

Monitoring Review

Monitoring Review 4/15
October 2015

Population estimates and projections: a comparison across the UK

Introduction

Population estimates and projections are among the UK's most prominent National Statistics, providing important input into national and local planning activity and to a large number of other economic and social statistics. For this reason, the UK Statistics Authority assessed whether these statistics continue to comply with the Code of Practice for Official Statistics. The statistics are produced across the UK by the Office for National Statistics (ONS), the Welsh Government, National Records of Scotland (NRS) and the Northern Ireland Statistics and Research Agency (NISRA). In July 2015, the Statistics Authority published Assessment reports 309¹, 310², 311³ and 312⁴, which examine these statistics for England, Wales, Scotland and Northern Ireland respectively. These reports confirm that the population statistics for each constituent country are designated as National Statistics, subject to the relevant producer bodies implementing certain requirements set by the Statistics Authority. The producer bodies have already begun to address these Requirements. This comparison paper brings together the main similarities and differences between the four producer bodies that we found during the course of this assessment.

Coverage

Each of the constituent countries publishes a range of statistical reports relating to population estimates and projections. Many of these reports cover similar outputs for similar geographical areas; for example, population estimates for local authorities, small geographical areas, and the very old are published for each constituent country. However, there are some differences; marital status estimates are produced only for England and Wales combined, and population projections for National Parks are produced only by the Welsh Government and NRS. (Note that there are no National Parks in Northern Ireland.) Annex 1 shows the coverage of population projections and estimates statistical reports for each of the producer bodies.

User engagement

All the producer bodies showed evidence of good engagement with their established expert users – mainly central and local government – with a number of active stakeholders groups set up which provide regular and constructive feedback. ONS, NRS and NISRA also maintain registers of users from the wider community, which they use to disseminate information on a range of issues, such as publication dates or, in some cases, corrections to published data. The Welsh Government has a generic mailing list, not specifically for users of population statistics, which it uses to keep users

¹ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-309--population-estimates-and-projections.pdf>

² <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-310--population-estimates-and-projections-for-wales.pdf>

³ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-311--population-estimates-and-projections-for-scotland.pdf>

⁴ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-312--population-estimates-and-projections-for-northern-ireland.pdf>

updated on consultations and releases of statistics and social and economic research on Wales. All the producer bodies provided examples of consulting users, either via their websites, users' registers, or stakeholders groups, on methodology changes or future work programmes. However, with the exception of NRS, the Assessment team felt that there were instances where users could have been more effectively engaged.

Resources

Resourcing pressures are an issue for all the producer bodies. While the producer bodies indicated that they currently have sufficient resources to produce the required statistical outputs, they all highlighted potential risks with regards to future resourcing. These include limited resources for development work on new methods and data sources, and difficulty filling posts that become vacant, resulting in vacancies for several months or posts being filled by temporary staff on fixed term contracts. The producer bodies told us that any future reduction of staff would be likely to result in a reduction in the number and frequency of outputs being produced.

Quality and methods documentation

The methods and data sources used to produce population estimates for the UK and each of the constituent countries are in some cases consistent, but there are also some exceptions. ONS, the Welsh Government, NRS and NISRA have worked together to produce several documents showing the comparability of the methods and data sources used in the production of the population estimates and projections statistics across the UK. *Population estimates for local authorities across UK constituent countries: a comparison of data sources and methods*⁵ and *Small Area Population Estimates Across the UK*⁶ were both produced in response to Requirements in previous assessments. *Sub-National Population Projections Across the UK*⁷ was originally published in May 2010 and has been updated during this assessment. Annex 2 shows a summary of the methods used by each of the producer bodies.

All the producer bodies publish documentation on the quality and methodology of each of the statistical outputs. With regards to the quality of the births and deaths administrative data sources, ONS (for England and Wales data), NRS and NISRA publish detailed documentation on the end-to-end data collection process and the quality assurance checks that are carried out. However, the documentation is not always easy to access from the statistical reports or the population statistics sections of the respective websites. ONS and NISRA could publish additional supporting information about the quality assurance and audit arrangements for other data sources used in the production of the population estimates and projections, such as migration data from the medical registers. NRS does publish this information, but it is not appropriately signposted from most of the statistical reports or from the population section of its website.

The Welsh Government receives its data from ONS and told us that it relies on the relevant statistics teams within ONS to carry out the necessary quality assurance on the administrative data.

⁵ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/population-estimates-for-las/population-estimates-uk-comparisons-paper.pdf>

⁶ http://www.nisra.gov.uk/archive/demography/population/small_area/UK_SAPE_Dec_2011.pdf

⁷ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/population-projections/subnational-population-projections-across-the-uk.pdf>

Corrections

The way in which each of the producer bodies approaches corrections of data varies. Both NRS and NISRA correct errors as soon as they become aware of them. They then promptly inform users of the correction, including the reason for the error and the impact that it had on the use of the statistics, via an email sent to those on the users register, and a correction note in the statistical report. ONS categorises its errors as major or minor. ONS corrects major errors as soon as possible, and lists these on the 'Corrections to data' page⁸ of its website. For minor errors, the relevant senior manager considers whether it can be resolved in the next regular publication or if it would benefit users to correct the error as soon as possible. ONS does not list minor errors on the 'Corrections to data' page.

