

HOUSEHOLD PROJECTIONS (2012 BASED) – CONSULTATION PAPER: COMMUNAL POPULATION PROJECTIONS



Covering note

The following paper was sent to the Household Projections Steering Group, with proposals on changing the assumption on the proportion of the population living in communal establishments in the 2012-based household projections. The general consensus of this panel of experts was that of agreement, and the work on household projections was progressed on that basis.

Note that in Annex A, reference was made to the English 2011-based household projections, which have been replaced by the 2012-based projections as published on 27 February. However, the methodology on projecting the household population in England has remained unchanged.

NISRA

March 2015

HOUSEHOLD PROJECTIONS (2012 BASED) – CONSULTATION PAPER: COMMUNAL POPULATION PROJECTIONS



Northern Ireland
Statistics &
Research
Agency

1. Introduction

NISRA produces official household projections for Northern Ireland, based on the population projections published by the Office for National Statistics (ONS) and NISRA. Population projections are based on future fertility, mortality and migration assumptions¹. The next planned household projections will begin at mid-2012 and project forward to mid-2037, and are planned for release in March 2015. They will replace the current 2008-based household projections².

The purpose of this paper is to consider the first step of the household projections methodology, namely that of projecting the population living in communal establishments (i.e. the communal population). This important step has a direct impact on the population living in households (i.e. the total population minus the communal population) and hence the household projections themselves. This paper considers some potential approaches in terms of modelling the **proportion** of the population living in communal establishments and outlines:-

- a. the method used in previous household projections (i.e. a constant age-sex specific proportion of the communal population);
- b. evidence of declining proportions of the communal population aged 75 and over;
- c. the impact of modelling constant or declining proportions on the estimate of the communal population aged 75 and over; and
- d. the proposal to keep proportions for the communal population constant for those aged under 75, and to use an average of constant and trended proportions for those aged 75 and over, as described within this paper.

¹ NISRA Population Projections: <http://www.nisra.gov.uk/demography/default.asp20.htm>

² NISRA Household Projections: <http://www.nisra.gov.uk/demography/default.asp21.htm>

2. Methodology: projected communal population

To obtain projections of the household population, the projected population in communal establishments (e.g. army barracks, prisons, students' halls of residence, and nursing homes) is subtracted from the published population projections. Counts of the population residing in communal establishments are taken from the latest Census data.

For the 2008-based household projections, 2001 Census data on the age-sex specific proportions of people living in communal establishments were used. These proportions were kept constant for each year projected into the future. This assumes an identical rate of population change for both household and communal population for a specific age-sex group.

3. Proportion of population in communal establishments

The 2011 Census data will replace the 2001 Census data in the methodology for calculating age-sex proportions of the communal population. In previous years the age-sex proportions for the communal population have been kept constant over the projected period for all age bands. The proportions of the communal population by age, according to the latest three Censuses, are shown below for both males (Figure 1a) and females (Figure 1b).

Figure 1a: Comparison of the proportion of the male population in communal establishments by age (1991, 2001, and 2011 Census)

