The Objectively Assessed Housing Needs of Stroud, Forest of Dean and Cotswold

Report to the District Councils of Cotswold, Forest of Dean and Stroud

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NMSS

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Report (Revised)

This report has been prepared by NM Strategic Solutions Ltd for the District Councils of Cotswold, Stroud and Forest of Dean

Note: apart from the correction of some typographical errors, the only changes in this report compared with the original version are as a consequence of the subsequent re-working of the estimates of the housing needs of Cheltenham, Gloucester and Tewkesbury Joint Core Strategy (JCS) derived from the economic forecasts made by Cambridge Econometrics. The changes are in Figures 41 and E4. There are consequential adjustments in Figures 42 and E5 in which the figures given for the "OAN with extra homes for jobs" has been increased by 100 for both Cotswold and Forest of Dean.

NMSS works with local authorities and others rather than just producing reports for them. We take considerable care to ensure that the analysis presented is accurate but errors can slip in and even official data sources are not infallible, so absolute guarantees cannot be given. Statistics, official or otherwise, should not be used uncritically: if they appear strange they should be thoroughly investigated before being used

THE OBJECTIVELY ASSESSED HOUSING NEEDS OF STROUD, FOREST OF DEAN AND COTSWOLD

Contents

THE OBJECTIVELY ASSESSED HOUSING NEEDS OF STROUD, FOREST OF DEAN AND COTSWOLD

Executive Summary

Aim

To provide a clear evidence base on which the three councils can determine their objectively assessed needs (OAN) for housing on a basis consistent with the analysis carried out for the Cheltenham, Gloucester and Tewkesbury Joint Core Strategy (JCS) and taking account of the projected economic growth of the area.

Approach

This report follows the approach indicated by the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG). It takes as its starting point the official population and household projections.

To assess the housing requirement of any area it is necessary to:

- Estimate the size and age structure of the population that will need to be housed.
- Take a view on how that population will group itself into households. This, combined with the population estimate, enables the number of extra households which will need to be housed to be estimated.
- An allowance needs then to be added for properties which will be empty or second homes to produce a preliminary estimate of the housing requirement.
- Finally, consideration needs to be given as to whether there are any factors which will not have been reflected in this approach. These might include:
    - market signals which suggest that the local housing market has been under particular stress;
    - unmet housing needs or past undersupply which will have affected the trend-based assessment of future housing needs produced by a demographic approach;
    - how the assessment of the overall housing requirements relates to the need for affordable housing (i.e. social and intermediate housing); and,
    - whether additional housing is needed to ensure that the area can accommodate sufficient workers to support the projected level of economic growth.

The report follows through these steps in order.

Findings and recommendations

Population projections

- The latest official population projections for local authorities are the ONS's 2012-based Sub-national Population Projections (2012 SNPP) which were published in May 2014. These were the first full, 25-year population projections published since the 2011 census. However, there are two issues which need to be taken into account in using these projections:

    - The projections made for the number of people who will move from and to other parts of the UK were based on flow rates during the period 2007-12, a period when flows were generally low as a result of the economic downturn.

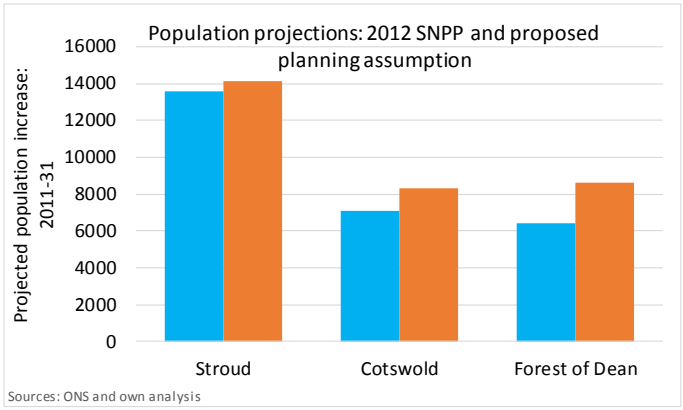
    - In principle, if the estimates for births, deaths and flows into and out of the three authorities during the period 2001-11 are added to the census 2001 population estimates the result should equal the census 2011 population estimates. This is never actually the case: there is a discrepancy, known as the 'Unattributable Population Change' (UPC). This can be either positive or negative i.e. the components of changes with UPC can either under or over-estimate the change in population suggested by the census counts. The ONS did not take UPC into account in producing their latest population projections. It is debatable whether this has resulted in projections which over or under-estimate the likely change in the population of the three authorities.

- Adjustments have been made to the 2012 SNPP projections to compensate for the low flow rates assumed from and to the rest of the UK. These increase the projected population in all three authorities.

- The impacts of including an allowance for UPC have also been calculated. These increase the projected population for Stroud but reduce it for Cotswold and Forest of Dean. Views vary on whether it is appropriate to make these adjustments. At least one inspector has taken exception to an authority using a negative UPC to reduce its OAN. It is recommended that the prudent approach is to plan on the basis of the higher number i.e. with or without UPC depending on whether it has the effect of increasing or decreasing the projected population.

- **It is therefore proposed that the planning assumption for population growth in Stroud, Cotswold and the Forest of Dean should be ONS's 2012 Sub-national Population Projection with an adjustment to correct for the low flows from other parts of the UK in the period 2007-12 plus an adjustment for UPC where this is positive i.e. where it has the effect of increasing the projected population.** Figure E1 below compares the population increase calculated on this basis compared with the unadjusted 2012 SNPP

Figure E1: Proposed planning assumptions for population increases



Population change 2011-31	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
ONS 2012-based projection	13600	7100	6400	52600	79600
Proposed planning assumption	14100	8300	8600	56400	87300

Household projections

- The latest DCLG household projections are the 2011-based projections produced in April 2013. These take account of the household formation patterns in the 2011 census. For some age groups, particularly the 25-34

- age group and some over 60 age groups, the rate of household formation in 2011 was well below the long term trend.

- Research suggests that for the 25-34 age group this lower than projected increase arises from the combined effect of increased international migration (because newly arrived migrants form fewer households), a long period during which house price rises exceeded increases in earnings, and the impact of the economic downturn. It can reasonably be expected that as the economy moves out of recession some of these effects will be reversed.

- Whilst there are fairly strong reasons for believing that there will be a return towards the previous trend for 25-34 year olds, for the older age groups it is far from clear that the changes which have occurred will reverse. A scenario which provided just for a partial return to trend for 25-34 year olds would therefore represent a reasonable planning assumption. Figure E2 shows the consequences of both a partial return to trend for 25-34 year olds and a similar return for all age groups applied to proposed planning assumption for population growth. For comparative purposes, the baseline of the unadjusted 2012 SNPP and the DCLG unadjusted 2011-based population projections is also shown. Note that to allow comparison with later figures, the numbers shown are for homes required, not households, i.e. they include an allowance for empty and second homes.

Figure E2: Homes needed 2011-31	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
2012 SNPP + DCLG 2011	8200	5300	5100	26900	45400
Adjusted 2012 SNPP + PRT 25-34	8700	6300	6400	30400	51800
Adjusted 2012 SNPP + PRT all ages	9200	6500	6600	33400	55700

- **It is proposed that the figures based on a partial return to trend for 25-34s (shown in yellow in Figure E2) should be taken as the demographic OANs for the three authorities.**

Other considerations

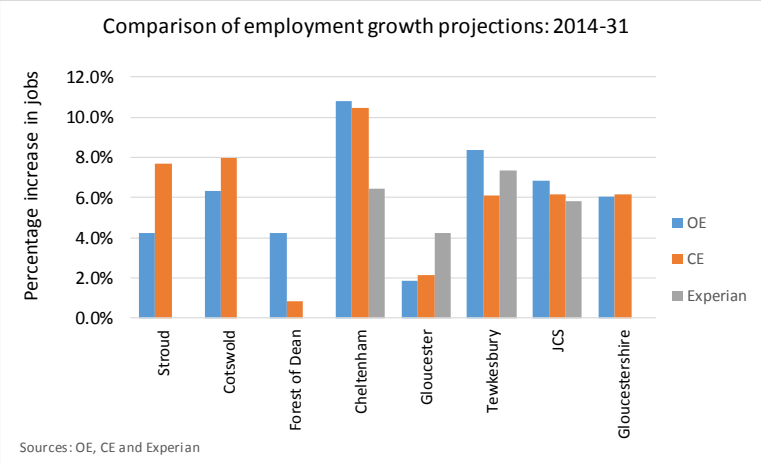
- There do not appear to be any other considerations (such as from market signals or past undersupply, existing unmet housing need or affordable housing requirements) to suggest that additional housing should be added to the estimate based on demographic analysis. This is particularly true as proposed demographic OANs already include additional homes to reflect the likelihood that there will be a partial return toward previous household formation patterns amongst younger adults.

Is additional housing needed to support economic growth?

- The Planning Practice Guidance requires that plan makers should consider whether the future working age population is likely to provide the labour force which the local economy will need. It is not acceptable simply to assume that any shortfall will be met by changes to commuting patterns. This is potentially a significant issue for all three authorities as they are all projected to see the size of their 16-64 population fall between 2011 and 2031 while the numbers of jobs are projected to rise.

- Economic forecasts have been obtained for the three authorities from Cambridge Econometrics (CE) and Oxford Economics (OE) for the period to 2031. Forecasts have also been provided by the JCS authorities (which also include projections by Experian) to enable a full picture for Gloucestershire as a whole to be formed. Figure E3 summaries these estimates. The figures shown are for the period 2014-31 to avoid the additional uncertainties caused by the forecasters' different views on the emergence of the economy from recession over the period 2011-14.

Figure E3: Employment growth projections for Gloucestershire



Job growth 2014-31	OE	CE	Experian
Stroud	4.3%	7.7%	-
Cotswold	6.3%	8.0%	-
Forest of Dean	4.2%	0.8%	-
Cheltenham	10.8%	10.5%	6.4%
Gloucester	1.9%	2.1%	4.3%
Tewkesbury	8.3%	6.1%	7.4%
JCS	6.9%	6.2%	5.8%
Gloucestershire	6.1%	6.2%	-

- From an examination of the forecasts it is clear that:
    - For some authorities there is a significant divergence between the two forecasts. For example, the OE projection for Forest of Dean is some 5 times the CE figure. This is because of the different views taken by the forecasters on the prospects for different sectors of the economy. Generally CE assumes a faster growth in jobs in 'government services' (which include health and education) and OE envisages stronger growth in private sector activity, particularly finance and business services.
    - Whilst both CE and OE assume some improvements in productivity, it is questionable whether they have made sufficient allowance for the likely improvements. In the last recession the fall in productivity was greater than in the previous two but so far there has been surprisingly little improvement in productivity as the economy has begun to recover from the downturn. (This helps to explain why there has been a faster than anticipated reduction in unemployment.) Productivity improvements will need to be delivered if the recovery is to be sustainable, particularly bearing in mind the need for the economy to be competitive internationally. Estimates suggest that if productivity were to improve in Stroud, Cotswold and Forest of Dean at the rates seen in the similar period after the early '90s recession, the projected improvements in output (GVA) could be delivered without any additional jobs being created. It is not suggested that that is a likely scenario but it does indicate how significant an impact a larger improvement in productivity could have.

- A critical factor in interpreting the job forecasts is the assumption made about the proportion of the population who will be economically active i.e. in work or available for work. It is expected that in future a bigger proportion of those aged 60 and over will be economically active as result of the planned rises in the state pension age; less generous pensions and better health. How big these changes are could have a substantial impact on the size of the labour force, particularly in areas such as Stroud, Cotswold and Forest of Dean which have relatively large older populations compared with the UK as a whole. In addition, there may be an increase in the number of people doing more than one job – 'double jobbing'. The recent emphasis on apprenticeships and the reform of working age welfare benefits could also have an impact.

- This analysis suggests that there is considerable uncertainty in the projections for job growth, and hence on the number of homes needed to support economic growth. In order to understand how large this might be a number of sensitivity analyses have been performed. These show that:

  - The projections are highly sensitive to the assumptions made about the growth in certain sectors. For example, if continuing austerity means that there can be no increase in government services jobs, the estimate of the extra homes needed to support growth in Stroud would fall by a half. Similarly, if the growth in finance and business services were to be half what OE project, the number of additional homes needed in Cotswold would fall by 20%.

  - Different assumptions on economic activity rates could also make a large difference. For example, the increase in economic activity assumed by OE in Cotswold is lower than they assume for either Stroud or Forest of Dean. If the improvement in economic activity were similar to Stroud (for which the improvement is less than for Forest of Dean) the number of extra homes needed would fall by about 45%.

  - As already noted, if productivity were to improve over the next ten years at the rate seen in a similar period after the early '90s recession, no additional jobs would need to be created to produce the additional output projected.

- These results show how much the estimate of the number of extra homes needed would change if different, but not implausible, assumptions were made. It is not suggested that any of the alternative scenarios are necessarily better than those suggested by the two forecasters. Nor is this intended to be a criticism of the economic projections: these uncertainties are inevitable. However, the size of the uncertainties mean that it would be naïve to treat the projections as anything other than broadest of indications of the possible change. At best, econometric projections can give an indication of what would happen if past trends were to continue. There are many reasons why this may not happen.

- Figure E4 shows the number of additional homes which estimates based on the OE and CE projections suggest may be needed in both the three authorities and the rest of Gloucestershire. Negative numbers indicate that the demographically based projections provide more people than are needed to support the projected increase in jobs (although the Planning Practice Guidance does not suggest that the number of homes required should be reduced in those circumstances).

Figure E4: Homes needed in addition to demographic OAN

	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
OE	-1200	3800	-300	-9500	-7100
CE	1800	2900	1900	-600	6100

- For Gloucestershire as a whole the OE based estimates do not suggest that any additional homes are needed. Indeed, it is only for Cotswold that the OE figures suggest there may be a need for additional homes and there are a number of reasons for questioning whether the number of jobs likely to be created in Cotswold has been over estimated.

- The CE projections suggest that Stroud, Cotswold and the Forest of Dean will all need to add additional homes to support the projected increases in jobs. In contrast, the JCS area does not appear to need any additional homes and indeed may have a small surplus. Taking Gloucestershire as a whole, the net additional housing requirement on the CE analysis is 6100 extra homes, of the order of 12% of the demographic OAN.

- Given the sizeable commuter flows between the Gloucestershire authorities there is a strong case for considering the relationship between homes and jobs on a broader basis than the individual authority.

- If a simple average were taken of the housing requirements suggested by the analyses of the OE and CE projections the conclusion would be that Gloucestershire as a whole does not need to add to its demographic OAN.

- It would not be prudent, however, to ignore the indication from the CE projections that Stroud, Cotswold and Forest of Dean may need some additional housing to support economic growth by 2031. However, to make provision at anything like the full rate suggested by the CE analysis would not be appropriate given the LEP's focus on promoting growth in other parts of Gloucestershire; the bullish view taken by CE on job growth in government services; and the likelihood that improvements in productivity will reduce the rate of job growth significantly.

- Against this background, a reasonable allowance for additional housing to support economic growth would be for Stroud, Cotswold and Forest of Dean to provide between them for half the additional homes which the CE analysis suggests might be needed across Gloucestershire i.e. 3,000. If these were allocated in line with the relative housing numbers suggested by the CE analysis Stroud would provide 800, Cotswold, 1300 and Forest of Dean 900 (rounded).

- This would suggest that the following housing requirement (with the baseline and demographic-only estimates shown for comparison):

Figure E5: Demographic OAN 2011-31	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
Baseline: 2012 SNPP + DCLG 2011	8200	5300	5100	26900	45400
Demographic OAN	8700	6300	6400	30400	51800
OAN with extra homes for jobs	9500	7600	7300	30400	54800

- The Stroud plan period is 2006-31. The equivalent figures for that period are as follows:

OANs for 2006-31	Stroud
Starting point: 2012 SNPP + DCLG 2011	9900
Demographic OAN	10400
OAN with extra homes for jobs	11200

- Given the uncertainties attaching to the both the econometric projections and their interpretation it is imperative that the actual growth in employment is closely monitored and the housing requirement reviewed periodically in the light of the changes which occur.

THE OBJECTIVELY ASSESSED HOUSING NEEDS OF STROUD, FOREST OF DEAN AND COTSWOLD

INTRODUCTION

Aim

1. To provide a clear and objective basis on which the three councils can determine their objectively assessed needs (OAN) for housing on a basis consistent with the analysis carried out for the Cheltenham, Gloucester and Tewkesbury Joint Core Strategy (JCS) and taking account of the projected economic growth of the area. This should enable the overall OAN for Gloucestershire to be established on a consistent basis

Approach

2. This report follows the approach indicated by the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG). It takes as its starting point the latest official population and household projections. It does not rely on any earlier assessments of the area's housing requirement.

3. To assess the housing requirement of any area it is necessary to:

    a. Estimate the size and age structure of the population that will need to be housed.

    b. Take a view on how that population will group itself into households. This, combined with the population estimate, enables the number extra households which will need to be housed to be estimated.

    c. An allowance needs then to be added for properties which will be empty or second homes to produce a preliminary estimate of the housing requirement.

    d. Finally, consideration needs to be given to whether there are any factors which will not have been reflected in this approach. These might include:

        - market signals which suggest that the local housing market has been under particular stress;
        - unmet housing needs or past undersupply which will have affected the trend-based assessment of future housing needs produced by a demographic approach;
        - how the assessment of the overall housing requirements relates to the need for affordable housing (i.e. social and intermediate housing); and,
        - whether additional housing is needed to ensure that the area can accommodate sufficient workers to support the projected level of economic growth.

4. The report follows through these steps in order.

WHAT POPULATION SHOULD BE PLANNED FOR?

Introduction

5. The first step in preparing a demographic estimate of an area's objectively assessed needs (OAN) for housing is to reach a view on the number of people to be planned for by age group and gender. This section takes as its starting point the recent ONS population projections and considers whether they provide a prudent basis on which to plan.

The recent ONS population projections

6. There are two sets of ONS population projections which post-date the 2011 census:

   a. The *Interim 2011-based subnational population projections for England*[1] (2011 SNPP) which were published on 28 September 2012. They only cover the period 2011-21 and have a number of acknowledged weaknesses stemming from the fact that they were produced relatively quickly following the census, before the necessary data was available to update the trends on which they are based. As a result they can over-estimate births in some areas and either over- or underestimate population flows between local authorities.

   b. The latest ONS local authority level population projections are the *2012 Sub-national Population Projections for England* (2012 SNPP) which were published on 29 May 2014[2]. They take as their starting point the 2012 population estimates. They cover the period 2012 to 2037. Unlike the 2011-based interim projections, the 2012 SNPP involve a full re-working of the trends which are used to project population growth. However, there are two significant issues with these projections:

      - The projections for flows between local authorities are estimated from data from the five years 2007-8 to 2011-12, a period which included a severe economic downturn, during which activity in the housing market and population flows between local authorities were depressed.

      - The projections ignore population changes which occurred between 2001 and 2011 which the ONS have not been able to attribute to any of the 'components of change' (births, deaths, and flows in and out to and from the rest of the UK and abroad). For some authorities these 'unattributable population changes' (UPCs) can be large compared

[1] Interim 2011-based subnational population projections for England, ONS, 28 September 2012, http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/index.html

[2] 2012-based Subnational Population Projections for England, ONS, 29 May 2014, http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/2012-based-projections/stb-2012-based-snpp.html#tab-Projections-for-Local-Authorities

with the total population change between the censuses. Not taking them into account may have introduced significant errors into some projections.

7. There are a number of reasons for looking at 2011 SNPP as well as the 2012 SNPP:

   a. The 2012 SNPP are not quite the reliable, issue-free and up to date set of projections that might have been hoped for. (It should, however, be recognised that any set of trend based projections can only tell you what is likely to happen if recent trends continue, which may or may not be the case. No projections should be used uncritically, without considering whether they are suitable for the purpose in hand.)

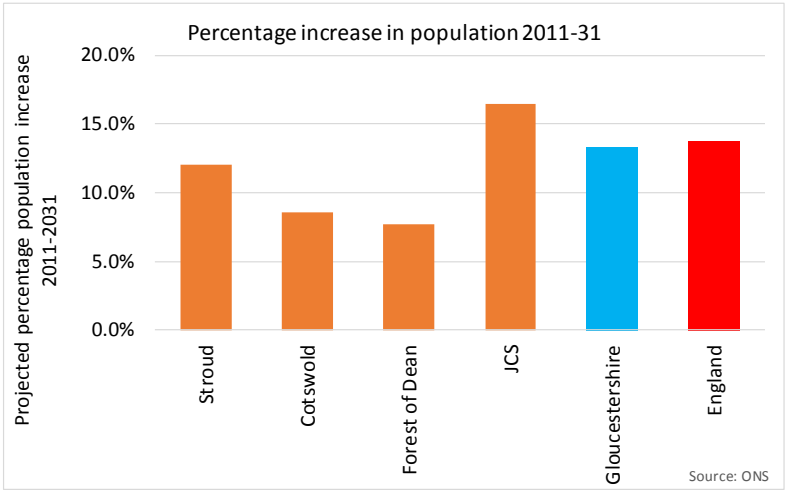
   b. The most recent DCLG household projections are based on 2011 SNPP and it is important to understand how the weaknesses in the population projections may have affected the household projections.

   c. The Cheltenham, Gloucester and Tewkesbury Joint Core Strategy (CGT JCS) is based on the 2011 SNPP projections, without any modifications.

What the projections say

8. The latest projections suggest significant population increases between 2011 and 2031 for Stroud (12%), Forest of Dean (8%) and Cotswold (8.6%), but increases that are smaller in percentage terms than for the JCS area (13.3%) and England (13.8%) as a whole. See Figure 1 below.

Figure 1: Projected population increases compared

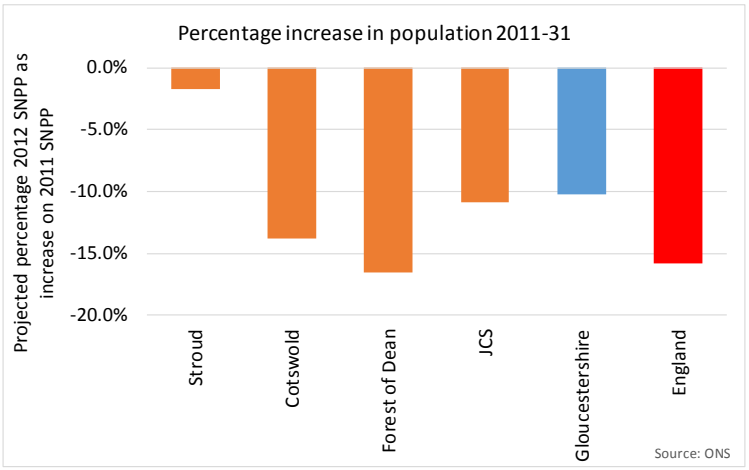


Projected population growth 2011-31	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire	England
ONS 2012-based projection	13600	7100	6400	52600	79600	7312000
Projected increase as % of 2011 population	12.0%	8.6%	7.7%	16.4%	13.3%	13.8%

9. There are also significant differences between the latest ONS projections for the Gloucestershire authorities and the previous set, the 2011 SNPP. In all cases the

latest projections suggest a smaller population increase. The size of the reduction varies considerably from authority to authority: see Figure 2 below.

Figure 2: Comparison of ONS 2011-based and 2012-based population projections



Projected population growth 2011-21	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire	England
ONS 2011-based projection	6600	3700	3900	31500	45700	4580000
ONS 2012-based projection	6500	3200	3200	28100	41000	3855000
2012 SNPP as % increase on 2011 SNPP	-1.7%	-13.8%	-16.6%	-10.9%	-10.3%	-15.8%

10. To understand why the projections are as they are, and hence how plausible they might be, it is necessary to delve into the 'components of change' which have produced the projections.

Understanding how populations change

11. The future population of any area is simply the current population plus those who come less those go. Those who come are those who are born in the area plus those who move in from outside. Those who go are those who die plus those who leave the area. It is helpful to divide arrivals and departures into those who come from or go to the rest of the UK and those who come from or go to other countries. This gives six 'components of population change':

- Births
- Deaths
- Arrivals from other parts of the UK – "internal migration in"
- Departures to other parts of the UK – "internal migration out"
- Arrivals from abroad – "international migration in"
- Departures abroad – "international migration out"

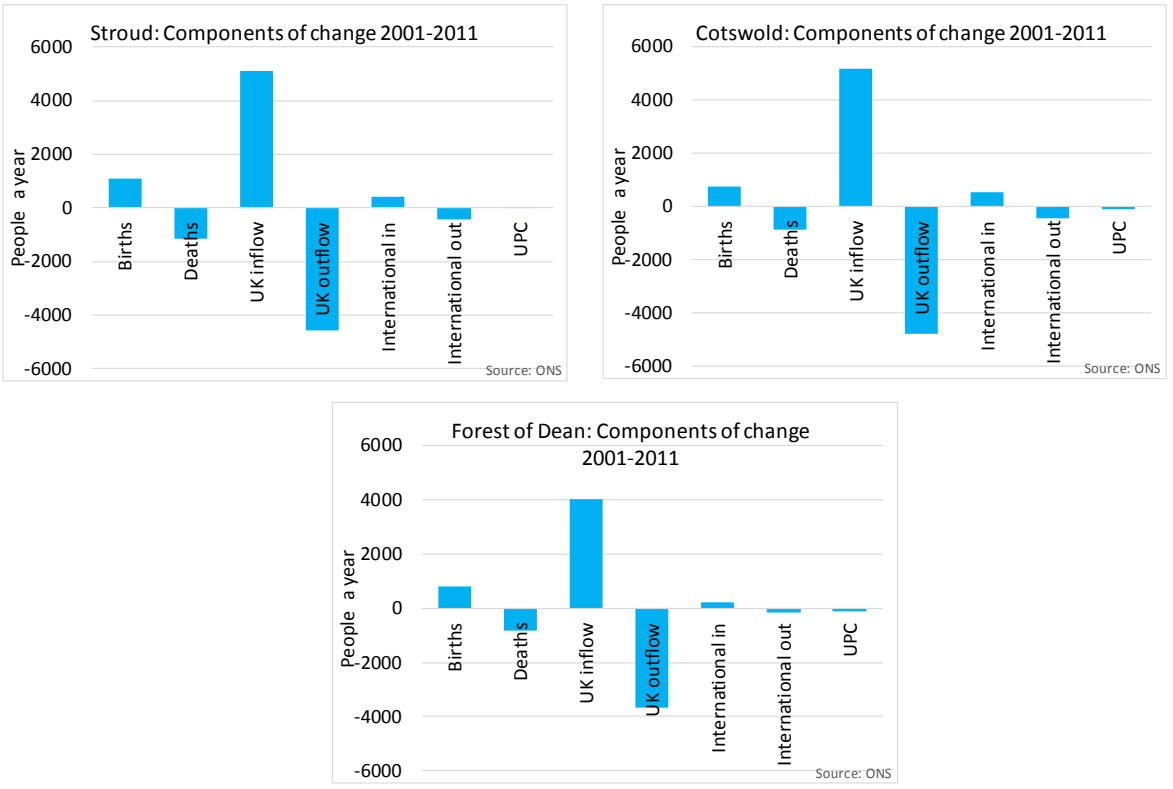
Taking a view on the plausibility of a projected population change

12. By examining each of the six components of change individually it is possible to take a view on how reasonable or otherwise the overall projection for the population of

any local authority area might be. This can be done by comparing the projected flow with the recent past to assess how plausible it might be.

13. Figure 3 (below) shows how the six components of change have contributed to the population changes which occurred in the three authorities between 2001 and 2011. This gives an indication of the relative size of the flows. In all cases the flows to and from the rest of the UK are substantially larger than the other flows.

Figure 3: Components of change 2001 - 2011



Births

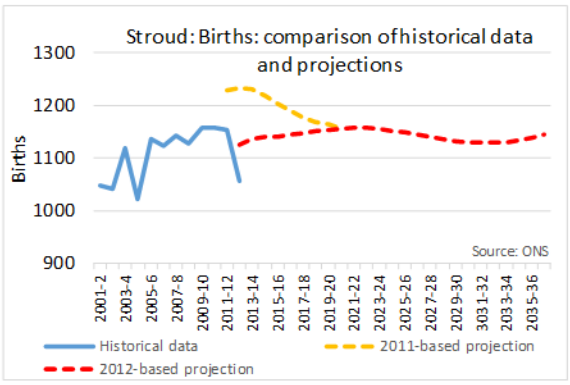
14. Figures 4 (below) compares the latest ONS projections for births with both the previous projections and the historical records. From the charts it is evident that:

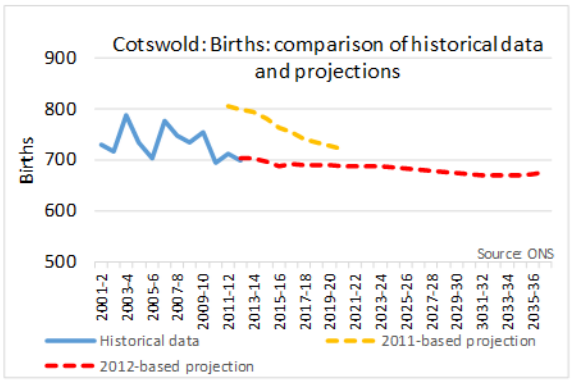
a. where there is a significant difference, the 2012 based projections are better fits to the historical data than the 2011-based projections; and,

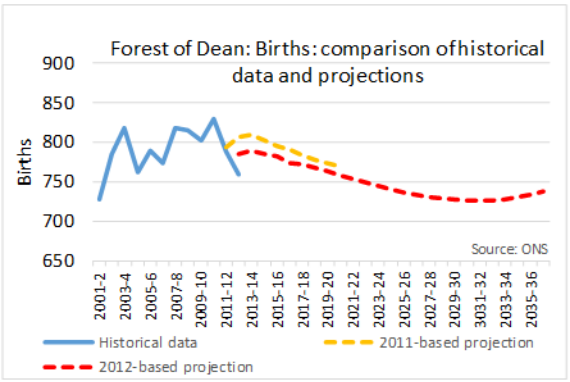
b. the latest projections are lower than the 2011-based projections. For Stroud and Cotswold the new projections suggest substantially lower births. For Forest of Dean the differences are small.

Both are to be expected as there was an acknowledged weakness in the 2011-based projections resulting from the re-use of fertility trends from earlier projections. This led to the over-estimation of fertility rates for some authorities.

Figure 4: Birth projections





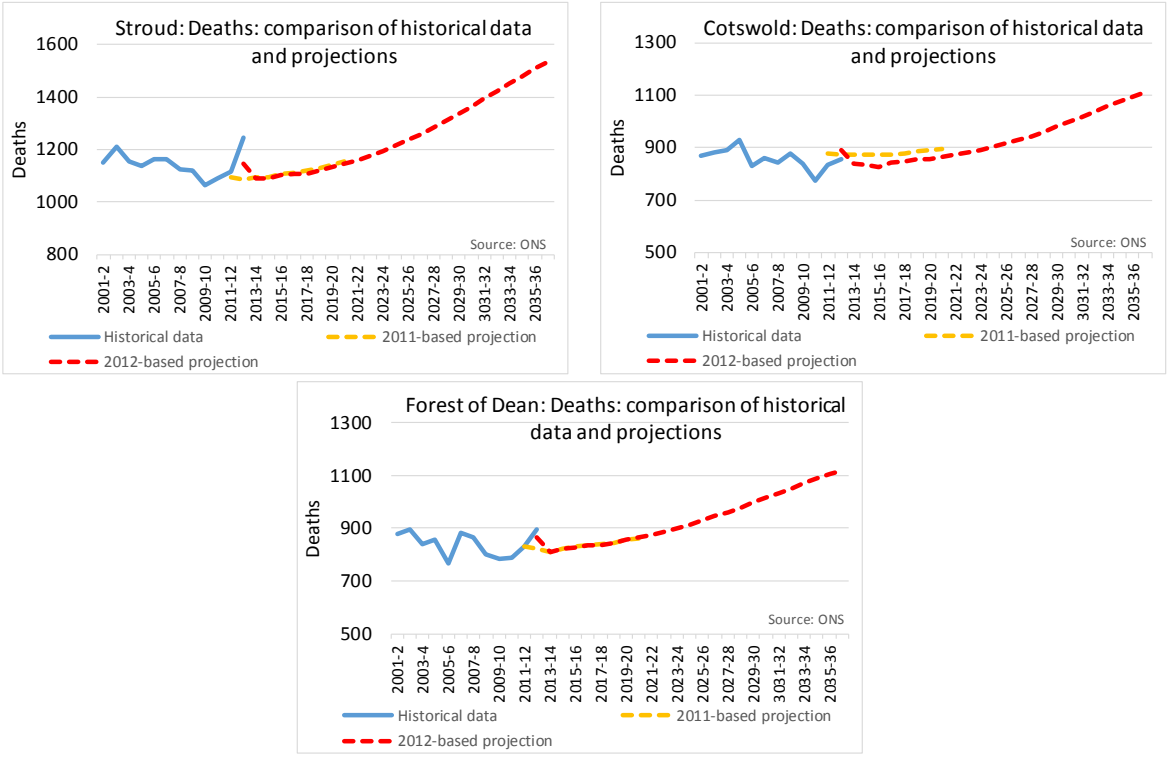


15. Whilst the revised birth projections will have the effect of reducing the projected increases in the populations of the Gloucestershire authorities, the changes are of limited relevance to estimating for the number of homes needed as children do not form households. Where the differences are relevant is in explaining why lower population projections do not necessarily result is similar reductions in the projected increases in the number of households, and hence in the housing requirements of authorities. Indeed, for an authority for which the revised birth projections account for a substantial proportion of the reduction in the increase in population between the two projections, there can even be an increase in the number of households between the two projections.

Deaths

16. The charts below compare the latest ONS projections for deaths with the historical trends. There is very little difference between the 2012 and 2011-based projections. There is no reason to question this aspect of the projections.

Figure 5: Death projections



Flows to and from the rest of the UK

17. As already noted, the flows to and from the rest of the UK are by some way the largest of the six components of change. Unlike births, they have an immediate impact on the adult population of an area and therefore have significant implications for household numbers and housing requirements. This suggests that the projections in this area deserve careful attention.

18. There are two complicating factors. First, the data sources on which the trends are based (primarily GP registrations) are not of a high quality. Second, the estimation of these flows was another area of weakness in the 2011-based projections (caused by the re-use of flow rates from earlier projections). The ONS statistical release that accompanied the 2011-based projections included the following note:

> *"Differences in the age structure at local authority level have also resulted in changes to projected levels of internal migration, that is, people moving their area of residence from one local authority to another within England. This is because migration rates based on historic trend data are applied to the new population base. Where the size and structure of the new population base in a local authority is very different from the 2010-based projections for 2011,*

particularly at ages most likely to migrate, the applied migration rate may over or underestimate the number of people moving from an area."[3]

19. In view of this it is to be expected that the 2012-based projections (which are based on a full re-working of the trends) should provide more reliable projections. However, as already noted, the projected population flows between local authorities in the UK were based on flow rates in the period 2007-12, a period which included the most severe economic downturn for more than a generation. For some authorities this will have had a significant impact on net flows, and hence the rate at which the population is projected to increase.

20. It can be argued that the appropriate course of action is to base the projection on either a 'typical' period or a longer period. A longer period would have the advantage of being less affected by economic or housing market cycles. This argument is particularly strong at a time such this when the economy is recovering after a prolonged and deep recession. It is likely that flows will return to higher levels once more normal economic conditions return, although that is not to say that the years immediately before 2008 were typical or that those flow rates will necessarily occur again.

21. The ONS do not, however follow this approach in the official population projections: they base their trends on a recent five year period. This has the advantage of picking up changes in trends more quickly, but the disadvantage of potential distortions as a result of cyclical changes.

22. A key consideration is that, by definition, net internal migration flows between local authorities in the UK must sum to zero. This means that adjusting the projected net flow into an authority to reflect a longer trend period should be accompanied by compensating adjustments in the other direction for the authorities which are net exporters of people to that authority. Or, to put this another way, making this kind of adjustment would have the effect of moving a projected population increase between authorities, whilst keeping the overall UK population increase unchanged.

23. There is a further issue in that, without a clear national policy on this, there is a danger that local authorities choose which trend period to use to suit their own convenience, perhaps choosing the approach which produces the lowest number if there is local opposition to house building. That could result in an overall under-supply of housing in some sub-regions.

24. It should also be recognised that the net UK flow is often a relatively small difference between two much larger gross 'in' and 'out' flows. This means that a small percentage change in either the projected 'in' or 'out' flow can therefore result in a large change in the projected net flow, with sizeable consequences for the projected change in population and hence the housing requirement.

[3] http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/stb-2011-based-snpp.html#tab-User-guidance

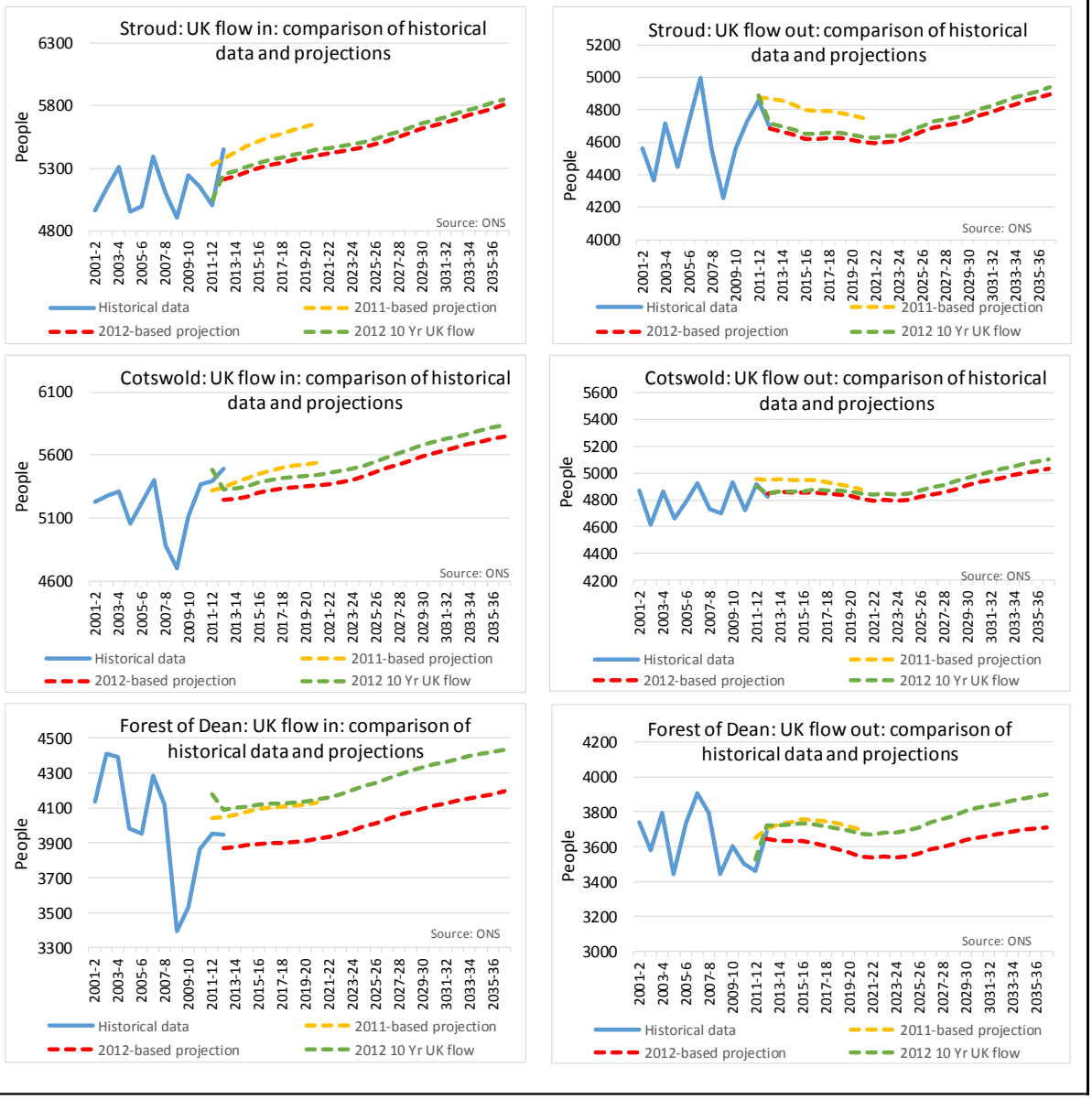
10-year migration scenario

25. To investigate the impact on 2012 SNPP of the use of 2007-12 as the trend period for UK flows, a sensitivity analysis has been carried out using a scenario in which flows into and out of the three local authorities have been adjusted. The adjustments are based on the ratio of the average annual flows over the ten year period 2002-12 to the flows over the period 2007-12. For example, the average inflow to Forest of Dean from the rest of UK over the period 2002-12 was 5.8% higher than the inflow in the period 2007-12 so inflows have increased by 5.8%. Similarly, average outflows to the rest of the UK were 1.8% larger in the period 2001-12 than they were in the period 2007-12, so the alternative projection increases outflows by that percentage. The model producing the alternative scenario allows for births, deaths and 'out' migrations from the extra people assumed to come to the authority. It also ages the extra migrants so that the age profile of residents is adjusted appropriately.

26. The charts below compare the 10-year migration scenario with both the 2011 SNPP and 2012 SNPP projections. It should be noted that all of the graphs have truncated 'Y' axes to enable the detail to be clearly seen. This magnifies the differences between the various projections.

