

Population And Migration Statistics (PAMS) Committee (Scotland)

Population and Migration Statistics Update

1. Introduction

This paper summarises the recent work on population and migration statistics. PAMS is asked to note the paper and other comments. We would also be very keen to hear back from PAMS members about how you use our statistics and what impact they have.

Note: Other specific points we would like feedback from PAMS members on are summarised at the end of this paper. Written comments on anything covered in this paper will also be very welcome, email: customer@gro-scotland.gsi.gov.uk.

2. Staffing

Ronan O'Kelly has left our team to join National Records of Scotland (NRS) Census Outputs and Martin Devine has left to go to the Scottish Government Health Analytical Services Division. Souraya Morrison joined us on 4 November to work on the 2014 mid-year estimates and Gail Sinclair will be joining us in the next few weeks to develop methods for producing 90+ population estimates for areas within Scotland.

3. Publications

Publications since the last PAMS meeting are:-

- 2012-based Sub-National Population Projections for Council and NHS Board areas (14 May 2014);
- Revised Small Area Population Estimates for 2002 to 2010, 2001 data zones and special populations including Urban Rural, Scottish Index of Multiple Deprivation (SIMD), etc (22 May 2014);
- Mid-2013 Population Estimates for Administrative Areas, delay from 30 April publication (26 June 2014);
- Migration tables for mid-2012 to mid-2013 (24 July 2014);
- Mid-2012 Settlement and Locality Population Estimates (31 July 2014);
- Small Area Population estimates and special area population estimates mid-2013 for old data zones, due to delay in new data zone boundaries (21 August 2014);
- National Life Tables 2011-2013 Scotland table published in August with our Registrar General's Annual Review (14 August 2014);
- Three chapters for the Registrar General's Annual Report (14 August 2014);
- 2012-based Scotland's Strategic Development Plan Areas and National Parks Population Projections (21 August 2014);
- Country of Birth and Nationality population estimates 2013 (28 August 2014);

- Centenarians, 2003 to 2013 (25 September 2014);
- Life Expectancy for Scottish Areas 2011-2013 (16 October 2014);
- Local Area Migration spreadsheet update (30 October 2014).

Future publications:-

- Life Expectancy for Areas in Scotland, 2011-2013, additional tables (27 November 2014);
- **Office for National Statistics (ONS) publication:** Quarterly Migration report – including International Migration for Scotland for calendar year 2013 (27 November 2014);
- Mid-2014 Population Estimates Scotland, Council and NHS Board areas (April 2015);
- Migration tables for mid-2013 to mid-2014 (July 2015);
- Local Area Migration spreadsheet update (July 2015);
- National Life Tables 2012-2014 Scotland table published in August with our RGs Annual Report (August 2015 TBC);
- Three chapters for the Registrar General's Annual Report (August 2015 TBC);
- Small Area Population Estimates (SAPE) 2014 for new 2011 data zones, data for previous years 2001 to 2013 if possible/required (August 2015);
- Country of Birth and Nationality population estimates 2014 (August 2015);
- Centenarians, 2004 to 2014 (September 2015);
- Life Expectancy for Scottish Areas 2012-2014 (October 2015);
- National Population Projections 2014-based (October/November 2015 TBC);
- Sub-national Population Projections for Scottish Areas 2014-based (Spring 2016 TBC).

Mid-2013 Population Estimates

Mid-2013 population estimates for administrative areas in Scotland which are consistent with the new NHS Board areas were published on 26 June 2014. NHS Board area boundary changes came into effect from 1 April 2014 and mean that NHS Board areas are now aligned with Council area boundaries. However, population estimates for pre-April 2014 NHS Board areas back to 1981 are available to download from the Population Estimates Time Series Data section of the NRS website. Only estimates for the 2014 NHS Board boundaries will be produced going forwards.

2012-based Population Projections

Sub-national 2012-based projections for council and NHS Board areas were published on 14 May 2014 and projections for National Parks and Strategic Development Plan areas were published on 21 August 2014. We have met with a couple of councils to discuss their results and we are very happy to come and speak to others if that would be helpful.

Small Area Population Estimates (SAPE)

We published small area population estimates for mid-2013 for '2001 data zones' on 21 August. On 6 November the Office of the Chief Statistician and Performance (OCSP) published the boundaries for the new '2011 data zones' on the Scottish Government's website. We will be reviewing the method to produce our SAPE and plan to publish population estimates for mid-2014 on the new '2011 data zone' boundaries in August 2015.