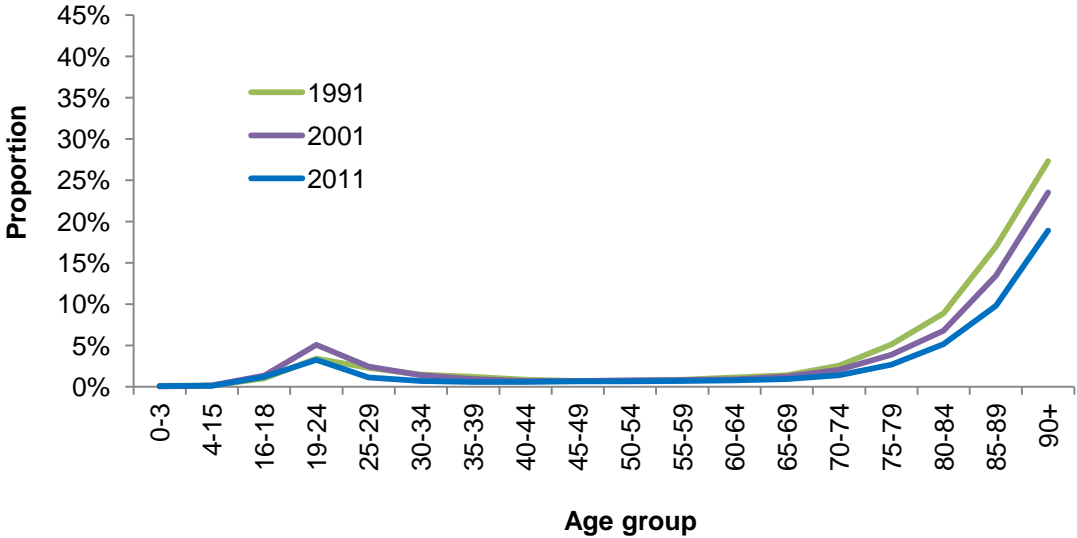
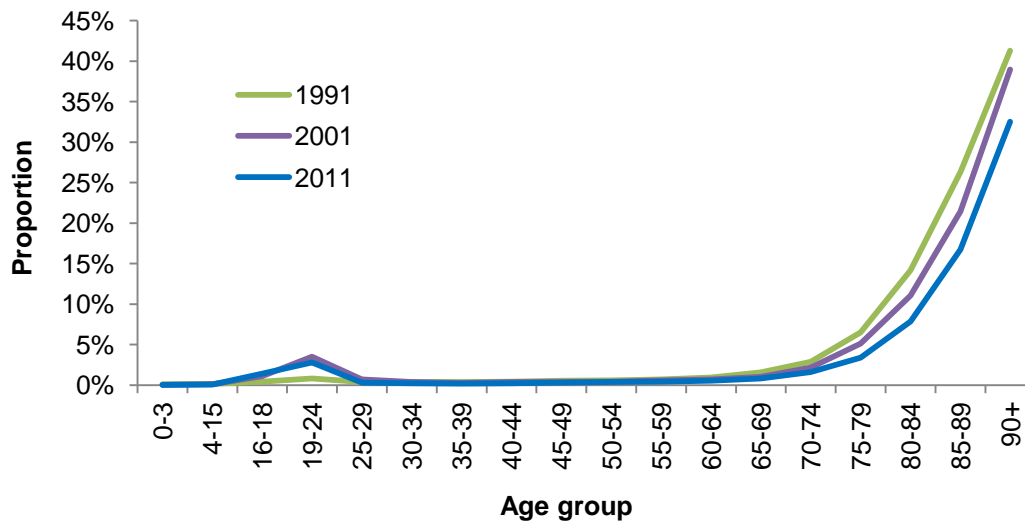


Figure 1b: Comparison of the proportion of the female population in communal establishments by age (1991, 2001, and 2011 Census)



Differences in the proportion of the younger population who are in communal establishments are negligible. Because of this, it is unlikely that these proportions will change in the period between 2012 and 2037. However, from Figures 1a and 1b it is evident that there is a visible trend emerging for the older age groups. The last three Censuses show that the proportion of the older population residing in communal establishments, particularly aged 75 and over, is declining (see Figures 2a and 2b below).

Figure 2a: Proportion of the male population in communal establishments by age (1991, 2001, and 2011 Census)

