

European wide issues in population statistics

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INTRODUCTION

Population statistics are a fundamental output for any national statistics institute because they provide essential information about the most valuable asset of the country, which is its people. They are also at the heart of any statistical system because they are core information without which it is impossible to contextualise other information. Organisations such as the United Nations and Eurostat have been prepared to expend significant efforts to establish principles and practices on population statistics and censuses that will aid comparability and coherence.^{1,2} In the early part of a new century and in light of evidence from the last round of censuses, it is timely to review the issues that face those responsible for providing measures of the population, its structure and its dynamics.

There is considerable diversity between the countries of the enlarged Europe but nevertheless there are some common demographic issues that require co-operation to achieve better understanding of the demographic challenges. The population is getting harder to count as population movement is greater than ever before. More factors are influencing population change and the balance of these is continually changing. The aim of this article is to discuss the issues facing those who measure population in Europe. The article first sets out a high level description of the current demographic position in the European Union (EU), focussing on the main demographic changes that are underway and that will influence the population in years to come.^{3,4} Consideration is then given to the issues these raise for those who measure population and how population statistics systems will need to evolve in response.

This article discusses the issues facing those in Europe who measure population. It first sets out a high level description of the current demographic position in Europe, focussing on the main demographic changes that are underway and that will influence the population in years to come. Consideration is then given to the issues these raise for those who measure population and how population statistics systems will need to evolve in response.

KEY DEMOGRAPHIC FEATURES OF EUROPE

The enlarged EU of 25 Member States covers a slowly growing population that is in excess of 450 million people.³ Whilst some of the acceding countries (Estonia, Latvia, Lithuania, Hungary, Czech Republic and Poland) have seen population decreases in recent years, most European countries are growing. Table 1 shows population change between 1993 and 2003 in the European Union of 25 countries. For many of the growing countries migration and other changes has been a key driver of change (i.e. see Portugal, Greece and Sweden but note footnote 2 to Table 1) and some countries would have declined without net inward migration and other changes (Italy and Germany but note footnote 2 to Table 1). However, there are a few countries where a natural increase, that is, due to an excess of the number of births over deaths, has been an important driver of population growth (for example, France, Finland and the Netherlands). There have been some where population growth is fuelled by a combination of both natural change and migration and other changes (for example, Ireland and the UK).

Table 1 Components of population change for 25 EU member states, 1993–2003

Country	Population ¹ on 1 January 1993	Natural change	Implied ² net migration and other changes	Total change	Thousands
					Population ¹ on 1 January 2003
European Union (EU25)	444,173.4	3,028.3	7,350.6	10,378.9	454,552.3
Belgium	10,068.3	107.8	179.7	287.5	10,355.8
Czech Republic	10,325.7	-164.1	41.7	-122.4	10,203.3
Denmark	5,180.6	70.7	132.2	202.9	5,383.5
Germany	80,974.6	-899.6	2,461.7	1,562.1	82,536.7 ^p
Estonia	1,511.3	-62.9	-92.4	-155.3	1,356.0
Greece	10,420.1	7.0	591.3	598.3	11,018.4 ^p
Spain	39,113.5	271.9	2,165.2	2,437.1	41,550.6 ^p
France	57,369.2	2,085.2	175.7	2,260.9	59,630.1 ^p
Ireland	3,569.4	217.3	176.9	394.2	3,963.6
Italy	56,960.3	-249.0	609.7	360.7	57,321.0 ^p
Cyprus	619.2	38.2	57.7	95.9	715.1
Latvia	2,585.7	-143.4	-110.8	-254.2	2,331.5
Lithuania	3,693.9	-46.1	-185.2	-231.3	3,462.6
Luxembourg	394.8	16.8	36.7	53.5	448.3
Hungary	10,365.0	-376.0	153.4	-222.6	10,142.4
Malta	363.0	16.3	18.0	34.3	397.3
Netherlands	15,239.2	593.0	360.4	953.4	16,192.6
Austria	7,882.5	51.8	133.0	134.8	8,067.3
Poland	38,418.1	350.8	-550.4	-199.6	38,218.5
Portugal	9,964.8	76.9	365.8	442.7	10,407.5
Slovenia	1,994.1	-5.7	6.6	0.9	1,995.0
Slovak Republic	5,314.2	69.3	-4.3	65.0	5,379.2
Finland	5,055.0	103.8	47.5	151.3	5,206.3
Sweden	8,692.0	33.9	214.9	248.8	8,940.8
United Kingdom	57,646.8	864.0	818.1	1,682.1	59,328.9

Notes: p = estimated or provisional value

1 The estimates of the resident population of each country is as at 1 January of the year in question (or 31 December of the previous year in some cases). The population is based on data from the most recent Census adjusted by the components of population change produced since the last census, or based on population registers.

