



BRIEFING

The Impact of Migration on UK Population Growth

AUTHOR: DR ALESSIO CANGIANO

PUBLISHED: 19/02/2014

NEXT UPDATE: 19/02/2015

2nd Revision



www.migrationobservatory.ox.ac.uk

Based on official population estimates and population projections, this briefing examines the impact of migration on recent and future UK demographic trends.

Key Points

More than half (54%) of the increase of the UK population between 1991 and 2012 was due to the direct contribution of net migration.

Differences in net migration assumptions between the 'low' and the 'high' variant projections produce a range of variation of 3.3 million in the projected size of the UK population in 2037 (between 71.6 and 75.0 million).

In the principal projection the cumulative net inflow of post-2012 migrants accounts for 43% of total population growth until 2037. A further 17% of projected population growth is attributable to the additional contribution of new migrants to natural change (i.e. births and deaths).

The projected contribution of net migration to population change considerably differs across the four UK constituent nations. Without net immigration Scotland's population would stagnate over the next two decades and decrease in the longer term.

Net migration assumptions have been continually revised in the projections released since the mid-1990s, reflecting rising levels of net migration and the high uncertainty of migration forecasting. The reduction in assumed net migration levels in the latest projections (relative to the previous 2010-based release) does not result in significant slowdown of future population growth because of the concurrent projected increase of fertility and life expectancy.

Understanding the evidence

Key concepts

In the UK statistical system long-term international migrants are defined as people who move into and out of the country for at least 12 months. Net migration is the balance between immigration and emigration over a given time period. In demographic terms, natural change – i.e. the difference between the number of births and deaths – measures the contribution of vital events to the dynamics of the population. Immigration and emigration contribute to population change not only by altering the number of individuals in the country at a given time (direct contribution) but also by affecting natural change (indirect contribution).

Population estimates

The Office for National Statistics (ONS) produces annual estimates of the resident population of England and Wales and estimates for the UK as a whole by collating data provided by the Northern Ireland Statistics and Research Agency (NISRA) and by the General Register Office for Scotland (GROS) (ONS 2012). The population at 30 June of a given year (stock) is obtained by annually ‘updating’ the most recent census population count with data on demographic events contributing to population change between these two dates (births, deaths and migration flows). Population estimates made between census years are revised retrospectively so as to provide a consistent series of population estimates over time. The revised estimates for the intercensal period 2001 to 2011 resulted in an adjustment of 497,500 (0.8% of the total UK population) largely due to the underestimation of net migration in the previous series (ONS 2013a). Mid-year population estimates are also used as the base-year population of demographic projections.