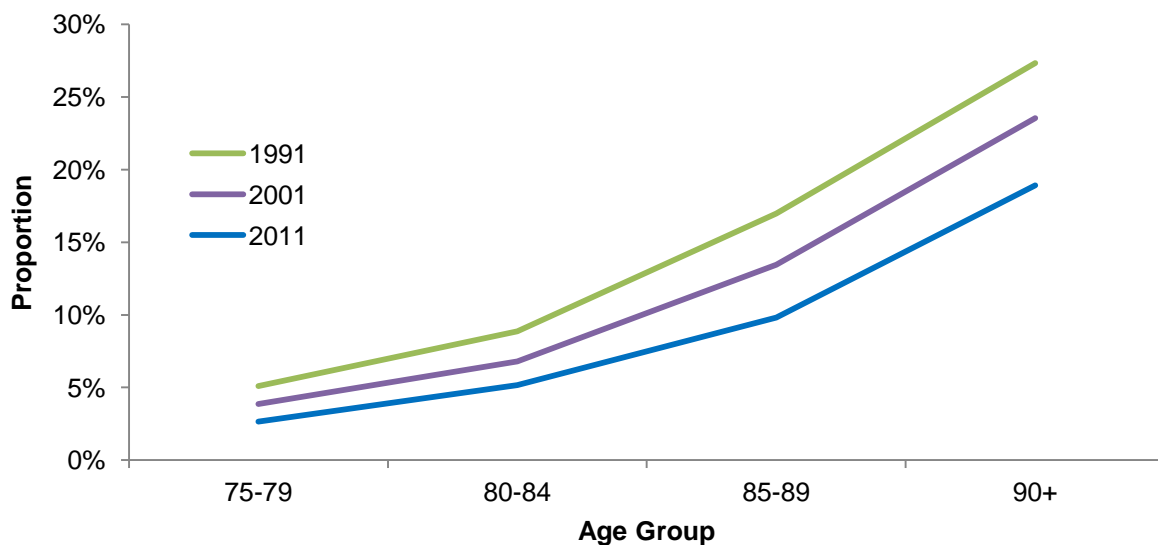
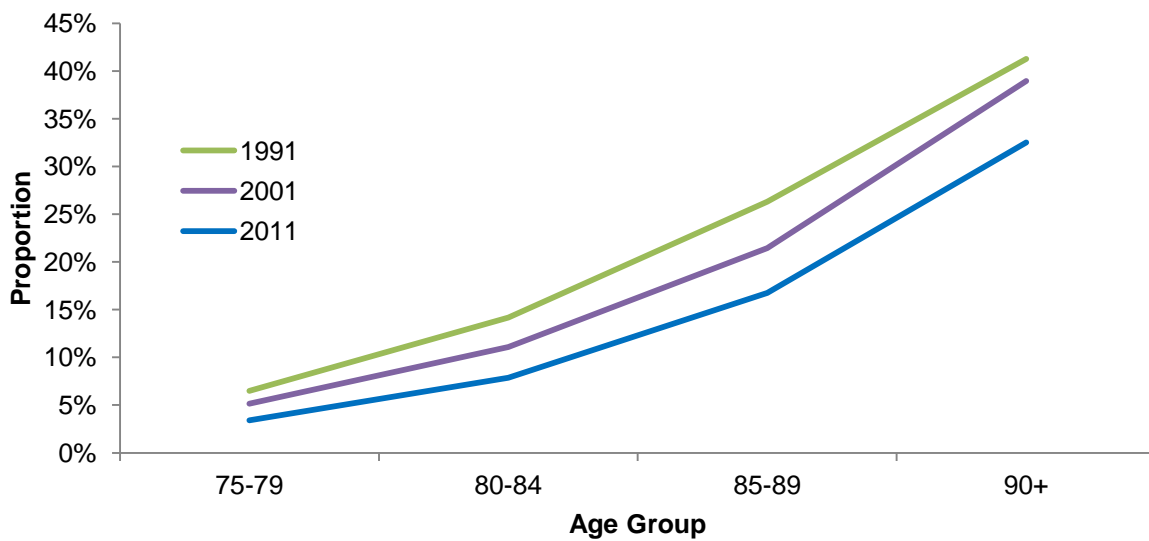


Figure 2b: Proportion of the female population in communal establishments by age (1991, 2001, and 2011 Census)



The evidence from the three latest Census data indicates that:

- (a) the assumption of a constant proportion for the communal population over the projected period can be maintained for those aged 74 or younger; and
- (b) the use of a possible trend in the proportion of those aged 75 and over warrants further exploration.

To align with the household projections methodology, the trend would be based on data from the two most recent Censuses (i.e. 2001 Census and 2011 Census) ³.

4. Constant vs. Trend

The trend in the data from the last three Censuses illustrates a decrease in the proportion of older persons in communal establishments. The latest population projections, published in November 2013, show a significant increase in the older population, with the number of people aged 75 and older set to rise by 36% in ten years, from 121,700 in 2012 to 166,700 in 2022.

³ It is proposed to create a trend using the [two-point exponential function](#), which is also used for projecting the proportion of the population residing in a specific household type.