2 Implied by the difference between total change and natural change. This cannot be taken to be an accurate estimate of net migration. For instance, this would include differences due to a change in the method of estimation or any other source of a break in the continuity of the series

Sources: Eurostat yearbook 2004 and New Cronos database.

The demographic position in the EU is one of an ageing population. Migration issues are important to those concerned with policy in many countries and there are changing social norms in the areas of partnership formation and dissolution that are producing new family and household structures. This brief summary focuses on these key areas.

Table 2 Life expectancy by sex and TFR for 25 EU member states, 1991 and 2001

	Life expectancy at birth (in years)				TFR ¹ (children per woman)	
	1991		2001		1991	2001
	Male	Female	Male	Female		
EU25	71.8 ^e	78.9 ^e	74.7 ^e	81.0 ^e	1.60	1.46
Belgium	72.9	79.6	74.9	81.1	1.66	1.64 ^e
Czech Republic	68.2	75.7	72.1	78.5	1.86	1.14 ^e
Denmark	72.5	78.0	74.7	79.3	1.68	1.74
Germany	72.2	78.7	75.6	81.3	1.33	1.35 ^p
Estonia	64.5	75.0	64.9	76.4	1.79	1.34
Greece	74.7	79.7	75.4 ^p	80.7 ^p	1.38	1.25 ^p
Spain	73.4	80.5	75.6 ^e	82.9 ^e	1.33	1.26 ^p
France	72.9	81.1	75.5	82.9	1.77	1.89 ^p
Ireland	72.3	77.8	74.7	79.7	2.08	1.94 ^p
Italy	73.6	80.2	76.7 ^e	82.8 ^e	1.31	1.25 ^e
Cyprus	:	:	76.1 ^e	81.0 ^e	2.33	1.57 ^e
Latvia	63.8	74.6	64.8	75.9	1.86	1.21 ^p
Lithuania	65.2	75.9	66.0	77.5	2.01	1.30 ^e
Luxembourg	72.0	79.1	75.2	80.7	1.60	1.66
Hungary	65.0	73.8	68.1	76.4	1.88	1.31 ^p
Malta	73.6	78.3	76.1	80.9	2.04	1.72 ^e
Netherlands	74.0	80.1	75.8	80.7	1.61	1.71
Austria	72.3	78.9	75.6	81.5	1.51	1.33
Poland	66.1	75.3	70.2	78.3	2.05	1.29
Portugal	70.3	77.4	73.5	80.3	1.57	1.45
Slovenia	69.5	77.3	72.3	80.3	1.42	1.21
Slovak Republic	66.8	75.2	69.6	77.7	2.05	1.20
Finland	71.3	79.3	74.6	81.5	1.79	1.73
Sweden	74.9	80.5	77.6	82.1	2.11	1.57
United Kingdom	73.2	78.7	75.7	80.4	1.82	1.63

Notes

1 TFR (total fertility rate) is the number of children that would be born to a woman if current patterns of fertility persisted throughout her childbearing life.

Sources: Eurostat

The countries of the EU are experiencing increasing life expectancy and low fertility, both of which are characteristic in-built features of ageing in the population. Mortality rates have declined significantly in the eighties and nineties largely through decreases in the mortality rates of older people. Table 2 shows how life expectancy and fertility has changed between 1991 and 2001. However, there remain substantial differences in life expectancy between countries. For men, the life expectancy at birth is usually close to 75 years or is above 75 years in many European countries in 2001 but in some of the EU's eastern European countries (for example, Estonia, and Latvia) it is only about 65 years. There is a similar picture for women; life expectancy is typically around or above 80 years in most EU countries but is around 76 years in Estonia and Latvia. Fertility rates have declined significantly since the sixties. There is low fertility across the EU with Total Fertility Rates (TFRs) being below replacement levels in all countries; ranging from around 1.8 or 1.9 to below 1.2. These low fertility rates reflect delayed childbearing, smaller family sizes and higher rates of childlessness. In 2001, the lowest fertility rates were in the acceding countries, particularly the Czech Republic, Latvia, Slovenia and the Slovak Republic and low rates were also seen in Greece, Italy and Spain. The highest fertility rates were in Ireland, France, Netherlands, Denmark, Finland and Malta.

