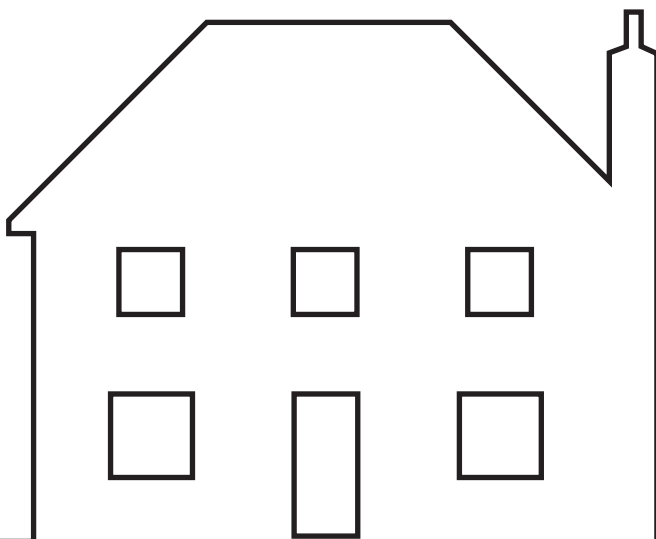




Campaign to Protect
Rural England

Housing the Future

An analysis of the Government's household projections
and their use in planning for new housing



A CPRE report
December 2009

Foreword

We live on a small, densely populated island and one of the biggest challenges we face is reconciling competing land use demands. Land is a finite resource and it is needed for a wide range of purposes, including producing food and energy, providing housing and associated services, and, often at the same time, providing space for wildlife and recreation. These demands are already considerable and, with our population expected to grow in future and climate change presenting new challenges, they are unlikely to subside.

CPRE has always campaigned for land to be used efficiently. Through good planning and design, we've seen significant improvements over the last decade in securing the use of previously developed land for housing and increasing housing densities. This needs to continue if we are to protect and enhance the countryside, while making our towns and cities better places in which to live.

In 2007, the Prime Minister announced plans to build 3 million new homes by 2020. Based on household projections, it was argued that as well as meeting housing needs this would address the growing problem of housing affordability. While CPRE recognises the need for more homes, particularly for permanently affordable housing in rural areas, we have questioned the Government's 'predict and provide' approach and the view that building more homes will reduce house prices.

The current economic climate changes everything. It shows that declining house prices can accompany a reduction in the supply of new housing, and that migration is strongly connected to the state of the economy. Consequently, the 3 million

target now looks entirely unrealistic. Planning for housing is increasingly fraught with uncertainties.

This report reminds us that household projections are based on the shaky assumption that past trends will continue. It explains that the projections should not be used as targets for housebuilding because they ignore wider considerations, cannot take account of changing economic conditions, and become self-fulfilling. Rather, it proposes that they should inform an objectives-led approach to planning for housing which is able to respond to changing circumstances, including evidence of environmental impact – in other words, a 'plan, monitor and manage' approach.

Some argue that increasing population is the biggest threat to the environment and that we need to reduce population overtime. This report begins to explore that issue and reveals a complex picture. It shows that the same level of population can have a very different environmental footprint depending on the nature and location of housing supply. But it also shows that planning for housing in the face of volatile demographic trends requires a more flexible and responsive policy framework – one that does not lock us into unsustainable land use decisions. I hope it is of use to all those pressing for a more sensible approach to planning for new housing at local, regional and national levels.



Neil Sinden
Director of Policy and Campaigns, CPRE

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Executive Summary

This report explains the nature of the Government's household projections. It considers their limitations and suggests how they should be used by the planning system to determine housing requirements and guide the level and location of new development.

Particular emphasis is given to the latest set of household projections published by the Department of Communities and Local Government (DCLG) in March 2009. These project a rise in the number of households in England from 21.5 million in 2006 to 27.8 million in 2031. This report will be relevant to all those with an interest in how the household projections are put together and used in practice.

The household projections are neither estimates of future housing need nor estimates of future demand, although they contribute to such estimates. They are not statements of the inevitable nor are they Government policy. They simply indicate the consequences for household numbers of a continuation of recently experienced trends.

A drawback with the household projections is that they quickly become out of date. Between the publication of the 2006-based household projections (DCLG, March 2009), Office for National Statistics (ONS) population projections (June 2008), and baseline data, there is a gap of three years. ONS population projections are based on trends in the five years up to the base year – 2006 for the latest projections – and are the key data source for the household projections. Consequently, although published in 2009, the household projections are heavily dependent on, and to some degree reflect, demographic trends from 2001 to 2006.

Added complexity and uncertainty arises as population and household projections are produced for national and sub-national levels, although this report focuses on the national level. Regional information is set out in Appendix E.

The household projections are trend-based, but they are not policy neutral. Household formation is highly sensitive to a wide range of socio-economic factors which are themselves influenced by Government policies. Extrapolating previously identified trends into the future means that the projections simply extrapolate the effects of previous household formation activity.

This process assumes implicitly that policies, economic and social conditions which applied previously will continue to apply in future, which may not be the case. Migration trends, for example, have changed recently, with a rise in emigration leading to a fall in net in-migration. All of this means that the projections are subject to a high degree of uncertainty.

The projected number and distribution of households are not inevitable. There is no unavoidable or direct relationship between projections, housing targets and building rates. Projections are not predictions or forecasts and should never be treated as targets – a mistake commonly made by the media and politicians.

As circumstances, policies and housing supply practices change, the likelihood is that projections and actual household formation will diverge from each other increasingly over time. Even relying on the projections for short term use can be risky. Significant changes may have taken place

since the period on which the projections are based and therefore underlying assumptions may no longer be valid.

As this report was being finalised, the ONS published new, 2008-based national population projections. For England, these project a slightly lower rate of population growth than the 2006-based projections. Once the sub-national population projections have been published, (due May 2010) work can be expected to begin on a new set of 2008-based household projections.

The structure of the report is as follows:

Chapters 1 and 2 describe the building blocks of the household projections and discuss the ONS population projections and estimates since these are the principal starting point for the household projections. Consideration is given to the different characteristics between inward and outward migrants as these have implications for the number and composition of households in future.

Chapter 3 considers the relationship between household formation, the projections and policy. It examines the extent to which the household projections are influenced by policies and explains why planned housing provision should not simply aim to match the household projections.

Household projections are issued by the Government every two to three years. Following revision, each set of projections frequently varies from its predecessor. This serves to highlight their inherent uncertainty. Uncertainty is greater for some groups than others (e.g. migrants) and

in sub-national (as opposed to national) projections. Where data is uncertain, the reliability of the projections can be called into question. For these reasons, projections should always be interpreted and critically examined in the light of up to date information and evidence on local circumstances and demographic trends. Uncertainty and possible responses to this, for example, through taking into account alternative projection models, are considered in **Chapter 4** and **Appendices A** and **B**.

Chapter 5 reviews how the projections should inform housing requirements and the steps needed to assess the number and type of dwellings required. It highlights the importance of identifying influences on household formation, drawing on other sources of information in addition to the projections, to assess matters such as: the number of people expected to be living in institutions, or as separate households; homelessness; internal and international migration (gross and net); whether there has been any change in trends since projections were published and, if so, whether this might be a permanent or temporary change.

The demographic approach to estimating future housing requirements, based on the household projections, is not the only one available. **Chapter 6** considers two alternative approaches. The first entails linking housing supply to anticipated economic growth. In theory, this will lead to an increased demand for labour and a rise in inward migration and the number of households in an area. The second approach is based on achieving affordability targets in market housing. Both the affordability and economic growth

methods appear even less reliable than demographic household projections, but may be used, with caution, as complementary methods.

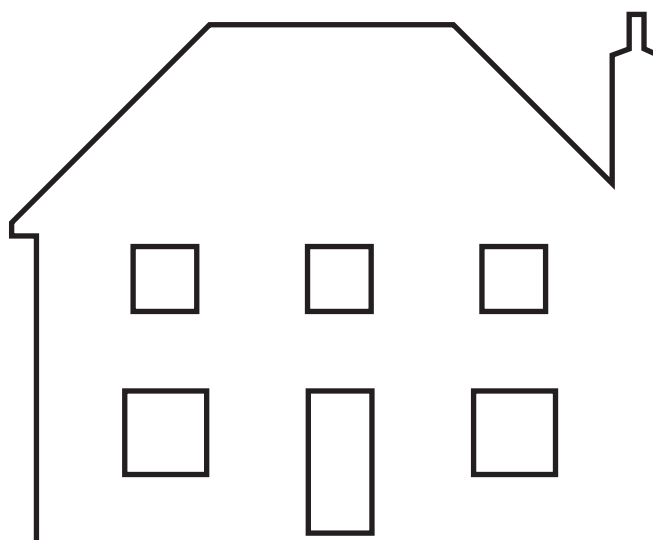
Although this report is about household projections and their use in determining housing requirements, other considerations, such as environmental impacts, are an important factor influencing the level and location of new development. There have long been concerns about the capacity of places to accommodate development and their ability to adapt to change over the long term, without incurring irrevocable harm.

Chapter 7 explores the idea of whether there are – or should be – any limits to household and housing growth.

The report concludes with suggested responses to points frequently raised about the household projections at Examinations in Public of regional and local development plans and highlights key issues to consider when these plans are being drawn up.

Acknowledgements

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Introduction

Estimates of future numbers of households are valuable for a variety of purposes, particularly in planning for public services such as health, education and housing. Estimates are all the more valuable if they provide reliable breakdowns of numbers by location, household size and household type. Successive Governments have recognised the role that household projections play in assessing housing requirements.¹

In March 2009, DCLG published *Household Projections to 2031, England*, the latest in a series of projections. These project a 29% rise (6.3 million) in the number of households in England between 2006 and 2031.

This report assesses the role of the official household projections in informing future dwelling requirements, and the steps which need to be taken to ensure that they are used correctly for housing and planning purposes. It explains how the household projections are calculated and the limitations of the methods used. It examines how much reliance can be placed on the latest projections, and compares these with earlier projections. This report also sets out how to use household projections to inform future dwelling requirements.

This report aims to give straightforward responses to frequently asked questions. Further information and explanation are provided in the appendices. Readers are directed towards external sources where appropriate. Much discussion about household projections arises when local and regional plans are being prepared and assessed at Examinations in Public, this report provides guidance on issues likely

to arise and suggests how the projections may be used sensibly to inform these deliberations.

¹ *Department of the Environment, Projections of Households in England to 2016*, paragraph 1, 1995. Planning Policy Statement 3: Housing (DCLG, 2007) requires account to be taken current of future demographic trends and the Government's latest household projections in assessing future housing requirements.

1. Household Projections and their Limitations

1.1 What are the household projections?

Household projections are estimates of the future number of households based on assumptions about future population growth, household composition and size. They are not forecasts or predictions.

The terms projection and forecast are often used loosely, but the difference between these terms is important. A projection is an extrapolation into the future of a set of data from the past. A forecast involves more complex analysis of past data and circumstances in order to predict how calculated trends are likely to change in future.

Projections are produced at national, regional and local authority level.² Sub-regional household projections are less reliable than national or regional projections, particularly for areas where the number of households and therefore sample size is relatively small.

1.2 Are the household projections estimates of future housing need?³

Household projections are neither estimates of future housing need nor of future housing demand. They are not statements of the inevitable nor are they national policy. They simply indicate the consequences, in terms of household numbers, of continuing recently experienced trends. The following statement explains their status:

'The assumptions underlying national household and population projections are demographic trend based. They are not forecasts. They do not attempt to predict

the impact that future government policies, changing economic circumstances or other factors might have on demographic behaviour. They provide the household levels and structures that would result if the assumptions based on previous demographic trends in the population and rates of household formation were to be realised in practice'

(DCLG, *Household Projections to 2031, England*, page 2, March 2009)

Projections have the appearance of forecasts and tend to be treated by the media as facts. Consequently, politicians and planners all too readily treat them as targets. This progression gives the original demographic data a totally unjustified authority and influence in planning decisions. This can have damaging environmental and social consequences.

If the projections are treated, wrongly, as a measure of need, the interests of some of the economically weakest groups in society would not be identified. This is because for some groups the projections

² District or unitary authority.

³ Planning Policy Statement 3: Housing (PPS3) defines housing need as 'the quantity of housing required for households who are unable to access suitable housing without financial assistance' and housing demand as 'the quantity of housing that households are willing and able to buy or rent'.

Box 1: What is a household?

The 2001 census defines a household as one person living alone, or a group of people living at the same address who share common housekeeping or a living room.

The number of households is not the same as the number of dwellings but is a measure of the number of distinct family units in England. Households may occupy their own dwelling, share a dwelling with other households, or own more than one home. In 2006 there were an estimated 21,900,000 dwellings in England (DCLG, Housing Statistics, Table 104: Dwelling stock by tenure, 2008) and 21,500,000 households. It is estimated that 241,000 households in England have a second home.

may underestimate household formation. This occurs with hidden or concealed households, i.e. prospective households that would like to form new or larger households, but are prevented from doing so for economic or other reasons.

1.3 How are the household projections calculated?

To calculate the household projections, first the number of people resident in England is assessed through population projections produced by the ONS. This combines projections of the natural population growth rate with those of inward and outward migration. The population estimated to be living in institutions is subtracted from the total resident population and this leaves the private household population. Household formation rates are then projected, in association with the number of people per household (household size), and applied to the private household population to generate household projections.

Determining household projections is affected by five distinct components: population, marital status, household representative rates, sub-national controlling (ensuring local projections match national projections) and the institutional population. These are considered below. A more detailed explanation on each of these is given in *Updating Household Projections to a 2006 Base: Methodology report* (DCLG, March 2009).

1.3.1 Population projections

Each new set of population projections is used as a basis for calculating a new set of household projections. The latest

household projections (DCLG, March 2009) are based on ONS 2006-based population projections, which is why they are referred to as 2006-based household projections. Population projections are a key element in determining household projections. How population projections are put together and influence household projections is considered in more detail in chapter 2.

1.3.2 Marital status

At a national level, the marital status of the population by age and gender is assessed by the Government Actuary's Department (GAD), together with an analysis of whether or not people are cohabiting. These findings are then projected forward, but at a national level only.⁴ This process identifies the following eight marital status types:

- single – not cohabiting
- married – not cohabiting (other than with spouse)
- widowed – not cohabiting
- divorced – not cohabiting
- single – cohabiting
- married – cohabiting (not with spouse)
- widowed – cohabiting
- divorced – cohabiting

1.3.3 The institutional population

For the purposes of the projections, people are assumed to live in dwellings in the community or in institutions. Household projections are calculated only for those people expected to live in the community, i.e. the private household population.

'The institutional population comprises all people not living in private households. These include people living in nursing

⁴ At district level, the ONS estimates marital status for future years based on 2001 census and other data from 2003. These data had to be used carefully to reflect the increased longevity especially of men since 2003.

homes, halls of residence, military barracks and prisons.’ (DCLG, *Updating the household projections to a 2006 base, 2009*)

‘In calculating the household projections an assumption is made that “the institutional population stays constant at 2001 levels by age, sex and marital status for the under 75s and that the share of the institutional population stays at 2001 levels by age, sex and marital status for the over 75s.’

(Ibid)

1.3.4 Household representative rate

The calculation of household numbers is based on the household representative rate,⁵ which is the probability that an individual in each of the age/sex/marital status cohorts (demographic groups within the household population) is part of a separate household.

To determine the household representative rate, the private household population is first divided into age groups by gender and marital status, a process which identifies cohorts. The household representative is the individual assumed to be the head of that household – in married or cohabiting households, by convention, this is taken as the eldest male.⁶

There is, by definition, only one such representative per household. Different types of household for projection purposes are married, cohabiting, other multi-person, lone parent, and single. The household population in each cohort is multiplied by the household representative rate for that cohort, and the sum across all cohorts gives the total number of households. To create the household projections, the membership of each cohort is calculated for

a base year and then modified to become the representation of the next cohort in the time sequence (called the cohort survival method). The key to the projection model is the set of transformation functions that carry out the modifications through the sequence of cohorts. The calculation and projection is carried out at national and sub-national levels.