Dissemination

The statistical reports produced by NRS and NISRA on population estimates and projections contain good, useful commentary that adds context and provides a sufficient level of detail, including links to relevant documentation and additional data. However some of the statistical reports produced by ONS and the Welsh Government lack context, contain little information about the strengths and weaknesses of the statistics, or are difficult to interpret. ONS, NRS and NISRA all produce infographics to supplement the statistics, making them easier for users to understand. They all also produce some interactive tools to allow the user more flexibility in the use of the data. ONS is the most advanced in this area. However NRS and NISRA each told us that they have been increasing the availability of infographics and interactive tools in line with available resources, and aim to make further improvements in the future, and the Welsh Government indicated that it would also like to produce some data visualisations.

All the producer bodies could improve the signposting of key supporting information, either within the statistical reports or on their websites. Some ONS and Welsh Government reports have insufficient links between current statistical reports and historic data or useful supporting documentation. ONS, the Welsh Government and NRS require additional links to quality documentation on births and deaths data. NISRA has recently made improvements in this area. However it still requires better signposting to quality documentation on previous censuses. All the producer bodies require clearer links to relevant development work on Census 2021. ONS and NRS have included a link in the mid-2014 population estimates statistical reports, but not in any other reports.

⁸ <http://www.ons.gov.uk/ons/about-ons/business-transparency/corrections-to-data/index.html>

Annex 1 – Coverage of population statistics reports by producer body, as at July 2015

Product	ONS	Wales	NRS	NISRA
National Mid-Year Population Estimates	<p><i>Mid-Year Population Estimates for the UK</i></p> <p>ONS produces these statistics for England and Wales and uses NRS and NISRA data to produce estimates for the UK.</p> <p>Coverage: - UK - UK's constituent countries</p>	<p><i>Mid-year Estimates of the Population</i></p> <p>These statistics are produced by ONS, but the Welsh Government produces this publication, which is focused on Wales only.</p> <p>Coverage: - Wales</p>	<p><i>Mid year population estimates, Scotland</i></p> <p>Coverage: - Scotland</p>	<p><i>Population and Migration Estimates Northern Ireland</i></p> <p>Coverage: - Northern Ireland</p>
Subnational Mid-year Population Estimates (includes local authorities and health geographies)	<p><i>Mid-year Population Estimates for the UK</i></p> <p>Coverage: - Regions: England - Counties: England - Local authorities: UK</p> <p><i>Small Area Population Estimates</i></p> <p>Coverage: - Clinical Commissioning Groups (CCGs): England</p>	<p><i>Mid-year Estimates of the Population</i></p> <p>Coverage: - Local authorities: Wales</p>	<p><i>Mid-year population estimates, Scotland</i></p> <p>Coverage: - Local authorities: Scotland - Health board areas: Scotland</p>	<p><i>Population and Migration Estimates Northern Ireland</i></p> <p>Coverage: - Local government districts: Northern Ireland - Former local government districts: Northern Ireland - Health trust areas: Northern Ireland</p>
Population Estimates for Small Geographical Areas	<p><i>Small Area Population Estimates</i></p> <p>Coverage: - Middle and Lower Super Output Areas: England and Wales</p>	Covered by ONS. No separate Wales publication.	<p><i>Small Area Population Estimates (SAPE)</i></p> <p>Coverage: - Data zones: Scotland</p>	<p><i>Population and Migration Estimates Northern Ireland</i></p> <p>Coverage: - Super Output Areas: Northern Ireland</p>
Population Estimates for other geographical areas	<p><i>Small Area Population Estimates</i></p> <p>Coverage (experimental statistics): - Electoral wards: England and Wales - UK Parliamentary Constituencies: England and Wales - National Parks: England and Wales</p>	Covered by ONS. No separate Wales publication.	<p><i>Small Area Population Estimates (SAPE)</i></p> <p>Coverage: - Scottish Government Urban Rural classifications - NUTS 2, 3, and LAU1 areas: Scotland - Scottish Index of Multiple Deprivation deciles - Scottish and UK Parliamentary Constituencies: Scotland</p> <p><i>Population estimates for settlements and localities in Scotland</i></p> <p>Coverage: Number of people living in 'built-up' areas of Scotland. These areas are the readily identifiable towns and cities of Scotland, rather than administrative areas such as local authorities or NHS health boards.</p>	<p><i>Population and Migration Estimates Northern Ireland</i></p> <p>Coverage (as supplementary tables): - Education and library boards: Northern Ireland - NUTS 3 areas: Northern Ireland - Electoral wards: Northern Ireland - UK Parliamentary Constituencies: Northern Ireland - Neighbourhood renewal areas: Northern Ireland - Neighbourhood renewal development offices: Northern Ireland</p>
Population Estimates of the Very Old	<p><i>Population Estimates of the Very Old (including Centenarians)</i></p> <p>ONS produces these statistics for England and Wales as a whole, and uses NRS and NISRA data to produce estimates for the UK.</p> <p>Includes breakdowns for England and Wales (as a whole), Scotland, Northern Ireland and the UK.</p>	Covered by ONS. No separate Wales publication.	<p><i>Centenarians in Scotland</i></p> <p>☐</p>	<p><i>Estimates of the population aged 85 and over, Northern Ireland</i></p>
Population Estimates by Marital Status	<p><i>Population Estimates by Marital status and Living Arrangement, England and Wales</i></p> <p>Coverage: - England and Wales combined</p>	Covered by ONS. No separate Wales publication.	<p><i>Mid-year Marital Status Population Estimates, Scotland</i></p> <p>Produced by NRS until October 2009. NRS currently considering the future of these statistics based on results of recent user consultation carried out in Spring 2015.</p>	Not produced.