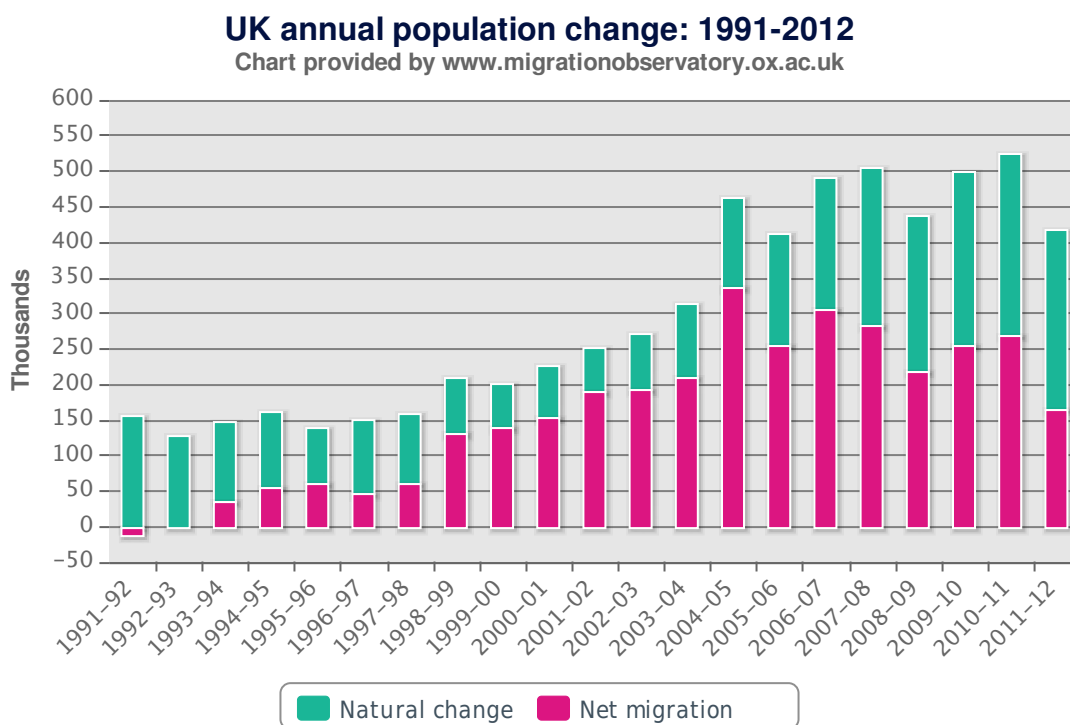
Population projections

Population projections are calculations showing the future development of a population based on a set of assumptions about fertility, mortality and net migration. Official UK projections are revised every two years by updating base-year population estimates and assumptions underlying future demographic dynamics so as to reflect the latest available information. Current projections take mid-2012 as the beginning of the projection period (ONS 2013b). The projection outputs consist of one principal projection reflecting the most ‘likely’ population developments on the basis of recently observed trends, and 16 variant projections, intended to capture the uncertainty of the assumptions made by showing the impact on population dynamics if one or more components of demographic change differ from the principal projection. In the principal projection, net migration is assumed to level off at +165,000 per year from 2018-19 onward. For comparative purposes, an important variant projection is the ‘zero net migration’ (also called ‘natural change’), which assumes migration inflows and outflows exactly equal at all ages throughout the projection period (with fertility and life expectancy at the same levels as the principal projection). In this scenario future population change is driven only by natural change. The comparison between the principal projection and the zero net migration variant projection shows the overall effect of net migration on population trends – i.e. including both the direct contribution and its impact on natural change. Two other variant projections illustrating the demographic impact of higher or lower net immigration (also assuming the same fertility and life expectancy as the principal projection) are also available: a high migration variant (long-term annual net migration at +225,000) and a low migration variant (+105,000 per annum). Finally, the long-term balanced net migration variant projection assumes that net migration will converge to zero in the long-term, with total (but not age- and sex-specific) in-migration and out-migration flows being equal from the year ending mid-2034 onwards.

Net migration exceeded natural change for a decade

Population estimates show that net migration was a major component of population growth over the past two decades (Figure 1).

Figure 1



Source : Office of National Statistics. Mid-year population estimates

In particular, annual net migration has substantially increased since the beginning of the 1990s, exceeding natural change as a driver of UK demographic trends in all years from mid-1998 to mid-2011. However, natural change has remained positive throughout the last two decades and has also continually increased from 2001 onwards, in particular due a rise in the number of births. As a result of a significant drop of net migration (by almost 100,000), 2011-12 was the first year in more than a decade when natural change contributed more to the growth of the UK population than net migration. Overall, between mid-1991 and mid-2012 net migration (resulting in an addition of 3.4 million people to the UK population) accounted for just over half (54%) of UK population growth.

