



Explaining the difference between Welsh Government's 2008- and 2011-based projections for Gwynedd

Produced for the Joint Local Development Plan team for
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Produced by:

The Corporate Research and Information Unit
Conwy County Borough Council,
Bodlondeb,
Conwy, LL32 8DU.
Email: research.unit@conwy.gov.uk

Phone: 01492 575291

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Headlines

- This paper has been written to explain and analyse the results of the 2011-based population and in particular the household projections which are published by Welsh Government.
- Key current characteristics for Gwynedd's population:
 - The median age is higher than average, and the population is getting older
 - More deaths than births – the population of Gwynedd does not replace itself naturally
 - Net population increase comes from migration, which fluctuates
 - Migration is predominantly in the 15-29 age groups; the presence of the university in Bangor is the biggest single driver of migration into and out of Gwynedd
 - As a ten year average, the net gain is about 330 people a year from migration in the 15-29 age group, and 120 in the pre-retirement 50-64 age group.
- The new projections show that
 - Population growth is expected to continue at a steady pace throughout the projection period for all scenarios, though the rate of growth for the 2011-based projections is higher than for the 2008-based projections – the 10 year migration trend projection has the highest rate of growth.
 - 10.4% growth for households was predicted in 2008 for the period 2011 to 2026, whereas the new 2011-based projections suggest only 8.2% growth for the principal (5 year migration trend) projection and only 9.4% growth for the 10 year migration trend variant.
 - The indicative dwelling requirement for the 15 year period falls significantly from a total of 6,380 predicted in the 2008-based projections to either 5,000 (5 year migration trend) or 5,730 (10 year migration trend).
- The differences between the 2008-based and 2011-based projections are due to:
 - the recalibration of all data after the results of the 2011 Census were published
 - changes in migration trend that was used – however though the differences in migration levels is instrumental in explaining the higher *population projections*, they have less of an impact in explaining the differences between the old and new Welsh Government *household projections* than in other unitary authority areas.
 - the difference between predicted and observed household size at 2011 – average household size was larger than expected, so fewer households were forming than past trends had predicted.
- Average household size was bigger than expected because
 - fewer young people than predicted are leaving the family home and forming their own households, perhaps due to housing costs
 - fewer people than predicted are living alone or in small households after family break-up

- death rates for men have reduced, meaning fewer household of lone older females living alone than predicted
- there are more households where adult children are living with their parents
- there are more households made up of unrelated adults who are sharing living costs
- Overall, however, the trend is still towards more smaller households and fewer large households in the future, though growth is at a slower rate than predicted in the past.

Introduction

This paper has been written to explain and analyse the results of the 2011-based population and in particular the household projections which are published by Welsh Government. It was produced in July 2014 by Conwy County Borough Council's Corporate Research and Information Unit under commission from the Joint Local Development Plan team for Gwynedd and the Gwynedd Local Planning Authority Area.

Welsh Government's latest 2011-based population figures were published in July 2013 and the household projections were published in February 2014. The figures are very different to the 2006- and 2008- based projections that were published in 2008 and 2010 respectively. The household projections give figures for most local authorities – including Gwynedd – which are lower than presented in 2008-based household projections, and this has caused some concern. However, though the difference in the total number of households at the start of the period is useful to know because it gives us a starting point for lots of calculations (such as homelessness rate per 1,000 households or estimations of average household size), what is really of interest for land-use planning is the change in numbers and types of household over time, and this brief paper focuses more on explaining why that rate of change is so different from those in the household projections produced in the past.

This paper also gives some context for the trends seen in the projections. All population and household projections will be influenced by the local characteristics of the population, and it is important to have an understanding of these characteristics and how they are likely to impact on future population trends before critiquing the projections themselves.

The paper covers the whole of the Gwynedd unitary authority area, including that part which is administered by the Snowdonia National Park local planning authority.

