

Article

Population statistics research update: February 2018

A description of ONS research into improving standard population statistics outputs, including recent progress and plans for future research.

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Release date:
5 February 2018

Next release:
To be announced

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1 . Introduction

This article describes the research and development conducted and planned for our standard population statistics outputs as at February 2018. To help users quickly find the information they need, the article includes a description of each project, followed by an update paragraph on progress for ongoing projects included in the [October 2017 research update](#).

A separate [programme of work](#) looking at alternative methods of producing statistics following the 2021 Census is available.

We [welcome your comments](#) on our proposed work and any suggestions for other research and development that would increase the value of our statistics to you.

The following sections will discuss and update on the progress of the various research and development planned for our standard population statistics outputs as at February 2018.

2 . Internal migration

The largest element of population change at the local authority level is internal migration – that is, people moving from one local authority in the UK to another. The methods for estimating internal migration were significantly improved in 2013 when the availability of new Higher Education Statistics Agency (HESA) data allowed a simpler and more reliable approach to be adopted for estimating migration of students. This further research has three main aims, which are detailed in this section.

Quality assuring the Personal Demographic Service (PDS) data source as an appropriate replacement for the Patient Register (PR) data source when the latter is discontinued

The PR data source currently used in producing the internal migration estimates is due to be closed in 2018. However, the alternative PDS data source now available to us seems to have several advantages over the PR. We are quality assuring the PDS data and checking that they are appropriate for use in producing the estimates, with a view to moving to using the PDS data fully in the mid-2018 population estimates.

Developing improved models for the destination of students after they graduate

The current methodology is thought to be an improvement on the previous method in that it is much more accurate in estimating migration of students to their place of study. However, there is still scope for improving methods for estimating the destination of students who move after leaving higher education.

At present, the assumption is that a student not updating their PR record upon leaving higher education will either stay in the local authority in which they lived while studying or return to their previous address as recorded on the PR, with an increasing probability of moving to their previous address as time goes on. We have developed an alternative approach of applying an Origin-Destination matrix to these students (so, for example, 10% of students in Southampton who don't update their PR record when leaving higher education move to Portsmouth).

Improving estimation of migration moves within the year not identified by comparing addresses at the start and the end of the year

As described previously in this section, the current methodology uses NHS Central Register data to adjust the initial estimates to allow for moves of people who were only present at either the start or the end of the year, but not both. We have investigated an alternative approach of directly identifying these moves, for example, by linking the start-year and end-year population stocks file with registrations of births and deaths.

Update: February 2018

Methods developed in the second strand are planned to be implemented for the 2017 (and subsequent) mid-year population estimates in June 2018. Evaluation of methods developed in the third strand indicated that these did not improve the quality of the estimates and for future estimates we plan to use an approach broadly similar to the one in current use. More information on this work is provided in the [Mid-year population estimates methodology update paper](#), published on 1 February 2018.

3 . Local authority emigration

Estimates of emigration at the national level are derived from the International Passenger Survey (IPS), with adjustments made to reflect for asylum seekers. Disaggregating these estimates to the local authority level relies on complex regression models, which were first set up in 2011. This project aims to update these regression models to reflect as well as possible the current characteristics of migration at the local level. We have developed a proposed model to replace the existing model and are arranging for a further independent evaluation to ensure that this new model meets the quality standards required.

The proposed model is broadly similar to the existing model: both are based on a Poisson Regression approach. However, there are three differences between the models, which are detailed in this section.

Changing the explanatory variables

The proposed model uses a different set of explanatory variables to those used in the existing model. As with the existing model, the set of explanatory variables has been selected by a combination of manual selection and algorithmic stepwise selection, providing a compromise between strict statistical optimality (based on the estimation period) and intuitively plausible explanatory variables.

Using an “offset term”

The proposed model introduces an “offset term” in the regression equation to reflect the size of the population of the local authority. This term effectively changes the model from a direct model of counts to a model of rates (that is, modelling emigration as a proportion of the start population). Such a term is a standard feature of Poisson models where the “population at risk” is different for different observations.

