

# **TOWARD A EUROPEAN STATISTICS SYSTEM: SOURCES OF HARMONIZED DATA FOR POPULATION AND HOUSEHOLDS IN EUROPE\***

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## 1. INTRODUCTION<sup>1</sup>

The growing number of areas of responsibility that the process of European integration, through the Maastricht, Amsterdam and, finally, Nice treaties, concedes to the political bodies of the European Union (EU) is increasing the demand for adequate statistics, including demographic statistics, for the development of policies at the supra-national scale. At the same time, the expansion of the European Union towards the East and towards the Mediterranean has proven the necessity to obtain information on these countries to properly prepare for the accession process. In this context, the required data on population are not limited to purely demographic aspects (total population, by sex and age, natural movement, migratory movement) but also include a wider field that includes aspects such as basic forms of co-habitation (households and families), the labour market, and evaluation of the social situation.

But in order to make such statistics, which come from different countries, useful to the researchers responsible for analyzing social reality and politicians responsible for defining and expanding policies on the basis of these analyses, it is necessary to make them as consistent and harmonized as possible, both in the definition of the indicators and in the collection and treatment of the data. This is not easy given the different statistical systems in each of the countries as well as different national traditions. A series of supra-national institutions in the European area participate or have participated in the task of homogenizing data series. They include Eurostat (the Statistical Office of the European Commission with headquarters in Luxembourg - <http://europa.eu.int/comm/eurostat/>), the Population Activities Unit of the Economic Commission for Europe of the United Nations (UN/ECE- (<http://www.unece.org/pau>), the former European Population Committee of the Council of Europe<sup>2</sup> (<http://www.coe.int/T/E/Social%5Fcohesion/Population/>), as well as international institutions such as the Statistics Division (UNSD- <http://www.un.org/Depts/unsd/>) and the Population Division of the United Nations (<http://www.un.org/esa/population/unpop.htm>). These organizations do an enormous amount of work individually but, furthermore, some of them collaborate each year in the collection of demographic data from European countries, as well as maintaining data banks and publishing harmonized statistical series that can be used comparatively.

The following pages present the main sources of data which, with different levels of harmonization, offer information about the population of European countries. They also explain their characteristics, improvements that are being implemented, and things that they lack. The basic demographic series (population, births, deaths, marriages, migration, and projections) are described in the following section, after which the main characteristics of the data sources that exist for the study of European families and households are presented.

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<sup>1</sup> During my previous work in the European Commission (1998-2004) I had the opportunity to contact people from Eurostat, the Council of Europe, and the Population Division of the UN. Access to part of the material presented in this article was possible thanks to these contacts. Therefore, I would like to express my gratitude to all who, with their information or simply sending publications, have made the completion of this paper possible, and especially to Peter Whitten, Ana Franco and Aarno Laihonon (Eurostat), José Cremades (Council of Europe) and Marta Roig (UN Population Division). The indirect contributions of Pedro Reques, Juan Antonio Fernández Cordón, and Anna Cabré, director of the CED, have also been fundamental for this text seeing the light. Of course the opinions expressed in this work are personal and does not necessarily reflect the opinion of the European Commission, Eurostat, and the other referenced institutions.

<sup>2</sup> The European Population Committee, an intergovernmental body of the Council of Europe, functioned for over 30 years providing demographic analysis and data to European policy-makers. Following the adoption of the Action Plan adopted by the heads of state and government in Warsaw in May 2005, the Council of Europe found it necessary to terminate its intergovernmental activities in the demographic field as well as in other sectors that do not have a direct link to the core objectives of the institution (human rights, democracy and rule of law).

## 2. SOURCES OF HARMONIZED STATISTICS ABOUT THE BASIC ASPECTS OF THE EUROPEAN POPULATION

### 2.1. THE EXERCISES OF JOINT COLLECTION OF DEMOGRAPHIC DATA: AN EFFORT TO OBTAIN HARMONIZED DATA

Thanks to collaboration between the Population Committee of the Council of Europe, Eurostat, UN/ECE, the Statistics Division of the UN, and the European countries' national statistics institutes, there is currently available a quite complete series of harmonized and comparable data dealing with fundamental demographic phenomena. This series is renewed annually and covers the totality of the 46 European countries that are full members of the Council of Europe or who maintain the status of observers. This **joint collection of demographic data** functions on the basis of a "gentlemen's agreement" between all affected parties, that is, between the different countries that send their demographic data and the organizations that are responsible for the collection, centralization, and organization of the process.

The joint collection of data is in reality the result of the overlapping of two different processes: the "rapid collection" and the "main collection". The first takes place at the beginning of May when Eurostat and the Council of Europe (which, since 1998, have collaborated in the collection of the data; before it was done separately in the area of their respective responsibilities) send all of the European countries a quick questionnaire that asks for basic data from the previous year (population, births, deaths, in-migration and out-migration) to be used as provisional data. The main collection, carried out through a commonly agreed questionnaire between Eurostat, UNSD, UN/ECE, and, since 2000, the Council of Europe, begins in June, when the organizing institutions request that the national institutions send final, more detailed data. The data are received at the beginning of August and are later verified, harmonized, and processed, after which they will finally be made available to the public through the institutions that organize the process. These data are put into the Eurostat database and are also the source of the annual Council of Europe publication, "Recent Demographic Developments in Europe"<sup>3</sup>, and from Eurostat, "European Social Statistics - Demography", as well as other publications from Eurostat and the United Nations.

The data obtained this way are regularly verified and are considered, therefore, to be of reasonable quality. The historic series of harmonized statistics available in the database of Eurostat begins in 1950 for the countries of the EU and of the EFTA, but only in 1960 for the other European countries. However, some age-specific data have not been completely processed for the period of 1960-1990 for the EFTA countries and to a lesser extent for the countries of Central and Eastern Europe<sup>4</sup>.

These data tend to come from the national population register systems, which provide statistics about births, marriages<sup>5</sup>, and deaths to Eurostat and to the rest of the centralizing

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<sup>3</sup> Following the extinction of European Population Committee of the Council of Europe in 2005, the 2005 edition of the publication [Recent Demographic Developments in Europe](#) is the last edition of this report in its present format. The Secretariat of the Social Policy Directorate of the Council of Europe is currently working on finding alternative solutions for the production of the ensuing editions of the yearbook.

