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#### Introduction

This report provides summary information on the 2008-based household projections for local authorities. The report explains what household projections are, how they should and shouldn't be used, the approach taken and the broad methods used. This includes a summary section comparing and contrasting patterns across all local authorities.

There is an ongoing need for household projections at a local authority level within Wales. Local and strategic planners need to be aware of future numbers of households at a local authority level in order to accommodate demand for housing. Household projections provide estimates of the future numbers of households and are based on population projections and assumptions about household composition and characteristics.

This report is the first output from the second set of local authority household projections for Wales. The first set of local authority household projections for Wales were the 2006-based household projections. A separate Local Authority report which would provide detailed analyses of the household projections in the form of charts, tables and text for each local authority is also being considered.

Detailed data tables have also been published on our StatsWales website. The data presented within this report are available on StatsWales: www.statswales.wales.gov.uk

This set of local authority household projections have been produced by Tony Whiffen and Hannah Kleinberg with input from the Wales sub-national household estimates projections working group (WASHP).

We would welcome any feedback on the content and presentation of this publication. To provide feedback or for general queries, please contact:

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# **Background**

# What are household projections?

Household projections provide estimates of the future number of households, and are based on assumptions about future population growth and household composition and size. The assumptions are based on past trends and the projections only indicate what may happen should recent trends continue. Projections done in this way do not make allowances for the effects of local or central government policies or socio-economic factors on household formation rates or future population levels.

Household projections are based on population projections which are themselves based on assumptions about future births, deaths and migration. As a result they provide an indication of future demand for household spaces as a result of population growth.

Household projections have been produced on an ad-hoc basis for each country of the United Kingdom for a number of years. In the past projections for Wales were produced together with those for England. The 2006-based household projections were the first to be produced separately for Wales and have been produced by the Welsh Assembly Government Statistical Directorate. They were also the first household projections for Wales to be produced at a local authority level.

# Uses of household projections

There is a high level of demand for household projections for Wales, at a local authority level. Those who plan for the future, to provide housing and deliver services need to consider future housing demand.

Household projections are *not* forecasts of numbers of dwellings or houses. Instead they provide an indication of future *demand* for housing based on recent trends and can be used for informing housing planning functions e.g. in Local Authority Development Plans. They can also be used to estimate future need for services (for example – health and utilities).

# Limitations of household projections

Household projections have limitations. These local authority household projections only indicate what may happen should the trend-based assumptions remain valid. As mentioned above, household projections are based on population projections. As a result they are dependent to some extent on the core assumptions about future fertility, mortality and migration which are part of those population projections.

#### Approach to producing local authority projections

These household projections have been developed with the input of expert advice from local authorities and key users in Wales - through the Wales sub-national household projection working group (WASHP). The WASHP group has evolved from the Welsh subnational population working group (WASPP) which is a subgroup of the Welsh Statistical Liaison Committee. The WASHP group has met on a regular basis since early 2008, and has been a forum for technical discussion on the methodology, the base and historic data, and the publication of the household projections. Members of WASHP include representatives with experience of demographic and housing data from Welsh local authorities, the Data Unit and the Welsh Assembly Government.

Regular updates (papers and presentations) have also been provided at full meetings of the WSLC. Further information on the WSLC, including membership is provided at: www.dataunitwales.gov.uk/WSLC.asp

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# **Results Overview**

# **Projected Households by Type, Wales**

Table 1 shows that the number of households in Wales is projected to grow to over 1.6 million by 2033. This is an increase of 323,000 households or 25 per cent when compared to 2008, with an average annual increase of just under 1 per cent.

Table 1: Projected Households by Household Type, Wales, 2008-2033<sup>(a)</sup>

# **Projected Households by Local Authority**

Table 2 shows the projected number of households by local authority in Wales.

Between 2008 and 2033 the number of households is projected to increase for all local authorities in Wales. Projected increases range from 7 per cent for Torfaen to 52 per cent in Cardiff.

