Projections Sub-Group (PSG)

Minutes of the Projections Sub-Group Meeting: 19 August 2015

Present	Organisation
Andrew Strickland	East Lothian
Alistair Harvey	City of Edinburgh Council
Catherine Stewart	City of Edinburgh Council
Jenny Boag	Falkirk Council
Andrew Ballingall	Fife Council
Jan Freeke	Glasgow City Council
Cameron Thomas	Highland Council
Steve Morley	North Ayrshire Council
Lesley Mann	North Lanarkshire Council
Sandra Thomson	Perth and Kinross Council
Heidi Goodship	Scottish Borders Council
Allison Craig	South Ayrshire Council
Allan Lambie	South Lanarkshire Council
Nick Smith	TAYplan (Strategic Development Planning Authority (SDPA) representative)
Professor Cliff Beevers	Chairman of the South West Communities Forum
Archie Clark	South West Communities Forum
Professor Ludi Simpson	Consultant
Kirsty MacLachlan (Arrived 11.45)	National Records of Scotland (NRS) Demography Division
Debbie Amabile	NRS Household Estimates and Projections
Esther Roughsedge	NRS Household Estimates and Projections
Esta Clark (Chair)	NRS Population and Migration Statistics
Claire Crowley	NRS Population and Migration Statistics
Luke Main	NRS Population and Migration Statistics
Gail Sinclair (Minutes)	NRS Population and Migration Statistics
Angela Adams	NRS Secondee
Charles Brown	Scottish Government (SG) Centre for Housing Market Analysis
Jos Ijpelaar (Phone)	Northern Ireland Statistics and Research Agency (NISRA)
Pete Large (Phone)	Office for National Statistics (ONS)
Alan Jackson (Phone)	Welsh Government (WG)

1. Welcome and introductions

1.1. Apologies were received from Paul Davidson, Perth and Kinross Council and Robert Collins, NRS Census and Statistical IT.

1.2. Esta Clark welcomed the group and everyone introduced themselves. The meeting is split into two parts, Part A on the sub-national population projections review and Part B on sub-council area population and household projections.

2. Part A: Sub-Council area population and household projections

Review of sub-national population projections and specification of new method and system

2.1. Esta began the meeting by advising that National Records of Scotland (NRS) are currently reviewing the methods used to produce the sub-national population projections (SNPP) for council and NHS Board areas in Scotland and summarised the reasons behind this work.

2.2. The main reason is that the Office for National Statistics (ONS), who produce the population projections for the UK and its constituent countries, have reviewed the national method and these changes mean that the method used for areas in Scotland will no longer work with these new national inputs.

2.3. Esta explained that reviewing the method will also allow Scotland to move from using an outdated net migration method to incorporate the latest academic thinking on the best way to project populations in line with international best practice.

2.4. NRS commissioned leading academics from Leeds University to: review the changes being made to ONS's national method; review our current sub-national method; provide an overview of projection methods used across the UK and across the world; and make recommendations for population projections for council and NHS boards areas in Scotland.

2.5. NRS received their report at the end of May 2015 and are now in the process of developing the new method and projection system.

2.6. This meeting of the sub-group is to discuss the recommendations from the academic report, to provide a progress report on the work undertaken to date and to obtain feedback on the intended approach. Many people in the group undertake their own projections and Esta welcomed their input. Esta also advised that Claire Crowley has now started at NRS and she will be starting work on programming the new system in SAS. Esta commented that the timescale is challenging.

2.7. The aim is for the group to meet again towards the end of the year to look at 2012-based results from the new method compared with the old method. NRS aim to publish 2014-based council and NHS board area population projections in June 2016 using the new method.

Academic Report Recommendations

2.8. Esta summarised the key findings of the commissioned report.

2.9. The primary recommendation made in the paper is that the Scottish sub-national population projections (SNPP) should move from a single-region model to a

multi-region model by changing from assuming a single net migration for each council area to a rates based approach for council area and rest of UK migration.

2.10.   The report also advocates using an adjustment developed by Statistics Canada[1] when applying migration rates, keeping the mortality and fertility methods the same as the current method, and applying a method similar to the method used by the ONS in the national population projections (NPP) when projecting and allocating international migration.

2.11.   Finally the report discussed the merits of impact scenarios, which are variant projections based on different likely scenarios, to be included in addition to the standard variants.

Implementation of Recommendations

2.12.   Esta summarised the intended changes to the projections process.

2.13.   NRS is planning to implement several of the recommendations made in the review paper. At present much of the development is still in the planning phase, however, it is planned to have completed an alpha version of the system by Christmas with a full test on 2012 data planned for early 2016.