Population ageing impacts on the age structure of the population and in the EU the proportion of those aged 65 and over (16 per cent) is only fractionally smaller than the proportion of children (ages 0 to 14), together representing a third of the total population. Thus two-thirds of

Table 3 Percentage of population aged under 15 and over 65 and the ratio between them for 25 EU member states, 2000

	Population:		Ratio (b/a)
	Under 15 (a) per cent	65 and over (b) per cent	
Belgium	17.5	16.9	0.97
Czech Republic	15.9	13.9	0.87
Denmark	18.7	14.8	0.79
Germany	15.3	17.1	1.11
Estonia	17.2	15.5	0.90
Greece	14.8	17.2	1.16
Spain	14.5	17.0	1.17
France	18.7	16.2	0.87
Ireland	21.2	11.1	0.53
Italy	14.3	15.9	1.11
Cyprus	21.5	11.7	0.54
Latvia	16.6	15.5	0.93
Lithuania	19.0	14.4	0.76
Luxembourg	18.9	13.9	0.74
Hungary	16.3	15.3	0.93
Malta	19.2	12.6	0.65
Netherlands	18.6	13.7	0.73
Austria	16.7	15.5	0.93
Poland	18.2	12.5	0.69
Portugal	15.9	16.5	1.04
Slovenia	15.4	14.5	0.94
Slovak Republic	18.7	11.4	0.61
Finland	17.9	15.2	0.85
Sweden	18.2	17.2	0.95
United Kingdom	18.6	15.9	0.85

Source: Eurostat New Cronos database.

the population are supporting the other third. Once again though, there are considerable differences between individual countries. In some the proportion of those aged 65 and over exceeds those in the 0 to 14 age group, which is most marked in countries that have the combination of both a high chance of survival to old age and have experienced low fertility over the last decade or so (Spain, Greece, Germany and Italy). By contrast in Ireland, which has the highest birth rate in the EU, the proportion of children (21 per cent) is nearly twice that of older people.

Migration is an important driver of population change but migration patterns vary across the EU. Much migration is economically driven but there are other drivers of migration which include for example educational and familial factors. Factors that influence a migrant's choices of destination country include geographical proximity, historical and cultural ties and economic globalisation, whereby jobs are created outside the country of the sponsoring company. Data are not available to assemble a complete matrix of migration flows between the individual countries of the EU. None the less, a recent Council of Europe report that presents analyses of the data that are available, shows the following patterns in moves by people of working age.⁵ The majority of economic migrants from central and eastern EU countries move to elsewhere in the EU, Germany and Austria receive a high proportion of economic migrants from central and Eastern EU countries. This containment within Europe is also seen in other countries such as Sweden. On the other hand, looking at migrants to countries such as the UK, the Netherlands, Malta, Spain and Italy, there is a high proportion of migrants from outside the EU. A subject of much debate in Europe is the extent to which EU enlargement will impact on migratory flows. Since accession there has been some movement of citizens of the acceding countries to some other parts of the EU but the extent to which migration to and from non-EU countries might be affected is unknown.

Changes in the patterns of marriage, divorce and cohabitation have implications for family formation and dissolution. The traditional nuclear family through marriage is still the norm in the EU but a wider range of family and household types is emerging, from lone parent families to step and extended family types. Within Europe, the rise in cohabitation, divorce and remarriage has been particularly evident in the Nordic member states, the Netherlands and the UK. The trends in partnership formation and dissolution mean that children are likely to experience family disruption whilst growing up and some will experience it more than once. There has been a marked increase in the number of births outside marriage over the last decade. The rate has risen from 9.6 per cent of all live births in 1990 to 28.6 per cent in the countries of Europe prior to enlargement and similar rises have been seen in many of the acceding countries. This, together with the rise in divorce rates, has led to an increase in the number of lone parent households.