Merthyr Tydfil and Cardiff are projected to have the smallest and largest number of households respectively throughout the period.

Table 2: Projected Households by Local Authority, Wales, 2008-2033<sup>(a)</sup>

						The	ousands and per cent
	2008	2013	2018	2023	2028	2033	Percentage change, 2008 to 2033
Wales(b)	1,297.3	1,366.4	1,440.3	1,509.2	1,568.5	1,620.3	25
Isle of Anglesey	30.6	32.0	33.4	34.5	35.3	35.8	17
Gwynedd	51.9	53.8	55.7	57.5	59.0	60.3	16
Conwy	50.7	52.8	55.0	57.0	58.7	59.9	18
Denbighshire	43.1	45.8	48.5	51.2	53.5	55.3	28
Flintshire	64.1	67.1	69.9	72.2	73.8	74.6	16
Wrexham	57.2	60.7	64.1	67.4	70.2	72.7	27
Powys	59.0	63.0	66.7	70.0	72.7	74.6	26
Ceredigion	32.8	34.3	35.9	37.4	38.6	39.5	20
Pembrokeshire	52.1	55.2	58.1	60.6	62.7	64.4	24
Carmarthenshire	80.3	86.2	92.0	97.5	102.5	106.8	33
Swansea	100.5	106.5	112.7	118.8	124.4	129.9	29
Neath Port Talbot	62.1	65.8	69.3	72.5	75.4	77.9	26
Bridgend	58.2	62.0	65.7	69.2	72.2	74.7	28
The Vale of Glamorgan	52.8	56.2	59.6	62.7	65.4	67.7	28
Cardiff	136.7	149.7	164.2	178.8	192.8	207.5	52
Rhondda Cynon Taf	99.1	103.0	106.9	110.4	113.1	115.4	16
Merthyr Tydfil	23.9	24.9	25.8	26.5	27.0	27.5	15
Caerphilly	74.0	77.8	81.4	84.4	86.7	88.6	20
Blaenau Gwent	30.7	32.1	33.5	34.6	35.5	36.2	18

# **Projected Household Population**

Table 3 shows the projected household population for by local authority in Wales.

Between 2008 and 2033 the private household population for Wales is projected to increase by 11 per cent overall. The private household population is projected to increase for all local authorities in Wales except Torfaen, which is projected to decrease by 2 per cent.

#### **Average Household Size**

Table 4 below shows that average household size in Wales is projected to decrease from 2.27 persons per household to 2.02 persons per household by mid-2033. This is due to an overall projected decrease in the number of persons in larger households (4 persons or more) and a concurrent increase in the number of persons in smaller households.

The decrease in average household size at a Wales level is reflected across all local authorities in Wales to 2033. For Conwy the projected average household size drops below 2 persons per household by 2023, followed by Denbighshire, Powys, Neath Port Talbot and Blaenau Gwent by 2028. Cardiff is projected to have the largest average household size throughout.

Table 4: Projected Average Household Size by Local Authority, 2006-2031<sup>(a)</sup>

	•					
	2008	2013	2018	2023	2028	2033
Wales(b)	2.27	2.20	2.14	2.10	2.06	2.02
Isle of Anglesey	2.22	2.16	2.10	2.05	2.02	1.99
Gwynedd	2.23	2.17	2.12	2.08	2.05	2.03
Conwy	2.15	2.09	2.04	1.99	1.95	1.92
Denbighshire	2.20	2.14	2.08	2.03	1.99	1.95
Flintshire	2.32	2.24	2.16	2.10	2.05	2.01
Wrexham	2.29	2.23	2.17	2.12	2.08	2.04
Powys	2.20	2.12	2.05	2.00	1.95	1.92
Ceredigion	2.25	2.20	2.16	2.11	2.08	2.05
Pembrokeshire	2.23	2.15	2.09	2.04	2.00	1.96
Carmarthenshire	2.22	2.14	2.08	2.02	1.98	1.94
Swansea	2.25	2.19	2.15	2.11	2.08	2.05
Neath Port Talbot	2.20	2.12	2.05	2.00	1.95	1.91
Bridgend	2.27	2.20	2.14	2.08	2.04	2.00
The Vale of Glamorgan	2.31	2.25	2.19	2.15	2.12	2.09
Cardiff	2.36	2.31	2.27	2.25	2.23	2.21
Rhondda Cynon Taf	2.34	2.28	2.22	2.17	2.14	2.10
Merthyr Tydfil	2.31	2.25	2.20	2.16	2.12	2.09
Caerphilly	2.31	2.23	2.17	2.11	2.07	2.03
Blaenau Gwent	2.22	2.14	2.07	2.03	1.98	1.94
Torfaen	2.31	2.25	2.20	2.17	2.13	2.10
Monmouthshire	2.27	2.19	2.12	2.06	2.02	2.00
Newport	2.31	2.26	2.21	2.18	2.16	2.14

