

Compendium

Frequently Asked Questions



Contact:
Andrew Nash
pop.info@ons.gsi.gov.uk

Release date:
29 October 2015

Next release:
To be announced

Table of contents

1. [Introduction](#)
2. [General national population projections FAQs](#)
3. [2014-based national population projections FAQs](#)
4. [Background notes](#)

1 . Introduction

This report answers some of the questions users most frequently ask on national population projections in general as well as the 2014-based release more specifically.

2 . General national population projections FAQs

What are the national population projections?

National population projections are prepared by the Office for National Statistics (ONS) on behalf of the National Statistician and the Registrars General for Scotland and Northern Ireland. They are produced every 2 years and provide projections of the future size and age structure of the population for the UK and its constituent countries. The national population projections are National Statistics, which means that they undergo regular quality assurance reviews and are produced free from political interference.

How are the projections produced?

The national population projections are based on the latest available mid-year population estimate and a set of demographic assumptions about future fertility, mortality and migration based on analysis of trends and expert advice. They are produced using the internationally accepted cohort component methodology. This method accounts for changes which increase or decrease the population (births, deaths and net migration) and models the effect of these changes and the passage of time on the age structure of the population.

Do the projections take government policies into account?

The national population projections are not forecasts and do not attempt to predict the impact that future government policies, changing economic circumstances or other factors (whether in the UK or overseas) might have on demographic behaviour. They simply provide the population levels and age structure that would result if the underlying assumptions about future fertility, mortality and migration were to be realised.

What population is covered by the projections?

Projections are made of the usually resident population of the UK and its constituent countries, whatever their nationality. The usually resident population includes all long-term international migrants (people changing their country of usual residence for at least one year). However, the usually resident population does not include short-term migrants who come to or leave the UK for less than a year.

How are the assumptions underlying the projections agreed?

The assumptions about future levels of fertility, mortality and net migration are agreed in liaison with the devolved administrations (namely National Records of Scotland (NRS), the Northern Ireland Statistics and Research Agency (NISRA) and the Statistical Directorate of the Welsh Government (WG)), following consultation with main users of projections in each country and advice from an expert academic advisory panel. Details of the [membership of the panel and minutes of the meeting](#) are published on our website.

Why are the national population projections produced?

The main purpose of the national population projections is to provide an estimate of the future population of the UK (and its constituent countries) as a common framework for use in national planning in a number of different fields.

Who are the main users of the projections, and what are they used for?

The national population projections are widely used across government for planning purposes. Examples include:

- the Office for Budget Responsibility use the projections as a main input to their long-term fiscal projections published in the fiscal sustainability report
- the Department for Work and Pensions use the projections extensively to produce forecasts of expenditure for benefits and pensions and as a main input for analysis on policy areas such as extending working lives
- the Department for Education use the projections as the basis for their projections of future school pupil numbers

The national population projections also provide the base for other products such as subnational population projections and household projections, which are widely used for resource allocation and planning.

Why do you produce variant projections?

Projections are uncertain and becoming increasingly so the further they are carried forward in time. Users of population projections should take account of this uncertainty in any decisions they base on the projections. To help with this, the principal (main or central) projection is accompanied by some variant projections, which are based on alternative, but still plausible, assumptions. These variant projections provide an indication of uncertainty by allowing users to consider the impact upon the population if future fertility, mortality and migration differ from the assumptions made for the principal projection. The publication of variant projections is an internationally recognised method for illustrating the uncertainty associated with population projections.

Also produced are a number of special scenario variants that allow users to consider "what ifs". So for example the "No mortality improvement" variant, due to be published in November 2015, shows what the population would look like if mortality rates stayed at similar levels to those currently observed. Some allow decomposition of the projections for example the "Zero net migration (natural change only)" variant looks at what would happen if net migration was zero at every age, by comparing this to the principal projection the impact of the migration assumptions can be assessed.

What is the "central" or principal projection and how is it different from the variant projections?

