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## **Economic Commission for Europe**

### **Conference of European Statisticians**

#### **Group of Experts on Migration Statistics**

#### **Work Session on Migration Statistics**

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Item 3 of the provisional agenda

#### **Producing migration data using household surveys and other sources**

## **The UK's Migration Statistics Improvement Programme - exploiting administrative sources to improve migration estimates**

**Note by the Office for National Statistics, United Kingdom**

### **I. Abstract**

In March 2012, the Migration Statistics Improvement Programme in the UK came to an end. Two of its key aims were to (1) improve the International Passenger Survey (IPS) to improve the quality of our national estimates of net international migration and (2) to make increased use of administrative data to improve international immigration statistics at the sub-national level. Meeting both of these aims have been seen as significant achievements from the Programme.

This paper will describe these improvements. It will describe how ONS obtained access to a range of administrative sources for statistical purposes, 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). It will explain how these sources were used either to improve the migration estimates or to quality assure local population statistics and inform future research.

In particular, it will describe the new methodology developed to estimate long-term immigration to local authorities (LAs) in England and Wales. This 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.

These new estimates for immigration at the LA level have been used to create indicative population estimates that were used to produce the 2010-based sub-national population projections.

The methods described will be of interest to other countries especially those that do not have an administrative system or population register to directly estimate international immigration at sub-national levels.

## II. 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.

### **III. 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 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 more robust 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. 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. These are presented in another paper being discussed at this conference.

The outputs from the Census will increase user confidence in migration statistics and will improve our understanding of migration.

#### **5. Long-term international immigration estimates by local authority**

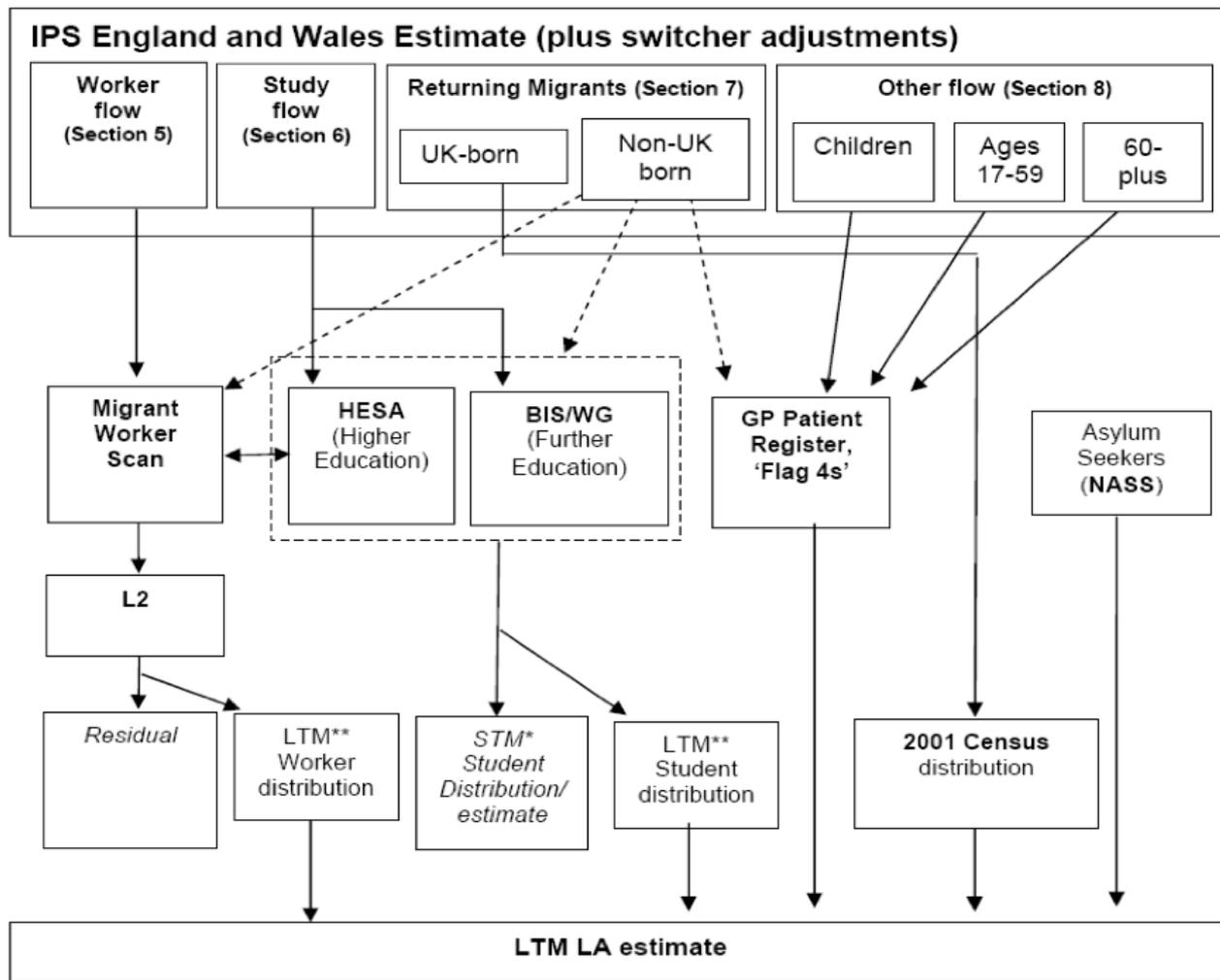
In November 2011 a new methodology was released for estimating long-term immigration to local authorities (LAs) in England and Wales. The new approach was based on using administrative data sources to distribute the England and Wales immigration totals from the International Passenger Survey (IPS) directly 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.