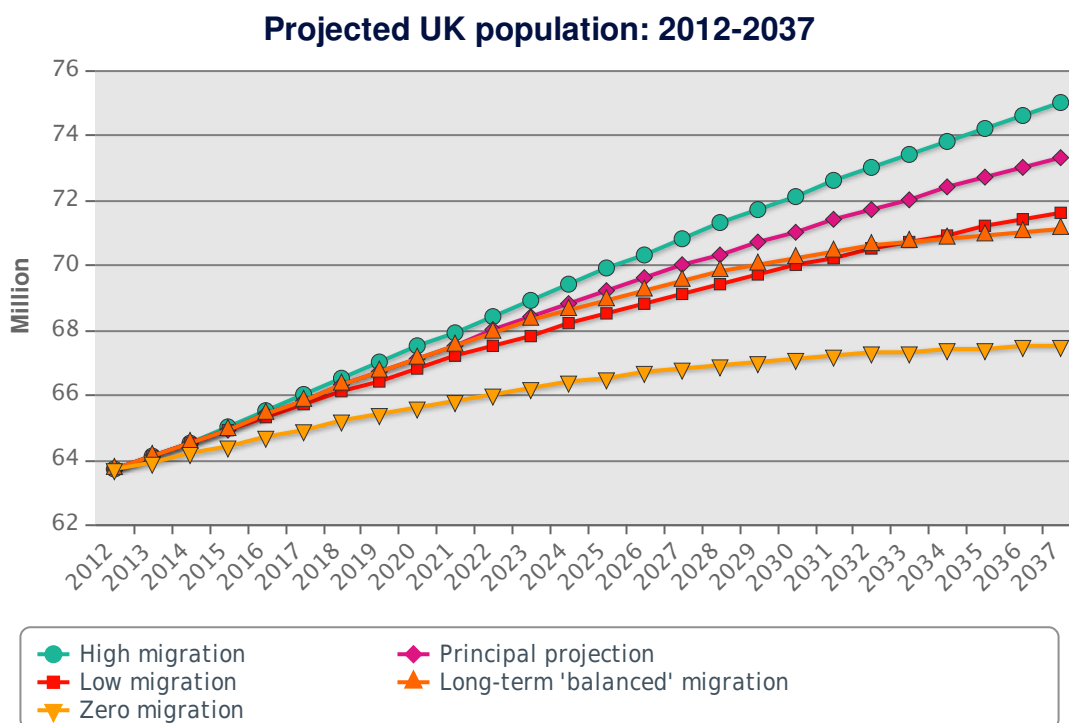
However, this retrospective analysis does not account for the contribution of past migration to natural change – mainly to births, given that migrants are mostly young, healthy individuals. The number of births over a given period is determined both by the size and age structure of the female population and by fertility rates (i.e. the average number of children per woman in each age group). Migration impacts on both factors – i.e. it affects the number of women of childbearing age and, if migrant women have different fertility patterns, the total fertility rate of the population as a whole. A recent ONS report (Dormon 2014) using the latest Census data for England and Wales has shown that births to foreign-born women made up 25.5% of all births in 2011, up from 16.4% one decade earlier (2001). For a shorter period (2001-07) and for the UK as a whole, Tromans et al. (2009) estimated the overall contribution of foreign-born women to the increase in number of births at 65%. However, this was mainly due to the increase in the number of foreign-born women of childbearing age – total fertility rates of non-UK born women remained constant between 2001 and 2011 (2.21 in both years), resulting in a decreasing gap with the fertility levels of UK-born women that increased from 1.56 to 1.84 over the same period (Dormon 2014). While these figure certainly point to the significant indirect contribution that immigration is making to UK population trends, it has to be noted that this analysis, by referring to country of birth: a) considers a temporally broad definition of the

migrant population (i.e. the overall impact on births of in-migration over the past three or more decades, not only the contribution of those who moved to the UK during the observed period) and b) does not single out the effect of emigration (of both UK and foreign-born women) and of immigration of UK-born women.

UK population projected to grow to 71-75 million by 2037

Figure 2 shows the projected size of the UK population in the period to 2035, including high migration and low migration variants of the 2010-based projections.