<sup>4</sup> In that case, the users should bear in mind that each country uses a different statistical system and that, as a consequence, the data are not comparable in the same grade as the data that refer to the member states of the European Union.

<sup>5</sup> The statistics about marriages and divorces are sometimes taken from other sources. In some countries marriage data are taken from parochial registers; in others divorce statistics come from judicial registers. In the majority of the countries the data are centralized in the Interior Ministry which resends them to the national statistics institute.

authorities. These statistics usually cover both national and non-national citizens that habitually reside in the countries in question, but they do not usually cover demographic events which, despite involving citizens of a given country, do not take place in the territory of the country (for more information about the joint collection of data on immigration, see section 2.3).

The process of national data harmonization is indispensable given the lack of: 1) Uniform systems for the register of events; 2) uniform definitions of the registered events and of the indicators used; 3) uniform systems of statistical exploitation of the gathered data.

With respect to the first problem, only 10 of the 15 old member states of the EU –in addition to the 4 of the EFTA countries– maintain municipal and/or centralized population registers (Table 1). These registers gather the demographic data in an exhaustive way and are permanently updated. In the majority of the cases it is the local administration that is responsible for maintaining the population register.

**TABLE 1. Comparison of the Types of Registers Used for Population Statistics**

<b>Centralized Population Register</b>	<b>Decentralized Municipal Population Register</b>	<b>Centralized Register of Non-Citizens</b>	<b>Countries Without a Register</b>
Belgium Denmark Finland Luxembourg Sweden Iceland Lichtenstein Norway	Germany Spain* Italy Netherlands Austria Switzerland**	Germany Luxembourg Switzerland	Greece France Ireland Portugal UK

\*In Spain the National Statistics Institute (INE) carries out a program to centralize registrations and de-registrations from the municipal registers, thereby creating a “Continuous Register” (*Padrón Continuo*) that is capable of providing accurate data at the national level.

\*\* Citizens only.

Source: Eurostat

With respect to the second problem, to give an example, the different countries use one of the following definitions of “age” in the classification of events that happened in the life of a respondent: either the age in years reached at the moment of the event (that is, the age as of the last birthday), or the age that the individuals reaches during the calendar year of the observation (that is, the observation year minus the birth year). The choice of one or another definition can lead to significant differences, especially in age analysis. Obviously, if one makes a comparison at the European scale of figures constructed using different definitions the result can give a biased image of the international reality.

This problem, but also the third problem mentioned before (lack of uniform statistical systems, resulting in different ways of calculating indicators) are solved during the joint collection of population data by only collecting row data, not indicators. The majority of the indicators are afterwards homogenously calculated using the SYSCODEM software, a method of permanent conversion started by Gérard Calot, of the European Demographic Observatory, which allows the harmonization of the raw data compiled according to the different definitions used in the various European countries. Although indicators calculated in this way can differ from those published by the countries themselves, this disadvantage is offset by the improvement in the comparability of the information which is obtained from using similar calculation techniques in all the countries.

This zeal for harmonization has its final expression in the panoply of state-level demographic statistics that Eurostat and the other international organizations make available to the public. However, the efforts to gather and present harmonized data on the European population are not limited to state-level data. Thanks to the **annual collection of regional demographic data**, Eurostat also offers demographic information at the sub-state level for European Union old member states (with data since 1975, 1980, or later, depending on the series), as well as for the new member states and the accession countries, which began to collect data in 1989, with data from 1990 on. This type of information, available in the "General and Regional data" sub-domain of the Eurostat database, is collected through a questionnaire that Eurostat sends to the concerned countries every October and which asks for demographic data on population, births, deaths (including causes of death) and inter-regional migration movements, at the regional level. Starting from the raw data that is gathered, Eurostat builds several simple indicators as gross rates and population density for different levels of territorial disaggregation (or NUTS levels<sup>6</sup>, using the Eurostat terminology). However, these data are not always verified, so their quality may be questionable, nor are they entirely comparable because of the different types of sources from which they come. Moreover, differences appear in the totals (the sum of regional data) compared with the national data, and the series start in different years in each of the member states. Nevertheless, Eurostat is making efforts to improve these regional statistical series which, on the other hand, provide useful data on a type of information that is hard to get at European level.

Finally, it is worth noting that, in addition to the voluminous information from the annual data gathering exercises described above, Eurostat has various supplementary statistical series that provide certain demographic information at the national or sub-national level through other data collection exercises, such as the national accounts, the statistics on social protection, on public health, on labour security... which, however, are not comparable with each other or with the demographic sources described above.

## 2.2. DATA AVAILABLE FOR THE STUDY OF FERTILITY, MARRIAGE, AND MORTALITY AT THE EUROPEAN SCALE

The Eurostat database, as well as the Eurostat and Council of Europe publications mentioned above, provide vital statistics that cover practically all of the European countries<sup>7</sup> and have, in general, a high level of harmonization in those indicators where it was feasible. For example, in the case of **births**, indicators like age-specific fertility rates and average age at first birth have been recalculated using the same definition: the age reached by women during the year of the event. And the same has been done with **marriage** figures. This allows to calculate longitudinal indicators. In the case of the female generations whose reproductive life has not ended, the estimations of final children (or the estimates of marriages for the cohorts that have not reached the end of their lives) are based on the *ceteris paribus* that the future age-specific rates will be equal to those recently observed<sup>8</sup>.

Another case presenting problems is that of the definition of the order of birth. Since the definitions used vary among countries<sup>9</sup> and correction is not possible. Eurostat and the

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<sup>6</sup> "Nomenclature des Unités Territoriales pour Statistiques" (NUTS): Specific system of classification of Eurostat, which includes several levels of territorial desegregation for each country. For example, in Spain NUTS 1 is equivalent to groupings of diverse Autonomous Communities, NUTS 2 to Autonomous Communities (regions), NUTS 3 to provinces, etc.