Note: In their 2011-based projections Welsh Government have, for the first time, produced a migration variant projection that shows a 10 year migration trend. This is a more robust projection to use for land-use planning, as it uses a more stable longer-term migration trend and better fits the time period covered by local development plans.

Though the principal projection (5 year migration trend) has traditionally been

“(t)he latest Assembly Government local authority level Household Projections for Wales [which] should form the starting point for assessing housing requirements”¹,

the Welsh Government Minister for Housing and Regeneration has indicated² that

“it is not prudent for a Plan, looking 15-20 year ahead to replicate a period of exceptionally poor growth”.

Therefore the 10 year trend variant projection will mostly likely have a greater weight when considering housing growth in local development plans in the coming years than is given to the principal projection. For this reason both the 2011-based principal projection and the 10 year trend migration variant are presented in this paper, together with a comparison against the now superseded 2008-based projections that were published by the Welsh Government in 2010. (see ‘Explaining the difference – migration changes’ section below for more details).

¹ Planning Policy Wales Edition 4 - February 2011 - Chapter 9 Housing

² Letter from Minister of Housing, Welsh Government to all Local Authority Cabinet members with Responsibility for Housing, 10th April 2012 – topic ‘Use of 2011 household projections’ (Ref: SF/CS/1070/14)

Key current characteristics for Gwynedd's population

This section of the report presents some key data about the population of Gwynedd, and explains how these population characteristics will impact on population estimates and projections in a general way.

The age of the population and natural change

The median age is higher than average, and the population is getting older –

The median age (the age at which half the population is older and half is younger) of Gwynedd's population is 42 years. The current median age for Wales is 41 and 38 for the UK. This means that, on average, the population is significantly older than for the UK and a little older than for Wales. The median age has increased from 40 to 42 years over the last decade. This is even after taking into account the large student population in the Bangor area, suggesting that the median age for the non-student resident population would be even higher.

More deaths than births – the population of Gwynedd does not replace itself naturally, as in most years there are more deaths than births. With deaths over a ten year period at an average of 1,320 per annum and births at just 1,270 the population of Gwynedd would decrease by around 50 persons per year if there were no net in-migration into the area.

Migration

Table 1: proportion of migration by age group, Gwynedd, (average 2003/04 to 2012/13)

Sources: internal and international migration flow data, ONS

	In-migrants	Out-migrants
Total migrants	6,300	5,950
Aged 0-14	8%	9%
Aged 15-29	59%	56%
Aged 30-49	19%	20%
Aged 50-64	9%	8%
Aged 65+	5%	6%
Aged 75+	2%	3%

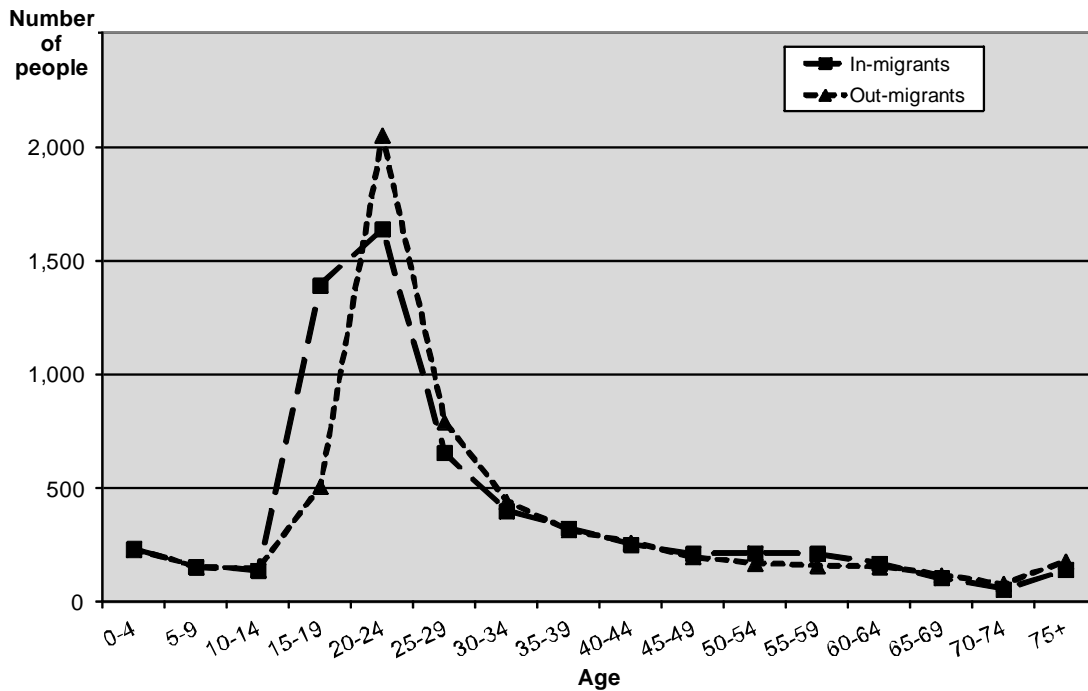
Net population increase comes from migration, which fluctuates – any overall growth in population comes from a net increase of people moving into the area – whether new migrants or returning former residents (for example students who studied outside of Wales), and whether from Llandudno or Liverpool or France. However, though the number of births and deaths remain relatively stable year-on-

