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Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

# Household Projections Across the United Kingdom

## Technical Report

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## Introduction

Household projections are produced separately for each of the countries within the UK. There are many similarities but also some subtle differences between methods. This paper gives a broad description of the methodologies used in each country.

This Technical Report has been collated by the General Register Office for Scotland based on contributions from the Department for Communities and Local Government, Northern Ireland Statistics Research Agency and the Welsh Assembly Government.

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## England

### **Main uses of projections within each country**

The main use of the household projections is as part of the assessment of future housing need and demand. Local authorities use the household projections in assessing future need and demand, service provision and to provide context for planning decisions.

### **Brief summary of the methodology**

Household projections are based on the population projections produced by the Office for National Statistics (ONS). The number of people living in private households is estimated by taking the population projections for each year and subtracting the number of people living in communal establishments, such as student halls of residence, care homes or prisons.

Household representative rates are projected using logistics time series trends from Census data, by age, marital status and gender. Household representative rates combined with the private household population provides the basic household projections.

To estimate the number of households of each type, information on household type and age group is projected forward from the 1991 and 2001 Censuses, for each household type, age group and local authority area. This is constrained to the total number of households.

Because the overall projections for England are believed to be more accurate than those for individual local authorities, the local authority figures are constrained to the England total.

### **Population projections**

The first main input into the household projections is population projections for England produced by the ONS. These are produced for England by local authority, sex and single year of age, using assumptions about births, deaths and migration. The relevant population for household formation is taken to be the adult population, aged 16 or over.

### **Communal establishments data**

The projected number of households is derived from projections of the numbers of people living in private households. To obtain this from the population data, estimates of the number of people living in communal establishments are subtracted from the total population for each projection year. The communal establishment population is projected using the 2001 Census data. It is assumed that a constant number are housed in communal establishments, by local authority, age group and marital status group, for those aged under 75, and a constant share of the population for those aged 75 or over.

Small adjustments are made to the communal establishment population for 2002 to 2008 (the base year) to reflect the increase in the prison population over this period.

### Projected household rates

The household representative rate is the probability of anyone in a particular demographic group being part of a separate household and can take any value between 0 and 1. The total number of projected households is equal to the sum of households represented by all age, sex and marital status types. This can be represented algebraically for any year as:

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Where: HH is the number of households  
 HRR is the household representative rate  
 HP is the household population  
 a are 5 year age groups (0-4....85+)  
 s is male or female  
 m is marital status group

Three marital status groups are used:

1. Couples households, including both married couples (where they live together) and cohabiting couples;
2. Separated, divorced or widowed (once married) households;
3. Never married households (as in not in a couple or separated, divorced or widowed, not necessarily a one-person household);

The household representative rates are projected from time trends estimated from the census based values for 1971, 1981, 1991 and 2001 and Labour Force Survey (LFS) data from 2001.

The projection method is a composite of two logistics trend:

1. A simple logistics trend - a trend fitted to  $\ln (X_t / (1-X_t))$
2. A dampened logistics trends where an S-shaped curve is fitted to  $\ln (X_t / (1-X_t))$

This weighting varies by age:

15 to 29 year olds:	80:20 weights for dampened / simple trend
30 year olds and over:	60:40 for dampened/ simple trend

The weight given to the LFS data varies by distance from the latest census point up to a maximum of 50%. For example, 2007 LFS data are given a weight of 30%.

### Household composition

The second main input to the household projections is the information on household composition from the 1991 and 2001 population Censuses. The proportions of households by local authority area, household type, and age group of the head of household are known for 1991 and 2001. The proportions of each household type sum to one within each age group within each local authority area.

The number of people who head particular household types will be the same as the number of households of this type. The proportion of these within any particular age

group and local authority area is known as the 'headship' rate and it is this that is projected forwards and then applied to the population projections (by age group and local authority area) to give the household projections. We also know the number of people in each area and age group who are not the head of household, for which 'non-headship' rates are calculated.

The headship (and non-headship) rates are projected forward using the modified two-point exponential model, the formula for which is as follows:

$$y_i = k + ab^{x_i}$$

where  $i$  = the year of the projection

$y_i$  = headship rate in year  $i$

$k = 1$  if  $y_{2001} \geq y_{1991}$

$0$  if  $y_{2001} < y_{1991}$

$a = y_{1991} - k$

$b = (y_{2001} - k)/(y_{1991} - k)$

$x_i = (i - 1991)/(2001 - 1991)$

The projected headship (and non-headship) rates are constrained in two ways:

- they cannot individually go above 1 or below 0; and
- they sum to 1 within an area and age group.

The household projections are then calculated by applying these projected headship rates to the population projections to give an estimate of the number of heads of household in each of the projection years for each household type, age group of the head of household, and area.

These figures are then controlled so figures for local authorities match that projected by the stage 1 household representative rates and sum to the total for England.

### Household Estimates

The total number of households within each local authority is "estimated" for each year to the base year of the projection period by applying the projected household representative rates to the mid year population estimates. However, these figures still use modelled household representative rates from Census data and so should still be viewed as projections. They will differ to household estimates which can be derived from survey data.

