

Migration Statistics Improvement Programme Final Report

Introduction

Information about the population underpins some of the key policy and resource allocation decisions that are made by government, business and the voluntary sectors. These decisions affect the economy, the environment and society and have an impact on every individual in the country. It is therefore imperative that the population statistics underpinning these decisions are fit for purpose and make use of the most up to date data that is available from the Census, surveys and administrative data.

In April 2008, the Office for National Statistics established the Migration Statistics Improvement Programme. This report describes why the programme was created, the outputs that have been delivered and the benefits that have been achieved or will be achieved as a result of the Programme.

Estimating the population is, on the face of it, relatively straightforward. It can be calculated by taking the previous years population estimate, adding on births, taking away deaths and making an adjustment for net migration. There are robust sources of information for estimating births and deaths. Migration, however, is far more difficult to estimate.

In its report, the Treasury Select Committee (2008) noted that:

Society is becoming more mobile and the information held electronically about events, persons and services by government agencies and other bodies has substantially increased.

and

The International Passenger Survey was designed to provide data primarily for tourism and business travel purposes. It is now called upon to play a central role in estimating international migration. It is clear from the evidence.... that the Survey is not fit for this new purpose.

The report made several recommendations which were consistent with the recommendations made by the National Statisticians Task Force on Migration in 2006:

- Improve information on migrants as they enter or leave UK
- Provide comprehensive and timely information on migrants in UK
- Develop better information to understand how migrants' intentions relate to their subsequent outcomes through linking different sources of information including administrative data
- Publish timely and robust indicators of migrant numbers using a range of data sources
- Ensure greater coherence in reporting of migration between departments

The Migration Statistics Improvement Programme was established, in response to the National Statisticians Task Force, to improve the quality of migration statistics at both the national level and the local level. The benefits sought by the programme were:

- Improved user confidence in migration and population statistics
- improved timeliness of migration statistics using more current data sources including administrative data

- Effective quality assurance with the engagement of external stakeholders including local authorities
- Platform for future delivery of e-Borders
- Quantification of uncertainty around population estimates
- Improved quality of National and sub-National migration statistics
- Increased efficiency in the production of migration statistics

In 2009, the United Kingdom Statistics Authority (the Authority) published the report: 'Migration Statistics – the way ahead'. This made further recommendations to improve population statistics including the need to (1) develop a Population Statistics Conceptual Framework and (2) produce measures of uncertainty for population statistics. These were incorporated into the Programme.

The Programme therefore had the following objectives:

- Improve the International Passenger Survey
- Develop a strategy for improving the information on those entering and leaving the country using administrative sources such as e-Borders and visas
- Improve the way migration is reported across government by bringing together all government statistics on migration into one coherent report
- Improve demographic models to enhance migration and population estimates
- Maximise the use made of admin sources in estimating local authority immigration (both internal and international)
- Introduce additional Census questions to identify short and long-term migrants
- Develop a conceptual framework for population statistics
- Develop measures of uncertainty for population statistics
- Develop techniques to use administrative data to develop plausibility ranges for population estimates

The diagram in Annex A shows how the programme objectives and deliverables relate to the benefits.

Main Deliverables from the MSIP

This section gives an overview of the main outputs from the Programme. More details can be found through the links which are included in Annex B.

1. Improvements to the International Passenger Survey (IPS)

Several changes were introduced to the IPS design in 2009 to reflect changing patterns of migration to and from the UK, particularly with the accession of eight new countries to the EU in 2004. These included changes to the sampling, leading to increased coverage at regional airports including Stansted, Luton and Manchester. These changes have led to more robust and timely estimates of international migration at both the national and regional level. These improvements were vital to subsequent improvements to migration estimates that were achieved by the programme. Recently a new suite of IPS questions have been introduced to improve our understanding of the initial intentions of immigrants leaving the country. One particular benefit will be to improve our understanding on whether or not international students remain in the UK after their period of study to take up employment. This is of interest to the Department for Business Innovation and Skills (BIS) and the Home Office in policy making.

Changes were also introduced to improve the timeliness of the release of IPS results.

The improvements to the IPS have contributed to the benefits in improved timeliness of migration estimates, improved efficiency and better estimates of migration at the national and sub-national levels.

2. Coherent Government Reporting on Migration

At the beginning of the Programme there were approximately 40 different release dates for population and migration statistics across government. In 2011 this had been reduced to approximately 10 dates in 2011, including 4 dates for migration reporting and other dates for population estimates, population projections and internal migration statistics.