year, migration is a much more volatile component of population change, which is difficult to measure and even harder to predict. Any year in which net migration is less than around 50 is likely to see a fall in total population numbers.

Migration is predominantly in the 15-29 age groups – the presence of the university in Bangor is the biggest single driver of migration into and out of Gwynedd.³ The 15-29 age group has become increasingly mobile in recent years so the size and impact of their migration patterns has grown. As a 10 year average, this age groups accounts for 59% of in-migrants and 56% of out-migrants.

Chart 1: average age profile of migrants in Gwynedd, 2003/04 to 2012/13

Sources: internal and international migration flow data, ONS



There are very high levels of in-migration in the 15-19 and 20-24 age groups, with lower but still significant in-migration in the 25-29 age group. This covers the typical age groups for undergraduate and post graduate study and migrants in these age

³ From the data available it is not possible to fully identify the impact of student-led migration in Gwynedd. However, if the university stopped operating, and thus the related migration ceased, it is likely that migration patterns would be similar to those seen in the neighbouring unitary authorities of Conwy County Borough and Isle of Anglesey. Young people would move out of the area for higher education and to pursue other economic and social opportunities, and many of them would not return to the area on the completion of their degree courses. In-migration would be mostly driven by the older age groups who were retiring to the area. If the scale of this retirement-related in-migration did not balance out the out-migration of young adults, then the total population of the area would start to fall. Over time, the age profile of Gwynedd would be skewed towards the older age groups. In addition, the number of births would mostly likely fall considerably, as there would be many fewer women of child bearing age in the population, which would of course mean there were fewer children.

The loss of the university/student population would have a knock-on effect on the local economy, both in terms of their consumer impact, but also in terms of the services and businesses which support them, or are attracted to the area by the existence of a higher education institution. Thus the migration patterns of those aged 30-49 would also be likely to be impacted (less in-migration, more out-migration), as the number and quality of higher skilled and better paid jobs in the area would be likely to go into decline.

groups are predominantly students. Some of the in-migration in the 20-29 age groups will also be young adults returning to Gwynedd after finishing their studies elsewhere.

Conversely there is also a big peak in out-migration in the 20-24 age group, which will mostly be students leaving the area, and again there is a lower but still significant level of out-migration in the 25-29 age group, which corresponds to the typical ages for end of higher education study. There is also a rise in out-migration amongst 15-19 year olds, which is likely to be mostly due to resident teenagers leaving the area to attend higher education institutions outside of Gwynedd. This is the age group which is also mostly likely to be economically and socially mobile, seeking not just education but work and other social opportunities outside the area.