The principal population projection is produced using a set of assumptions of future levels of fertility, mortality and migration. These assumptions are set using past trend data and advice from an expert panel. Projections are inherently uncertain and becoming increasingly so the further they are carried forward in time. To help users with this, the principal (main or central) projection is accompanied by some variant projections, which are based on alternative, but still plausible, assumptions. These variant projections provide an indication of uncertainty by allowing users to consider the impact upon the population if future fertility, mortality and migration differ from the assumptions made for the principal projection. The publication of variant projections is an internationally recognised method for illustrating the uncertainty associated with population projections.

How far ahead do the projections go?

Projections are uncertain and become increasingly so the further they are carried forward in time. For this reason, analysis of the projection results mainly focuses upon the first 10 or 25 years of the projection period, which corresponds with the planning horizons of the majority of users of the projections, whilst recognising that uncertainty will be greater over a 25 year period.

However, some main users require projections over a longer period for modelling purposes, and the principal projection is also published for up to 100 years ahead. However, caution should be used when interpreting this longer-term projection as projections become increasingly uncertain the further into the future they go.

Do you produce population projections by religion or ethnicity?

We do not produce population projections by religion or ethnicity. We publish national population projections by age and sex for the UK and its constituent countries. We also produce subnational population projections for England by age and sex which are published about 7 months after the national population projections.

3 . 2014-based national population projections FAQs

What is the latest set of national population projections?

The latest set of national population projections is the 2014-based projections that we published on 29 October 2015. They are based on the estimated population at 30 June 2014. The principal (central) projection is based on assumptions considered to best reflect demographic patterns at the time they were adopted. We also produce a number of variant population projections, based on alternative, but still plausible, assumptions of future fertility, mortality and migration. Some special case scenario projections are also published. Nine variant projections are published alongside the principal projections on 29 October 2015, and a further 7 variant projections will be published on 26 November 2015.

Where can I find the latest projections?

The [latest national population projections](#) are available from our website. Detailed information on the assumptions underlying the projections and the methodology used to produce the projections can be found in the published reports. Information on 7 further variants will be published on 26 November 2015, and the reference volume in spring 2016. There are a number of interactive tools and supporting documents to help users view and understand the projections.

What data have been published?

For the 2014-based projections, principal projections data have been published up to 100 years ahead for the UK, Great Britain, England and Wales and each of the constituent countries.

Variant projections have been published up to 25 years ahead for the UK and each of the constituent countries. The low migration, high migration and zero net migration (natural change only) variants have also been published for Great Britain on 29 October 2015 and further variants are available from 26 November 2015.

Data for each country or variant combination have been published in 2 summary tables and 1 zipped open data file.

Summary table 1 contains the total projected population for all years of the projections, the components of change and other summary statistics.

Summary table 2 contains the projected population in 5 year age groups for all years of the projection.

The XML open data files contain:

- population by single year of age (0 to 104), age groups (105 to 109, 110 and over) and sex
- fertility assumptions by single year of age (15 to 46)
- mortality assumptions by single year of age (0 to 125) and sex
- cross border rates for each country flow by single year of age (0 to 125) and sex
- births by age of mother (15 to 46)
- deaths by age (0 to 105) and sex
- in, out and net cross border migration by age (0 to 105) and sex
- in, out and net international migration by age (0 to 105) and sex
- in, out and net total migration by single year of age (0 to 105) and sex

How do I find the table I want without the interactive table download tool?

The projections have been categorised by country and by type of information and these groupings can be accessed through links on the left hand side of the reference table webpage.

If you have any difficulty finding the information you require please contact the projections team at projections@ons.gsi.gov.uk, Tel: +44 (0)1329 444652.

What are the findings of the 2014-based projections?

A commentary on the findings of the projections, along with files containing the detailed results, are available on the [release page](#). Main points are:

- the UK population is projected to increase by 9.7 million over the next 25 years from an estimated 64.6 million in mid-2014 to 74.3 million in mid-2039
- the UK population is projected to reach 70 million by mid-2027
- assumed net migration accounts for 51% of the projected increase over the next 25 years, with natural increase (more births than deaths) accounting for the remaining 49% of growth
- over the 10 year period to mid-2024, the UK population is projected to increase by 4.4 million to 69.0 million. This is 249,000 higher than the previous (2012-based) projection for that year
- the population is projected to continue ageing with the average (median) age rising from 40.0 years in 2014 to 40.9 years in mid-2024 and 42.9 by mid-2039
- by mid-2039 more than 1 in 12 of the population is projected to be aged 80 or over

What are the assumptions underlying the latest projections?