In 2011, the Migration Statistics Quarterly Report (MSQR) brought together migration data from ONS, the Home Office and Department for Work and Pensions into one output. It contains links to topic reports, data sources and other related output. The MSQR is accompanied by a user guide that provides guidance on how to interpret the statistics and how to compare different data sources, including their limitations.

These changes have received positive user feedback and improved the understanding of the various sources of migration patterns.

The improvements to migration statistics reporting have led to increased user confidence in migration statistics. Timeliness has also been improved through the reporting of provisional data and appropriate charts and tables that give an early indication of changes to migration patterns.

3. Data sharing, record linking and assessment of administrative data.

ONS obtained access to a range of administrative sources for statistical purposes, where necessary through the powers that were created in the Statistics and Registration Service Act 2007 or through other existing legal gateways (e.g. Social Security Administration Act 1992). These sources were used either to improve the migration estimates or to quality assure local population statistics and inform future research. In some cases data was linked with other sources to look at how combining sources could inform and improve our knowledge of population and migration.

Access to these sources has been one of the major achievements of the Programme and was successful in part due to the close collaboration between ONS and the departments concerned. Data from the Department for Work and Pensions (DWP) (Migrant Worker Scan and the Lifetime Labour Market Database), Home Office (Visa and sponsorship data), Department for Health (Patient Register Data), BIS and Welsh Government (Further Education Learner data) and the Higher Education Statistics Agency (Student Records) have been assessed and used in new methods to create local authority estimates of long and short-term international immigration. Data sharing agreements are in place between ONS and these departments to enable the continued supply of these data. Special attention has been given to data handling arrangements, as well as to specific legal and privacy issues. ONS has comprehensive procedures in place to protect confidentiality and safeguard the security of all the data that it uses. In addition to complying with agreed Government standards on transfer, storage and handling, individual data sharing applications have been scrutinised as appropriate by Parliament, departmental ethics committees and the Information Commissioner's Office. All those involved in this work understand the need for, and importance of, safeguarding confidentiality and demonstrating to data owners and the public that ONS can be trusted to handle and use information safely and appropriately.

The knowledge and expertise developed in safeguarding confidentiality will be shared within ONS especially with those areas that could have significant reliance on administrative data such as the Beyond 2011 programme, looking at the future provision of Census type data.

This project led to improvements in the national and sub-national migration estimates together with improved efficiency gained through the earlier availability of administrative data compared to survey data. The programme has led the way in data sharing, for statistical purposes, across government.

4. Improve demographic models to enhance migration and population estimates

In the early part of the programme it was necessary to make improvements to the way that local authority long-term international migration estimates were calculated. These improvements were delivered through supplementing demographic models that relied on data from the 2001 Census, the Labour Force Survey and the International Passenger Survey with more timely administrative data. These are described below. It should be noted, however, that with the increased availability of administrative data, many of these methods were superseded by developments that occurred in the latter part of the programme which are described in sections 6 and 7.

Significant enhancements were made to the modelling methodology. Statistical models were developed to combine annually updated administrative data with survey data to produce improved estimates of international migration for mid-2002 to mid-2008. For immigration, the models replaced the less timely 2001 Census distributions, which were previously used to distribute immigration to local authority level, to ensure the results better reflected more recent changes in migration, such as those following EU accession. These models were developed in the early part of the programme and were superseded by the distributional methods which are discussed later. For emigration, the models represent an improvement on the 'propensity to migrate' models introduced in 2007. Advice on model-based approaches was obtained from expert academics and the final models have been subject to both internal and external peer review. A key challenge was the presentation of these relatively technical approaches to users in a transparent and understandable way. This was achieved through interactive sessions at the regional user-engagement seminars held in June and December in 2009.

The estimates of migration of higher education students within England & Wales were improved using new aggregate information available from the Higher Education Statistics Agency (HESA). The improved method was implemented into the population estimates series mid-2002 to mid-2008. It was necessary to make assumptions about the detail of student moves such as end date of study, and users were consulted about the evidence used to help set these assumptions. A positive response to the estimates was received from users.

Producing estimates of local level short-term international migration was a key requirement for users. Estimates of migrants who moved for less than the usual 12-month definition of long-term migration were produced for mid-2007 and mid-2008 at the national level. These were based on the International Passenger Survey (IPS) and were published as experimental estimates in February 2009 and February 2010 respectively. The mid-2010 estimates were published as National Statistics in February 2012. These, together with the long-term migration estimates, helped to provide a more holistic national picture of total international immigration. Local level estimates cannot be derived from a survey, so administrative sources were used to produce an initial set of local level short-term migration estimates for mid-2007 that were published as a research report in October 2009.