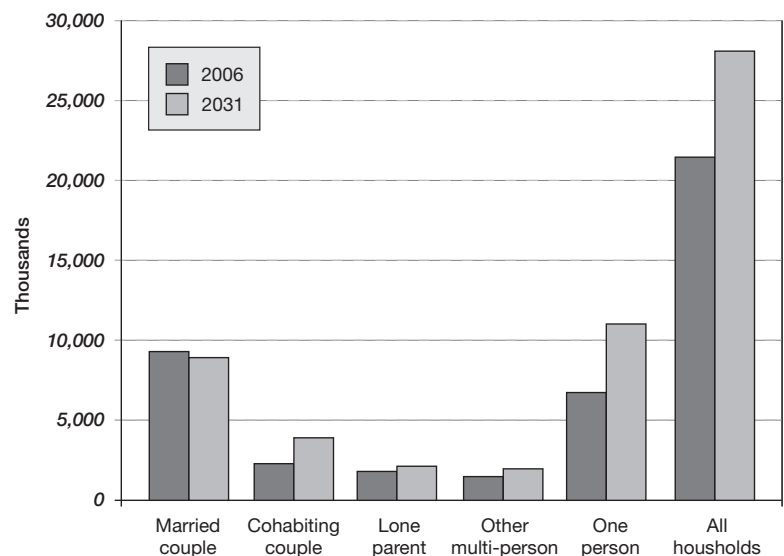
Household representative rates vary across age, sex and marital status cohorts. Consequently, the total number of households projected is particularly sensitive to changes in the age, sex or marital status of the population.

1.3.5 Sub-national controlling

Data analysis at sub-national levels is initially carried out independently, but results are manipulated to ensure they are

⁵ The household representative rate can take any value between 0 and 1. There are 240 population groups, defined by sex, age, marital/co-habitational status. This gives 240 household representative rates in total. Projected household representative rates are estimated from census based values from 1971, 1981, 1991 and 2001 and Labour Force Survey data from 2002-2007.

Figure 1: Projected change in the number of households, England 2006-2031



Source: Table 404: Household estimates and projections by household type and region, England, 1997-2031, DCLG Live Tables

consistent with data for the geographical area above them and ultimately for the country as a whole. This controlling process, which entails consulting regional planning bodies and local authorities about the figures, ensures that local projections add up to the national projection.

1.4 What is the nature of projected growth in the number of households and how is this explained?

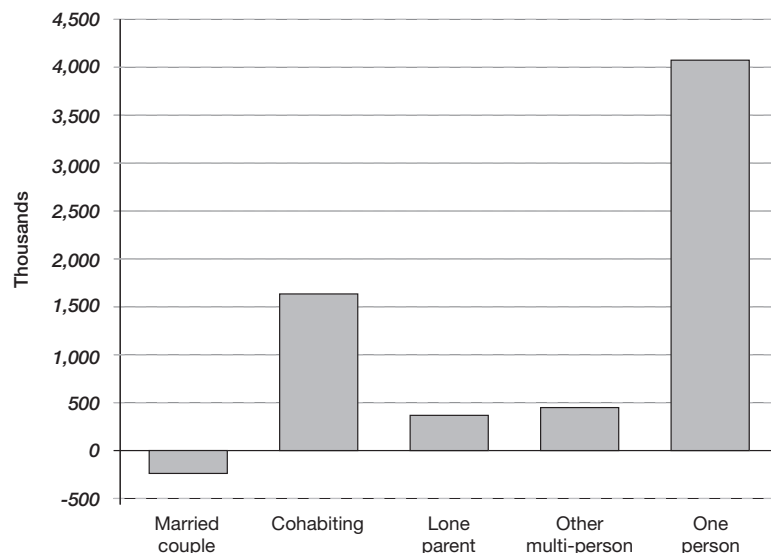
The 2006-based household projections show an annual rate of growth in England from 2006 to 2031 of 252,000 households. They indicate a continuing decline in average household size from 2.32 in 2006 to 2.13 by 2031. One person households comprise the greatest proportion (65%) of growth in the number of households, as indicated in Figures 1 and 2.

As Figure 3 shows, projected growth in the number of households is unevenly distributed in England. The South East region is projected to experience the largest absolute increase in households – an increase of 39,000 per year from 2006 to 2031. This is a 28% rise from the 2006 level.

The North East region shows the smallest projected growth in households, at 8,300 per year from 2006 to 2031 (a 19% rise from the 2006 level). The ten districts with the largest increases are in the East Midlands and Yorkshire and the Humber.

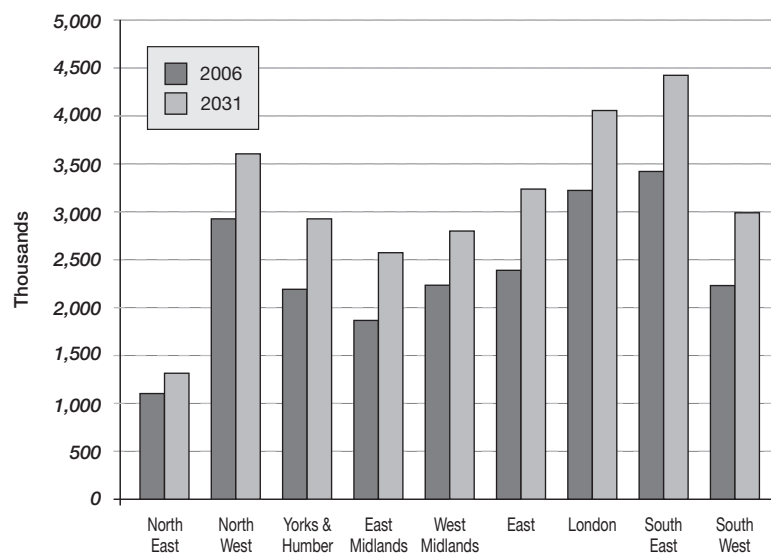
The 2006-based household projections show the total number of households in England is expected to grow from 21.5 million in 2006 to 27.8 million by 2031 (see Figure 1). This is an increase of 216,000

Figure 2: Household growth 2006-2031 England



Source: Table 404: Household estimates and projections by household type and region, England, 1997-2031, DCLG Live Tables

Figure 3: Projected change in the number of households, by region, England



Source: Table 403: Household estimates and projections by region 1971-2031, DCLG Live Tables

⁶ The household representative rate is sometimes called the headship rate. An explanation of how this is calculated is given in Updating Communities and Local Government's household projections to a 2006 base: methodology report, DCLG, pp6 and 7.

annually compared with the 2004-based projections. How is this extra growth explained and are the figures reliable?

An examination of the household projections (Appendix C) shows that for the 2006-based household projections, the increase in numbers is only projected after 2006. The value for 2006, i.e. the baseline year, is taken from ONS's mid-year estimate, which provides a more up to date value. Further information on regional projections is given in Appendix E.

At a national level, much of the increase can be assigned to an increase in the population, caused by net in-migration, a rise in the birth rate and increased life expectancy. About three quarters (74%) of projected household growth between 2006-2031 is driven by projected growth in the population.⁷ Changing household size and composition is also a factor in the rising number of households. This has a smaller effect than population growth on the national projection but is significant in some parts of the country.

The five year trend which informed the 2006-based population projections coincided with a period of high net inward migration. Recent figures indicate this has fallen.⁸ It remains to be seen whether net migration will remain at more modest levels or revert to the high level recently experienced. Immigration can be expected to fall due to economic reasons and because the Government tightened immigration controls. European Union enlargement has also slowed. These factors suggest that the projected population increase caused by net migration may well turn out to be less in reality than the trend-based projections.

Since population growth accounts for the majority of projected growth in household numbers, the reliability of the household projections will depend on the reliability of the underlying population projections and how these translate into household projections. Appendix A examines the reliability of the population projections on various grounds, and draws particular attention to issues surrounding migration data.

1.4.1 The economy and household formation

Historically, birth rates fall when the economy is in a downturn and rise during times of prosperity. Should the present recession be sustained this should reduce any population forecast relative to the trend-based projection, given that the economy was buoyant during the period on which the projections are based (2001-2006).

Birth rates will not immediately affect the number of households, but will affect the longer term projection. An economic downturn will encourage more adults to live or stay together, to limit their combined expenditure. This means there will be fewer single-person households than would otherwise be expected to form in times of prosperity. The rate of household formation is sensitive to interest rates.⁹ When these are higher fewer new households can be expected to form and vice versa.

These influences suggest that the increase in household numbers is, at present, no longer following the accelerating upward trend shown in the 2006-based household projections. Looking further ahead, an assessment is required of change in future

⁷ DCLG, Household Projections to 2031, England, 2009

⁸ ONS, Migration Statistics Quarterly Report No 2: August 2009

⁹ Professor Dave King, Projected Patterns of Population and Household Growth for England, 1996-2021, Anglia Polytechnic University

household numbers (compared with those projected from 2006 data). There are at least four scenarios:

- 1) the present economic recession is short-lived and has no effect on the overall mean increase in households;
- 2) the recession has the effect of reducing short-term demand (perhaps for five years) but the recent upward trends then return and the increase in household numbers continues as in the 2006-based projections, but from a lower starting point;
- 3) the recession causes fundamental changes in aspirations, which reduce rates of household formation, so that the assumptions underlying the 2006-based projections no longer apply; and
- 4) recent high levels of net inward migration are not sustained. Migration rates are restored to a lower and more stable rate in the future, leading to a more modest increase in household numbers.

These alternatives would create four totally different household numbers and housing requirements scenarios in the future. However, accepting the 2006-based projections of population and households as the basis for national and regional planning implicitly accepts that the first scenario is the most likely.

As the household projections take little account of events that have occurred since 2006 they are out of date and therefore may be highly deceptive. Economic conditions significantly affect household formation and migration,

with migration having fallen in the year to December 2008 (there has been a decline in internal migration and a fall in net in-migration). This highlights the need for decisions based on the projections to take account of the fact that the present set are almost certainly too high in the short term. In turn, this casts doubt on their reliability over the long term. Box 2 summarises some of the other limitations of the household projections.

Box 2: Technical limitations of household projections

Ethnic background: There can be marked differences in household formation, fertility and life expectancy among different ethnic communities.

Migration assumptions: NHS patient registers are the best proxy for internal migration within England and Wales but are known to underestimate migration. In particular, young men are less likely to register with a GP when or after they move.

Variation amongst younger households: Household formation amongst younger adults (especially those under 24) is more variable reflecting a range of factors including housing and employment.

Length of time elapsed since the census used to derive projections: The process of change is cumulative so the reliability of projections decreases over time.

Private households: Household projections largely disregard concealed households and tend to be based on out of date information regarding the size of the institutional population.

Source: DCLG, Strategic Housing Market Assessments Practice Guidance Version 2, Table 4.1

2. Impact of Population Projections on Household Projections

2.1 How do the population projections affect the household projections?

Both the size and composition of the population have profound implications for household formation. The ONS population projections, like the household projections, are trend-based. This means they are based on assumptions about past demographic trends – for the 2006-based projections, trends observed during five years up to the baseline year. For the base year (i.e. 2006), a mid-year estimate, rather than projection, is used.

The population projections show what would happen if projected trends were realised in practice. They take no account of changed circumstances, practices, policies or economic conditions which may fundamentally alter underlying trends.

ONS projections show the UK population rising from 60.6 million in 2006 to 71.1 million in 2031 and in England from 50.8 million to 60.4 million over the same period.¹⁰ As this report was being finalised, the ONS published 2008-based national population projections. For England, these project a slightly lower rate of population growth than the 2006-based projections, but in most respects are similar.

It will be several months before new sub-national population projections are published. The timing of new, i.e. 2008-based, household projections will depend on when ONS publishes the sub national projections (expected May 2010). Once these are available work can be expected to begin on a new set of household projections.

Key drivers of population change, recent trends and how these shape the UK's demographic profile are considered below.

2.1.1 Population change

The three ingredients that make up change in the population are live births, deaths and migration. For the UK population as a whole, the impact of migration derives only from international migration. At the regional or local level internal migration the movement of existing residents within the UK) also affects the size of the population.

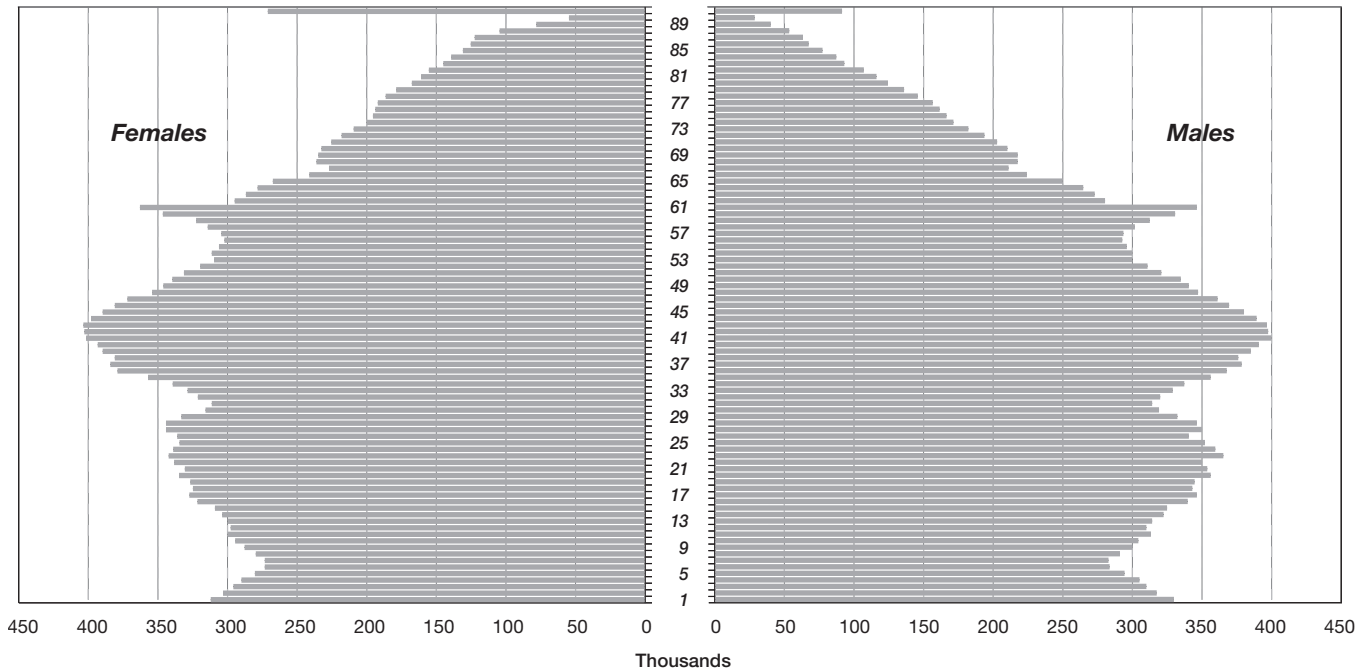
Assumptions about births and deaths used in the population projections are generally more reliable and stable than those applied to migration. This is because projections of births and deaths are based on very large samples of naturally occurring events that are relatively easy to predict, whereas projections of migration are based on much smaller samples. Short term changes in the components of the population projections can, however, have significant effects on the results. Appendix A shows how the population projections contain significant uncertainty.

2.1.2 Age structure

The distribution of the population between different age groups, and between men and women, will affect the future population of the country. Figure 4 shows the shape of the UK's demography in mid-2007. The largest group in the population comprises people aged between 30 and 55. As people in this group grow older, there will be a corresponding, albeit smaller, increase (because of deaths) in older age groups.

¹⁰ ONS 2006-based national population projections were published in October 2007 and have been superseded by 2008-based national population projections. ONS 2006-based sub-national population projections were published in June 2008.