<sup>(</sup>a) Based on the 2008-based Local Authority Population Projections

<sup>(</sup>b) Based on the 2008-based National Population Projection

### **Variant Household Projections**

To illustrate the uncertainty which surrounds any forecast or projection, and the inherent uncertainty of demographic behaviour, variant household projections have been produced.

At a Wales level, the variant household projections are based on the highest and lowest combination variant population projections produced by the Office for National Statistics.

- The high variant household projection is based on assumptions of high fertility, high life expectancy and high migration.
- The low variant household projection is based on assumptions of low fertility, low life expectancy and low migration.

Nonetheless these should not be regarded as maximum or minimum projections but a set of possible outcomes resulting from alternative trends.

# **Comparison with Previous Projections**

Figure 2 and Table 5 show the differences in the projected total number of households and average household size for Wales based upon the 2008-based and 2006-based household projections.

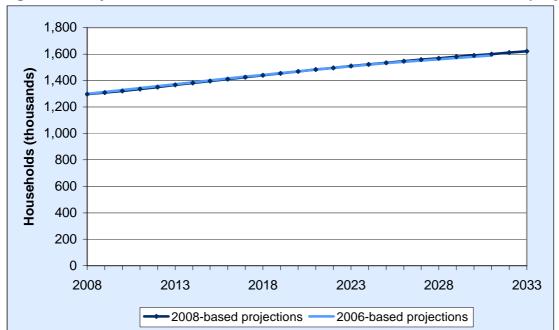


Figure 2: Projected Household in Wales, 2006-based and 2008-based projections

Table 5: Projected Average Household Size for Wales, 2006-2026

	2006	2011	2016	2021	2026
2006-based projections	2.30	2.23	2.16	2.11	2.07
2008-based projections		2.23	2.16	2.11	2.07

Figure 2 shows that using the 2008-based projection the projected total number of households for Wales is 1.60 million at 2026 compared to 1.59 million using the 2006-based projection, a difference of 0.7 per cent. Whilst table 5 shows that the projected average household size has not changed compared to the 2006-based household projections.

As there have been no changes to the methodology between the 2006-based and 2008-based projections, the slight differences between the two sets of projections are solely due to changes in the underlying population projections.

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# Methodology

This section provides an overview of the broad methodology used in producing household projections. Essentially this is unchanged from the methodology used in the 2006-based household projections. A technical report including more detailed explanations of this methodology was published in August 2010. This is available on the housing statistics theme page at:

#### www.wales.gov.uk/statistics

These household projections were calculated by:

- using population projections to calculate the projected number of people living in private households;
- using historical data to calculate projected household membership rates;
- multiplying the projected number of people living in private households by the projected household membership rates;
- dividing the results out by household size and aggregating by age, gender and household type to give the projected total number of households.

This process was carried out by local authority and for Wales as a whole. Each stage of the process is explained below.

#### **Projected Total Population**

Total population was taken from the available population projections and broken down by age group and gender. At a local authority level the 2008-based local authority population projections for Wales were used. At a Wales level, data from the 2008-based national population projections (principal projection) from the Office for National Statistics was used. 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. For more details please see the National and Local Household Projections section.

