HOUSEHOLD ANALYSIS REVIEW GROUP: METHODOLOGY FOR 2002 BASED PROJECTIONS

Introduction

1.   This paper presents the results of 2002 based household projections run on trends in headship, based respectively on the Head of Household and Household Reference Person concepts. The paper discusses the potential strengths/ weaknesses of the two methodologies and presents some basic diagnostic information. The paper concludes that:-

- For most councils the two sets of projections give very similar outcomes on overall household growth.
- Overall, projected change in the percentages of different age groups heading households/ as household representative shows greater council-council variability for the household reference person approach, with a few significant outliers for smaller councils.

Because of the greater volatility in the projections on a household reference person basis, it would seem best to base this set of projections on a head of household basis.

2.   Members of HARG are invited to comment on the analysis and conclusion.

Background

3.   At the January meeting it was agreed that, for the 2002 based projections, under the current general methodology the choice for the 2002 based projections lies between:-

- a modified 2 point exponential applied to trends in the proportions in each age group who are a 'Head of Household'; or
- a modified 2 point exponential applied to trends in the proportions in each age group who are a 'Household representative[1]', measured on the basis of the age of the 'Household reference person' for the household.

4.   The separate age groups on which the projections will be based are those used in projections throughout the 1990s and are given in table 1.

5.   In preparing for the projections, housing statistics branch obtained from GRO(S), analyses at local authority level giving:-

    a)   The proportions of the population in each age group who headed a household in the 1991 and 2001 Censuses; and
    b)   The proportions of the population in each age group who were a household reference person in 1991 and 2001.

6.   For the two sets of analyses the aim was to ensure that, as far as possible the 1991 and 2001 rates were being calculated on a consistent basis. The 'Household Reference Person' concept was introduced in the Census for the first time in 2001. For 1991, the information

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[1] The term 'Household representative rate' is used in the literature for the ODPM methodology.

about the relationship between members of the household need to identify the Household Reference Person was coded for only 10% of Census records. Thus the 1991 household representative rates for each council are based on a 10% sample.

7.   In discussion, HARG favoured developing projections on a Household Reference Person basis as long as there was no evidence that the use of a 10% sample for the 1991 household representative rates was causing a distortion in the projections.

Outputs

8.   Table 2 summarises the outputs from both sets of projections. For these illustrations the projections have been anchored on the 2003 mid-year household estimates derived using the methodology described in the household estimates paper. The key points are:-

- For Scotland as a whole, both sets project significantly lower rate of household growth than the 2000 based projections – around 13th – 14th households a year compared with around 18th houses a year in the 2000 based projections.
- The lower growth reflects the combined effects of lower projected growth in the population and more modest change in household formation patterns measured between the 1991 and 2001 Censuses.
- For most, but not all, councils, and for Scotland as a whole, the methodologies give very similar projections of total number of households.

Diagnostics

Scale of adult adjustment

9.   In previous years, the choice between detailed projections methodologies has been informed by the number of councils for which it was necessary to adjust the projected household mix to ensure that there are sufficient adults in the projected population to form the projected number and mix of households.

10.   For this suite of projections, only two fairly minor adjustments were needed on both sets of projections.   These were.

Head of Household base:

Council	Periods adjustment needed	Scale of adjustment
Aberdeen City	2013-2016	1,595 (1.0% of popn>16)
Edinburgh City	2016	1,236 (0.3% of popn >16)

Household Reference Person base:

Council	Periods adjustment needed	Scale of adjustment
Aberdeen City	2014 – 2016	1,807 (1.2% of popn >16)
Orkney	2016	32 (0.2% of popn >16)

Credibility of projections

11.   Table 3 compares for each council, the percentage growth in number of households between 2002 and 2016. The key points are:-

- For all but 1 council, the general pattern of projected growth is the same in both sets of projections. From the final columns of the table, most councils only move one or two positions in the ranking of growth on the two bases.
- However, for Clackmannanshire projected growth using the Household Reference Person base is significantly lower than using the Head of Household base.