On balance, there are more in-migrants in the 15-29 age group than out-migrants, leading to net population growth. As a ten year average, the net gain is about 330 a year.

This is a very different pattern to that seen in neighbouring areas which don't have a higher education institutes, where out-migration amongst young adults tends to be high, and not all of those who leave in their late teens or early twenties come back to the area, and this accentuates the older than average age profile of the population in those areas much more than it does in Gwynedd.

In- and out-flows of migrants are pretty much equally balanced between ages 0-15 and 30-49.

There is a slight bulge in in-migration in the pre-retirement age groups – those aged 50 to 64 make up about 9% of in-migrants. In the last 10 years, net migration in that age group has been an average annual gain of 120 persons. On average, from ages 65 onward the balance is towards out-migration, but only marginally so.

Note: Migration is affected by many factors over which we have no control at a local level, such as national economic policy or social trends towards overseas retirement. Unforeseen or one-off events can also have a significant impact on migration, such as the influx of economic migrants from Eastern Europe which was seen after EU accession in 2004 or the slow-down in both internal and international migration after the 2008 economic downturn. We therefore need to be careful when trying to interpret trends in migration.

What the projections show

The population projections, though starting at a higher point than the 2008-based projections, showed a similar pattern for future population. Population growth is expected to continue at a steady pace throughout the projection period for all scenarios, though the rate of growth for the 2011-based projections is higher than for the 2008-based projections.

The higher migration totals used in the 2011-based projections are the chief drivers of this – the 10 year migration trend projection has the highest rate of growth – though some changes in the population structure (and thus changes to projected fertility and mortality rates) are also part of the reason for growth.

The table below shows the differences between the 2011- based projections and the 2008-based official projection. It compares across a 15 year period, which is the length of operation for most development plans.

Table 2: differences between 2008- and 2011-based household projections for Gwynedd

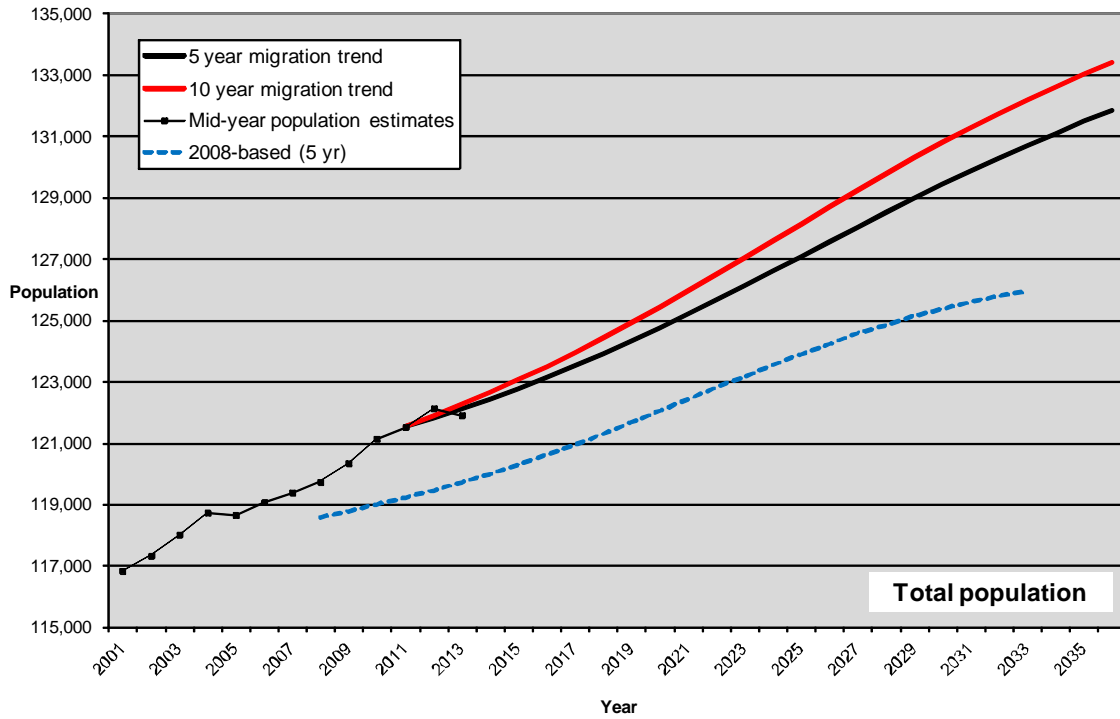
Sources: 2011- & 2008-based household projections, Welsh Government