### Final Adjustments

The figures are adjusted to ensure that the minimum number of adults required to fill the projected households is not greater than the projected adult private household population (e.g. a minimum of two adults would live in the household type 'two or more adults'), and the same check is carried out for children. If an adjustment is required, each district in England is adjusted to maintain a constant ratio, at 2001 levels, between the actual number of dependent children to the implied household projection outcome of dependent children.

**Time-frame into the future**

The sub-national household projections are published for the twenty five years that follow the base year.

**Areas projected**

The projections are published for the local authority districts, government office regions and England.

**Household types and age groups used in the household projections**

Household projections are produced for each local authority area, broken down into 17 household types (based on the number of adults and children living in the household) and sixteen age groups, as follows:

**Detailed Household types**

One person households: Male

One person households: Female

One family and no others : Couple households : No dependent children\*

One family and no others : Couple households : With one dependent child

One family and no others : Couple households : With two dependent children

One family and no others : Couple households : With three or more dependent children

One family and no others : Lone parent households : With one dependent child

One family and no others : Lone parent households : With two dependent children

One family and no others : Lone parent households : With three or more dependent children

A couple and one or more other adults : No dependent children

A couple and one or more other adults : With one dependent child

A couple and one or more other adults : With two dependent children

A couple and one or more other adults : With three or more dependent children

A lone parent and one or more other adults : With one dependent child

A lone parent and one or more other adults : With two dependent children

A lone parent and one or more other adults : With three or more dependent children

Other households\*\*

\*A dependent child in a household is aged 0-15 or aged 16-18 who is an economically inactive student and with marital status of single.

\*\* Includes couple and lone parent households with non-family dependent children only and lone parents with no dependent children.

**Age group**

15-24

25-34

35-44

45-54

55-59

60-64

65-74

75-84

85+

These are published on the Department for Communities and Local Government website:

<http://www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatisticsby/householdestimates/>

### **Variant projections**

The principal household projections are based on the principal population projections produced by ONS which use assumptions about fertility, mortality and migration which are thought most likely to occur over the next 25 years. Variant projections are based on alternative assumptions of future fertility, mortality and migration. Variant projections are only produced at the national level.

Variant household projections are published on the DCLG website for the main component projections.

### **Frequency of Projections:**

Sub-national household projections for England are published every two years to maintain consistency with the national population projections.

### **Who produces them:**

The sub-national household projections are produced under contract to the Department for Communities and Local Government.

### **Web location of data and metadata /technical report:**

<http://www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatisticsby/householdestimates/>

### **Dissemination:**

The household projections are published as a National Statistics release, supported by detailed Live Tables on the DCLG website.

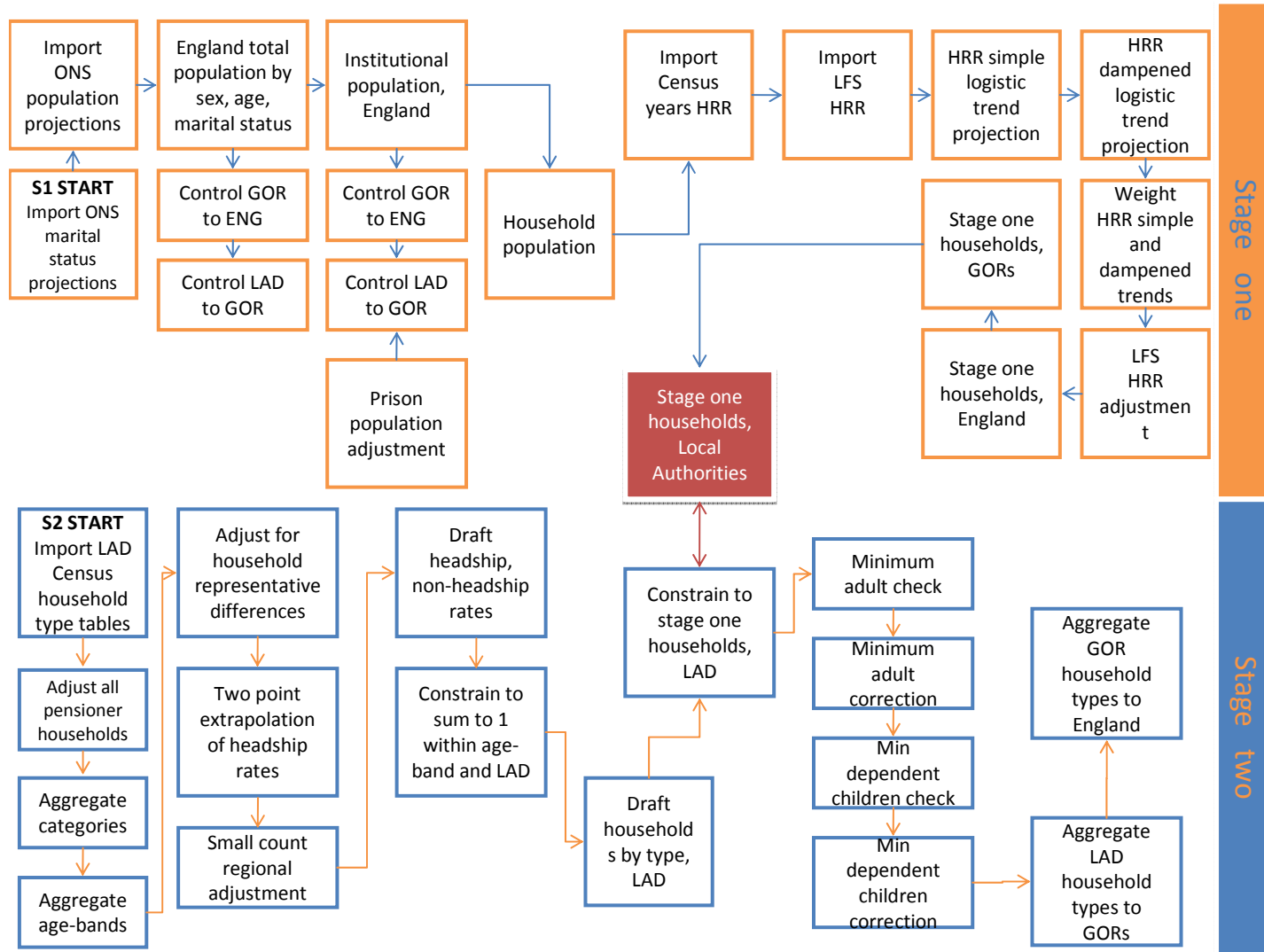
A methodology report and a more detailed report by the contractors are published alongside the Statistical Release.