Other trends are for a rising number of people living alone, leading to smaller household sizes, though household sizes remain above 2.8 people per household, the average levels in 1981, in some countries (Spain, Ireland and Portugal). In many countries a high proportion of those living alone are older people, particularly older women. The fastest growing component of the older population in Europe is the oldest old (that is, those aged 85 and over) and their living arrangements tend to differ from the younger old.^{6,7} In some countries the proportion of older people living in an institution is quite high. Other household types such as groups of unrelated adults or multigenerational households also exist but their prevalence varies dramatically between countries. For instance, elderly parents are less likely to live with an offspring in northern than in southern Europe.⁸

IMPLICATIONS OF THE DEMOGRAPHIC CHANGE

The above section describes a fluid and dynamic population. Policy makers need to respond to demographic change and thus need to properly understand the implications of such change for society, both in terms of current policy and in formulating new policy. They need to be able to monitor the impacts of the policy, for example assess the way in which policies affect behaviour, and this might manifest itself as an impact on demographic trends.

The increasing numbers of older people and increased life expectancy have very significant implications for retirement, pensions, health and care, particularly as the number of the oldest old (aged over 85) continues to grow. With improved health the less old are much more active participants in society, for example, taking on caring roles for younger generations in their family, participating in the voluntary sector or continuing in the labour market. Recent reports have highlighted the need for people to anticipate that they should expect to live longer and build this into their financial planning for their retirement, particularly for their oldest years.⁹ Higher life expectancy means there is a longer period between departure from the work force and becoming highly dependent on services. More people may want to work past retirement age or adopt more flexible working patterns as they get older, perhaps making more use of part-time working opportunities past the usual retirement age. At the same time, larger numbers of older people are taking advantage of property markets to spend significant periods living in another country.

The ageing population is evident in the ageing of the labour force and the current low levels of fertility have implications for the numbers who will enter the workforce in future. Migration, which is traditionally primarily of population of working age may help to mitigate labour market skills shortages in some areas, but may exacerbate them elsewhere. Economic globalisation and flexibility in labour markets has led to increased mobility of the workforce. This can lead to migration but also situations where people work in one place for periods without cutting their links with their home country. Within countries there are significant numbers

of people who work away from home, either for a period of time or for part of the week. Living arrangements are becoming increasingly complex as a result of working patterns that mean some family members live apart, for example, during the working week, this has given rise to a number of people who have two residence addresses.

General mobility has increased with more short-term and unplanned moves which are of uncertain duration but which may become migratory moves. Also the formation and dissolution of families and households, both within and outside marriage, mean that natural parents of children live at separate addresses, but the children have more than one residence. This article goes on to explore the implications that demographic changes have for data collection. For example, understanding the impact of mobility, on how people perceive where they belong in terms of residency status, is important to census takers; more complex household living arrangements may require different question wording by census and survey takers. These are issues that are being faced internationally and there is much to be gained from close working between the EU countries but also with countries outside Europe such as the US, Canada and Australia. All these countries are contributing to UN ECE Task Force groups on the 2010 round of censuses.

The EU is ethnically and culturally diverse; enlargement of the EU will increase this diversity as migration has done for individual countries over a number of years. Demographers need to reflect this diversity and thus it is no longer sufficient just to present the average or the typical values in order to provide relevant and complete information about the population, its structure and dynamics.

IMPLICATIONS FOR THOSE WHO MEASURE POPULATION, ITS STRUCTURE AND DYNAMICS

Definitions of population, household, migrant

Following publication of the 2001 Census estimates in the UK, fundamental questions have been asked about what population should be measured. Traditionally the measure has been resident population, but as a result of increased mobility and more complex living arrangements the concept of usual residence is becoming less clear. There are significant numbers of people who no longer regard themselves as being associated with a single place of residence. Thus there has been a weakening of the link between people and dwellings, which has a huge significance for data collection exercises that have been based on the traditional premise that such one to one association exists. People can belong to more than one household, live in more than one dwelling and therefore be part of more than one community. These relationships can cross over national boundaries because it is becoming increasingly common for people to spend time living in different countries.