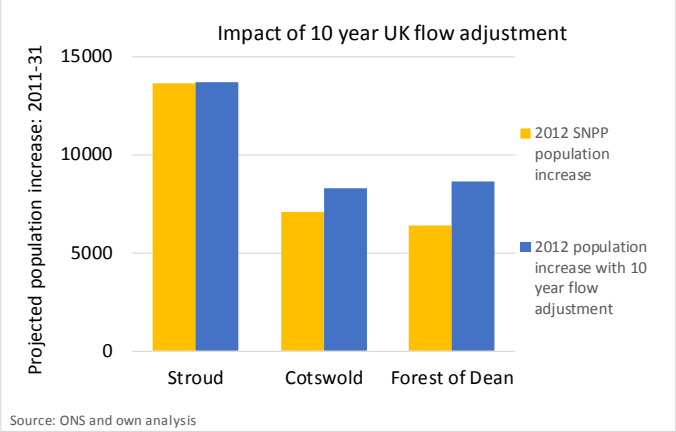
27. As can be seen from the graphs, the adjustments for Stroud are small whereas those for Forest of Dean are much larger. The adjustments for Cotswold are relatively modest, but larger than for Stroud. Comparing the projections with the historical data it is evident that the Forest of Dean projections have been quite significantly affected by the low flows in the period 2007-12: the 10-year migration scenario is clearly a more plausible projection of the longer term trend. The position is less clear for the other two authorities as the differences are much smaller, but it would be prudent to plan on the basis of the higher flows in the 10-year migration scenario.

Figure 6: Projected UK flows in and out



28. The overall impact on the population projection depends on both the scale of the adjustments and the extent to which they cancel each other out. Figure 7 (below) summarises the impacts on the population projections for the period 2011-31.

Figure 7: Impact of 10-year UK flow adjustment



Source: ONS and own analysis

10 year UK flow adjustments: 2011-31	Stroud	Cotswold	Forest of Dean
Adjustment to inflow	0.8%	1.6%	5.8%
Adjustment to outflow	0.7%	-0.3%	1.8%
2012 SNPP population increase	13600	7100	6400
2012 population increase with 10 year flow adjustment	13700	8300	8600
Percentage change	1.2%	16.0%	34.5%

29. The reason why the impact on the population change for the Forest of Dean is as large as it is is that:

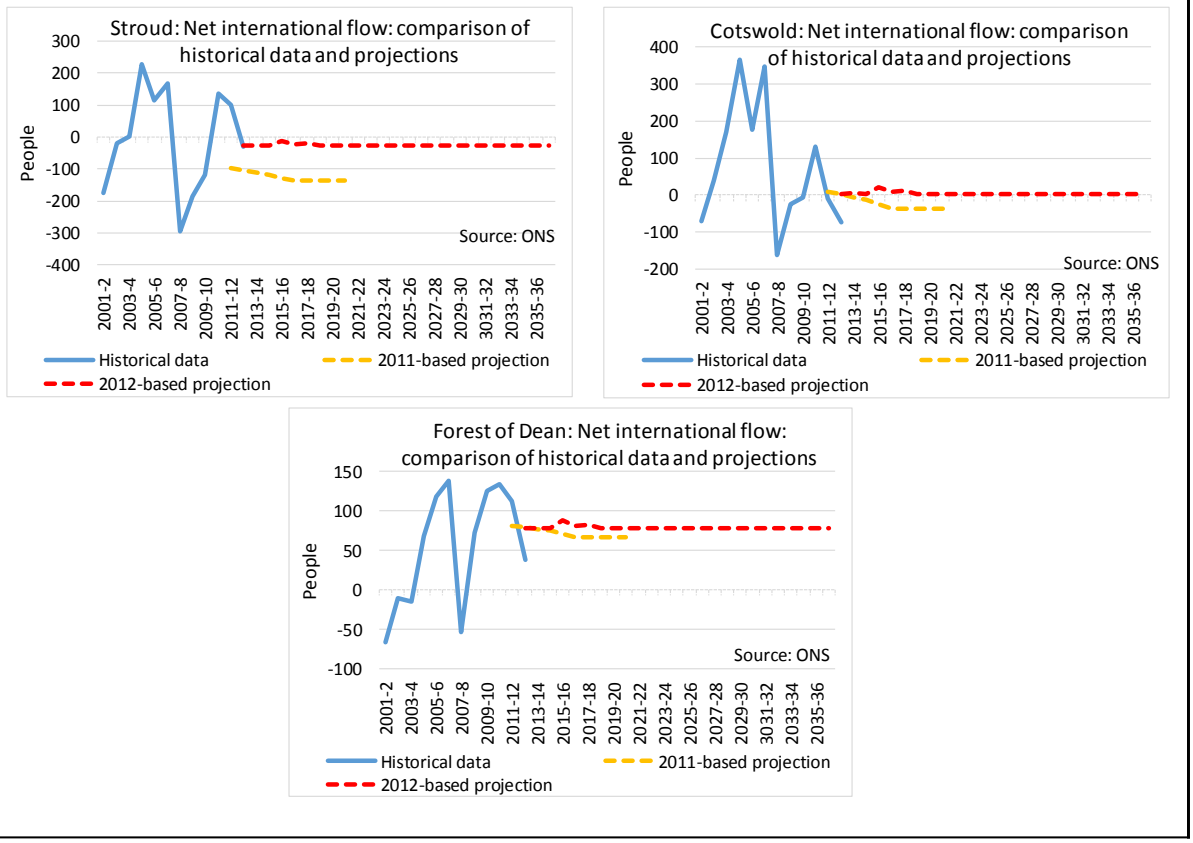
- the adjustment to the inflow is much larger than the adjustment to the out flow;
- the adjustments are to the gross 'in' and 'out' flows, which are much larger than the net flows and so a relatively small percentage change has a large impact on the population change;
- the base population change projected for Forest of Dean in 2012 SNPP is relatively small, averaging only 0.33% a year between 2006 and 2031, less than half the national average. The 32.1% change in the projected population increase is therefore an increase on a relatively small base.

International flows

30. The international projections in both the 2011-based 2012-based projections are constrained to be consistent with the national view taken by the ONS on international flows, a view that changed considerably between the two projections. The 2011-based projection envisaged an average England net international flow of 197,000 people a year over the period 2011-21. The 2012-based projection reduced this to 154,000, a reduction of over 20%.

31. The impact on individual authorities is, however, very far from uniform. Both the 'in' and 'out' international flows are substantially lower for all three authorities in the 2012 SNPP than in the 2011 SNPP. However, those changes largely cancel each other out so the differences between the two projections for the net international flows are smaller – as shown in Figure 8.

Figure 8: Net international flows



32. As can be seen from the charts, the difference between the two projections for Forest of Dean and Cotswold are very small. For Stroud the differences are larger but the 2012-based projection is much closer to the average net flow for the period 2001-2 to 2011-2. All three 2012-based projections are a reasonable continuation of the past trend – suggesting that there is no reason to query this aspect of the population projections.

Unattributable Population Change' (UPC)

33. If all of the data were completely accurate the population in one census plus the cumulative effect of the components of change in the intervening years would equal the population counted in the next census. That is not the case: there is a discrepancy known as the 'Unattributable Population Change' (UPC). At the national level the discrepancy was 103,700 people between the 2001 and 2011 census. That is not a large number in the context of England's population of 53 million in 2011, only 0.2%. It is, however, 2.8% of the population change between the two censuses and that is arguably the more relevant comparison.

34. At the local authority level UPC can be much larger proportionately. There are 28 English local authorities for which the total UPC over the period 2001-11 is more that 5% of the population in 2011 and 83 for which the average UPC is more than 50% of the average population change between 2001 and 2011. A discrepancy of that size is highly significant in estimating population changes.

35. It is not thought likely that there are significant errors in the estimation of births and deaths as we have effective registration systems for both. That leaves three possible causes of UPC:

- International migration estimates
- Flows within the UK
- Census estimates in both 2001 and 2011

36. The ONS considered the arguments for and against taking UPC into account in its 2012 sub-national population projections and decided not to. The main reasons were that:

a. It is unclear what proportion of UPC is due to errors in the 2001 and 2011 censuses and what proportion is due to errors in the components of change. Insofar as the errors are in either the 2001 and 2011 censuses they will not affect projections based on trends in the components of change.

b. If UPC is due to international migration, the biggest impacts will have been during the earlier years of the decade as significant improvements in the migration estimates were made in the latter part of the decade.

37. This is the considered view of the ONS's experts in this field and should not be lightly dismissed. However, where UPC is sizeable compared with the total population, it is less likely that a significant part of it could be due to errors in the 2001 and 2011 censuses, although it should be noted that census estimates of local authority populations are subject to significant error margins. The ONS publishes[4] 95% confidence intervals[5] for its census population estimates and for the 'all persons' counts for the Gloucestershire authorities in both the 2001 and 2011 census these were in the range 1.0 – 1.3%. This means, broadly speaking, that we do not know how many people there were in these authorities on census day to better than +/- 1000 people. Given the size of UPC for the Gloucestershire authorities, it is theoretically possible for the entire discrepancy to have been due to errors in the two census counts.

38. Of the three authorities, the most extreme case is Forest of Dean. For period 2001 to 2011 total UPC was -1360 people. That is 63% of the population increase over that period. The minus sign implies that the cumulative components of change exaggerated the actual population change. However, this was 63% of a relatively small population increase: the total UPC for the period 2001-11 was only 1.7% of the population in 2001. That suggests that a significant proportion of UPC could possibly have been due to errors in either the 2001 or 2011 censuses. The figures for UPC for the other authorities are given in Figure 10 (below).

[4] http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/census-confidence-intervals.xls

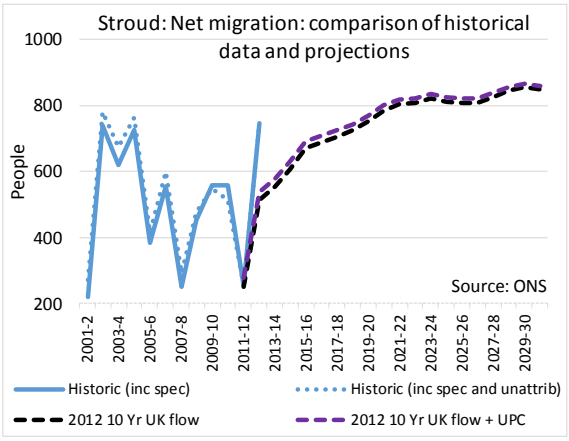
[5] A 95 per cent confidence interval is a range within which the true population would fall for 95 per cent of all possible samples that could have been selected.

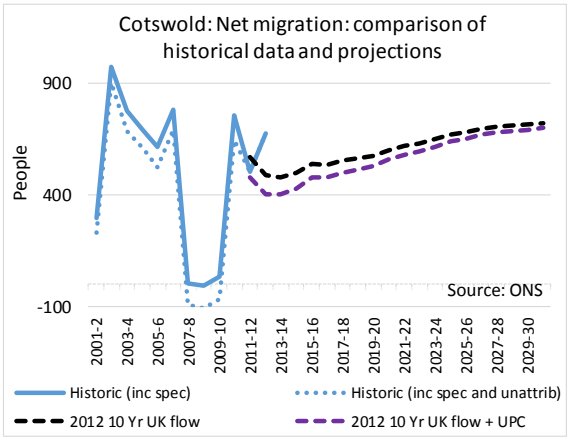
39. Insofar as UPC is caused by errors in the migration components of change, the effect will largely be to misallocate the projected population growth between local authorities. Correcting for it will largely be a question of redistributing the projected population growth.

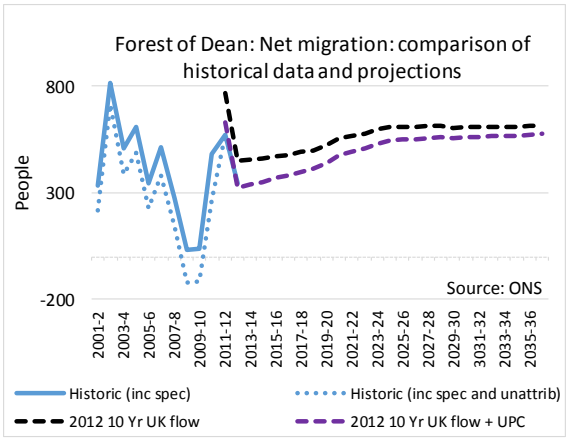
UPC scenario

40. Figure 9 (below) shows the impact of UPC on the three authorities. The dotted blue lines show the difference that would be made if all of the UPC was included in the historic net total migration flow (i.e. the net flow from both the rest of the UK and the rest of the world). The dotted black line shows the projected flow including the 10-year migration adjustment. The dotted purple line shows the impact of adding a UPC adjustment to the 10-year migration adjustment.

Figure 9: Impact of UPC on net migration flows

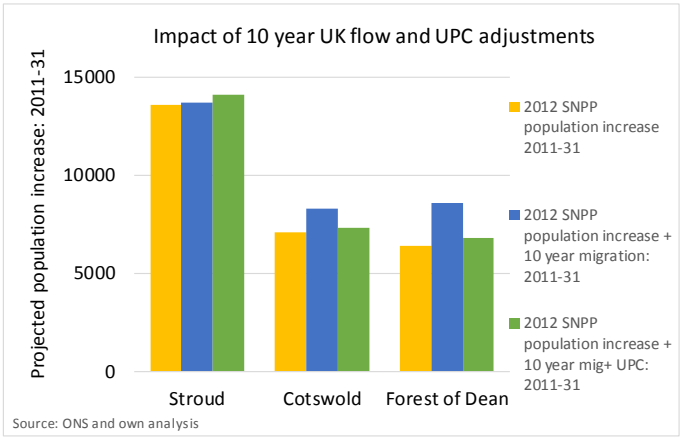






41. Figure 10 below summarises the impact which UPC has on the population projections when combined with the 10-year migration scenario. This assumes that all of the UPC is attributable to net migration. That is an extreme view, although most of it may well be attributable to net migration. The best trend-based population projection probably lies between the 10-year migration scenario and the scenario that adjusts both for migration and UPC.

Figure 10: Impact of UPC on population projections



Impact of Unattributable Population Change	Stroud	Cotswold	Forest of Dean
Mean UPC as percentage of mean population change	5.3%	-32.5%	-63.5%
2001-11 UPC as percentage of 2001 population	0.2%	-1.1%	-1.7%
2012 SNPP population increase 2011-31	13600	7100	6400
2012 SNPP population increase + 10 year migration: 2011-31	13700	8300	8600
2012 SNPP population increase + 10 year mig+ UPC: 2011-31	14100	7300	6800
Change due to UPC adjustment	2.6%	-12.3%	-21.1%

42. Whilst there is room for debate about the merits of including a UPC adjustment, given the uncertainty, the prudent approach would be to plan on the basis of the higher of the two figures i.e. not to include the UPC adjustment when it is negative. Further weight is given to this view by the fact that there has been at least one instance of an inspector taking exception to an authority seeking to use a negative UPC to reduce its housing requirement[6].

Conclusions on the population to be planned for

43. The above analysis suggests that:

a. The 2012 SNPP projections for births, deaths and international migration appear to be plausible projections of recent trends.

b. The impact of the 2012 SNPP using 2007-12 as its trend period for flows from and to other UK authorities could be significant in the case of Forest of Dean. It is negligible for Stroud. The impact for Cotswold is somewhere in between.

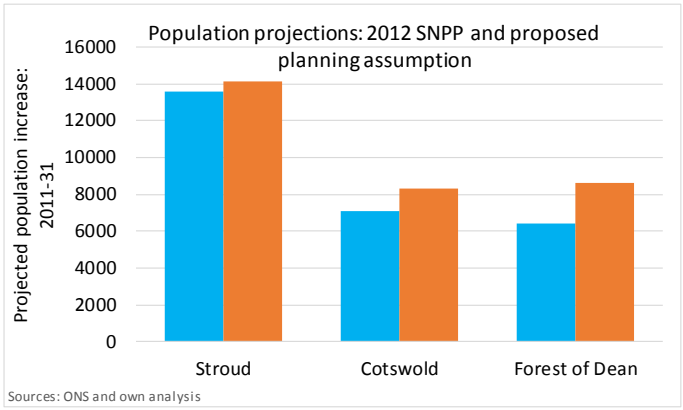
c. The best trend-based population projection is likely to lie somewhere between the 10-year migration scenario and the 10-year migration scenario plus UPC. The prudent approach would be to plan on the basis of the higher

[6] See Inspectors initial conclusion on the Vale of Aylesbury Plan Strategy Examination (7 January 2014) http://www.aylesburyvaledc.gov.uk/GetAsset.aspx?id=fAAxADQAMwAyADYAfAB8AFQAcgB1AGUAfAB8ADAAfAA1

of the two figures i.e. to include UPC where it is positive and not where it is negative.

44. Figure 11(below) shows what these conclusions would mean, showing the basic 2012 SNPP and the proposed adjustment.

Figure 11: Proposed planning assumptions for population increases



Projected population growth 201	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
ONS 2012-based projection	13600	7100	6400	52600	79600
Proposed planning assumption	14100	8300	8600	56400	87300

HOW PEOPLE ARE LIKELY TO GROUP THEMSELVES INTO HOUSEHOLDS

The household projections

45. The assumptions made about how people will group themselves together into households are crucial in estimating the number of homes needed. The key issue is whether household formation patterns will revert to the earlier trend towards smaller average household sizes or will the economic downturn and a long period of deteriorating housing affordability have caused a permanent change?

46. The two most recent DCLG household projections are the 2008-based and 2011-based projections. The 2008-based projections, in effect, predate the economic downturn and are often taken as broadly indicative of the previous longer term trend. The 2011-based projections were produced following the 2011 census and take some account of census data which generally found fewer households than had been projected in the 2008-based projections, suggesting that household formation patterns had departed from the previous long term trends.

47. The 2011-based projections were based on the ONS's 2011-based population projections which, as already noted, had a number weaknesses as a result of having used trends taken from the ONS's 2010-based population projections and not updated in the light of the 2011 census. This has meant that some flows within the UK have been either over- or underestimated.

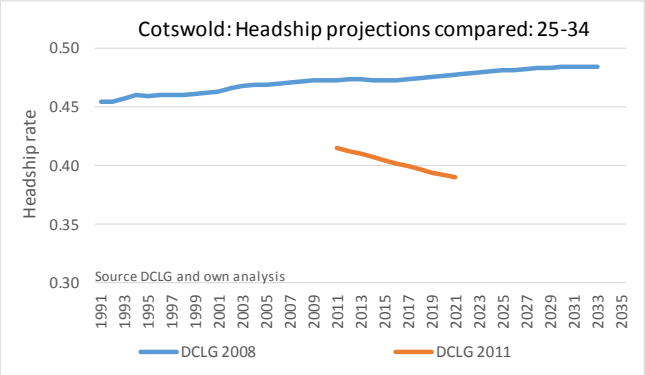
48. To understand the changes that have occurred in household formation patterns it is necessary to look at how different age groups have been affected. The charts in Annexes A-C compare the past and projected household formation patterns in the 2008 and 2011-based projections for the nine age groups used by DCLG.

49. The extent and direction of the departure from the previous trend varies considerably. In the charts in Annexes A-C and Figures 12-14 below, the distance between the start of the orange line for the 2011-based formation rates and the blue line for the 2008-based rates is an indication of how far below or above the expected rate the 2011 census results were. Where the orange line is below the blue one there were fewer households formed by a given number of people than expected in the 2008-based projections.

50. Note that:

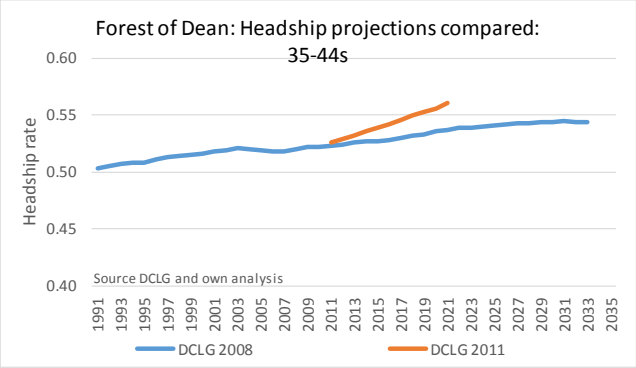
- The departure from trend is largest for the 25-34 age group. Headship rates for this age group were significantly below the level in 1991, let alone the level projected for 2011. Note also that the 2011-based projection suggests that they will continue to diverge from the 2008-based trend. This implies that a smaller and smaller proportion of people in this age group will set up their own households (either on their own or with others). The following chart shows that 25-34 age group for Cotswold as an example:

Figure 12: Divergence between headship rates in DCLG's 2008 and 2011-based household projections: 25-34s



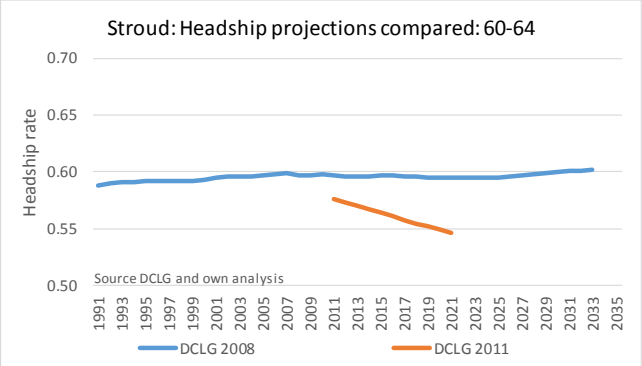
- The 2011-based projection for 35-44s also starts below trend but is projected to move upwards, more steeply than in the previous trend, albeit from a lower starting point. The exception is the Forest of Dean for which the headship rate in 2011 was very slightly higher than expected by the 2008-based projections. However, in line with the other authorities, its headship rate is also projected to move upwards faster than in the previous projections. The Forest of Dean example is shown below:

Figure 13: Divergence between headship rates in DCLG's 2008 and 2011-based household projections: 35-44s



- Other groups showing a significant departure from trend are the 60-64 and 65-74 age groups. These have below trend headship rate projections which are projected to diverge further from the 2008-based trend. The example of the 60-64s in Stroud is particularly striking:

Figure 14: Divergence between headship rates in DCLG's 2008 and 2011-based household projections: 60-64s

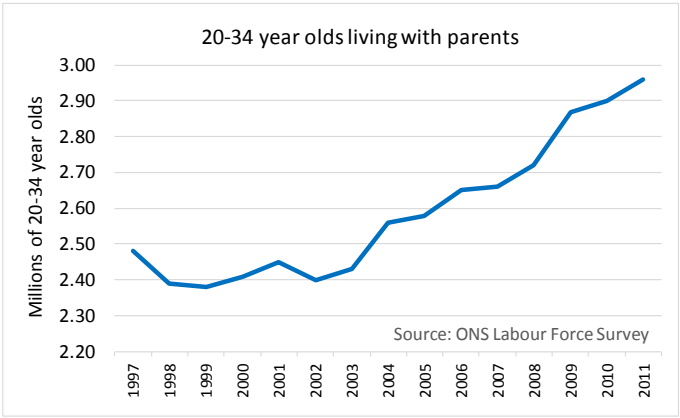


Below trend headship rates amongst younger adults

51. Two reasons have been suggested for the departure from previous trends amongst the younger adult age groups.

52. First, the 2008-based projections over-estimated the likely increase in household formation rates as a result of not taking into account the significantly higher numbers of new international migrants. This impacts on headship rates as recent international migrants tend to live in larger households (i.e. they have a lower propensity to form separate households) than the rest of the population of a similar age. There is evidence to suggest that the increased volumes of international in migration seen in the first decade of the century were responsible for at least half of the difference between the expected number of households in 2011 and the actual number found by the census[7].

Figure 15: Young adults living with parents



53. Second, there is evidence that there has been a significant increase in young adults living in shared houses and flats or with their parents. The latter issue was explored

[7] Holmans, A. (2013), *New estimates of housing demand and need in England, 2011 to 2031,* London, TCPA. http://www.tcpa.org.uk/pages/new-estimates-of-housing-demand-and-need-in-england-2011-to-2031.html

in an ONS report entitled "Young adults living with parents in the UK, 2011"[8] (see above chart). Using data for the Labour Force Survey, this suggested that there had been a 21% increase in the number of young adults living with their parents between 2001 and 2011 – an increase of over ½ million people – as shown in this chart. Note also that the increase started well before the credit crunch and recession suggesting that other factors, such as the deteriorating affordability of housing, were at work here.

54. Whilst it is possible that some of these changes in the living patterns of young adults will have been free choices, it seems more probable that most are changes caused by the economic situation, the cost of housing and the difficulty in obtaining a mortgage without a sizeable deposit. As such it seems likely that there will be a move back towards the previous trend if economic conditions improve. However, the fact that the recent changes appear to have started well before the credit crunch and recession suggests that better economic conditions alone will not be sufficient on their own. It seems likely that what happens to the affordability of housing (i.e. the relationship between earnings and house prices/rents) will also be an important factor. In addition there may also be structural factors which would not reverse even if the conditions of the early years of the century were fully replicated. For example, we are unlikely to see the same ready availability of mortgage finance that we saw before 2007. Welfare reforms will also have had an impact.

55. How much allowance should be made for a potential move back towards previous headship rate trends is a matter of judgement, not exact science. The following factors need to be taken into account:

    a. Insofar as the departure from the 2008-based projection was due to those projections not making an appropriate allowance for increased international migration, that element of the departure is unlikely to unwind. However, Stroud, Cotswold and Forest of Dean have smaller international inflows than the average local authority so less than half of the difference may be due to international migrants.

    b. A return to the 2008-based headship rates corrected for international migration would represent a complete unwinding of the factors which have caused headship rates to fall amongst existing UK residents. As already noted that is not likely in the foreseeable future as an improvement in the affordability of housing would be needed and there are structural factors which are likely to remain in place.

56. Headship rates gradually moving back to the mid-point between the 2008-based projections and the 2011-based projections would represent the unwinding of a large part of the factors which have caused headship rates to fall amongst existing residents. Full unwinding (which seems unlikely) might for these authorities equate to moving three quarters or more of the way back to the 2008-based projections. Taking the mid-point therefore seems to be a prudent planning assumption.

[8] Young Adults Living With Parents in the UK, 2011, ONS, 29 May 2012 http://www.ons.gov.uk/ons/rel/family-demography/young-adults-living-with-parents/2011/young-adults-rpt.html

Below trend headship rates amongst over 60 age groups

57. What has been happening amongst the older age groups is much less clear than it is for the younger age groups. However, a detailed study of the changes in the headship rates of the Gloucestershire authorities between 2001 and 2011 has provided some useful indicators.

58. The first point to note is that the headship rate data for the individual age groups used by DCLG – 65-74, 75-84 and 85 and over – can be confusing as couples can have members in two different age groups. Consider, for example, a couple consisting of a man aged 76 and a woman aged 74. This would appear as a couple in the 75-84 age group. However, should the man die the widow would appear as a single person household in the younger age group – those aged 65-74. The headship rate in the latter younger age group would go up and the rate in the older age group would go down. It is possible to avoid most of these complications by considering the headship rates of all households headed by someone aged 65 or over together, although there will still be an issue with couples where one partner is under 65.

59. If all households aged 65 and over are considered together, the changes which have occurred between 2001 and the 2011-census based headship rates are much easier to understand. What is seen is a reduction in the number of single person households and an increase in couples and 'other' households. ('Other' households are people living with other people who are neither their partner nor a dependent child. The other person could be a grown-up child.) For Stroud, Forest of Dean and Cotswold the reduction in the number of single person households between 2001 and 2011 is broadly consistent with single person households being replaced by either couple households (producing half as many households as there are two people per household) or 'other' households made up of one person aged over 65 and someone age under 65. This suggests that what may be happening is a combination of:

    a. Couples staying together longer either as a result of both partners living longer or fewer divorces.

    b. Single person households becoming households consisting of someone who might previously have lived on their own but now has one or more other person living with them. However, those other people are in the most cases not people over 65 as there are not significant numbers of people aged 65 who are not accounted for by adding up the number of heads of households and assuming that most over 65 couples are both over 65[9].

60. The key point here is that there is little evidence of older people sharing homes with other older people or, indeed, going to live with people in younger age groups, such as their sons or daughters. If there were evidence of this it might suggest that household formation patterns had been distorted by the recession or the high cost of accommodation – something which might reverse if and when conditions improve

[9] This is on the basis that if, you assume that each couple household has two people aged 65+ and each 65+ 'other' households also contains a person aged 65 or over then, adding in the 65+ single person households the entire 65+ household population is accounted for to a reasonably good approximation.

(as is expected in the 25-34 age group). Whilst sons and daughters coming to live with parents aged over 65 may be an indication of stress in the age groups to which they belong, if those changes reverse and the households in question revert to being single person households, there would be no change in the number of households in the 65+ age groups: all that would happen is that one 'other' household would disappear and one single person household would appear.

61. It is perhaps also significant that the changes in the 65+ age group projected in the DCLG 2008-based projections for the period 2001 to 2011 are far harder to explain and in some cases are positively implausible. This suggests that the 2008-based projections for 2011 for this age group may not be a very reliable guide to the previous longer term trend. This is not too surprising as the 2008-based headship rate projections were based on 2001 census projections rolled forward using the available (but not wholly reliable) data for changes since the census. As such it is to be expected that they become less and less reliable the further they get from the previous census. In contrast the 2011-based figures are based on an up to date census and are therefore likely to be a reasonably reliable indication of current household formation patterns.

62. This leads to the conclusion that there is no evidence that the household formation patterns of over 65s in 2011 in these three authorities have been significantly distorted by the recession or the unaffordability of housing (as appears to be the case for 25-34 year olds). They should therefore be thought of as a reliable base from which to project forward future household formation patterns. In contrast, there are suggestions that the 2008-based projections for 2011 may not be particularly reliable. It would therefore seem that the 2011-based projections for the headship rates of over 65s are probably at least as good a basis for assessing the housing needs of this section of the community as the 2008-based projections, if not a better one.

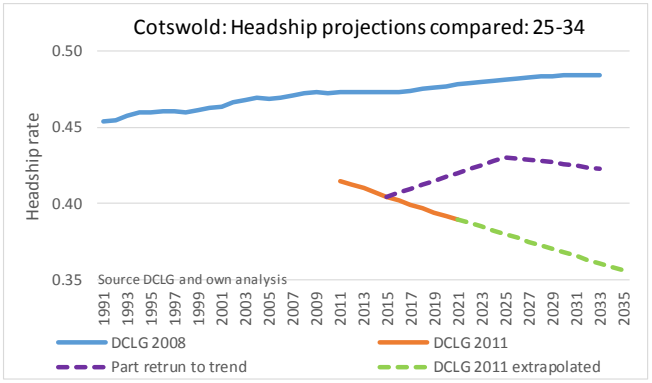
Other age groups

63. To complete the picture a brief mention should be made of the other age groups i.e. the 15-24 households and those aged between 35 and 64. As the headship rate charts in Annexes A-C show the extent and direction of the departure from the 2008-based headship projections varies from age to age group to group and from authority to authority. In some cases the 2011-based projections suggest headship rates which are higher than those envisaged in the 2008-based projections, which implies that assuming a return towards the 2008-based projection would mean a reduction in the number of additional households formed. For Stroud, Cotswold and Forest of Dean it is the case that if a partial return to trend were assumed for the 'other' age groups the number of additional households formed between 2001 and 2031 would fall. Assuming no return to trend for these age groups would therefore carry no risk of underestimating the housing requirement: indeed there is a small risk in the other direction.

64. The following chart illustrates the part return to trend option for 25-34 year olds in Cotswold. This assumes that from 2015 household formation rates for all age groups begin to move steadily back towards the 2008-based rates until in 2025 they are

half-way between the 2008 and 2011-based rates. Thereafter household formation rates are assumed to remain half-way between the 2008 and 2011-based rates.

Figure 16: Part return to 2008-based headship rate projections



Modelled scenarios

65. To provide full comparability with the analysis carried out for the JCS the following scenarios have been modelled.

    a. **DCLG's 2011-based projections (DCLG 2011).** This the latest official set of household projections. It uses population projections from 2011 SNPP with DCLG's 2011-based headship rates. It was, in effect, the starting point for most recent analysis carried out for the JCS.

    b. **DCLG's 2011-based projections with partial return to trend for 25-34s (DCLG 2011 + 25-34s PRT).** This is the scenario on which the current draft of the JCS is based

    c. **2012 SNPP applied to DCLG's 2011-based headship rates (2012 SNPP + DCLG 2011).** This brings together the two most recent official population and household formation rate projections. It is therefore the most up to date starting point for assessing an OAN.

    d. **'Adjusted 2012 SNPP with part return to trend' (Adjusted 2012 + PRT)**. This uses the 2012 SNPP adjusted for the low flows from and to other UK authorities in the period 2007-12 plus a further adjustment for unattributable population change where UPC is positive, together with a partial return to trend for all age groups.

    e. **'Adjusted 2012 SNPP with Part return to trend for 25-34' (Adjusted 2012 + PRT 25-34).** This is as the previous scenario but only assumes a partial return to trend for 25-34 year olds.

Empty and second homes

66. To turn an estimate of the net number of additional households into an OAN assumptions need to be made about the proportion of the housing stock that will

either be empty or used as second homes. To be consistent with the JCS, the assumptions used have been based on 2011 data as set out in Figure 17:

Figure 17: Number of homes in 2011	Second homes	Vacant homes	Number of homes	% vacant or second homes
Cotswold	1540	1076	39940	6.55%
Forest of Dean	306	1243	36160	4.28%
Stroud	401	1576	49940	3.96%

Second homes data from 2011 Council Tax data base
Vacant homes from DCLG Live Table 615
Number of homes in from DCLG Live Table 125

67. The results for the scenarios modelled are in the following table. To avoid suggesting spurious accuracy, the figures have been rounded to the nearest hundred for the total housing requirement and to the nearest 10 for the annual requirement.

Figure 18: Households and homes	Stroud		Cotswold		Forest of Dean	
	2011-31		2011-31		2011-31	
	Homes	Homes/yr	Homes	Homes/yr	Homes	Homes/yr
DCLG 2011	7800	390	5700	290	5600	280
DCLG 2011+ 25-34s PRT	8000	400	6100	310	6000	300
2012 SNPP + DCLG 2011	8200	410	5300	270	5100	260
Adjusted 2012 + PRT	9200	460	6500	330	6600	330
Adjusted 2012 + PRT 25-34	8700	430	6300	310	6400	320

68. The equivalent figures for the JCS area and for Gloucestershire as a whole are as follows:

Figure 19: Households and homes	JCS		Gloucestershire	
	2011-31		2011-31	
	Homes	Homes/yr	Homes	Homes/yr
DCLG 2011	28400	1420	47300	2370
DCLG 2011+ 25-34s PRT	30500	1520	50400	2520
2012 SNPP + DCLG 2011	26900	1340	45400	2270
Adjusted 2012 + PRT	33400	1700	55700	2800
Adjusted 2012 + PRT 25-34	30400	1520	51800	2590

69. It should be emphasised that these numbers assume that past trends continue, albeit in some cases with adjustments to the estimates to reflect what are thought to be departures from the underlying trend. There may be reasons why this might not happen or why it might not be desirable.

Conclusion on demographic estimates of housing requirements

70. The key issues for the Stroud, Forest of Dean and Cotswold Councils are:

a. **What population to plan for.** The 2012-based ONS population projections (2012 SNPP) together with DCLG 2011-based household formation rates represent the natural starting point as these projections provide the last official views on the two key variables. The main issues are **whether to make adjustments for :**

- **The impact of a trend period which encompassed the economic downturn.** Without this adjustment the populations of Forest of Dean and Cotswold could be underestimated.

- **Unattributable population change (UPC).** It is debatable whether an adjustment should be made for UPC given the ONS's explicit decision not to include adjustments in their official projections. At least one inspector has taken view that negative UPCs should not be used to reduce a housing requirement. However, where UPC is positive there is a risk of underestimating the future population if no adjustment is made. The prudent course would be to include UPC where it is positive.

b. **Whether to plan on the basis of the headship rate projections in DCLG's 2011-based projections or assume a partial return to the previous trend either for all age groups or just for the 25-34s.** The key considerations here are:

- The DCLG 2011 headship rates assume that a smaller and smaller proportion of 25-34 year olds set up a home of their own (possibly with a partner or others). In effect, this means assuming that housing conditions become less favourable for young adults.

- Both of the partial return to trend scenarios would correct this decline to some extent. There is a strong case for the 'Partial return to trend for 25-34s' as there is evidence as to why headship rates in this age group have departed from the previous long term trend and are likely to return at least partially towards that trend. On the other hand the changes which have occurred in the 65+ age group between 2001 and 2011 are consistent with changes which are not likely to be reversed.

- It is therefore suggest that a partial return to trend for 25-34s only should be assumed

71. On this basis the demographic OANs for the three authorities, the JCS and Gloucestershire would be as follows:

Figure 20: Demographic OAN	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
Baseline: 2012 SNPP + DCLG 2011	8200	5300	5100	26900	45400
Demographic OAN	8700	6300	6400	30400	51800

ADJUSTMENTS TO REFLECT 'OTHER FACTORS'

72. The PPG advises:

> *"The household projection-based estimate of housing need may require adjustment to reflect factors affecting local demography and household formation rates which are not captured in past trends. For example, formation rates may have been suppressed historically by under-supply and worsening affordability of housing. The assessment will therefore need to reflect the consequences of past under delivery of housing. As household projections do not reflect unmet housing need, local planning authorities should take a view based on available evidence of the extent to which household formation rates are or have been constrained by supply."*[10]

Market signals

73. More specifically those planning for housing are expected to take account of 'market signals':

> *"The housing need number suggested by household projections (the starting point) should be adjusted to reflect appropriate market signals, as well as other market indicators of the balance between the demand for and supply of dwellings. Prices or rents rising faster than the national/local average may well indicate particular market undersupply relative to demand."*[11]

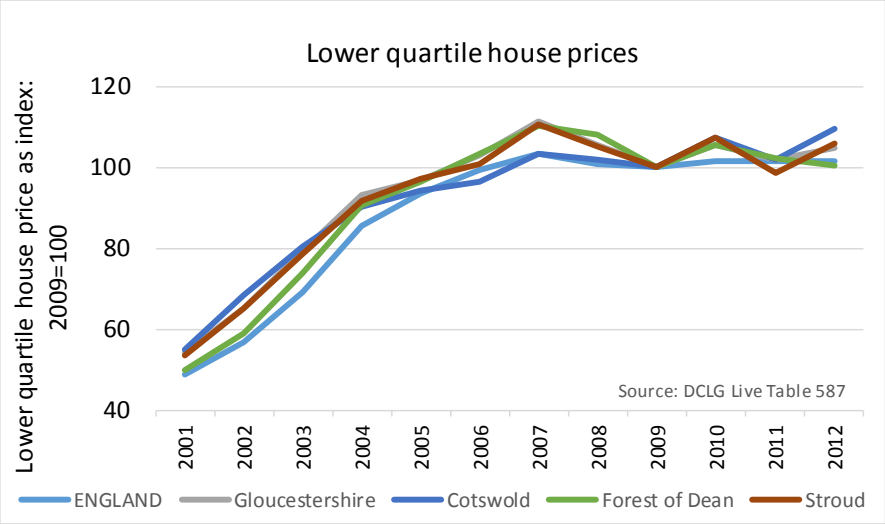
74. The reference to 'prices or rents rising faster than the national/local average' is important. Higher prices than in other areas may not necessarily indicate a particular problem but may simply reflect the mix of housing in an area or particular features which are thought desirable such as proximity to transport links, city centres, attractive countryside etc. For example, prices in central London are always going to be higher than elsewhere given the value those renting or buying homes attach to a central location – advantages that are inevitably limited to a finite number of properties no matter how adequate the supply of homes is in London as a whole. On the other hand, prices rising faster than other areas may indicate a supply problem. This is reinforced by the Planning Advisory Service's (PAS) recent technical advice note on Objectively Assessed Needs and Housing Targets[12] which advises at paragraph 5.38 that, "Proportional price change is generally a better indicator than absolute price,…."

75. The most obvious indicator is changing house prices. Figure 21 shows lower quartile house prices for Stroud, Forest of Dean and Cotswold expressed as an index to enable the relative price movements to be seen. The clear conclusion is that prices in the three authorities have moved in line with those in the county and the country

[10] Planning Practice Guidance, Paragraph: 015 Reference ID: 2a-015-20140306
[11] Planning Practice Guidance, Paragraph: 019 Reference ID: 2a-019-20140306
[12] Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

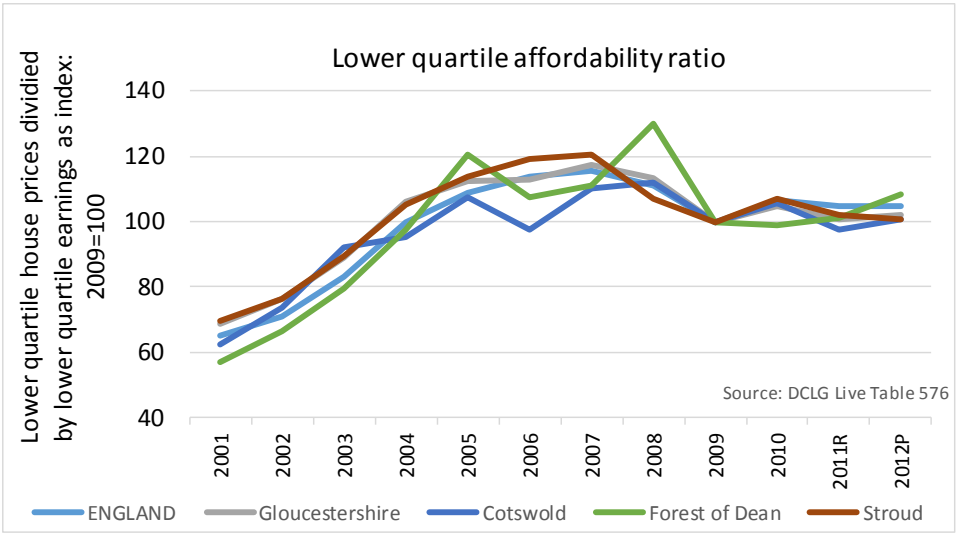
as a whole. This suggests that there are no particular local factors to take into account.