Figure 2



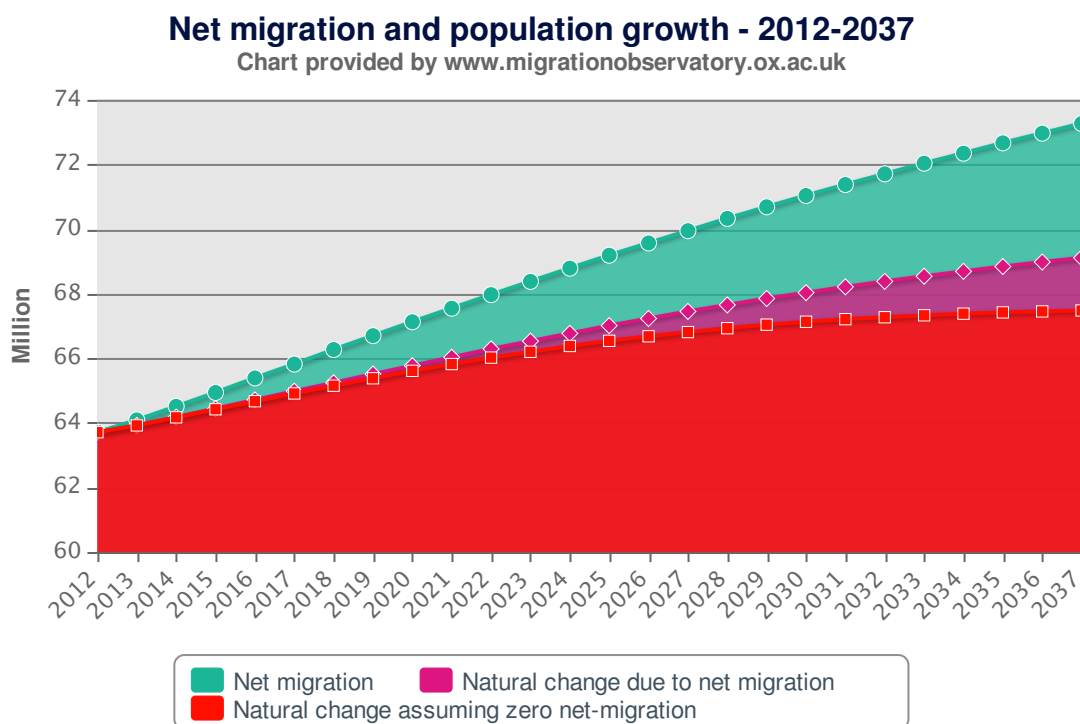
Source : Office of National Statistics

In the principal projection, the size of the UK population is projected to increase by almost 10 million between 2012 and 2037 – from 63.7 million to 73.3 million, an increase of 15%. In this demographic scenario, the UK population will reach 70 million in 2027. The different net migration levels assumed in the high migration and low migration variants ($\pm 60,000$ per year) lead to a variation after 25 years of ± 1.7 million people – or, in relative terms, a 5% difference between the low migration and high migration variant. Projected population size in 2037 according to the balanced net migration variant (assuming convergence of net migration to zero towards the end of the projection) is only marginally lower (-0.5 million) than in the low migration variant. In the zero migration variant, the projected population size reaches 67.5 million in 2037, or 7.9% less than the principal projection. This is discussed further below in the ‘natural change’ scenario.

Net migration accounts for over two-thirds of projected population growth

Figure 3, which refers to the 2012-based principal projection, shows the breakdown of the projected population increase into three components: the natural change that would occur in the absence of migration during the projection period (zero net migration variant); the direct contribution of post-2012 net migration to population change (i.e. the number of individuals who will migrate to the UK minus the number of those who will leave the country); and the indirect contribution of net migration to natural change.