# **Private Household Population**

The private household population is the number of people living in private households. For each year the private household population was calculated by subtracting the population living in communal establishments from the projected population by age group and gender.

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. As a result 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 Rates**

The total private household population is the total number of people living in private households. Once the total private household population has been calculated, the numbers living in each type of household need to be determined. Household types were determined by size and the presence of children. There were 12 types in all as shown below.

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 shown below.

#### Age groups and Household types used in the 2008-based household projections

Age Groups	Household Types
0-4	1 person
5-9	2 person (no children)
10-15	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)
35-39	4 person (2+ adults, 1+ children)
40-44	4 person (1 adult, 3 children)
45-49	5 + person (no children)
50-54	5 + person (2+ adults, 1+ children)
55-59	5 + person (1 adult, 4+ children)
60-64	, , , ,
65-74	
75-84	
85+	

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 results were then

# **Projected Households**

The projected population by household type was divided by household size and aggregated by age group and gender to give the projected number of households by type. The results of this were further aggregated to give the projected total number of households for each local authority and Wales as a whole.

#### **Variant Projections**

In order to illustrate the uncertainty associated with household projections, variant projections have also been published alongside the main (or principal) household projection. Note that at both a Wales and a local authority level these should not be regarded as maxima or minima but a set of possible outcomes resulting from alternative trends.

At a Wales level, the variant household projections are based on the highest and lowest combination and natural change only (or 'zero migration') variant population projections produced by the Office for National Statistics. The high variant household projection is based on assumptions of high fertility, high life expectancy and high migration. The low variant household projection is based on assumptions of low fertility, low life expectancy and low migration. The zero migration is based on an assumption of zero net migration to or from Wales to identify the effect migration has on household formation.

At a local authority level variant household projections have been produced using the available variants from the 2008-based round of population projections. As a result, at a local authority level the high variant household projection is based on assumptions of high fertility and low mortality. The low variant household projection is based on assumptions of low fertility and high mortality. The zero migration is based on an assumption of zero net migration to or from a local authority to identify the effect migration has on household formation.

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# **National and Local Household Projections**

#### **Background**

The production of 2008-based household projections for Wales follows on from the publication of the 2008-based local authority population projections for Wales published by the Welsh Assembly Government and the 2008-based national population projections for Wales published by the Office for National Statistics.

Using published population projection data it is possible to produce projected household numbers for Wales as a whole using two different approaches:

- Applying the household projections methodology to the national population projection for Wales
- Applying the household projections methodology to the local authority population projections and summing the results

As the local authority population projections do not have to add up to the national ones these two approaches will produce different results. For this set of household projections the National level projection was produced by applying the membership rates methodology to the 2008-based national population projection for Wales produced by the Office for National Statistics. As a result the local authority numbers shown in Table 2 of the Results Overview chapter do not add up to those for Wales. Figure 1 compares the household projections for Wales using the two different approaches.

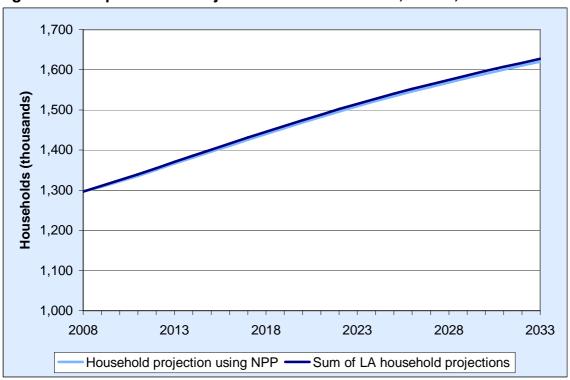


Figure 1: Comparison of Projected Total Households, Wales, 2008-2033

Overall the National level projection follows a very similar pattern to the sum of the 22 local authority projections. The difference between the two is around 4,000 in 2013, increasing to 6,000 in 2018 and 7,000 in 2033. In percentage terms the differences are no more than 0.4 per cent by 2033, whilst the differences between the sum of 2008-based national and local authority population projections Wales, on which the household projections are based are no more than 1.1 per cent by 2033.