An overview of this methodology is shown below (for more details see **Methodology for Estimating Local Authority Long-term International Immigration** in Annex B)

The main features of the new distributional methodology are as follows and are summarised in the diagram below:

- The key principle is to achieve the closest possible mapping between the IPS and the available administrative data
- The LA estimates are based on distributions and not the actual administrative counts. Thus, the total population estimate for England and Wales does not change
- A distinction is drawn between 'first-time' migrants and 'returning' migrants because of differences in the way in which they interact with the administrative sources
- Record linkage is used both within and between sources to minimise definitional differences and double counting.



. \*STM = Short-term migrant \*\*LTM = Long-term migrant

Note: A Flag 4 is assigned to those migrants who register with a GP and whose previous address was outside of England and Wales

- The sources used are as follows:
  - Migrant Worker Scan (MWS) provides a count of foreign nationals applying for a NINo
  - Lifetime Labour Market database (L2) is used to estimate the proportion of the NINo count who are long-term migrant workers
  - HESA administrative data is used for distributing publicly funded Higher Education student flows
    - HESA survey data is used to distribute private Higher Education flows
  - Department of Business, Innovation and Skills (BIS) Welsh Government (WG) administrative data sources used to distribute Further Education student flows
  - 2001 Census data for distributing UK-born returning migrant flows.

- National Asylum Support Service (NASS) data to distribute asylum seeker flows identified in the IPS; and
  - Flag 4 data from the GP Patient Register Database, to distribute the remaining migrants
- The intention is that the method will be applied for mid-2005/06 to mid-2009/10. This is partly because this five year period will contain sufficient trend data for the 2010-based SNPPs (Sub- National Population Projections), but also because some of the administrative data are not available for earlier years.

### **Key Assumptions.**

There are three fundamental assumptions underpinning the improved methodology:

- 1: The IPS immigration estimate is the best possible estimate at the national level
- 2: The ‘main reason for migration’ data in the IPS is a suitable basis for categorising the national IPS estimates so that they can be distributed down to LA level.
- 3: Any differences between the definitions used to map the administrative sources and the corresponding IPS data do not introduce geographic bias.

## **6. 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. In particular, users have been able to get a greater understanding of total (long and short-term) migration.