Figure 3

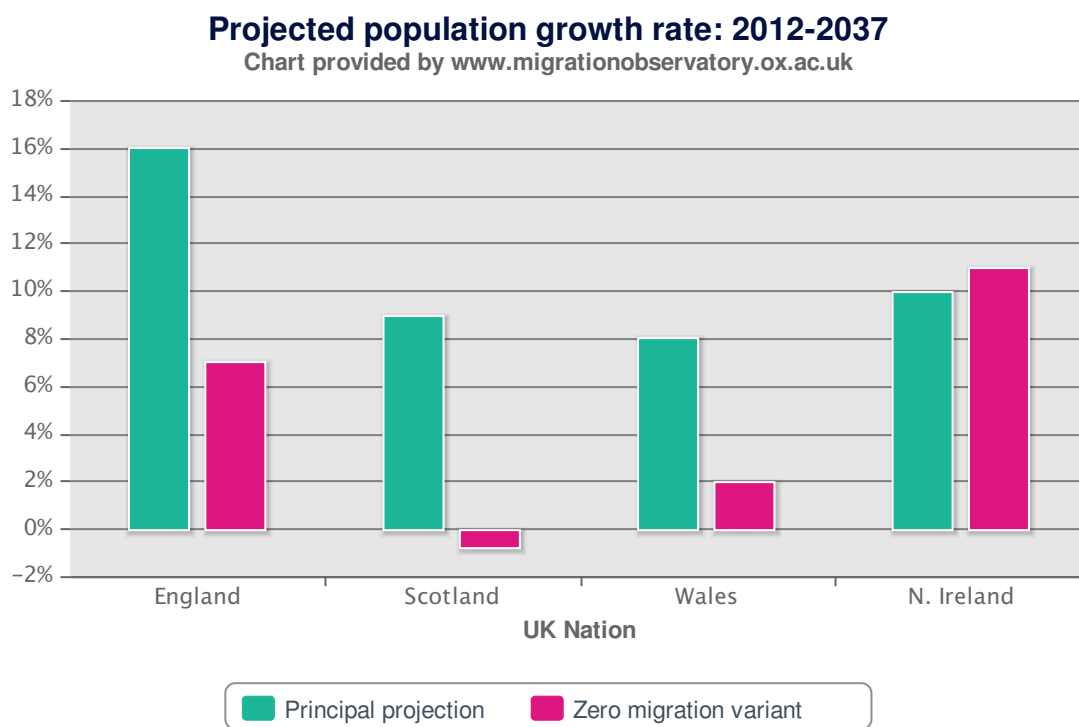


The UK population is projected to rise both because of positive natural change and because of positive net migration. Population growth in the absence of further migration would total 3.8 million, equivalent to 39.4% of the total increase in the principal projection. However, the size of the UK population with no additional net migration would level off at 67.5 million over the next three decades and would eventually decline if the projections are carried forward beyond mid-century. In the principal projection the cumulative net inflow of new migrants accounts for 43.5% of total population growth, i.e. an addition of 4.2 million. The additional (indirect) contribution of post-2012 immigrants to natural change until 2037 is estimated at 1.6 million, i.e. 17.1% of projected population growth. In total, therefore, 60.6% of the expected increase in the UK population is attributable, directly or indirectly, to future net migration. It should also be emphasised that, while these calculations are based on the same assumptions about future fertility and mortality rates irrespective of the assumed level of net migration, fertility and mortality rates for recent migrants are likely to differ, to some extent, from those for the long-established population – e.g. assuming higher fertility rates for post-2012 immigrant women would imply a larger indirect contribution of migration to natural change.

Scotland’s population would stagnate without future migration

Figure 4 compares projected population growth rates in England, Wales, Scotland and Northern Ireland between 2012 and 2037, in the principal projection and in the zero net migration variant.