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#### **Further Work**

This is the second time that household projections for the 22 local authorities in Wales have been produced. Household projections are continuously evolving – as new data is collected and improved methods for estimating the population introduced, the methods for projecting the population are thus also improved.

As part of the work on developing the local authority household projections, a number of issues/ methodologies have been identified for ongoing investigation.

### **Annual Population Survey data**

It has not been possible to use data from the Annual Population Survey (APS) (formerly the Labour Force Survey) to project household membership rates. This is due to the sample size for the APS and the age, gender and household type breakdown used to create the membership rates.

Work will continue to look at how APS data may be used to project membership rates. This may yet provide a third point to the exponential model based on more recent data.

#### Socio economic effects

The trend assumptions used in the projections are based on the last two censuses and do not take into account social change since 2001 or economic factors such as affordability.

Further work may look at whether affordability can be factored into the household projections model.

# **Migration**

The household projections model only takes account of the effect migration has on population numbers. It does not factor in the effects migration may have on household formation rates. Neither does it assume different household membership rates which may exist for migrant populations.

Further work will look at the relationship between migration and household formation rates, possibly using longitudinal data.

#### **Communal Establishments**

For the 2006 and 2008-based household projections, household populations have been calculated using data on residents of communal establishments from the 2001 census.

Work will continue to look at using more recent and detailed data on residents in communal establishments by type, i.e. halls of residence, care homes, and boarding schools.

#### 2011 Census

Detailed results from the 2011 Census are due to become available in 2013. These will include information on residents in households and communal establishments and overall numbers of households. This will enable work to be undertaken to assess the accuracy of the current projections. Once analysed the new information will then provide an additional data point for future household projections.



# **Quality Information**

Information on quality is provided throughout this publication. A selection of key quality information is also provided below, plus a full technical report detailing the full methodology was published in August 2010 and can be found on our website: www.wales.gov.uk/statistics

# **Definitions**

The projected numbers of households and av

#### **Revisions**

The 2008-based household projections are not subject to planned revisions. It is, however, possible that the base population (2008 mid-year estimates) for the underlying population projections will be revised in future.

#### **Charts**

Note that the charts used throughout this document do not always start at 0, and are based on different scales.

# **Symbols**

The following symbol has been used throughout the publication:

- less than half the final digit shown.

#### **Assessment**

Our household projections and estimates are cuK -1.ation (2008 mid-ye



### **Further Information**

### **Household Projections – Wales**

A local authority report, technical report, guidance leaflet and frequently asked questions on the 2006-based local authority household projections can be found at: www.wales.gov.uk/statistics

Information on the 2006-based household projections for National Park Areas in Wales can also be found at:

www.wales.gov.uk/statistics

Data cubes are available on the StatsWales website: (Housing / Household Projections) www.statswales.wales.gov.uk

#### **Household Projections – other UK countries**

Information on household projections for England, Scotland and Northern Ireland can be found at:

England

www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatistics/by/householdestimates/

Scotland

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

Northern Ireland

www.nisra.gov.uk/demography/default.asp21.htm

## **Local Authority Population Projections**

Summary, local authority and technical report

# **National Population Projections for Wales**

Analysis of the 2008-based national population projections for Wales can be found at: www.wales.gov.uk/statistics

Data cubes are available on the StatsWales website: (Population and Migration / Population / Projections / 2006-based national) www.statswales.wales.gov.uk

Further detailed information can be found on the GAD website: www.gad.gov.uk

#### **Household Estimates**

Information on household estimates for Wales is available at: www.wales.gov.uk/statistics

Data cubes are available on the StatsWales website (Population and Migration / Housing / Household Estimates) www.statswales.wales.gov.uk

#### **Contact details**

For queries on the 2008-based local authority household projections, or for general queries on housing data, please contact:

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