Figure 4: Population profile by age and gender: England, 2007

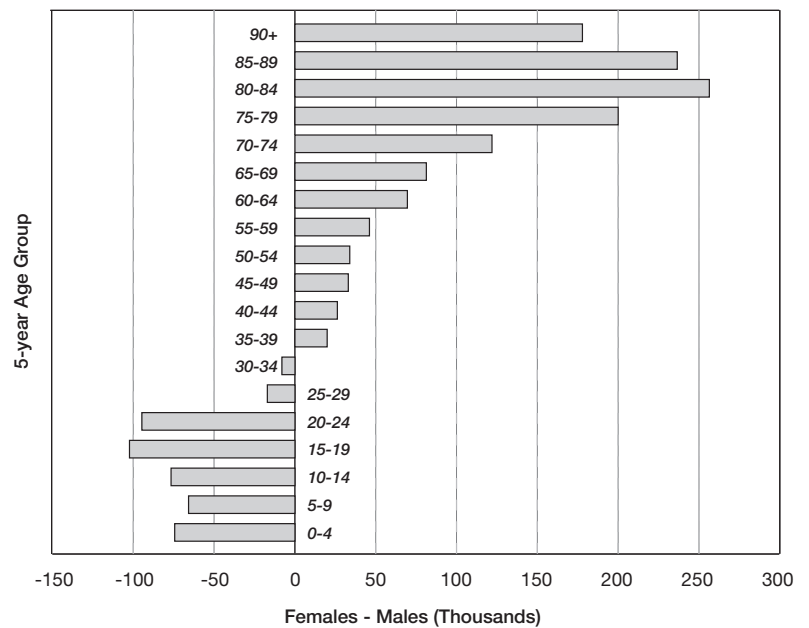


Source: Population Estimates Unit, ONS Centre for Demography

The present age distribution could be maintained by net inward migration, but only if the age profile of immigrants matched those of emigrants and the propensity to form households remained the same (see section 2.1.7 on migration ‘churn’). The dip in the figure around the age of 67 corresponds to the Second World War. The longer life expectancy of women is evident from around the age of 30 when the number of women begins to outnumber men.

Figure 5 shows the number of females minus the number of males in each five-year age band. Consideration should be given to potential differences in household formation patterns, given that there are over a million more females than males aged 65 and over.

Figure 5: Difference Between Age Profiles of the Male and Female Population



Source: Population Estimates Unit, ONS Centre for Demography

Table 1 shows that nearly half of projected population growth between 2006-2026 will comprise people aged 65 or over. The rising number of elderly people (especially the very elderly, i.e. those over 75) is a major contributor to population growth, declining average household size and growth in the number of households.

2.1.3 Births

As Figure 4 indicates, the birth rate has risen in recent years, from a low point in 2002. This will impact on household numbers in later years, but has not reached a level that will, without migration, replace the previous generation. The profile shows a sharp increase in the population aged 60 and 61 corresponding to those born in 1946 and 1947. The increase in the size of the population aged 36 – 46 corresponds to the 1960s baby boom. This was followed by a further rise in the 1980s when those born during the 1960s reached their twenties.

Birth rate, i.e. the number of live births per thousand of the population, is affected by a variety of considerations. The key consideration is the number of women of childbearing age since this has a strong bearing on fertility rates (live births per woman).

In 2008, the UK's Total Fertility Rate (TFR) stood at 1.96 children per woman (England 1.97), its highest level since 1973. It reached its lowest point in 2001, at 1.63 per woman. Although fertility rates have risen, they remain below the level required to sustain the population at its present level (this would require a TFR of 2.075). This is partly because childlessness has increased – one in five

Table 1: Projected increase in the population of England by age 2006-26

Age group	Males ('000)	Females ('000)	Total ('000)	Total (%)
Under 15	648	639	1,287	16.1
15-19	26	31	57	0.7
20-29	243	130	373	4.7
30-44	541	326	867	10.9
45-64	780	813	1,593	20.1
65-74	697	707	1,404	17.7
75 and over	1,271	1,066	2,337	29.5
Total	4,207	3,712	7,919	100

Source: ONS 2006-based population projections

women born in 1963 remained childless compared with one in eight women born in 1933 and the proportion of women having three or more children has also fallen.¹¹

2.1.4 Deaths

Increased life expectancy has implications for the size and composition (i.e. age and gender) of households. A rise in the number of elderly people is a significant factor in projected household growth, particularly in one-person households. Life expectancy at birth in the UK is expected to rise from 77.3 years in 2006–07 to 82.7 years in 2030–31 for men, and from 81.7 years to 86.2 years for women.¹²

Although there are many uncertainties in the projection of mortality rates, what matters is whether the uncertainty is likely to be significant in the overall projection of the population. Life expectancy projections are made for 50 years ahead but, in practical terms, it is the potential variation from the principal projection in the next 20 years or less that matters. In the conclusion to his 2005 lecture at Cass

¹¹ ONS, Frequently Asked Questions – births and fertility, August 2009.

¹² Government Actuary's Department (2008) 2006-based national population projections for the UK and constituent countries, table 2.

Business School,¹³ the Chairman of the Pensions Commission said:

‘Both our work with GAD and that of the CMI [Continuous Mortality Investigation] have illustrated the large uncertainty involved in estimates of life expectancy: these are considerable even when estimating the life expectancy of a 65 year old man or woman today: but the uncertainties increase dramatically as we look into the future.’

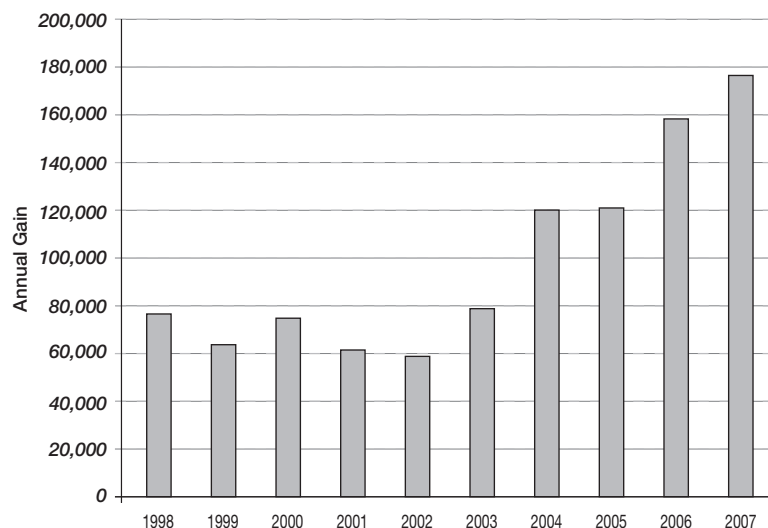
Considering only the uncertainty in the next ten years, the difference between GAD’s low and high projections is not very large. For 2010 the low and high projections of life expectancy for males are {78.7, 79.2} and for females {82.3, 82.8}. By 2020 these widen to {80.5, 82.2} and {84.2, 85.2} respectively. Although these uncertainties will affect the population projections, they will not be as influential as other, more volatile, factors such as migration.

2.1.5 Natural change

Natural change is the difference between births and deaths and is a key factor in population projections. Figure 6 shows that, after subtracting deaths from births, there has been a net annual gain in England between 1998 and 2007.

The effect that population growth has on household formation and subsequent housing requirements depends on the cause of the gain. If it were attributable mainly to a fall in the death rate then the number of households can be expected to increase, although some increase would be offset were there a rise in the institutional population. Conversely, if growth is largely from a rise in the birth rate then household size would increase, but

Figure 6: Annual natural gain in England



Source: ONS, *Population Trends 131 – Spring 2008: table 7.1, table 6.2*

the effect on the number of households would be delayed for 15-20 years. Between 2002 and 2007, both forces were operating. The birth rate increased by 12% and the death rate fell by 8 per cent.

Overall, there has been a long-term reduction in the death rate in all regions and from 2002 to 2007, an increase in the birth rate. However, for a few regions the birth rate fell during some years within this period. The combined reduction in death rate and increase in birth rate give an accelerating natural gain for the country as a whole.

In some regions, particularly London, this is a significant feature of the overall change in the population. Natural change accounted for 54% of population growth in the 12 months to mid-2008 (ONS, mid-year estimate, August 2009). This is the first time in a decade that births have overtaken net-migration as the main contributor to population growth. Natural change accounts for 53% of the projected population growth between 2006 and 2031 (See Table 2).

¹³ *Uncertainties in life expectancy projection: lecture by the Chairman of the Pensions Commission, Cass Business School, April 2005.*

2.1.6 International migration

Projections of international migration are a crucial component of national population projections. International migration data for 2006 (the base year) were not available when long term assumptions underlying the 2006 projections were made. Subsequent estimates for 2006 show that net migration to the UK was +191,000 in 2006, lower than 2004 and 2005, but continuing a period of historically high levels of migration.¹⁴ According to the Identity and Passport Service, net migration to the UK fell by 118,000 in the year to December 2008 (44% lower than in the year to December 2007). This is the lowest level since A8 accession (in 2004, when central and eastern European countries joined the European Union). There was a 24% rise in the number of people (395,000) emigrating from the UK, with the number of non-British emigrating rising by 50%. Immigration remained at a similar level (512,000 people, compared with 527,000 the previous year).

Much of the quality of data on migration in recent years is questionable, although efforts are underway to improve the methods used for estimating the annual figures. This limits its value; renders the projections subject to considerable uncertainty; and casts doubt on their reliability. It is therefore best to avoid, or to be extremely cautious about, using long-term projections of migration as the basis for irrevocable decisions, for example, about housing supply. Projections should always be accompanied by a sensitivity analysis which tests the effect of different migration assumptions. Uncertainty and volatility in the international migration projections are considered in Appendix B.

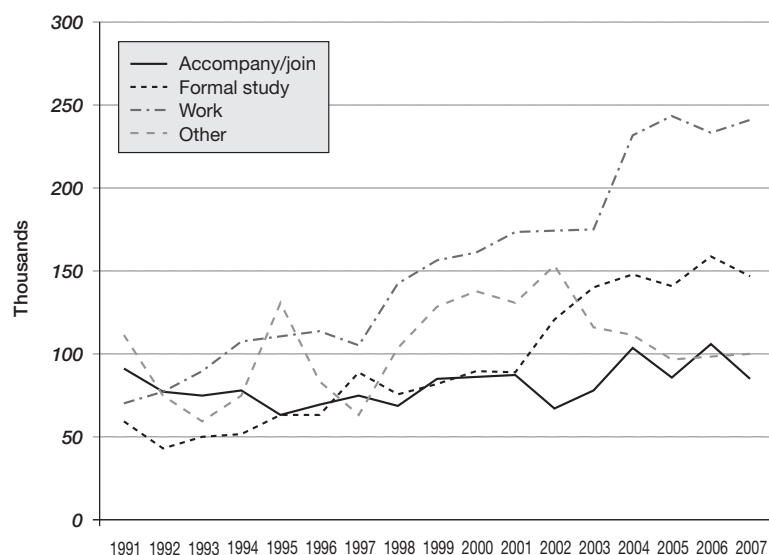
2.1.7 Migration churn

Migration churn is the difference in characteristics between people coming from abroad to live here (inward migrants) and those who leave (outward migrants). Taking account of migration churn is essential to reaching a proper understanding of the effects of migration on household formation rates. Different reasons for migrating or differences in the ethnicity of those entering the country and those leaving will affect subsequent household-forming characteristics. On average, in-migrants tend to be younger than out-migrants. ONS and GAD population projections assume that from around the age of 45, net migration is zero and for some older groups there are small net outflows.¹⁵

¹⁴ This reflects an allowance for additional net migration from accession countries which joined the EU in May 2004 and January 2007. Source: ONS, *Population Trends 131 – 2008, 2006-based national population projections for the UK and constituent countries*

¹⁵ www.gad.gov.uk/Demography%20Data/Population/2006/methodology/mignote.html

Figure 7: Reason for moving to the UK (inward migration)¹⁶



Source: ONS: table 2.04 FR update: total international migration – main reason for migration

¹⁶ NB: The six categories in the original dataset, ONS: Table 2.04 FR update: total international migration - main reason for migration, have been reduced to four by grouping 'Other' and 'No reason stated' into 'Other', and 'Definite job' and 'Looking for Work' into 'Work'.

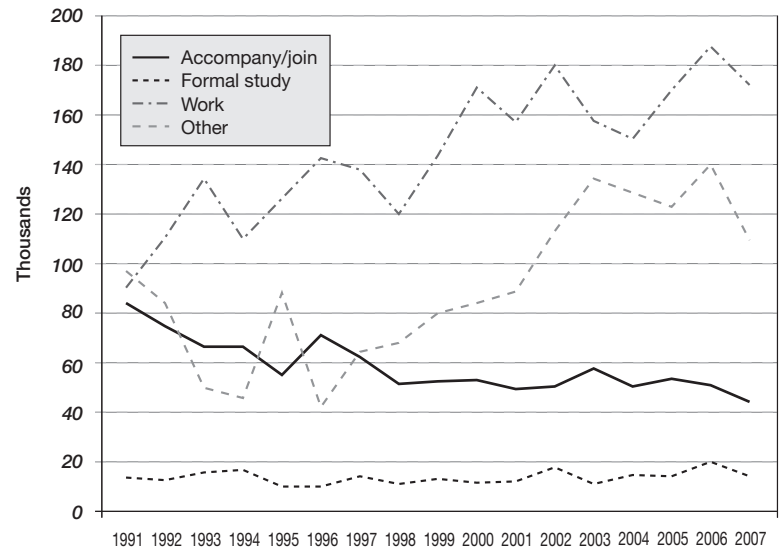
As Figure 7 shows, the number of people moving to the UK for work-related reasons has increased over the last 10 years and is the main reason people come to live here. More people have also come to the UK to study, particularly over the last five years. But this is only half of the story. Figure 8 shows that the dominant reason people emigrate from the UK is also work. The number leaving to study is small and has shown no significant change since 1991. A key factor is the difference between these profiles, shown in Figure 9 below.

Figure 9 shows that net work-related migration remains important and that the largest difference is in the student population. During the 17 years from 1991 to 2007, over 65% of net migration is attributable to study and less than 7 per cent to work.

There are signs this pattern is changing, as the proportion of net migration to the UK which is work related has increased to 19% since 2000. During this period the number of students who came to study in the UK also rose, although the proportion remained the same – around 65% of all migrants. Student numbers have implications for household formation, as the tendency for students to form independent long-term households is less than for other categories.

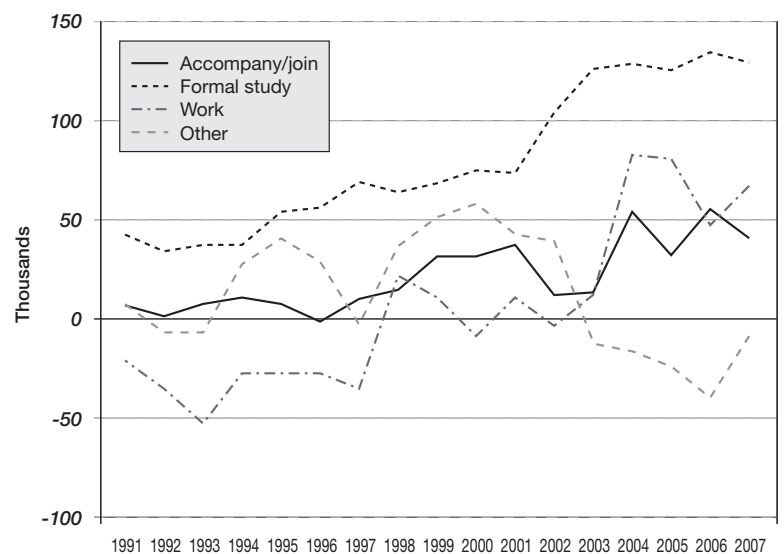
A further consideration is the number of overseas students who leave the UK once they have finished their studies. For a wide variety of reasons, over the period of the projections, the number of students coming to study in the UK can be expected to change. Assumptions in the projections should therefore be carefully examined in the light of up to date evidence and local circumstances.

Figure 8: Reason for leaving the UK (outward migration)



Source: ONS: table 2.04 FR update: total international migration – main reason for migration

Figure 9: Net migration subdivided by reason for migrating



Source: ONS, FR update, table 2.04: total international migration – main reason for migration

Another aspect of migration churn is the country of source or destination and ethnicity. Figure 10 shows net migration by source and destination. The most obvious features are the recent rise in European Union migrants and the contrast between those groups coming to and from Australia, Canada and New Zealand and the rest of the Commonwealth. From 2002 to 2006 the UK lost 143,000 migrants to Australia, Canada and New Zealand and gained 319,000 from the Indian sub-continent. This should not be regarded simply as a total gain of 176,000 but as a churn of 462,000 individuals with all of the implications, in terms of household formation rates, of the differences between the two groups.