The production of the household projections is guided by an expert steering group made up of key experts and users in the area.

### **Planned/Ongoing developments:**

Significant methodological review work has been undertaken over the last few years, leading to a change in methodology for the 2008-based projections. It is not anticipated that any further developments will be undertaken until the 2011 Census results are available.

### Annex 1: England - Flow Diagram



## Northern Ireland

### **Main uses of projections within each country**

Household projections are used as a key source of information at a Local Government District (LGD) level within Northern Ireland in the housing and planning functions. Funding has been provided by the Department for Regional Development and the Northern Ireland Housing Executive.

### **Brief summary of the methodology**

An overview of the methodology used to produce household projections in Northern Ireland is shown in Annex 2.

Household projections are based on population projections produced by both the Office for National Statistics and the Northern Ireland Statistics & Research Agency (NISRA). For each year the household population is calculated by subtracting the population living in communal establishments from the projected population by age group and sex.

Information on household type and age group is projected forward from the 1991 and 2001 Censuses and applied to the private household population to produce numbers of people living in private households by type, age and sex. These numbers are divided by household size (in terms of the number of persons) then summed for all ages and sex to produce estimates of the number of households by type. The results of this are then summed to give total projected numbers of households for Northern Ireland as a whole and its constituent LGDs.

### **Population projections**

The available population projections are one of the main inputs into the household projections for Northern Ireland. For LGDs, only principal projections are available which add up to the Northern Ireland level.

### **Communal establishments data**

The projected private household population is determined by the assumed population living in communal establishments. Communal establishments include residential care homes, university halls of residence, army barracks and prisons. Population projection outputs do not include separate counts for communal establishments so data from the 2001 census were used. For each projected year it is assumed that the age-sex specific proportions of people living in communal establishments are the same as at 2001.

## Household Membership

The other main input to the household projections is on household membership. Historical data on the population in each household type were obtained from the 1991 and 2001 censuses and used to create projected membership rates for each household type. Membership of different household types tends to vary by age and sex, so historical proportions of people in each household type were calculated by sex for each age group. The age groups and household types used are shown below.

Previously, only census data were used these historical proportions were projected forward using a two point exponential model. This model ensured that the resulting membership rates for each individual household type were greater than 0 but less than 1. Also, the trend slows down when rates approach 0 or 1. The formula for the two point exponential model is:

$$y_i = k + ab^{x_i}$$

where  $l$  = the year

$y_i$  = membership rate in year  $i$

$k = 1$  if  $y_{2001} \geq y_{1991}$

$0$  if  $y_{2001} < y_{1991}$

$a = y_{1991} - k$

$b = (y_{2001} - k)/(y_{1991} - k)$

$x_i = (l - 1991)/(2001 - 1991)$

The projected rates were adjusted to add up to 1 for each age and sex group so that the private household populations by type add up to the total private household population.

Multiplying the projected private household population by the projected household membership rates gives the projected population by age group, sex, and household type. As household types are based on size in terms of numbers of persons the projected private population by household type is divided by household size and aggregated by age group and sex to give the projected number of households by type.