2.14.   The projections will be trend based and there are no plans to change the current approach of using the cohort-component method to project the population.

2.15.   There are also no plans to change the methods used to project births and deaths which are based on scaling the mortality and fertility rates used in the NPP for local areas.

2.16.   It is planned that Within Scotland, and Rest of UK migration to and from councils will be projected using a rates based model. Out-migration from a council to another area will be projected by assuming a rate based on past trends in migration, and the population of the council in recent years.

2.17.   NRS is also investigating the use of the adjustment developed by Statistics Canada that would be applied to the rates in order to better project migration between council areas with large population differences.

2.18.   It is also planned that International migration to and from council areas will be projected by first assuming a long-term total using an Auto-Regressive Integrated Moving Average (ARIMA) time series model for each council area or building brick, which will then be constrained to the NPP assumptions. A run-in period would then be projected based on the long-term total and the run-in period used in the NPP. This is similar to how the ONS project the long-term international migration at Scotland level in the NPP. Data from the NRS migration estimates based on patient

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Footnote
1) More information on the adjustment can be found on the [Statistics Canada](#) website.

registers will then be used to derive age and sex distributions for international migrants.

2.19. NRS plans to publish the same seven variants that have been produced as part of previous releases.

2.20. At present Strategic Development Plan (SDP) areas and National Park (NP) area populations are projected following publication of the projected population at council area level. It is planned that these geographies will be projected and published at the same time as council and NHS Board area projections. Nick Smith welcomes that the SDP and NP projections will now be published at the same time as the SNPPs under the new system.

2.21. Esta advised that these suggestions make a significant change to the current system.

2.22. Esta also advised while impact scenarios are being considered, it will not be part of the initial projections.

Details of method

Luke Main gave a presentation covering the details of the proposed new method and system.

2.23. Luke began by explaining the single-region migration model, confirming that this is the one currently used.

2.24. Luke then explained the multi-region migration model, confirming that this is the one we intend to move to.

2.25. Luke next explained the Statistics Canada adjustment and the current method used to project births and deaths.

Discussion

2.26. Heidi Goodship asked where the data for the multi-region migration model will be taken from and Luke confirmed it was the Scottish National Health Service Central Register (NHSCR) and the Community Health Index (CHI) which have postcode based information. This can then be aggregated to higher levels and past trends will be used to inform the projections.

2.27. Nick Smith asked about the known limitations of the NHSCR, for example where people move but do not re-register/de-register, mentioning the particular effect this has amongst young adult men. Esta agreed that this is a well-known problem but advised that it is the best data available to NRS. Esta also advised there is a separate Higher Education Statistics Agency (HESA) project underway which hopes to help address this issue. Esta confirmed that ONS and NISRA add adjustments in order to attempt to account for the disparity seen for young adult men.

2.28. There was a suggestion that the Register of Scotland's sasines register, which records land and property sales, could be used to track house moves and help with

this analysis. However, Jenny Boag pointed out that the register records property sales and does not hold age or sex information, or contain information on other moves e.g. among people renting, or moving in and out of homes owned by others [the sasines register also only relates to the purchaser of the property, not the occupants and it is considered that the register would not provide the information required] .

2.29. Jan Freeke asked for confirmation on what NRS intend to use for age bands and Luke replied that the intention is to produce by single-year of age (SYOA) and sex.

2.30. Luke Main advised that national projections have included the option to apply an adjustment. We do not know whether or not it is appropriate to apply an adjustment until we run simulations to see. Luke pointed the group towards page 39 of the academic papers for more details on how the adjustment that is being considered would be applied.

2.31. Jenny Boag noted that the need for an adjustment seems reasonable given the differences in the sizes of the administrative areas.

2.32. Professor Cliff Beevers asked if NRS retrospectively checks to determine the accuracy of projections once actual births and deaths are known. Esta advised that this exercise was carried out after the 2012 data was known and the projected numbers were found to be close to actual births and deaths. ONS have also published some research on this at a national level and a similar publication looking at the sub-national figures is due to be published next week [Subnational Population Projections Accuracy Report, ONS, August 2015].

2.33. Luke explained that there are two options for projecting Strategic Development Plan (SDP) areas and National Park areas. The first is to project forward from smaller (part) areas then add these to produce projections for NHS Health Board areas, SDP areas and National Park areas but it is possible that some areas may be too small to project. The second option is to project forward at council area level then take proportions of these. Luke suggested that the current preference is towards the second option. Initial study of census data suggests that this is a sensible decision and indicates that the proportions have not changed dramatically since 2001.