	2011-based WG household projections		2008-based WG 5 year mig trend
	Principal (5 mig year trend)	10 year mig trend	
Number of households			
2011 (base year)	52,411	52,411	52,967
2026 (15 year period)	56,711	57,336	58,500
Change 2011-26 (no.)	4,300	4,925	5,533
Change 2011-26 (%)	8.2%	9.4%	10.4%
Household size			
2011 (base year)	2.248	2.248	2.192
2026 (15 year period)	2.176	2.169	2.063
Change 2011-26 (no.)	-0.073	-0.080	-0.129
Change 2011-26 (%)	-3.2%	-3.5%	-5.9%
Possible dwelling impacts			
Change 2011-26 (no.)	5,004	5,732	6,383
Change 2011-26 (%)	8.2%	9.4%	10.4%
Migration assumption			
Annual net migration (people)	387	458	251

Over this period (2011 to 2026) the growth in household numbers and the dwelling impact of this growth is expected to be lower than predicted by previous projections – 10.4% growth was predicted in 2008, whereas the 2011-based projections suggest only 8.2% growth for the principal (5 year migration trend) projection and only 9.4% growth for the 10 year migration trend variant. This means the indicative dwelling requirement for the 15 year period falls significantly from a total of around 6,380 in 2008 to either 5,000 (5 year migration trend) or 5,730 (10 year migration trend) in the 2011-based projections.

Chart 2: comparing population projections for Gwynedd

Sources: mid-year population estimates, ONS; 2011- & 2008-based household projections, Welsh Government



Explaining the difference

Rebasing the population estimates

The biggest factor in explaining the difference between the 2008- and 2011-based projections is the recalibration of all data after the results of the 2011 Census were published. The previous projections relied on the changes which were seen between the 1991 and 2001 Censuses to set their assumptions about household growth rates.

In particular, the 2011 Census and the 2011 mid-year population estimates gave us a new population base from which to predict population growth in the future. In order to produce population projections we also needed to know how population changed each year between 2001 and 2011. We needed to know what part of population growth came from natural change (births and deaths) and what part came from migration.

Between the 2001 and 2011 Censuses, trends which had been relatively stable for several decades changed. New data from the 2011 Census showed that for Gwynedd, population growth was higher (+1.9%) than expected, and household growth lower (-1.1%) than expected. (Wales figures – population +0.9%, households -2.5%). For some age groups and household types within the population the difference was even greater.

Analysis of the new data from the Census allowed demographers at the Office for National statistics and within Welsh Government to:

- produce fertility rates and mortality rates based on corrected population estimates, so we can make better predictions about future births and deaths. Rates changed significantly as they are calculated against a very different population base. In particular fertility rates help predict how many children will be born in future, and if these are wrong a set of projections can significantly under- or over- predict the population at younger age groups.
- look at migration trends (both total numbers and by age/gender) to decide which assumptions to make about future migration trends. Migration totals and the age structure of the migrant profile changed significantly, as mis-estimation of migration was one of the chief reasons for the mismatch between the 2011 Census and the old rolled-forward mid-year population estimates. If we use the wrong migration data in the projections model, growth levels will be much distorted.

These and other analyses led to a recalibration of all the data that was used to produce population and household estimates and projections. As well as fertility/mortality rates and migration trends, household composition and institutional population figures were also revised. Some elements of change were more significant than others for Gwynedd – namely changes in migration trends and changes to average household size – and these are investigated in more detail below.