In the 2006-based projections, two further refinements were made to the methodology, as some of the 1991-2001 trends did not seem to continue. Firstly, the projected number of households with children became driven by the projected number of children, with constant household membership rates from the 2001 Census. These households were then completed with adults of an age-sex distribution as observed in the 2001 Census. The remaining adults from the projected household population were then distributed over childless household types according to the two-point exponential household membership rate method outlined above. This refinement prevented the child-adult ratio to go askew.

Secondly, the two-point exponential model projected the number of males aged 75 and over in two-adult household to exceed that of females. The improved life-expectancy of males did not seem to have been captured in the household formation. The refinement in the methodology consisted of sourcing additional females from the one-adult household type to constrain the sex ratio of persons aged 75 and over in two-adult households to be less than one.

In the 2008-based projections, additional information on household membership was obtained from the Health Card Information System for the period 2001 to 2008. This information was collected to underpin the manual refinements that were introduced in the 2006-based projections. The two-point exponential method was then applied to the household membership rates of 2001 and 2008. Despite the additional and more recent information, the previously introduced refinements were retained in the household projections model.

Health Card information on membership rates were considered to be unreliable at the LGD-level. The household projections for LGDs followed the 2006-based method; results were constrained to add up to the Northern Ireland level by type and size.

#### **Household Estimates**

The exponential model also enables membership rates to be calculated for the years between the last census and the start of the projection period. Household figures can thus be created using population **estimates** rather than projections. However, as the membership rates are still inter- and extrapolated from the 1991 and 2001 Censuses, such figures would still be regarded as projected.

#### **Time-frame into the future:**

The household projections are published for the 15 years that follow the base year. This is similar to the time-frame available from the population projections.

#### **Areas projected:**

The projections are published for the 26 LGDs in Northern Ireland. Other geographies such as the NUTS 3 Areas, can be create from aggregating the constituent LGDs.

**Household types and age groups used in the household projections**

Household projections are produced for each LGD, broken down into twelve household types (based on the number of adults and children living in the household) and 14 age groups, as follows:

Household types	Age group
1 person	0-3
2 person (no children)	4-15
2 person (1 adult, 1 child)	16-18
3 person (no children)	19-24
3 person (2 adults, 1 child)	25-29
3 person (1 adult, 2 children)	30-34
4 person (no children)	35-44
4 person (2+ adults, 1+ children)	45-49
4 person (1 adult, 3 children)	50-54
5 + person (no children)	55-59
5 + person (2+ adults, 1+ children)	60-64
5 + person (1 adult, 4+ children)	65-74
	75-84
	85+

Note that in the latest 2008-based projections, the definition of children was changed compared to the 2002-based and 2006-based projections, in that it no longer includes persons aged 16-17 in full-time education. This was done to allow the use of Health Card information to be included, which does not provide this information. This change in definition did not affect the projected total but did change projections by type.

**Variant projections**

There are no variant household projections for Northern Ireland. In theory, it is possible to run the household projections model with variant population estimates, although the results should be checked for consistency. For example, a high fertility variant population projection can indicate that more women have children, the same number of women have more children, or (more likely) a combination of the two. In the current household projections model, this would result in a uniform percentage rise in the projected number of households with children across sizes and types. These households are then headed by males and females, mainly in their 20s and 30s, leaving fewer adults to form childless households.

There are no sub-national population projections for Northern Ireland; hence it is not possible to create sub-national household projections.

**Frequency of Projections:**

Household projections for Northern Ireland have been published every two years to maintain consistency with the population projections.

**Who produces them:**

The household projections are produced by the Demography & Methodology Branch of NISRA.

**Web location of data and metadata/technical report:**

Web location of data and published reports:

<http://www.nisra.gov.uk/demography/default.asp21.htm>

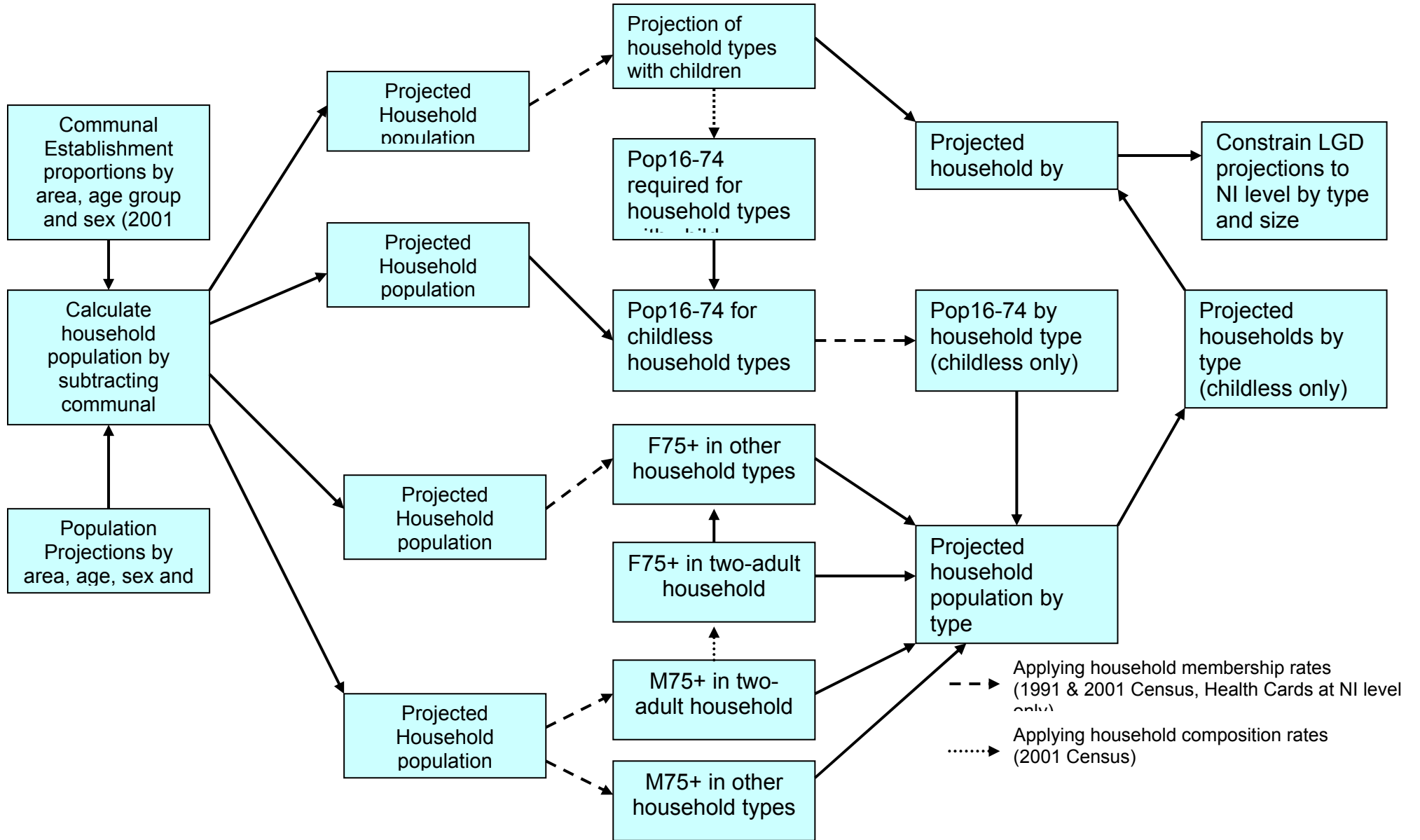
**Dissemination:**

The household projections report, press release, technical note, and detailed tables are published on the NISRA website. The report includes summary results and a brief background to the methodology.

**Planned/Ongoing developments:**

Subject to funding, further analysis will be carried out on including information from the Health Card registration system to improve the household formation and transition trends.

**Annex 2: Northern Ireland - Flow Diagram**



## Scotland

### **Main uses of projections within each country**

The main use of the household projections is as part of the assessment of future housing need and demand. Local authorities use the household projections in assessing future need and demand, service provision and to provide context for planning decisions.

### **Brief summary of the methodology**

An overview of the methodology used by the SAS code to produce household projections in Scotland is shown in Annex 3.

Household projections are based on the population projections produced by the General Register Office for Scotland (GROS). The number of people living in private households is estimated by taking the population projections for each year and subtracting the number of people living in communal establishments, such as student halls of residence, care homes or prisons. To estimate the number of households of each type, information on household type and age group is projected forward from the 1991 and 2001 Censuses, for each household type, age group and local authority area. This information is applied to the private household population to produce the basic household projections.

Because the overall projections for Scotland are believed to be more accurate than those for individual local authorities, the local authority figures are constrained to the Scottish total. Each year, GROS produces household estimates based on Council Tax data. These estimates provide a total figure for the number of households in each local authority area, which is based on more up-to-date data than the household projections. Therefore, the household projections for the base year (y) and the following year (y+1) are adjusted to match the household estimates for these years. The household projections for subsequent years are then adjusted by the same proportion as the (y+1) figures, to preserve the proportion over time.

### **Population projections**

The first main input into the household projections is population projections for Scotland produced by the General Register Office for Scotland (GROS). These are produced for Scotland by local authority, sex and single year of age, using assumptions about births, deaths and migration. The relevant population for household formation is taken to be the adult population, aged 16 or over.

### **Communal establishments data**

The projected number of households is derived from projections of the numbers of people living in private households. To obtain this from the population data, estimates of the number of people living in communal establishments are subtracted from the total population for each projection year. Estimates of the proportion of the population living in communal

establishments in 2008, by gender and age group were collected from various sources. Local authorities were then consulted on these figures, and the figures were amended as appropriate, based on local authorities' more detailed local knowledge. The final communal establishment proportions were then applied to the GROS population projections for each year. This methodology assumes constant proportions of people living in communal establishments for each of the 25 projection years.

### Household composition

The second main input to the household projections is the information on household composition from the 1991 and 2001 population Censuses. The proportions of households by local authority area, household type, and age group of the head of household are known for 1991 and 2001. The proportions of each household type sum to one within each age group within each local authority area.