2.2 Key drivers of projected population change

Analysis of ONS population projection data reveals that natural change accounts for 53%, and net migration 47%, of the projected increase in the UK population between 2006 and 2031. Some projected population growth from natural change will result from projected net-in-migration since inward migrants tend to be, on average, younger than outward migrants. This age differential will produce higher fertility and birth rates and lower mortality rates within the population. However, even with this age differential and the rise in retirement age, the age dependency ratio (the number of persons of state pension age and above per thousand persons of working age) is still projected to increase (ONS, *Population Trends 131*, 2008).

A summary of the components of projected population change in the UK between 2006 and 2031 is given in Box 3 and Table 2.

Figure 10: Net migration grouped by source or destination of migrants

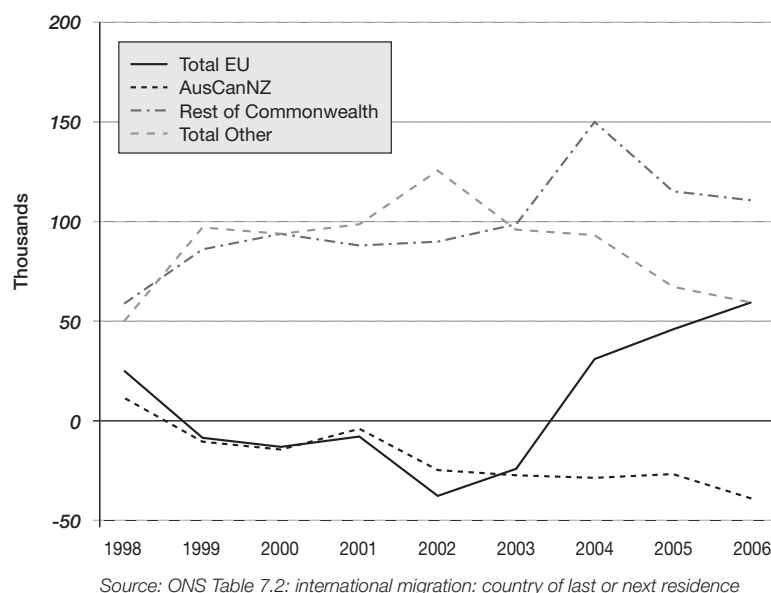


Table 2: Components of population change UK: 2006-3031

UK annual averages (thousands)	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031
Population at start: 60,587					
Births	780	799	805	796	788
Deaths	565	549	552	573	610
Natural change	215	250	253	224	178
Net migration	220	193	190	190	190
Total change	435	443	443	414	368
Population at end	62,761	64,975	67,191	69,260	71,100

Source: ONS, *Population Trends 131*, 2008, Table 3

Box 3: Summary of projected population change

UK population, mid-2006 = 60.587 million

Projected change: 2006-2031

Births 19.847 million – deaths 14,247 million

= natural change 5.601 million

+ net migration 4.912 million

= total population change 2006-2031: +10.513 million

UK Population mid-2031 = 71.100 million

3. Government Policy, Household Formation and Projections

3.1 Are the household projections influenced by Government policies?

The household projections are described as trend-based, rather than policy-based, because they project past trends into the future and take no account of changes in policy. They are not, however, policy neutral. Extrapolating previously identified trends into the future means that the projections extrapolate the effects of previous household formation activity. This assumes that policies and trends which existed at the time will continue to exist in future, which may or may not be the case. This is particularly apparent in the assumptions made about future migration patterns.

Any assumed rate of migration into or out of an area, trend-based or otherwise, is an assumption which carries significant policy judgement. For the period of the projection it implies the continuation of a particular combination of the supply and price of housing (relative to other areas), employment availability, locational attractiveness (schools, services, environmental quality) taxation and immigration policy.

Even relatively predictable expectations about matters such as births and deaths may be unreliable beyond the short term. Mortality rates, for example, are influenced by access to health care, provision of retirement accommodation (quality of care and accommodation influence lifespan, areas with a lot of retirement accommodation will have higher death rates because more of their population is elderly, regardless of health care standards), nutrition, and warmth in the home.

3.1.1 Circular projections

As stated above, trends which inform the household projections are themselves the outcomes of earlier policies and practices. If, for example, a significant supply of new housing is built in an area adding to the overall stock, and much of that housing is occupied by households who move there (say, to take up newly available employment), then that household growth and the inward migration to support it are recorded as trends and projected into the future. The original policy of encouraging housing in an area has generated a projection of future households following in their footsteps into the same area.

In their report *Circular Projections* (CPRE, 1995), Professor Glen Bramley and Craig Watkins investigated this through a review of migration data at the district level. They considered migration probably the single most important variable in determining differences between localities in household growth, as reflected in the household projections. They found, unsurprisingly, 'that net migration is systematically influenced by local housing market and supply conditions. In particular, where the supply of new private housing is greater, due to greater land availability, there is more in-migration and/or less out-migration. The criticism of household projections, that they are to some degree circular, is borne out by this finding' (page 32).

Circularity occurs when trend-based housing projections are taken as targets. This makes them self-fulfilling, independent of changes in circumstances since the base date for the projections. An increase in housebuilding in an area, for whatever reason, will create an upward trend in

household numbers even if the cause was transitory. This does not justify turning the continuing achievement of that level of building into a target.

3.1.2 Economic and social influences on household formation

The projections reflect features of household formation and migration associated with the state of the economy locally and nationally in the period used to calculate those projections. During periods of rapid economic growth there is likely to be more construction and migration than at other times. Any particular set of projections is only likely to be representative during similar economic periods to those on which the projections were based. When preparing projections, choices therefore have to be made about the period on which the projection will be based. Too long a period and the projection may be out of date, but too short and it may only be based on a transitory experience. More sophisticated projections, such as non-linear trends or even an attempt to emulate economic cycles, would have their own disadvantages, giving the impression of forecasts rather than simply projections.

While the above might suggest a need for the household projection model to take into account the state of the economy, such an adjustment would be difficult to accommodate. Changes in the economy are happening the whole time, and significant changes to economic variables can arise rapidly. Introducing economic issues as a factor in the preparation of household projections would superimpose additional volatility and scope for error on the demographic trends. This conundrum

suggests strongly that caution should be exercised in interpreting the household projections and that a range of contextual information should be used alongside them to inform housing and planning decisions and policies.

Social and cultural, as well as economic, considerations affect household formation. For example, how many children women have is influenced by education, expectations, taxation and benefits policy. Historically, the birth rate has been affected by the national mood as well as events such as wars. The recent rise in birth rate may well have slowed as a result of the current recession because of people delaying setting up independent homes and starting families. Though the evidence is currently only anecdotal, such as the following remark, 'It's no secret that some people are delaying adding to their family because of the recession, layoffs and general fear about the state of the economy and job stability'¹⁷, it is a predictable reaction to the state of the economy.

Similarly, the extent to which different generations of the same family live together is partly a social and cultural choice albeit constrained by the options available. This affects how many households need to be housed and the type and size of dwelling suitable for them.

3.1.3 Demographic trends and public policy

To the extent that social and cultural issues are matters of choice, they are capable of being influenced. Governments already exercise these kinds of influence (classically by the use of tax incentives to

¹⁷ *Wall Street Journal* online 13/02/2009.

encourage marriage), and could, if they wished, influence the number and size of households. This prospect was raised in a government Green Paper in 1996, *Household Growth: Where shall we live?* This recognised that demand for housing arising from changes in the population structure and social evolution was not immutable. The Green Paper referred specifically to the option of ‘a focus on action to strengthen the family as a means of reducing household growth’ (paragraph 3.3). If, therefore, the Government was minded to, it could introduce incentives and regulations to influence people’s behaviour in forming households and even in the number of children they have.

Declining household size has been a significant factor in the increasing number of households, although at a national level population growth has a greater influence. The benefits of increasing household size (in the form of co-housing or cooperative housing or family and friends living together, for example), include improved social cohesion and community engagement and a reduction in isolation and loneliness. This leads to improved support, mental health and well-being. Extended families living as single households, granny annexes, sharing of facilities by different households, co-housing, and students attending local universities whilst living at home¹⁸ illustrate the fluidity of household formation and its housing implications. In short, household formation could be the subject of deliberate policy, rather than the inadvertent consequence of policies in other spheres.

3.2 Should housing requirements or housebuilding rates aim to match the projections?

The household projections simply indicate the number and type of households which would form if past (recent) trends were to continue. The projections do not imply that the numbers and distribution of households is inevitable. There is no unavoidable or direct relationship between projections, housing requirements and building rates. As circumstances, policies and housing supply practices change, projections and household numbers are likely to increasingly diverge from each other over time. On this basis, building at a rate that matches the household projections could only be relevant in the very short term, (assuming low vacancy rates and limited scope for meeting needs from empty property) before delivery on the ground has had much opportunity to divert from projection.

Even relying on the projections for short term use can be risky. For example, between the issuing of population projections based on 2006 data (which are the principal input into the household projections) and publication of household projections in March 2009, the pattern of international migration changed (ONS, *Migration Statistics Quarterly Report No 2*, August 2009). From a period of significant net inward migration, spurred by the eastward enlargement of the European Union, with the onset of recession in 2007/8, and changed policies on who may enter the country as an economic migrant the United Kingdom is now seeing a rise in emigration and fall in net migration. The Federation of Poles in

¹⁸ *The Green Paper, Household Growth: Where Shall We Live?*, noted ‘mainland European students are more likely to study locally and live in their parents’ home for longer. Clearly, encouraging a similar approach in England would reduce household creation rates and release more of the other stock for existing households’ (paragraph 3.21).

Great Britain estimates that 200,000 Poles left Britain in 2008 (Press Release, 28 January 2009). The household projections published in 2009 made no allowance for the change in migration patterns between the base year of the data in 2006 and publication in March 2009. Any estimate of households based on them should therefore be amended to reflect more recent experience.

Closely matching land supply for long-term building rates to the household projections is effectively treating the projections as an indicator of need and demand, or as a target. As explained above (see section 3.1.1 on circular projections and section 1.2 on housing need), this would be quite wrong. To do so risks turning the projections into self-fulfilling prophecies. This would lead to policies being adopted in order to secure outcomes in line with the projections and continuing with a building programme in places where an earlier justification for building no longer existed; or simply a failure to identify or respond to housing needs.

Although the projections have some merit in forewarning of possible future housebuilding requirements, a wide range of future scenarios is possible which may require fewer, or more, homes to be built. This highlights the importance of taking a plan, monitor and manage approach which pays attention to policy objectives, such as urban renewal and countryside protection, and the means of achieving them alongside local and contextual information. This would use the household projections as one, albeit important, factor alongside other considerations.

While the household projections are trend-based, and only indirectly affected by policy, housebuilding rates are the subject of intentional policy. If projections and building rates happened to be the same this would be a matter of some surprise. As policies and economic conditions are always changing, there is no reason why they should be the same for the foreseeable future as they were at the time when the household projections were being formulated. Recently, for example, national policy on housing supply has been to encourage building at a faster rate than implied by the household projections. This reflected the Government view that a higher rate of housebuilding is key to improving the affordability of market housing.¹⁹

¹⁹ *The Housing White Paper, Homes for the future: more affordable, more sustainable, July 2007, set a target rate of house building of 240,000 homes annually to 2016, compared with official projected household growth at the time of 223,000 households annually (page 7). This approach has been taken forward by the National Housing and Planning Advice Unit (which advises the Government and regional planning bodies) whose supply ranges are at and above, the projected level of household growth.*

4. Responding to Uncertainty in the Household Projections

4.1 Variability

Household projections are issued by the Government approximately every two years (September 2004, March 2006, March 2007, a partial revision to details in February 2008 and March 2009). Each set of projections varies considerably from its predecessor, with successive revisions since 1999 producing a higher projection (Table 3). Considerable changes from one set to another, however they are explained, discourages users from taking them at face value and does not inspire confidence in the reliability of any one set.

The main response appropriate in these circumstances is first to assess the basis of the latest set of projections, and second to examine the contribution of other issues to decisions on housing supply. Policy makers are usually (or should be) alert to the need to avoid taking irreversible decisions which could turn out to be unjustified.

Seriously under-estimating or over-estimating future household numbers, types and sizes would have major undesirable consequences, failing to identify housing needs, or conversely, leading to a waste of resources and unnecessary development.

Table 3: Projected annual household growth in England based on Government household projections (average rate 2001-2021)

October 1999	150,000
September 2004	189,000
March 2006	213,000
March 2007	223,000
March 2009	258,000*

*average rate 2006-2026

Small changes to key assumptions which inform the projection model can significantly affect the resulting projection. Steps should be taken to minimise those risks.

4.1.1 Dependent and independent variables

In any projection or forecasting process it is essential to identify whether variables used as a basis for analysis are dependent or independent of each other. The same discrimination should apply to assumptions and results. In the case of population projections, birth, death and migration data can be treated as independent in the short term, but their relationships need to be taken into account in longer term projections and forecasts. For example, birth rate is correlated with ethnicity and therefore not truly independent of migration. The age and gender of migrants affects both birth and death rates, and ethnic breakdown affects trends in the population family size. Although these are gradual effects and will have only marginal impacts over a short period, they can significantly affect population trends and household formation in the future, particularly over the longer term.

4.2 Alternative models

One way of dealing with uncertainty in the household projections is to run models which test different assumptions. Instead of identifying a margin of error around any particular assumption, the effect of deciding to fix one or more variables at chosen values can be examined. This gathers information which can be compared with the official projections. An approach sometimes taken is to identify the number of households which would

form in an area in future years if there was zero net migration in and out of an area across all ages (see box 4). It can provide insight into how migration assumptions affect household formation over and above natural change in the population. This is viewed (by local authorities particularly) as a measure of household growth/change in their area, provision for which would meet locally generated needs only.

4.2.1 The Chelmer Model

A widely used household projection model designed to allow the use of alternative assumptions is the Chelmer Population and Housing Model (CPHM), developed by Anglia Ruskin University. This replicates the method used in the Government's model but enables interested parties to investigate the effects of their own assumptions. For example, it enables the effects of fixing in a locality the amount of net migration, or new housing supply, or resident population, or a combination of controls, to be identified and examined.²⁰

Each alternative assumption has knock-on effects throughout the model, so the entire model is run with the new assumptions. Inaccuracies would arise if an assumption is made that one variable can be adjusted in isolation from all others, as highlighted above. The model demonstrates considerable versatility, but the user's selection of priorities and controls may call into question the independence and transparency of results where only one set of projections is published. In particular, the concept of a housing-led projection being used as a basis for projecting the housing requirement would self-evidently be a circular operation (as discussed in the section on circular projections above).

Exploring 'what if...' scenarios with the Chelmer Model can be a useful way of comparing the projections of past trends with projections based on alternative trends. Both should be appreciated as theoretical exercises.

²⁰ The website of the Population and Housing Research Group at Anglia Ruskin University states: 'In addition to conventional migration-led forecasting, CPHM offers a housing-led model in which the forecasting of population is evaluated in terms of the capacity of an area to accommodate households. This is calculated from the base numbers of dwellings and building/demolition rates. From this, the population growth and migration implications are derived. Within the model framework, calculations may be repeated with various controls applied, such as total populations and total households.'

Box 4: Zero net migration

Zero net migration is different from zero migration. Measures of the former generally assume equal levels of migration in both directions; in reality inward migrants are unlikely to have identical characteristics to outward migrants, so the propensities of the two sets of migrants to form households will differ. For example, a household comprising a worker moving out of an area on retirement might be expected to dissolve within some years, whereas a household comprising a young worker leaving the parental home to move into the area might in due course start a family. In the longer term this would create the need for more, not fewer, houses, even though initially there was no net increase.

How, then, is the effect on household formation of zero net migration to be calculated? Does this mean neglecting any further future household-forming potential of inward migrants? There has been some difficulty over the years at public inquiries into development plans in resolving differences between parties in assumptions made when calculating zero net migration. At the sub-regional scale these differences can significantly affect the anticipated number of households.

Assessing zero net migration, or any other combination of variants on the assumptions used in the Government's household projections, may well raise new difficulties in the process of trying to shed light on original uncertainties.

