year 2023 are already announced in the INE publication calendar, which may be consulted at:

<https://www.ine.es/daco/daco41/calen.htm>

During upcoming years, the publications will follow the same pattern, adding a quarter to the series, and updating the rest of the provisional series from the last published census. Regarding definitive data updates when a new census is published, they will be carried out as explained below:

Each year $t+1$, in the first publication (first fortnight of February), the data from 1-April-($t-1$) to 1-January- t shall become definitive, the latter coinciding with the census of year t , which will have been published in December of the previous year (December of year t).

During the year 2024, due to the fact that the annual censuses begin in 2023, the calendar will be somewhat different with the first-time publication of two censuses simultaneously: the 2023 one, which is the applicable one, and the previous one, of 2022.

For this reason, in February 2024, data will become definitive in the ECP for yet another year, i.e. from 1-April-21 to 1-January-2023.

9 Cost estimation

This is a statistic compiled from administrative sources, and therefore, it does not require the collaboration of reporting units, and does not result in data collection costs.

The estimate of the budget credit necessary to finance this operation foreseen in the 2023 Annual Programme of the 2021-2024 National Statistical Plan, is 160.00 thousand euros, and 350.00 thousand euros for the entire 2021-2024 four-year period of the PEN.

Annex I: Breakdown of Final Results Tables for Total Population Series (Provisional).

a) National results

- Series as from 2002
 - Resident population by date, sex and age
 - Resident population by date, sex and generation (age as at 31 December)
 - Resident population by date, sex, age group and nationality
 - Resident population by date, sex, age group and country of birth
 - Resident population by date, sex, age, nationality (country group) and place of birth (country group)
 - Resident population by date, sex, generation (age as at 31 December), nationality (country group) and place of birth (country group)
- Series as from 1971
 - Resident population by date, sex and age

b) Results by autonomous communities and provinces

- Series as from 2002
 - Resident population by date, sex and age
 - Resident population by date, sex and generation (age as at 31 December)
 - Resident population by date, sex, age group and nationality (country group)
 - Resident population by date, sex, age group and place of birth (country group)
 - Resident population by date, sex, nationality (country group) and place of birth (country group)
- Series as from 1971
 - Resident population by date, sex and age

c) Results by islands

- Series as from 2002
 - Resident population by date, sex and age group
 - Resident population by date, sex, nationality (Spanish/foreign)
 - Resident population by date, sex and place of birth (Spanish/foreign)

Annex II:

Variables and Their Classification

- **Sex:** male / female
- **Age:**
 - **Simple age:** 0, 1, 2, 3, etc.
Final age of the open group (groups together this age and the following ones), depends on the table, and is usually 85, 90, 100 or 105.
 - **Five-year age groups:** 0 to 4, 5 to 9, 10 to 14, etc.
Same consideration over the final age.

- **Country of nationality or birth:**

- **Group 1:**

<u>Nationality</u>	<u>Country of birth</u>
Spanish	Spain
Foreign	Foreign

Spanish / foreigner or Spain / abroad, depending on the variable.

- **Group 2:**

<u>Nationality</u>	<u>Country of birth</u>
Spanish	Spain
European Union (without Spain)	European Union (without Spain)
Rest of Europe	Rest of Europe
Africa	Africa
North America	North America
Central America and the Caribbean	Central America and the Caribbean
South America	South America
Asia	Asia
Oceania	Oceania
Stateless	

- **Simple countries:** a selection of the most relevant countries is made:

Group	Country (nationality / birth)
Spain	Spain
Country of the European Union (does not include Spain)	Belgium Bulgaria Denmark Finland France Ireland Italy Netherlands Poland Portugal Germany Romania Sweden Lithuania Other countries within the European Union
Country in the rest of Europe	Norway United Kingdom Switzerland Ukraine Moldova Russia Other countries in the rest of Europe
African Country	Algeria The Gambia Ghana Guinea Equatorial Guinea Mali Morocco Mauritania Nigeria Senegal Other African countries
North American Country	United States of America Mexico Other North American countries
Central America and the Caribbean country	Cuba Honduras Nicaragua Dominican Republic

Group	Country (nationality / birth)
	Other Central America and the Caribbean countries
South American Country	Argentina Bolivia Brazil Colombia Chile Ecuador Paraguay Peru Uruguay Venezuela
	Other South African countries
Asian Country	Bangladesh China Philippines India Pakistan
	Other Asian countries
Oceania	Oceania
Stateless	Stateless (only Nationality)