Figure 21: Lower quartile house prices



76. Affordability ratios, which measure house prices as a multiple of earnings, are another indicator of how a housing market is performing. The following chart shows the ratio of lower quartile house prices to lower quartile earnings, the lower quartiles being chosen as better indicators of the prices paid and incomes earned by those seeking to enter the housing market for the first time.

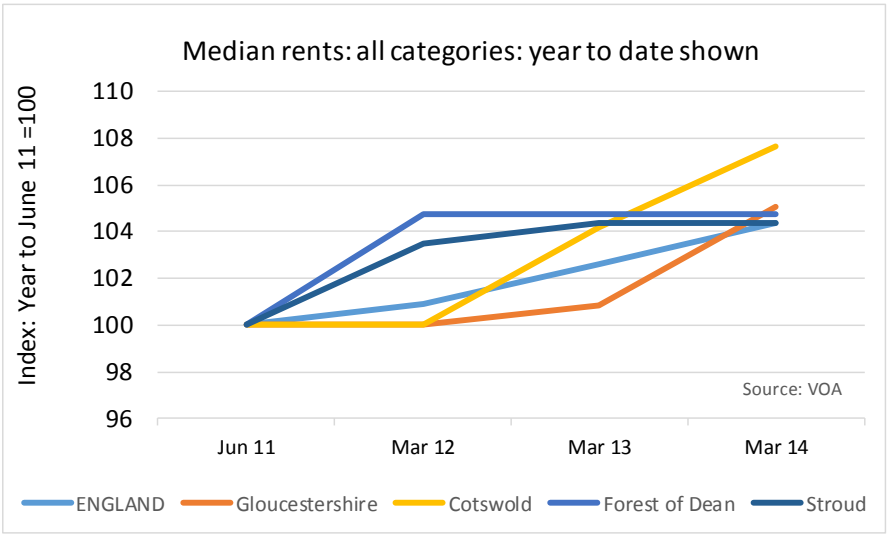
Figure 22: Lower quartile affordability ratios



77. The affordability ratio for Forest of Dean has perhaps been a little more volatile than other the areas. However, Forest of Dean is the district with the lowest but one lower quartile house prices in Gloucestershire. This is therefore a change from a low base so is not of as great a concern as it might otherwise be.

78. Average rents are a further indicator. However, the available Valuation Office Agency data at the local authority level does not extend back beyond the year to June 2011 and so is of limited value in enabling trends to be identified. What information there is (see Figure 23) does not suggest a particular problem in any of the authorities.

Figure 23: Rents



Under supply

79. The PAS technical advice note offers some useful advice on what is meant by the references in the PPG to past under supply:

> *"5.34 The guidance on past supply and market signals is sometimes misinterpreted, because readers take 'under-supply' and 'under-delivery' to mean that house building was below policy targets. But in the present context these words mean something quite different - that house building was less than demand or need. In many places delivery is in line with targets, but the targets themselves are far below need or demand; in other words, planning constrains the amount of housing development. This constitutes under-supply within the meaning of the PG.*
>
> *5.35 The impact of under-supply works not only through suppressed household formation, but also through suppressed migration. The latter effect is very common, as we can see from the close correlation between housing completions and net migration. If housing land, and hence housing, is in short*

supply, households will be prevented from moving into the area or will be priced out or forced out of the area.[13]"

80. The PAS technical note also draws attention to a recent High Court judgment which has made it clear that under supply should not be gauged against the now defunct Regional Plan housing targets:

> *"In assessing future need, authorities should not add any 'backlog', where past housing development under-delivered RSS targets. Thus a recent High Court judgement noted:*
>
> > *'… There was no methodological error in the way these competing estimates for the period 2011-2031 were drawn up by reason of the notional "shortfall" in housing delivery between 2006 and 2011 by comparison with the average annual figure for additional housing indicated in the South East Plan… There was no reason whatever for a person in 2011 seeking to draw up a current estimate of population growth and housing requirements looking into the future from that date to 2031 and using up-to-date evidence to do so, to add on to the estimated figures any shortfall against what had been estimated to be needed in the first phase of the previously modelled period included in the South East Plan..'*
>
> *(Zurich Assurance Limited v Winchester City Council and South Downs National Park Authority, [2014] EWHC 758 (Admin) 18th March 2014)*[14]"

81. The PAS technical note recommends the comparison of past completions with the trend in completions in England as a whole[15], the suggestion being that a local trend that was clearly at variance with the national trend might indicate that planning constraints or other local factors were affecting housing supply and that as a consequence past household formation rates or migration flow might not be a reliable basis on which to assess an OAN. Figure 24 shows the available data for housing completions over the last 20 years with the England trend rate shown as an appropriately scaled index. Whilst there have been up and downs, there is no clear evidence that supply has been subject to particular constraints over the last ten years.

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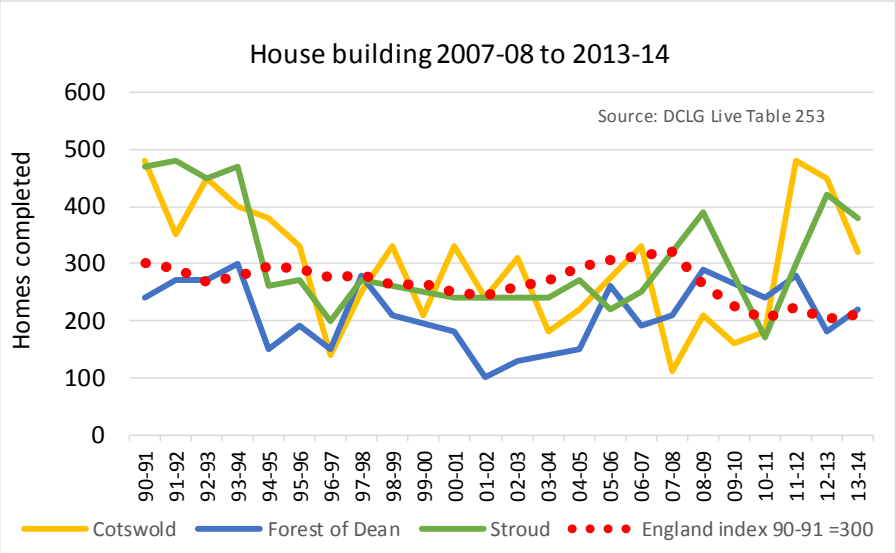
[13] Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service, Paragraphs 5.34 and 5.53
http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

[14] Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service, Paragraph 8.5
http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

[15] PAS Technical note at Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service, Paragraph 5.40
http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

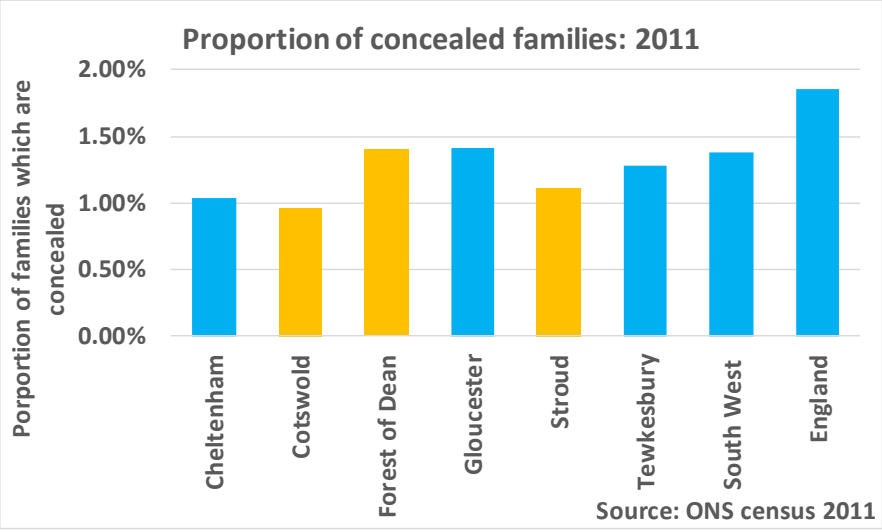
Figure 24: Dwellings completed



Concealed families

82. The proportion of concealed families (i.e. families living within another household) is another measure of the degree of stress in a housing market. Figure 25 shows the data from the 2011 census for the three authorities alongside the data for the other Gloucestershire authorities, the South West and England.

Figure 25: Concealed families



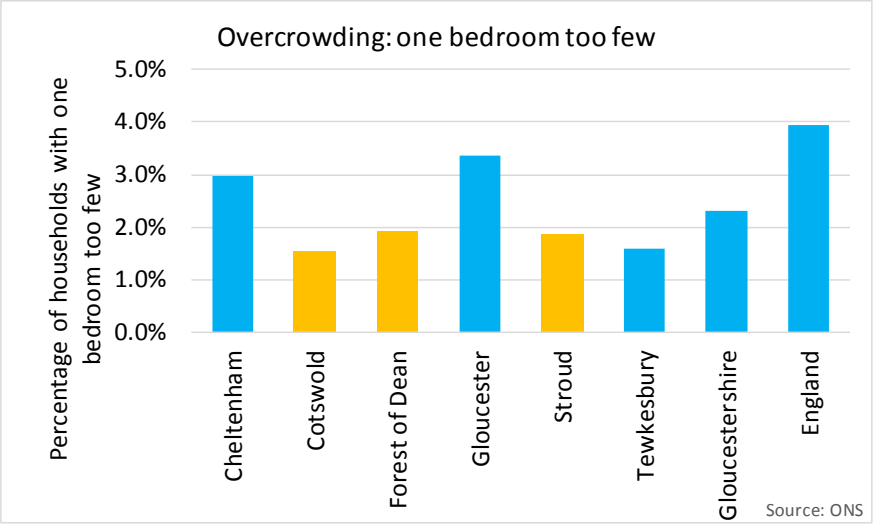
83. Whilst the proportion of concealed households in Forest of Dean is above average for Gloucestershire (and on a par with Gloucester) it is well below the England average and not far from the South West average. The proportions for Cotswold and

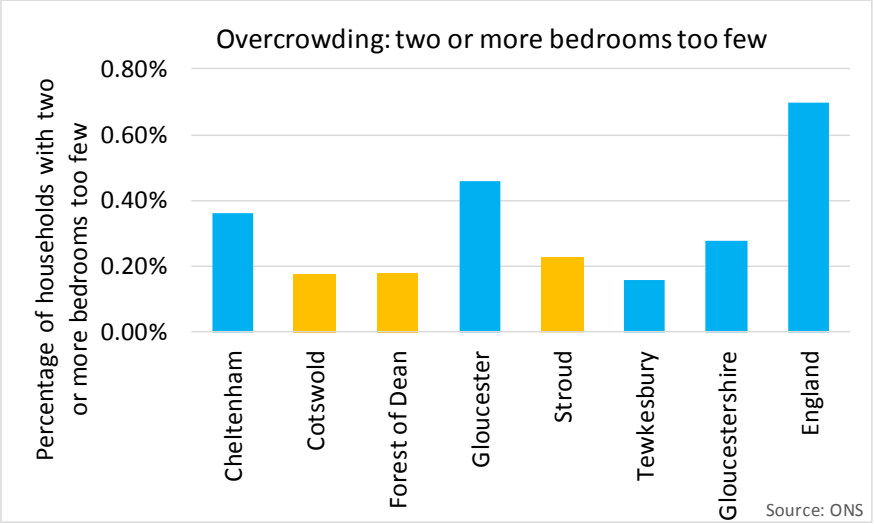
Stroud are much lower. Overall this indicator does not suggest any particular housing stress in the three authorities.

Overcrowding

84. Overcrowding provides a further indicator of potential stress in housing markets. Figure 26 present the census 2011 data for households which have either one bedroom too few or two or more too few. On both measures Cotswold, Stroud and Forest of Dean compare favourably with the rest of Gloucestershire, and England. There are therefore no particular ground for concern on this measure.

Figure 26: Overcrowding: 2011 census data





Affordable housing

85. Assessing the affordable housing needs (i.e. social and intermediate housing) of the three authorities is outside the scope of this report, but there remains the question of the extent to which the assessed need for affordable housing should be taken into account in determining objectively assessed housing needs as a whole. The PPG guidance on this is not particularly explicit:

> "*The total affordable housing need should then be considered in the context of its likely delivery as a proportion of mixed market and affordable housing developments, given the probable percentage of affordable housing to be delivered by market housing led developments. An increase in the total housing figures included in the local plan should be considered where it could help deliver the required number of affordable homes."*[16]

86. The reference to the assessed affordable housing need being considered in the context of the "probable percentage of affordable housing to be delivered by market housing led developments" suggest a degree of pragmatism: there is no point simply adding a large housing needs figure to a demographically-based assessment of a housing requirement when there is no prospect of that volume of housing being funded by developers or anyone else. The PAS technical note supports this approach when it refers to the need for a judgement to be made:

> *"……on how much affordable housing can be realistically paid for. The planned quantity of affordable housing must be consistent with the developer contributions that can be viably delivered by the planned quantity of market housing. If that affordable housing number is too high, then the land intended for affordable provision will either remain vacant or be developed for market housing."*[17]

87. The Gloucestershire Strategic Housing Market Assessment Update (March 2014) – the SHMA – includes an assessment of Gloucestershire need for affordable housing, estimating this at 5698 affordable dwellings a year. That compares with the demographic OAN for Gloucestershire for the period 2011-31 of 2590 homes a year i.e. the estimated need for affordable homes is more than twice the objectively assessed for all types of housing. Such discrepancies are not unusual and there can be a variety of reasons for them, including the realism of the assumptions made. The SHMA notes that if the methodology used is adjusted to reflect current market conditions by factoring a higher affordability threshold and the supply of private rented accommodation (via LHA), the need for new affordable housing reduces to 1067 homes per year. That is a more realistic figure, but at over 40% of the demographic OAN and still well over what might be funded by developer contributions.

[16] Planning Practice Guidance, Paragraph: 029 Reference ID: 2a-029-20140306

[17] Objectively Assessed Need and Housing Targets: Technical advice note, Planning Advisory Service, Paragraph 7.4
http://www.pas.gov.uk/documents/332612/6363137/Objectively+Assessed+Need+and+Housing+Targets/f22edcc2-32cf-47f1-8e4a-daf50e4412f7

88. The demographically-based estimate of the OAN is essentially trend based (albeit with a number of adjustments). It includes within it a view on future household formation rates across all tenure types, including affordable housing. As that view, is trend-based, it in effect reflects the extent to which society has in the past supported the formation of households by those unable to afford for themselves the homes they need. Unless there are reasons to believe that funding will become available to enable the formation of more households in affordable housing, planning on the basis of past trends in this respect is a reasonable approach to take. It certainly would not be appropriate to increase the total volume of housing planned for until the amount of affordable housing that can be delivered through S106 agreements equals the affordable housing need: for many authorities that would result in an extremely large total housing requirement and many more market homes than are indicated by an objective assessment.

Conclusions on adjustments for 'other factors'

89. None of the above discussion suggests there is a case for adding to the demographically-based estimate of the housing requirements of the three authorities, particularly bearing in mind that it is proposed that additional housing should be added to reflect the fact that the headship rates for 25-34 year olds were below the long term trend in 2011 and this has been carried forward into the latest DCLG household projections.

SUPPORTING ECONOMIC GROWTH

90. The PPG advises:

> *"Plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as appropriate and also having regard to the growth of the working age population in the housing market area. …..*
>
> *Where the supply of working age population that is economically active (labour force supply) is less than the projected job growth, this could result in unsustainable commuting patterns (depending on public transport accessibility or other sustainable options such as walking or cycling) and could reduce the resilience of local businesses. In such circumstances, plan makers will need to consider how the location of new housing or infrastructure development could help address these problems."*[18]

91. This makes it clear that Local Plans should be consistent with the economic prospects of an area and that it is not acceptable simply to assume that commuting patterns will change to cover any shortfall between the resident labour force and what is needed to support the economic growth of the area.

92. In particular, there may be a temptation to assume that a faster increase in jobs than workers can be accommodated simply by assuming that fewer people will commute out of the area. However, this is unlikely to happen unless the new jobs are attractive to those who commute out, some to well-paid city-centre jobs. The PAS Technical Advice Note[17] advises caution in this area and notes the need for credible supporting evidence to show how the changes envisaged will be brought about: aspirations alone are not sufficient. It also notes the need for consultation under the Duty to Co-operate. We understand that in the discussions that have taken place neighbouring authorities do not envisage changes in commuting patterns.

93. This section of the report discusses the economic projections which have recently been obtained for the Stroud, Cotswold and Forest of Dean and compares them with past trends in employment growth. It then seeks to estimate the implications for the housing requirements of the three authorities if the projected labour forces are to be provided without changes in commuting patterns. However, before considering the economic projections a few comments on the nature of the labour market in Gloucestershire provide some useful context.

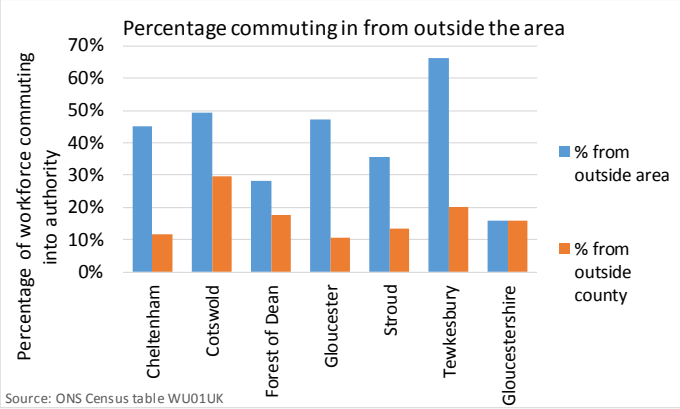
Commuting flows

94. Local authority boundaries are about as relevant for labour markets as they are for housing markets: for both there are likely to be substantial flows across the

[18] Planning Practice Guidance, Paragraph: 018 Reference ID: 2a-018-20140306 http://planningguidance.planningportal.gov.uk/blog/guidance/housing-and-economic-development-needs-assessments/methodology-assessing-housing-need/

boundaries. This is particularly true for the Gloucestershire authorities. As Figure 27 shows, according to the 2011 census, the proportion of those employed in the Gloucestershire authorities who live outside the authority in which they work ranges from 28% (Forest of Dean) to 66% (Tewkesbury). However, with the exception of Cotswold and Forest of Dean, the majority of those commuting into the Gloucestershire authorities come from elsewhere in the county. Only 16% of those who work in Gloucestershire commute from outside the county.

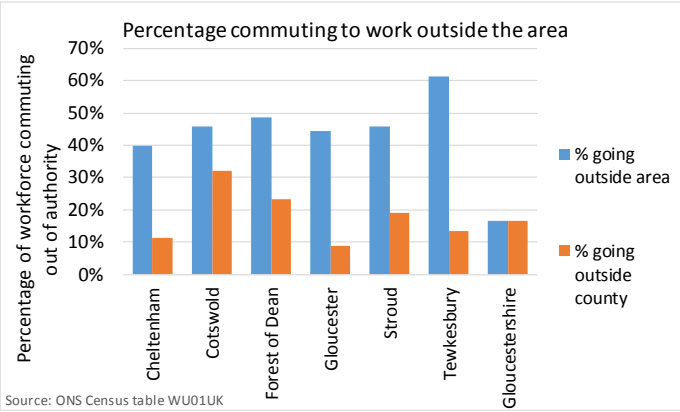
Figure 27: Commuter inflows



Commuter flows	Cheltenham	Cotswold	Forest of Dean	Gloucester	Stroud	Tewkesbury	Gloucestershire
% from outside area	45%	49%	28%	47%	36%	66%	16%
% from outside county	12%	30%	18%	11%	13%	20%	16%

95. The situation for those commuting out to work in another authority's area is similar although rather more uniform. The proportion of those who are in work who commute to somewhere outside their home authority ranges from 40% (Cheltenham) to 61% (Tewkesbury). With the exception of Cotswold, the majority of these are commuting to somewhere else in Gloucestershire. Only 17% of Gloucestershire residents in work commute to somewhere outside the county. See Figure 28.

Figure 28: Commuter outflows



Commuter flows	Cheltenham	Cotswold	Forest of Dean	Gloucester	Stroud	Tewkesbury	Gloucestershire
% going outside area	40%	46%	49%	44%	46%	61%	17%
% going outside county	11%	32%	23%	9%	19%	13%	17%

96. The relatively high proportion of Cotswold commuters who come from or go to places outside Gloucestershire reflects its position on the east of the county. Whilst the largest inflow is from Stroud and there is also a substantial flow from Cheltenham, there are also large numbers of workers coming in from Wiltshire, Swindon and Wychavon.

97. By some margin Stroud's largest commuters flows both in and out are with Gloucester. The next largest inflows are from South Gloucestershire and then from Cheltenham.

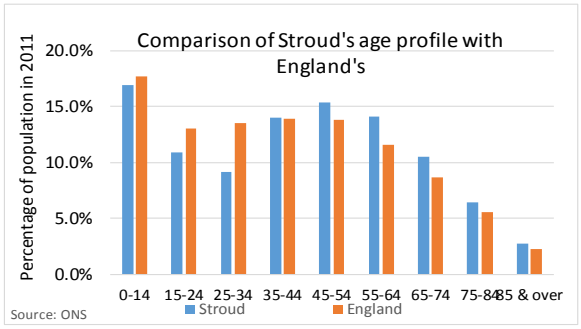
98. The Forest of Dean's commuter flows are heavily influenced by the physical barrier of the Severn. The biggest commuter outflow is to Gloucester but the next most important commuter destinations are Herefordshire and Monmouthshire. Herefordshire and Monmouthshire also provide the largest inflows into the Forest of Dean.

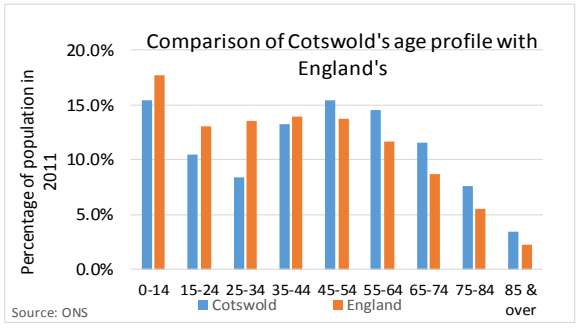
99. All of this indicates that Gloucestershire is a far more sensible geographical area in which to consider labour markets than any of its local authorities. Indeed, given the strong interactions between the labour markets of the Gloucestershire districts, focussing too narrowly on an individual authority is likely to lead to misleading conclusions. It is therefore, extremely helpful that, courtesy of the JCS authorities, we have economic forecasts for their areas as well as for Stroud, Cotswold and Forest of Dean. This enables a broad picture to be compiled of the potential overall demand for labour in the wider area.

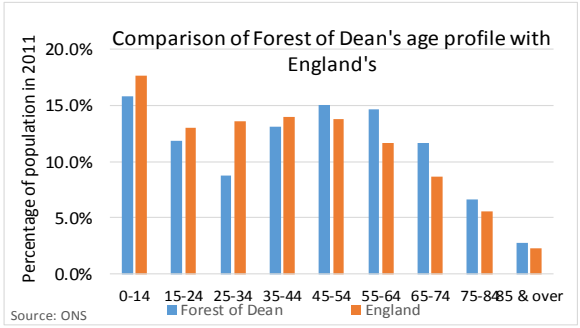
The falling 16-64 population

100. As the charts in Figure 29 show, Stroud, Cotswold and the Forest of Dean all have older populations than the England average. The 15-24 and 25-34 age groups are both under-represented; and the 45-54 and 55-64 age groups – the people who will retire in the next 20 years – are over represented.

Figure 29: Comparison of age profiles

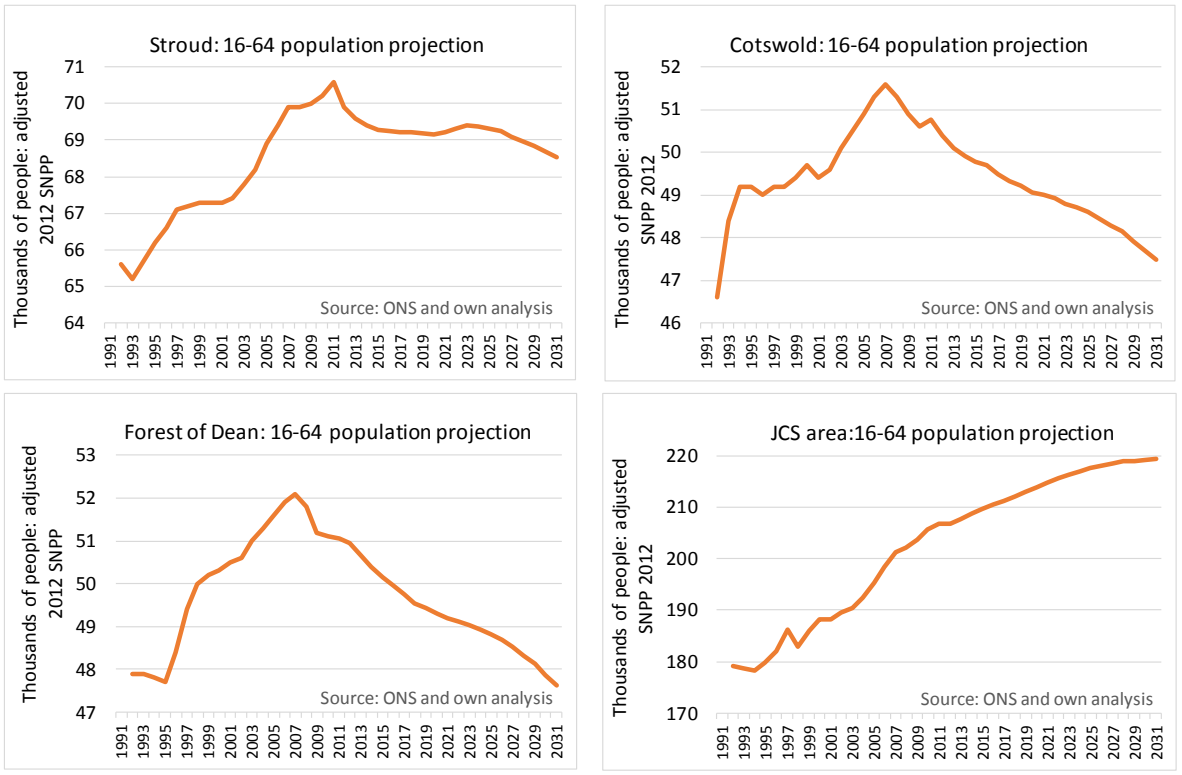






101. A consequence of these age profiles is that, after having risen consistently in the past, the number of 16-64 year olds in the three authorities is projected to fall in the future – see Figure 30. The turning point from a growing 16-64 population to one that is falling coincides with the post-war 'baby boomers' reaching 65. Note that the position contrasts with both the JCS area and England as a whole where the number aged 16-64 is projected to continue to grow, albeit at a slower rate.

Figure 30: Projections for 16-64 population

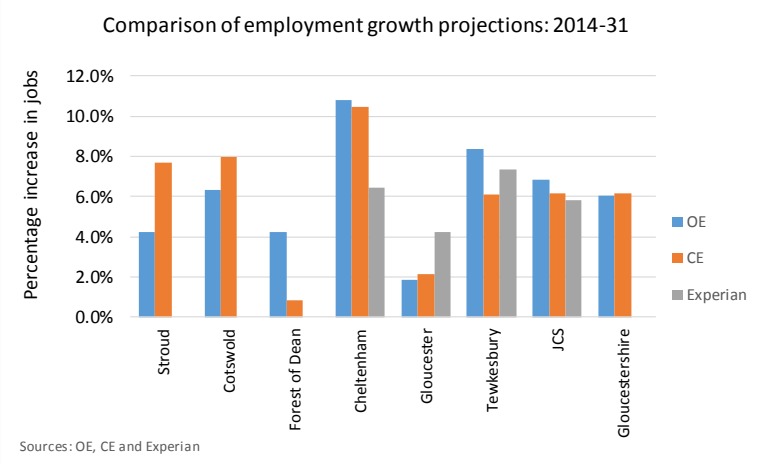


The economic forecasts

102. Figure 31 summarises the available projections from Oxford Economics (OE), Cambridge Econometrics (CE) and Experian. This uses the data for the period 2014-31 to avoid the distortions caused by the inevitable uncertainties in the forecasters' views on the emergence of the economy from recession in the period 2011-14[19]. It should be noted that the projections for the JCS area are from January 2014 whereas those for the Stroud, Cotswold and the Forest of Dean are from August 2014.

[19] The forecasters' views of what has actually happened between 2011 and 2014 vary considerably: in the case of Stroud the CE view of the job increase over this period is 90% larger than OE's; for Forest of Dean the OE increase is nearly 5 times the CE increase. The forecasters will have had data for some but not all of the years in question when they prepared these forecasts. The differences will reflect uncertainties in the underlying datasets which are based on sample surveys and the ways in which they have been used.

Figure 31: Employment growth projections for Gloucestershire



Job growth 2014-31	OE	CE	Experian
Stroud	4.3%	7.7%	-
Cotswold	6.3%	8.0%	-
Forest of Dean	4.2%	0.8%	-
Cheltenham	10.8%	10.5%	6.4%
Gloucester	1.9%	2.1%	4.3%
Tewkesbury	8.3%	6.1%	7.4%
JCS	6.9%	6.2%	5.8%
Gloucestershire	6.1%	6.2%	-

103. As can be seen from Figure 31, the projections for employment growth vary widely between localities, from OE's projection for Gloucester of 1.9% to their projection for Cheltenham of 10.8%.

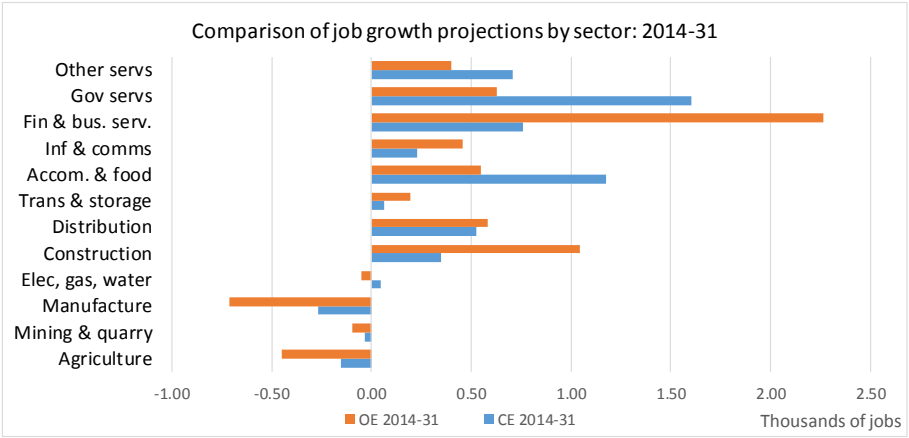
104. Note also that there are significant differences between the forecasters in their assessments of the potential for job growth in some authorities. The Forest of Dean is the most extreme example of this with the OE projection being some 5 times the CE figure.

105. Whilst there are still variations between forecasters, if a wider area is considered the variations are likely to be smaller. This is the case for both the JCS area and for Gloucestershire. This reflects the general rule that projections of this kind, whether for jobs, people or housing, tend to be less and less reliable the smaller the geography considered. This point is explicitly acknowledged in the explanatory notes on the CE model.

106. The reasons for the variations between the forecasters becomes rather clearer when the more detailed sector by sector forecasts are examined. The forecasts are built up using a combination of a national view on the prospects for the difference sectors of the economy and local data on the demand for services and the performance of the different sectors. Because of the different views taken by the various forecasters about the prospects to different sectors, significant differences arise in their projections for individual authorities. Take, for example, the data for Cotswold shown in Figure 32. This again uses the data for the period 2014-31 to avoid the uncertainties in the period 2011-14. CE take a much more bullish view of the prospects for 'government services', a sector that includes health and education, than OE and envisage a growth in jobs in this sector that is 2½ times that suggested

by OE. This has a significant impact on CE's overall estimate for jobs growth in Cotswold as their estimate for government services accounts for over 30% of the total projected increase in jobs.

Figure 32: Projected job growth by sector in Cotswold



107. In contrast, OE are much more optimistic about financial and business services. Their estimate of jobs growth in that sector in Cotswold is three times that of CE. Again this has a significant impact on the overall OE projection as growth in this sector equates to nearly half of their projected job increase across all sectors.

108. This high degree of sensitivity to the assumptions made on individual sectors underlines the care that needs to be taken in interpreting the local authority level projections.

Interpreting the economic projections

109. In assessing the housing implications of any economic projection two questions need to be asked:

a. **How plausible are the overall projected job growth figures?** Just as in earlier sections of this report we have examined the plausibility of the population and household formation rate assumptions which underpin the household projections, a similar exercise needs to be carried out on the job growth projections.

b. **How many people will be needed to fill the extra jobs that are likely to be created?** There are a variety of changes taking place in the workforce including in particular older people working longer and more emphasis on apprenticeships. These mean that in future a population of a given size and age profile is likely to be able to support more jobs than at present. There is, however, considerable scope for debate about how big a change will occur.

How plausible are the overall job growth figures?

110. A number of factors are relevant here.

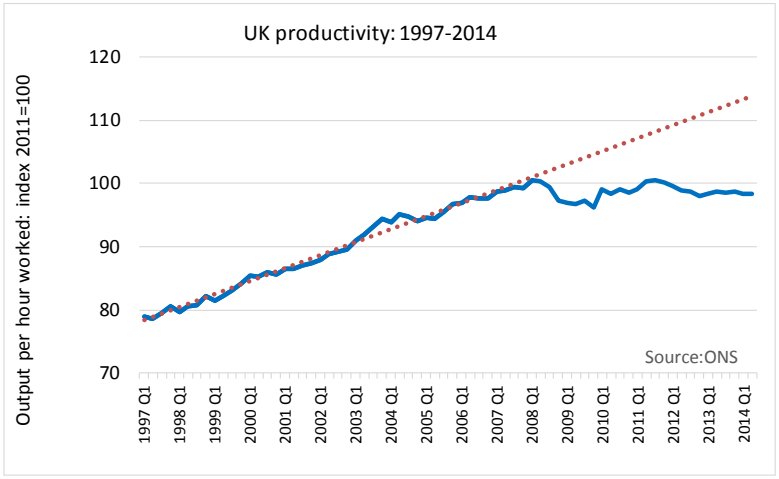
(a) Uncertainty in the figures

111. As already noted the projections for job growth vary significantly from forecaster to forecaster and the individual forecasts for some authorities are heavily dependent on the assumptions made for the rate of growth in key sectors. For example, if OE had assumed that financial and business services would grow at the rate envisaged by CE, their projection for job growth in Cotswold would have been 30% lower. This indicates that there is considerable uncertainty in the projections, not that they are necessarily too high or too low.

(b) Improvements in productivity

112. Whilst both CE and OE assume some improvements in productivity, it is questionable whether they have made sufficient allowance for the likely improvements. In the last recession the fall in productivity was greater than in the previous two but so far there has been surprising little improvement in productivity as the economy has begun to recover from the downturn. (This helps to explain why there has been a faster than anticipated reduction in unemployment.) Figure 33 shows how UK productivity has departed from trend in the recession and so far failed to recover. Productivity improvements will need to be delivered if the recovery is to be sustainable, particularly bearing in mind the need for the economy to be competitive internationally.

Figure 33: UK Productivity



113. As the economy recovers from the downturn demand for goods and services will grow. That increased demand will not necessarily mean more job will be created. The last upturn in the economy showed what is called 'smart growth' with few extra jobs as output expanded. There is reason to expect this will be more prevalent in this upturn because productivity has fallen so heavily – and unexpectedly.

114. The processes which can generate growth without additional jobs include:

a. Existing staff may be more fully utilised with the result that the same number of people produce more output;
b. Many of the jobs that have been created over the last few years have been part-time. As the economy improves it is likely that people will be enabled

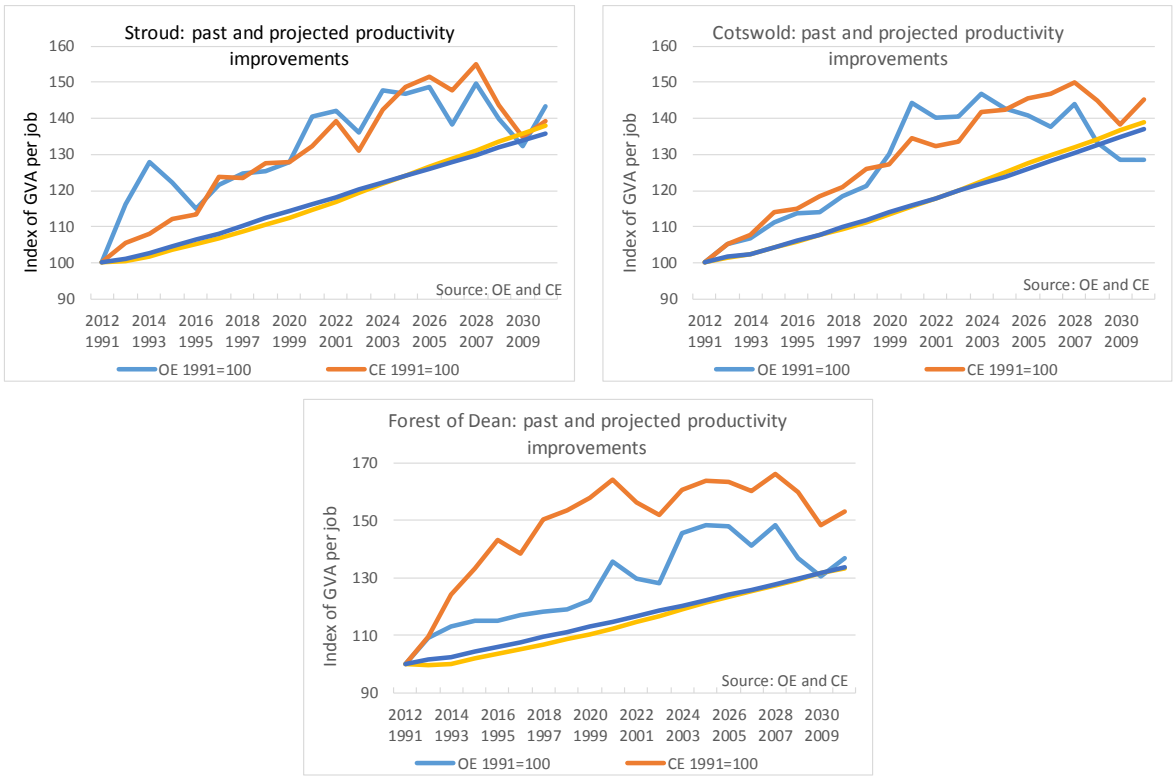
to work longer hours or that jobs will be restructured to reduce the numbers of workers employed;

c. More overtime working;

d. Improvements in productivity arising from new technology. It is difficult to assess how much further these will go but given the likely continuing cutbacks in public service jobs, such changes could well accelerate over the period to 2031.

115. One way of gauging how realistic the assumption made by OE and CE about productivity improvements are is to compare what is projected with what happened following the recession in the early 1990s. Figure 34 compares the productivity improvements achieved then with what is now projected. As can be seen, over the period to 2031 the increases are broadly comparable with those achieved in an equivalent period following the recession in the early '90s. However, the increases in productivity projected for the next 10 years are much smaller than occurred in a similar period following the previous recession. Indeed, if similar productivity improvements were achieved to those delivered in the period 1991-2001, the increases in output projected for the next 10 years could be achieved without any increase in the number of jobs.