Population statistics are used for a multitude of diverse purposes, including allocation of funding, planning service provision, developing and monitoring policy and monitoring trends; consequently no single population definition will meet users needs. In the UK, users have identified a range of different population bases for which estimates are required, in addition to the usually resident population. These include for example population in households, population in institutions, daytime population, *de facto* population, the working population or the population for whom specific services are provided.¹⁰ Efforts will be focussed on developing core population estimates for a small manageable set of different definitions that meet the highest priorities of users. This core set must include a definition that is used across the Member States to enable statistics for the EU25 to be prepared and to facilitate reliable comparisons between countries.

The more complex living arrangements of the 21st century also have implications for the definition of a household and a family. There is a

need to use relevant definitions that reflect reality and are meaningful to respondents. Most EU countries are lacking data on unusual family types and living arrangements and more information is needed. A UN ECE Task Force will be reviewing definitions in the context of recommendations for the 2010 round of censuses. The UK is regarded as having an advantage because of the inclusion of the relationship matrix in the 2001 Census. ONS are in the process of evaluating how well this worked and aim to report the findings during 2005.

A migrant is defined in the UN recommendations as someone who moves for a period of a year or more. This definition works in the traditional context, as in the past, where migrants were mainly people who moved to settle in a new land. However, migrants are now a much more diverse group who include economic migrants and their dependents, refugees and asylum seekers, as well as the more traditional settlers. Globalisation and general increased mobility means that there is now much more population movement that results in people moving between countries for periods of time without them being defined as migrants. People move to another country to undertake seasonal work, to undertake short contracts, to study for periods of three months or more; some older people spend part of the year in one country and part in another. There is a need for more information to understand the extent of such population movement and a first stage is to define exactly what is meant and required. It is likely that there will be interest in knowing about people who move between countries for periods of three to six months and six months to one year. Such people often join the labour market of the new country and hence impact on the size of the available workforce. Measures such as employment rates are key economic indicators. There also remains significant interest in migrants as defined in the UN recommendations and migration within a country also needs to be clearly defined and measured.

Measuring the population

It is getting more difficult to count the population in the complex societies of the 21st century. Demographers must rise to this challenge as information about the number and characteristics of the population by geographical area and for different population sub-groups is essential. Across the EU there are a variety of approaches to measuring the population and its basic characteristics. The traditional approach is the conduct of a periodic, often decennial, census with the use of demographic methods that utilise information on births, deaths and migration to estimate population in the intervening years. Experience in the UK, which has been mirrored in other countries that use this approach, is that it is becoming increasingly difficult to conduct a census that enumerates the whole population and that it is necessary to adopt a variety of methods to take account of underenumeration.¹¹ Ever more innovative approaches are required to maximise the response to a census and subsequently to estimate those who missed being enumerated. The census provides an essential benchmark that forms the base for population estimates in the years until the next census.

The 2001 Census in the UK highlighted that the intercensal population estimates were not sufficiently accurate at subnational levels.¹² A challenge for the future is to improve the quality of these estimates and also provide information about quality that will enable users to make judgements about their fitness for particular purposes. The weakest link in the intercensal population estimation process is the quality of data on migration flows. This will be covered in more detail in a later section of this article.

There are alternatives to the traditional census model, for example, in France the population will be enumerated by means of a continuous survey covering the whole country over a period of time. The data collected each year can be modelled to enable reliable population estimates to be derived. Other countries have population registers that are

used in combination with administrative sources to enable the derivation of estimates of the population and its demographic characteristics. Given the expense of a census and the increasing difficulties in counting everyone through a census, it is likely that in future there will be increased use of address and population registers supplemented by administrative data sources and survey data to produce the required range of population statistics.¹³ Moving from a census-based approach, that is, a direct measurement, to a system based on administrative data sources, may produce an alternative set of estimates with a different range of quality issues. The challenge is to design methods whereby any such estimates can be confronted using other sources and processes to ensure adequate reliability.

Migration

There are fundamental difficulties in making reliable estimates of migration, due principally to the lack of data, particularly on emigration. It is generally recognised that more needs to be done to obtain estimates that are accurate, coherent and comparable. Not only is information required about the *flows* of immigrants and emigrants and their characteristics but also about the *numbers* of immigrants and their integration into the society and economy of their new country. In individual countries there is considerable interest in international migration that is between Member States as well as migration from outside the EU region. Such information is important in understanding population change and in assessing the diversity of the population and its structures. In addition to international migration, Member States require reliable information about population migration within the country because there are significant implications for housing provision, service provision, local regeneration and local labour markets.