Migration changes

Partly, the difference between the 2008- and 2011-based projections is due to changes in the population element of household projections, in particular different migration trends. Migration is a very volatile component of population change and can fluctuate significantly from year to year. (See bottom line in table 2 above).

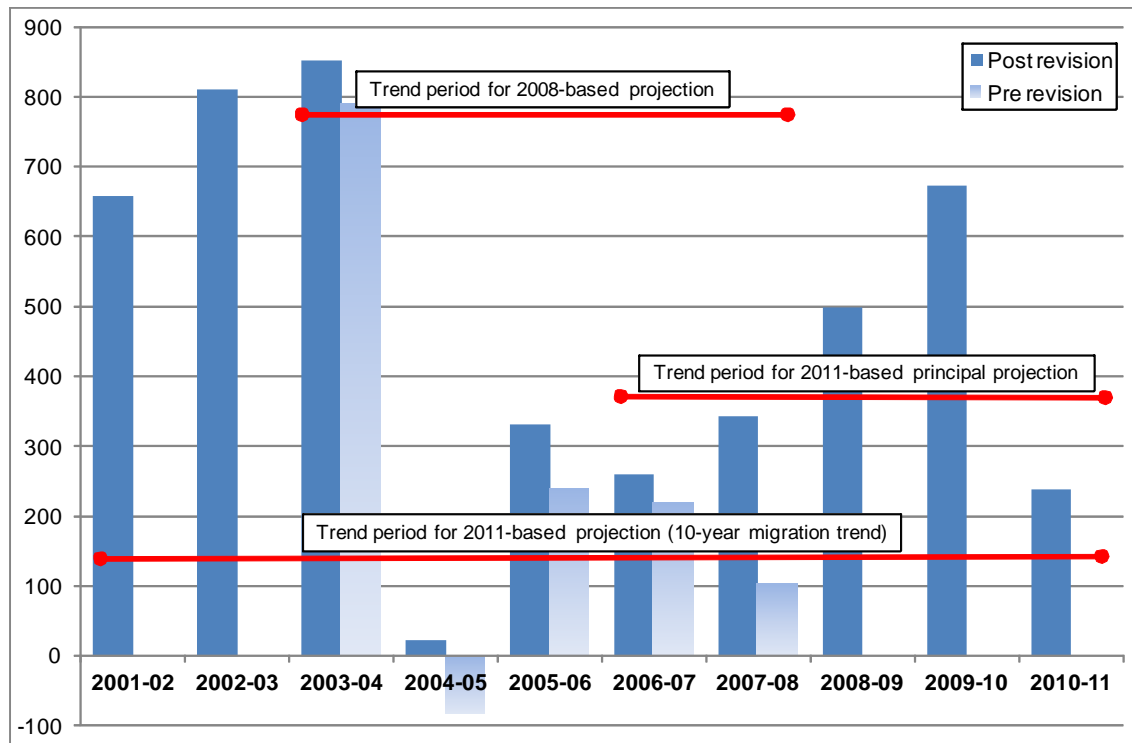
For most of Wales, migration levels were highest in the trend used for the 2008-based projections. This was not the case for Gwynedd, however, and thus though the differences in migration levels is instrumental in explaining the higher population levels, they have less of an impact in explaining the differences between the old and new Welsh Government *household projections* than in other unitary authority areas. (Though population growth is higher in the 2011-based projections, the household growth is lower.)

Though this paper is primarily concerned with the differences in household projection figures, it is still worth examining the differences in migration levels, as an understanding of the volatility of migration trends data will help us understand future projections. Apart from in the once a decade case of Census data being rebased, differences in migration trends are likely to be the biggest drivers of change in any population and household projections that Welsh Government produce in the future.

The 2008-based projections took a trend from 2003/04, which, with the exception of the first year, was a period of particularly low net migration for Gwynedd. The average annual migration for the 5 year period as used in the projections was +251*.