The number of people who head particular household types will be the same as the number of households of this type. The proportion of these within any particular age group and local authority area is known as the 'headship' rate and it is this that is projected forwards and then applied to the population projections (by age group and local authority area) to give the household projections. We also know the number of people in each area and age group who are not the head of household, for which 'non-headship' rates are calculated.

The headship (and non-headship) rates are projected forward using the modified two-point exponential model, the formula for which is as follows:

$$y_i = k + ab^{x_i}$$

where  $i$  = the year, from 2009 to 2033

$y_i$  = headship rate in year  $i$

$k = 1$  if  $y_{2001} \geq y_{1991}$

$0$  if  $y_{2001} < y_{1991}$

$a = y_{1991} - k$

$b = (y_{2001} - k)/(y_{1991} - k)$

$x_i = (i - 1991)/(2001 - 1991)$

The projected headship (and non-headship) rates are constrained in two ways:

- they cannot individually go above 1 or below 0; and
- they sum to 1 within an area and age group.

The household projections are then calculated by applying these projected headship rates to the population projections to give an estimate of the number of heads of household in each of the projection years for each household type, age group of the head of household, and area.

These figures are then controlled so figures for local authorities sum to the total for Scotland.

**Household Estimates**

The total number of households within each local authority in 2008 and 2009 is adjusted to equal the annual household estimates. The household projections for 2010 onwards are adjusted by the same proportion as the 2009 figures, to preserve the trends.

**Final Adjustments**

Finally, the figures are adjusted to ensure that the minimum number of adults required to fill the projected households is not greater than the projected adult private household population (e.g. a minimum of two adults would live in the household type 'two or more adults'), and the same check is carried out for children. Where an adjustment is required, the number of households is kept constant, but the balance of household types is adjusted, to reduce the number of large households and increase the number of smaller households.

**Time-frame into the future:**

The sub-national household projections are published for the twenty five years that follow the base year.

**Areas projected:**

The projections are published for the thirty two council areas in Scotland. Projections have also been developed for National Park and Strategic Development Planning (SDP) areas. These are produced as a separate publication later in the year.

Household projections for National Parks are based on the population projections for National Parks and are built up from the General Register Office for Scotland's mid-2008 data zone populations. The overall projections for Scotland are believed to be more accurate than those for individual areas and therefore the National Park figures and the rest of Scotland are constrained to the Scottish total.

For SDP areas, household projections were calculated by aggregating the projections for the constituent council areas (which had already been published) and then subtracting any areas which do not form part of the SDP area such as areas which overlap with the National Parks. These projections are not National Statistics. GROS are also working with councils and Manchester University to provide advice and data so that councils can use POPGROUP to produce sub-council area projections.

**Household types and age groups used in the household projections**

Household projections are produced for each local authority and SDP area, broken down into seven household types (based on the number of adults and children living in the household) and sixteen age groups, as follows:

Household types	Age group
<b>1 person households:</b>	16-19
1 adult: male	20-24
1 adult: female	25-29
<b>2 person households:</b>	30-34
2 adults	35-39
1 adult, 1 child	40-44
<b>3+ person households:</b>	45-49
1 adult, 2+ children	50-54
2+ adults, 1+ children	55-59
3+ adults	60-64
	65-69
	70-74
	75-79
	80-84
	85-89
	90+

These are published on the General Register Office for Scotland (GROS) website:

<http://www.gro-scotland.gov.uk/index.html>

**Variant projections**

The principal household projections are based on the principal population projections produced by GROS which use assumptions about fertility, mortality and migration which are thought most likely to occur over the next 25 years. Variant projections are based on alternative assumptions of future fertility, mortality and migration. For the 2008-based population projections, GROS produced both low and high migration variant projection at sub-national level for the first time.

Variant household projections are published on the GROS website, for each council area, SDP area and National Park.

**Frequency of Projections:**

Sub-national household projections for Scotland are published every two years to maintain consistency with the national population projections.

**Who produces them:**

The sub-national household projections are produced by the General Register Office for Scotland.

**Web location of data and metadata /technical report:**

Web location of data:

<http://www.gro-scotland.gov.uk/>

Web location of published reports:

<http://www.gro-scotland.gov.uk/statistics/publications-and-data/household-projections-statistics/index.html>

**Dissemination:**

The sub-national household projections report, tables, figures and detailed tables are published on the GROS website. The report includes summary results, detailed analysis of the results for each council area in Scotland, and a brief background to the methodology.