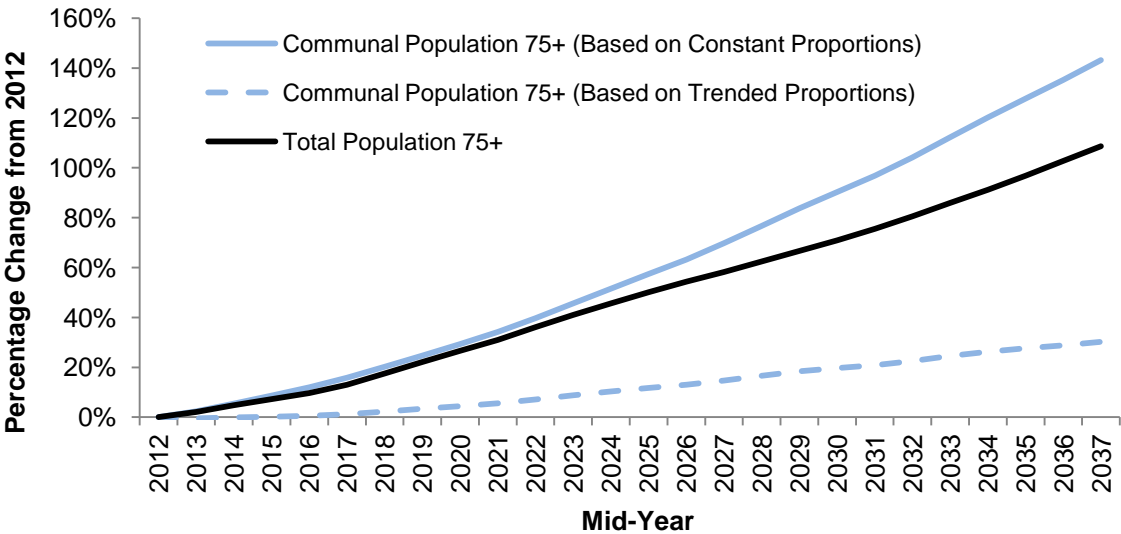
Figure 3 shows the projected percentage change, for the period 2012-2037, in the population aged 75 and over living in communal establishments assuming that the **proportion** of the communal population aged 75 and over:-

- (i) follows the falling trend observed between the 2001 and 2011 Censuses; and
- (ii) is held constant at the level observed in the 2011 Census.

By way of reference, the projected percentage change in the population aged 75 and over as a whole is also shown.

Using a constant proportion throughout the projection period will result in the projected number of the communal population aged 75 and over increasing by 40 per cent in the 10 year period 2012 - 2022⁴. After that period, its growth will increasingly exceed that of the population aged 75 and over as a whole. On the other hand, applying the falling trend observed between the 2001 and 2011 Census will lead to an increase of 7 per cent over the same 10 year period.

Figure 3: Relative change of population aged 75 and over, 2012 to 2037



Using a trend for the projected proportion of the population aged 75 and over living in communal establishments would lead to an additional 12,000 people added to the household population by 2037 compared to the assumption of a constant proportion. The vast majority of this age group would be living in single or couple households. This exemplifies the importance of a decision on the approach for projecting communal populations.

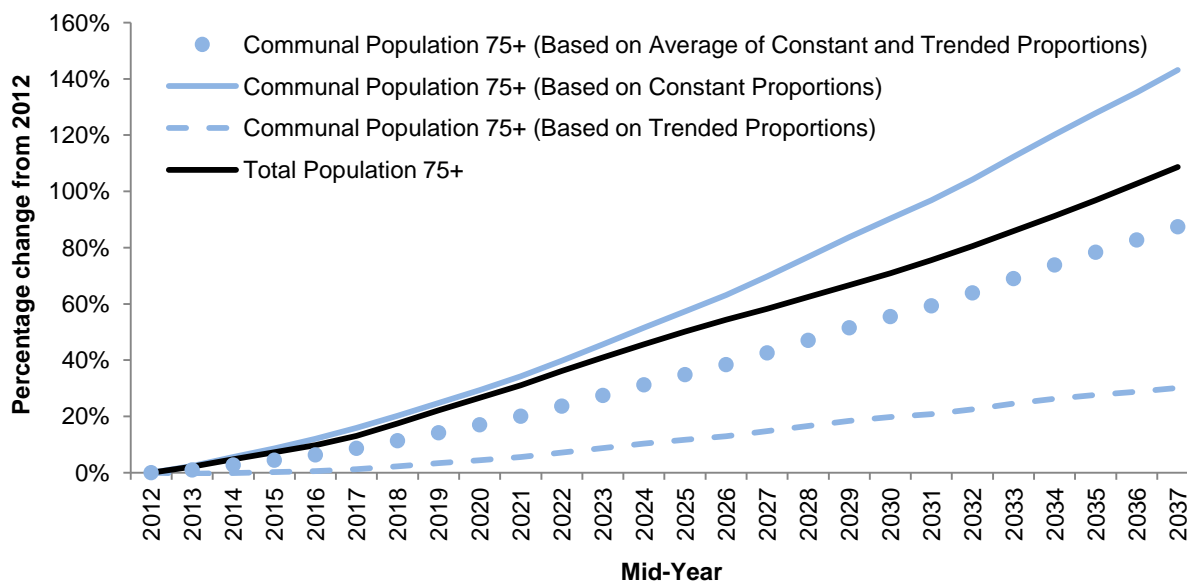
⁴ The proportions are kept constant for each age group, however, population growth is greatest for those age groups with the highest proportion. Therefore, the increase of the communal population is higher than that of the population as a whole.