## **7. e-Borders**

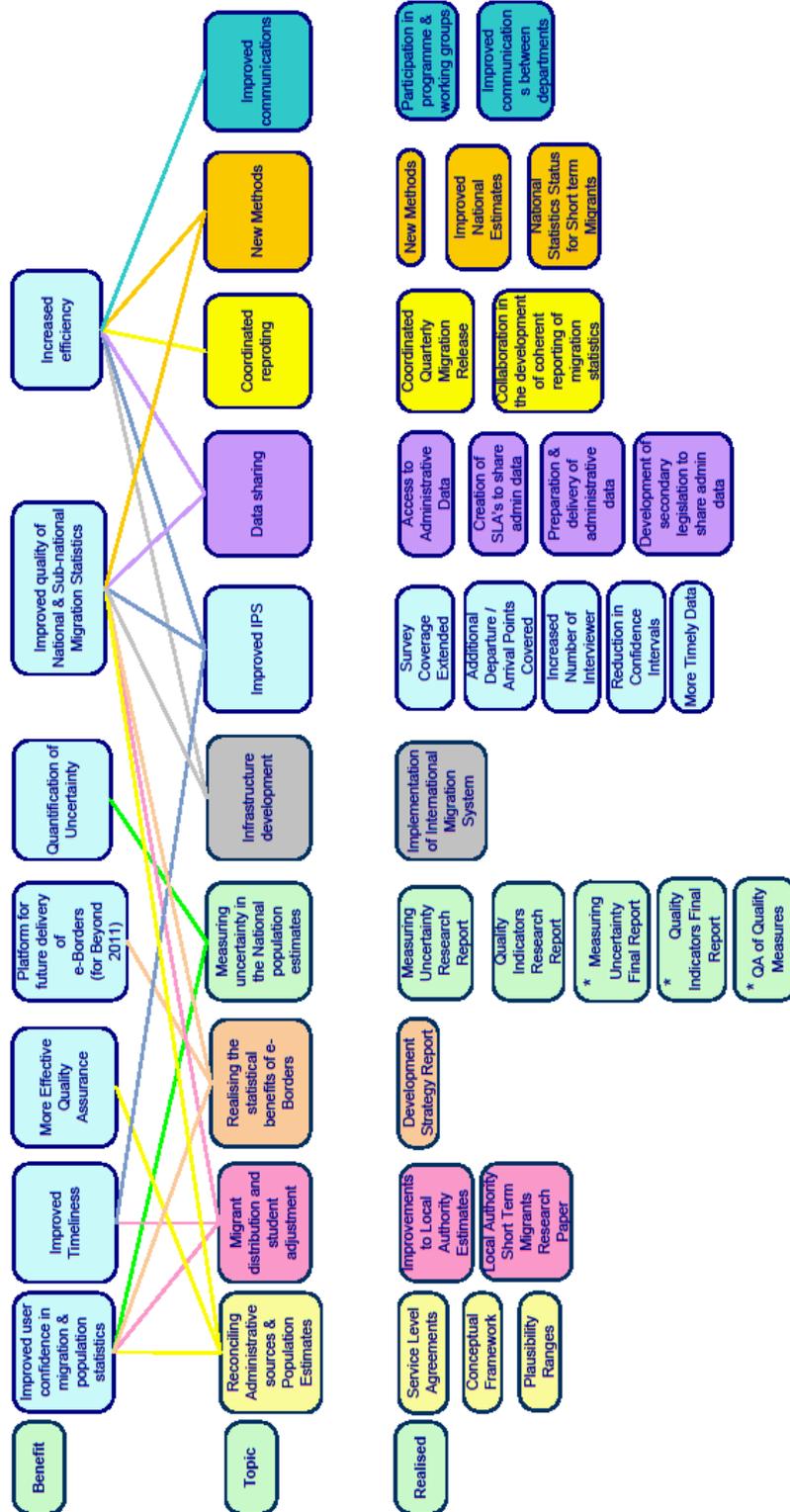
The e-Borders Programme is being implemented by the UK Border Agency (UKBA) with the primary aim of improving UK border security by collecting information from carriers on all those travelling to, and from, the UK. There is a recognition that this information will deliver significant statistical benefits,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

#### **IV. 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 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.

**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>