The new demographic models have improved users confidence in migration and population estimates and improved the timeliness and the quality of the outputs.

5. Introduce Additional Census Questions to identify short and long term migrants

Several questions were introduced into the 2011 Census that will identify short and long term migrants. Additionally, further questions were introduced on Citizenship.

The outputs from the Census will increase user confidence in migration statistics.

6. Long-term international immigration estimates by local authority

In November 2011 a new methodology was released for estimating long-term immigration to local authorities (LAs) in England and Wales. The new approach was based on using administrative data sources to distribute the England and Wales immigration totals from the International Passenger Survey (IPS) directly to LAs. The approach splits the IPS into different streams, mainly by 'reason for migration' (e.g. worker, student, other) and then maps each stream to the most relevant administrative sources which are then used to distribute immigrants to each local authority. For example, workers are distributed using National Insurance (NINo) data from the Department of Work and Pensions (DWP); students are mainly distributed using Higher Education Statistics Agency (HESA) data, while children and some other migrants are distributed using 'Flag 4s' from the GP patient register data (PRD).

This methodology was thoroughly quality assured within ONS and externally by academics and local authorities. The method was widely recognised as an improvement over the modelling methods, developed earlier in the programme, as well as being more transparent and easier to explain. The estimates were used to create indicative population estimates that were used to produce the 2010-based sub-national population projections.

7. Short-term international immigration by local authority

ONS has developed a new methodology to distribute England and Wales short-term immigration estimates to local authority level. The new methodology has focused on:

- in-flows only;
- moves made for between 3 and 12 months for work and study reasons for visit (i.e. the UN definition);
- the years from mid-2008 to mid-2010.

The methodology is based on the long-term immigration method and used published short-term immigration totals derived from IPS data for workers and students staying 3-12 months which is the UN definition of a short term migrant. The worker and student totals are then distributed by mapping the IPS definition as closely as possible to the relevant data within the administrative sources provided by other Government departments such as the student record data from HESA and Grants of visa and Grants of Extensions of Leave to Remain from the Home Office.

These short-term migration estimates have been released as experimental statistics.

The improvements in quality to both the long-term and short-term migration estimates using administrative data have led to greater user confidence in the migration and population estimates and improved the timeliness of our estimates.

8. Population statistics measures of uncertainty

8.1 Quality Indicators

The United Kingdom Statistics Authority recommended that ONS should produce measures of uncertainty for its local authority population estimates. The programme has produced a research report containing Quality Indicators which identified, for each local authority, the proportion of its population that consisted of sub-populations that were more difficult to measure. These were households that were difficult to enumerate in the 2001 Census, internal migration, international immigration, students, armed forces and cumulative migration

The Quality Indicators are the first step in quantifying uncertainty in our population estimates and will lead to improved user confidence in the population statistics.

8.2 Measures of Uncertainty

In addition to the Quality Indicators, the programme has also overseen the development of more complex statistical measures of uncertainty based on the uncertainty observed in the Census, International migration and internal migration. These are associated with the largest impact in terms of statistical error in the mid year estimates. This method is expected to be finalised shortly and a research paper is expected to be published in Summer 2012.

9. Population Statistics Conceptual Framework

As mentioned earlier, it is important to have a comprehensive understanding of the population to enable the successful running of a modern democracy. A key element for this is having reliable population statistics that are based on robust data sources.

The population statistics conceptual framework provides users of population data with a detailed understanding of how population statistics are constructed. It gives details of the component parts of the population statistics model together with the data sources used to estimate these parts. In particular, it examines how individual sources such as the Census, surveys and administrative data differ in terms of quality and coverage with each other. It also describes how population statistics are used, who the key users are and how the population statistics outputs meet these users' needs.

The framework will be valuable to:

- users of population statistics (including analysts, statisticians, researchers as well as policy and decision makers) to aid the interpretation of population data and to understand its strengths and weaknesses. To also give a framework against which other data sources, not currently used in the production of population statistics, can be assessed.
- data providers to understand the context and uses to which their data are put.
- producers of population statistics to (1) provide a basis on which to prioritise future developments in population statistics and (2) communicate latest data and put data in proper context

The framework has been produced as a dynamic document which will be enhanced in the future with details of other data sources and more detailed descriptions of some of the components of the model, for example statistics on migration.

10. Plausibility Ranges

Local authorities often compare population estimates against administrative sources to sense check their estimates. A recommendation from previous research into local authority populations was to explore the possibility of developing plausibility ranges for the population estimates. This project looked at several administrative sources to determine if it is possible to develop a method to set upper and lower ranges for population estimates based on the usual residence definition. The project has developed a method to create indicative plausibility ranges for 0-15 year olds using a range of administrative sources (patient register, live births, child benefit, school census and school boarders). Administrative sources of information for the working age population group were not considered sufficiently robust at this stage whilst sources for the older age groups will need further investigation before plausibility ranges for this group can be derived.