2.34. Nick Smith noted that Fife is split between two SDP areas and found it was not possible to aggregate the SNPPs to obtain population or household projections for the TAYplan and SESplan SDP areas. The SDPs tried to look at aggregating part areas but it was not possible and needed to wait until the publication of the SDP and NP projections, which are published several months after the council area projections. Nick noted that it would be important to speak to NPs about the part areas as for some these will be very small. Luke noted that it is the intention to speak to NP areas about this. Jan Freeke supported using the second (rates) option as he felt that to use multi-region migration along with the first option would be impractically resource intensive. Cameron Thomas and Alistair Harvey also expressed support for the rates method. Jenny Boag noted that it is important that stakeholders should be consulted but was concerned that the new use of rates for migration would make it more difficult for stakeholders to understand the figures.

2.35. Esta assured the group that NRS will consult on international migration and rates prior to any publication but advised that there may be some disclosure issues at SYOA for small geographies.

2.36. Luke Main advised that there are two forms of applying a rates based model. The first is to calculate a reference rate from trend based data. The second is to use a rate that moves forward with the projections.

2.37. Jenny Boag asked how rates would change as the population increases. Jan Freeke suggested that the fixed rates of out-migration could stabilise the projections. Alistair Harvey agreed, noting that the rates are applied to outward, rather than inward movement. Cameron Thomas noted that Highland had undertaken some of their own work on projections with POPGROUP using rates and found that the results are very sensitive to the denominator used. Cameron noted that while he supports the use of rates in general, in his experience, the initial results may be rather different to those produced using the previous method. Cameron also noted that NRS should be very clear about the time periods being used for the calculation. Jenny Boag agreed that she also supports the rates method but with concerns and is looking forward to seeing the preliminary results.

2.38. Jan Freeke asked if work had been carried out elsewhere to validate the accuracy of the new projection method (see 2.32). Jenny Boag suggested that it is expected that previous projections will not be correct as they are used to inform policy, effecting demographic change. Alistair Harvey agreed that the projections affect policy. Nick Smith said the variants can help to assess the effects of potential policy changes and welcomed that NRS will continue to produce these.

2.39. Esta Clark asked for feedback about the impact scenarios suggested in the commissioned report. There were no suggestions for any additional variants to the ones which NRS have already advised will be produced.

2.40. Esta advised that Claire is coding in SAS now so there is an opportunity to identify additional table outputs that people would find useful. Jan Freeke asked for documentation detailing the rates used and the group agreed this would be important. Jan added that it is important that all assumptions are specified clearly.

2.41. Jenny Boag asked if NRS would still be constraining the local authority levels to the ONS Scotland level projections. Esta Clark said that the constraints would still be applied but advised that there is currently an option to switch off the constraint and the intention is to maintain this. Jenny Boag said that it would be interesting to see the unconstrained results, particularly for migration because currently changes in one area's migration affect other areas. Jan Freeke commented that this much more interactive model will probably leave less room for consultation with stakeholders.

2.42. Jenny Boag asked where the figures for migration will come from and Esta Clark advised that NRS will use flow based ARIMA modelling.

2.43. Jan Freeke voiced concerns that the results from this model, might be difficult to explain to outside parties beyond the group, including politicians. This would

particularly be the case if the numbers are significantly different from previous results.

3. Next steps

3.1.   Esta Clark thanked everyone for their feedback and assured the group that NRS would take all comments on board during the project. Esta reiterated NRS's intention to consult on the results and assured the group that NRS are using expert opinion throughout and consulting on the latest research on methodological best practice in the area of sub-national projections. Esta noted that another meeting would be scheduled later in the year to discuss the differences in the results and noted that NRS are also keen to see the results and get feedback on them.

4. Part B Sub-Council area population and household projections

Background and work carried out so far

4.1.   Angela Adams presented the paper on sub-council area population and household projections.

4.2.   Angela explained that the project is in response to demand from councils and community planning groups for sub-council area level population and household projections to help with a wide range of issues including resource allocation and service planning for local areas.

4.3.   NRS have gained funding from the SG Statistics Development Fund to develop methods for sub-council area population and household projections and produce them as a one-off exercise. The funding covers a temporary 10 month post to explore and produce the projections and also for academic support from Professor Ludi Simpson. This project builds on the guidance produced by NRS and Professor Ludi Simpson which is available on the NRS website.

4.4.   The aim is to produce sub-council area population and household projections for all 32 council areas in Scotland.

4.5.   The projections will be 2012-based due to the availability of input data.

4.6.   Principal projections only will be produced, variant projections won't be prepared due to the timescale available.

4.7.   The default geography is Multi-Member Wards but councils are invited to choose their own geography if preferred. All geographies are based on aggregations of 2001 data zones.