<sup>7</sup> The Council of Europe publication "Recent Demographic Developments in Europe" provides also information about the member states or observers of the Council of Europe that are not geographically European, such as Georgia, Armenia and Azerbaijan.

<sup>8</sup> However, this method is not used in the most recent cohorts, whose life cycle is not sufficiently advanced.

<sup>9</sup> The birth order considered is that which covers the whole reproductive life of the mother in Austria, Denmark, Spain, Finland, Greece, Ireland, Italy, the Netherlands, Portugal, Sweden, Iceland, and Norway, while it is the birth order in the present marriage in Germany, Belgium, France, Luxembourg,

Council of Europe provide the data at the national level but not totals for the European countries combined. In general, however, European level fertility and marriage information is abundant, reliable and reasonable harmonized.

Less reliable, however, are the statistics about **divorces** and **legal abortions** available at the European level. The causes are legal and demographic –both in the definition of the events and in the gathering of data on them. Due to the existing differences, for example, between divorce laws in each country and the diverse administrative provenances of these statistics (judges, ministries of justice, national statistics institutes) both the raw data and the available divorce rates should be taken with extreme caution. Furthermore, divorce figures per duration of marriage, which serve as the base to calculate key divorce indicators, are not constructed in the same way for all countries, due to the differences in the definition of raw available data and in the calculation of marriage duration. All this negatively affects the reliability and the comparability of statistics about divorces at the European level. And the same can be said about abortions, where, further complicating the matter, the existing sources do not gather data on illegal abortions nor those that take place outside the country of residence of the woman.

The statistics that the joint collection of demographic data manage to get are not, however, the only sources –nor even the most adequate– that are available to study reproductive patterns and the formation and dissolution of couples in European countries. As they use different types of sources, with extremely variable levels of depth and coverage among the countries, they provide a portrait that is sometimes unequal and non-uniform. Furthermore, these sources at times do not sufficiently illuminate the more subtle aspects of couple behaviour, such as interactions between union formation and the decision to have children, nor do they allow an in-depth analysis of conditioning factors like the level of education and participation in the labour market.

It was because of this that at the end of the 1980s, the Population Activities Unit (<http://www.unece.org/pau>) of the Economic Commission for Europe of the United Nations (UN/ECE) decided to launch a series of surveys focused on analyzing the changes in reproductive and family behaviour: thus were born the Fertility and Family Surveys, FFS, which cover a substantial portion of the European countries.

National demographic centres and national statistics offices participate in this program and have carried out, working together with the PAU, this research program financed by the UN/ECE, the United Nations Population Fund (<http://www.unfpa.org/>) and other national-level participating organizations. The most visible results of this project are the national reports, called Standard Country Reports. The results obtained by the FFS in each one of the participating countries, which are very informative, are also comparable with each other, but, however, they are not comparable with those that can be obtained from other more traditional data sources.

Returning again to the joint collection of demographic data, statistical series are also collected on **mortality**, accessible again due to Eurostat and the Council of Europe. Data of reasonable quality are available about deaths by age, age-specific mortality rates, and life expectancy at different ages for practically all of the European states, starting in 1960 and available also for previous years in certain countries. A good part of the data have been harmonized, especially the more recent data, and are fully comparable<sup>10</sup>. There remain, however, certain holes with respect to homogenization of some terminology aspects that

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the UK, and Switzerland. Austria, Italy, the Netherlands, and Portugal collect annual data in both formats.

<sup>10</sup> The life expectancies at different ages for the period 1960-80 were provided by national statistics institutes. However, they have been calculated by Eurostat using the same method for the years after 1985.

ultimately affect the accounting of the events and the construction of indicators such as infant mortality. For this reason various countries are reviewing their definitions of spontaneous abortion, early foetal death, and late foetal death, given that current definitional differences lead to variations in the measurement of those phenomena and of perinatal mortality<sup>11</sup>.

For EU member states, plus those of the EFTA (Iceland, Norway and Switzerland), Eurostat also has statistics about **causes of death** (since 1994), with absolute figures, gross rates, and standardized rates, at both the national and regional levels (the NUTS 2 level). This information comes directly from the national statistics institutes, thus the quality of these data are subject to the manner in which the causes of death are gathered and classified in each country. With respect to the level of harmonization, the collection procedures for this class of data are relatively homogenous among the different countries as joint illness classification tables have been used, specifically the "International Classification of Diseases" (ICD-10) of the World Health Organization. However, the results are far from being totally comparable since there remain differences in the way in which several countries classify certain illnesses.

Leaving mortality behind, although on a closely related topic, Eurostat also provided other statistics –from different sources, with diverse starting date and grade of coverage– related with the **state of health** of the population (morbidity, disability, anthropometric characteristics) and with the level of development of **health systems** (number of physicians by region and specialty, number of hospital beds and relative distribution, number of organ transplants). Information that is all very interesting but with unequal quality and with a very doubtful level of comparability –and in some cases none– due to the absence of common definitions and systems of classification with respect to the many variables that are cited.

### 2.3. A MORE COMPLEX CASE: DATA ON MIGRATION

Among all the demographic phenomena, the study of migratory movements at the European scale is, without doubt, that which presents the greatest difficulties with respect to availability, harmonization, and comparability of data sources. Some of these difficulties are linked to the specific nature of the phenomenon, i.e. the event that defines fertility is births, that which defines mortality is deaths, but what exactly should be consider a "migration"? The response, obviously arbitrary, is obstructed by the institutional framework, the territorial division used, and the type of movement done (defined in time and in space). Other difficulties are linked to data collection, e.g. the change of residence that could be defined as a migration may not have been registered, especially if there was not a change of administrative entity; on the contrary, if it has implied a change of administrative limits and, maybe, a change in registration system, then the risk of omission and double counting grows. These difficulties increase due to the existence of heterogeneous migration registry systems between countries and even among different governmental departments in each country. Furthermore, registry systems are also conditioned by the legislation that exists in the different areas (such as naturalization and asylum laws, norms on legal residence permits, labour legislation) so that the level of coverage can vary even inside the same country, and between the different types of migratory movements. Finally, the conscious desire of migrants to register or not their migration (both at the arrival and at the exit), conditioned again by the existing legislation, also influences the level of coverage and the quantity and quality of available migration statistics in each of the European countries.