Removing new migration geographies for outflows from constraining process

The current model uses a non-standard geography called new migration geographies for outflows (NMGos). An NMGo is a collection of local authorities that is treated as a single source of emigration when constraining to the IPS. The proposed model eliminates the use of NMGos. The removal of this constraint means we are making less use of the IPS data in allocating emigration, but also removes the practical problem that an over-estimate for one local authority could result in counter-balancing under-estimates in neighbouring local authorities. Removing the use of these non-standard geographies should also make the estimates more transparent and based on standard definitions.

Update: February 2018

This work is now complete. We plan to implement this new model for the 2017 mid-year population estimates in June 2018 and the revised back-series of population estimates from 2011 to 2016. More information on this work is provided in the [Mid-year population estimates methodology update paper](#), published on 1 February 2018.

4 . Population characteristics

We have acknowledged user interest in a new set of population estimates by ethnic group. We launched a project in September 2016 looking at whether such estimates (consistent with the mid-year population estimates) can be derived primarily from the Annual Population Survey (APS). If this is successful we would look to extend these methods to cover country of birth and nationality.

For many years we have published tables of the population by country of birth and by nationality as part of our suite of migration-related statistics. These estimates are derived from the APS. Since that survey does not cover some people not living in households, these estimates are not consistent with the mid-year population estimates (which cover all usual residents in an area). This project is looking at combining APS data with other data sources (in particular, the 2011 Census) to produce estimates of the population by country of birth, nationality and ethnic group, which are fully consistent with the standard mid-year population estimates.

In August 2017 we published a [research report](#) describing this work along with another report describing a method for [using survey and administrative data to produce estimates by ethnic group](#), as part of our research into developing an Administrative Data Census approach.

Update: February 2018

We are continuing to assess the quality and usefulness of these research outputs and now expect to decide in the first half of 2018 whether we should look to make the population characteristics estimates described previously a standard output.

5 . Subnational population projections for England

The 2016-based subnational population projections are scheduled for May or June this year. We aspire to publish in late May but are not yet able to commit to a definite date. On 19 January 2018 we launched an engagement exercise with local area users – local authorities, county councils, combined authorities and Clinical Commissioning Groups. Although the exercise is intended for those groups, the [engagement paper](#) may be of wider interest as it provides information on changes to source data and methods.

6 . Quality assurance of administrative data sources

Each of our regular statistical releases is accompanied by a Quality and Methodology Information report, which summarises information on the quality of the published statistics and the methods used to produce them. In addition, we are preparing reports on the quality assurance procedures adopted for each of the main administrative data sources used in producing our statistics.

This work is being conducted within the framework of the UK Statistics Authority's Quality Assurance of Administrative Data Sources Toolkit. All of the administrative data sources feeding in to our statistics have been assessed on the risk of quality issues having an impact on the statistics. This has allowed us to set out appropriate levels of documentation needed for each data source. The initial series of quality assurance of administrative data (QAAD) reports was published in early 2017 and links to the reports are available in the [June 2017 Population statistics research update](#).

Update: February 2018

A new [QAAD report on Scottish internal migration](#) was published on 18 January 2018. We are planning updates of the published reports and to publish additional reports including ones covering the Personal Demographic Service (PDS) and the Department for Work and Pensions' Customer Information Services data sources.

7 . Household projections for England

We announced in January 2017 that we were taking responsibility with immediate effect for the production and publication of the household projections in England, previously produced by the Ministry of Housing, Communities and Local Government (MHCLG – formerly the Department for Communities and Local Government). We hope that this transfer of responsibility will further develop the consistency between the household projections and the national and subnational population projections (SNPPs), and allow us to produce them with increased efficiency.

Following a discussion with MHCLG on their experience of producing the household projections and a consultation with users, we are evaluating some proposed changes to the methods with a view to including any changes in the 2016-based household projections due for publication in summer 2018.