We produce a principal (central) projection and also a number of variant projections based on alternative assumptions. The 2014-based principal population projection for the UK assumes:

- a long-term average completed family size of 1.89 children per woman
- life expectancy at birth in 2039 of 84.1 years for men and 86.9 years for women, with constant rates of mortality improvement assumed thereafter
- a long-term assumption of annual net migration to the UK of +185,000 per year

The long-term assumptions above are complemented by short-term assumptions designed to allow a realistic convergence to the long-term assumption. For example, assumed net migration for the first 7 years of the projection is higher than the long-term assumption above. Detailed information on the [assumptions underlying the projections](#) can be found on the release page.

Is the projected growth in the population due to births or migration?

Projected growth over the next 25 years is evenly split between the direct effect of these two factors. Of the 9.7 million projected increase in the population over the full projection period to mid-2039, 4.7 million (49%) is due to projected natural increase and 5.0 million (51%) is due to assumed net migration.

Past international migration also has an indirect impact on the population through its effect on the numbers of births and deaths – for example, women who were born overseas but who give birth after migrating to the UK will increase the numbers of births, while the numbers will be decreased by women born in the UK who migrate overseas before giving birth (assumptions of future fertility and mortality are based on past trends of all residents irrespective of where they were born).

Because migration is concentrated at young adult ages, the assumed level of future net migration has a much greater effect on the projected number of women of childbearing age and hence the projected number of births, than on projected number of deaths over the 25 year period of the projection. Of the 4.7 million natural increase projected between mid-2014 and mid-2039, only 3.1 million would occur if net migration were zero (at each and every age) throughout the projection period. Thus about 68% of the projected increase in the population over the period mid-2014 to mid-2039 is either directly attributable to future migration (51% of projected growth), or indirectly attributable to future migration through its effect on births and deaths (17 per cent of projected growth).

Care should be taken in interpreting these figures as "the indirect impact of migration". A fuller assessment of this would consider:

- births to, and deaths of, people who had migrated to the UK before 2014
- how to account for births to, and deaths of, UK-born people who had emigrated and subsequently returned to the UK
- how to account for births to, and deaths of, UK-born people who had parents (or grandparents etc) who were themselves immigrants, and the corresponding figures for foreign-born people descended from UK emigrants

Do the assumptions about future migration reflect the latest patterns of international migration?

The 2014-based principal projection assumes that levels of net migration to the UK will be +185,000 per year from 2020 2021 onwards. Net migration rose between 2012 and the release of these projections. The [August 2015 Migration Statistics Quarterly Report](#) showed net migration estimated as 330,000 to the year ending March 2015, a statistically significant increase from 236,000 for the year ending March 2014 and was the highest estimated net migration on record at that point. Therefore the assumptions for the years to 2020 2021 are higher than the long-term assumption but are assumed to converge from the levels seen between 2013 and early 2015 to the long-term assumption.

The long-term assumptions have been set based on migration data to mid-2014. An allowance has been made in the short-term for the planned return of armed forces to the UK. The provisional estimates of migration to March 2015 have also been taken into account in the assumed migration for the first year of the projection.

What changes have been made to the methodology?

The methods for setting and implementing the cross-border (intra-UK) migration have been changed. More information on this follows.

The UK, GB and England and Wales projections have been calculated as the sum of the projections for the 4 individual countries (England, Wales, Scotland and Northern Ireland). Therefore, the projected population numbers, deaths at each age and births at each age of mother for the UK are just the sum of those for the 4 individual countries. The "assumed" UK fertility and mortality rates are then "back-calculated" from these projected births, deaths and population numbers.

Previously some of the UK variant projections were "non-additive", that is, they were not calculated as the sum of those for the 4 individual countries. This change has been introduced partly as a result of the introduction of a new cross-border migration methodology and partly to meet a user requirement for variant projections for Great Britain.

Have you changed the methods for setting migration assumptions?