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<sup>11</sup> Perinatal mortality includes stillbirth and late foetal deaths after a minimum period of gestation (from 22 to 28 weeks, according to the countries, although in other countries this criterion is substituted or complemented by others, such as the weight or the size of the foetus) plus certain infant mortality (in different proportion depending on the country).

The complexity of the phenomenon, plus the disparities that exist in respect to the registry systems, have led to the use of multiple sources of data and indicators to try to measure the intensity and characteristics of the diverse types of migratory movements and of their protagonists, the migrants. Therefore, different data series on stocks (population according to nationality, place of birth, or previous residence) and flows (residence and work permits, asylum applications, rejections and positive decisions) exist. These data series come from censuses, national or municipal registers, other administrative statistics (including consular registers, statistics on visas granted, border crossing statistics), surveys (such as labour force survey), etc. It is almost not necessary to say that the level of harmonization of all of these types of statistics, at the European level, is very deficient. The work of the organizations that centralize international demographic information, such as Eurostat, formerly the Council of Europe, and, in the case of migration, the SOPEMI (The Permanent Migration Observation System) of the OECD (<http://www.oecd.org/els/migration/>), is focused in collecting the data from the diverse countries involved, but very little work on harmonization has been done<sup>12</sup>. Nevertheless, it is necessary to recognize that, even if big gaps and inconsistencies continue to exist, the availability of data on migration in Europe, and the quality of them, has undoubtedly improved in recent years thanks to the gathering, organization, and dissemination work carried out by these organizations.

**Eurostat** is, without doubt, the institution with the greatest number of statistics on migration (and not just international migration) for to the European countries. This is due to the **joint data collection on migration** now carried out in 36 countries in collaboration with the UNSD, the UN/ECE, and the International Labour Organization (since 1998), and with the participation of national statistics institutes on a “gentleman’s agreement” basis. The common questionnaire is sent every September to the countries. The data arrive to Eurostat from December to February, where they are verified, processed, and stored, and part of them are used for the annual publication "European Social Statistics - Demography". Eurostat has also published more specialized reports such as "Patterns and Trends in International Migration in Western Europe" (2000) and other publications on different aspects of migrations, published as “working papers.”

A large part of the migration data that are gathered annually are introduced in the Eurostat database, sub-domain “International Migration and Asylum”, from which researchers can find statistics on:

- Acquisition of citizenship, with data since 1980 for the EU and the EFTA member countries, and more recent data for other European countries;
- Asylum applications and decisions, with annual statistics on applications for the EU and EFTA since 1985, although monthly data on EU countries have also been collected since 1998 and published since 1999;
- Active population and workers by citizenship, with data for the EU countries since 1980, 1985 or 1997, depending on the table;
- International migration flows (migration and immigration by sex, age group, nationality, and country of previous and subsequent residence), with data for the EU and the EFTA member countries in some cases since 1960, although only since the 1990s for other European countries.
- Finally, population by citizenship and sex exist at the national level since 1985.

It is necessary to clarify that the statistics on migration and non-national population that Eurostat collects are of a purely demographic nature, that is to say, they do not include

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<sup>12</sup> Although some international recommendations on immigration statistics are given by the UN, and were revised by the Statistics Commission in 1997, there are very few countries that are capable to fulfill them. Furthermore, given that many of these sources have an administrative and not a statistical nature, the ability of Eurostat or other international organisms to influence them is very limited.



information on the socio-economic characteristics of migrants nor integration indicators due to the lack of adequate resources in the great majority of countries.

These statistical series are not very harmonized nor totally comparable given the difficulties inherent to migration data and, more specifically, due to their disparate provenance, as each country uses a different data source (censuses, national registers, surveys...). Furthermore, tables present many empty cells because certain countries do not possess the required information or the information provided is not sufficiently detailed. However, Eurostat believes that data on international migration are as good as they can be given the existing limitations.

Data on migration flows at regional level have been also collected by Eurostat and difused in its database, more specifically in the "General and Regional Statistics – Migration statistics" sub-domain. As there is no community legislation on this topic, all the data supplied by the EU Member States on regional migration statistics is based on a voluntary agreement. Therefore these data sets on international migration are incomplete and the level of harmonization is non-existent. Furthermore, a lot of these data have not been updated since 2000.

Beyond the two sub-domains that have been mentioned, the Eurostat database also provides other data on migration and non-national population in other sub-domains, specifically in those corresponding to population censuses and the Labour Force Survey. Although the LFS is a sample not specifically oriented to study migrations, its large sample (about 1.7 millions individuals across the EU) allows to study the main characteristics of the foreign population and their comparison with the national one (Vidal, Gil and Domingo, 2006). Nevertheless, these migration data coming from different sources (migration database, censuses, LFS) have different characteristics and therefore are not fully comparable.

After the extinction of the Council of Europe Population Committee in 2005, the other international institution that, together with Eurostat, provides data on migration in Europe is the **Permanent System of Migration Observation (SOPEMI), of the OECD**. It publishes an annual document called "Trends in International Migration," with a greater scope than just Europe, based on contributions from some 30 national correspondents that describe the most recent developments in migration flows and policies. It also includes a section where the global tendencies in this phenomenon are analysed, with special attention to specific aspects such as the increase in the number of immigrants in the OCDE countries, their participation in and impact on the labour markets, the evaluation of national migration policies (on flow control and integration of immigrants), as well as an estimation of clandestine immigration (number of illegal immigrants, economic impact), among others. The annual report concludes with a complete statistical annex that contains a set of comparative statistical tables –although with a more than doubtful grade of harmonization— on multiple aspects of international migration: foreign and immigrant population, foreign workers, migration flows, and data on naturalizations. Finally, the SOPEMI also publishes other reports and studies more specific and specialized aspects of international migration.