5. How to Use the Projections to Plan for Housing

5.1 How should the household projections inform housing requirements?

The number of houses needed overall and in any particular place is essentially a matter of judgement. Technical evidence is needed to support such judgement and demographic information is one source. This should be considered alongside data on environmental, economic and social factors.

Demographic evidence should comprise both an estimate of the number of households requiring accommodation, and an assessment of household sizes and types, and the kind of accommodation they will require. While the household projections do not provide full evidence on these, they can provide helpful indicators. It will also be necessary to draw on other information on current and expected influences on the number and type of households. This step is sometimes overlooked in practice, but important.

Both the number of new households and number of dwellings needed to house them will be affected by factors noted earlier in this report, including economic, social and policy-based considerations. A complex interplay of issues affects decisions on matters such as whether to encourage lodgers, demolish or restore an empty home or provide more homes through conversions. New build requirements will depend to a significant extent on whether good use is made of the existing housing stock and other suitable vacant property to provide homes.

There is some evidence that household numbers expand to use up spare capacity in the dwelling stock in weaker housing

markets.²¹ Numerous and complex forces shape demographic trends, and the assessment of housing requirements. Key issues that need to be addressed are set out below.

5.1.1 Number of households

Authorities charged with estimating housing requirements, from the national to the local, should assess the forces at work which could cause actual numbers of households to differ from the projections. This should include considering the following questions:

- > will more or fewer people live in institutions in future rather than in the household population? (See box 5 below);
- > how many households will live together, either from choice or because they are unable to afford, or gain access to, separate accommodation? This is not simply a matter of sharing (i.e. unrelated people deciding to share the services of a dwelling), which many young people do for a while before moving on to other arrangements. Some households may be technically distinct, but in practice living together. These are known as concealed households, such as a young mother who takes her child to live with her parents, or a son or daughter of a household who marries but stays on in the same dwelling with a spouse. Different generations may live at the same address. An elderly relative may move out of separate accommodation and instead reside permanently with family, all of them using the facilities as a single household;²²

²¹ Professor Glen Bramley reported that between 1981 and 1991 England's rural areas experienced house building rates of 7,000 units per year above the household projection rate, and also saw actual household growth 7,000 per year higher (Housing with Hindsight, 1996, CPRE, page 33). Conversely, absolute falls in household numbers were found to be rare, suggesting some tendency for household numbers to expand to fill available housing stock even in relatively depressed areas (pages 57-58). In the former case, household growth was facilitated by planning decisions, but in the latter it arose without that influence.

- > how many people will not form households but be homeless instead? Housing requirements would then need to ascertain how many homeless people might in future form part of a private household and how many are likely to be accommodated in institutions;
- > what is the current pattern of migration, internal (to and from different parts of the UK) as well as international migration? Although this is accommodated within the population projections, which underlie the household projections, significant variations in migration within a particular area, or nationally, can arise over limited periods. Assumptions underlying the household projections can quickly become out of date and therefore data should be assessed in the light of the most recent evidence; and
- > over what length of time will these arrangements be observed? Household numbers in future will depend on whether any change in the patterns observed will:
 - be of a short duration and subsequently level-off (creating a one-off change in housing requirements);
 - be temporary and revert to a previous state (a blip that changes housing requirements in the short-term only); or
 - continue as a trend over the period of the housing requirements assessed (which would need to be reflected in provision on an ongoing basis).

In all these matters, technical assessment of the numbers of separate households in future will involve judgements. Assumptions made will be subject to uncertainty, not only because there is a margin of error in this process but because the factors which cause household numbers to change cannot be predicted with certainty. An estimate of future households is therefore often no more than a best guess. As a result, some departure from the numbers indicated by the trend-based household projections is therefore highly likely.

5.1.2 Dwelling requirements

Having reached a view on the likely number of households requiring accommodation and kind of dwelling they need, the number, type and size of dwellings required to satisfy those needs will have to be assessed. Planning policies and housing market data play a significant role in estimating dwelling requirements, adding another tier of assumptions to those already involved in estimating household numbers.

5.1.3 Contribution of the existing dwelling stock

By far the biggest contribution to meeting needs is the existing dwelling stock. However great the rate of housebuilding, new build only adds a tiny fraction to the stock of homes each year (typically around 1 per cent). The existing dwelling stock is reasonably well identified physically but inexact in terms of its availability to households. Some homes are owned by businesses or other non-household bodies for use by their own staff, while others are retained as second

²² *The desirability of this in household formation terms was indicated in the 1996 Green Paper Household Growth: Where Shall We Live? which stated, 'there is some reduction in existing households every time an older relative goes to live with a younger one. It might be possible to find ways in which this could be made more socially or financially attractive to them and their families than it is now' (paragraph 3.17).*

homes or rented out as holiday homes. Stock may be lost to or gained from such owners as circumstances change.

There can also be gains and losses from conversions, to or from commercial, office, hotel, space over shops or any other use. Conversions and changes of use are omitted from some statistics on housing completions, but included in others. They are generally included, however, in regional monitoring figures derived from local authority sources.

Establishing an accurate record of dwelling stock is crucial. Yet there are significant discrepancies on how many additional dwellings have been provided in the past. This in turn affects how many will be needed in the future. For example, statistics from the DCLG record a net gain in the housing stock in England in 2007/8 of 207,000 homes. This source gives a breakdown of conversions and demolitions prior to 2001 only, after which net additions to the stock are given, but with no breakdown for conversions or demolitions.²³

Further DCLG figures show 168,140 housing completions in England for this period.²⁴ It is unclear whether to attribute this difference to a large number of conversions or under-recording of housing completions. Sources generally omit the additional housing capacity created through extensions to existing homes, which in some cases may be significant. Allied to this is the issue of what were once relatively affordable market homes becoming up-market, unaffordable mansions as a result of extensions. These issues serve to highlight the importance of maintaining an up to date and

comprehensive knowledge of the local housing stock.

5.1.4 Vacancy rates

Closely associated with the size of the existing stock is the assumption made about the rate of vacancy across the whole of the existing stock. Some vacant dwellings remain unoccupied on a long term basis. Many homes are unoccupied only for a short period, however, since some vacancies inevitably arise in the turnover of the stock from one household to another.

An element of vacancy is needed for labour mobility and to enable the housing market to function. There is, however, scope for better management to minimise the time that homes are empty. Reasons for short term vacancy include the following:

- > the previous owner(s) moving house or entering a nursing home, with the property still on the market;
- > death of a single occupant owner. Property cannot generally be sold until a person's financial affairs have been resolved legally, causing a delay in filling the property;
- > repair and refurbishment. An ideal time to effect major works is often between occupants;
- > one household owning two homes in the transition period of moving between them, usually in order to guarantee access to the new home or to avoid the breakdown of a chain of movers; and
- > repossessed homes awaiting new occupants.

²³ DCLG live tables, table 111 conversions and demolitions: estimated annual gains and losses, England, from 1991/92 (February 2009)

²⁴ DCLG live tables, table 209 permanent dwellings completed, by tenure and country (August, 2009)

In 2008 an estimated 3.2 per cent of homes in England were vacant (2008 figures); the majority (88%) within the private sector. Just under half are vacant for less than six months. The number of private sector homes lying empty for more than six months has remained at a fairly constant 1.6 per cent of the private housing stock for some years.²⁵

Although there has been a fall of about 12% in the total number of vacant dwellings over the past ten years, the number has recently started to rise, as shown in Figure 11. The number of empty homes rose by 2.5 per cent from 2005 to 2007 and by 3.6 per cent between 2007 and 2008.

Additional dwellings must be available to allow for the assumed level of vacancy, if necessary being added to the total number required to be built. Very small changes in the vacancy rate have a major impact on the calculation of new dwellings which will remain to be provided. If 1 per cent is normally added to the local housing stock each year, for example, changing the vacancy rate by one percentage point will either add or remove the need for a year's worth of new housing over the plan period.²⁶

In addition to vacancy in the existing stock, allowance should be made for vacancy in the new stock. There can be delays between the date when a new home is technically complete (and counted as such) and the date when the first resident moves in.

The working margin of vacancy assumed by those planning for housing provision can vary, but typical proportions used are 3 per cent in market housing; less in

social rented housing. There are usually market and/or quality reasons for extended vacancy (meaning housing is vacant for longer than six months). Judgements must be made about the scope for and cost of bringing vacant homes back into use, compared with alternatives (demolition, new build or conversion, for example). It is good practice for councils to employ officers specifically to bring empty homes back into use. A number of local authorities have created this role, recognising the benefits this brings not only in additional households housed but social benefits from property in use and economic benefits to landlords and vendors. A recent Audit Commission report²⁷ found that bringing back into use just 5 per cent of empty homes would reduce councils' annual homelessness costs by £1½ billion.

While empty homes are not the whole solution to meeting housing needs, far more could be done to make better use of existing housing and vacant property of all types. Research by the Audit Commission reveals that councils feel pressured into focusing on building new homes. They point out that while 94% of areas prioritised new and/or affordable housing targets in their local area agreements or sustainable community strategies, fewer than a third prioritised targets relating to their existing housing stock even though the latter would bring significant financial savings, environmental improvements and social benefits. Just 6 per cent have a specific objective to bring empty homes back into use.²⁸

5.1.5 Conversions and changes of use

The potential to provide homes from conversions and changes of use should always be considered. These have

²⁵ DCLG, www.communities.gov.uk/housing/rentingandletting/emptyhomes.

²⁶ To illustrate, using figures similar to the 2006-based household projections, suppose an area has 1 million homes in 2006 and is expected to have 1.25 million homes by 2031. This is a growth of 25%, comprising 10,000 extra annually – which is one per cent extra every year for 25 years. If the vacancy rate in the stock is 4 per cent of the 1 million houses in 2006 but this is intended to be reduced to 3 per cent by 2031, the number of empty homes in the 2006 stock will fall from $1\text{million} \times 0.04 = 40,000$ to $1\text{million} \times 0.03 = 30,000$. This is a difference of 10,000 homes, equal to one year's additional supply of homes. If the vacancy rate could be reduced from 4 per cent to 3 per cent before 2031, the saving on the need for new construction could similarly be secured at an earlier date.

made, and probably always will make, an important contribution to housing supply.²⁹ In some parts of the country this contribution is significant. Vacant and underused space above shops and other commercial premises should also be considered as potential sources.

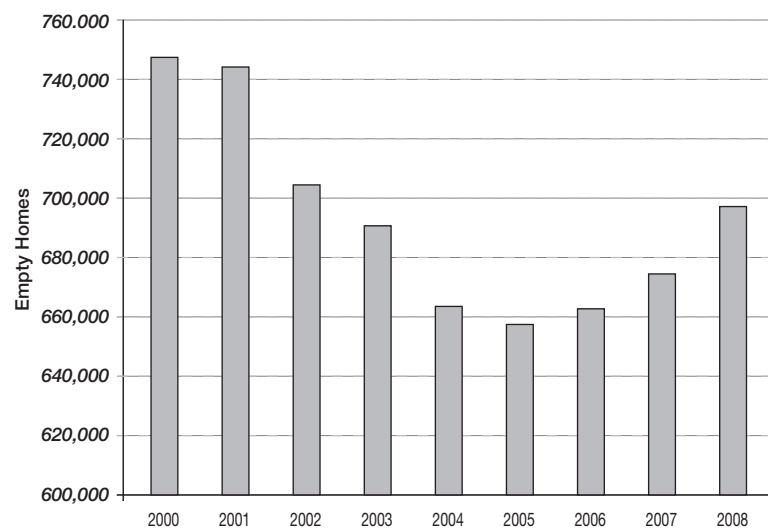
5.1.6 Demolitions and renovation

Creating more attractive homes, whether by replacing poor quality property or by renovating and upgrading to a higher standard, may well stimulate a virtuous circle in the local housing market.³⁰ (If this does not happen, the new construction may simply move the vacancy to the stock which people left behind when they moved to the new housing.)

The process of meeting housing requirements is therefore not simply a matter of building new homes to achieve gross additions to, or otherwise improve the stock, i.e. through replacing it. It is also a matter of deciding how best to use and refresh the existing stock in relation to total demand and need, and the pattern of vacancies. Local housing requirements may be capable of being satisfied with very low net additions to the stock.

In some areas the requirement may be to replace the existing poor quality housing rather than add to the stock. Many areas have a significant number of empty homes which are perfectly habitable and at the same time long waiting lists for public sector housing. The challenge is for public policy and public finance to bring the two together. The Government's Housing Market Pathfinder areas aim to tackle low demand and failing housing markets. Policy in these and other lower demand areas (i.e.

Figure 11: Changes in the number of vacant homes between 2000 - 2008



Source: Empty Homes Agency, taken from DCLG's housing strategy statistical appendix statistics

not just areas officially recognised as low demand) should be tied to housing and planning policy in adjacent areas, so that the limited demand for housing in weaker market areas does not leech away to newly supplied housing nearby.

High vacancy rates may be a measure of too many dwellings in some areas, rather than poor quality or insufficient renovation. Where this is the case, one alternative may be demolition. This may be appropriate in areas with weak housing markets and a clear and straightforward surplus of properties over households (low demand areas), typically due to a sustained loss of local employment, but other factors such as environmental quality and provision of public transport and services also play their part.

Demolishing poorer property could be considered if the local housing market cannot be invigorated and households cannot be enticed to use it. Socio-

²⁷ *The Audit Commission, Building Better Lives, 2009.*

²⁸ *Ibid*

²⁹ *DCLG live tables, table 111 conversions and demolitions: estimated annual gains and losses 1992-2007*

³⁰ *CPRE, Useless old houses?, 2006, suggests an approach which seeks to retain structurally sound housing and tackle dwelling surpluses in other ways.*

economic and environmental factors which created the weak demand need to be addressed, however and demolition should only be considered as a last resort. Removing wholly surplus property may help the market in the remaining stock to function more positively. In these circumstances, housing requirements may well be capable of being satisfied with little or no net addition to the stock.

5.1.7 Backlog of unmet need

Dwelling requirements will be affected by the way in which any backlog of unmet housing need is assessed. The household projections identify households at a series of dates, from a recent to future date, in the case of the latest 2006-based projections, mid-2006 to mid-2031. This identifies net change in household numbers between any two dates.

If housing provision aims only to satisfy additional household growth, it would miss out any housing needs not satisfied at the start of the assessment period. In effect the assumption would be that an equal quantity of unmet need would be carried forward. Although households whose needs had not been met would largely be different in future years from those households currently with unmet needs, simply carrying forward a quantum of such needs would be widely viewed as lacking in aspiration to secure improved housing opportunities.

On the other hand, such unmet needs arise largely because of insufficient investment in state-subsidised housing (if households had enough money they could meet their needs in the market). Clearing the backlog will require a large increase in funding for affordable housing. This is a

major challenge for any Government. Identifying the backlog of unmet need is an imprecise science. One source of information is local authority waiting lists. These show households who have put their names forward for social housing (whether provided by the council, or a registered social landlord), but have limitations for assessing requirements. Sources such as the decennial census and the Survey of English Housing reveal the following categories of need:

- > households (including would be households) who lack their own dwelling who depend on the social rented sector to obtain self-contained accommodation:
 - families accepted by local authorities as homeless and housed in temporary accommodation (e.g. in bed and breakfast establishments, hostels or refuges);
 - concealed households³¹ preferring separate accommodation; and
 - households in non-self-contained accommodation, i.e. involuntary sharing households, including from the private sector.
- > households in the private sector (owner occupiers and tenants) whose accommodation is unsatisfactory (e.g. too small in relation to household size and composition) and who depend on the social rented sector to resolve this; and
- > social rented sector tenants whose accommodation is unsatisfactory (e.g. too small, or unsuited to disabled or older people or families with young children).

³¹ See section 1.2.

Concealed households include households that can be expected to form independently but who are unable to do so, usually for economic reasons.

Identifying the backlog of housing need among households in overcrowded or unsuitable conditions is not straightforward, not least because it requires qualitative rather than quantitative or numerical judgement. Some households require homes of a different size (smaller as well as larger) or type rather than numerically additional homes (so might not count as needing extra construction). Enough suitable homes of the right size and type in the existing stock to meet their needs is unlikely to ever be available (which would imply a requirement for additional building). Estimating backlog requires judgements to be made on the threshold beyond which an existing dwelling is considered sufficiently unsatisfactory for a household to merit alternative accommodation.