Figure 34: Past and projected productivity improvements



c) Comparison with past trends in job growth

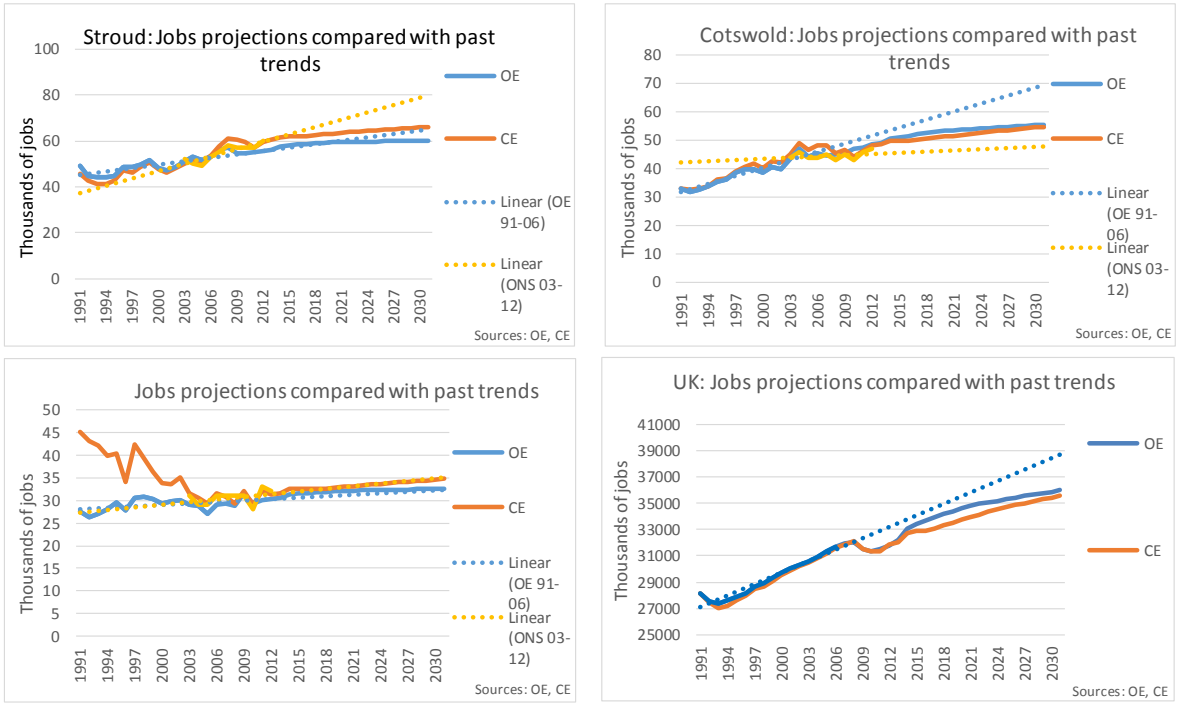
116. The PPG stipulates that, "Plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as

appropriate…" Figure 35 therefore compares the projections for job growth with past trends and adds the equivalent UK projections from OE and CE to enable their projections for Stroud, Cotswold and the Forest of Dean to be seen in the context of their view of the country as a whole.

117. Note that, when compared with past job growth, both the OE and CE projections for the UK are below past trends. This may reflect the fact that the growth in the England 16-64 population will be slower than in the past.

118. For Forest of Dean the alignment between past job growth and the projections is reasonably close. The projections for Stroud might be argued to be a little low. However, if the departure from trend is compared with the projections for England as a whole, it is not necessarily out of line. For Cotswold a lot depends on the period from which the trend is taken: job growth in the last ten years has been at a much slower rate than over the period since 1991. Against the performance in the last ten years the projections could be optimistic.

Figure 35: Comparison of projections with past trends



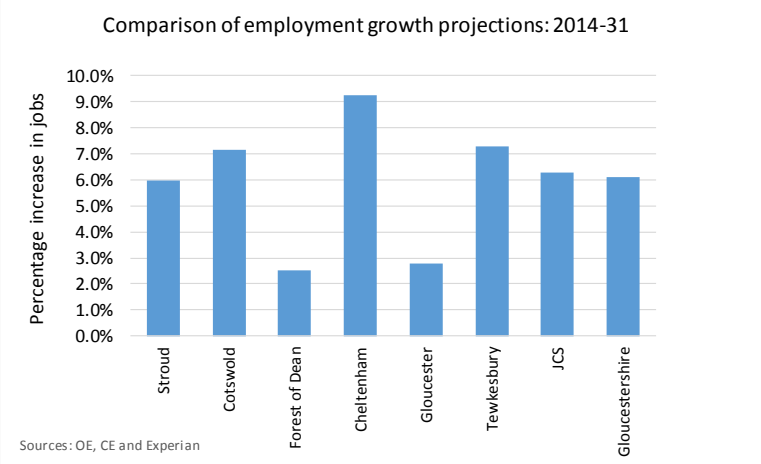
(d) Comparison with other areas

119. Figure 36 (below) compares the job growth projections in Stroud, Cotswold and Forest of Dean with the rest of Gloucestershire. Two aspects stand out:

a. The projected growth in Forest of Dean is much lower than for the other authorities. This may be a reflection of its relatively isolated position and the sector mix in its economy. As already noted, the low growth projections are not out of line with past trends.

b. It is surprising that the job growth projected for Cotswold is above the average for both Gloucestershire and the JCS. That sits oddly with the LEP strategy which seeks to facilitate growth along the M5 corridor. It is also out of line with the trend from the last ten years.

Figure 36: Employment growth projections for Gloucestershire



Job growth 2014-31	Average of projections
Stroud	6.0%
Cotswold	7.1%
Forest of Dean	2.5%
Cheltenham	9.2%
Gloucester	2.8%
Tewkesbury	7.3%
JCS	6.3%
Gloucestershire	6.1%

Conclusions on the plausibility of the job growth projections

120. From the above analysis it is clear that there is considerable uncertainty attaching to both sets of job growth projections for the three authorities: that is inevitable given the difficulties of modelling economic growth on this spatial scale, particular as the economy emerges from the deepest recession for more than a generation. There are indications that the projections for Cotswold in particular are high compared with the rest of Gloucestershire. Moreover, when compared with the productivity gains seen after the early 1990s recession, the projected productivity improvements over the next ten year seem low. This is particularly relevant given the much greater fall in productivity associated with this recession and the fact that significant productivity improvements have yet to be seen as economy emerges from the downturn. If future productivity gains were comparable with those seen in the 1990s, i.e. not taking the specifics of this upturn into account, the projected increases in output could be achieved with no increase in jobs.

How many people will be needed to fill the extra jobs that are likely to be created?

(a) Assumptions about economic activity rates

121. How many people are needed to fill a given number of jobs without a change in commuting patterns depends on what proportion of the population is available for work; the unemployment rate and the number of people who have more than one job ('double jobbing'). The proportion available for work (i.e. the economic activity rate of the population) is expected to change with the raising of the state pension age, less generous pensions and better health in older age groups. Other factors such as the extension of fulltime education to 18, the growth in apprenticeships and reforms to working age welfare benefits may also have an impact.

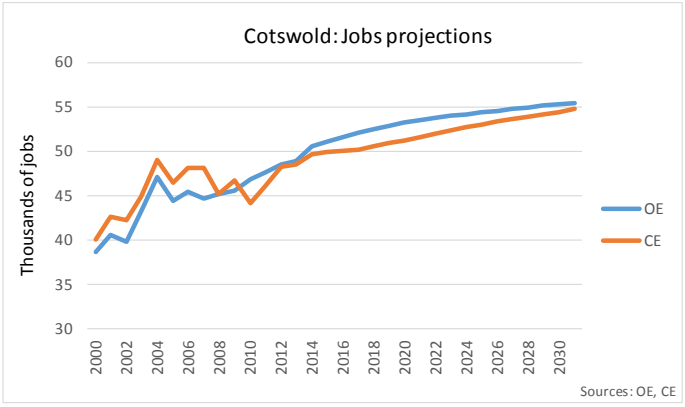
122. There is considerable debate about how far economic activity rates will change and it is impossible to say categorically that one view is the right one. However, in estimating the working age population, and hence housing implications of an economic projection, it is important to make assumptions that are consistent with the projections being interpreted. This is because the projections depend on the view taken on the relationship between the number of people in the population and the number jobs they will fill. Applying a lower economic activity rate assumption than that implicit or explicit in a forecaster's model would be inconsistent with the forecast as, had the forecaster used a lower activity rate, he would have concluded that there would have been fewer jobs in the economy – and hence fewer jobs to distribute between local authorities.

123. In this report the population implications of CE projections have been calculated by assuming that economic activity rates change in line with CE's projections for activity rates in the South West. The issue does not arise in interpreting the OE projections as their projections include estimates of the 16-64 population in each authority which can be compared with the population projections for those age groups derived from ONS's 2012 SNPP.

(b) Period to be used in estimating the population implications of a job projection

124. A particular difficulty in assessing how many homes will be needed to support a projected increase in jobs as the economy moves out of the downturn is that the number of additional jobs to be supported depends heavily on the period over which the assessment is made. Figure 37 shows the OE and CE projections for Cotswold for the period from 2000 onwards. As can be seen there are considerable fluctuations in the number of jobs there are thought to have been in Cotswold over the period 2006 to 2014, fluctuations which are large compared with the total job growth projected over the period to 2031. This means that the increase in jobs over a period to 2031 depends significantly on when the period considered starts. Taking the CE projections as an example, if the period starts in 2006 it is 6613; if it starts in 2011-31 it is 8680 and if it starts in 2014 it is 4815. It is clearly not acceptable to have an estimate of the homes needed to support economic growth that fluctuates so wildly.

Figure 37: Example of impact of choice of start date on projected job increase



Jobs increase	2006-31	2011-31	2014-31
OE	9949	7819	4815
CE	6613	8680	5011

125. To avoid this the assessments made in this report have been based on the period 2014-31. That is the period after the fluctuations caused by the economic downturn and its immediate aftermath and might be thought to represent the forecasters' medium term view. Moreover, from a very practical point of view, it is the period from now onwards that is most relevant: unless the view is taken that current commuting patterns are unacceptable, the key issue is to ensure that there is not such a mismatch between future job growth and future housing provision that commuting patterns become unsustainable.

Sensitivity analysis

126. To give an indication of how much difference the factors discussed in this analysis might make to the number of homes needed to support economic growth a number of sensitivity analyses have been performed

a. The scenarios set out by the two forecasters have been modelled.

b. The effect of plausible changes in the forecasters' assumption for the growth of key sectors have been illustrated by modelling two possible scenarios:

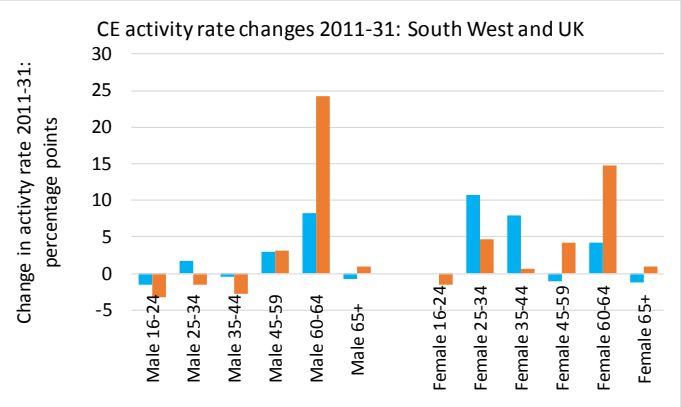
- CE: continuing austerity means that there is no increase in employment in government services and that improvements in those services are brought about solely through improvements in productivity.
- OE: the growth in jobs in finance and business services is half what has been assumed.

c. Different assumptions about changes in economic activity rates:

- As Figure 38 shows, CE's activity rate projections for the South West assume much smaller increases for 60-64 year olds than their projections for the UK as a whole. It is not clear why this is. A

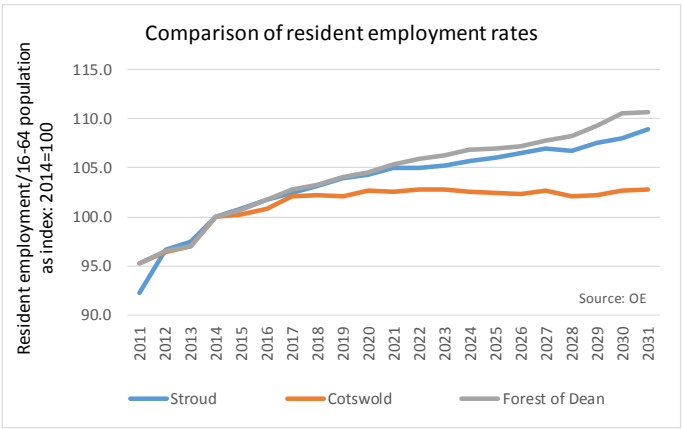
sensitivity analysis has therefore been carried out to explore the consequences of assuming that the activity rates in the three authorities move in line with CE's UK assumptions rather than the SW projections

Figure 38: Comparison of CE actvity rate projections for the South West and the UK



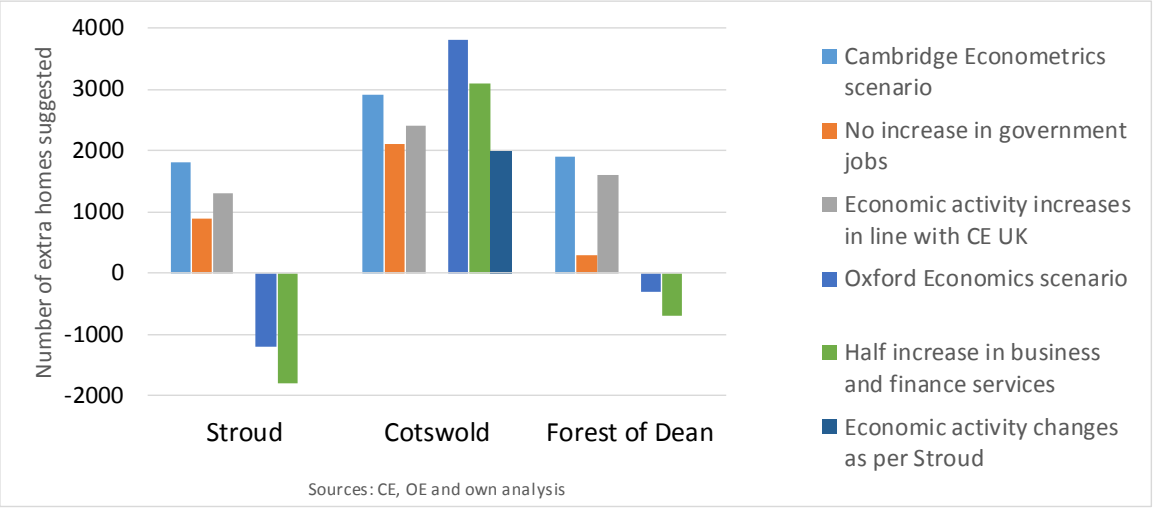
- A comparison of OE's projection for increases in economic activity rates in the three authority shows (see Figure 39) that a much smaller increase is envisaged for Cotswold than for either Stroud or Forest of Dean. This seems surprising. A sensitivity analysis has therefore been carried out to test the impact of assuming that Cotswold's economic activity increases at the same rate as Stroud's.

Figure 39: Comparison of projected changes in economic activity



127. Figure 40 (below) summarises the result of the sensitivity analyses. Negative numbers indicate that the demographically projected population in 2031 is larger than the population needed to support the projected increase in jobs.

Figure 40: Sensitivity analysis: Homes needed in addition to demographic OAN



Sources: CE, OE and own analysis

	Stroud	Cotswold	Forest of Dean
Cambridge Econometrics scenario	**1800**	**2900**	**1900**
No increase in government jobs	900	2100	300
Economic activity increases in line with CE UK	1300	2400	1600
Oxford Economics scenario	**-1200**	**3800**	**-300**
Half increase in business and finance services	-1800	3100	-700
Economic activity changes as per Stroud		2000	

128. These results are simply intended to indicate the broad order of magnitude of the changes that would occur if different assumptions were made. It is not suggested that the alternative scenarios are necessarily more plausible. However, it is clear that plausible variations in the assumptions made could produce very substantial variations in the estimates of the additional homes needed.

129. The alternative scenarios tested have not explored the consequences of assuming improvements in productivity akin to those observed in the 1990s. These would have the effect of substantially reducing the number of jobs created in the next ten years.

130. It is also illuminating to look at the results for the Stroud, Cotswold and the Forest of Dean in the context of the results for the JCS and Gloucestershire as a whole – see Figure 41:

Figure 41: Homes needed in addition to demographic OAN

	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
OE	-1200	3800	-300	-9500	-7100
CE	1800	2900	1900	-600	6100

131. Note that:

a. OE projection suggests that, taking Gloucestershire as a whole, no additional housing above the demographically based OAN is needed. In fact there will

be more people in the area than their projection suggests will be needed to support the projected increase in jobs.

b. For CE the Gloucestershire requirement is 6100 homes i.e. about 12% of the demographic OAN of 51,800 for the period 2011-31.

Conclusions on the number of homes needed to support economic growth

132. The key points from the above analysis are:

a. There are a substantial uncertainties in any econometric projection of job numbers at the local authority level and hence in estimates of the implications these may have for an area's housing requirement. Such calculations should be regarded as broadly indicative of a potential pressure on the housing stock and not regarded as exact or certain.

b. In particular, faster improvements in productivity akin to those seen in the 1990s could mean many fewer jobs are created, at least in the next ten years. Given that the drop in productivity in the last recession was greater than in the previous two, productivity improvements larger than those seen in the 1990s could well occur.

c. With the exception of Cotswold, the analysis of the OE projections suggests that the demographically projected population will be more than is necessary to support projected increase in jobs. Taking Gloucestershire as a whole the OE projections suggest that the demographically projected population will be adequate to support the projected economic growth by a fairly comfortable margin.

d. The CE projections suggest that Stroud, Cotswold and the Forest of Dean will all need to add additional homes to support the projected increases in jobs. In contrast the JCS are does not appear to need any additional homes and may have a small surplus. Taking Gloucestershire as a whole, the net additional housing requirement on the CE analysis is 6100 extra homes, of the order of 12% of the demographic OAN.

e. Given the sizeable commuter flows between the Gloucestershire authorities there is a strong case for considering the relationship between homes and jobs on a broader basis than the individual authority.

133. If a simple average were taken of the housing requirements suggested by the analyses of the OE and CE projections the conclusion would be that Gloucestershire as a whole does not need to add to its demographic OAN.

134. It would not be prudent, however, to ignore the indication from the CE projections that Stroud, Cotswold and Forest of Dean may need some additional housing to support economic growth by 2031. However, to make provision at anything like the full rate suggested by the CE analysis would not be appropriate given the LEP's focus on promoting growth in other parts of Gloucestershire; the bullish view taken by CE

on job growth in government services; and the likelihood that improvements in productivity will reduce the rate of job growth significantly.

135. Against this background, a reasonable allowance for additional housing to support economic growth would be for Stroud, Cotswold and Forest of Dean to provide between them for half the additional homes which the CE analysis suggests might be needed across Gloucestershire i.e. 3,000. If these were allocated in line with the relative housing numbers suggested by the CE analysis Stroud would provide 800, Cotswold 1300 and Forest of Dean 900 (rounded).

136. Given that there are strong arguments for suggesting that productivity improvements in the next ten years are likely to be larger than have been assumed by both OE and CE and that this will reduce the number of jobs needed to produce the output increases projected, the additional homes to support economic growth may not be needed until the second half of the plan period. A possible approach would be to safeguard land for the additional homes but not to release it for development unless and until actual job growth demonstrates that it will be needed.

137. In any case, given the uncertainties, regular monitoring will be essential, together with readiness to adjust the housing numbers up or down in the light of developments.

138. **Figure 42 sets out both the demographic OANs and the OANs with the suggested allowances for homes to support economic growth for the period 2011-31. The 'starting point' OANs (i.e. the OANs based simply on applying the latest official projections unadjusted) are also given for comparative purposes.**

Figure 42: OANs for 2011-31	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
Starting point: 2012 SNPP + DCLG 2011	8200	5300	5100	26900	45400
Demographic OAN	8700	6300	6400	30400	51800
OAN with extra homes for jobs	9500	7600	7300	30400	54800

Summary and Conclusions

139. The latest official population projections for local authorities are the ONS's 2012-based Sub-national Population Projections (2012 SNPP) which were published in May 2014. To provide a prudent basis on which to plan for housing two adjustments should be made to these projections

- The flows to and from other parts of the UK have been projected from flow rates estimated from the period 2007-12 which included a severe economic downturn. As a result some of the projected flows appear to be low. Adjustments should be made to compensate for this.

- There are discrepancies between the population changes suggested by the ONS's estimates for births, deaths and migration flows for the period from 2001 to 2011 and the changes in the populations suggested by the differences between the 2001 and 2011 counts – known as 'Unattributable Population Change' (UPC). The ONS have not taken UPC into account in the 2012 SNPP and it is debatable whether as a result they may have either over or underestimated some population changes. It is recommended that the prudent approach is to include an adjustment for UPC where it has the effect of increasing the population projection, but not otherwise.

140. On this basis the population projections for Stroud, Cotswold and Forest of Dean would be as follows:

Population change 2011-31	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
ONS 2012-based projection	13600	7100	6400	52600	79600
Proposed planning assumption	14100	8300	8600	56400	87300

141. To turn an estimate of a population change into an estimate of the change in the number of households a view needs to be taken on how the tendency of people to form separate households (the household formation rate) is likely to change. The most recent official projections for household formation rates are contained in the DCLG's 2011-based household projections. For some age groups the household formation rates are lower than envisaged in the previous set DCLG projections, those based on 2008 data.

142. There is evidence that the low household formation rates for young adults (25-34s) were the result of increased international migration, a prolonged period of poor housing affordability and the economic downturn. Insofar as the changes were due to the last two factors they can be expected to return towards the previous trend as and when conditions improve. It is therefore proposed that it should be assume that there is a 'partial return to trend' for this age i.e. that household formation rates will return to halfway between those projected in the 2011-based projections (as extrapolated) and those suggested by the 2008-based projections.

143. For the over-60 age groups the changes in household formation in the latest projections compared with the earlier set can largely be explained by factors such as both members of a couple living longer. A return to the previous trend is therefore much less likely. For the other age groups the departures from the 2008-based

projections are generally smaller. In some cases the latest projection suggest higher household formation rates and in other case they are lower. For Stroud, Cotswold and Forest of Dean the impact of assuming a partial return to trend amongst these other age groups would be to reduce the estimate of the number of households formed. It is therefore proposed that a partial return to trend should only be assumed for the 25-34 age group.

144. Provision needs to be made for vacant and second homes and it is suggested that this should be based on official data derived from the council tax data base. There do not appear to be any other considerations (such as from market signals or past undersupply, existing unmet housing need or affordable housing requirements) to suggest that additional housing should be added to the estimate based on demographic analysis. This is particularly true as proposed demographic OANs already include additional homes to reflect the likelihood that there will a partial return toward previous household formation patterns amongst younger adults.

145. On this basis the demographically assessed housing requirement for the three authorities and the rest of Gloucestershire would be as follows:

Demographic OAN	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
Baseline: 2012 SNPP + DCLG 2011	8200	5300	5100	26900	45400
Demographic OAN	8700	6300	6400	30400	51800

146. Economic projections have been obtained from Oxford Economics (OE) and Cambridge Econometrics (CE) for the three authorities. Similar, if slightly older projections have been made available by the Joint Core Strategy (JCS) authorities – Cheltenham, Gloucester and Tewkesbury. This enables a Gloucestershire wide view to be taken.

147. There are substantial differences between the (OE) and (CE) projections. They are highly sensitive to the assumptions made on the growth in jobs in key sectors such as government services (including health and education) and finance and business services. The assumptions made about economic activity rates (i.e. the proportion of the population who are available for work) also have a big impact on the number of people needed to support economic growth (and hence the number of additional homes required). Plausible variations in the assumption could change the number of homes needed by 50% or more. In addition there are question marks over whether the projections have made sufficient allowance for improvements in productivity as the economy recovers from recession given that the deterioration in productivity in the last recession was deeper than in the previous two and there has so far been relatively little improvement in productivity. In view of these uncertainties the job growth projections need interpreting with caution.

148. Given the sizeable commuter flows between the Gloucestershire authorities there is a strong case for considering the relationship between homes and jobs on a broader basis than the individual authority.

149. For Gloucestershire as a whole the OE projections suggest that there is no need to add to the demographically-based estimate of the county's housing requirement to support the projected job growth. Cotswold is the only authority for which this is an

issue based on the OE projections and there are reasons to question whether the OE job growth projection for Cotswold is too high.

150. The CE projections for Gloucestershire suggest that there may be a need to add about 10% additional homes to the demographically-based estimate of the county's housing requirement. Within this the JCS area has a small surplus and Stroud, Cotswold and Forest of Dean need extra homes.

151. In view of the difference between the two economic forecasters and the level of the uncertainties in both their projections it is proposed that Stroud, Cotswold and the Forest of Dean should between them make an allowance for additional homes equal to half the number of additional homes suggested by the CE analysis for Gloucestershire and that these should be shared between the three authorities in line with the relative housing numbers suggested by the CE projections. This would imply Stroud would provide an extra 800 homes, Cotswold 1300 and Forest of Dean 900.

152. This leads to the following estimates for the objectively assessed housing requirements of the three authorities, the JCS area and the Forest of Dean.

OANs for 2011-31	Stroud	Cotswold	Forest of Dean	JCS	Gloucestershire
Starting point: 2012 SNPP + DCLG 2011	8200	5300	5100	26900	45400
Demographic OAN	8700	6300	6400	30400	51800
OAN with extra homes for jobs	9500	7600	7300	30400	54800

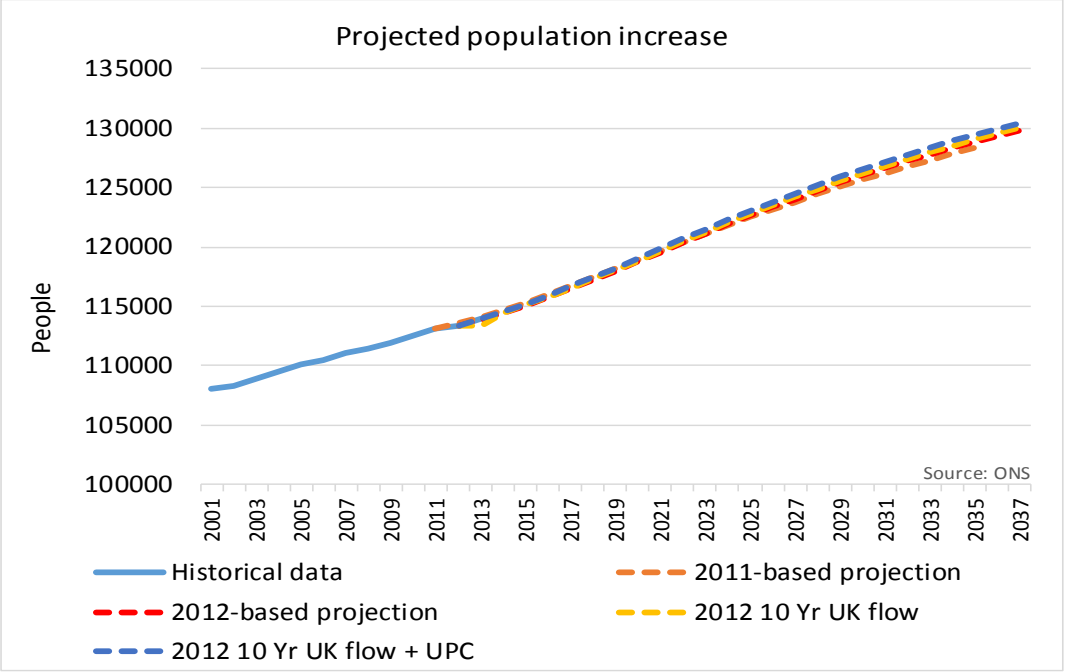
153. The Stroud plan period is 2006-31. The equivalent figures for that period are as follows:

OANs for 2006-31	Stroud
Starting point: 2012 SNPP + DCLG 2011	9900
Demographic OAN	10400
OAN with extra homes for jobs	11200

ADDITIONAL DATA FOR STROUD

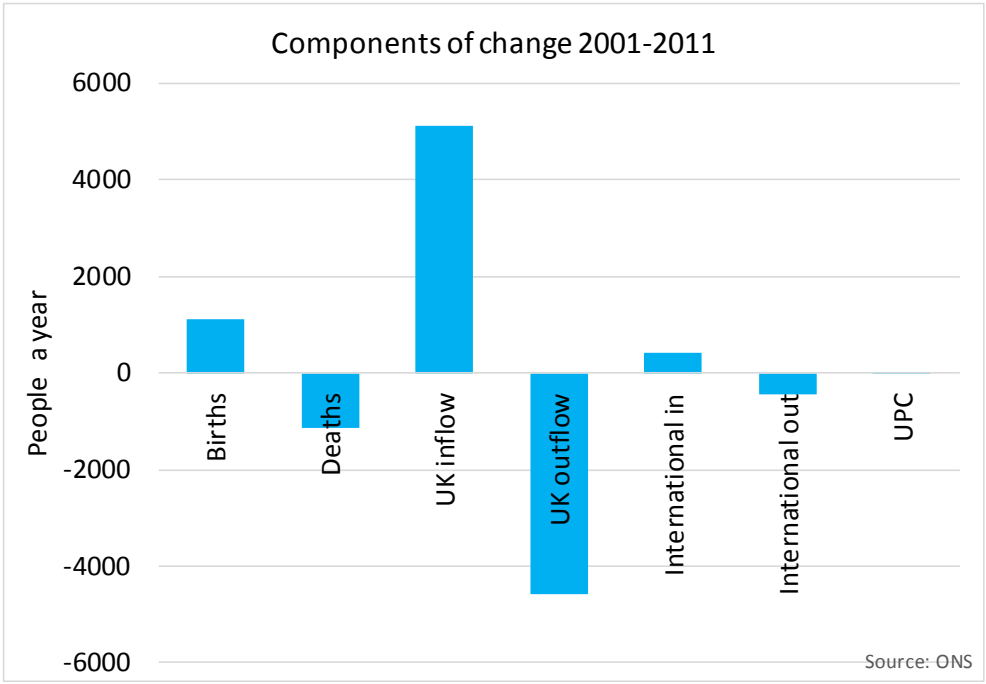
APPENDIX A

Stroud Population projections



Population	2006	2011	2021	2031	Increase 2011-21		Increase 2011-31		Increase 2006-31	
					People	Percentage	People	Percentage	People	Percentage
2011-based projection*	110500	113100	119700	126200	6600	5.8%	13100	11.6%	15700	14.2%
2012-based projection	110500	113100	119500	126600	6500	5.7%	13600	11.9%	16100	14.6%
2012 10 Yr UK flow	110500	113100	119600	126800	6600	5.7%	13700	12.1%	16300	14.8%
2012 10 Yr UK flow + UPC	110500	113100	119900	127200	6800	6.0%	14100	12.5%	16700	15.1%
Proposed planning assumption	110500	113100	119900	127200	6800	6.0%	14100	12.5%	16700	15.1%

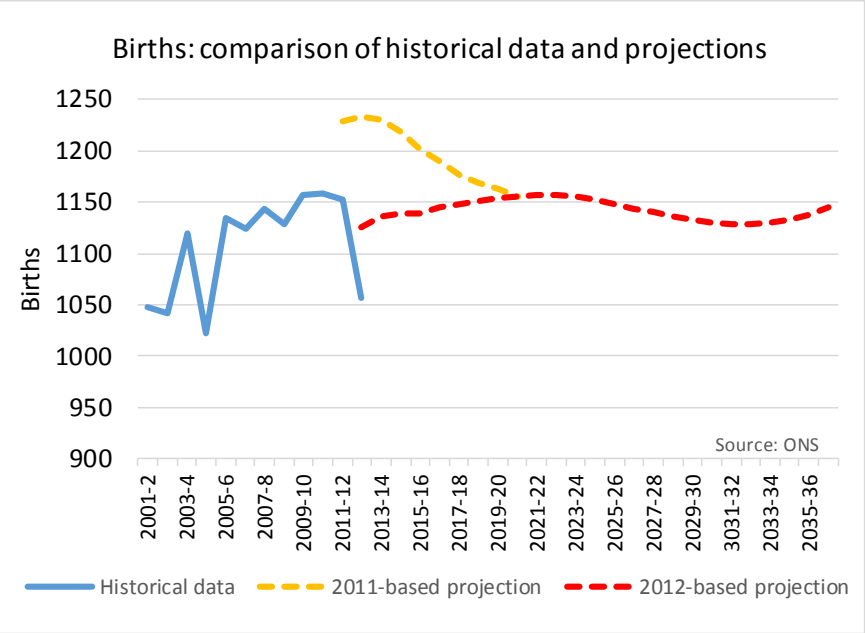
Stroud: Components of change

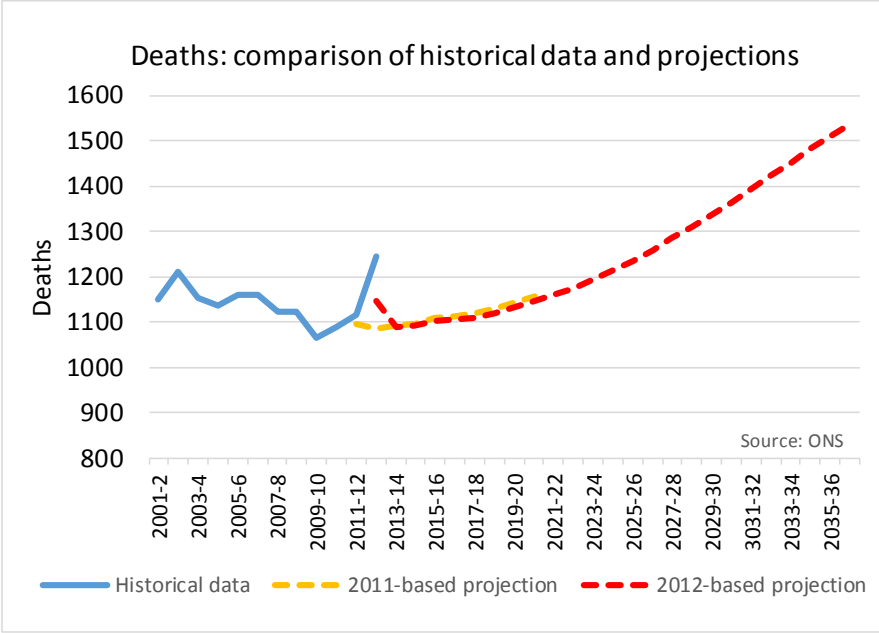


Average annual flows	2001-11	2011-based 2011-21	2012-based 2011-21
Births	1108	1197	1144
Deaths	-1137	-1113	-1116
UK inflow	5115	5514	5285
UK outflow	-4592	-4813	-4657
International in	413	446	311
International out	-427	-572	-322
UPC	27		

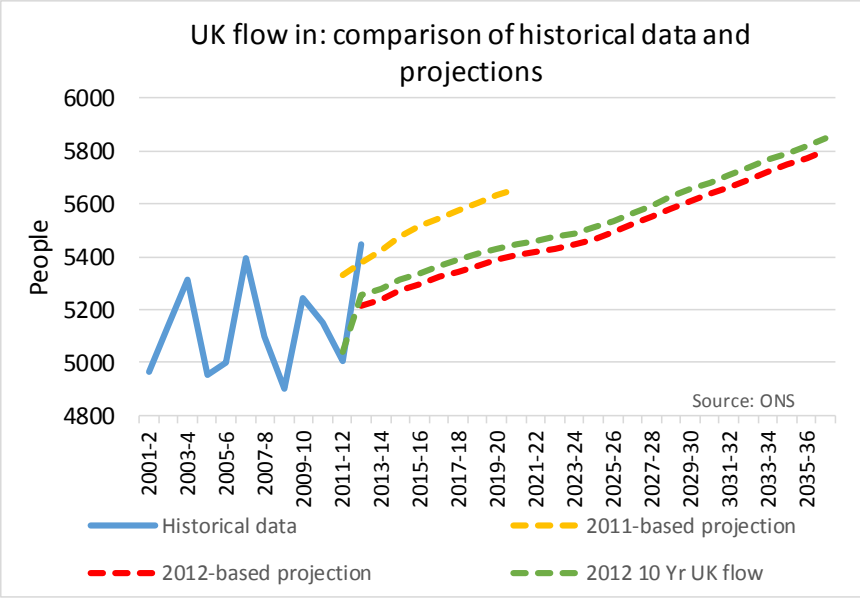
Average UPC as percentage of average annual population change 2001-11	5.3%
2001-11 UPC as percentage of 2001 population	0.2%

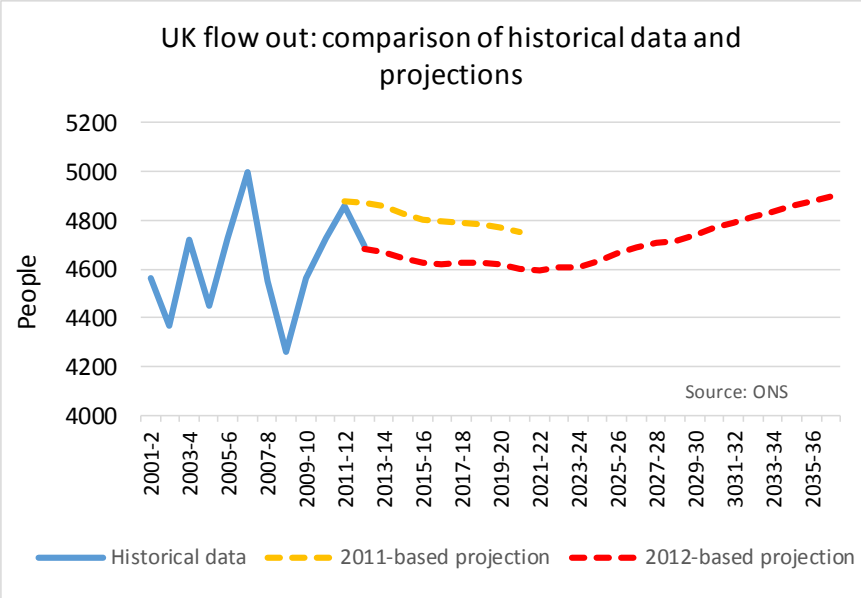
Stroud: Births and Deaths





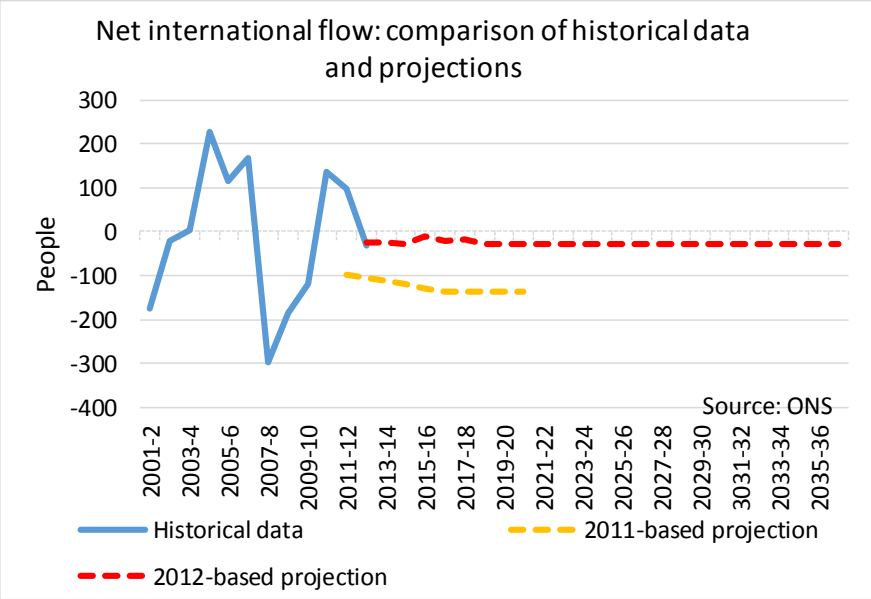
Stroud: UK Flows



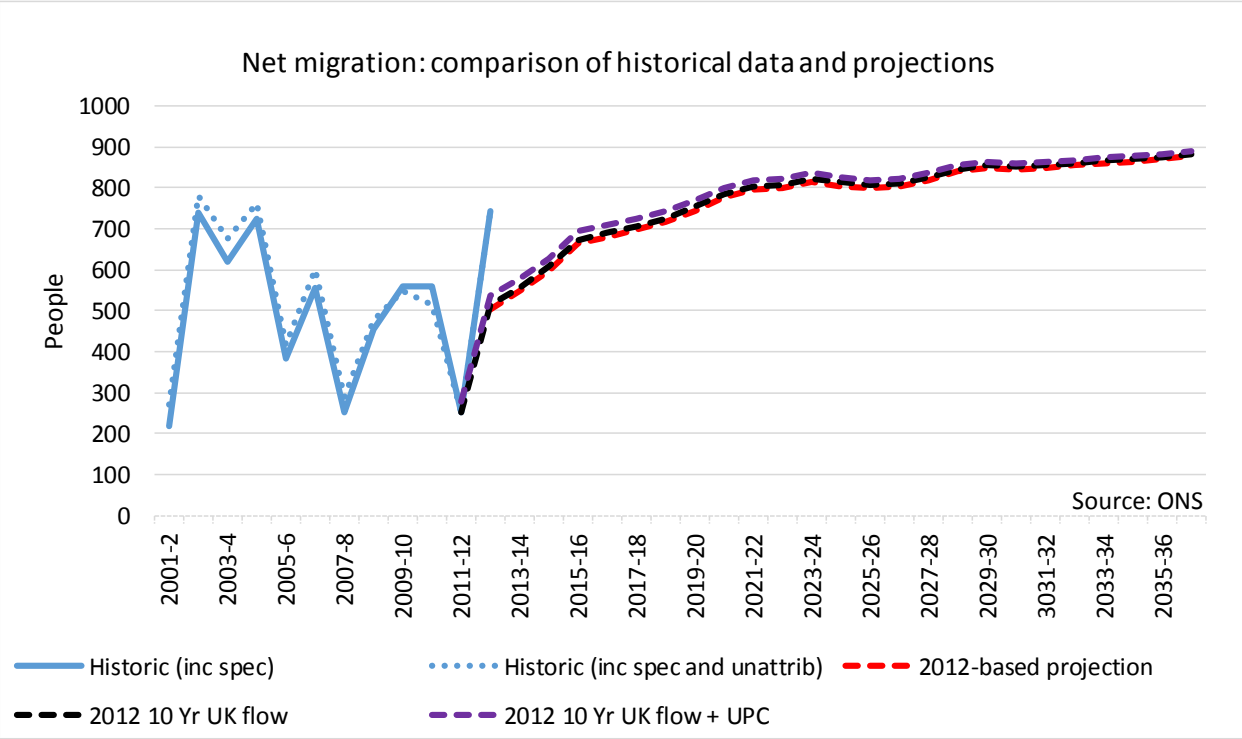


	Average inflow	Average outflow
2007-12	5079	4591
2002-12	5118	4622
02-12 as increase on 07-12	0.8%	0.7%