#### 2.4. AVAILABLE DATA ON POPULATION ESTIMATES: AVERAGE POPULATION AND ON THE 1<sup>st</sup> OF JANUARY

A paradigmatic example of the sort of problems that exist when using data at the European scale are those that affect a basic statistic such as annual population figures. EU countries use different procedures to estimate the annual average population, as well as the population stock that they have on the 1<sup>st</sup> of January. Some member states, the majority, estimate their population on the 1<sup>st</sup> of January or the 31<sup>st</sup> of December based on updates (applying the components method) of the figures provided for the most recent census

round<sup>13</sup>, while others use data taken from population registers<sup>14</sup> (Table 2). For these estimations, the average population is usually calculated –with various exceptions– as the arithmetic mean between the population on the 1<sup>st</sup> of January (or 31 December) of two consecutive years<sup>15</sup>.

**TABLE 2. Methods used to estimate annual population figures (on the reference date and average population)**

Country	Base	Estimation Method	Reference Date	Method of Obtaining the Average Population
<b>B</b>	Census	Population Register	January 1	arithmetic mean of the population on 1 Jan of two consec. years
<b>DK</b>	:	Population Register	January 1	population registration on July 1
<b>D</b>	Census	Components Method	December 31	arithmetic mean of monthly population estimates
<b>EL</b>	Census	Components Method	January 1	Arithmetic mean of the population on 1 Jan of two consec. years
<b>E</b>	Census	Components Method	January 1	arithmetic mean of the population on 1 Jan of two consec. years
<b>F</b>	Census	Components Method	January 1	arithmetic mean of the population on 1 Jan of two consec. years
<b>IRL</b>	Census	Components Method	April 15	Estimation on April 15
<b>I</b>	Census	Components Method	January 1	arithmetic mean of the population on 1 Jan of two consec. years
<b>L</b>	Census	Components Method	December 31	arithmetic mean of the population on 1 Jan of two consec. years
<b>NL</b>	:	Population Register	January 1	population registry on July 1
<b>A</b>	Census	Components Method	January 1	arithmetic mean of 5 partial estimations
<b>P</b>	Census	Components Method	January 1	arithmetic mean of the population on 1 Jan of two consec. years
<b>FIN</b>	:	Population Register	December 31	arithmetic mean of the population on 1 Jan of two consec. years
<b>S</b>	:	Population Register	December 31	arithmetic mean of the population on 1 Jan of two consec. years
<b>UK</b>	Census	Components Method	June 30	Estimation on 30 June
<b>IS</b>	:	Population Register	December 1	Mean from the population on 1 Dec. of two consec. years until 1996; population registered on 1 July since 1997
<b>LI</b>	:	Population Register	December 31	arithmetic mean of the population on 1 Jan of two consec. years
<b>NO</b>	:	Population Register	January 1	arithmetic mean of the population on 1 Jan of two consec. years
<b>CH</b>	Census	Components Method	December 31	Citizens: arithmetic mean of two years taken on Jan. 1 Non-Citizens: Arithmetic mean of monthly estimates

Source: Eurostat

<sup>13</sup> For the completion of the updates, France, Greece, Ireland and Portugal compile data on net migration from diverse sources, while the UK estimates them based on a specific survey administered in the border ("International Passenger Survey").

<sup>14</sup> Belgium, Denmark, the Netherlands and Norway extract the data from the population register on January 1; Finland and Sweden on 31 December; and Iceland on 1 December. A mixed method is used by Germany, Austria, Luxembourg, and Italy, who use the registers to obtain a net migration figure that, added to natural growth, provides the total population growth. Switzerland uses the same procedure to calculate its natural population, but its non-national population is obtained through the foreign population register.

<sup>15</sup> This is not the case of Ireland and the UK which traditionally estimate their population with the date of 15 April and 30 June respectively, with these estimates serving as a mean population. For their part, in Germany and Switzerland (only non-nationals) the mean population is the arithmetic mean of twelve monthly estimates and in Austria it is the average of five partial estimations for each year. Finland, Denmark, Holland and Iceland take as a mean population that extracted from the population register on 1 July.

Those countries that estimate their annual population from census data through the components method, usually made annual corrections of the calculated data *post facto*. The difficulty of measuring migration is what introduces the greatest uncertainty. Eurostat, for example, produces figures of annual net migration for the EU and EFTA countries based on the difference between natural growth and total growth. It means that net migration includes adjustments and corrections that cannot be properly classified as births, deaths, or migration.

## 2.5. POPULATION PROJECTIONS FOR THE EUROPEAN COUNTRIES

Available population projections by sex and age at the European level, apart from those completed by the National Statistics Institutes for the respective countries, are those produced by the UN and Eurostat.

The demographic projections carried out by the **United Nations' Population Division**<sup>16</sup> (<http://www.un.org/esa/population/unpop.htm>) cover, as the name indicates ("World Population Prospect"), all of the countries of the world, including 47 European countries and territories grouped in four large areas<sup>17</sup>. Started in 1951, they were published approximately every five years until 1978. Since 1978, the revisions have been completed every two years, with 2004 being the last one available to date. For the 184 countries or territories of the world that have an estimated population of at least 150,000, including 38 European ones, the projections are made using the components methods, which requires the formulation of hypotheses about future tendencies in fertility, mortality, and migration for each country. For the other 44 countries or territories that have a population of less than 150,000, among them 9 in Europe<sup>18</sup>, the total population projections are based on a hypothesis about the future evolution of the population growth rate.

For each of the countries in which the components method is used four scenarios based on four hypotheses about the future evolution of fertility are used<sup>19</sup>: high, medium, low, and a fourth, for merely illustrative purposes, holding fertility constant. All of these scenarios incorporate the same hypotheses about the future evolution of mortality and, in the majority of countries, the same migratory tendencies.

The 2004 revision of the UN projections covers the period up to 2050 but the Population Division has also published long-term scenarios, revised every five years, that go to the year 2150 ("Long-range world population projections"), although they only offer figures for Europe and the other continents, but not for each country on its own (except India and China).