The mismatch between existing dwelling types and sizes and households looking for homes extends beyond overcrowding and dwelling size, and varies by location. For example, many cities now have too many two-bedroom flats in blocks of flats, but may have insufficient flats for families or two-bedroom flats with a large floor area suited to older people looking for independent living accommodation close to services. In more rural and suburban areas, there may be a disproportionate number of larger houses, with much new development taking the form of executive market housing, or smaller houses being extended into larger ones, with the result that local people cannot find or gain access to affordable accommodation, whether in the state or market sector.

The backlog may also include conjectural needs, i.e. households which would have formed had accommodation been

available for them (e.g. couples who wish to marry but where each partner is living in cramped accommodation with their parents). However, this too requires judgement, as some would-be households might still not actually form even if the perceived deficiency in housing supply were overcome. More generally, there is a risk that some households will be double-counted in both the backlog and the projected additional households.

5.1.8 Summary

Considerable uncertainty surrounds future household formation and the housing requirements which flow from it. Household projections carry forward trends identified at the time, but these can soon become out of date and therefore need to be examined closely and frequently. Housing requirements are highly sensitive to matters such as:

- > the propensity for people to form households (e.g. how many married couples will divorce/separate, what proportion will remarry/re-co-habit, how long will elderly people remain in their own homes or young people stay in the parental home, what is the size of the institutional population?);
- > net migration rates;
- > vacancy rates in the existing housing stock;
- > local demographic trends – institutional population as well as household population, e.g. students, elderly, prison population; and
- > the state of the economy.

5.2 Getting the right number of dwellings of the right type in the right place

The process of making sure that everyone has a suitable home will need to resolve a series of frequently competing pressures. The Government's vision, as stated in the 2007 Housing Green Paper, is for

'everyone to have access to a decent home at a price they can afford, in a place where they want to live and work' (*Homes for the Future: More affordable, more sustainable*, July 2007).

Providing the right number of homes in the right places, to be occupied by the households for whom they are suitable

Box 5: How does the institutional population affect housing requirements?

Careful assessment of the number of people in institutions and of trends in the size and composition of these populations is needed. For example, the number of people housed institutionally will be affected by decisions about the size of the armed services, the prison population and the number of young people expected to enter further and higher education. These will be affected by the economic climate, societal and political preferences. Accommodation for armed services families may be released for use by private households, while the intended increase in student numbers – some in halls of residence – may not occur.

In calculating the household projections an assumption is made that 'the institutional population stays constant at 2001 levels by age, sex and marital status for the under 75s and that the share of the institutional population stays at 2001 levels by age, sex and marital status for the over 75s' (DCLG, Updating Communities and Local Government's Household Projections to a 2006 Base: Methodology report, March 2009). This may not hold true in practice, either at a local or national level.

Student numbers pose particular difficulties. The decennial census historically enumerated students at their home address. In 2001 this was changed to account for them at their term-time address. The number of students in further and higher education, and the proportion who live in halls of residence rather than in dwellings off-campus, will affect the balance of the institutional and household populations. It is important to recognise, for housing policy purposes, that students often occupy a significant number of dwellings around colleges and universities. Some of these dwellings would become available to non-student households if more halls of residence were constructed. Household projections in individual areas should therefore be analysed in the light of local knowledge and data taking into account matters such as:

- > accommodation building programmes of colleges and universities;
- > anticipated growth in overall student numbers at each college and university; and
- > the proportion of students at each college and university who live at home.

requires careful judgement informed by an appraisal of a wide range of evidence: economic, environmental and social. This is an iterative process, requiring policy judgement, not a simple tick-box exercise.

Having decided the housing requirements to be met in the years ahead, as outlined in the previous section, arrangements must be made to secure the provision of dwellings to satisfy those requirements. The type of site – urban, rural, greenfield or brownfield – and tenure, (for sale or rent) are key considerations, but beyond the scope of this report. Key issues which should be taken into account when providing new dwellings are discussed in the following sections.

5.2.1 Household size and dwelling size

One of the most striking trends in the household projections, and the actual household figures, has been the decline in average household size over the past 50 years or so. The trend is projected to continue. This is indicated in Table 4.

Household sizes in England are by no means atypical for western Europe and Scandinavia. These projections should therefore not be considered implausible. As household sizes have declined, housing space per person has risen. In part, this reflects the desire for more space which accompanies prosperity, but it also reflects the rise in divorce/separation, and practical considerations where former partners have children.

The implications of this for housing supply should be approached with caution. If all other things were equal, smaller households might satisfactorily

Table 4: Average household size in England

Year	Size
<i>Actual</i>	
1961	3.15
1966	2.98
1971	2.91
1976	2.76
1981	2.70
1986	2.55
1991	2.48
1996	2.40
2001	2.36
<i>Projection</i>	
2006	2.32
2016	2.23
2026	2.16
2031	2.13

Source: DCLG Table 401, Household estimates and projections, UK, 1961-2031, November 2009

be accommodated in smaller dwellings (e.g. with fewer bedrooms and lesser floor areas) than would otherwise be appropriate. While decision-makers need to be alert to the growth in one person households, declining household size and the implications for housing requirements, household size is not the sole force determining dwelling size.

Most households seek as much space as they can. In the private sector this is limited by what households can afford or choose to spend, while in the subsidised sector households are given the space which the state decides to supply (ideally in relation to the state's assessment of their needs). In the private sector, whether owned or rented, wealthy households unsurprisingly occupy large homes and the poorest

households may be overcrowded. In the state sector too there are mismatches. Children may grow up and leave (with parents then having more space) or, alternatively, a young family may have more children and be unable to move to a larger home (and so become cramped). People are generally prepared to trade space, i.e. live in a smaller home, for a more convenient or attractive location.

5.2.2 Under-occupancy

There is limited scope to constrain under-occupancy of dwellings in the private sector, where households can choose their dwelling size in the market. Incentives and the availability of attractive alternative housing options can, however, play a role here.

5.2.3 Overcrowding

Households in the private sector that meet the Government definition of overcrowded may be eligible for accommodation instead in the subsidised sector. Whether they will receive it will depend on how bad their circumstances are compared with other claimants, and on the amount of suitable stock which becomes available. In practice, private sector households in need will be competing with other overcrowded households in the subsidised sector. In some areas there is a major shortfall of larger dwellings to meet the needs of households currently in overcrowded conditions.

Although overcrowding on the Government's measure has been improving in the private sector (it was down to 1% in 2001), little change has been achieved in the social sector over the years, with 4% of housing association

tenants and 6% of local authority tenants being in overcrowded homes in 2001. This is a significant problem, supplemented by rising numbers of households on housing waiting lists and in temporary accommodation. The shortage of larger homes in the social sector can be attributed to the following main reasons:

- > few four or more bedroom dwellings are currently built in the social sector, despite the need for them, because they are relatively expensive and larger numbers of smaller homes meet targets and are more attractive to politicians; and
- > the Right To Buy scheme has caused larger and better quality homes to be lost from the social stock more quickly than smaller homes.

Looking across housing needs as a whole (not just the increment represented by the housing requirements identified over the coming years), the urgency is for the provision of large dwellings in the subsidised sector, in most parts of the country. If the needs of larger households were met, smaller dwellings, especially in the subsidised sector, would then become available for appropriately-sized smaller households. There is another group whose housing needs warrant particular attention: the elderly.

5.2.4 An ageing population

Almost half (47%) of the projected growth in population between 2006 and 2026 will be among people aged 65 and over: see table 5 below. The median age of the population is expected to reach 41.8 years by 2031. Increased life expectancy leading to a rise

in the number of elderly people is one of the principal drivers of household growth.

The UK's ageing population (see table 1, chapter 2) and growth in single person households are key considerations. Unsurprisingly, the two are related. The growth in single person households is predominantly in the older age groups. The 2006-based household projections suggest that, by 2031, 25% will be aged 75 and over, 43% 65 and over and 59% 55 and over (see table 5 below).

These findings have profound implications for new housing provision. They suggest that around one quarter of the growth in single person households (41,000 extra every year) will be among people needing ready access to nearby services in neighbourhoods and buildings designed for easy pedestrian access and mobility.

In areas where the profile of the existing housing stock is inadequate, provision will need to target specifically the needs of elderly households. Attention will need to be paid to the location of specialist housing

provision, such as sheltered homes, nursing homes and retirement villages, as well as the provision of accessible accommodation close to day-to-day services, such as shops, public transport and community facilities, to accommodate the growing number of older people.

5.2.5 Affordable housing

It is crucial that there are mechanisms in place for ensuring that the dwellings supplied are those which are required and that households who need them obtain access to them. Without careful management of the process, however, there is a risk that dwellings of the wrong type will be built to satisfy a purely numerical target or market demand, and people who most need homes will be squeezed out by those best placed to pay for them.

Regional and local plans generally distinguish the proportions of overall housing supply which should be in the market sector and affordable housing. The latter usually requires some form of state subsidy. Unfortunately, the means of

Table 5: Single person households by age group

Age group	Households in 2006 ('000)	Households in 2031 ('000)	Change in households 2006-31 ('000)	Annual average increase ('000)	Change 2006-31 in total households (%)
Under 25	248	290	42	2	1
25-34	815	1,088	273	11	7
35-44	1,017	1,695	678	27	17
45-54	940	1,626	686	27	17
55-64	1,059	1,726	667	27	16
65-74	1,052	1,766	714	29	18
75 and over	1,692	2,708	1,016	41	25
Total	6,822	10,899	4,077	163	100

Source: DCLG, Household projections to 2031, England (2006-based), table 3, March 2009

achieving the supply of houses in these proportions has long been inadequate. The target proportion of affordable housing specified in regional plans has never been achieved. While this is due to a lack of funding, the shortfall has been tolerated through the planning system, which itself could do more to secure affordable homes (Department for Environment, Food and Rural Affairs, *Affordable Rural Housing Commission, Final Report*, 2006). During the mid 1990s to 2007, there was considerable cross-subsidy of affordable housing on larger private sector housing sites. This was not enough to bridge the gap between targets and the amount which could be achieved with the Government's funds. The failure to meet targets at a time of prosperity does not bode well for the chances during an economic downturn.

Without a change in direction, from the housing sector and Government, the current failure to satisfy housing needs appears certain to persist. The likelihood of the private sector building its own share of the national housing target is remote, as is cross-subsidy to provide affordable housing on the scale required. While we have seen improvements in recent years, as yet, there are no serious Government proposals for increasing affordable housing provision above recently achieved levels, though some funding allocated to future years is being brought forward. Without a radically different approach, the expectation must be that sufficient affordable housing will not be provided, the needs of households unable to access market housing, to rent or buy, will remain unmet and the backlog of unmet need will continue to grow.

5.3 How should housing requirements inform housing land supply?

The Government's policy of ensuring a decent home for everyone is easy to support. This should not be considered the same as simply allowing the market to decide how many homes are built and where. That would be a recipe for supplying the most profitable homes rather than meeting needs, building preferentially in stronger market areas, rather than the weaker markets needing invigoration, and targeting already attractive environments rather than those that might be made more attractive with the right kind of development.

The task of the planning system is to secure the pattern of supply which houses the nation and achieves a wide variety of public interest objectives, including protecting areas from over-development, while still attracting investment in new housing. The planning system usually sets different priorities from those of the market, encouraging housing supply in some areas and discouraging it in others.

Allocating more land for affordable or market housing during an economic downturn will make no difference to housebuilding rates since the problem is not a shortage of land but lack of credit, capital and confidence. In these circumstances, over-allocating land simply to try to enable aspirational housebuilding targets to be met would be pointless.

6. Other Ways to Assess Housing Requirements

The demographic approach to estimating future housing requirements, based on the Government's household projections, is not the only one available. The other main methods include linking housing supply to (a) the needs of the workforce anticipated to materialise in support of projected economic growth, and (b) housing affordability. These are sketched out below. Both methods appear even less reliable than demographic household projections, for the reasons given. It is beyond the scope of this report to consider these approaches in detail and readers are referred to other sources for further information.

6.1 Projected economic and jobs growth

Dwelling requirements have for many years been derived from predicted economic growth and its location¹². This generally increases demand for labour. As the workforce expands, so the number of additional households can be expected to increase. Calculated dwelling requirements will depend on assumptions about growth in the wider economy, and particular employment sectors, the number of men and women of working age seeking employment, changes in technological and business practices and levels of inward investment.

Strategic planning bodies aim to reconcile economically-derived assessments of housing need with demographic assessments. Deterministic models of housing need based on economic development assumptions should be examined carefully, since the relationship between employment, economic growth and housing is not straightforward. A

planned increase in the workforce does not necessarily lead to more households. Economic growth does not always increase employment; depending on the sector, technological development or changes in working practices, it may mean fewer jobs. It is important, therefore, not to assume any direct relationship between economic and employment growth and household growth. Key considerations are:

- > skills training to develop a skilled workforce locally may be an alternative to in-migration of skilled workers;
- > the workforce needed may be able to commute to an area rather than reside locally, or may do so anyway regardless of whether or not new homes are built;
- > unrealistic forecasts may be made about economic growth, job creation, unemployment, and the scope for local unemployed people to access new jobs rather than inward migrants;
- > in areas of high demand the anticipated workforce may not be able to access new homes if they are outbid by wealthier households who work elsewhere; and
- > developments in communications technology and working practices may increase the scope for home working.

A further problem with the economic-led approach is that it relies on long range forecasts of economic performance. As well as the inherent uncertainty in these forecasts, these tend to be over-optimistic. While there is no doubt a business case for being optimistic, running models on

¹² For example, the South West draft Regional Spatial Strategy Incorporating the Secretary of State's Proposed Changes (2008), seeks to align jobs growth with new housing provision based on housing market areas and travel to work areas. Forecast jobs growth in the draft Regional Spatial Strategy is based on achieving regional economic growth (Gross Value Added) of 3.2 per cent per annum throughout the life of the plan, i.e. 2006-2026.

unrealistically high forecasts would indicate the need for more new homes than is actually the case. A detailed critique of the job-based approach to household projections has been carried out by Chris Elton (*Assessing the Draft Regional Spatial Strategy Phase 3 report*, CPRE South West, 2006). His report demonstrates how small changes in economic growth assumptions can make a big difference to projected dwelling requirements. While his study focused on the South West, there are clear implications for the country as a whole where several planning authorities adopt this approach.

The National Housing and Planning Advice Unit (NHPAU) commissioned consultants, Experian, to advise on national and regional dwelling requirements based on economic projections (*Regional household forecasts and scenarios*, March 2008). Experian's national forecast makes assumptions for population growth, employment rates, the full-time/part-time mix of employment and productivity growth. For regional projections, county shares of national employment are aggregated to regions, together with assumptions about regional productivity, rates of inward investment, infrastructure provision and changes in European funding.

The model allows for a relationship between unemployment rates, house prices and migration, plus change in international migration. All totals are controlled to (i.e. adjusted to ensure compliance with) the national macro-economic forecast. The baseline forecast assumes 2.5 per cent annum growth in Gross Domestic Product. Experian's advice is subject to a series of statistical

limitations which severely restrict its utility in policy-making. For example, two of its modelling methods suggest the results are pre-defined and there is a lack of information about variability and uncertainty in the data. These shortcomings are examined in Appendix D.

6.2 Affordability targets

Following recommendations made by the economist, Kate Barker, (*Review of Housing Supply: Final report*, HM Treasury, 2004), the Government has focused attention on housing requirements towards improving affordability in market housing. This is wholly distinct from providing more affordable housing (i.e. in the subsidised sector) which remains a key, but separate, consideration. The underlying rationale of the affordability approach is that if enough houses are built, their price will fall (at least in the longer term) and more households will be able to afford to buy or rent a home that meets their needs. As affordability improves, so the theory goes, households will be able to move from the assisted sector to market housing to meet their needs. The principal strategy for bringing this about is to raise housebuilding targets and require planning authorities to make more land available for housebuilding.