Action requested : We would be interested in revisiting views from PAMS on the requirement for a back series for SAPE on the new 2011 data zone boundaries.

Mid-2012 Settlement and Locality Population Estimates

Mid-2012 population estimates for settlement and localities were published in July 2014. Thank you to those who helped to quality assure the estimates and boundaries, the feedback we received was really helpful. We improved the content of the publication and background material and improved the presentation of the data with new charts and maps.

Action requested : Feedback on the publication improvements would be very welcome.

4. Use of urban rural settlement indicators in local government funding allocation

The local government funding allocation methodology, known as Grant Aided Expenditure (GAE), uses urban and rural settlement pattern indicators in the funding formula. Urban settlement pattern is defined as the percentage of the local authority population outwith settlements of over 10,000 and rural settlement pattern as the percentage of the local authority population outwith settlements of over 1,000. These settlements differ slightly from the settlement patterns produced by NRS in that settlements within 1km of each other are amalgamated into single settlements whereas NRS methodology requires settlements to be touching. It would be very helpful to get comments from the Population and Migration Statistics Committee on the list of NRS settlements in each local authority area that have been amalgamated. In particular, it would be useful to know if there are particular physical barriers or other reasons why such amalgamations may not be sensible (or if members are sure that the settlements are definitely more than 1km apart). It is worth pointing out that local authority boundaries will be recognised when the final settlement indicators are calculated. Whilst the final methodology for calculating the updated settlement patterns has still to be agreed, it is likely that David Cruickshank, Statistician in the Scottish Government, will be writing to PAMS LA side members in early January 2015 to ask for feedback.

Action requested: PAMS LA members to note that David Cruickshank will be looking for feedback in early 2015 on the settlements in each local authority area that have been amalgamated to calculate the urban and rural indicators used in local government funding allocation.

5. Progress on research and improvement work

Now that we have almost completed our programme of publications for this year we will be taking forward some of the development work we have planned including:-

Internal Migration, including comparing address 12 months ago information from the 2011 Census with our migration estimates. This work is likely to be complete mid to late 2015.

Continuing to develop our use of the Demographic subset of the NHS Central Register (NHSCR) extract, explore the recently obtained Higher Education Statistics Authority (HESA) and how it can improve our estimates of student migration and continue to pursue additional data sources to improve our estimates. Due to changes to the NHSCR system, because of the NHS Board boundary changes in April 2014, we are having to accelerate our use of our subset of the NHSCR demographic extract and prioritise it over other development work. Please refer to [Annex A](#) for more information on our plans to improve internal migration estimates.

Over the next few months we will be reviewing through consultation the need for Marital Status population estimates and also take the opportunity to consult our users on the content and requirement for our stats outputs. Work on developing Ethnic Population Estimates has been postponed to allow us to consider how work planned by academics and Office for National Statistics (ONS) may fit in.

Some work has been taken forward to develop quality indicators for mid-year estimates and explore the creation of confidence intervals for our estimates. We plan to use these initial indicators internally in the quality assurance of the 2014 mid-year estimates and refine them before consulting with users on how useful they are in late 2015.

Research the feasibility of producing population estimates at single year of age and sex up to 100+ rather than 90+ as part of our main mid-year estimates process and review with ONS the existing methodology at Scotland level to produce 90+ estimates by single year of age.

Review the methodology to produce Small Area Population Estimates to allow improvements for our estimates of new 2011 data zone population estimates.

Review the methodology and processes used to create population estimates of settlements and localities.

Review the sub-national projections methodology in time for the 2014-based projections, required as a result of changes to the national projections produced by ONS. Hold a POPGROUP Users meeting in early 2015.