4.8.   Angela thanked councils for their engagement, summarised responses received so far on geographies and the reasons why these were selected. Eighteen councils have opted to use ward boundaries, custom geographies have been selected by nine council areas and five have to be confirmed.

4.9.   Angela asked for feedback on the projection timescale. It was felt that at least 10 years would be required and the group felt that projections up to 2037 may be of

use. They should be issued with the usual caveats about their use and particularly that projections become less reliable the longer the length of the projection and that small areas may be more volatile to change than projections for larger areas.

4.10. Heidi Goodship asked whether planned changes to an area could be taken into account in the projections. Scottish Borders has a new railway line planned and it will almost certainly have a significant impact on population size and location.

4.11. Esta Clark advised that NRS produces trend based projections only but that councils and other stakeholders can then use these as a base point to apply local knowledge. This can be done in different ways, for example, through the Derived Forecast (DF) constraints option of POPGROUP (which allows you to factor in future housing supply) for those who have it. Esther Roughsedge added that as well as POPGROUP there is the SG Centre for Housing Market Analysis Housing Need and Demand Assessment (HNDA) Tool which allows users to apply household growth scenarios to household projections. Sandra Thomson mentioned that Perth and Kinross Council applied local knowledge to the previous projections and found that this improved their accuracy.

4.12. There was discussion amongst the group surrounding the fact that these are trend based projections and about the importance of the distinction between projections and forecasts. Esta Clark pointed out that the language surrounding the release clearly disclaims their use in forecasting. Sandra Thomson agreed that a very clear disclaimer should be added if projections extend to 2035 at small geographies. The group noted that when reporting on the results NRS should liaise with councils and add qualifications where there are issues in particular wards (or custom areas).

5. Presentation of assumptions/results for Fife population projections

5.1. Angela presented the results for the test authority Fife advising that the results were not for discussion outside the room as they are pre-release statistics for quality assurance purposes.

5.2. Andrew Ballingall advised that the results reflect the areas where there has been recent investment in house-building. This was considered a positive indicator.

5.3. Jenny Boag asked whether constraining pushes up/down other areas. This was also an area of concern for other members of the group. Angela Adams said this is something NRS are aware of and will monitor as the work is taken forward.

5.4. Jenny Boag asked if stakeholders would still get pre-release access adding that this would be even more important at small geographies. Esta Clark advised that pre-release access will be given and that NRS plan to give pre-release access for quality assurance purposes to those who want it as well.

5.5. Andrew Ballingall noted that Fife Council had found previously that trend-based projections at small geographies can be difficult to explain to other parties. Esta Clark noted that any irregularities should be explainable and that quality assurance of the figures would consider this.

5.6.   The test scenario has not removed special populations and Jenny Boag questioned whether it is better to remove special populations. Angela Adams advised that previous work on this indicated that special populations on the whole have a low impact and adding or removing them makes little difference. Ludi Simpson added that the impact of special populations will be picked up in the small area population estimates (SAPE) (which counts the differences each year, including communal establishments) and therefore any distorting effects on the projections should be minimal although you can make assumptions about special populations in the future. Ludi agreed that there are pros and cons with both options.

5.7.   Nick Smith asked whether Defence Statistics could be used to further investigate areas with special populations. Esta Clark advised that while NRS has access to this data, the access agreement allows use for quality assurance only.

5.8.   Cameron Thomas queried averaging migration over 12 years (2001-2013) noting that this introduces inconsistency between these projections and the SNPPs which consider migration trends over five years. Jenny Boag noted that there has been significant changes in house building patterns since the economic downturn in 2008 and that recent figures are likely to be more relevant. Ludi Simpson advised that this period was chosen to reduce variation from the small numbers seen at SYOA for small geographies. Cameron Thomas agreed that the 12 years is more robust but had concerns about the level of variation over time.

5.9.   Noting that the method calculates age specific migration by council area, Jenny Boag queried whether age specific migration is largely consistent throughout Scotland. Ludi Simpson advised that findings suggest it can vary considerably between council areas and particularly referred to areas where there is high family migration versus areas where there is high student migration. Cameron Thomas agreed that work completed in this area in Highland found that superficially the levels looked very similar but analysed in more detail they were quite different.

5.10.   Jan Freeke asked if NRS plan to produce household projections for every authority. Angela Adams confirmed this is planned

6. Next steps

6.1.   A number of council areas requested an extension to submit their chosen projection geography which has been accepted although, these areas need to be finalised by the end of August.

7. Any other business

7.1.   There was no other business.

8. Date and time of the next meeting

8.1.   To be arranged for December 2015

8.2.   Esta thanked everyone for coming and giving their input to the project and brought the meeting to a close.