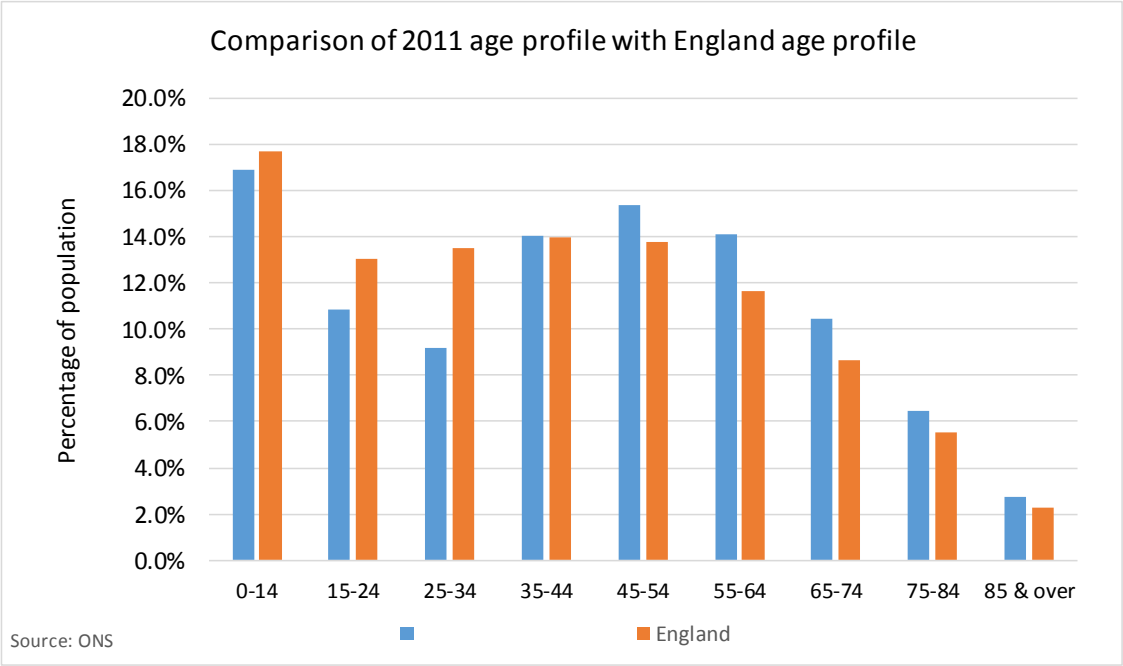
Stroud: **International Flows**



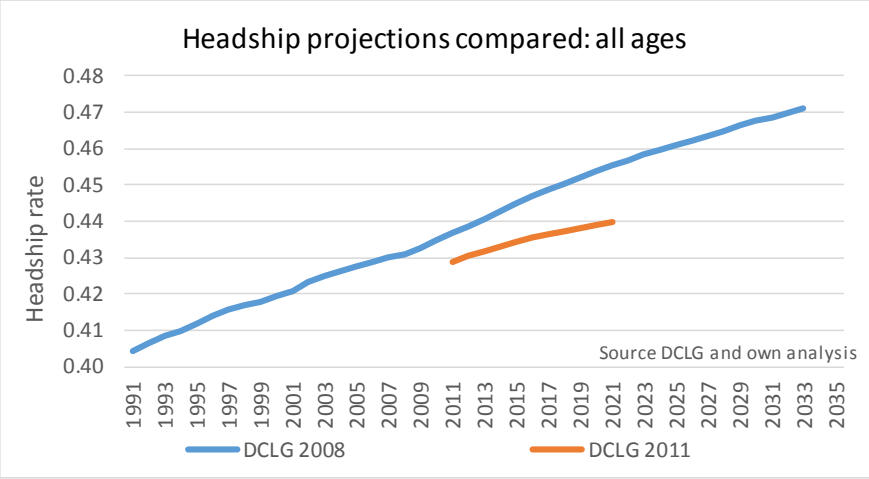
Stroud: Net Migration

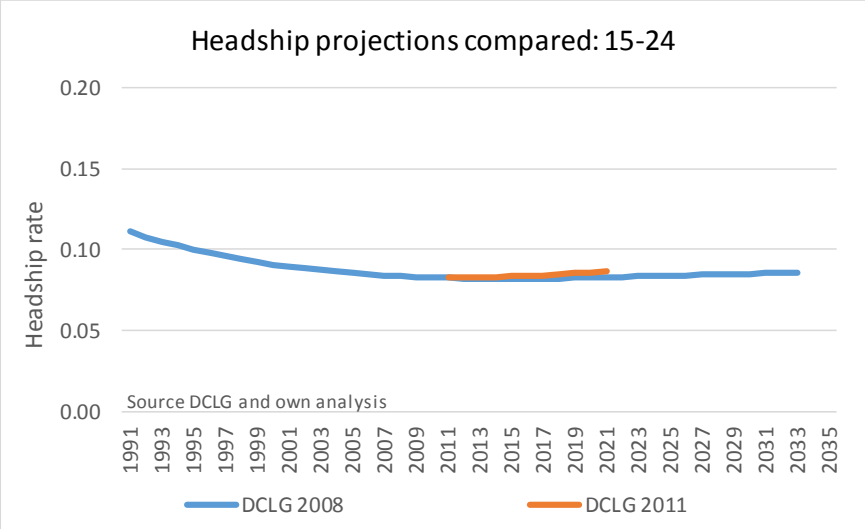


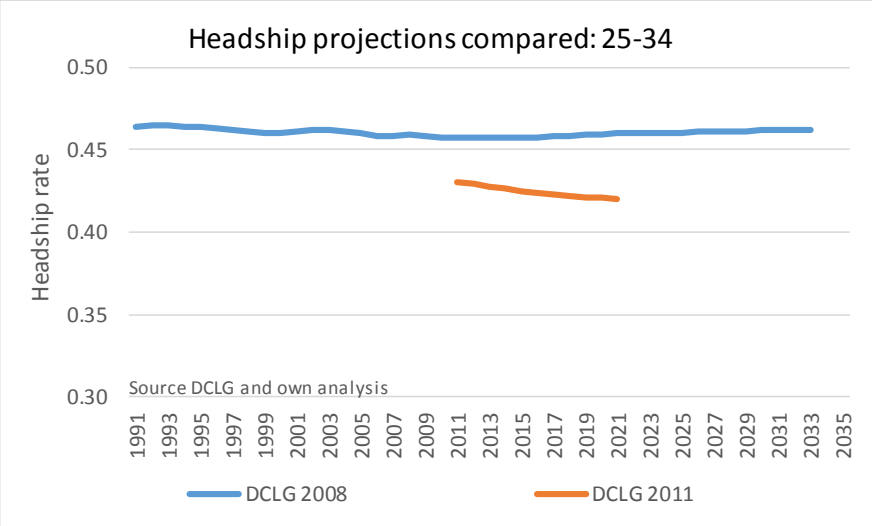
Stroud: Age profile



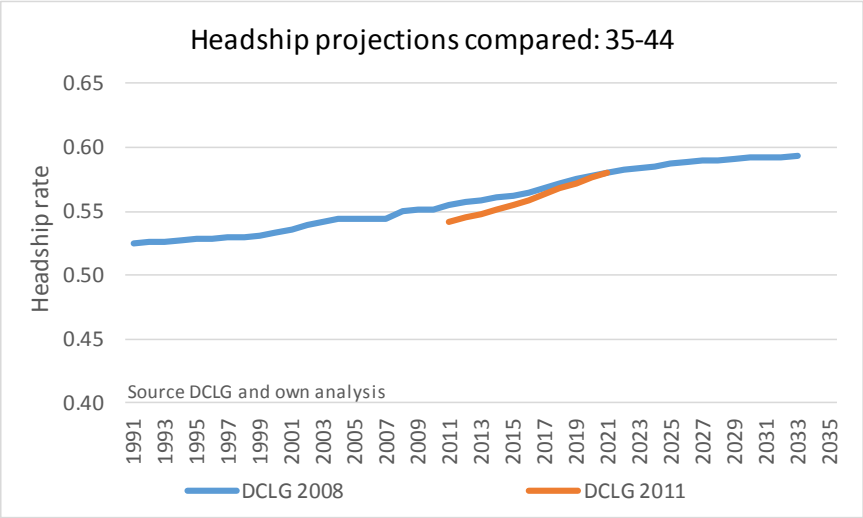
Stroud: Headship rate projections

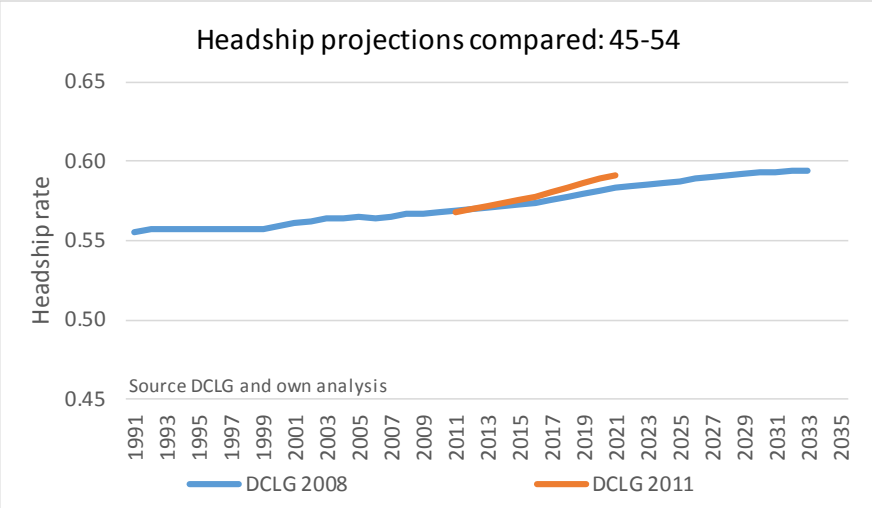


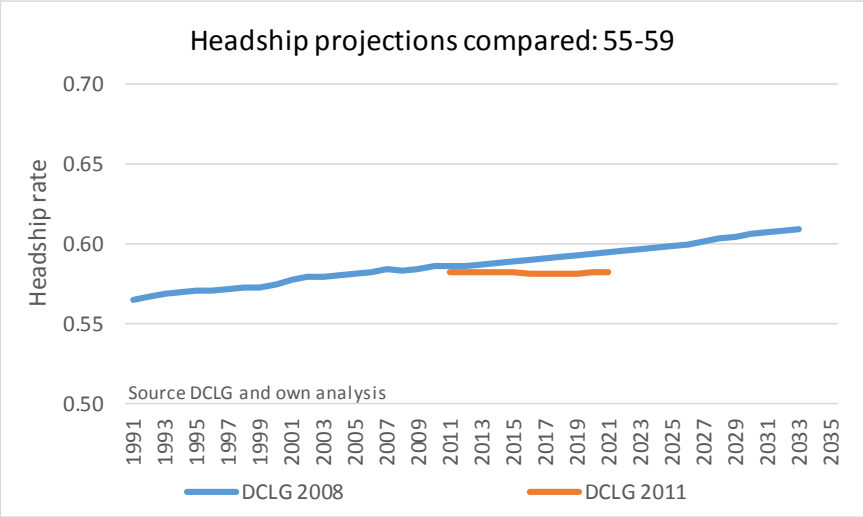


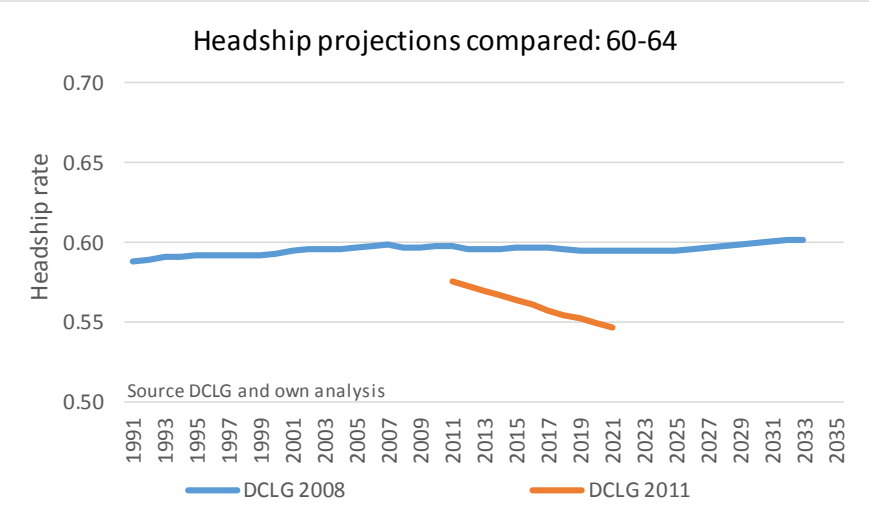


Stroud: Headship rate projections

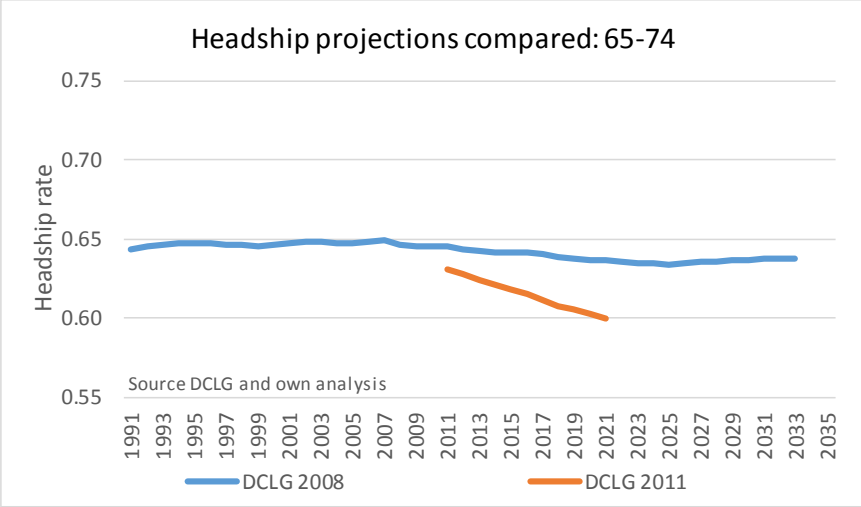


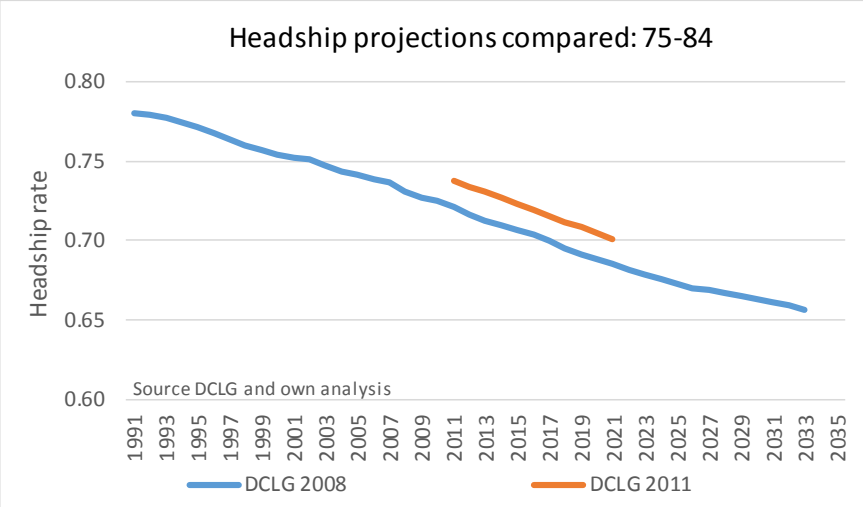


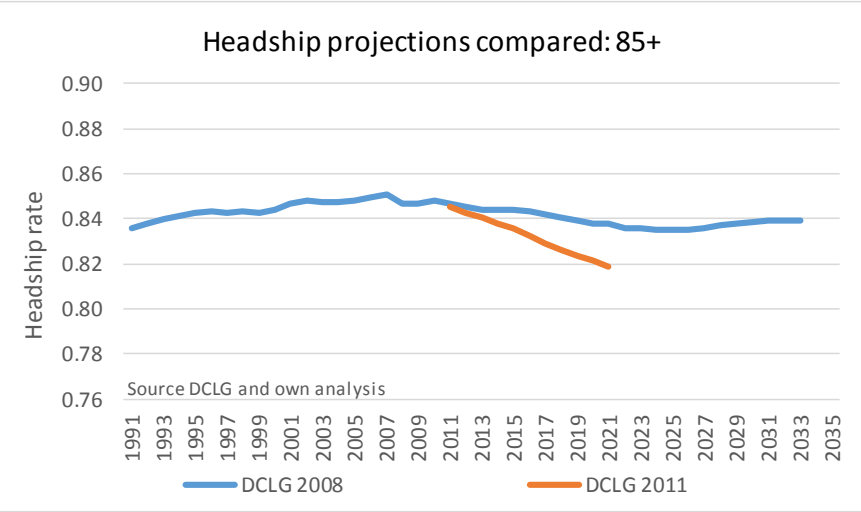




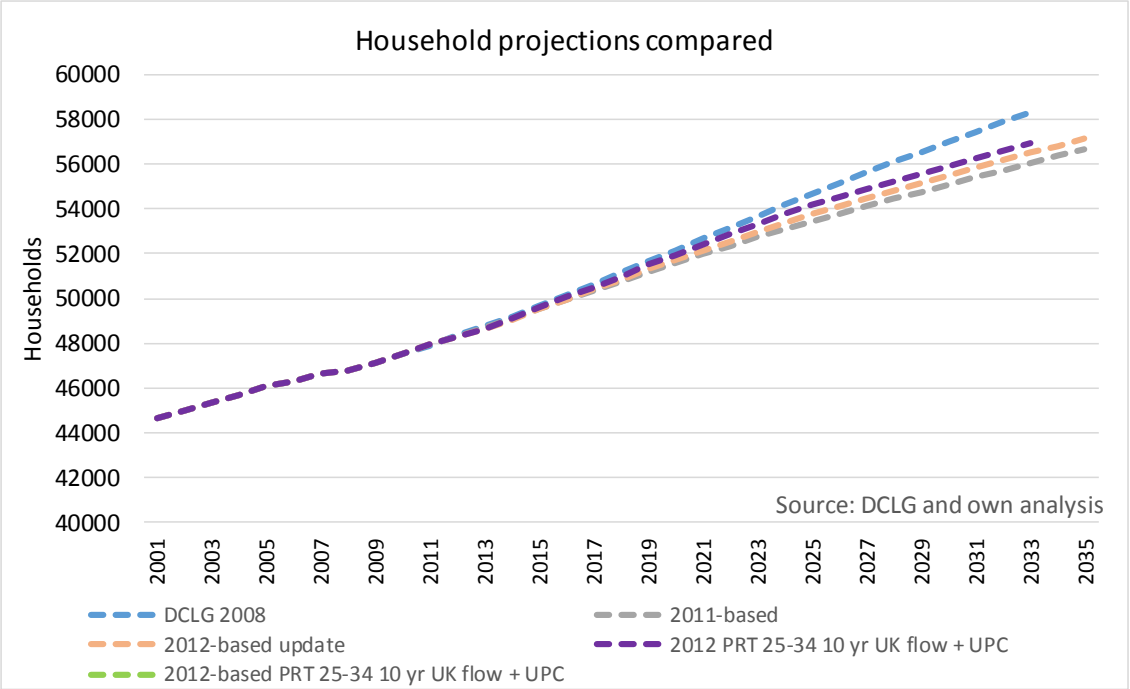
Stroud: Headship rate projections







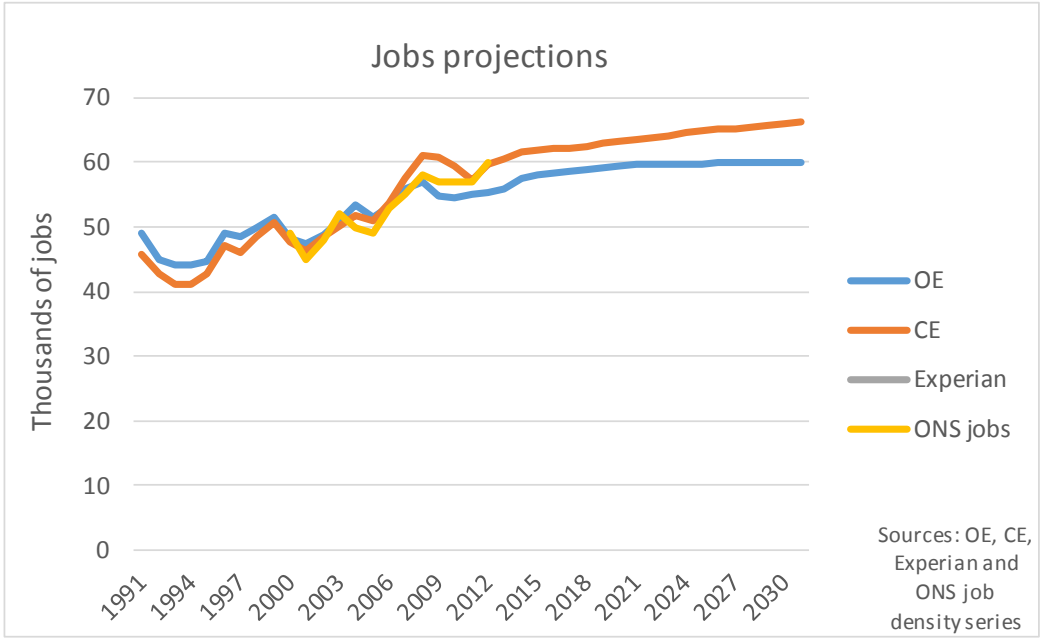
Stroud: Household projections



Households and homes	Households				2011-31		2006-31	
	2006	2011	2021	2031	Homes	Homes/yr	Homes	Homes/yr
2011-based projection	46300	47900	52000	55400	7800	390	9500	380
2011-based PRT 25-34	46300	47900	52100	55600	8000	400	9700	390
2012-based update	46300	47900	52100	55800	8200	410	9900	400
2012-based PRT 10 yr UK flow	46300	47900	52600	56600	9100	450	10800	430
2012-based PRT 10 yr UK flow + UPC	46300	47900	52700	56800	9200	460	10900	440
2012-based PRT 25-35 10 yr UK flow	46300	47900	52300	56100	8500	430	10200	410
2012 PRT 25-34 10 yr UK flow + UPC	46300	47900	52400	56200	8700	430	10400	420
Proposed demographic OAN	**46300**	**47900**	**52400**	**56200**	**8700**	**430**	**10400**	**420**

STROUD: HOUSING NEEDED TO SUPPORT ECONOMIC GROWTH

Stroud: Employment projections (thousands of jobs)

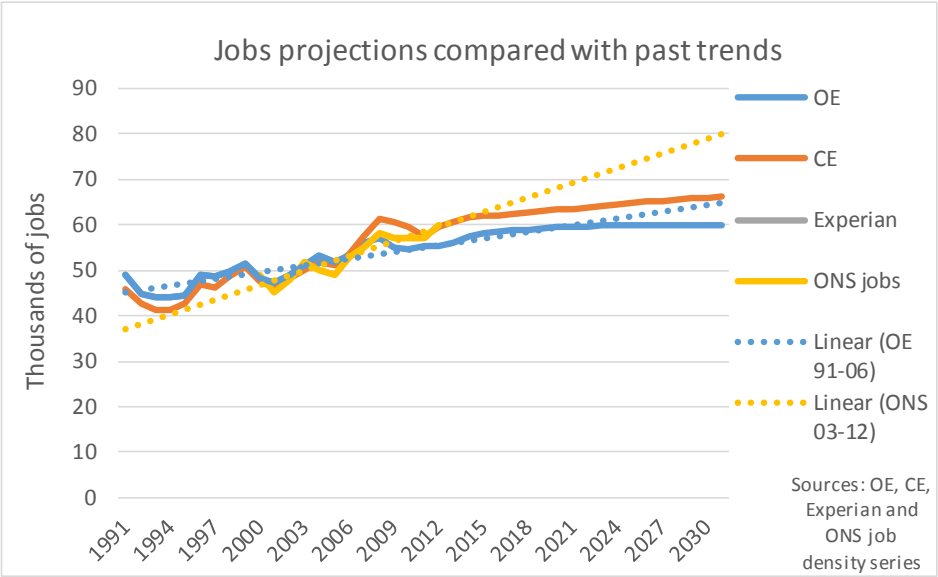


Thousands of jobs	1991	1996	2001	2006	2011	2016	2021	2026	2031
OE	49.0	48.9	47.4	53.2	55.2	58.4	59.6	59.9	60.0
CE	45.9	47.0	46.2	53.7	57.3	62.1	63.6	65.1	66.2
ONS jobs			45.0	53.0	57.0				

ONS jobs is from ONS job density series

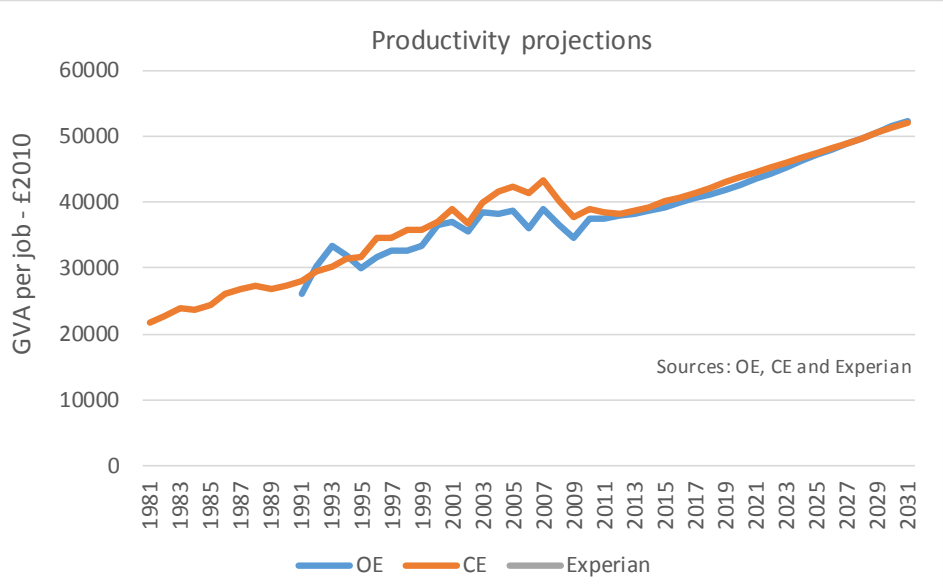
Jobs increase	2006-31	2011-31	2014-31
OE	6805	4790	2444
CE	12493	8828	4403

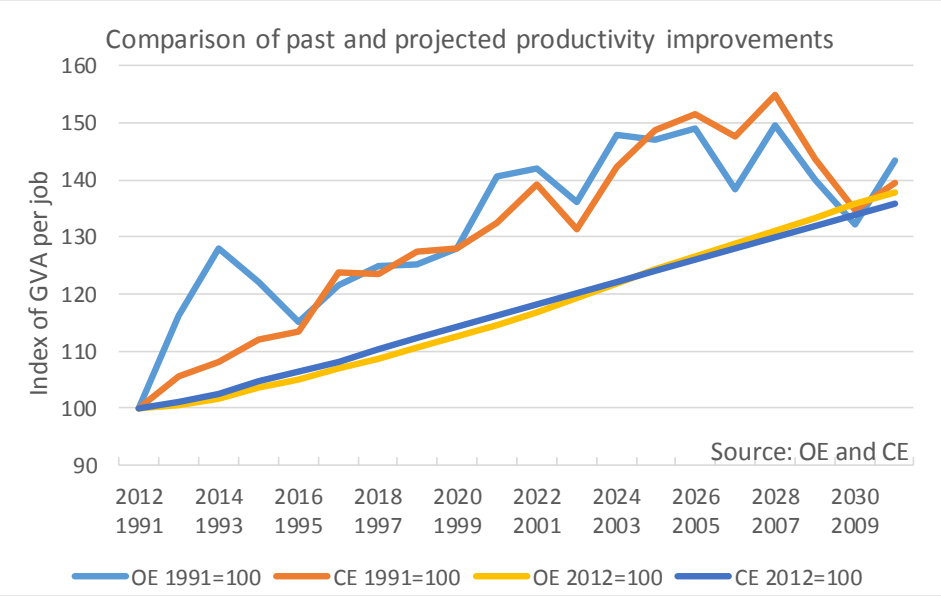
Stroud: **Comparison of job projections with past trends**



The Planning Practice Guidance suggests that plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts. This chart enables the econometric projections to be compared with past trends. Two periods have been chosen: the period from the year before the early '90s recession to the year before the latest recession i.e. the last full cycle; and the ten year to 2012 - a period which encompasses both the downturn and some years of relatively strong growth.

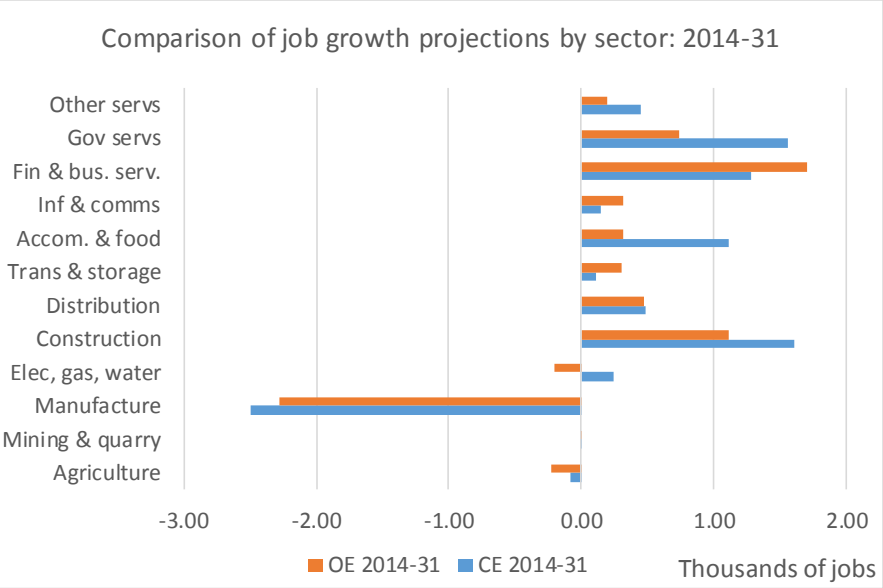
Stroud: **Comparison of productivity projections with past trends**



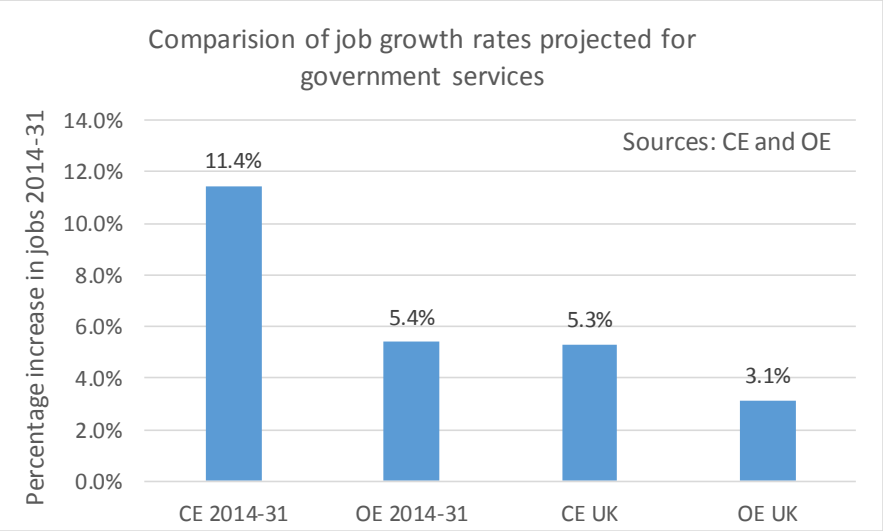


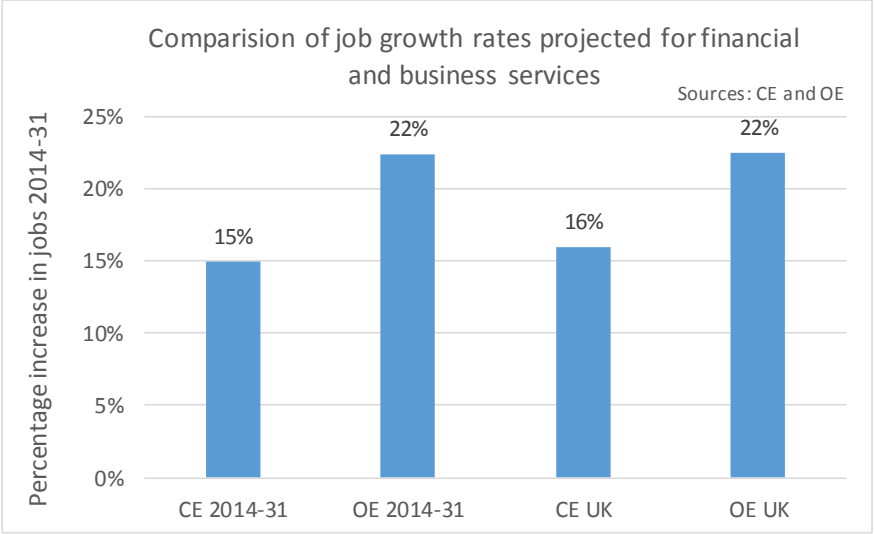
These charts are intended to enable the projected improvements in productivity to be compared with what was achieved after the early 90's recession. The second chart superimposes the projection from 2012 on top of what happened from 1991, thereby enabling the productivity improvements to be compared more easily

Stroud: **Comparison of job growth projections by sector**



These charts are designed to enable the sector by sector jobs growth projections of OE and CE to be compared. The pair of charts at the bottom of the page pick out two sectors which have a significant impact on the overall job growth projection and compare both the OE and CE projections for the local authority area and the OE and CE projections for the UK as a whole.

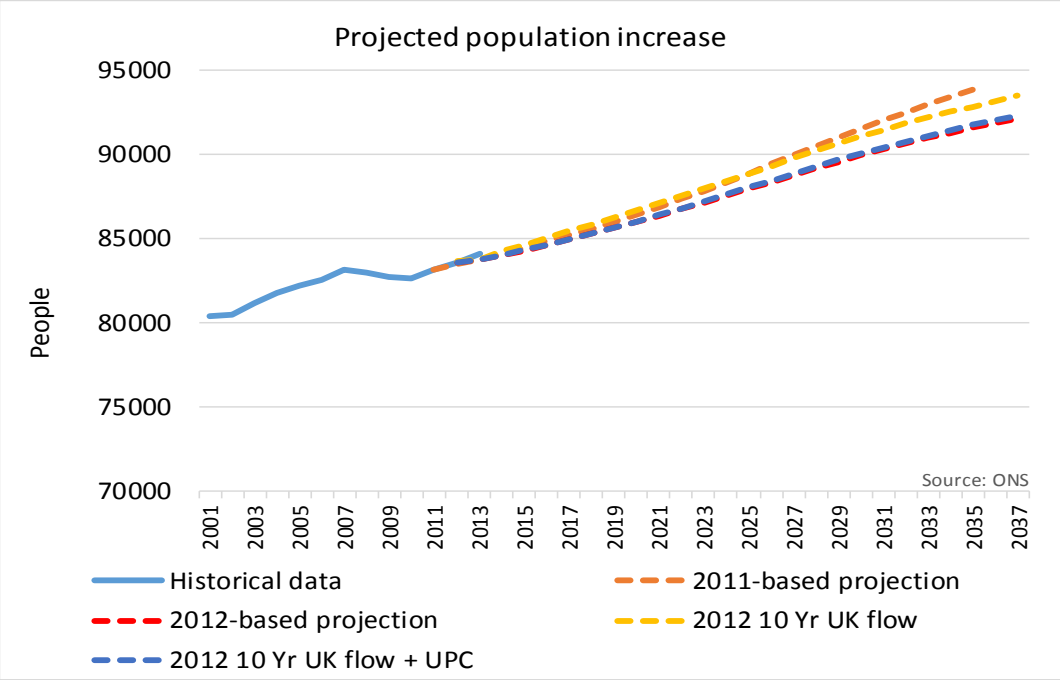




ADDITIONAL DATA FOR COTSWOLD

APPENDIX B

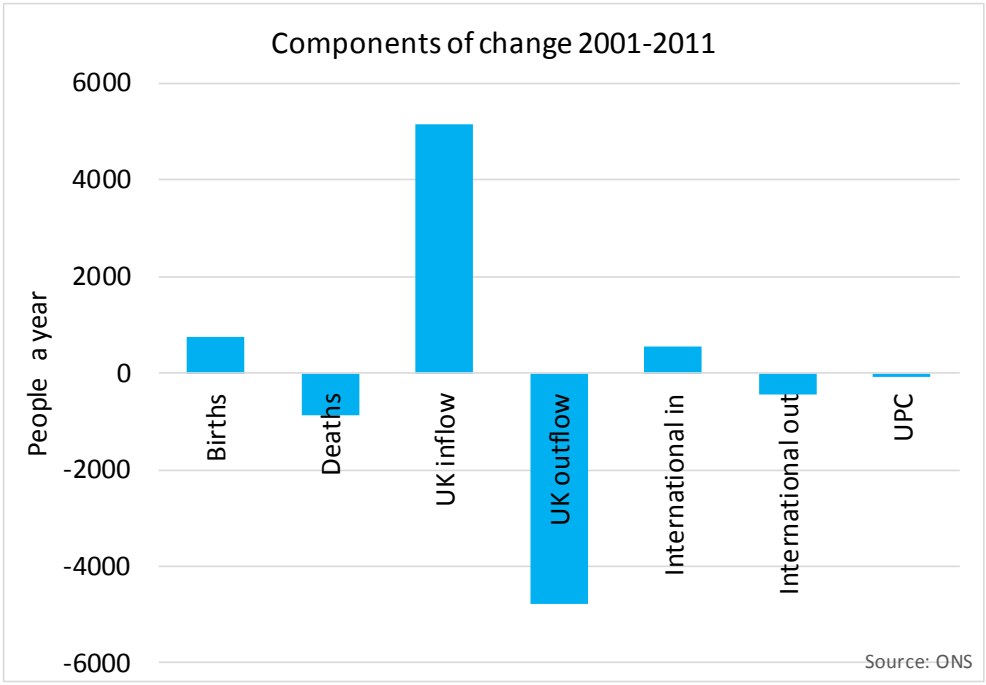
Cotswold: Population projections



Population	2006	2011	2021	2031	Increase 2011-21		Increase 2011-31		Increase 2006-31	
					People	Percentage	People	Percentage	People	Percentage
2011-based projection*	82600	83200	86900	92000	3700	4.4%	8900	10.6%	9400	11.4%
2012-based projection	82600	83200	86400	90300	3200	3.8%	7100	8.5%	7700	9.3%
2012 10 Yr UK flow	82600	83200	87100	91500	3900	4.7%	8300	10.0%	8900	10.8%
2012 10 Yr UK flow + UPC	82600	83200	86400	90500	3300	3.8%	7300	8.8%	7900	9.6%
Proposed planning assumption	82600	83200	87100	91500	3900	4.7%	8300	10.0%	8900	10.8%