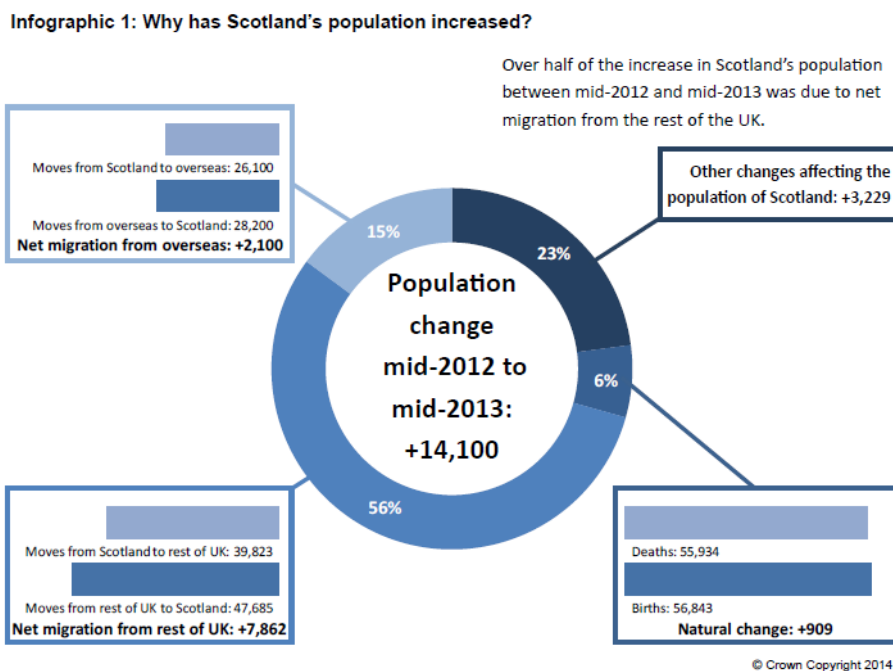
6. Improving our dissemination: infographics and data visualisation

With other teams in NRS we have continued to develop new infographics and data visualisations for our releases, including:-

[Interactive Internal Migration Map](#) (available on Scotland's Census website).

[Interactive Life Expectancy infographic](#) (available on Scotland's census website).

Mid-year estimates infographic:



We will be continuing to develop these visual summaries and interactive content as we go forward. We have also continued to make use of Twitter and have tweeted links to news releases, infographics and key messages on the days we release statistics.

Action requested : feedback and suggestions for dissemination would be very welcome

Follow us on Twitter: [@NatRecordsScot](https://twitter.com/NatRecordsScot)

7. UK Statistics Authority Assessment

The UK Statistics Authority is currently assessing our population estimates and projections. They have been asking our users for feedback on our statistics and engagement with users and we would like to thank those who have responded to their questionnaire. The assessment report is likely to be published in Spring 2015.

8. Summary of specific questions for PAMS members:

- Councils and others to let us know if they would like to talk to us about their population estimates and projections.
- Is there a requirement for new 2011 data zone population estimates for previous years 2001 to 2013?
- Feedback on our improvements to our publications, infographics and data visualisations.
- PAMS Local Authority (LA) members to note that David Cruickshank will be looking for feedback in early 2015 on the settlements in each local authority area that have been amalgamated to calculate the urban and rural indicators used in local government funding allocation.

- PAMS members are asked to note our approach to bringing forward improvements to internal migration estimates as outlined in [Annex A](#).
- Other feedback/questions on anything in this paper including planned publications and development work are welcome.

NRS: Population and Migration Statistics branch
17 November 2014

Annex A

Improving internal migration estimates using the subset of the NHS Central Register demographic extract

1. NHS Central Register data files currently used for migration

National Records of Scotland (NRS) internal migration¹ estimates are produced from two monthly files (PNP and SMIG) received from the National Health Service Central Register (NHSCR) which contain information at NHS Board area level, no postcode or other geographic location is included. What the acronyms PNP and SMIG stand for have been lost to the mists of time. There are historic processing reasons why two monthly files are used for each month.

The information provided in the PNP files includes age at mid-year, sex, origin and destination for movements from:

- Scottish NHS Board areas² to other Scottish NHS Board areas,
- Scottish NHS Board areas to England and Wales (E&W),
- Scottish NHS Board areas to Armed Forces (AF),
- Scottish NHS Board areas to Overseas (OS),
- Scottish NHS Board areas to Northern Ireland (NI),
- E&W to Scottish NHS Board areas,
- NI to Scottish NHS Board areas,
- AF to Scottish NHS Board areas, and
- OS to Scottish NHS Board areas.

The information provided in the SMIG files includes date of birth, sex, origin and destination for movements from:

- E&W to Scottish NHS Board areas.

The PNP and SMIG files, together with data supplied by the Office for National Statistics (ONS) and the Northern Ireland Statistics and Research Agency (NISRA), are used to estimate internal migration for the mid-year population estimates.

Quarterly inflows and outflows (totals only) are agreed between the four constituent countries of the UK by NRS, ONS and NISRA. The receiving countries data is deemed to be more reliable. For example, the flow to Scotland from E&W is provided by NRS whereas the flow from Scotland to E&W is provided by ONS. Furthermore, NRS provide ONS with record-level data on E&W to Scotland moves (from the SMIG files) and ONS provide NRS with record-level data on Scotland to E&W moves.