The members of the Household Analysis and Review Group (HARG) are consulted on the methodology for the population projections. The papers can be found on the GROS website:-

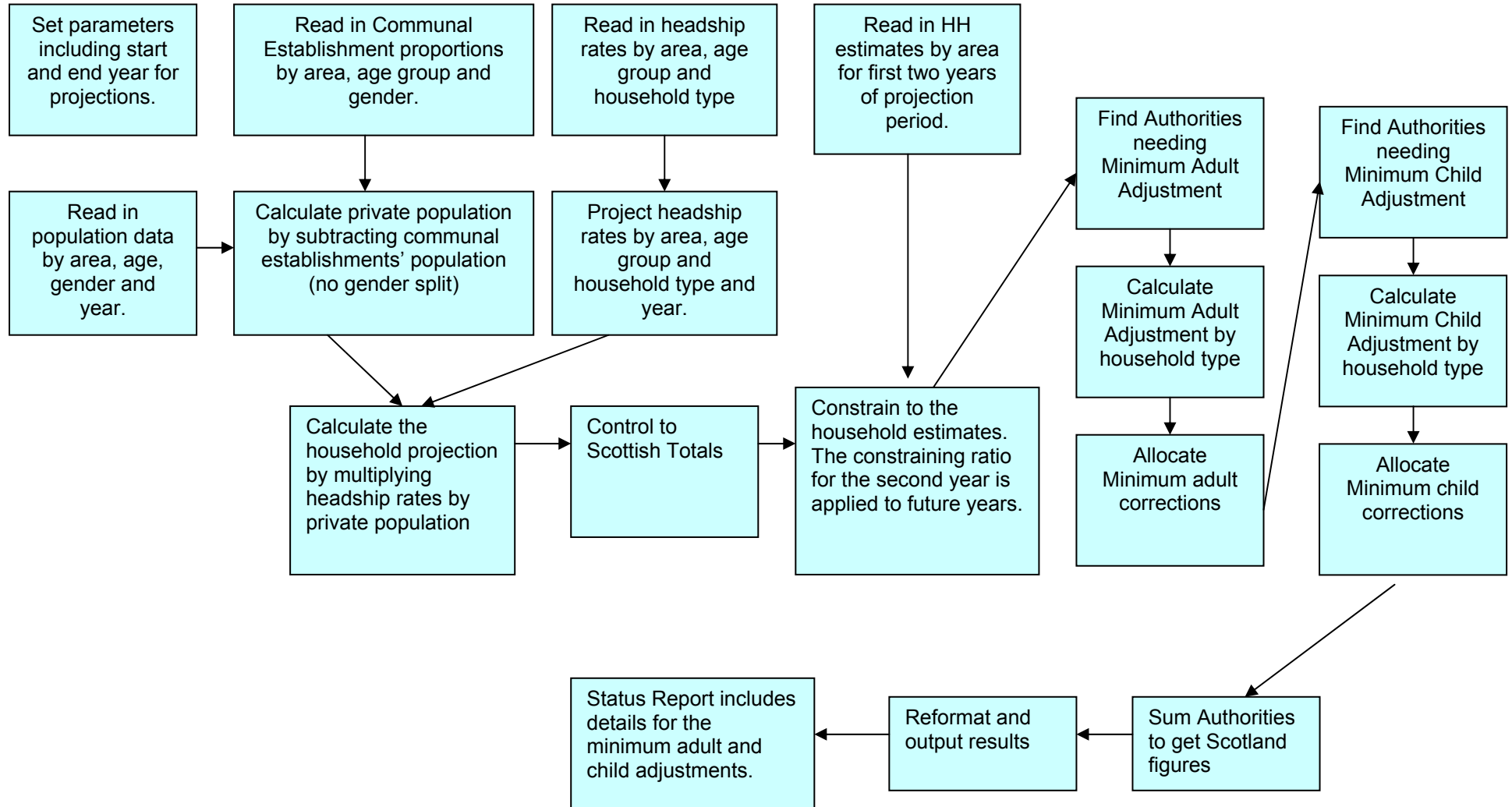
<http://www.gro-scotland.gov.uk/statistics/user-consultation-groups-seminars/harg/index.html>

Each council area is consulted on the communal establishment figures for their area. They are given the chance to suggest and provide evidence for any changes, which are considered before the household projections are finalised. HARG also advise on methodologies used to compile estimates and projections and possible alternatives.

**Planned/Ongoing developments:**

We plan to investigate the feasibility of incorporating survey data to update trends in household composition.

### Annex 3: Scotland - Flow Diagram



## Wales

### **Main uses of projections within each country**

Household projections are used as a key source of information at a local authority level within Wales in the housing and planning functions. Local authorities use the household projections in assessing future demand for housing. Household projections are used in the preparation of Local Authority Development Plans and also wider service provision.

### **Brief summary of the methodology**

An overview of the methodology used to produce household projections in Wales is shown in Annex 4.

Household projections are based on population projections produced by both the Office for National Statistics and the Welsh Assembly Government. For each year the private household population is calculated by subtracting the population living in communal establishments from the projected population by age group and gender.

Information on household type and age group is projected forward from the 1991 and 2001 Censuses and applied to the private household population to produce numbers of people living in private households by type, age and gender. These numbers are divided by household size (in terms of the number of persons) then summed for all ages and genders to produce estimates of the number of households by type. The results of this are then summed to give total numbers of households by local authority and for Wales as a whole.