The process of developing the plausibility ranges has increased our understanding of some of the dynamics in the population estimates model and has highlighted several areas for further investigation. These will be followed up as part of a reconciliation of 2011 Census results and population estimates.

The Conceptual Framework and the Plausibility ranges work will provide greater understanding and quality assurance for our estimates which will lead to improved confidence in population statistics and, over time, will lead to further improvements to the national and sub-national estimates.

11. e-Borders

The e-Borders Programme is being implemented by the UK Border Agency (UKBA) with the primary aim of improving UK border security by collecting information from carriers on all those travelling to, and from, the UK. There is a recognition that this information will deliver significant statistical benefits, however, the current level of coverage is not sufficient to deliver these benefits at this time. The e-Borders Programme identifies a specific benefit around the potential to deliver improvements to ONS migration statistics and delivering a strategy of the potential statistical benefits from e-Borders was a key aim of MSIP.

The e-Borders project highlighted some of the benefits which could be achieved over the medium to long term. It recognised that data from e-Borders will not replace existing sources but will, instead, improve our understanding of migration by combining it with existing sources. Some of the benefits highlighted include improved estimates of international immigration and emigration, improved weighting of the IPS and, through linking, the potential to make further improvements to data on patterns of migration.

Governance

At the outset it was clear that the success of the Migration Statistics Improvement Programme depended on close collaboration between departments. It was created as a cross-departmental programme led by ONS with significant support, in the form of direct financial support and work in kind, from Business Innovation and Skills (BIS), Cabinet Office (CO), Department for Communities and Local Government (DCLG), Department for Education (DE), Department for Health (DH), Department for Work and Pensions (DWP), Home Office (HO), Treasury (HMT) and the Office for Budget Responsibility (OBR). Most of these Departments were represented on the Programme Board which met around every three months during the lifetime of the programme.

These departments also had representatives on the following five Programme Subgroups which led individual projects:

1. Entry and Exit working group
2. Migration Reporting Working Group
3. Local Population Estimates Working Group
4. Acquisition of Data and administrative sources working group
5. Analysis and Coordination Working Group

The close links developed between departments, together with support from Ministers in departments, facilitated many of the early successes of the Programme, such as coordinating the reporting of migration and the sharing of administrative data.

Stakeholder Engagement

Another key element that was vital for success was achieved through the involvement and support of stakeholders of population statistics. These included demographic experts who were able to provide advice on new methods and local authorities who could provide feedback on new methods and indicative results.

Throughout the programme regular contact was maintained with all stakeholders with Roadshows and Local Insight Reference Panels providing opportunities for Local Authorities to provide feedback and inform the Programme of their views on which priorities the programme should be following. This was particularly useful midway through the programme where users gave a very