Update: February 2018

We have developed a new processing system through which potential methodological changes outlined in the consultation and consultation response can be tested and compared. Early outputs from this processing system have been shared with the Household Projections Collaborative Group. Using the 2014-based SNPPs, we are continuing to test different variations in the methodology, providing research and analysis for Office for National Statistics (ONS) and the Collaborative Group of experts to discuss.

8 . Adjustment for Foreign Armed Forces dependants

Whilst the methods for producing the mid-year population estimates work well for most local authorities in England, we recognise that they may not work so well for areas with a large number of Foreign Armed Forces, where their dependants are not reflected in available data sources in the same way as most international migrants.

We have developed a method for dealing with this issue by using an alternative administrative source and treating these dependants as a "special population" (as we do the Armed Forces themselves) in the mid-year population estimates and the subnational population projections (SNPPs).

We plan to implement this method for both the 2017 mid-year population estimates and the revised back-series of estimates. We also provisionally expect to use a similar approach in the 2016-based SNPPs.

Update: February 2018

More information on this work is provided in the [Mid-year population estimates methodology update paper](#), published on 1 February 2018.

9 . Gender identity

Work on gender identity is being conducted jointly by the Population Statistics and Census teams within Office for National Statistics (ONS). Information on our work on this topic is provided on our [Gender identity page](#).

The [2021 Census topic consultation](#) identified a need among a number of data users for information about gender identity for policy development and service planning; especially in relation to the provision of health services. These requirements are strengthened by the need for information on those with the protected characteristic of gender reassignment as set out in the Equality Act 2010. The Gender identity topic report on the consultation findings provides further information and can be found on the Gender identity page.

As we do not currently collect data on gender identity on any of our social surveys, research and testing work will inform our position on this topic. The Gender identity research and testing plan, on the Gender identity page, sets out the work we will do to help us determine how to meet user needs for information on this topic.

On 13 January 2017 we published the [Gender identity update](#) paper. This addresses our commitment to review the Trans Data Position Paper, which we published in 2009. The update outlines developments around the topic of gender identity. It covers:

- legislation
- the Women and Equalities Committee Transgender Equality inquiry
- data collection and question development worldwide
- our research, testing and findings so far
- the next steps and future work we will be undertaking

Update: February 2018

On 13 December 2017 we published an update of our gender identity research as part of the [2021 Census topic research report](#).

On the same day, a Population and Public Policy Forum was held in London. As ONS prepares its recommendations to government on the format and content of the next census, we met with stakeholders to update them on progress so far and listen to their views. No decisions have yet been made on gender identity, but the needs and research on this topic were discussed. For further information, see Iain Bell's blog: [Reflecting views on the 2021 Census](#).

10 . Migration analysis

On 24 August 2017, we published the latest research update on international student migration, which included a [summary note](#) and a [technical paper](#). These papers, which involved working closely with other government departments, set out important findings from new analysis of administrative data sources, as well as collaborating with the Centre for Population Change and Universities UK on a new Survey of Graduating International Students. This research helped inform our understanding of what international students do after completing their studies in the UK.

Update: February 2018

We are now extending our previous work on international students to cover other migrant groups; those on work, family or other types of visa. This work will involve analysis of Home Office Exit Check data to ascertain the volume of those with an expiring visa that either legally extend their stay in the UK or depart long-term. These findings will help to improve our understanding of the quality and reliability of data collected through the International Passenger Survey (IPS), from which official estimates of migration are currently derived.

11 . International Passenger Survey Switcher Review

Total net migration estimates published by Office for National Statistics (ONS) include an adjustment for people, known as switchers, whose actual behaviour does not match their migration intentions. This is an adjustment to the overall figures for long-term international migration (for estimating the population).

[The work undertaken on international students](#) showed us that, for this particular group of migrants, their intentions (as stated on the International Passenger Survey) do not accurately reflect their actual migration patterns. This could be the same for other groups of migrants.

Update: February 2018

We are re-examining this adjustment in light of the findings for students, to assess whether the current adjustment is still valid. A programme of work has started to review the assumptions and identify whether any improvements can be made to more accurately capture switchers.