* as extended by CCHPR

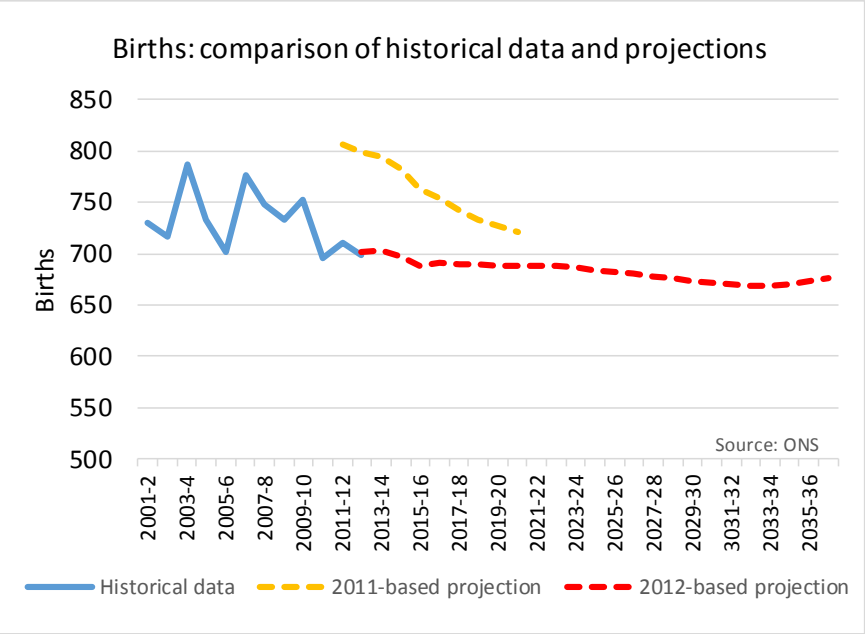
Cotswold: Components of change

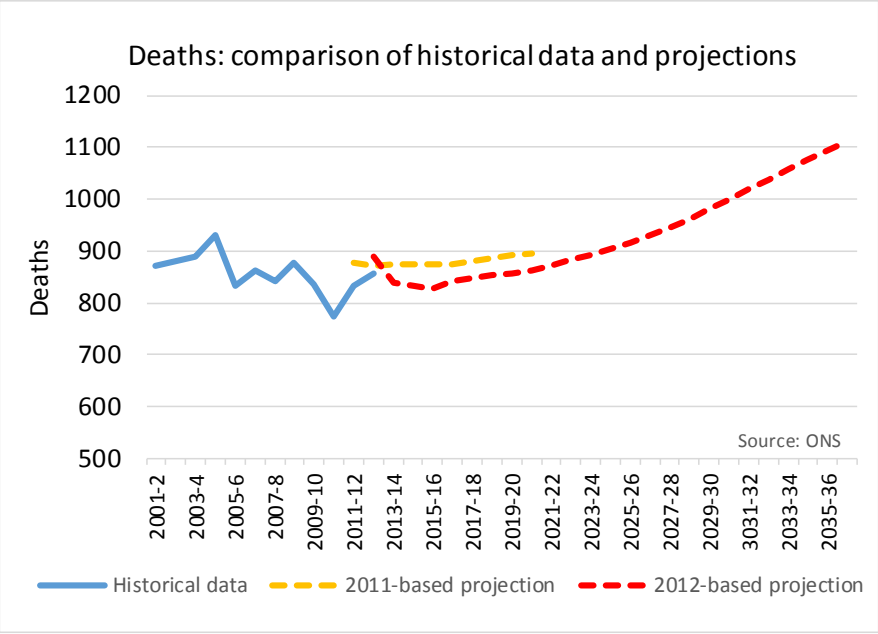


Average annual flows	2001-11	2011-based 2011-21	2012-based 2011-21
Births	738	762	695
Deaths	-860	-880	-848
UK inflow	5158	5448	5317
UK outflow	-4781	-4935	-4851
International in	552	628	414
International out	-456	-649	-409
UPC	-91		

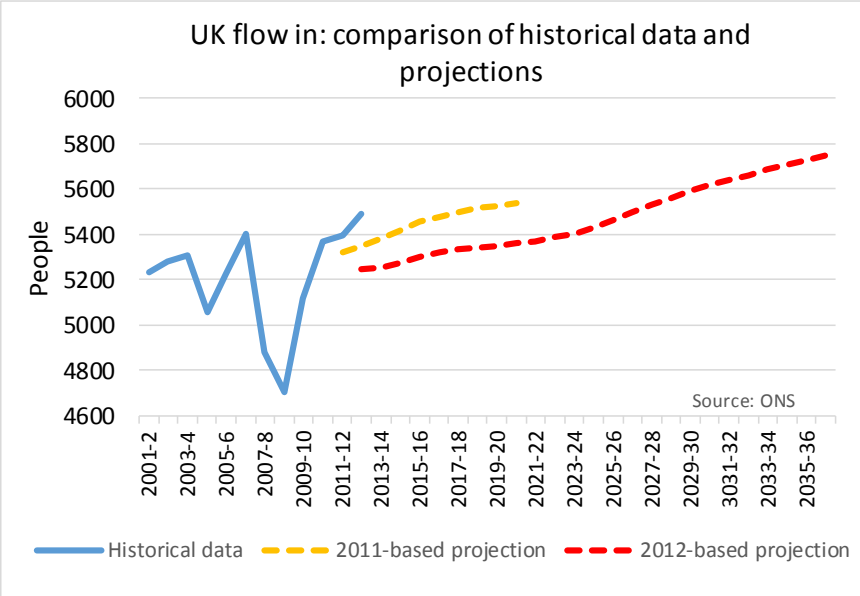
Average UPC as percentage of average annual population change 2001-11	-32.5%
2001-11 UPC as percentage of 2001 population	-1.1%

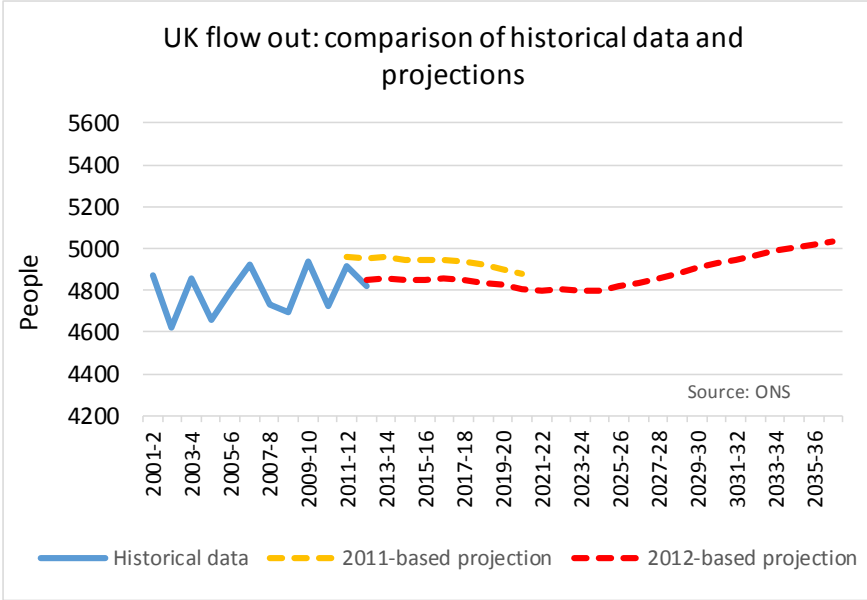
Cotswold: Births and Deaths





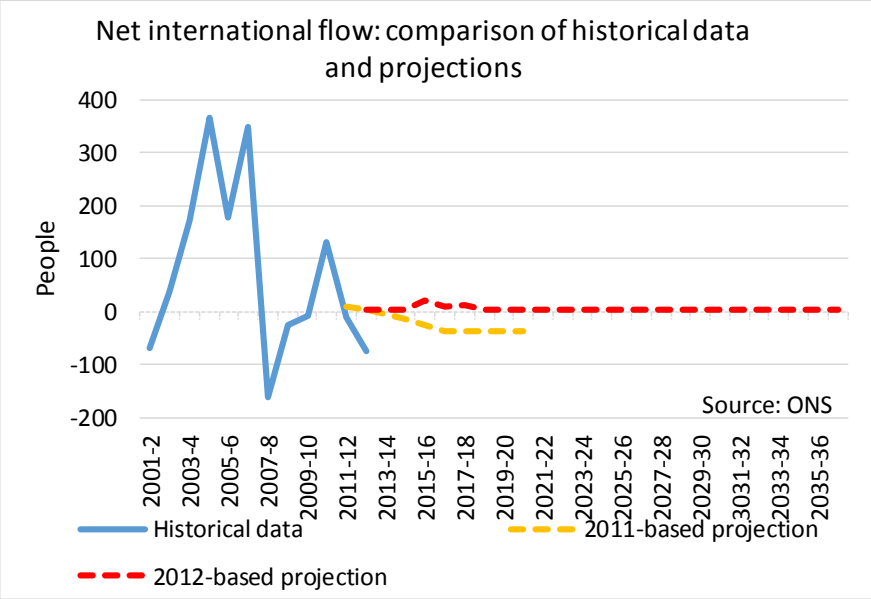
Cotswold: UK Flows



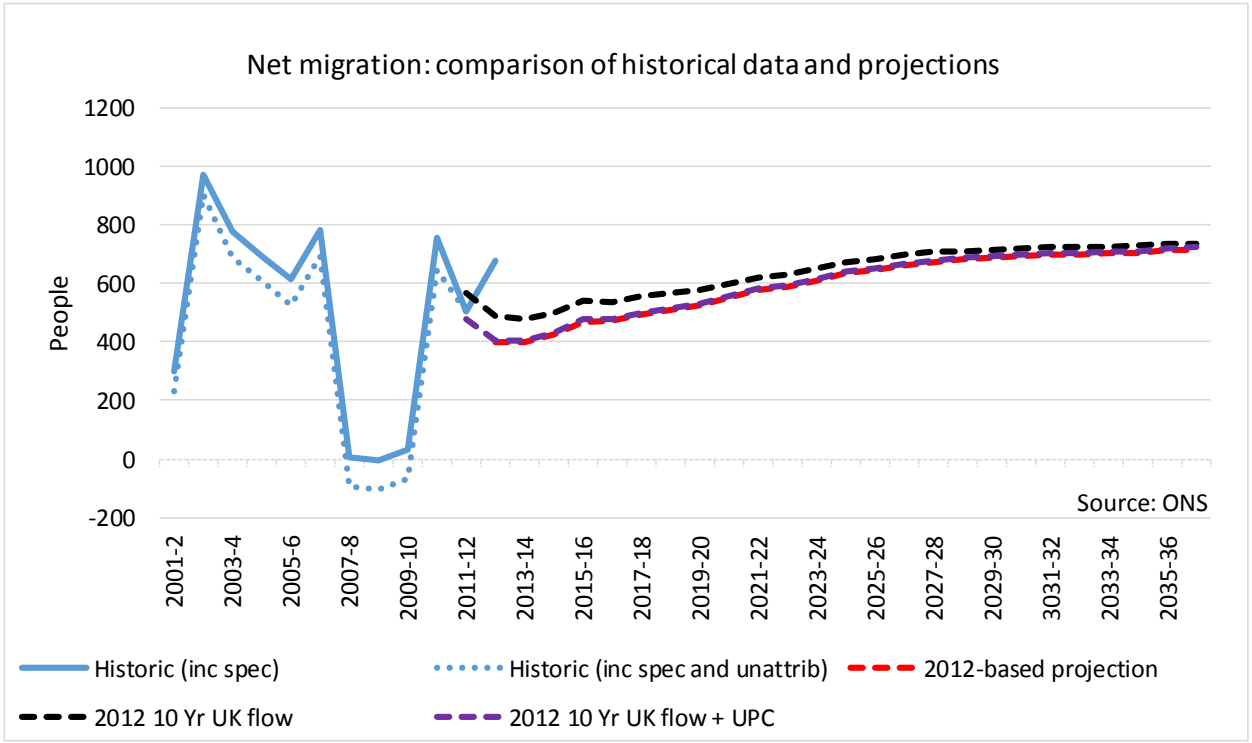


	Average inflow	Average outflow
2007-12	5093	4802
2002-12	5174	4785
02-12 as increase on 07-12	1.6%	-0.3%

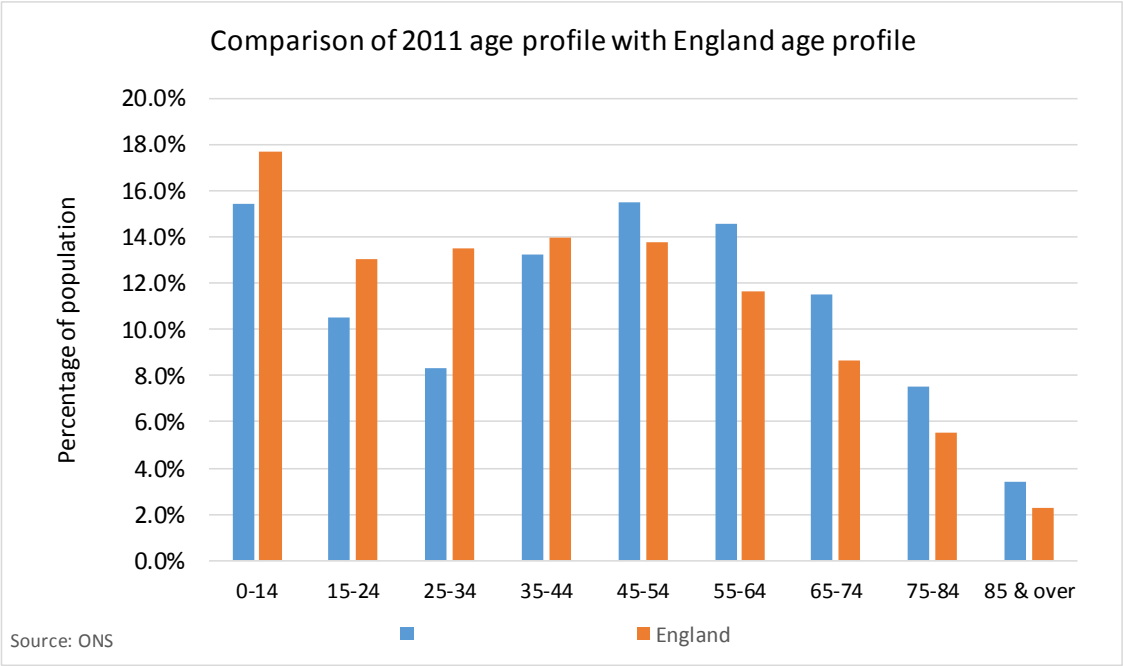
Cotswold: International Flows



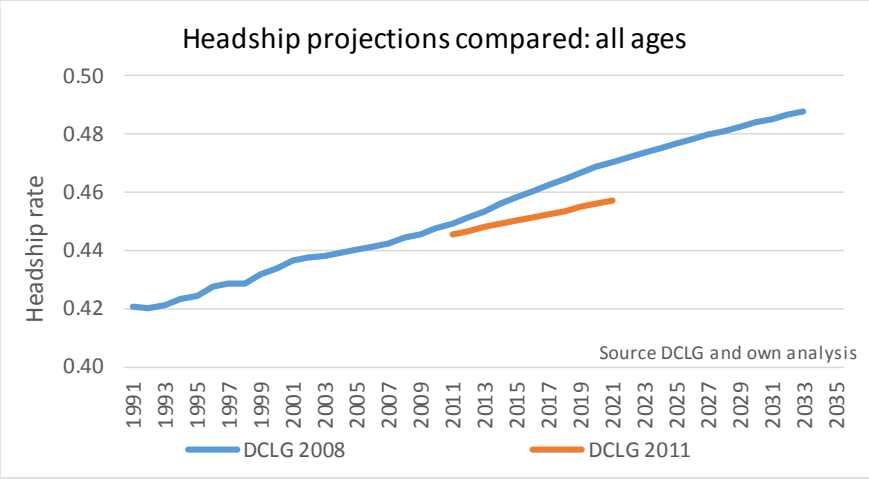
Cotswold: Net Migration

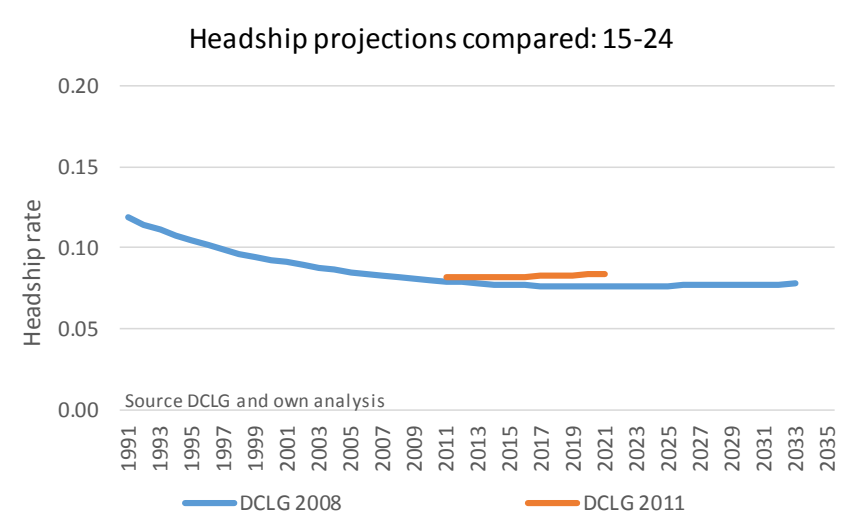


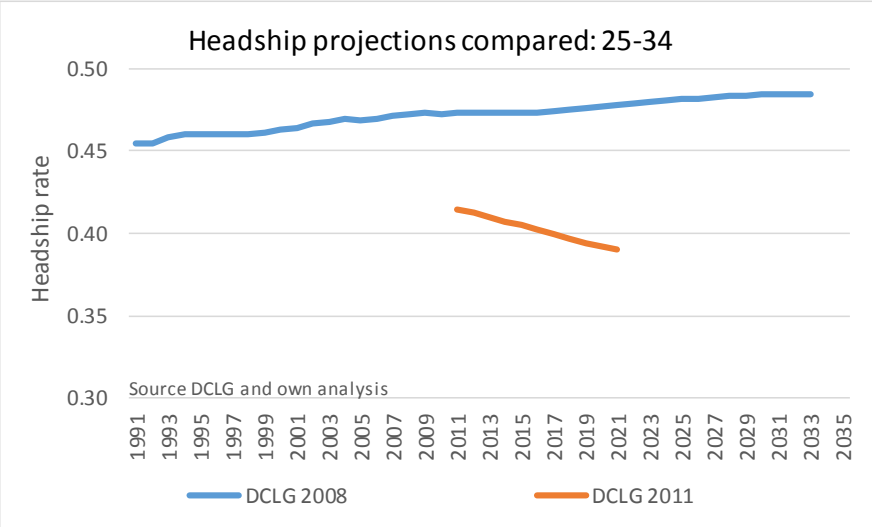
Cotswold: Age profile



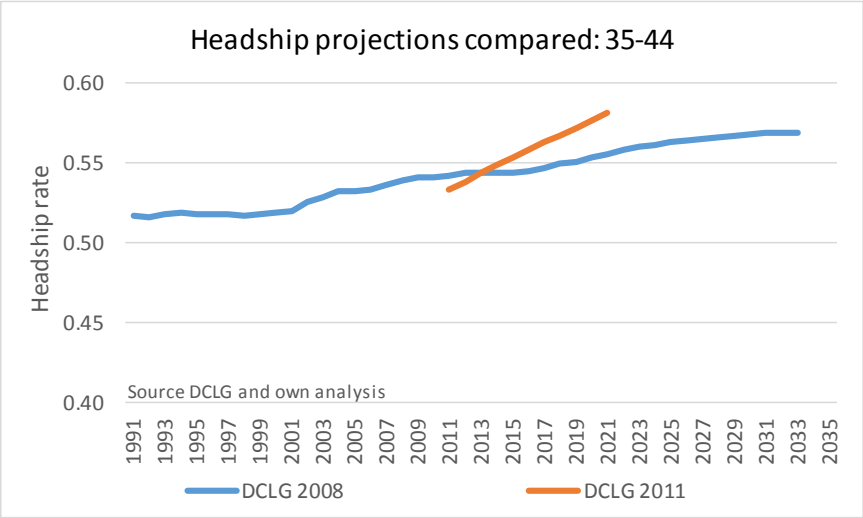
Cotswold: Headship rate projections

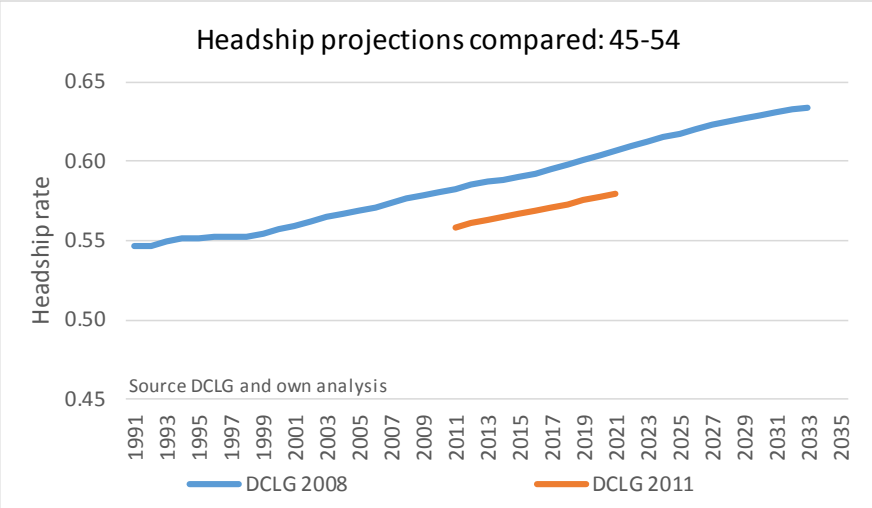


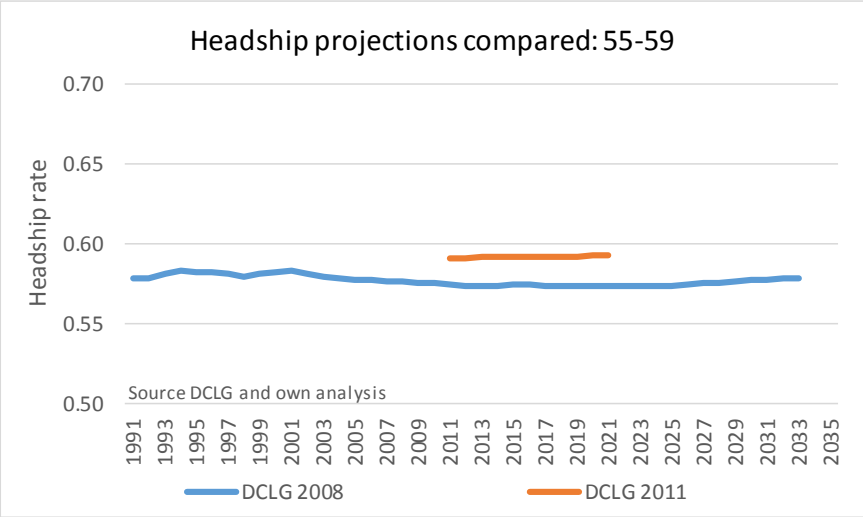


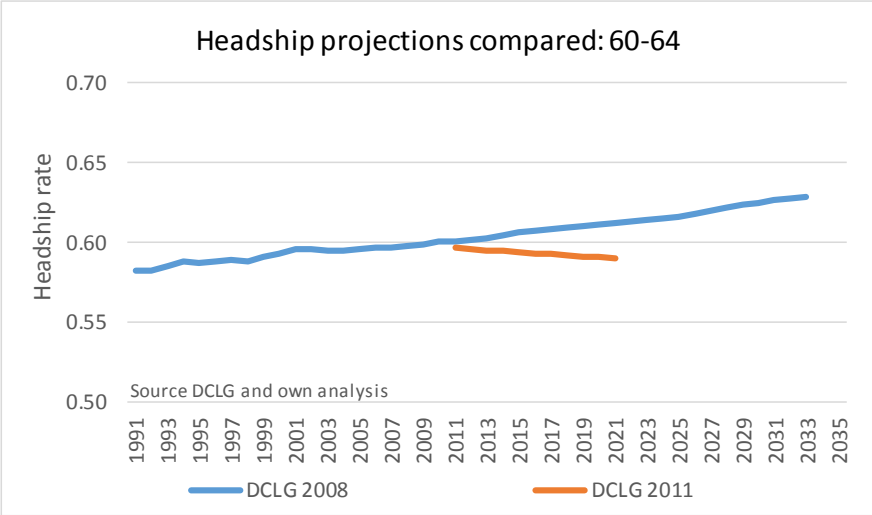


Cotswold: Headship rate projections

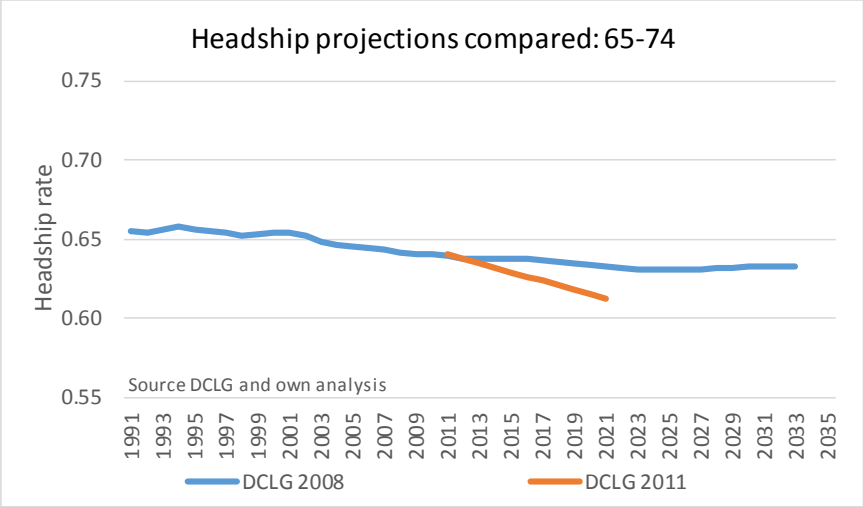


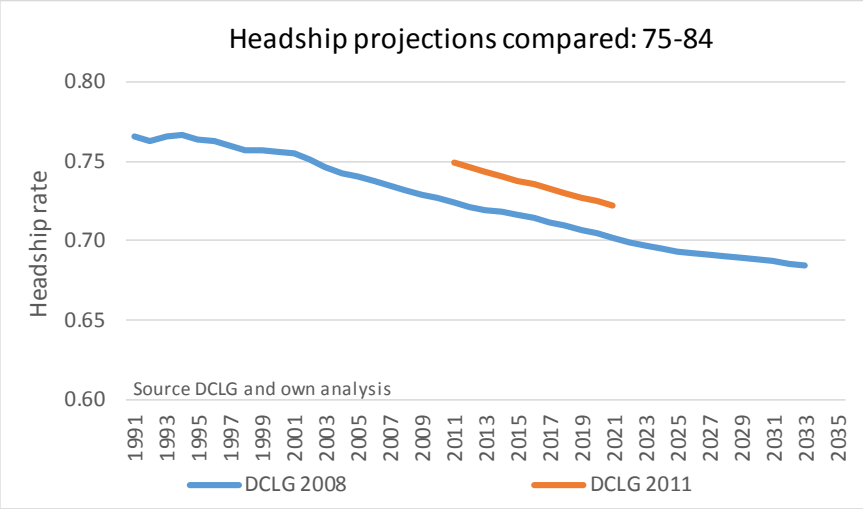


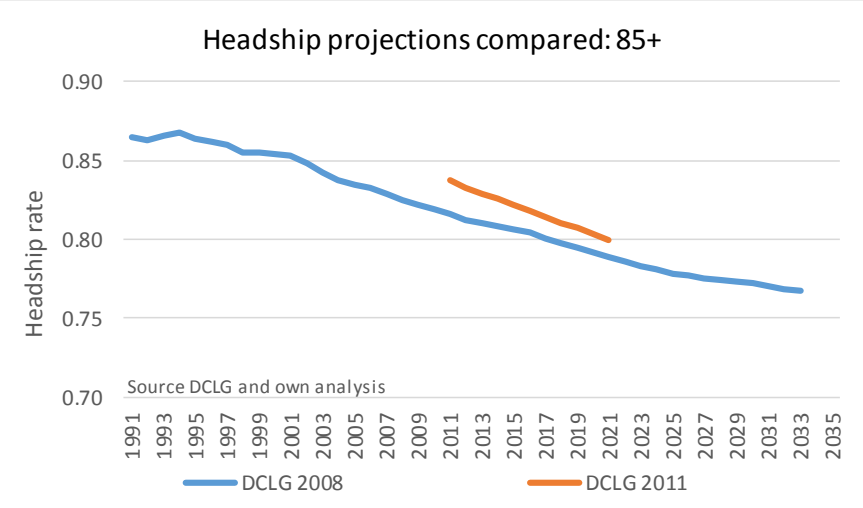




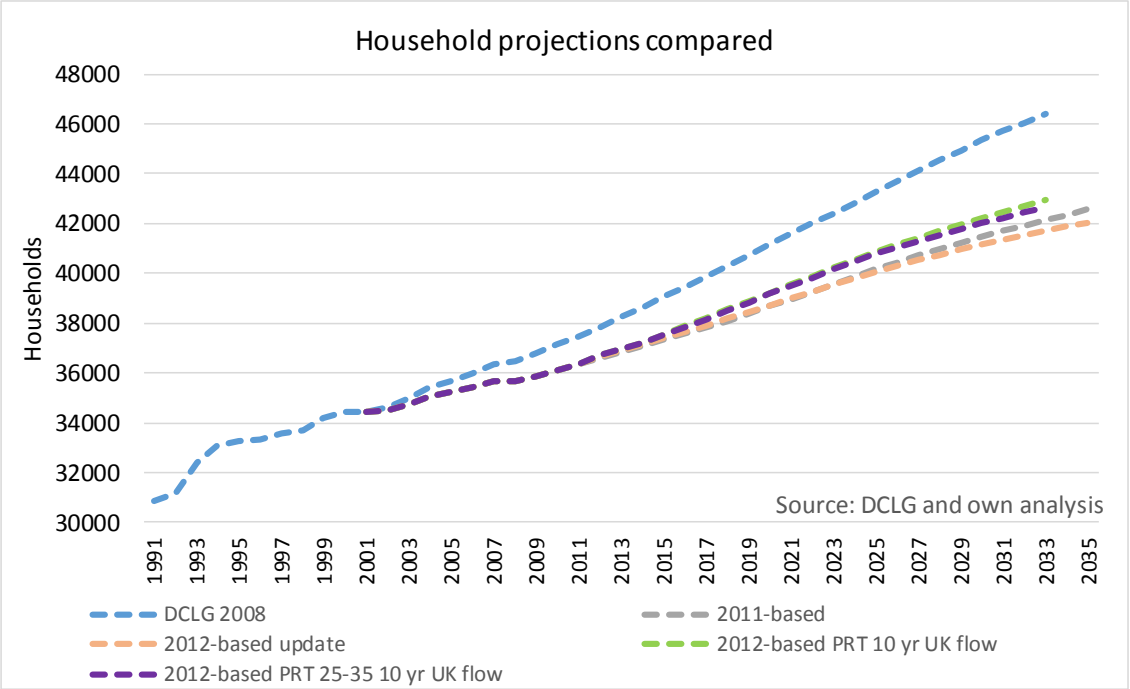
Cotswold: Headship rate projections







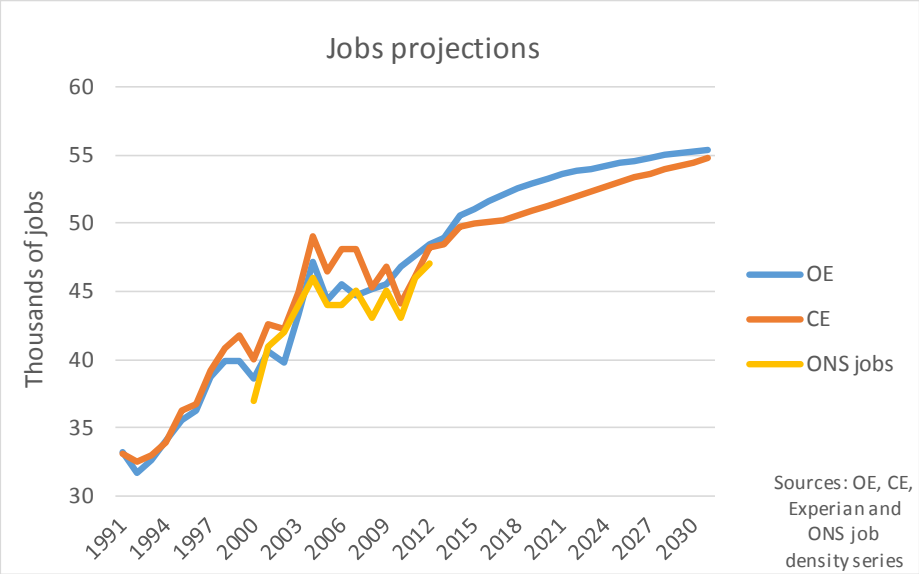
Cotswold: Household projections



Households and homes	Households				2011-31		2006-31	
	2006	2011	2021	2031	Homes	Homes/yr	Homes	Homes/yr
2011-based projection	35400	36400	39000	41700	5700	290	6700	270
2011-based PRT 25-34	35400	36400	39200	42100	6100	310	7200	290
2012-based update	35400	36400	39000	41400	5300	270	6400	260
2012-based PRT 10 yr UK flow	35400	36400	39500	42500	6500	330	7600	300
2012-based PRT 10 yr UK flow + UPC	35400	36400	39300	42100	6100	300	7100	280
2012-based PRT 25-35 10 yr UK flow	35400	36400	39500	42200	6300	310	7300	290
2012 PRT 25-34 10 yr UK flow + UPC	35400	36400	39200	41800	5800	290	6900	270
Porposed demographic OAN	**35400**	**36400**	**39500**	**42200**	**6300**	**310**	**7300**	**290**
			Percentage vacant or second homes	6.55%				

COTSWOLD: HOUSING NEEDED TO SUPPORT ECONOMIC GROWTH

Coswold: **Employment projections (thousands of jobs)**

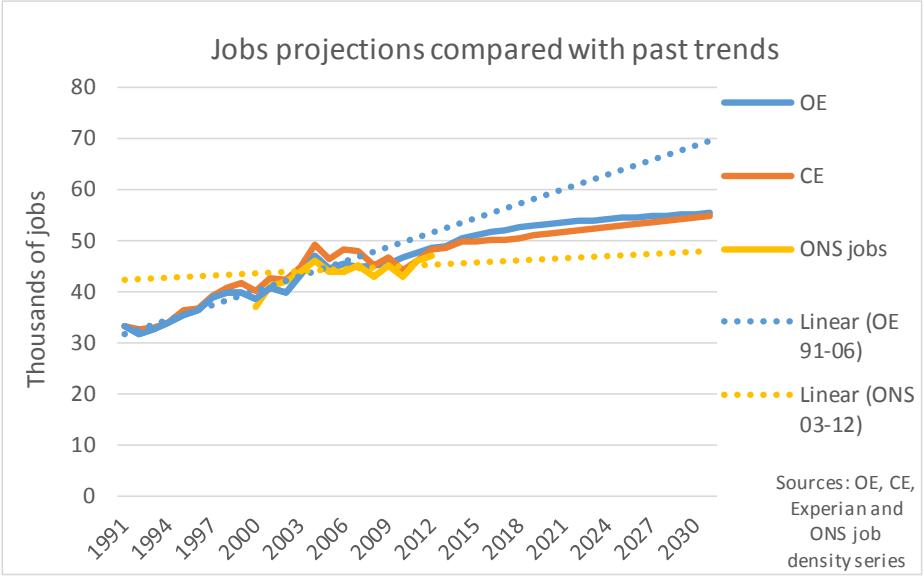


Thousands of jobs	1991	1996	2001	2006	2011	2016	2021	2026	2031
OE	33.2	36.3	40.6	45.5	47.6	51.6	53.6	54.6	55.4
CE	33.1	36.7	42.6	48.1	46.1	50.0	51.6	53.3	54.7
ONS jobs			41.0	44.0	46.0				

ONS jobs is from ONS job density series

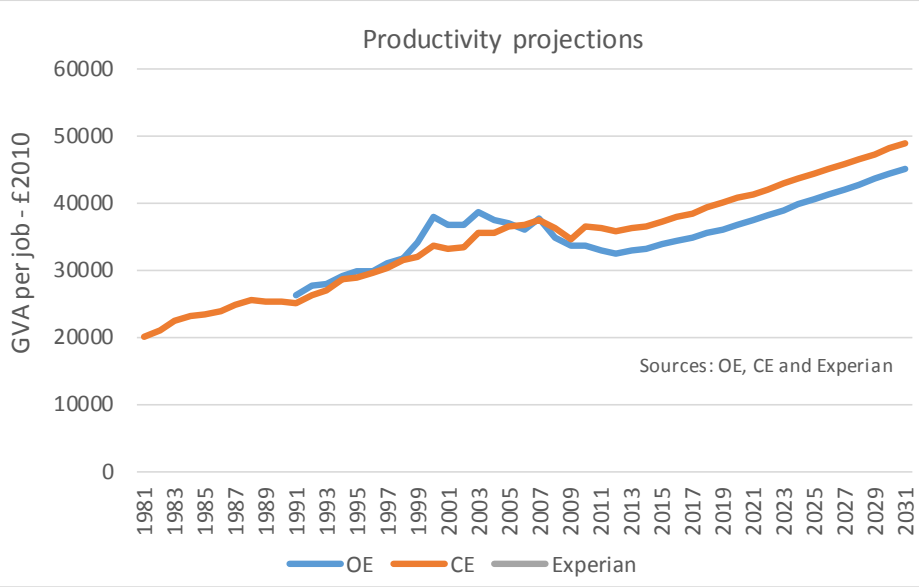
Jobs increase	2006-31	2011-31	2014-31
OE	9949	7819	4815
CE	6613	8680	5011

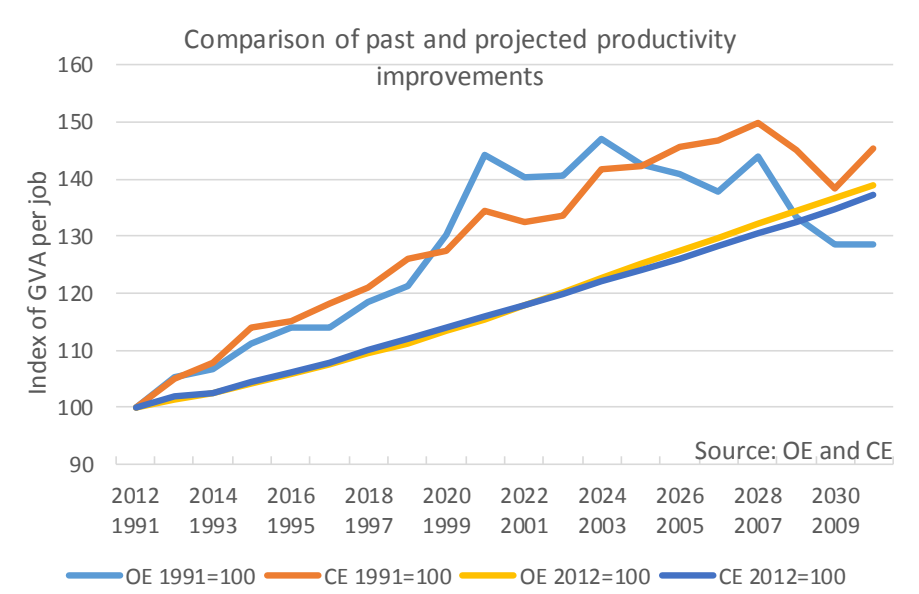
Cotswold: **Comparison of job projections with past trends**



The Planning Practice Guidance suggests that plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts. This chart enables the econometric projections to be compared with past trends. Two periods have been chosen: the period from the year before the early '90s recession to the year before the latest recession i.e. the last full cycle; and the ten year to 2012 - a period which encompasses both the downturn and some years of relatively strong growth.

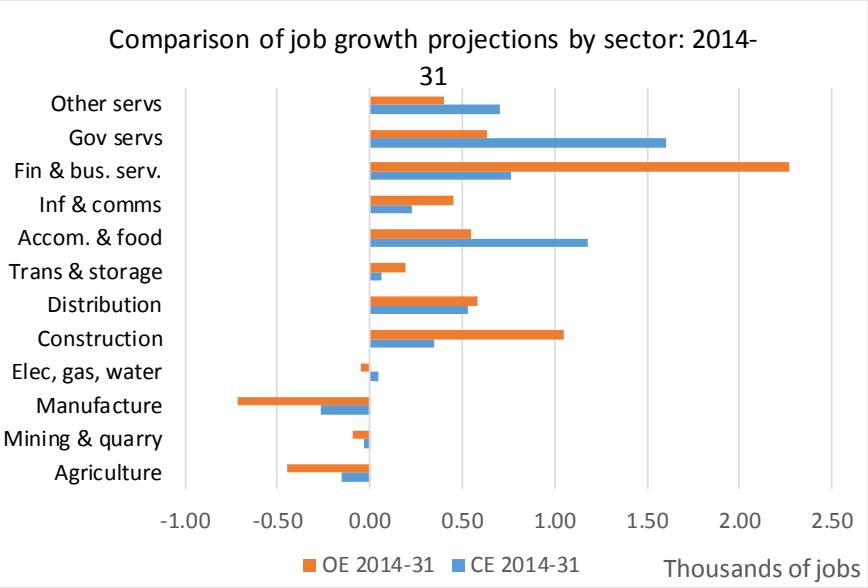
Cotswold: Comparison of productivity projections with past trends



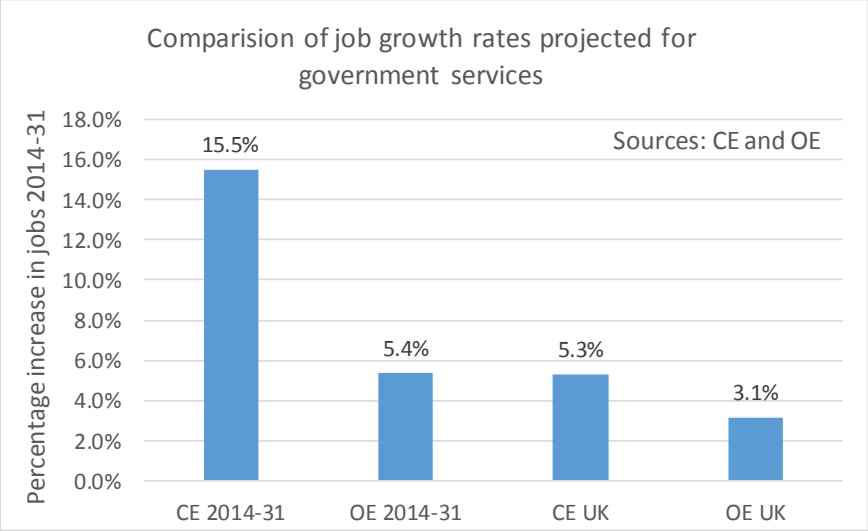


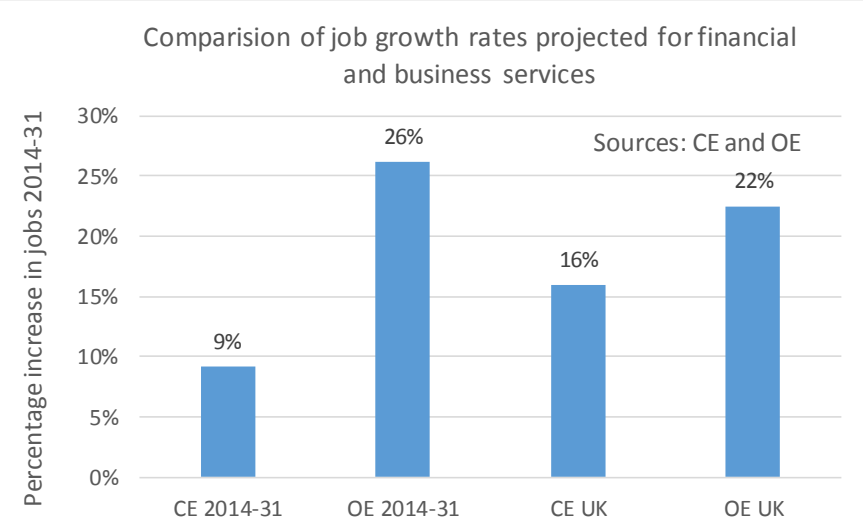
These charts are intended to enable the projected improvements in productivity to be compared with what was achieved after the early 90's recession. The second chart superimposes the projection from 2012 on top of what happened from 1991, thereby enabling the productivity improvements to be compared more easily

Cotswold: Comparison of job growth projections by sector



These charts are designed to enable the sector by sector jobs growth projections of OE and CE to be compared. The pair of charts at the bottom of the page pick out two sectors which have a significant impact on the overall job growth projection and compare both the OE and CE projections for the local authority area and the OE and CE projections for the UK as a whole.