The affordability model (also known as the Reading Model) was first developed by a team led by Geoff Meen at Reading University following a commission by the Office of the Deputy Prime Minister. (Meen et al, *Affordability Targets: Implications for housing supply*, 2005). The way to improve affordability is calculated by the Reading Model to depend on building large numbers of dwellings in higher-priced areas. This will have both direct local

effects on house prices and a ripple effect across regional boundaries.

The Reading Model has been further developed by the NHPAU in its advice to ministers (*Meeting the Housing Requirements of an Aspiring and Growing Nation: Taking the medium and long-term view – advice to the Minister about the housing supply range to be tested by Regional Planning Authorities, 2008* and *More Homes for More People: Advice to Ministers on housing levels to be considered in regional plans, 2009*). The NHPAU explores a range of housing supply scenarios in the light of regional and national affordability targets set out in HM Treasury's Public Service Agreement 20.³³

Overall, the affordability method would require more houses to be built than indicated by the household projections in southern England, but fewer houses than indicated by the household projections in the Midlands and northern England. There are major flaws in this approach, however, particularly with regard to how the planning system is expected to apply it and its implementation by the housebuilding industry. A detailed examination of this approach and its limitations are given in *Planning for housing affordability* (CPRE, 2007).³⁴

³³ *The implausibility of this approach and the weaknesses in the NHPAU's case are examined in: Green Balance, Affordability and Housing Supply: A review of the implications for the West Midlands of the NHPAU recommendations, March 2009, West Midlands Regional Assembly.*

³⁴ *Green Balance, Planning for Housing Affordability: Why providing more land for housebuilding will not reduce house prices, CPRE, 2007.*

7. Are There Any Limits to Household and Housing Growth in England?

The UK has one of the developed world's highest population densities (the size of the population in relation to land area). Average density was 248 inhabitants per km² in 2005, second only to Japan (338 inhabitants per km²) among the G8 countries.³⁵ One consequence of this is that land is subject to competing pressures and its use is hotly debated and contested.

The Minister for Immigration, Phil Woolas MP, commented in October 2008 that he wished to see the population of the United Kingdom rise to no more than 70 million (from about 61 million at the time). Setting a limit either to population or to the number of dwellings the nation needs may appear attractive to some, but highly controversial to others. It would certainly provide a new perspective to land use planning.

7.1 Population growth and the environment

There have long been concerns about the effect growth has on the character and quality of places and their ability to adapt and accommodate change over the long term. What is unclear is the extent to which effects can be attributed to population size as opposed to people's lifestyle or behaviour. Views on this and how we should respond differ.

On the one hand, groups such as Migration Watch and the Optimum Population Trust call for limits on population and immigration. Others, such as Friends of the Earth and the commentator George Monbiot, maintain population growth is not the main cause of environmental degradation since

the richest 20% of people consume 86% of the earth's resources and have the lowest birth rates. They say even if growth stopped tomorrow this would not remove pressures on the environment (Friends of the Earth, Briefing Note, 2006). Wherever the reality lies, it is clear that it is impossible to consider seriously the issue of population and household growth without at the same time examining lifestyles, consumption and the wider global context.

The effect any given population has on the environment depends not only on its size but its composition and geographic distribution. Household size, type, age, lifestyles, consumption and development patterns are crucial factors. As incomes rise with age, so consumption tends to increase. Overall, larger households tend to consume less per head than smaller households, all other things being equal. Where we live matters too: the average resident of Europe, America or Australia has a far greater effect on the environment than the average person living in Africa. Disparities are likely to be greater among poorer residents in respective countries. As Monbiot stated, 'people breed less as they become richer, but they don't consume less; they consume more'.³⁶

Evidence suggests that lower population density leads to higher energy use and carbon dioxide emissions. The harm caused by low density development is well documented and includes land fragmentation, loss of farmland, natural resource degradation, social decline and watershed damage.³⁷ Somewhere with a fragile ecology will be less able to sustain any given population without harm than other areas.

³⁵ ONS, *Social Trends* 39, 2009

³⁶ The Population Myth, published in the *Guardian*, 29 September 2009

³⁷ *European Environment Agency, report no 10, Urban Sprawl in Europe: The ignored challenge, 2006. This research highlights that while Europe's population has grown 33% since the mid-fifties, EU cities have expanded 78%. The Scatter Project, Sprawling Cities and Transport: From evaluation to recommendations, EU Fifth Framework Programme.*

7.1.1 Ecological footprint

The principles of ecological footprinting³⁸ demonstrate that the English way of life is dependent on the proceeds of far more land than England's actual land area. Research by WWF has shown that by the mid-2030s, the global population will need the equivalent of two planets to maintain lifestyles, if demands on the planet (in terms of land needed for growing food, wood products, water and other resources we consume) continue at the current rate.³⁹

'If everyone in the world lived as most Europeans do, we would need three planets to support us. People in other parts of the world are consuming natural resources and polluting the environment at different levels. For example, the average North American lifestyle requires the equivalent of five planets. China, although currently at the one planet level, has such a large population that its rapid development is likely to lead to a massive increase in its impact upon the planet's natural resources.'

(WWF and Bioregional, One Planet Living).

According to the Optimum Population Trust, the UK could support a population of about 17 million if we relied solely on our own land resources – 27 million with big cuts in carbon emissions, 40 million under a zero-carbon scenario – but still far short of the current 61 million residents. In short, we sustain our present way of life by placing ever increasing demands on other countries. In doing so, we export our environmental damage and diminish prospects for less prosperous nations to achieve a reasonable standard of living or even meet basic needs for water, food and shelter.

Finite resources, such as fossil fuels and industrial minerals, on which our present lifestyles depend, cannot continue to be obtained forever. Globally there are environmental limits which if breached will threaten life on earth: loss of the ozone layer, depletion of natural resources and concentrations of greenhouse gases are examples. It may not always be possible to identify precisely these limits, but they exist nonetheless.

The United Nations estimates that by 2050 the world population will exceed 9 billion. While it seems reasonable for everyone to aspire to a modest standard of living, or at the very least have their basic needs met, extending levels of consumption and standards of living enjoyed by industrialised countries to all nations is not an option since it would exceed resources available and have catastrophic environmental consequences.

Establishing a basis for a sustainable population size in England is as much a political judgement as it is a scientific one. The threshold beyond which the resident population cannot sustain itself depends on the yardstick by which sustainability is measured. Views differ greatly on this. Measured against eco-centric principles, in which natural environments retain their full extent and biodiversity, that threshold has long since been passed in England.

While some argue that further economic gain can be extracted from the environment without exceeding a tipping-point and causing a cycle of deterioration, this approach has three immediately obvious limitations. Firstly, the ability of technology, ingenuity and efficiency to continue achieving more

³⁸ *Ecological footprinting is a tool developed by the Global Footprint Network. It measures how much land and water is needed to produce the resources we consume, and to absorb the waste we produce.*

³⁹ *WWF, Living Planet Report, 2008*

with less (and thereby sustaining a larger population) cannot carry on indefinitely. There will come a point where growth in consumption outweighs gains in efficiency. Secondly, environmental changes needed to sustain a new equilibrium may be unacceptable where they entail damaging the qualities which originally made a place special or even capable of supporting life or where they are irreversible. Thirdly, it is not always known where this tipping-point is until it has been passed. This suggests we would be wise to adopt a precautionary approach. A view must be reached – and this is as much a political as it is a scientific judgement – about the extent to which changes are so damaging and irreversible that they should not be tolerated or that what is at risk is so essential, unique or incapable of replication elsewhere that change should not be accepted.

7.1.2 Environmental capacity

Lack of agreement about environmental limits and how they should be measured does not mean such limits do not exist or that we should not take them seriously. The concept of carrying capacity can usefully serve to highlight the relationship between populations and the resources needed to sustain them. Although some maintain the concept is better suited to protected habitats where the priority is conservation than it is to complex man-made environments in open socio-economic systems (Robin Grimble, *Sustainable use and Demographic Determinants of Natural Habitats and Ecosystems management*, 1996) the idea deserves further consideration, not least because the capacity of the environment to accommodate population growth and

development concerns all of us. But as Michael Jacobs made clear in his study, *Making Sense of Environmental Capacity* (CPRE, 1997), it is not possible to reach a view on environmental capacity purely on scientific grounds as it requires value judgements to be made:

'The thresholds become determinants of decision-making through political judgement and social choice. This judgement is about value: about what society regards as the acceptable form and rate of environmental change. Environmental capacity must therefore be determined by the democratic process, in which formally constituted bodies seek the participation and views of the people affected.'

This becomes particularly apparent at the local level, where major environmental losses may be treated by decision-makers as purely local and worth it for the wider benefits deriving from a scheme or, conversely, as politically unacceptable because of the level of public attachment to the threatened environment. Local responses to pressures for housing growth are similarly mixed. The distinctive qualities of some places have been stoutly defended; elsewhere protecting local environments may not be accorded the same importance. The availability of good scientific evidence may sharpen the debate but will not remove it.

There are also wider considerations concerning how we define quality of life. A growing body of research demonstrates that once basic needs, for example, for food, water, shelter and employment, are met, consuming more does not make people happier.⁴⁰ Quality of life is

⁴⁰ *New Economics Foundation, Making Indicators Count: Using quality of life indicators in local governance, 2003.*

inextricably linked to matters such as the neighbourhood people live in, family, sense of community, access to a decent home and employment.

7.2 Ways forward

One response to the above issues is to minimise the demand for land, energy, materials and water arising from the construction, use and location of dwellings. Housing development should never be pursued in isolation, but form part of broader efforts to foster sustainable patterns of development and lifestyles. We need to question whether a continued decline in average household size is either inevitable or desirable⁴¹ – on social, economic or environmental grounds – and the extent to which it reflects an increasingly fragmented society that is ill at ease with itself.

Urban renewal, recycling land and buildings and efficient land use, through compact, dense development are all ways to minimise the impact of population growth on the environment and in some circumstances derive benefits, e.g. retaining or attracting residents and skilled labour.

Within England we need a more balanced approach which seeks to make best use of resources across the country as a whole, rather than focusing the majority of growth in the wider South East.⁴²

How and where we live profoundly affects resources and prospects for conserving them for future generations. It is beyond the scope of this report to explore the broad ramifications of population and household growth, beyond highlighting,

the need for public policy to pay more attention to these.

The Royal Commission on Environmental Pollution's present study⁴³ on the environmental impacts of demographic change in the UK should shed light on this important topic. This study covers the period up to 2050 and is looking at a range of factors such as changes in the ageing population, spatial distributions, family and household structures; population movements within the UK (urban and rural) and implications of these demographic trends for water use and quality; energy use; air quality; food, waste; landscape, land use and biodiversity.

⁴¹ By 2031 18% of England's total population is projected to live alone, compared with 13% in 2006. DCLG, Household Projections to 2031, England.

⁴² CPRE, Even regions, greener growth, 2001.

⁴³ Royal Commission on Environmental Pollution, *The Environmental Impacts of Demographic Change in the UK*, 29th Study

8. Conclusion

In the same way that the market should not be allowed to dictate public interest in housing supply, neither should household projections. The household projections simply express what would occur should recent trends in household formation continue.

The projections are not predictions and are a poor indicator of housing need, beyond the short term. Nor do they require the provision of housing where it has been provided in the past. That is a judgement best reached by evaluating a range of considerations through the planning system. Just as the market provides only economic signals, household projections provide only demographic signals. The planning system needs to take these into account, alongside other evidence, without succumbing to the temptation to take any one signal as the ultimate arbiter of what is best or necessary.

Household projections are not forecasts or targets. Reality may well turn out to be different. Significant changes from one projection to the next, show that household projections are a work in progress rather than a definitive statement, and likely to be updated more frequently than planning policies. This argues for clear strategic thinking through the planning system about the kinds of places where we want to live and how to secure them, guided in the broadest of terms by the household projections and other evidence, particularly concerning environmental effects.

8.1 Plan, monitor and manage

Good planning, through a plan, monitor and manage approach, will always build in the scope for adjusting to circumstances as time passes. Household projections should be treated with caution and assessed in the light of up-to-date local evidence. There are no certainties in housing supply however much effort is put into estimating even short term future needs.

The over-supply by the market of executive housing, and more recently, one and two-bedroom urban flats, in some areas (for example, where the overriding need is for affordable housing), shows how easily misjudgements can be made. The principal response of the planning system to the household projections, and the assessments of housing need derived in part from them, should therefore be one of caution – with increasing caution being exercised the further ahead one looks.

Household projections can indicate a direction of travel, but numbers of households in an area at a date far into the future are just that – projections – and should be viewed as conjecture tied to assumptions, rather than an inevitable outcome for which plans must be laid immediately. Economic conditions, social changes and migration trends can depart remarkably quickly from past trends, so the planning process must be alert to these and, if necessary, adjust accordingly.

Recommendations

The following recommendations draw on material in this report. Although this report has focused on housing, the projections are used to inform, and justify, a wide range of services and levels of future development.

Their correct use in the preparation of local and regional development plans is fundamental: in the evidence base (Housing Market Assessments, for example), development plan/Local Development Framework options and policies and at Examinations in Public (EIP). No assumption should be made that EIP panels or inspectors are familiar with these points: rather, arguments should be explained and, where necessary, evidence to support them presented.

- 1) The projections should not be used as forecasts or targets. They are a tool, not a policy.
- 2) All projections should be accompanied by a sensitivity study to test the effect(s) of different assumptions.
- 3) Caution should be applied in interpreting the projections. Projections are based on the assumption of continuation of past trends. If past trends have changed radically then the projections are not meaningful.
- 4) Care should be taken in adjusting regional projections to the national totals since this reduces their validity for planning at the local and regional level.
- 5) Projections are prone to circularity, particularly when an earlier projection has been misused as a target. Any interpretation of future projections should be mindful of this possibility.
- 6) The projections are inherently unreliable and change frequently, therefore planning for the longer-term should always take into account contextual and up-to-date information.
- 7) Changes in circumstances should be allowed for. The patterns of new housing development indicated by the projections are neither inherently right nor necessarily desirable.
- 8) The projections are a work in progress rather than a definitive statement, and likely to be updated more often than planning policies. A plan, monitor and manage, rather than predict and provide, approach should be adopted since this will be more responsive to changing circumstances and needs.
- 9) Housing supply should be informed more by housing needs than projections. This requires regular housing needs assessments and a comprehensive, up to date knowledge of the existing housing stock.
- 10) The contribution of existing buildings to meeting needs should always be carefully considered by means such as empty homes surveys, measures to reduce under-occupancy and potential conversions from existing housing or other types of property.
- 11) The location of new housing does not have to reflect precisely where household growth is projected to occur. Planning is a process of co-ordinating land uses and should

aim to foster sustainable patterns of development, not simply reinforce previous trends and patterns of household change.

- 12) Policy in areas of lower housing demand should be linked to housing and planning policy in adjacent areas, with a view to ensuring that limited demand for housing in weaker market areas does not leach away to newly supplied housing nearby.
- 13) Population and household projections should be published and processed as early as possible to give planning authorities reliable guidance. An eighteen-month or two-year delay before projections are published means that recent events, however important, cannot be taken into account.

Responding to Frequently Used Arguments or Common Misconceptions

The projections are the best estimates of housing need we have

- (i) They are not measures of housing need, but projections of past trends.
- (ii) Attention should be paid to changes in circumstances and policies which may have occurred since the projections were issued.
- (iii) The policy response should be discerning, not automatic, and ask: what are our policy objectives for this place? What kinds of houses (or flats or other type of accommodation) are needed and should be built, where, when and under what constraints?

The projections are independent and not policy led and should be treated as facts

- (i) They are the product of past practice and experience, led or shaped in part by policy at the time.
- (ii) Some aspects of the projections carry significant policy judgement, whatever assumptions are made, especially migration rates.
- (iii) They are as good as the assumptions which went into them. They are a matter for review, not a fact to be accepted without question.

We should enable the projections to be met, even if events move on

- (i) Meeting the projections would turn them into self-fulfilling prophecies.
- (ii) The projections are not targets.
- (iii) This approach would amount to a failure of vision. Planning is about shaping places and the pattern of housing supply and responding to circumstances.

- (iv) There is nothing inevitable about the projections turning out to be right. Land must be allocated, permissions granted and homes built to allow the projections for particular locations to materialise. This is intervention every bit as much as building different numbers of different dwelling types in different places.