Figure 4



Source : Office of National Statistics

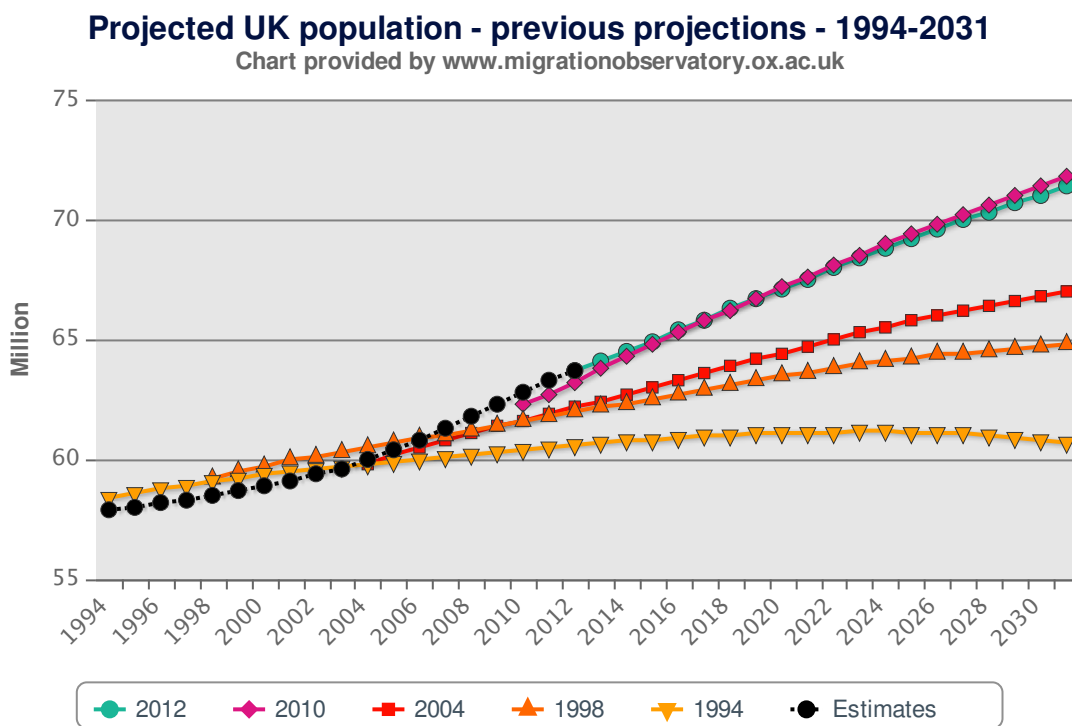
Demographic and migration trends differ considerably across the four UK constituent nations, and future population scenarios reflect these differences. In the principal projection, England has by far the largest population growth rate (16%), while Wales has the slowest demographic growth rate (8%). The overall (i.e. direct and indirect) contribution of net migration to population change also varies across UK nations. Net migration is the major component of demographic change in England and Wales, accounting for 59% and 70% of projected population growth respectively. In Scotland, net migration is the only determinant of long-term population growth: without net immigration Scotland’s population would remain essentially stable for the next two decades and decrease over a longer time horizon. In contrast, in Northern Ireland natural change is projected to be by far the main driver of future population trends – in the principal projection net migration is assumed to be negative at the beginning of the period and converge to zero from 2018-19.

Evidence gaps and limitations

Population projections are not forecasts, i.e. they do not attempt to predict the impact of changes in the political, economic, social and cultural realm which may affect demographic patterns and trends. They are in general purely mechanical calculations, formalising the implications of assumptions. Projections are normally reliable for the short to medium term but uncertainty increases the further they are carried forward in time. Any upward or downward changes in fertility, mortality and migration assumptions, compounded over time, can lead to significant variations in the projected population size and structure. Future international migration is more difficult to project than fertility and mortality because migration flows are typically affected by sudden changes in economic, social, or political factors which are hard to predict or quantify – as exemplified by the sharp decline of immigration in 2011-12 following both the restrictions introduced by the 2011-12 immigration reform and the unfavourable economic climate. Migration assumptions are therefore the major source of uncertainty for long-term population projections, particularly in demographic regimes such as the UK which are characterised by low fertility and low mortality levels. In addition, the use of net migration as a statistical construct to operationalise the combined effect of immigration and emigration can bring additional uncertainty because net migration is more volatile than ‘gross’ flows (Herm and Poulain 2010).

In order to reflect the information provided by the most recently observed demographic trends, assumptions of future levels of fertility, mortality and migration are continually updated in subsequent revisions of population projections. In particular, the high volatility of recent migration inflows and outflows has resulted in numerous and sizeable revisions of future net migration assumptions made in different sets of population projections released throughout the 1990s and 2000s. As shown in figure 5, in the 1994 projections net migration was assumed to return to zero in the long-term, reflecting the balance between immigration and emigration proximate to zero observed during the 1980s and early 1990s. As of the mid-1990s the size of the UK population was projected to peak at 61 million in 2023 and then start to decrease.