Footnotes:

1) Within Scotland and rest of UK migration.

2) Up to and including September 2014 the PNP and SMIG files provided pre-April 2006 (15) NHS Board areas. From October 2014 onwards the PNP and SMIG files will gradually begin to provide April 2014 NHS Board areas. NHS Argyll & Clyde will, however, be retained.

Roughly speaking, the PNP files for September to August are aggregated together to become migration data for the year to 30 June. (The data is lagged by two months.) The following adjustments are then made to the data:

- the total number of E&W to Scotland moves in the PNP files are constrained to the total number of moves in the SMIG files,
- all Scotland to E&W moves in the PNP files are replaced by record-level data provided by ONS, and
- the total number of NI to Scotland moves in the PNP files are constrained to a total agreed with NISRA.

2. The subset of the NHS Central Register demographic extract

Population and Migration Statistics branch have access to a reduced version of the NHSCR demographic extract. The extract is received monthly and is a snapshot of key variables on the NHSCR database at the end of each month.

The extract contains three data sets:

- a person data set containing basic demographic information (date of birth and sex) for all persons on the NHSCR,
- a 'postings' data set containing the posting history of the records in the person data set, and
- a postcode data set containing the postcode history of the records in the person data set.

The main advantage of the NHSCR extract compared with the PNP/SMIG files is that it contains date of move and postcode-level information.

3. Impact of NHS Central Register data quality work on PNP and SMIG

Historically PNP and SMIG files were the best migration data from the NHSCR that could be supplied but the issue is that they are not based on the date that a move occurs. For example, moves in the September 2014 PNP and SMIG files correspond to moves that were entered onto the NHSCR in September 2014 irrespective of the actual date when the move occurred. In the past this has caused problems, particularly when NHSCR undertake data quality work on moves that occurred before the last Census.

For example, NHSCR carried out a data quality exercise between October 2012 and February 2013 that resulted in additional records relating to older 'moves' being included in the PNP data. For the 2013 mid-year estimates, the England and Wales to Scotland moves in the PNP files for October 2012 and February 2013 were adjusted using data from the subset of the NHSCR demographic extract in order to correct for this..

4. NHS Board area boundary changes in April 2014

Up to and including September 2014 the Scottish origin and destination codes in the PNP and SMIG files corresponded to pre-April 2006 (15) NHS Board areas. Since October 2014 Practitioner Services Division (PSD) have started to implement the April 2014 NHS Board area boundary changes on the NHSCR. This work is expected to continue until February/March 2015.

The largest boundary changes are in NHS Lanarkshire and NHS Greater Glasgow and Clyde. Following the boundary changes approximately 6.5 per cent of NHS Greater Glasgow (in terms of population) transferred to NHS Lanarkshire and approximately 0.3 per cent of NHS Lanarkshire transferred to NHS Greater Glasgow and Clyde. Posting codes on the NHSCR are being updated to reflect these boundary changes. Because of the way the PNP files are created (basically they are a record of any posting changes on the NHSCR in a given month) these changes will come through on the PNP file as moves even though the patients have not physically moved.

This presents us with two problems:

- the PNP file will contain 'moves' which are due to changes of posting to reflect changes in the NHS Board area boundaries rather than genuine moves. It will not be possible to identify these 'moves', and
- the changes are coming into effect (gradually) from October 2014. This means that the monthly files used to estimate migration for mid-2015 (September 2014 to August 2015) will not be on a consistent set of boundaries.

The NHSCR extract can be used to identify these 'moves' since they will have a move date of 1 April 2014 and could be used to create migration data. However, until all of the posting changes have been implemented the posting codes on the NHSCR will not be on a consistent set of boundaries. One way around this problem is to use the postcode information. However, the quality of the postcode information on the NHSCR has not yet been fully assessed.

Internal migration information for the 2014 mid-year population estimates (to be published in April 2015) is not affected by this issue but we need a solution for internal migration for the 2015 mid-year estimates.

5. Recommendation

On the basis of the issues outlined in sections 3 and 4, we propose that for September 2014 onwards NRS prioritises and accelerates work to use the subset of the NHSCR demographic extract to produce internal migration moves. We will keep PAMS informed of progress.

PAMS are asked to note this approach.