### **Population projections**

The available population projections are one of the main inputs into the household projections for Wales. Both national- and local authority population projection data are used. The local authority population projections for Wales are used to project households at a local authority whilst national population projection data are used separately to project households at a Wales level. This approach is consistent with that used for England, with the exception that the local authority results are not forced to add up to those at a Wales level.

### **Communal establishments data**

The projected private household population is determined by the assumed population living in communal establishments. Communal establishments include residential care homes, university halls of residence, boarding schools and prisons. Population projection outputs do not include separate counts for communal establishments so data from the 2001 census were used. For each projected year it is assumed that the number of people aged under 75 and the proportion of people aged 75 and over living in communal establishments were the same as at 2001.

### Household Membership

The other main input to the household projections is census data on household membership.

Historical data on the population in each household type were obtained from the 1991 and 2001 censuses and used to create projected membership rates for each household type. Membership of different household types tends to vary by age and gender, so historical proportions of people in each household type were calculated by gender for each age group. The age groups and household types used are shown below.

As only census data were used these historical proportions were projected forward using a two point exponential model. This model ensured that the resulting membership rates for each individual household type were greater than 0 but less than 1. The formula for the two point exponential model is:

$$y_i = k + ab^{x_i}$$

where  $i$  = the year

$y_i$  = membership rate in year  $i$

$k = 1$  if  $y_{2001} \geq y_{1991}$

0 if  $y_{2001} < y_{1991}$

$a = y_{1991} - k$

$b = (y_{2001} - k)/(y_{1991} - k)$

$x_i = (i - 1991)/(2001 - 1991)$

The projected rates were adjusted to add up to 1 for each age and gender group so that the private household populations by type add up to the total private household population.

Multiplying the projected private household population by the projected household membership rates gives the projected population by age group, gender, and household type.

As household types are based on size in terms of numbers of persons the projected private population by household type is divided by household size and aggregated by age group and gender to give the projected number of households by type. The results of this are then further aggregated to give the projected total number of households for each local authority and Wales as a whole.

### Household Estimates

The exponential model also enables membership rates to be calculated for the years between the last census and the start of the projection period. The rates the model produces can therefore also be used to produce household estimates by applying them to historical population estimates using the approach outlined above.

**Time-frame into the future:**

The household projections are published for the twenty five years that follow the base year.

**Areas projected:**

The projections are published for the twenty two local authority areas in Wales. Projections have also been developed for National Park areas within Wales. These have been produced as a separate publication following the Wales- and local authority level projections.

Household projections for National Parks are based on the population projections for National Parks produced by the Welsh Assembly Government. As with the local authority level projections these are produced by applying household membership rates from census data for 1991 and 2001 commissioned at a National Park level.

**Household types and age groups used in the household projections**

Household projections are produced for each local authority area, broken down into twelve household types (based on the number of adults and children living in the household) and sixteen age groups, as follows:

Household types	Age group
1 person	0-4
2 person (no children)	5-9
2 person (1 adult, 1 child)	10-15
3 person (no children)	16-18
3 person (2 adults, 1 child)	19-24
3 person (1 adult, 2 children)	25-29
4 person (no children)	30-34
4 person (2+ adults, 1+ children)	35-39
4 person (1 adult, 3 children)	40-44
5 + person (no children)	45-49
5 + person (2+ adults, 1+ children)	50-54
5 + person (1 adult, 4+ children)	55-59
	60-64
	65-74
	75-84
	85+

**Variant projections**

The principal household projections are based on the principal population projections produced by Welsh Assembly Government which use assumptions about fertility, mortality and migration which are thought most likely to occur over the next 25 years. Variant household projections are based on the variant population projections produced for Wales which use alternative assumptions of future fertility, mortality and migration. For both the 2006-based and 2008-based household projections, variant projections were produced using the low and high fertility, the low and high mortality and the zero migration variant projections for Wales.

Variant household projections are published on the StatsWales website for each local authority area and Wales as a whole.

**Frequency of Projections:**

Household projections for Wales are published every two years to maintain consistency with the population projections.

**Who produces them:**

The household projections are produced by the Statistical Directorate, Welsh Assembly Government.

**Web location of data and metadata /technical report:**

Web location of data:

[www.statswales.wales.gov.uk](http://www.statswales.wales.gov.uk)

Web location of published reports:

[www.wales.gov.uk/statistics](http://www.wales.gov.uk/statistics)

**Dissemination:**

The household projections report, tables, figures and detailed tables are published on the Welsh Assembly Government website. The report includes summary results and analysis for Wales, and a brief background to the methodology.

The members of the Wales Sub-National Household Estimates and Projections (WASHP) Working Group are consulted on the methodology for the household projections. The papers can be found at:  
<http://wales.gov.uk/topics/statistics/theme/housing/estimate/group/?lang=en>

**Planned/Ongoing developments:**

We plan to continue to look at the inclusion of Annual Population Survey data to inform trends in household membership and also the use of more recent data on communal establishments to determine the total private household population.

**Annex 4: Wales - Flow Diagram**