12.   Table 4 and Chart 1 compare, for each council, the percentage growth in the number of households between 2002 and 2016, and the projected change in the total population. Overall, the table and chart show a fairly strong relationship between overall population change and projected household growth on both projections[2].   The main points of note are:-

- The broad population/ household relationship for Clackmannanshire gives growth mid way between the projected growth under the two methodologies – i.e. There is no evidence here as to which projection base is best.
- Both sets of projections for Dundee give a lower figure than the broad population relationship would suggest. This may be explained by the lower growth in HH formation in older age groups discussed in the next section.
- Both sets of projections for Elian Siar give a higher figure than the broad population relationship would suggest. This looks to b because of the higher growth in household formation in most age groups discussed in the next section.

13.   Table 5 and Chart 2 compare the annual rate of household change between 2002 and 2016 with the annual rate of change in occupied dwellings[3] in each council area from 1997 to 2002. For Scotland as a whole the projections – on either basis – show a slight fall off in the rate of change in the number of households; from 0.7% per year, reducing to 0.5%-0.6%, depending on the projection basis.

14.   In some cases there are large differences in projected rate of change in number of households and the rate experienced between 1997 and 2002. The most significant appear to be:-

Projections lower than 97-02 experience

- Moray: From 0.9% a year to a projected 0% per year.
- Aberdeenshire: From 1.1% a year to 0.6%.
- Highland: From 1.1% a year to 0.4% - 0.5%
- South Ayrshire: From 0.6% a year to 0.1% - 0.2%.
- Angus: From 0.5% a year to 0.1%

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[2] We wouldn't expect a perfect relationship, or there would be no point in projecting separately by age and local trends in household formation patterns. The purpose of the analysis is to identify any gross inconsistencies.
[3] Revised, consistent household estimates over the period up to 2001 would have been a better comparator, had they been available. However, it is generally agreed that trends in occupied dwellings from council tax system are a good guide to change in numbers of households. 1997 was taken as the starting point because figures for 1996 came shortly after local government reorganisation and may be less reliable.

Projection higher than 97-02 experience

- Shetland: From 0.3% a year to 1.0%.
- Argyll & Bute: From -0.3% a year to 0.4%.

15.   For Clackmannanshire, the projected rate of household change on the head of household basis is close to the rate of change in 97 – 02. Also the head of household rate is a little closer to the trend line shown on the chart.

Changes in household formation patterns

16.   Tables 6&7 show, for each council, the proportions in each age group who are a household representative in 2002, and 2016. Table 8 shows the change in these proportions over the period. Table 9-11 give the same information for the head of household based projections.

17.   The key pieces of diagnostic information are the standard deviations of change in proportions in each age group heading/ representing a household (tables 8 & 12); and the detail of these changes for the islands and smaller councils. In almost every age group, the standard deviation of the changes over the 14 year period are 1 or more point percentage points higher for the household representative based projections; and in one or two specific cells (e.g. men aged 55-59 in Orkney projected change on a household representative basis looks well out of line with other councils).

18.   The higher volatility in the household reference person based projections does suggest that the concerns identified in the January meeting about the use of 10% data for smaller councils for 1991 have been borne out in practice.

Conclusions

19.   The main points from the analysis are:-

- This suite of projections is showing, for Scotland as a whole, significantly lower household growth than the 2000 based projections.
- For Scotland as a whole, projections on both bases give very similar overall patterns of household growth.
- For most councils the Head of Household and Household Reference Person bases give very similar results.
- However, at a more detailed level, projected changes in the proportions of each age group forming a household show greater volatility on a household reference person basis compared with head of household.

20.   Thus, overall, it would appear best to base the published 2002 based projections on projected household formation patterns using the head of household concept.

DD-ASD
February 2004

Table 1:   Age groups and household types for projections

Age groups	Household Types
16-24	1 person: male.
25-29	1 person: female
30-34	2 person: all adult
35-44	1 adult: 1 child
45-54	3+ persons: all adult
55-59	1 adult: 2+ children
60-64	2+ adult: 1+ children
65-74	
75-84	
85 and over	