Product	ONS	Wales	NRS	NISRA
National Population Projections	<p><i>National Population Projections, UK</i></p> <p>ONS produces these statistics for the UK and its constituent countries.</p> <p>Coverage:</p> <ul style="list-style-type: none"> - UK - UK's constituent countries 	<p>Covered by ONS. No separate Wales publication.</p>	<p><i>Projected Population of Scotland</i></p> <p>These statistics are produced by ONS, but NRS produces this publication, which is focused on Scotland only.</p> <p>Coverage:</p> <ul style="list-style-type: none"> - Scotland 	<p><i>Northern Ireland Population Projections</i></p> <p>These statistics are produced by ONS, but NISRA produces this publication, which is focused on Northern Ireland only.</p> <p>Coverage:</p> <ul style="list-style-type: none"> - Northern Ireland
Subnational Population Projections	<p><i>Subnational Population Projections for England</i></p> <p>Coverage:</p> <ul style="list-style-type: none"> - Regions: England - Counties: England - Local authorities: England - Clinical Commissioning Groups (CCGs): England 	<p><i>Local Authority Population Projections for Wales</i></p> <p>Coverage:</p> <ul style="list-style-type: none"> - Local authorities: Wales 	<p><i>Population Projections for Scottish Areas</i></p> <p>Coverage:</p> <ul style="list-style-type: none"> - Local authorities: Scotland - Health board areas: Scotland 	<p><i>Population projections for areas within Northern Ireland</i></p> <p>Coverage:</p> <ul style="list-style-type: none"> - Local government districts: Northern Ireland - Former local government districts: Northern Ireland - Health trust areas: Northern Ireland - Education and library boards: Northern Ireland - NUTS 3 areas: Northern Ireland
Other geographical area projections	Not produced.	<p><i>Population Projections for National Parks in Wales</i></p> <p>Coverage:</p> <ul style="list-style-type: none"> - National Parks: Wales 	<p><i>Population Projections for Scotland's Strategic Development Plan Areas and National Parks</i></p> <p>Coverage:</p> <ul style="list-style-type: none"> - National Parks: Scotland - Strategic Development Plan areas: Scotland 	Not produced.

Annex 2 – Summary of methods used to produce population statistics by producer body, as at July 2015

Product	ONS	Wales	NRS	NISRA
National Mid-Year Population Estimates	Cohort component	Cohort component	Cohort component	Cohort component
Subnational Mid-year Population Estimates	Cohort component (except for CCGs, which use Ratio change)	Cohort component	Cohort component	Mixed cohort-component and ratio change
Population Estimates for Small Geographical Areas	Ratio change	Ratio change	Cohort component	Mixed cohort-component and ratio change
Population Estimates for other geographical areas	Ratio change	Ratio change	Cohort component	Mixed cohort-component and ratio change
Population Estimates of the Very Old	Kannisto-Thatcher	Kannisto-Thatcher	Kannisto-Thatcher	Kannisto-Thatcher
Population Estimates by Marital Status	Labour Force Survey proportions applied to national mid-year estimates	Labour Force Survey proportions applied to national mid-year estimates	Cohort component	N/A
National Population Projections	Cohort component	Cohort component	Cohort component	Cohort component
Subnational Population Projections	Cohort component - constrained to National total	Cohort component - not constrained to National total	Cohort component - constrained to National total	Cohort component - constrained to National total
Other geographical area projections	N/A	Cohort component	Cohort component	N/A

Notes:

1. The cohort component method is where the previous year's population estimate is aged on by one year, births are added, deaths removed, and an adjustment is made for migration.
2. The ratio change method is where selected indicators of population change are used to update the population estimate from some earlier or base period. The method assumes an unchanged relationship over time between the chosen indicator and the true population.
3. The mixed method takes the average of the estimates from the cohort component method and the ratio change method.
4. The Kannisto-Thatcher method is where the population at a given age is estimated by looking at the ratio of the number of survivors of a cohort still alive to the number of that cohort who died in the last few years.