In 2012, we commissioned the Economic and Social Research Council Centre for Population Change to carry out a review of the methodology used in setting migration assumptions for the NPPs and to make recommendations for future methods.

As a result, the methodology for setting the migration assumptions for the 2012-based NPPs were revised to incorporate findings from the review.

No further changes have been made for the 2014-based projections international migration assumptions. However, changes have been made to the methods for setting the cross-border (intra-UK) assumptions.

Why have you changed the methods for setting cross-border migration assumptions?

Introducing migration rates into the projections is a continuation of the work to implement the recommendations from the ESRC review and is another step towards fully aligning our projections with the most up to date academic ideas.

The [ESRC review](#) set out the main benefits of using migration rates rather than fixed numbers of migrants. The main advantage is that the process is clearly related to the population at risk, allowing the migrant flows to change on the basis of the underlying population size and age structure. This means that the projections cannot produce implausible values, such as negative population stocks, when projected fixed levels of emigration are greater than the initial population size.

This is a particular issue for Northern Ireland where there is a high level of cross border migration of 18 to 19 year olds out of Northern Ireland but an often decreasing projected population in this age group. If fixed migrant numbers are assumed on the basis of past trends regardless of the underlying population size, this can lead to the migration rate of 18 to 19 year olds out of Northern Ireland increasing over the course of the projection. This issue has previously required a specific ad hoc adjustment, but the use of rates resolves the issue.

What is the new method used to set the migration assumptions?

The cross-border (intra-UK moves) migration assumption is set as a rate for the first time in the 2014-based projections. This means the projections assume a constant proportion of the population at each age will move from one country of the UK to another. Since the population at each age changes each year, the number of people moving across borders within the UK will also change through the projection period. However the cross-border flows of people do stabilise during the projection period.

More information on the [cross-border assumptions](#) can be found within the release.

Details of the [new method were \(399 Kb Pdf\)](#) published in June 2015.

Where do all the projected migrants, go to and, come from?

Our migration assumptions are not created based on where people are migrating to, or from, and they do not provide forecasts or projections of movements of people from particular countries to and from the UK.

We do publish [estimates of long-term international migration](#) that provides information on where people migrate to, or from.

What do the latest projections show regarding population ageing?

The population is projected to rise most quickly for the oldest age groups. The number of people aged 80 to 89 is projected to nearly double from 2.5 million to 4.6 million over the 25 years to mid-2039. The number of people aged 90 and over is projected to nearly treble, from 0.6 million in mid-2014 to 1.7 million in mid-2039. The increases in State Pension Age mean that the ratio of working age people to each person of state pensionable age is projected to increase slightly from 3.22 in mid-2014 to 3.32 in mid-2024 and then to decline to 2.71 in 2039.

How do the 2014-based projections compare with previous projections?

In the short-term the projected future population size is slightly higher than that in the previous (2012-based) projections. This is partly attributable to the base 2014 population being 86,000 higher in the 2014-based projection than in the 2012-based projections. Population growth is projected to be lower in the 2014-based projections than the 2012-based, and therefore in the long-term the 2014-based projections are lower. The lower growth reflects changes in the age structure of the base population (which affects the numbers of projected births and deaths) and changes in assumptions made in the 2014-based projections.

The principal long-term fertility assumption in the 2014-based projections remains unchanged from the 2012-based projections at 1.89 children per woman; in the short-term levels of fertility are assumed to be lower than in the 2012-based projections. More information on the [changes to the fertility assumptions](#) can be found on our website.

In general the [annual rates of mortality improvement in the longer-term have remained the same as in the 2012-based projections](#). More information on [mortality](#) can be found on our website.

The [2014-based long-term assumption for net migration to the UK](#) is higher at +185,000 each year, compared with +165,000 each year in the 2012-based projections. These changes reflect the most recent trends in international migration. More information on [migration](#) can be found on our website.

The mortality assumptions have not changed so why are you projecting lower life expectancy?