Figure 5



Source : Office of National Statistics. Government Actuary's Department

Summary of assumptions				
Projection base-year	Annual net migration (long-term)	Total Fertility Rate (long-term)	Life expectancy at birth (2031)	
			Men	Women
1994	0	1.80	78.3	83.2
1998	95,000	1.80	79.2	83.4
2004	145,000	1.74	81.4	85.0
2010	200,000	1.84	82.7	86.4
2012	165,000	1.89	83.3	86.6

Source: Office for National Statistics; Government Actuaries' Department

In further sets of projections, assumed net migration levels have risen several times in response to the rapid increase in migration flows to and from the UK – and due to some improvement in survey coverage and procedural changes in the estimation of long-term flows. Changes in fertility and mortality assumptions have been comparatively less significant. As a result of these adjustments, projected population growth rates have also progressively increased: in the most recent projection (2010) the estimated size of the UK population in 2031 is 11 million higher than in projections produced in the early 1990s. Increases in net migration assumptions were the main drivers of the higher

projected demographic growth rates until the 2004 revision and in the 2010 revision, while the combined effect of revised fertility and mortality assumptions has played a greater role in the faster projected population increase resulting in the 2006 and 2008 projections.

References

- Dormon O. "Childbearing of UK and non-UK born women living in the UK - 2011 Census data." ONS, London, February 2014.
- Herm A. and M. Poulain. "International Migration Data as Input for Population Projections." Working Paper 20, Joint Eurostat/UNECE Work Session on Demographic Projections, Lisbon, 28-30 April 2010.
- ONS. "Methodology Guide for Mid-2011 Population Estimates, England and Wales." ONS, London, 2012.
- ONS. "Revised Annual Mid-year Population Estimates, 2001 to 2010." ONS, London, December 2013.
- ONS. "Background and methodology: 2012-based national population projections." ONS, London, November 2013.
- Tromans N, E. Natamba, and J. Jefferies. "Have Women Born outside the UK Driven the Rise in UK Births since 2001?" *Population Trends* 136 (2009):28-42.

Further readings

- Coleman D. "Projections of the Ethnic Minority Populations of the United Kingdom 2006–2056." *Population and Development Review*, 36(3) (2010): 441–486.
- Howe N. and R. Jackson. "Projecting Immigration. A Survey of the Current State of Practice and Theory." Working Paper 2004-32, Center for Retirement Research at Boston College, Chestnut Hill, MA, 2005.
- Keilman N. "UK National Population Projections in Perspective: How Successful Compared to Those in Other European Countries?" *Population Trends*, 129, (2007):20-30.
- ONS "Births in England and Wales by Parents' Country of Birth, 2009." *Statistical Bulletin*, ONS, London, 2010c.
- Shaw C. "Fifty Years of United Kingdom National Population Projections: How Accurate Have They Been?" *Population Trends* 128 (2007): 8-23.

With thanks to Phil Rees, Sarah Spencer and COMPAS colleagues of the Migration Observatory for their helpful comments on an earlier version of this briefing.



The Migration Observatory

Based at the Centre on Migration, Policy and Society (COMPAS) at the University of Oxford, the Migration Observatory provides independent, authoritative, evidence-based analysis of data on migration and migrants in the UK, to inform media, public and policy debates, and to generate high quality research on international migration and public policy issues. The Observatory’s analysis involves experts from a wide range of disciplines and departments at the University of Oxford.



COMPAS

The Migration Observatory is based at the ESRC Centre on Migration, Policy and Society (COMPAS) at the University of Oxford. The mission of COMPAS is to conduct high quality research in order to develop theory and knowledge, inform policy-making and public debate, and engage users of research within the field of migration.

www.compas.ox.ac.uk

About the author

Dr Alessio Cangiano
Research Associate, COMPAS
cangiano_a@usp.ac.fj

Press contact

Rob McNeil
Head of Media and Communications
robert.mcneil@compas.ox.ac.uk
+ 44 (0)1865 274568
+ 44 (0)7500 970081

Recommended citation

Cangiano, Alessio. "The Impact of Migration on Population Growth." Migration Observatory Briefing, COMPAS, University of Oxford, UK, February 2014.