Having considered the available evidence, NISRA considers that there is merit in applying a falling trend to the **proportion** of the projected communal population aged 75 and over. However, there are important points to consider:

- Proportions of the communal population were kept constant for all ages in previous Northern Ireland household projections, and in the production of household projections for England, Wales and Scotland (see Annex A).
- Using a trend will have a considerable effect on the number of people in the communal population and hence on the household population, which may seem too extreme.
- In the longer run, the trended proportions at older ages will become smaller than the constant proportions of younger ages.

On balance, it is proposed that a year-on-year projected average proportion, made up of the constant and trend-based projected proportions, is used to project the projected number of the communal population aged 75 and over, providing a more moderate impact (see Figure 4). This will avoid that the trended proportions at older ages will become smaller than the constant proportions of younger ages.

Figure 4: Relative change of population aged 75 and over, 2012 to 2037



5. Feedback

NISRA would appreciate your feedback on whether or not applying a projected trend to the proportions of the older population as discussed above is the best practice for producing the number of the communal population.

Responses in writing to the following consultation question are invited before Friday 27 February.

Question 1 For the population aged under 75 years, are you content to keep the proportion of communal population constant at the 2011 Census levels? This approach mirrors the approach taken in the 2008-based household projections.

Question 2 For the population aged 75 years and over, are you content to use an average of (1) a 2011 Census based constant proportion and (2) a 2001-2011 Census based trended proportion for the communal population?

Please detail the reason(s) behind your choice.

Responses should be sent to [suppressed for public version].

**Demography and Methodology Branch
February 2015**

Annex A – Methods used in England, Wales and Scotland

Household projections for each of the countries within the UK are produced separately: the Department for Communities and Local Government (DCLG) for England; the National Records of Scotland (NRS) for Scotland; and the Welsh Assembly Government (WAG) for Wales.

The methodologies used contain many similarities; however they do also contain some subtle differences depending on various factors such as availability of resources and data. A full comparison of all four methodologies was published in a joint report and is available on the [WAG website](#).

As this document specifically concerns the projected population in communal establishments (i.e. the communal population), focus remains on this, with an overview of the most recent approach taken by each of the three other UK countries.

England

For the 2011-based interim household projections for England, data from the 2011 Census on the communal population at a detailed enough level (age, sex and marital status) was not yet available and so the communal population was projected using the 2001 Census data as follows:

- **Aged under 75** – assumed a constant number are housed in communal establishments by local authority, age group and marital status group. These are then controlled to the 2011 Census in the year 2011 and the levels held constant for 2012 to 2021.
- **Aged 75 and over** – assumed a constant share of the communal population by local authority, age group and marital status group. The 2011 shares are then held constant for 2012 to 2021.

Due to an increase in prison population, a small adjustment is also made for the years 2002 to 2008 (base year).

Scotland

Estimates of the proportions of the communal population were calculated by age and sex group from the mid-2012 population estimates published by NRS and the numbers of the communal population collated by NRS. A number of administrative data sources and surveys were used to establish the communal population depending on the communal establishment type. Where no such sources were available for a communal establishment type, 2011 Census data were used (a full list of data sources used are available in the most recent [report](#)). The proportions calculated assumed constant proportions of the communal population.

Wales

Data from the 2011 Census was used as follows:

- **Aged under 75** – based on the number of people in communal establishments at the 2011 Census
- **Aged 75 and over** – based on the proportion of people in communal establishments in the 2011 Census.