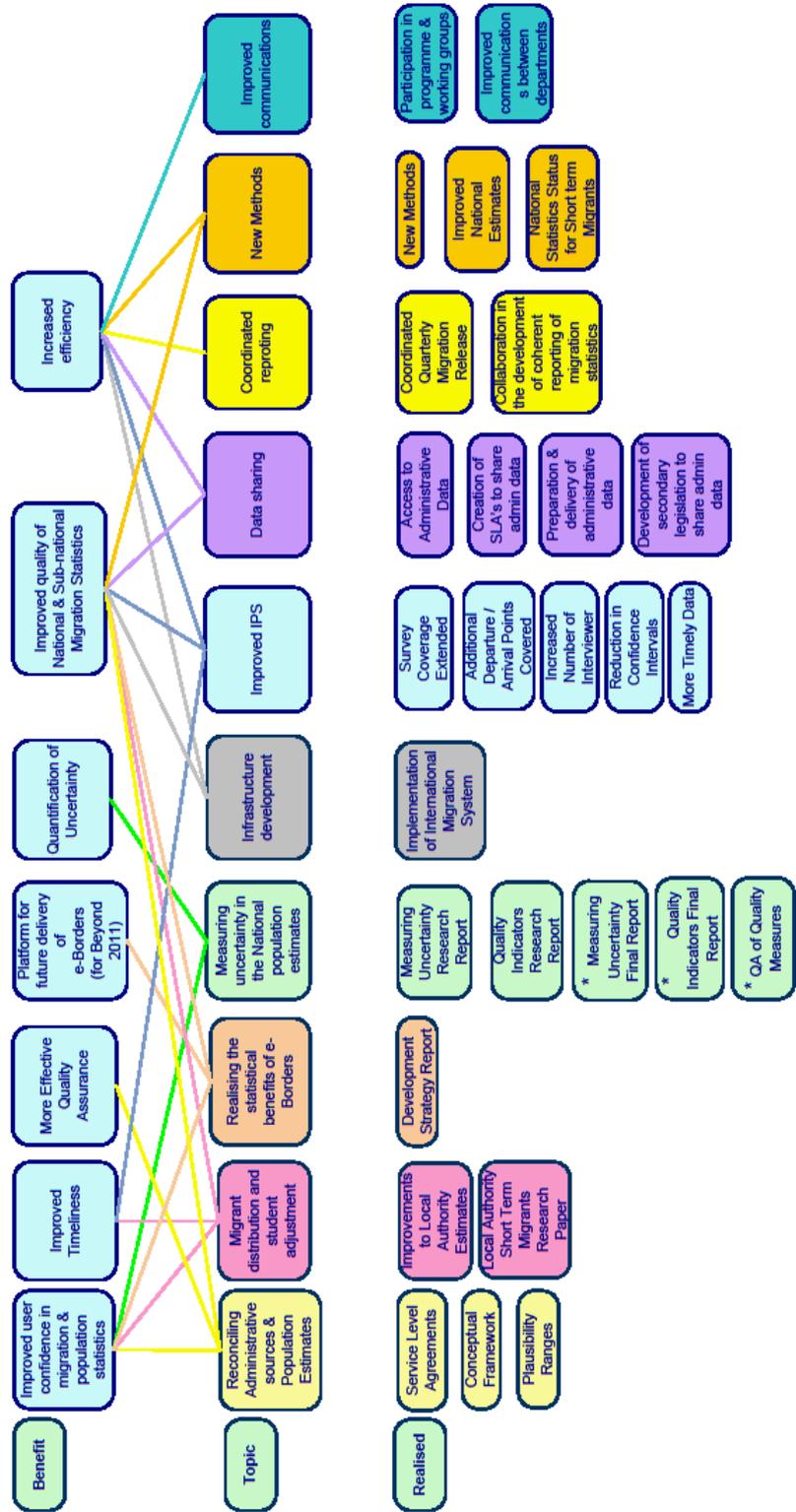
clear steer to focus the remaining part of the programme on the development of methods to use administrative data to estimate long-term and short-term international immigration at the local authority level. And, once these estimates had been produced, Local Insight Reference Panels provided feedback on the quality of the indicative estimates.

Future

The programme has delivered the benefits a year ahead of schedule. ONS will, however, continue to make improvements to its population statistics. Its short-term priority will be to reconcile the results of the programme with the Census results in the summer of 2012. Realising the benefits from e-Borders will be a further key priority. However, other work will proceed including achieving National Statistics status for local authority short-term migration estimates, further development of plausibility ranges for other age groups, developing and incorporating the conceptual framework into population statistics decision making and further developments on internal migration and emigration. The priority for this work will be set after careful consideration following the outcomes from the Census reconciliation exercise and consultation with our stakeholders.

Annex A

Migration Statistics Improvement Programme Benefits Realisation



* - will be realised by the end of December 2012

Annex B

Further Information

Migration Statistics Improvement Programme Homepage:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/index.html>

Migration reporting including the latest Migration Statistics Quarterly Report:

<http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=International+Migration>

Migration Statistics Improvement Programme Annual Reports for 2008/2009 and 2009/2010:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/updates-and-reports/historical/2009/annual-overview-2008-2009.pdf>

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/updates-and-reports/historical/updates-and-reports-from-2010/migration-statistics-improvement-programme-annual-overview-2009-10.pdf>

Methodology for Estimating Local Authority Long-term International Immigration:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/improvements-to-local-authority-immigration-estimates/index.html>

Methodology for Estimating Local Authority Short-term International Immigration:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/updates-and-reports/current-updates-and-releases/distributing-short-term-migrants-to-local-authorities/index.html>

Population Statistics Quality Indicators:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/latest-news/uncertainty-in-la-mypes/index.html>

Population Statistics Measures of Uncertainty:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/latest-news/uncertainty-in-la-mypes/index.html>

A Conceptual Framework for UK Population and Migration Statistics:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/latest-news/conceptual-framework/index.html>

Plausibility ranges:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/latest-news/using-administrative-data-to-set-plausibility-ranges/index.html>

Strategy for using data from e-Borders:

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/latest-news/delivering-statistical-benefits-from-e-borders/index.html>