**Eurostat**, for its part, makes available to the public a package of projections ("scenarios") completed by Eurostat itself for all of the member states of the European Union (plus Bulgaria and Romania) using common starting points and a uniform methodology so that the

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<sup>16</sup> In close collaboration with the Division of Statistics and with each one of the regional commissions of the UN (in the European case, the UN Economic Commission for Europe, UN/ECE).

<sup>17</sup> These four big European areas are: Eastern Europe (10 countries or territories), Northern Europe (13), Southern Europe (15, including Spain) and Western Europe (9). Furthermore, the UN presents projections for each one of the continents, for large grouping of countries depending on their level of development (all the European countries are included in the group: "most developed countries) and, of course, for the total world population.

<sup>18</sup> In Europe, they are: the Channel Islands (Anglo-Norman), the Faeroe Islands, the Isle of Man, Andorra, Gibraltar, the Holy See, San Marino, Liechtenstein, and Monaco. The UN does not publish projections for these areas in a separate way, but instead it includes its populations in regional totals.

<sup>19</sup> In the high and low variants the total fertility rate is, during the greater part of the projection period, a half child more or less than the projected value in the medium scenario. These differences in fertility hypothesis seem small but nonetheless they lead to important differences in the population size at the end of the projection period.

results can be comparable for all countries. These projections consist of seven scenarios (high, low, baseline, no migration, high fertility, young, and old) built, in this case, from different hypotheses about fertility, mortality, and migration for each country, applying the components method. The high and low scenarios are the two extremes of demographic evolution that are still considered plausible, the young and old scenarios interchange hypotheses about fertility and mortality, while the baseline scenario is the product of the fertility, mortality, and migration hypotheses that seem most probable. Finally, the high fertility and no migration scenarios are variations built from the baseline scenario where the modified parameters are fertility and migration levels, respectively.

The Eurostat projections are updated approximately every five years, the most recent available being those carried out in 2005, which start in the year 2004 and project out to 2050. As they have been built in a homogeneous way, it is considered that the Eurostat scenarios provide more comparable data at the international level than the projections done by the national statistics institutes.

### **3. SOURCES OF HARMONIZED DATA FOR THE STUDY OF EUROPEAN HOUSEHOLDS**

Analyzing the basic forms of cohabitation of individuals, that is, households and families, with harmonized data and indicators, is possible in the European Union thanks to the efforts of Eurostat in cooperation with the national statistics institutes. Several sources of relatively harmonized data are therefore available. First of all, we will focus on the population and dwelling censuses, with data gathered and centralized by Eurostat and made available to the public in its database. Thus we will focus on three other sources that also provide information on the characteristics of the households: the European Community Household Panel, which has been recently replaced by the European Union Survey on Income and Living Condition; the Household Budget Survey, and the Labour Force Survey.

#### **3.1. POPULATION CENSUSES**

The population and household censuses, which the majority of European countries complete every ten years (usually at the beginning of each decade), are one of the most important sources for knowing population and households characteristics. These censuses can be traditional (based on a questionnaire), derived from national registers or other administrative sources, or the result of a combination of both methods. From these sources Eurostat collects detailed information on demography, households (both private and institutional) and dwellings of the EU member states plus the four EFTA countries—several results are also available at the regional level<sup>20</sup>.

How does Eurostat assure the harmonisation of the census data collected by the different countries? Although the states have the responsibility of organizing the censuses and their contents at their discretion (and to decide whether or not to organize a census in the traditional way), there are UN recommendations about the census content, applicable at the word level, and also some common UN/ECE-Eurostat recommendations, valid for European countries, that determine the questions that the censuses should include at a minimum. There is also the so-called “Community Census Table Programme” that specifies the data that Eurostat will collect from the member states, in which categories the data should be grouped, and with which dimensions they should be crossed. In this way, a series of standardized or common tables are designed in which the format of the data to collect is specified. This tabulation program, on a “gentlemen’s agreement” basis, tries to ensure the homogeneity of data from the various countries as much as possible, without full harmonization being complete.

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<sup>20</sup> The Eurostat database provides several tables with census information at the regional level (NUTS 2 level). However, on demand, it is also possible to get access to census data at the NUTS 3 level.

Although comparability problems still exist, Eurostat has, thanks to this process, access to an enormous amount of harmonized demographic data from censuses that allows a reasonable quality analysis and comparison of the population and household characteristics in the of the EU and EFTA member states. But census data present a handicap: due to the ten year separation between the census rounds the reality described remains out of sync at the end of a certain period. Another point is that data from the 2000-2001 census round have only been transmitted to Eurostat since the year 2002 and they have not been available in the Eurostat website until very recently.

### 3.2. EUROPEAN COMMUNITY HOUSEHOLD PANEL (ECHP) AND THE EUROPEAN UNION SURVEY ON INCOME AND LIVING CONDITIONS (EU-SILC)

Without any doubt, the main harmonized source that was available for the analysis of demographic, economic, social, and the general life conditions of European households of the European Union and of the individuals that live in those households was the **European Community Household Panel (ECHP)**<sup>21</sup>. Due to disagreements among the EU member states, the ECHP was extinguished after the 2001 wave and it has recently been replaced by the European Union Survey on Income and Living Conditions (EU-SILC).

The ECHP is a product of the nineties. In 1991 Eurostat instituted a “Task Force” on household income to try to respond to the growing necessity of having access to information on that topic. The first task of this Task Force was to evaluate, together with the member states, the income data in the national registers and surveys, to verify if these could be harmonized satisfactorily. This was considered unfeasible, so the decision was made to launch a specific survey for the entire EU that could provide longitudinal data on income, employment, poverty and social exclusion, dwellings, health, and other social indicators relative to life conditions of people and private households. Thus the ECHP was born. Its questionnaire was designed in a centralized way by Eurostat in 1993-1994 in close cooperation with the member states and with the goal of obtaining harmonized data but with the necessary flexibility to adapt to national requirements<sup>22</sup>.

As the ECHP was a panel type survey, it allowed longitudinal analyses, that is, it was possible to follow and interview the same people and the same households across several consecutive years<sup>23</sup>. Therefore, in contrast to a cross-sectional survey, it provided information on the relationships and transitions through time at the micro-level, allowing analysis of the social dynamics in the EU.