Member States use a variety of different approaches to estimating migration that are driven by the different types of migration that are experienced and different sorts of migration controls operated, which can provide a range of administrative data. Population registers have place of residence as their foundation and hence have the advantage of measuring immigration effectively, although incomplete recording of emigration is a known issue. Also there are a variety of different rules about how long a person has to stay or leave before they are recorded as a migrant. Other Member States use a variety of surveys and administrative data to produce estimates.

The inflows and outflows from the EU are large, and within the EU there are significant flows between Member States. There is a reasonable capability to measure the inflows, but that to measure outflows is more limited. The difficulties are well known for countries where measurement is based on asking about people's intentions but even in countries with administrative data there are problems, as people can remain on administrative registers and systems for long periods after they have left a country. Inflows are easier to measure because the people are physically present. However, only limited use has been made of the receiving country principle, that one country's outflow is another country's (or set of countries) inflows, as lack of comparability in definitions can make it hard to take advantage of this in practice.

Eurostat are developing a Framework Regulation covering Community statistics on asylum and migration. The aim is to obtain clarity about what Member States are required to provide on asylum and migration statistics; ensure a greater certainty of data supply to Eurostat; and improve the quality, timeliness and comparability of the statistics. Efforts to improve the availability of comparable and reliable statistics are to be welcomed, and there are significant challenges in the field of migration statistics. Some concerns have been expressed about the proposed speed at which the legislation is being prepared and introduced, although there is agreement in principle as it is recognised that improvements in these statistics is a major issue.

Comparability ensuring coherent EU25 statistics

Statistics for the EU as a whole are compiled using data provided by the Member States. Although there have been considerable developments towards harmonisation of definitions and outputs, ensuring coherent EU statistics and the availability of truly comparable national data remains a challenge. The introduction of joint questionnaires that meet the population data requirements of the EU, Council of Europe and UN has helped to manage the burden of data supply faced by countries. Consistent requirements from the international organisations has aided work on harmonising outputs, although there remain substantial issues because of differences between countries in concepts, measurement, timing and frequency. With the increase in the number of Member States, harmonisation becomes even more of a challenge.

In recent years the focus has been on ensuring harmonisation of outputs, although this is difficult to achieve given the multitude of data collection instruments used by Member States. There needs to be an increased focus on improving understanding of what the statistics provided by Member States actually measure, through increased use of explanatory information. Such information is invaluable in understanding artefactual differences when comparing statistics for different countries.

Groups in the population, for example, ethnic communities

There is considerable interest in specific groups in the population, such as minority ethnic groups, those with particular religious affiliations, the homeless and, more contentiously, illegal immigrants. Such minority groups in the population are defined in different ways in different countries, using classifications that are relevant, and possibly specific, to a country. This makes it difficult to produce statistics on minority groups across the EU. However there has been considerable demographic research into minority groups in different countries by the Council of Europe, which has increased understanding of the structures of these groups and their integration into society. The Council of Europe has a long history of research that contributes to understanding the relationship between social policy and demographic issues.

Families, households and living arrangements

Information about family and household structures and how they are changing, their formation and dissolution is key to understanding EU society. The social norms in the different Member States means that there will be different patterns, but complex living arrangements are far more usual than in the past.

Where the UK is going

The UK are planning for the next Census in 2011, working closely with colleagues in other census-taking countries, both in the EU and internationally, to share experience and lessons learned from the 2000 round of censuses. In Europe a UN ECE Census Task Force exists to review recommendations for the 2010 round of censuses. Between now and 2011, considerable efforts are in hand to improve the quality of intercensal population estimates for local areas and migration estimates. Post 2011, the vision is to move towards an integrated population statistics system that utilises address registers, population registers, administrative sources and surveys. This approach will involve the linkage of records at an individual level for statistical purposes. There are substantial issues to be resolved, such as barriers that currently prevent the linkage of administrative records and the need to gain acceptability from the public, but the benefits in terms of the quality of population statistics will be significant.

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