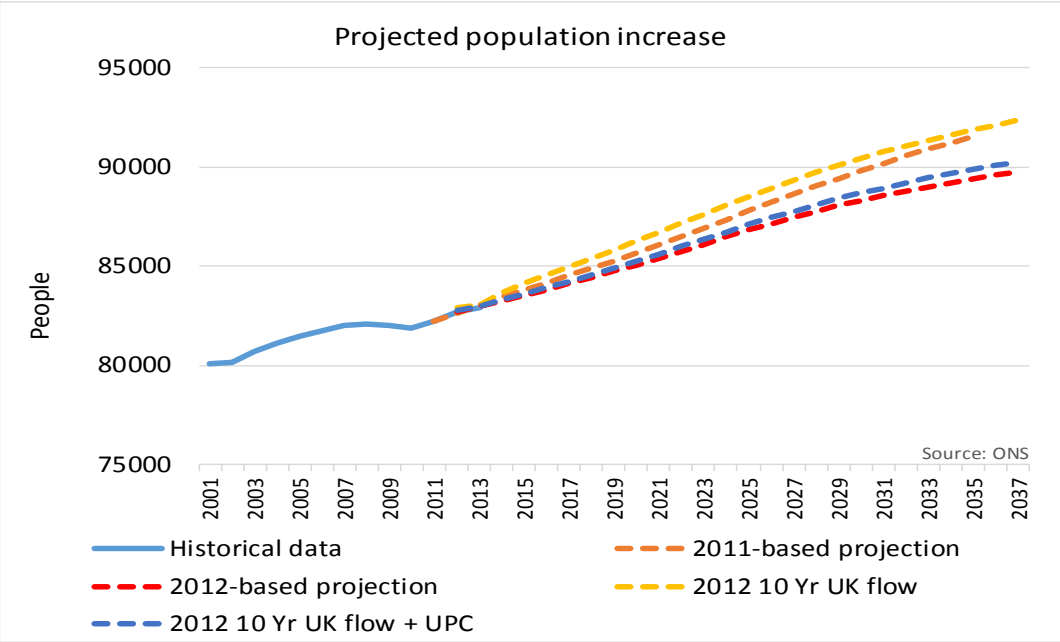




ADDITIONAL DATA FOR FOREST OF DEAN

APPENDIX C

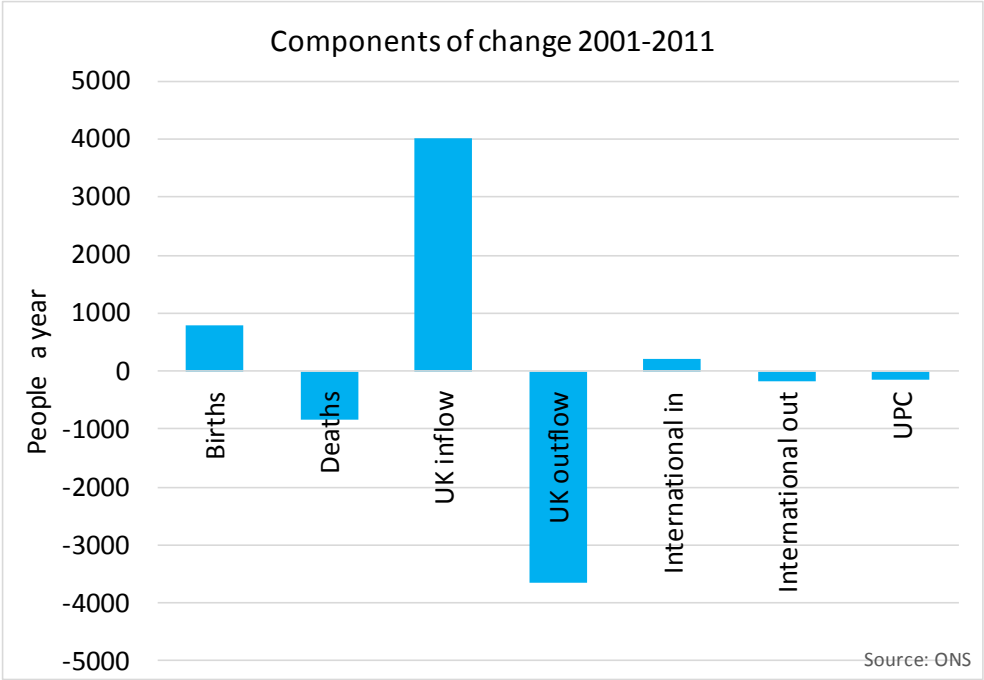
Forest of Dean: Population projections



Population	2006	2011	2021	2031	Increase 2011-21		Increase 2011-31		Increase 2006-31	
					People	Percentage	People	Percentage	People	Percentage
2011-based projection*	81700	82200	86100	90200	3900	4.7%	8000	9.7%	8500	10.4%
2012-based projection	81700	82200	85400	88600	3200	3.9%	6400	7.8%	6800	8.4%
2012 10 Yr UK flow	81700	82200	86700	90800	4500	5.5%	8600	10.5%	9000	11.1%
2012 10 Yr UK flow + UPC	81700	82200	85600	89000	3400	4.1%	6800	8.3%	7200	8.9%
Proposed planning assumption	81700	82200	86700	90800	4500	5.5%	8600	10.5%	9000	11.1%

* as extended by CCHPR

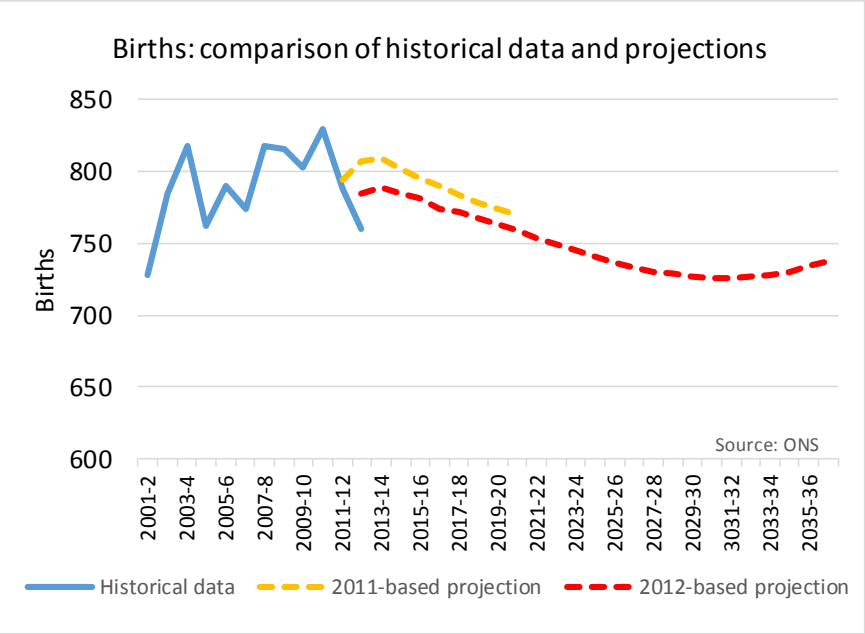
Forest of Dean: Components of change

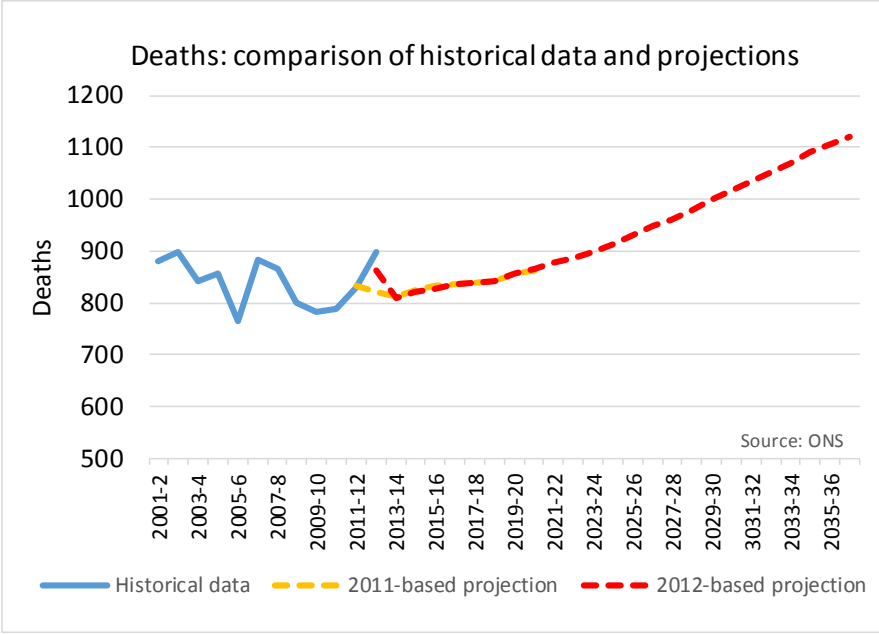


Average annual flows	2001-11	2011-based 2011-21	2012-based 2011-21
Births	792	790	776
Deaths	-836	-835	-838
UK inflow	4007	4090	3901
UK outflow	-3654	-3722	-3592
International in	221	284	210
International out	-169	-212	-127
UPC	-136		

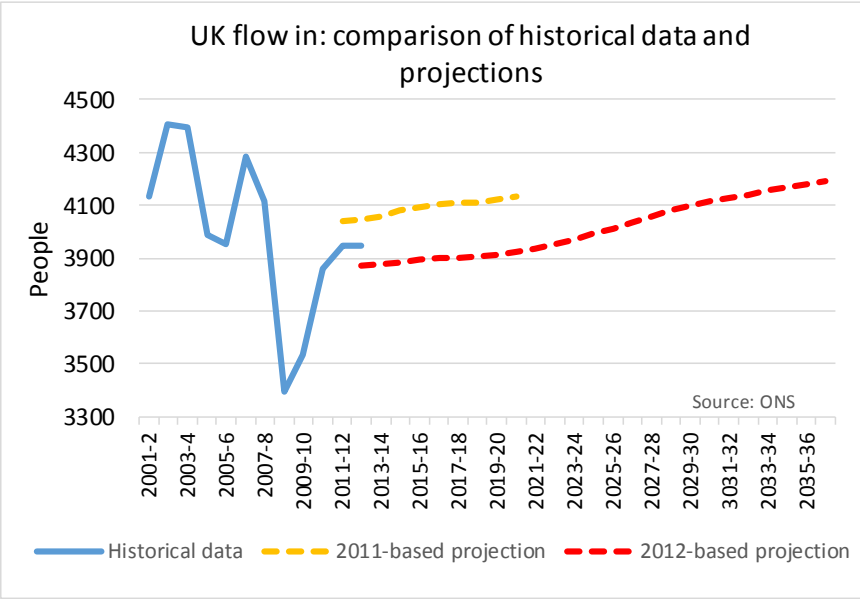
Average UPC as percentage of average annual population change 2001-11	-63.5%
2001-11 UPC as percentage of 2001 population	-1.7%

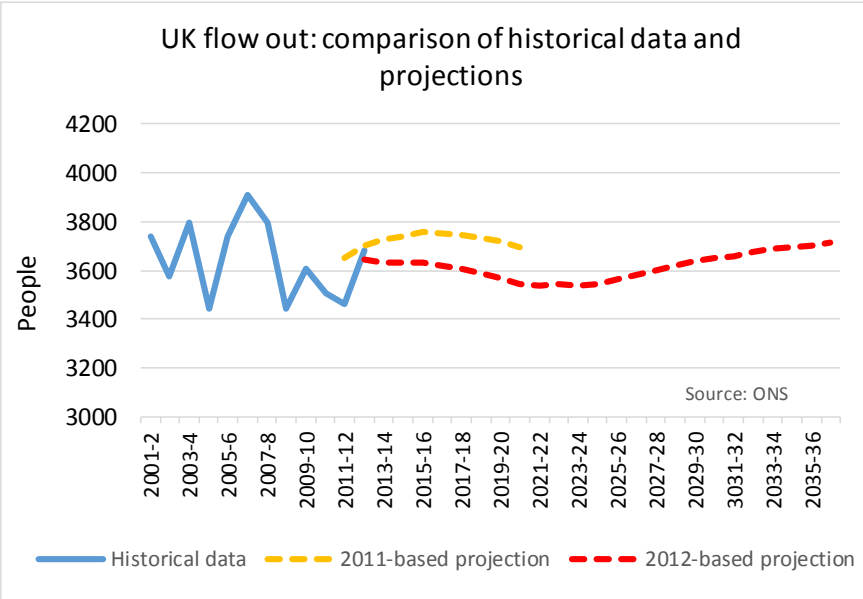
Forest of Dean: Births and Deaths





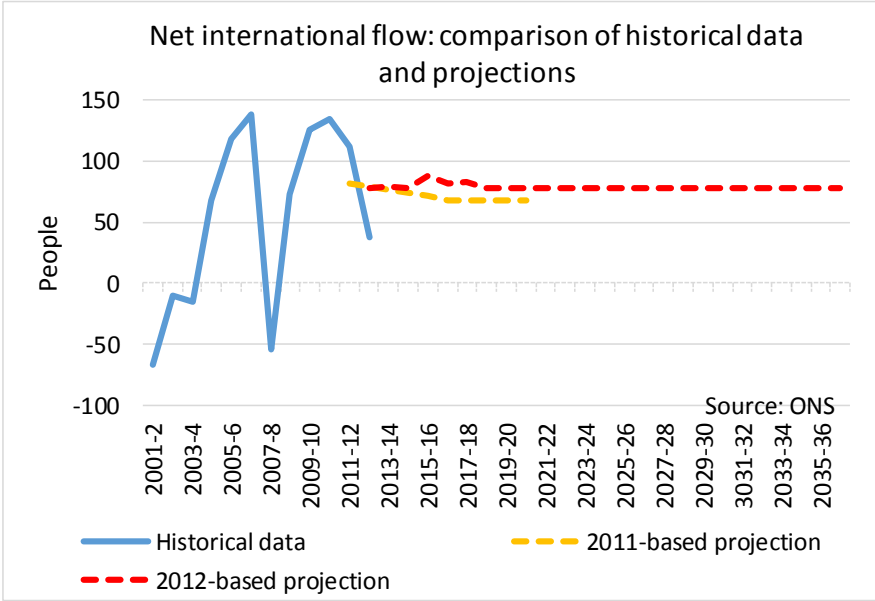
Forest of Dean: UK Flows



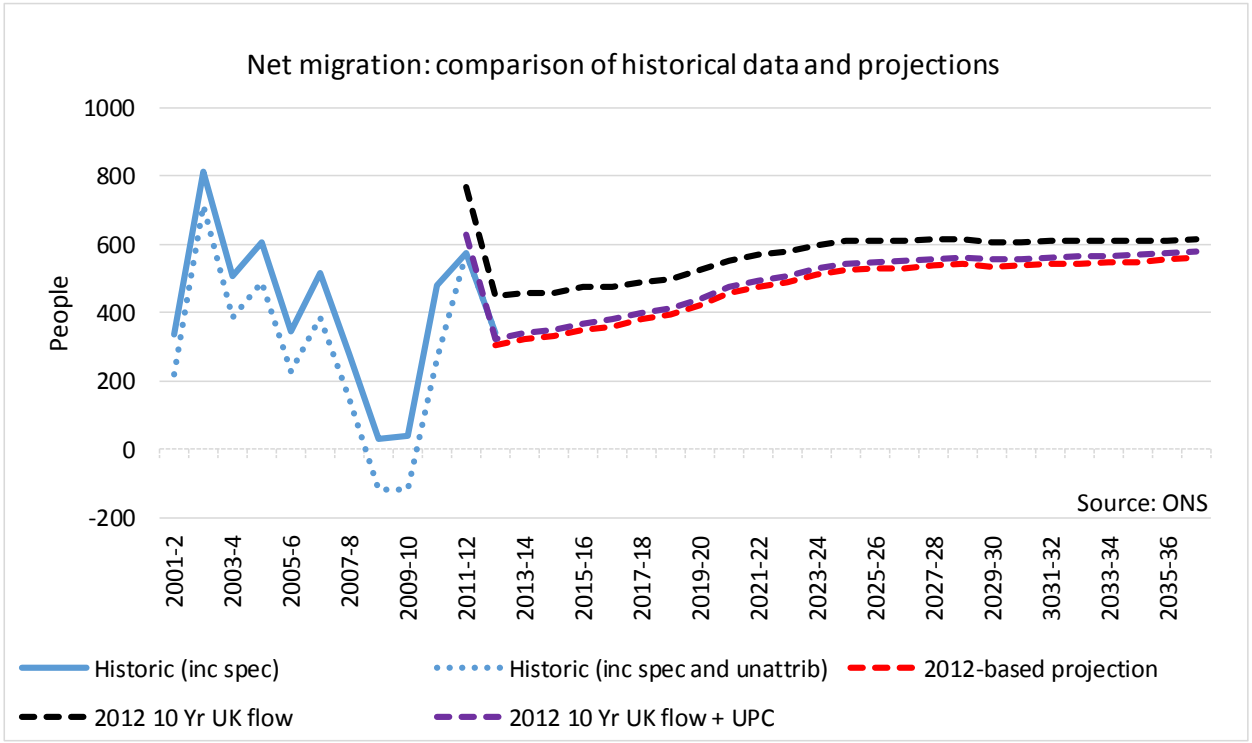


	Average inflow	Average outflow
2007-12	3771	3561
2002-12	3988	3626
02-12 as increase on 07-12	5.8%	1.8%

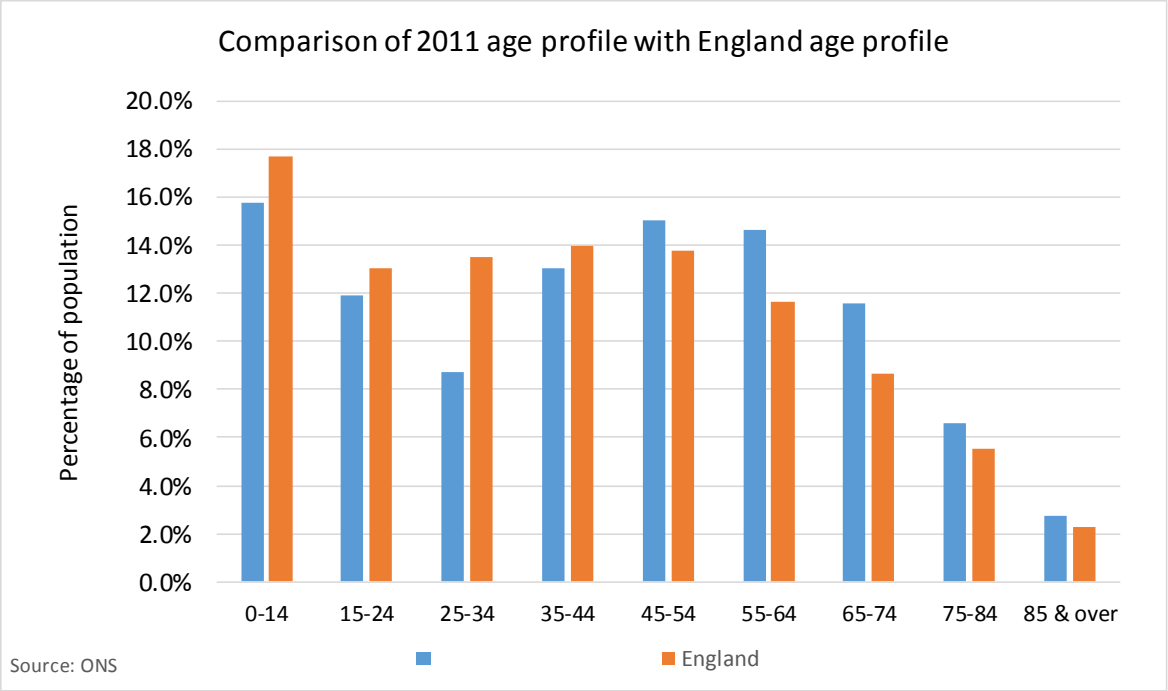
Forest of Dean: International Flows



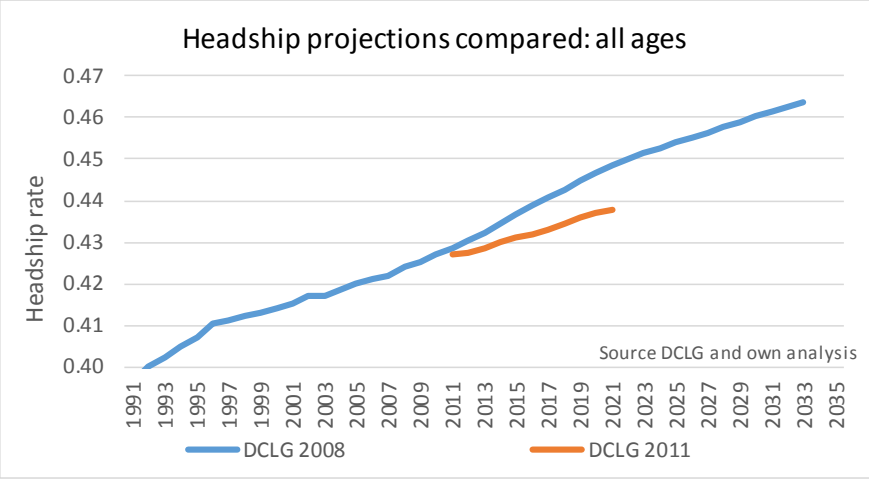
Forest of Dean: Net Migration

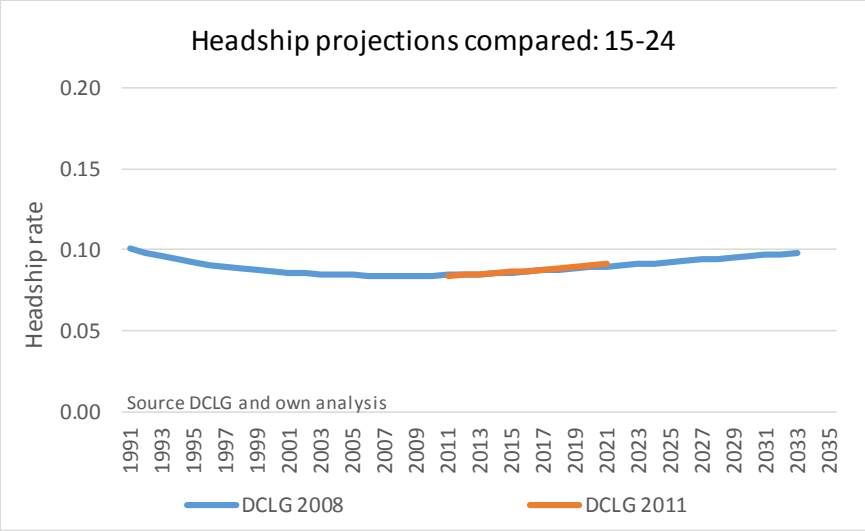


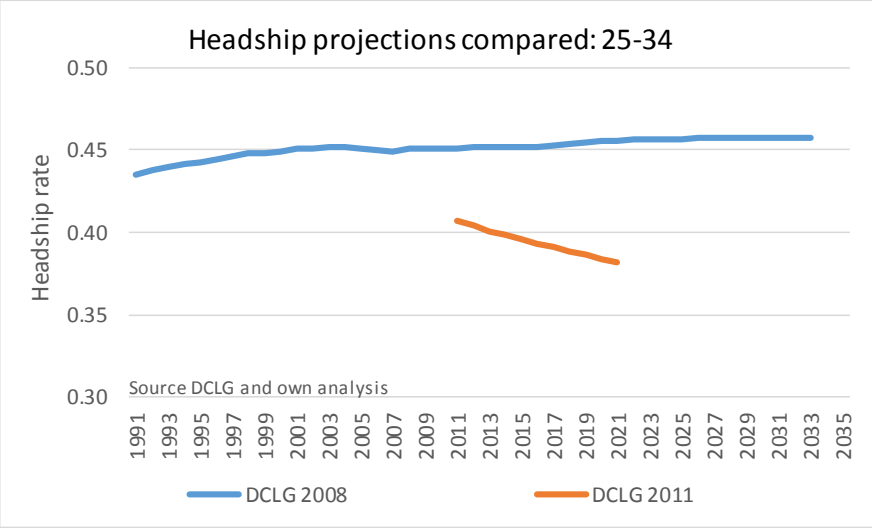
Forest of Dean: **Age profile**



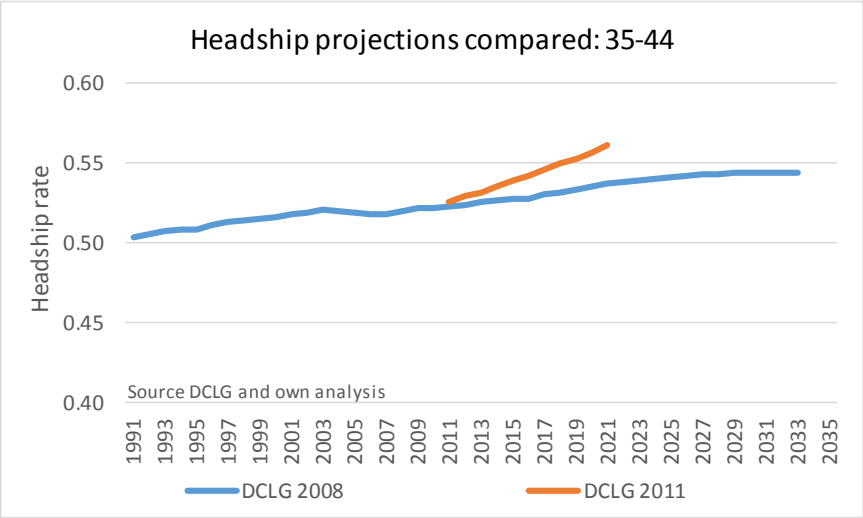
Forest of Dean: Headship rate projections

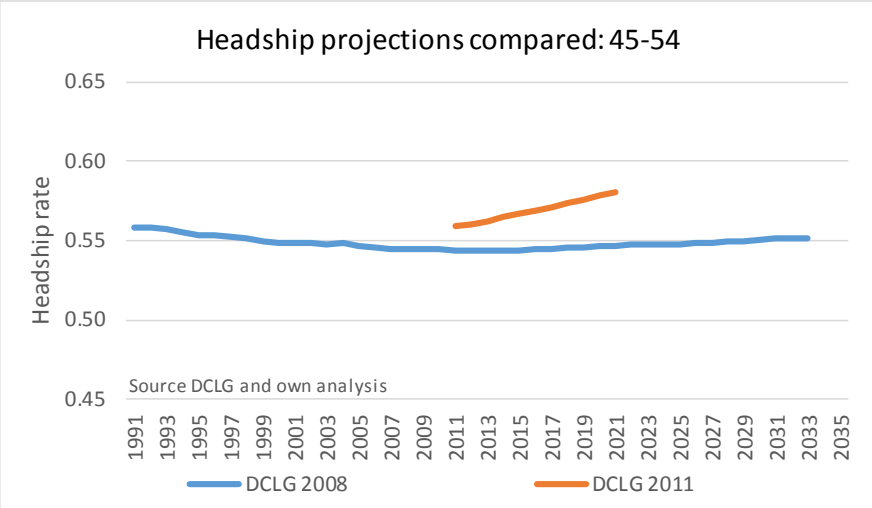


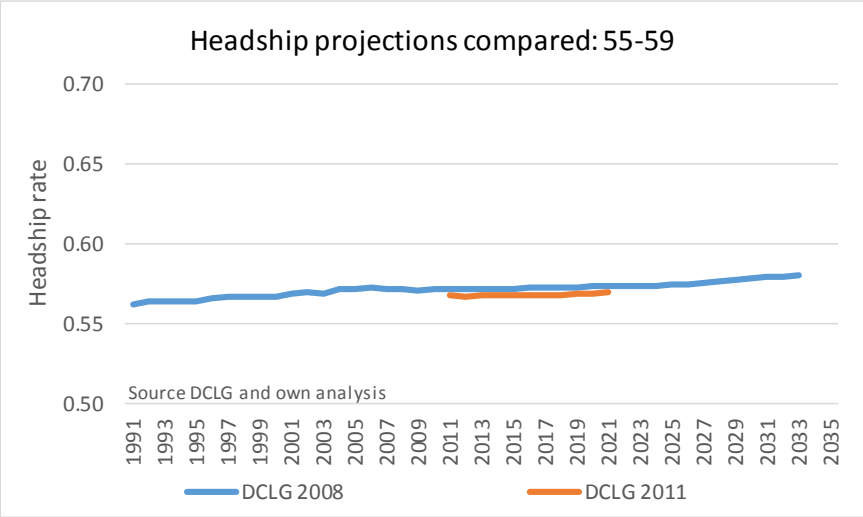


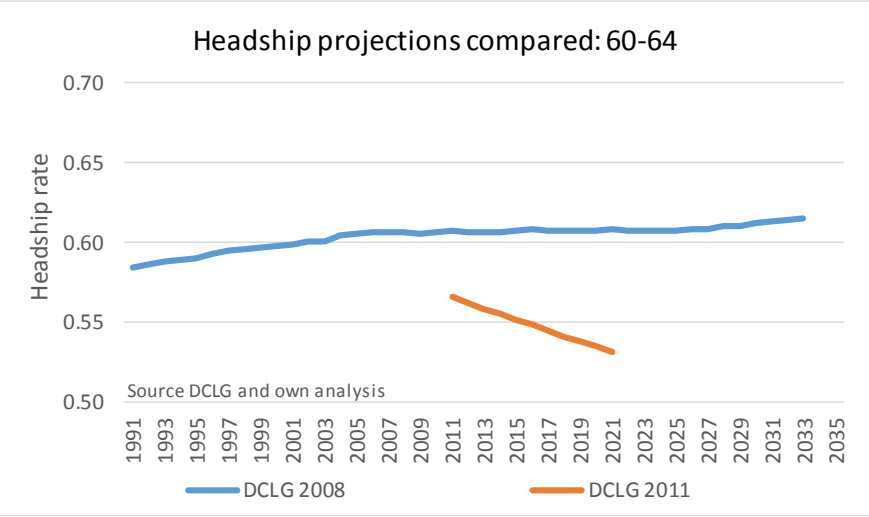


Forest of Dean: Headship rate projections

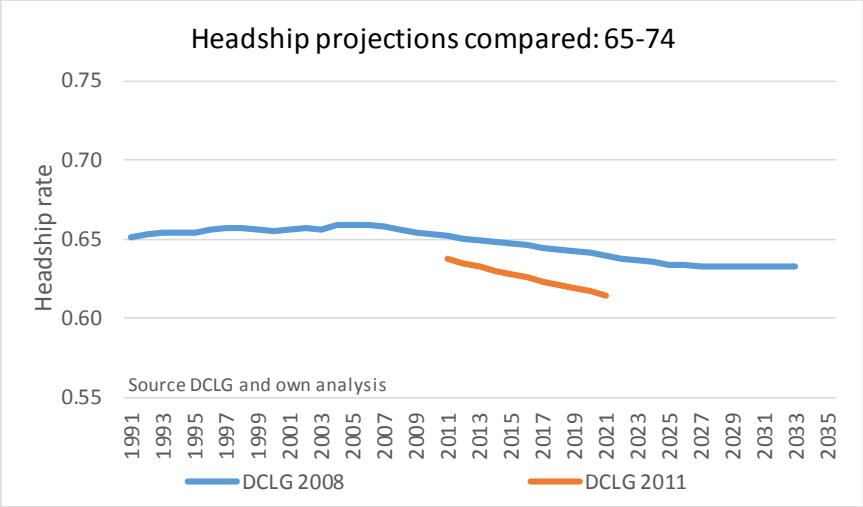


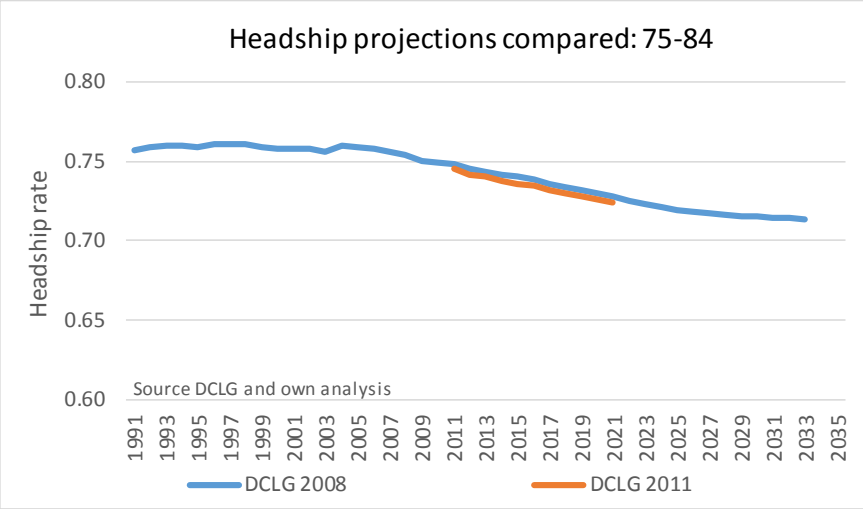


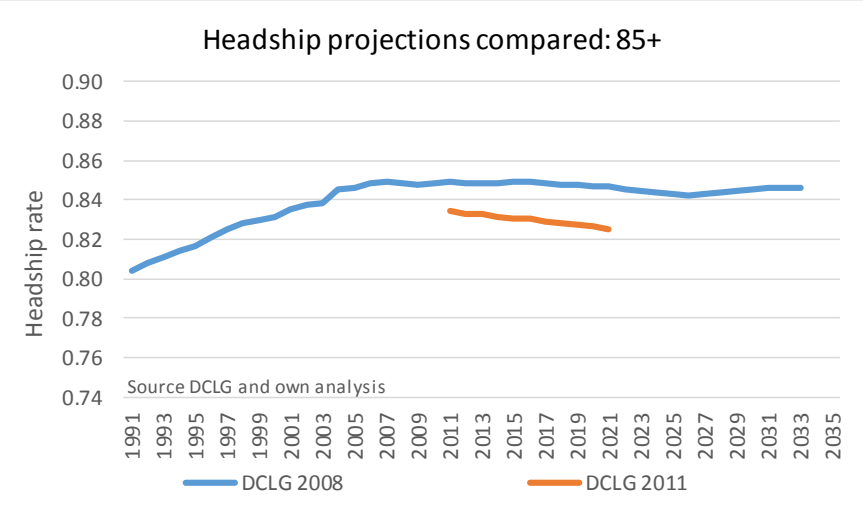




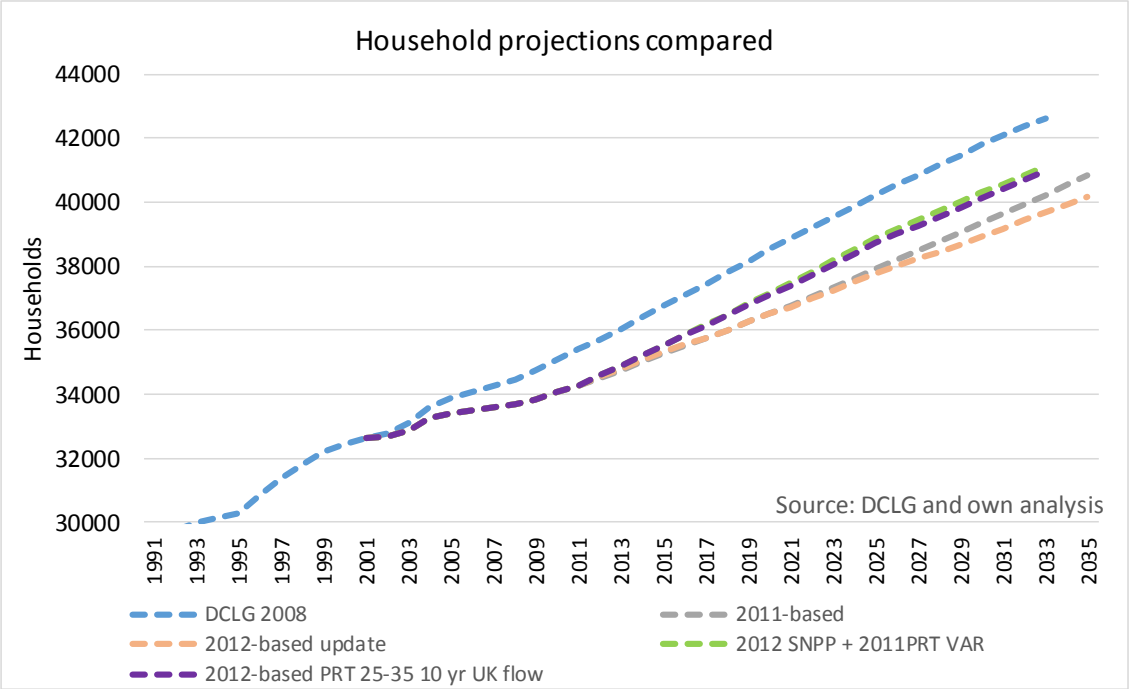
Forest of Dean: Headship rate projections







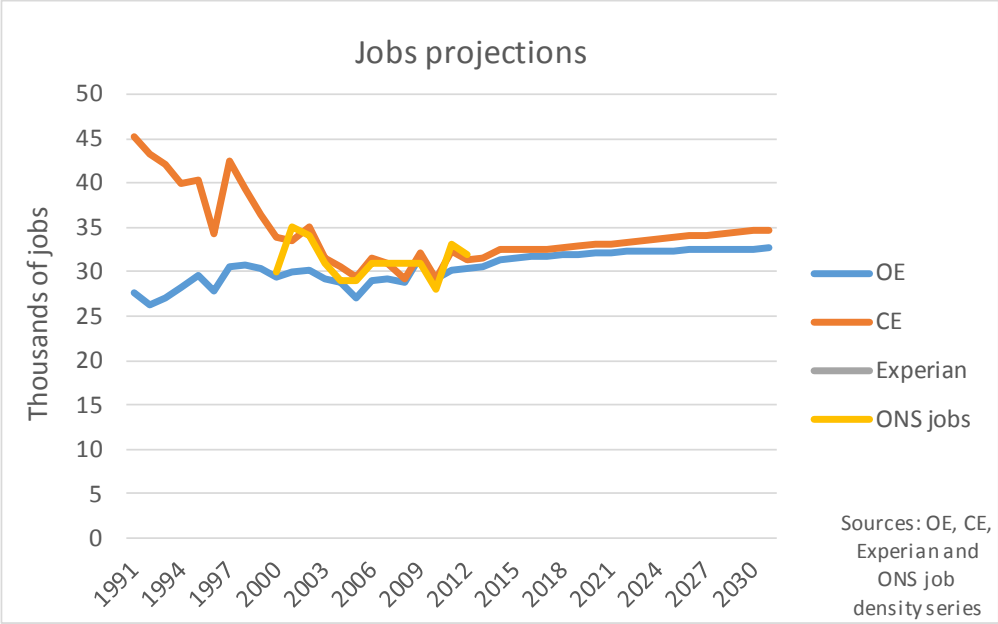
Forest of Dean: Household projections



Households and homes	Households				2011-31		2006-31	
	2006	2011	2021	2031	Homes	Homes/yr	Homes	Homes/yr
2011-based projection	33500	34300	36800	39600	5600	280	6400	260
2011-based PRT 25-34	33500	34300	37000	40000	6000	300	6800	270
2012-based update	33500	34300	36700	39200	5100	260	5900	240
2012-based PRT 10 yr UK flow	33500	34300	37500	40600	6600	330	7400	300
2012-based PRT 10 yr UK flow + UPC	33500	34300	37100	39900	5800	290	6700	270
2012-based PRT 25-35 10 yr UK flow	33500	34300	37400	40400	6400	320	7200	290
2012 PRT 25-34 10 yr UK flow + UPC	33500	34300	37000	39700	5600	280	6500	260
Recommended demographic scenario	**33500**	**34300**	**37400**	**40400**	**6400**	**320**	**7200**	**290**
Percentage vacant or second homes			4.28%					