The questionnaire consisted of three parts: a “household register” which is used to maintain a detailed list of the characteristics of the individuals and households selected in the sample

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<sup>21</sup>

The ECHP, at the community level, defined a “household” in terms of shared residence and agreed shared living, that is to say, sharing food the majority of days or sharing the same sitting room. But not all of the countries strictly apply this EU definition.

<sup>22</sup> In effect, it was decided to design a single questionnaire instead of enumerating a list of variables and letting each country develop its own questionnaire (as is done in the case of the Labour Force Survey), thereby obtaining a greater comparability of the resulting data, but leaving a certain level of flexibility for the national institutes to adapt to country-specific practices and circumstances. The process of completing the national versions meant adapting the proposed questions and responses to the national context, translating the questionnaire and redesigning this (and the instructions to the interviewers) as a function of the customs and preferences of the national organizations.

<sup>23</sup> It is not easy to measure the percentage of households that were not able to be measured in two consecutive ways, given that in a panel it is the people, more than in the households, that are the authentic longitudinal units. Between the 1994 and 1995 waves it was estimated that 10% of the failure was due to absence of contact or of response, households that had ceased to exist, etc. These last ones were compensated for in part by the inclusion of new households introduced in the sample, so that the 1995 sample was 93% of the 1994 sample.

throughout the various phases; a “household questionnaire” which should be completed by the “person of reference” of the household; and an “individual questionnaire” to be filled out by each member of the household born in 1977 or before in the wave of 1994, until 1978 in the 1995 survey, and so on.

Dealing with a completely new survey in nearly all the countries<sup>24</sup>, it was possible to follow practically the same structure and implementation procedures in all of them. Therefore, it designed an initial random sample of households (representative of all of the private households situated in the national territory) that would be interviewed during consecutive years using the same follow-up rules to trace the movements of persons and homes.

The first wave of the survey was done in 1994 (with questions referring to the year 1993) in the then 12 member states of the Union<sup>25</sup>, with a sample of some 60,500 households representative at the national level, including some 170,000 individuals of whom some 130,000 were adults (older than 15 years) and were interviewed. Then annual waves were done until 2001: it was the 8th wave, which would be the last.

Indeed, many member states were not satisfied with the ECHP: it was a very expensive exercise which was paid by the countries but organised in a centralised way by Eurostat. Furthermore, it was a not very flexible instrument, with a lot of time spent between the implementation of the waves and obtaining of the results –too long for analysis of the most recent tendencies and to allow policy action. Attributing this excessive delay to the rigidity of the ECHP, the political decision was taken of cancel this powerful panel survey.

As information on social aspects at European level was still needed, Eurostat sought to launch from the year 2003 a new instrument that would replace the ECHP: the **European Union Survey on Income and Living Conditions (EU-SILC)**. After negotiations with the EU member states, the UE-SILC has the following characteristics: it is lighter than the ECHP, therefore needing less time between implementation and result obtention; it is more flexible, giving greater liberty to the member states in the way that they organize the survey at the national level; the permanent questionnaire is smaller than that of the ECHP and it covers basically aspects of income and living conditions, although thematic modules focusing on specific issues are added in each annual wave; finally, the majority of the survey is cross-sectional (like the LFS), and the longitudinal part exclusively covers the aspects of income and social exclusion through the rotation of a part of the sample. The EU-SILC therefore provides less information on the characteristics of European households than the previous ECHP and the resulting data are less harmonized, but information is however more updated.

The EU-SILC constitutes at present, in consequence, the central element of the European system of social surveys, providing comparable statistics for all of the countries of the EU about income (including social transfers), poverty and social exclusion, family and household characteristics (number of people that make up the household, average size, typology), as well as various other types of social indicators concerning the life conditions of private homes and individuals, which also allows the analysis of the interrelations between all of these variables. The rotatory character of a part of the sample may also allow the description of the characteristics of the households and people that enter and leave poverty and social exclusion, and analyze the causes that determine these flows.

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<sup>24</sup> The only exceptions were Belgium and the Netherlands, where the ECHP was developed as an adaptation to already existing national panels, but they followed the same development rules as in the rest of the countries.

<sup>25</sup> Austria and Finland join the ECHP project in 1995 and 1996, respectively. Sweden remained as the only country that did not participate in this survey.

### 3.3. HOUSEHOLD BUDGET SURVEY (HBS)

The "Household Budget Survey" (HBS) is the generic name that Eurostat uses to describe the surveys carried out in EU countries on a large amount of aspects concerning consumption, income, expenses, savings, debt, and other characteristics of private households. It is made of different national surveys such as the "Enquête Budgets des Familles" in France, the "Family Expenditure Survey" in the UK, and the "Encuesta Continua de Presupuestos Familiares" in Spain, whose results are collected, organised and published in a more or less homogenous way (as waves organised around a given year) by Eurostat. All of those surveys possess common characteristics, for instance, with respect to their coverage. They typically cover a period of a complete year –coinciding with a calendar year, although there are various national exceptions to this– and the results tend to be representative of all of the private households situated in the national territory (collective or institutional households, as well as people without a fixed place of residence, are excluded). The surveys use a variety of samples that vary between the approximately 2.000 households in the Netherlands up to 40.000 in Germany, totalling some 150,000 households in the EU.

The HBS is organised every 5 years approximately, around a reference year: 1988, 1994 and 1999. The Eurostat database currently gives access to the results of the HBS surveys implemented in these three waves. The last reference year has been planned for 2005, but data is not yet available. These data are organised in the Eurostat website in the three big information groups: consumption expenditure of private households, structure of mean consumption expenditure, and household characteristics (size and type of household, age and socio-economic situation of the person of reference, main source of income, number of active people, urbanization degree). This information on households is important from the demographic point of view and complements that which, at the EU level, can also be obtained through population censuses, the EU-SILC and the Labour Force Survey.

However, these national-implemented budget surveys are very different from one another and, therefore, their results reflect a great diversity of structures, designs, and methods, as well as important differences in the procedures followed and in the definition of the concepts used. Therefore, the level of result harmonization that can be obtained from the HBS is very low.