The mortality assumptions are set in terms of rates of improvement of mortality rates by age, sex and year. The long-term rates of improvement (i.e. those in the 25th year of the projection period (2039) and thereafter) are the same as those assumed in the previous 2012-based projections. However, we have assumed higher mortality rates at nearly all ages and lower rates of mortality improvement at most ages over 65 in 2014 compared to those projected for 2014 in the 2012-based projections. The combination of these factors, for both males and females, gives rise to projected period life expectancies that are lower than those in the 2012-based projections. Life expectancy figures for 2014 and 2015 also reflect an adjustment made to allow for the much larger number of deaths registered in early 2015 compared to those projected.

How accurate have past projections been?

We published an analysis of the past [accuracy of national population \(1.03 Mb Pdf\)](#) projections in July 2015. This analysis considered the 1955-based to 2012-based projections and compared these projections with the latest estimates of the UK population up to 2013, where available. The analysis found that the mean absolute error of the projected total UK population 20 years ahead was about 2.7% overall (when considering 1955-based to 2012-based projections). This would correspond to around 2.0 million people (2.7% mean absolute error calculated on the 2014-based principal projection for 2034). The largest differences between projected and actual populations were found to be for the youngest and oldest ages.

What are the confidence intervals or error margins around the projections?

We do not publish confidence intervals around the projections. The projections are inherently uncertain and become more so the further they are carried forward in time, particularly for smaller geographical areas. Variant projections are produced to provide an indication of uncertainty by allowing users to consider the impact upon the population if future fertility, mortality and migration differ from the assumptions made for the principal projection.

When is the UK population projected to reach 70 million, and why is this population level of significance?

According to the 2014-based principal projection, the UK population will reach 70 million by mid-2027, in the same year as projected by the 2012-based and the 2010-based projections. In comparison, the 2008-based projections indicated that it would reach this level in early 2029, and the 2006-based projections in early 2028.

A population level of 70 million is of no special demographic significance, although some customers of population statistics will inevitably be interested in when and how fast the population might reach numerical milestones such as 50 million, 60 million and 70 million. The UK population is estimated to have reached 50 million in 1948 and 60 million by mid-2005. It is projected that the population will rise from 60 to 70 million over a period of 22 years, compared to the 57 years over which it rose from 50 to 60 million.

Will the UK population go on growing forever?

Under the principal projection assumptions, the size of the UK population is projected to continue increasing over the projection period. However projections are uncertain and become increasingly so the further they are carried forward.

When will all the variant projections be available?

The release on 29 October 2015 covered the main (principal) 2014-based projections and 9 main variant projections based on alternative assumptions. On 26 November 2015, we will release a further 7 variant projections that illustrate additional alternative scenarios to supplement the projections released in October. This November release will form part of the overall release of the 2014-based national population projections, the main results of which are described in the statistical bulletin and supplementary reports published on 29 October.

Are projections for areas within the UK available?

The 2014-based national population projection release includes projections for the UK, Great Britain, England and Wales, England, Wales, Scotland and Northern Ireland. Our projections for subnational areas for England are planned for publication in May/June 2016. Subnational projections for areas in Wales, Scotland and Northern Ireland are produced by the Welsh Government, National Records for Scotland (NRS) and Northern Ireland Statistics and Research Agency (NISRA) respectively.

How do future changes to the UK population compare with other countries in Europe?

There are differences between our projections methodology and that used by Eurostat. For example, our projections are based on the population estimates at 30 June while the Eurostat projections are based on an estimate of the population at 1 January. Eurostat also make different assumptions about future levels of fertility, mortality and migration.

The latest Eurostat projections are [EUROPOP2013](#).

The estimated population in the base year for our projections is 0.4 million higher than the Eurostat projected population. By 2024, we project the population to be approximately 0.8 million higher than that projected by Eurostat and this difference of 0.8 million remains in 2039.

According to the Eurostat figures, the estimated resident population of the UK at 1 January 2014 was 64.2 million, with only Germany and France estimated to have more people. The UK is projected to have more people than France by 2030 and is projected to have the largest population in the EU by 2047.

The population of the EU28 as a whole is projected to increase by 2% over the 10 years to 2024 and by 3% in the 25 year period to 2039. Of the member states, the UK is projected to be the fourth fastest growing population, with only Luxembourg, Belgium and Sweden projected to grow at a faster rate.

4. Background notes

1. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

These National Statistics are produced to high professional standards and released according to the arrangements approved by the UK Statistics Authority.