Chart 3: annual net migration for Gwynedd, showing trend periods used in Welsh Government population projections

Sources: 2011- & 2008-based household projections, Welsh Government



The new 2011-based principal projection is based on a five year migration trend and looks at the period from 2006/07 to 2010/11. The average annual migration for the 5 year period was +387.

The 2011-based 10 year trend projection took a longer period, which evened out some of the peaks and troughs seen over the shorter periods. The average annual migration for the 10 year period was +458.

These figures show how the annual average net migration for any selected period can fluctuate – there is a significant difference (about 200 migrants a year) between the highest and lowest trend used by Welsh Government, and this can have a big impact on the perceived continuity of projections methodology over time. Generally speaking, a longer trend period is more stable, though it is virtually impossible to accurately predict future migration trends. Migration is driven by many things outside of our powers to control or forecast (the recent economic downturn, the expansion of the EU, housing market booms or busts).

The volatility of the migration element of population change highlights the limitations of using trend based projections in isolation of other data, and especially of using migration trends for only one short, fixed period. Migration data is a key component of the projections process, but the resultant outputs from a projections model can vary widely, depending on the trend period which is selected.

***Note:** Migration figures were revised after the release of the 2011 Census, including the figures used in the new 2011-based projections. If this revised data had been used in the 2008-based projections, the net migration level would have been +362)

There was also some minor adjustment of the migration totals and the age structure of the migrant population after the rebasing of the mid-year population estimates, which will have impacted on fertility and mortality (and thus future population totals). However, these changes have a much lesser role in explaining the differences between the 2008-based and the 2011-based projections than the selection of the trend period.

Household size

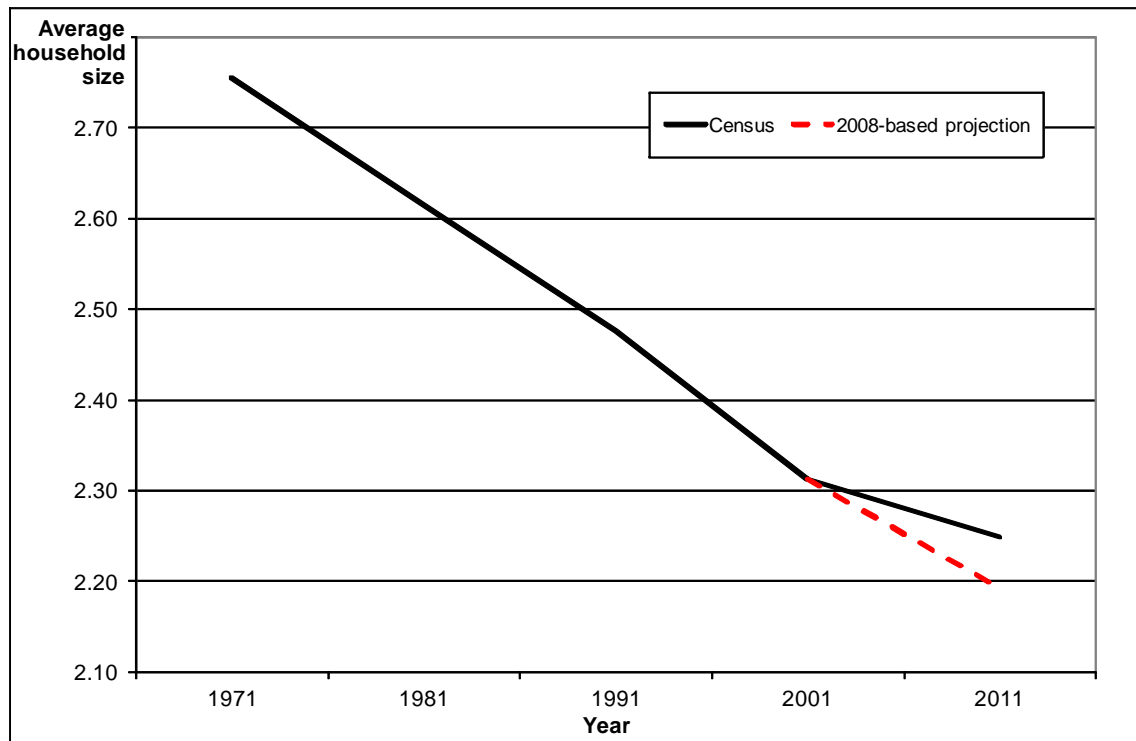
The biggest impact from the recalibrated Census data came from the difference between predicted and observed household size at 2011.