### 3.4. LABOUR FORCE SURVEY (LFS)

The Labour Force Survey, usually known as the LFS, is the third of the big social surveys coordinated by Eurostat and represents, without a doubt, the key tool to study the evolution of the labour market at the European Union level, although it also provides valuable information on the characteristics of private households.

The efforts to have such an instrument began in 1960<sup>26</sup>, and the subsequent two decades saw the completion of various partial efforts, but it would not be until 1982, when the 13<sup>th</sup> International Conference of Labour Statistics adopted several exact definitions for the different population categories with respect to activity, that the member states of the then European Economic Community agreed to adopt these recommendations in a new series of annual community surveys on the population activity. Thus in 1983 a database with substantial and coherent information on the EU labour market began. It currently contains information from some 561,000 households<sup>27</sup> in the 12 member states that have the

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<sup>26</sup> In this year the first LFS was completed and it covered the six original member states. Later there was a period of annual surveys between 1968 and 1971, being completed every two years between 1973 and 1981.

<sup>27</sup> The basic units for which the LFS provides results are individuals and private households. Although the definition of a household varies somewhat between different countries, it is considered that such differences do not have significant effects on the comparability of results.

household as a sample unit, plus some 50,000 individuals in Denmark, Finland and Sweden, where the sampling unit is individuals.

Like the HBS, the LFS is based on a list of variables established at the community level which enumerates the kind of data collected from national surveys on the labour market that the member states' statistics institutes have to send to Eurostat. It is, therefore, a product of close collaboration between Eurostat and the national statistics institutes. These institutes are responsible for the selection of the sample, for the preparation of the questionnaires, of the interviews in the households and the transmission of the results to Eurostat, following common procedures. Eurostat develops, for its part, the program for tabulation and analysis of the results and ensures data exploitation and diffusion. In this way, we obtain considerably more harmonised and comparable results than any other statistic on activity, employment, or unemployment currently available for the member states. This is due to a tight correspondence between the community list of questions and the national questionnaires, the application of the same definitions in all of the member states, the use of common response codes and nomenclature (for example, the NACE for economic activity), the synchronization of the annual and quarterly surveys, and the centralised exploitation of data by Eurostat<sup>28</sup>.

However, the level of harmonization is not as elevated as it was in the case of the ECHP given that certain aspects that affect the comparability of the results continue to be different in the various national surveys, obviously subject to the requirements of each country: the editing of certain questions and their ordering in the survey, the basic structure as well as the rotation patterns of the sample, how data collection is organized, as well as technical procedures such as sample weighing, and imputation, and other aspects of the statistical analysis of the results. In all of these aspects there is continuous work to improve the level of harmonization.

Currently the LFS covers all of the member states of the EU and the EFTA (except Lichtenstein), plus the candidate countries. The information is gathered on a quarterly basis (with the exception of Luxembourg which only provides annual average). In some countries the survey includes a certain longitudinal component (panel or rotating sample) which allows following the same individuals during a limited period of time, making possible the analysis of the transition between different statuses.

Although the series of harmonized data provided by the LFS and available in the Eurostat database with annual periodicity started in 1983, not all of the countries that are now members of the EU were members at that time, nor are there data from all of the countries that were EU members for the period 1983-1998. So, for example, uninterrupted continuous activity data for all of the simple ages begins in 1984 in Germany and in 1987 in the Netherlands. Due to the later incorporation into the EU, the series begins in 1986 in Spain and 1987 in Portugal, while data corresponding to Austria, Finland, and Sweden are only available since 1995.

The Eurostat database provides statistics about the variables that are best related to participation in the labour market such as number of actives, inactives, employed people, unemployed people, atypical work, and time of work (part- / full-time), as well as information on other variables such as population resident in private households, population according to level of education and nationality. Furthermore, within the sub-domain "General and Regional statistics – regional labour markets" one can find data from the LFS at the NUTS 2 level for the member states of the EU and the applicant countries about population, activity,

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<sup>28</sup> Beyond the centralizing role of Eurostat, the national surveys about labour force are harmonized in a double-sense: they have a shared conceptual framework (defined by the International Conference of Labour Statistics) and there is agreement between the national statistics institute with respect to basic technical aspects.



employment, unemployment, etc., as well as the number and characteristics of households. Finally, the great richness of this survey allows users to obtain –on demand– a great variety of additional information on the size and types of households, family structures, number of children (dependent and non-dependent), etc., as well as to cross all of these variables with different aspects of participation in the labour market.

#### 4. CONCLUSIONS

Although the road to obtaining totally harmonized statistics at the European scale is still long, we cannot undervalue the importance of the work that has already been done and the value of the sources of information already available. Thanks to the cooperation of the European countries' national statistical institutes and to the organization and centralization task carried out by organizations such as Eurostat, the former European Population Committee of the Council of Europe, and the organizations that depend on the UN, the volume and quality of harmonized data on population increases year after year. The diverse joint data collections annually organized by these institutions provide a mass of standardized information with a more than reasonable quality in the areas of fertility, mortality, and marriage. Data on migration, at the other end of the scale, appear as the main information gap with respect to the existence of harmonized statistics at the European level reflecting the deficiencies that data gathering systems present in this field at the national level.

Thanks to the existence of instruments such as the EU-SILC, the HBS, and the LFS –and thank also to censuses, but these with ten-year periodicity– a large amount of information on the characteristics of European households is also available. However, certain harmonization problems continue to exist in specific areas. Paradoxically, they have increased in the recent years due to the disappearance of the source that presented the highest degree of harmonization, the European Community Households Panel.

Finally, it must be said that, although the presence of harmonized data mainly covers the 15 former member states of the European union (complemented by the four the EFTA member states), the process of enlargement has increased, in the past years, the availability of standardized data on central and eastern European countries (plus Malta and Cyprus). Moreover, the ever closer cooperation between Eurostat and the other demographic organizations of pan-European scope are increasing the wealth of demographic data on other European countries (such as those situated in eastern Europe and the Balkans) and the former Soviet Union, leading us, step by step, toward the constitution of a harmonized statistical system that covers the entire continent.

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