FOREST OF DEAN: HOUSING NEEDED TO SUPPORT ECONOMIC GROWTH

Forest of Dean: Employment projections (thousands of jobs)

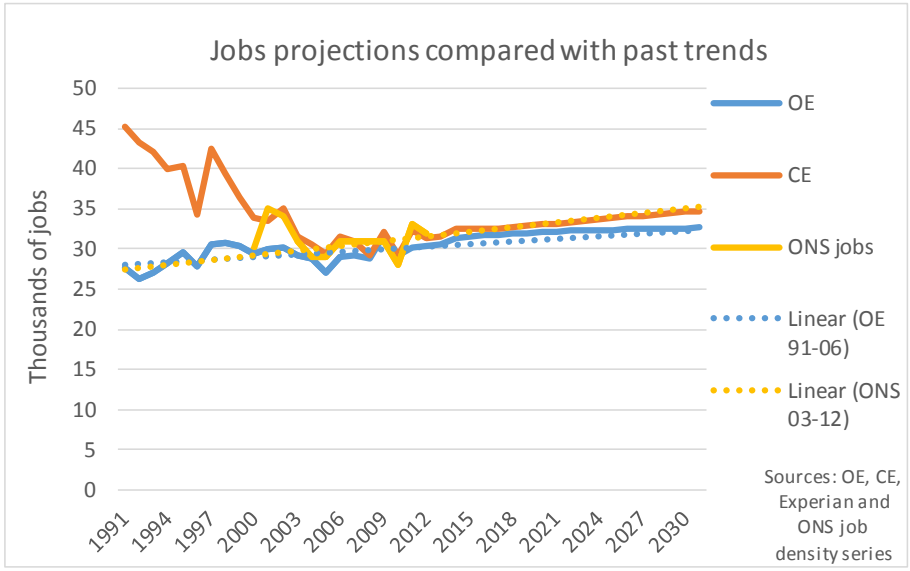


Thousands of jobs	1991	1996	2001	2006	2011	2016	2021	2026	2031
OE	27.6	27.8	29.9	29.1	30.1	31.7	32.2	32.4	32.6
CE	45.2	34.2	33.5	31.6	32.2	32.5	33.2	34.0	34.7
ONS jobs			35.0	31.0	33.0				

ONS jobs is from ONS job density series

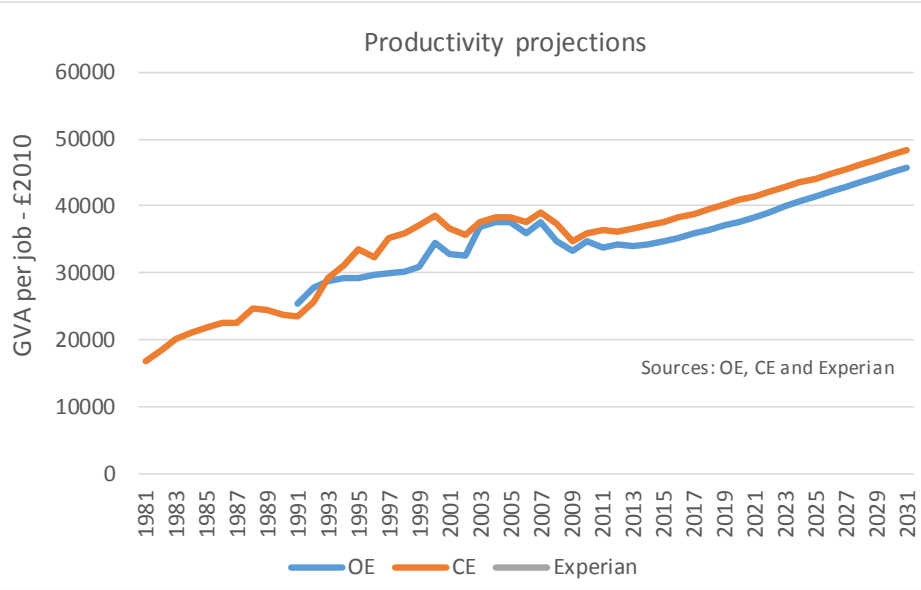
Jobs increase	2006-31	2011-31	2014-31
OE	3573	2494	1221
CE	3154	2526	2261

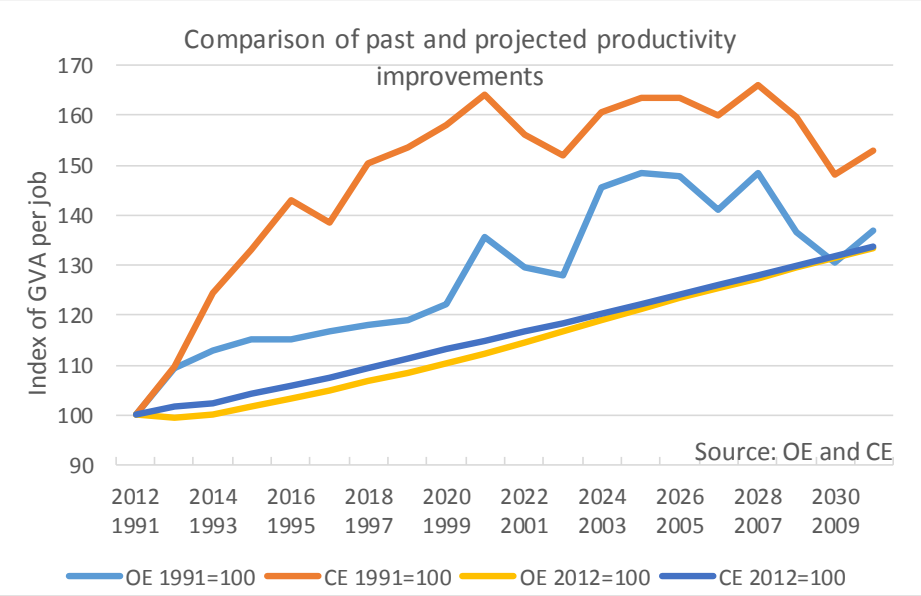
Forest of Dean: Comparison of job projections with past trends



The Planning Practice Guidance suggests that plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts. This chart enables the econometric projections to be compared with past trends. Two periods have been chosen: the period from the year before the early '90s recession to the year before the latest recession i.e. the last full cycle; and the ten year to 2012 - a period which encompasses both the downturn and some years of relatively strong growth.

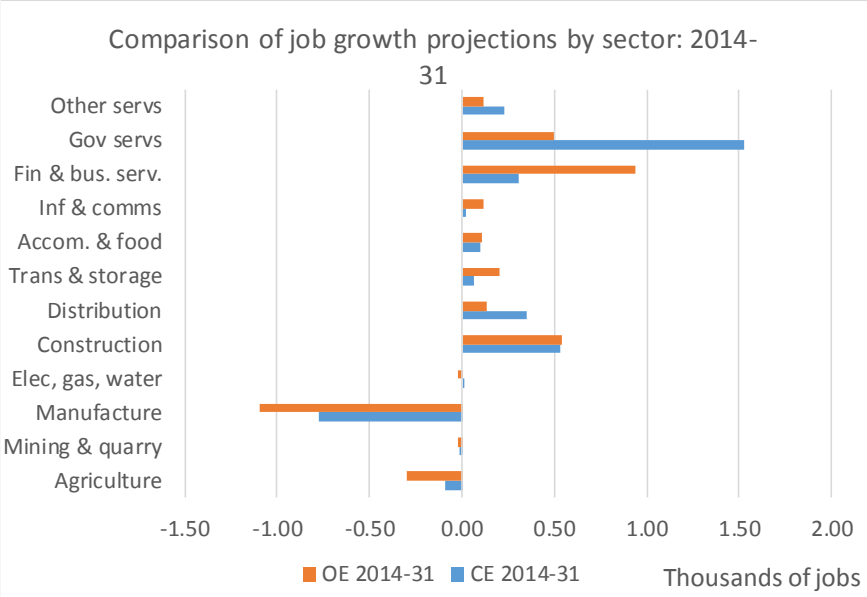
Forest of Dean: Comparison of productivity projections with past trends



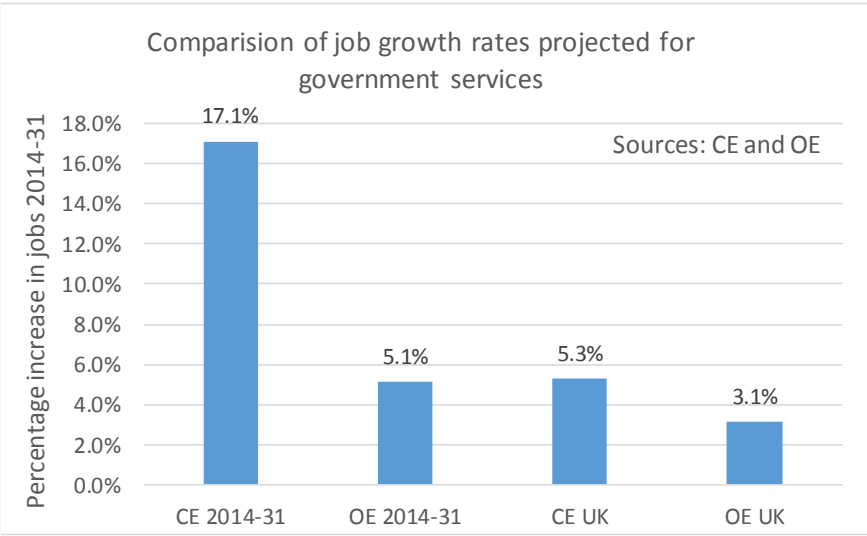


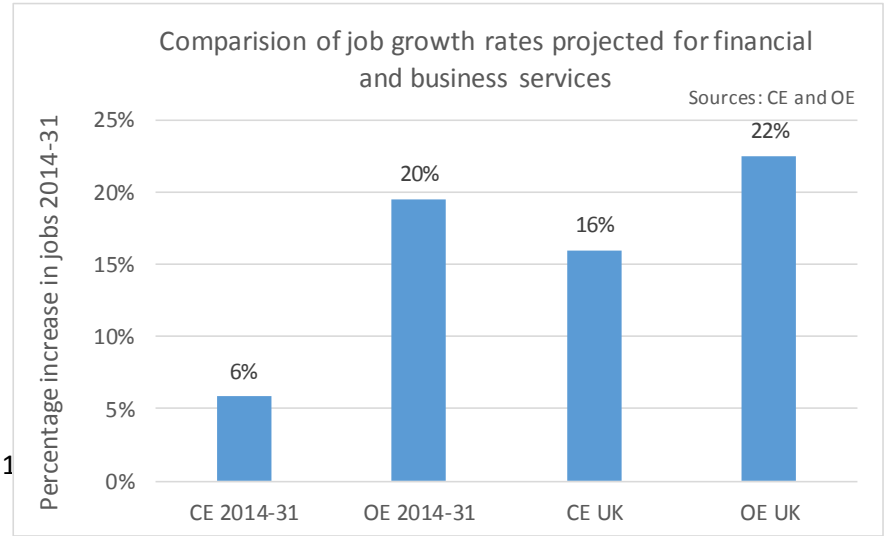
These charts are intended to enable the projected improvements in productivity to be compared with what was achieved after the early 90's recession. The second chart superimposes the projection from 2012 on top of what happened from 1991, thereby enabling the productivity improvements to be compared more easily

Forest of Dean: Comparison of job growth projections by sector



These charts are designed to enable the sector by sector jobs growth projections of OE and CE to be compared. The pair of charts at the bottom of the page pick out two sectors which have a significant impact on the overall job growth projection and compare both the OE and CE projections for the local authority area and the OE and CE projections for the UK as a whole.

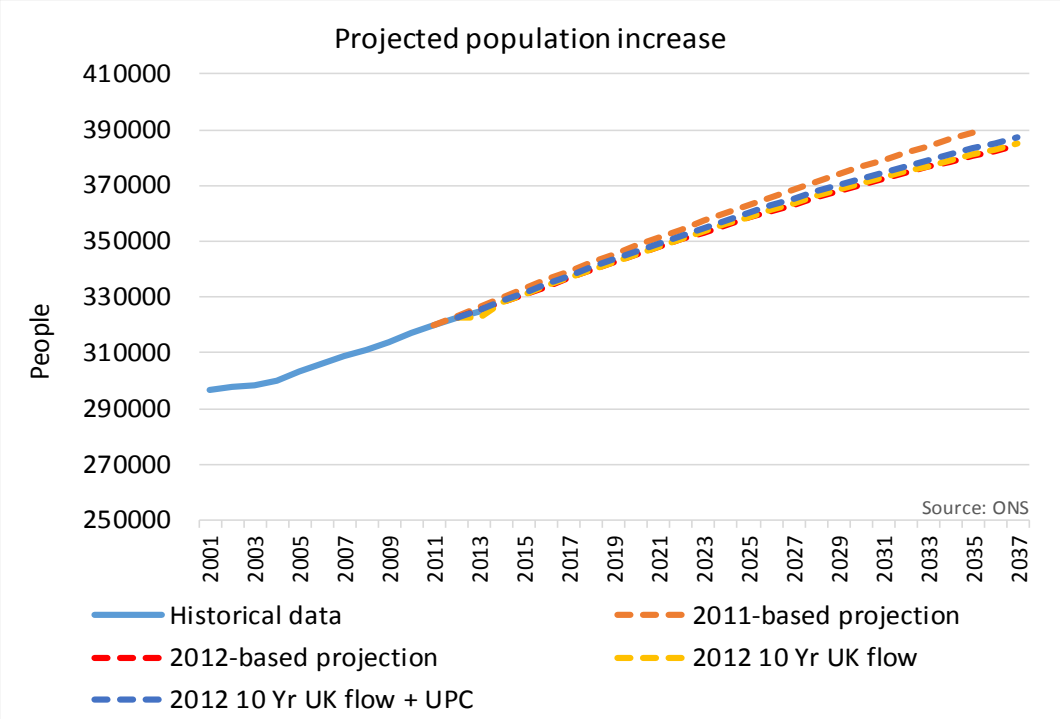




ADDITIONAL DATA FOR JCS AREA

APPENDIX D

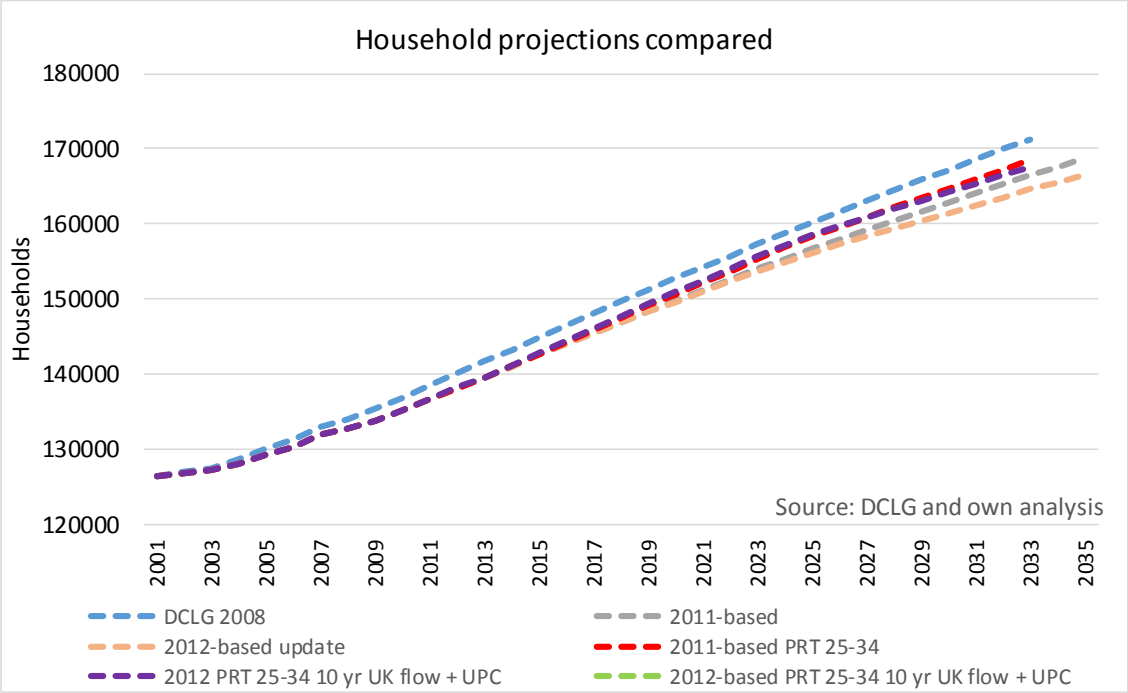
JCS Population projections



Population	2006	2011	2021	2031	Increase 2011-21		Increase 2011-31		Increase 2006-31	
					People	Percentage	People	Percentage	People	Percentage
2011-based projection*	305900	319800	351400	379200	31500	9.9%	59400	18.6%	73300	24.0%
2012-based projection	305900	319800	347900	372400	28100	8.8%	52600	16.4%	66500	21.7%
2012 10 Yr UK flow	305900	319800	348200	372900	28400	8.9%	53000	16.6%	67000	21.9%
2012 10 Yr UK flow + UPC	305900	319800	349400	374700	29500	9.3%	54900	17.2%	68900	22.5%
Proposed planning assumption	305900	319800	350300	376200	30500	9.5%	56400	17.6%	70300	23.0%

* as extended by CCHPR

JCS: Household projections

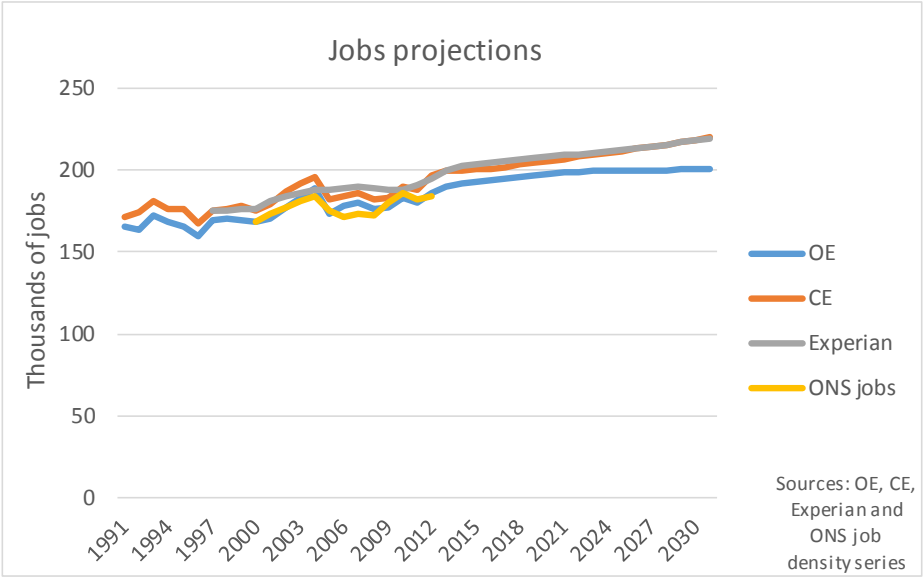


Percentage vacant or second homes	3.86%

Households and homes	Households				2011-31		2006-31	
	2006	2011	2021	2031	Homes	Homes/yr	Homes	Homes/yr
2011-based projection	130300	136600	151100	164000	28400	1420	35000	1400
2011-based PRT 25-34	130300	136600	152100	165900	30500	1520	37000	1480
2012-based update	130300	136600	150900	162500	26900	1340	33500	1340
2012-based PRT 10 yr UK flow	130300	136600	153000	167400	32000	1600	38600	1540
2012-based PRT 10 yr UK flow + UPC	130300	136600	153400	168200	32800	1640	39400	1580
2012-based PRT 25-35 10 yr UK flow	130300	136600	152000	164600	29100	1450	35600	1430
2012 PRT 25-34 10 yr UK flow + UPC	130300	136600	152500	165300	29900	1490	36400	1460
2012 SNPP + 2011 PRT 25-34	130300	136600	151900	164400	28900	1440	35400	1420
Recommended demographic scenario	**130300**	**136600**	**152800**	**165900**	**30400**	**1520**	**37000**	**1480**

JCS: HOUSING NEEDED TO SUPPORT ECONOMIC GROWTH

JCS: Employment projections (thousands of jobs)

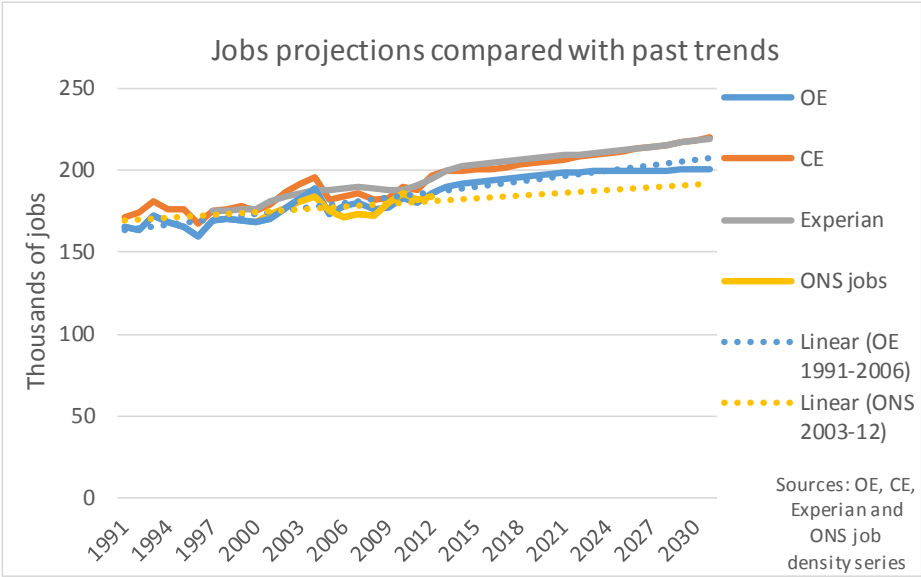


Thousands of jobs	1991	1996	2001	2006	2011	2016	2021	2026	2031
OE	165.6	159.4	170.1	178.2	179.9	194.1	198.6	199.9	200.7
CE	171.1	167.5	178.8	184.4	188.2	200.9	206.9	212.9	219.8
Experian	0.0	0.0	180.9	188.5	191.1	204.8	208.9	213.5	219.4
ONS jobs			173.0	171.0	182.0				

ONS jobs is from ONS job density series

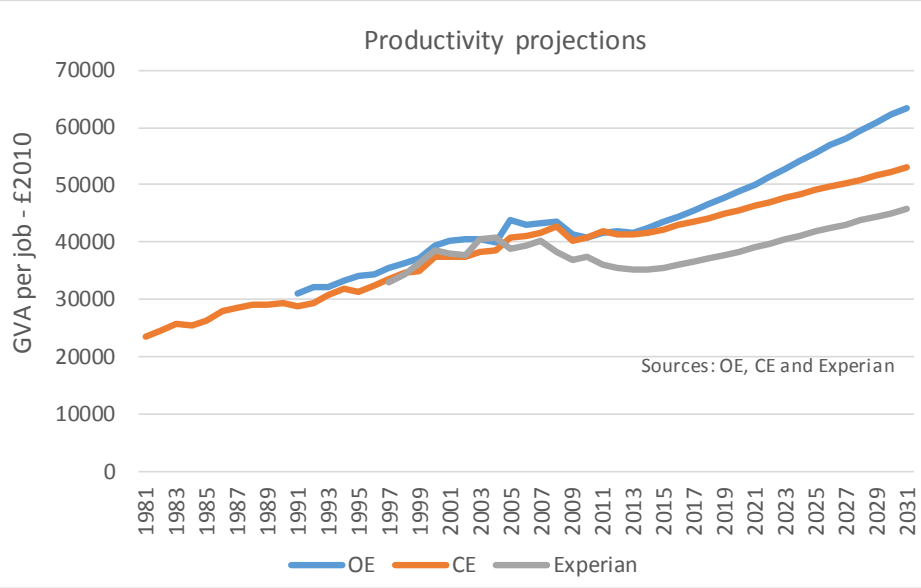
Jobs increase	2006-31	2011-31	2014-31
OE	22516	20784	8451
CE	35422	31587	19951
Experian	30910	28310	17190

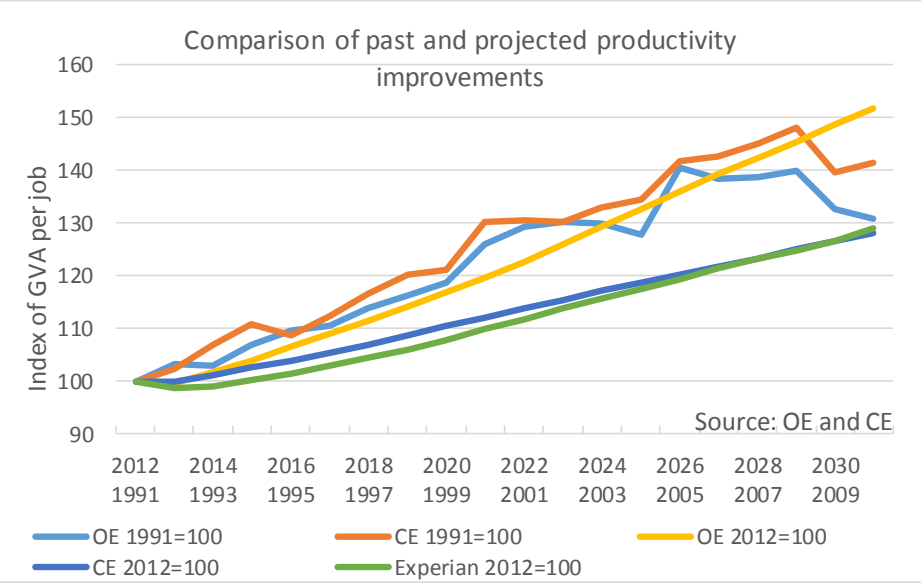
JCS: **Comparison of job projections with past trends**



The Planning Practice Guidance suggests that plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts. This chart enables the econometric projections to be compared with past trends. Two periods have been chosen: the period from the year before the early '90s recession to the year before the latest recession i.e. the last full cycle; and the ten year to 2012 - a period which encompasses both the downturn and some years of relatively strong growth.

JCS: **Comparison of productivity projections with past trends**



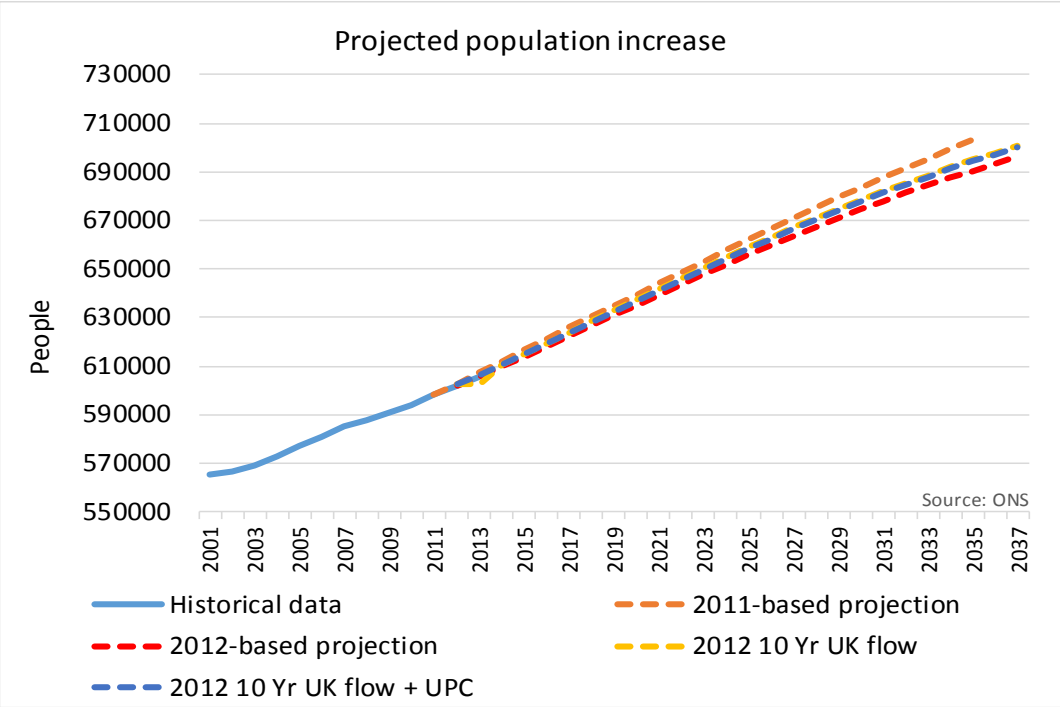


These charts are intended to enable the projected improvements in productivity to be compared with what was achieved after the early 90's recession. The second chart superimposes the projection from 2012 on top of what happened from 1991, thereby enabling the productivity improvements to be compared more easily

ADDITIONAL DATA FOR GLOUCESTERSHIRE

APPENDIX E

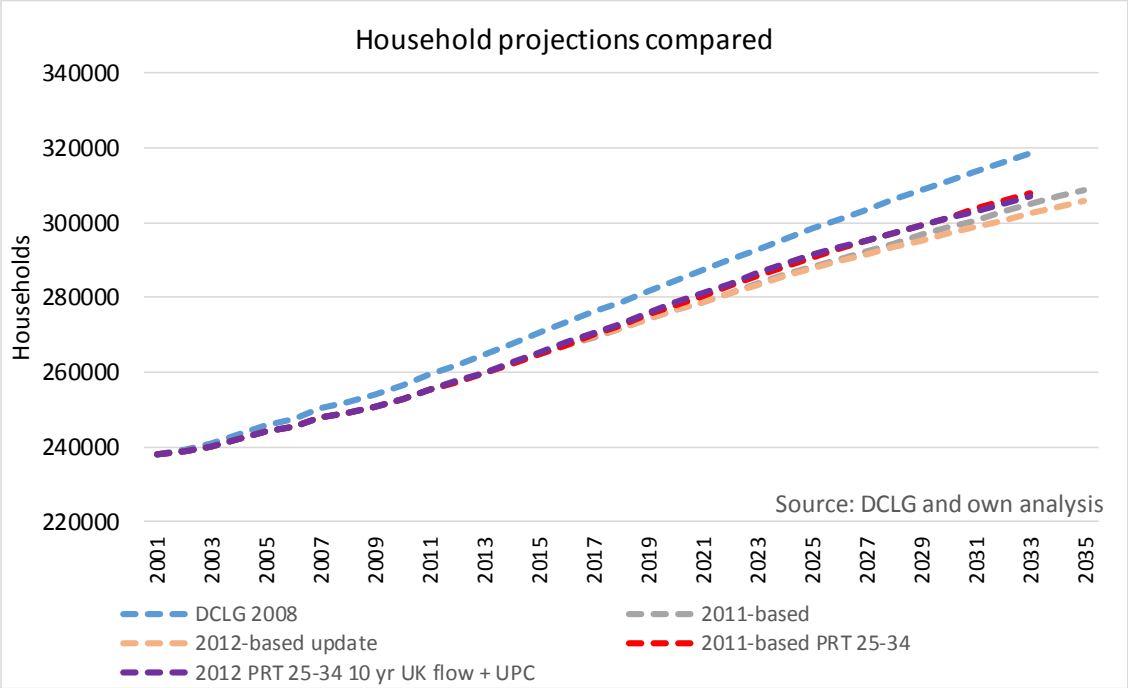
Gloucestershire: Population projections



Population	2006	2011	2021	2031	Increase 2011-21		Increase 2011-31		Increase 2006-31	
					People	Percentage	People	Percentage	People	Percentage
2011-based projection*	580700	598300	644000	687700	45700	7.6%	89400	14.9%	107000	18.4%
2012-based projection	580700	598300	639300	677900	41000	6.9%	79600	13.3%	97200	16.7%
2012 10 Yr UK flow	580700	598300	641700	681900	43400	7.3%	83600	14.0%	101200	17.4%
2012 10 Yr UK flow + UPC	580700	598300	641300	681300	43000	7.2%	83000	13.9%	100600	17.3%
Proposed planning assumption	580700	598300	644000	685600	45700	7.6%	87300	14.6%	104900	18.1%

* as extended by CCHPR

Gloucestershire: Household projections

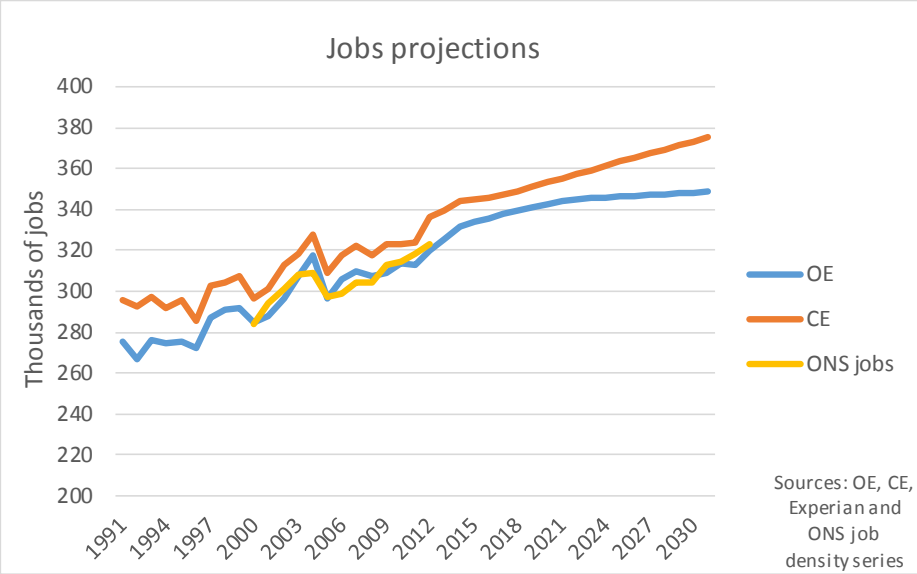


Percentage vacant or second homes 3.86%

Households and homes	Households				2011-31		2006-31	
	2006	2011	2021	2031	Homes	Homes/yr	Homes	Homes/yr
2011-based projection	245500	255200	278800	300700	47300	2370	57400	2300
2011-based PRT 25-34	245500	255200	280400	303600	50400	2520	60400	2420
2012-based update	245500	255200	278800	298800	45400	2270	55500	2220
2012-based PRT 10 yr UK flow	245500	255200	282600	307100	54000	2700	64100	2560
2012-based PRT 10 yr UK flow + UPC	245500	255200	282500	306900	53800	2690	63900	2550
2012-based PRT 25-35 10 yr UK flow	245500	255200	281200	303300	50100	2500	60100	2410
2012 PRT 25-34 10 yr UK flow + UPC	245500	255200	281100	303100	49800	2490	59900	2400
2012 SNPP + 2011 PRT 25-34	245500	255200	280300	301700	48400	2420	58500	2340
Recommended demographic scenario	**245500**	**255200**	**282100**	**304800**	**51800**	**2590**	**61900**	**2480**

GLOUCESTERSHIRE: HOUSING NEEDED TO SUPPORT ECONOMIC GROWTH

Gloucestershire: Employment projections (thousands of jobs)

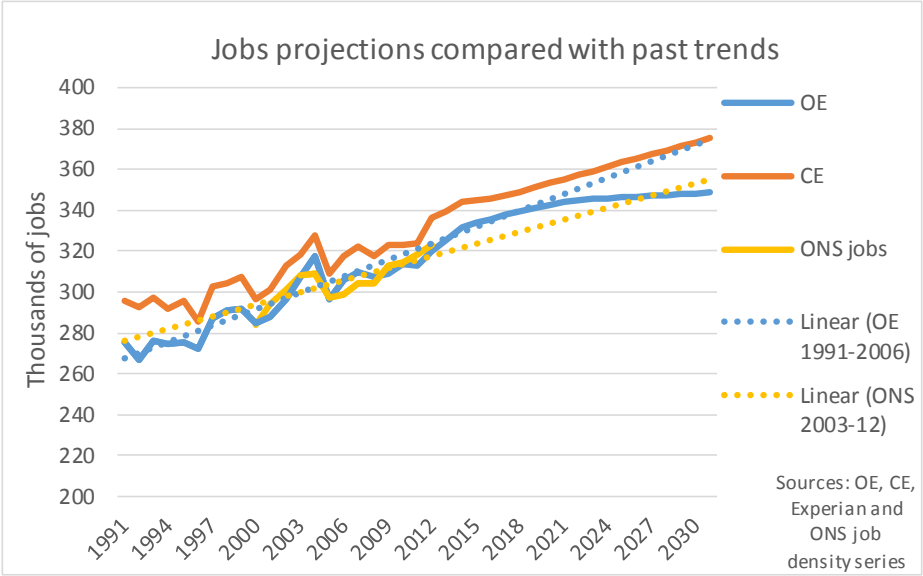


Thousands of jobs	1991	1996	2001	2006	2011	2016	2021	2026	2031
OE	275.4	272.4	288.0	305.9	312.8	335.8	343.9	346.8	348.7
CE	295.3	285.4	301.2	317.8	323.9	345.5	355.2	365.3	375.5
ONS jobs			294.0	299.0	318.0				

ONS jobs is from ONS job density series

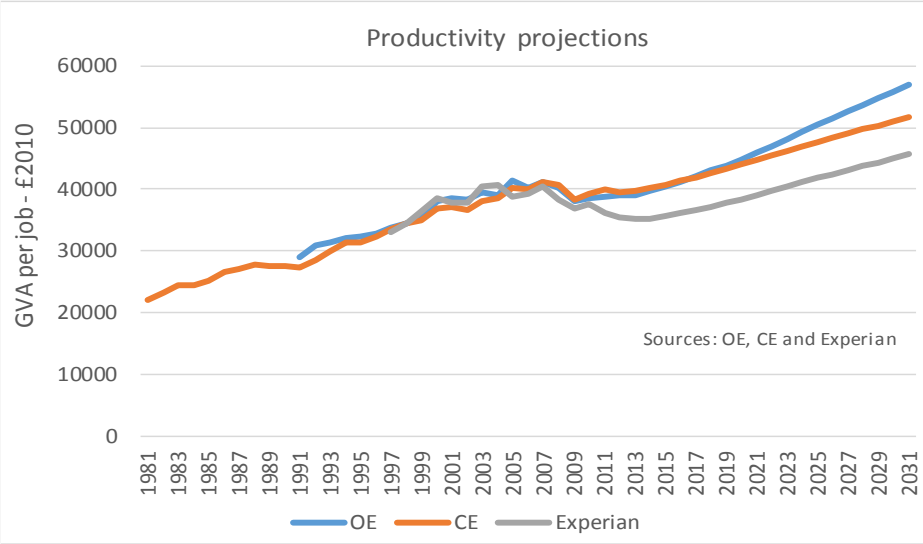
Jobs increase	2006-31	2011-31	2014-31
OE	42843	35887	16931
CE	57682	51621	31626

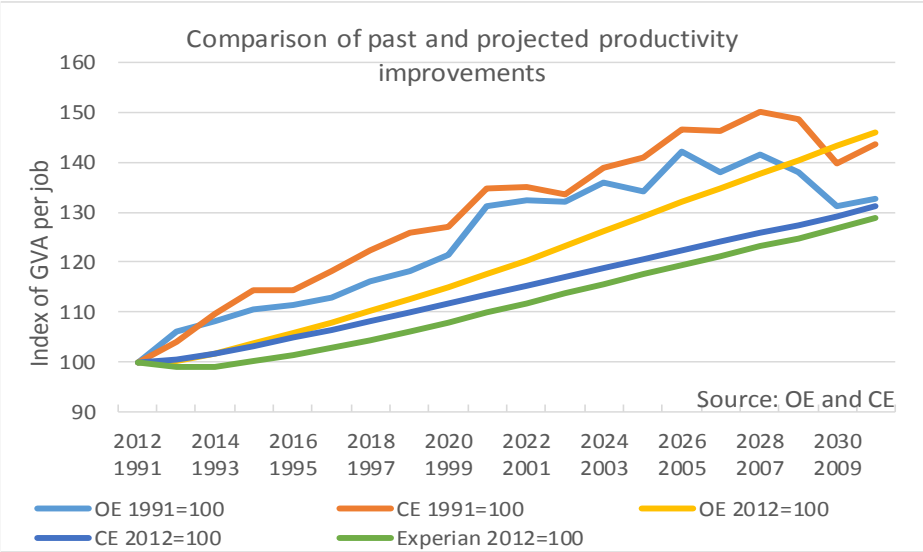
Gloucestershire: Comparison of job projections with past trends



The Planning Practice Guidance suggests that plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts. This chart enables the econometric projections to be compared with past trends. Two periods have been chosen: the period from the year before the early '90s recession to the year before the latest recession i.e. the last full cycle; and the ten year to 2012 - a period which encompasses both the downturn and some years of relatively strong growth.

Gloucestershire: Comparison of productivity projections with past trends





These charts are intended to enable the projected improvements in productivity to be compared with what was achieved after the early 90's recession. The second chart superimposes the projection from 2012 on top of what happened from 1991, thereby enabling the productivity improvements to be compared more easily