The rate of change in average household size has been falling since records began. However, after many decades of an almost linear decline, between 2001 and 2011 the speed of the downward trend reduced considerably. This means fewer households were formed than was predicted by the 2008 projections – that is, average household size was larger than expected, so fewer households were forming than past trends had forecast.

The chart below shows the extent of the change in the linear trend which the 2008-based projections had continued. 2011 data shows a distinct slow down in the rate of change.

Chart 4: change in average household size in Gwynedd, 1971-2011

Sources: Census of population; 2008-based household projections, Welsh Assembly Government



Changes in institutional population levels also explain some of the differences in the projections. Though only a small proportion of the overall population, the number of

people in communal establishments in 2011 was higher than 2001 by 30%, which has an impact on the number of people available to form households. The previous trend had been towards a declining institutional population. In Gwynedd, as across most of Wales, this rise is mainly due to the increase in student populations living in halls of residence.

What caused the step change in household size trends?

The growth rate for smaller households was slower than predicted in previous projections. This is due to:

Fewer young people than predicted leaving the family home and forming their own households. This is often because they can't afford to do so, as house prices (both to buy and rent) have increased so much in the past 10-15 years. More of the young people who do leave the parental home are sharing with other non-related adults rather than setting up their own homes.

Fewer people than predicted are living alone or in small households after family break-up. They are either sharing with other, unrelated adults, or are moving back to the parental home. As a consequence, growth rates in one person and lone parent households were much slower between 2001-2011 than between 1991 and 2001.

Death rates for men have reduced. Much of the growth in single person households was expected to come from a growth in older females living alone after the death of their partners. As men are living longer, the numbers of households composed of lone older females is smaller than predicted

Overall, total numbers of households of 5+ people continue to shrink, though at a slower rate than previously predicted. This is due to:

More households where adult children are living with their parents. This is both for children who have never left home/have returned to the family home after higher education, and adults moving back in with their parents after relationship breakdown, because they are unable to afford to set up home on their own. Whether this is a sustained trend, or is a temporary result of economic factors (such as steep rises in house prices seen over the past decade or so and the economic downturn of 2007/8) is not yet known.

More households made up of unrelated adults. In Gwynedd, these are mostly young adult households, including student households. In areas where there has been a high level of international in-migration, the increase in larger households may also be due to larger family sizes for some ethnic groups or due to house-sharing amongst young economic migrants, though this is not a trend which has had a significant impact in Gwynedd however.

Housing mix – future trends

The chart below shows the differences between the current make up of households by size and the predicted mix in 2026. Though both the old and new projections show an increased proportion of smaller households by 2026 and a decrease in larger households, the now superseded 2008-based projections predicted faster growth for smaller households and a steeper decline for larger households.

Overall, however, the trend is still towards more small households and fewer large households in the future, though growth is at a slower rate than predicted in the past.

Despite this slow down in growth rates, small households are expected to account for most of future increases in household numbers, especially in one person households, households formed of two people without children, and one parent households. The number and proportion of households with 3 or 4 people are set to fall, though the number of large households (5+ people) composed of adults only – for example, student households or adult children living with parents –will increase slightly.

Chart 5: housing mix, 2011 and 2026

Sources: 2011- & 2008-based household projections, Welsh Government