Other projections, like the Chelmer Model, produce similar outcomes

- (i) Models like the Chelmer Model answer 'what if...' kinds of question. They are not formal projections.
- (ii) Those models produce outcomes which reflect the assumptions fed into them. These may be similar to, or depart from, the official Government household projections according to how different those assumptions are.
- (iii) Projections of household formation based on anticipated workforces or on affordability targets in market housing are conceptually very different from demographic forecasts. Any similarity between their outcomes is coincidental. Assumptions in those models may even have been adjusted to produce similar outcomes to the Government's household projections.

The projections tend to be lower than figures based on affordability

- (i) The number of houses required to be built to achieve particular affordability targets, as issued by the NHPAU, tend to be much higher than the official household projections in the south of England but more similar in the Midlands and North.
- (ii) In theory, the affordability approach

depends on bringing down house prices (and thereby improving affordability) by building a surplus of houses especially in high pressure areas. This surplus is deliberately greater than the number of households expected to exist to occupy those houses.

The projections are not used slavishly: planning procedures assess them

- (i) This would be an acceptable comment if it was true; however, it often is not.
- (ii) Assessment usually needs to be more rigorous. Planning procedures frequently take the household projections as their starting point, but then treat them as targets for housing supply purposes without first either adjusting them to estimates of housing need, taking account of the potential to meet needs within the existing housing stock or applying planning policy objectives to them.

Acronyms

DCLG Department of Communities and Local Government

GAD Government Actuary's Department

IPS International passenger survey

NHPU National Housing and Planning Advice Unit

ODPM Office of the Deputy Prime Minister

ONS Office for National Statistics

RES Regional Economic Strategy

TIM Total international migration

Appendix A: Uncertainty in the Population Projections

An issue that calls into question the reliability of the projections is the long delay that occurs between the base year for calculations and the date projections are published. This means projections are always out of date by the time they are issued. For example, the ONS 2006-based population projections were 18 months out of date, and DCLG's (2006-based) household projections two years out of date, by the time they were published.

The significance of this will depend on whether the underlying assumptions and trends on which the projections are based continue to hold true. During the five year period used to calculate the population projections the level of migration was historically high. Rates have now fallen to more modest levels. This suggests that key assumptions on migration in the population and household projections are invalid. The system for generating projections ties analysts to using two-year-old data with very limited scope for taking into account later changes without disrupting the system.

Figure A1 shows the past history and projections of the private household population. It is clear that between 2003 and 2004 there was a change in the base data, or assumptions, giving rise to an increase in the projections. The actual change for 2004 is not large, but the gradient has been increased and the 2026 projection is almost 1 million higher.

GAD has published a set of 2006-based population projections, but these include institutional residents as well as private households. However, a comparison with the projections shown in figure A1 is informative. No figure was given for

Figure A1: Population projections based on data to 2003 and 2004

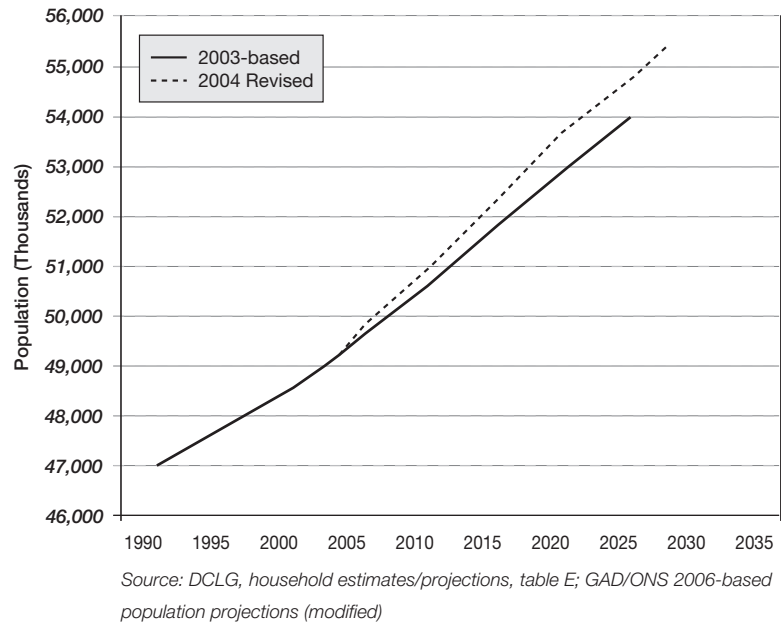
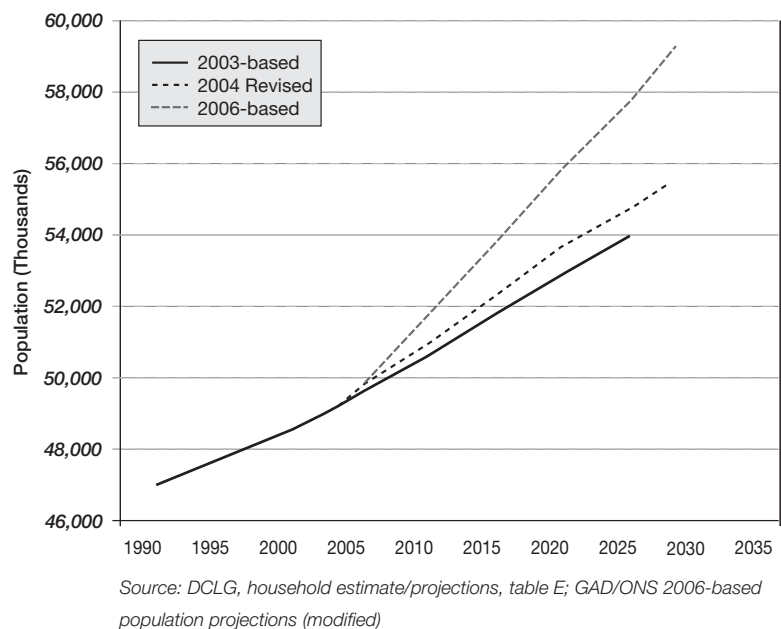


Figure A2: Comparing the 2003-, 2004- and 2006-based population projections



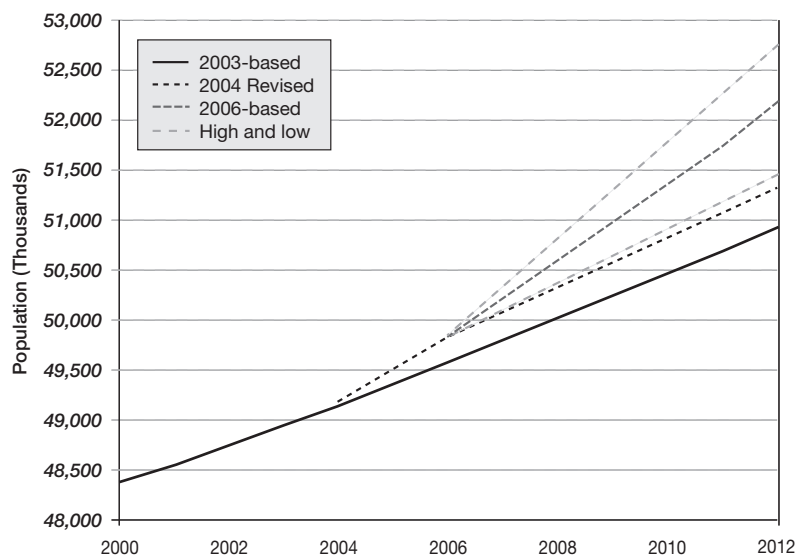
the institutional population within the 2006-based population projections. An approximate value, derived from the 2004-based data, is 955,000. In the 2006-based population values from the ONS, projections have been reduced by this amount to give the private household population.

It is clear that the gradient has again been increased, by an even greater degree, and the 2026 projection is up by almost 4 million. The overall impression is that the whole process is unstable. This is acceptable, statistically, if the uncertainty in the projections recognises this instability so that any planning actions can be revised downwards. This would require each set of high and low projections to be wide enough to encompass the variation. Figure A3 shows the detail from 2000-2012 of the various projections and includes the high and low alternative 2006-based projections.

Figure A3 shows that the revised 2004-based projection lies below the low 2006-based projection. This occurred because the 2006-based projections took into account the increased birth rate and the very high level of (net inward) migration that took place between 2004 and 2006. This illustrates how uncertainty is embedded in the population projections and how earlier experiences are quickly replaced by newer ones.

The higher levels of migration do not include expectations but are the extrapolations of past trends, subject to certain constraints. This does not imply that the recent rates of migration are expected to continue. Although it is possible that a sudden increase may

Figure A3: Uncertainty span in the 2006-based projections



Source: DCLG, household estimates/projections, table E; GAD/ONS 2006-based population projections (modified)

be the start of a new long-term change, it is statistically more justifiable to use this lack of stability as a basis for widening the span of the high and low projections. The assumptions behind the low projection should have been relaxed to ensure that the previous projections were within the span.

Appendix B: Uncertainty and Volatility in the International Migration Projections

The enormous uncertainty over international migration is reflected in recent projections. Figure B1 shows three successive projections of net inward migration. The first two, issued by GAD, are based on data to 2003 and 2004. The principal projections for these years were accompanied by low and high projections to give a measure of uncertainty in the output. In both cases projections were for four years ahead, after which a flat value was used.

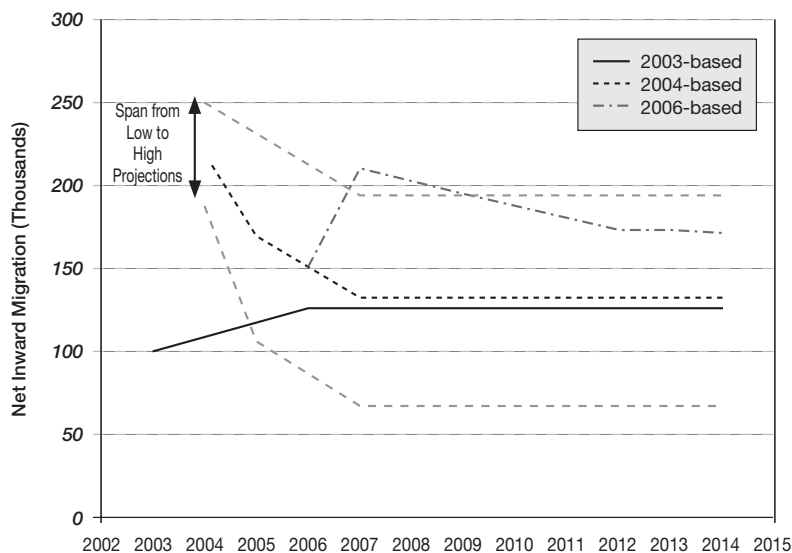
The 2003-based projection rises from 99,500 until 2006 when it stabilises at 124,000 but the 2004-based projections start at 218,000 and drop to 130,000 by 2007. They therefore converge from a separation of 118,500 in their first years to 6,000 when they stabilise. Note that the initial uncertainty range for 2004 does not contain the projection for 2004 based on 2003 data. The 2006-based data, issued by ONS, starts off close to the 2004-based value for 2006 but quickly moves above the 2004-based high projection before reducing again.

ONS projections are less cautious than those from GAD. They vary over the first nine years instead of four. This seems illogical, given the gross disagreement in the first two years of each set of projections.

It is important to understand why these figures are so volatile. There are two likely reasons:

- > the measurement method is inefficient and uncertain; and
- > migration values vary greatly from year to year, and therefore cannot be predicted with accuracy

Figure B1: Successive projections of net inward migration



Source: Population projections by GAD and ONS

Table B1: IPS migration data⁴⁴ for England for 2006

(Thousands)	Estimated migration	Standard error	Percentage
Inflow	475.6	18.3	3.9
Outflow	336.4	16.6	4.9
Balance	139.1		

Migration uncertainty

Primary data on migration comes from the international passenger survey (IPS), supplemented by other sources. In ONS data on migration, the IPS represents 80-90% of the Total International Migration (TIM). IPS error statistics are therefore of paramount importance.

Tables on these published by ONS specify the standard error associated with each value. This is extremely valuable as it provides a basis for calculating the confidence that can be placed on the numbers themselves. For example, figures for 2006 for England, are shown in table B1.

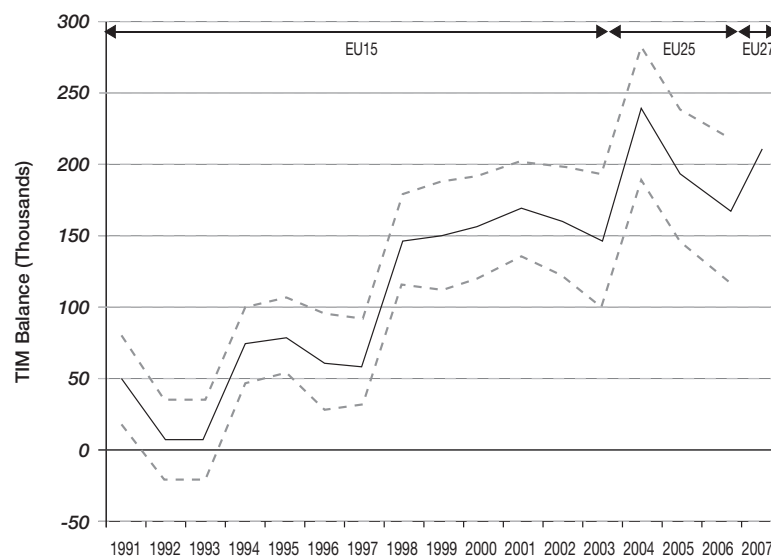
The standard error is only a small percentage of the inflow and outflow totals but the most significant number is not shown in the published table. The balance, or net inward migration, is the difference between the inflow and outflow, in this case 139,100. The standard deviation of the estimated balance will always be larger than the standard errors of the inflow and outflow. The standard deviation of the difference between two values can be approximated by $\sqrt{x^2 + y^2}$ where x and y are the standard errors of the original estimates. This means that the balance of 139,100 has a standard deviation of about $\sqrt{((18.3)^2 + (16.6)^2)} = 24.7$, which is nearly 18% of the measured balance.

The effect of such a large variation can be seen in Figure B2. This shows the estimated total net inward migration and its 95% confidence interval. (The true 95% confidence interval will be slightly wider as there is additional error from the sources by which the remaining 10-20% of the TIM is estimated.)

The bar at the top of Figure B2 corresponds with the years in which the EU enlargement occurred. There appears to have been an increase from 1993 to 2003 while the EU consisted of 15 countries. There was then a sudden rise in 2004 when an additional ten countries joined, two years of reduction and then another increase when Romania and Bulgaria joined.

National net migration is only part of the whole picture. Two other aspects of key importance in planning are migration churn and regional variations in international migration. The first of these is considered in the main report, the second is examined below.

Figure B2: Recent variation and uncertainty in net international migration



Source: National Statistics Online, series MN, table 2.06, TIM

Some projections, such as variant projections produced by DCLG and GAD, include a subset called zero net migration. This is intended to represent what would happen if the only source of change was natural change, so the effect of net migration is controlled. In fact, this representation can only be achieved by analysing zero migration, i.e. no inward or outward movement. Zero net migration and zero migration are sometimes confused. For example, GAD fails to distinguish between these. Its assumptions for migration variants⁴⁵ includes the statement: 'Note that the "zero migration" special case scenario assumes zero net migration at all ages.' This is intended to provide a natural change baseline case, i.e. the effect of births and deaths in the indigenous population. However, this requires zero migration because zero net migration can hide a gradual change in the characteristics of the population which may lead to changes in the birth and death

⁴⁴ International migration, estimates from IPS, series MN33, table 1.2.

⁴⁵ Assumptions for migration variants: www.gad.gov.uk/Demography%20Data/Population/2006/methodology/varmigraass.html

rates. Even were it possible to model an exact match between inward and outward migrants, this is not the same as modelling what would occur in the absence of any migration. DCLG does, however, acknowledge limitations in the zero net migration projection model it uses:

'The zero net migration variant projection assumes zero net migration in the population at all ages. This does not give a pure measure of zero net migration on household formation as the composition of the inward and outward migrants and their propensity to form households will be different, but it illustrates the extent to which the migration assumptions impact on household numbers over and above natural change in the population.'

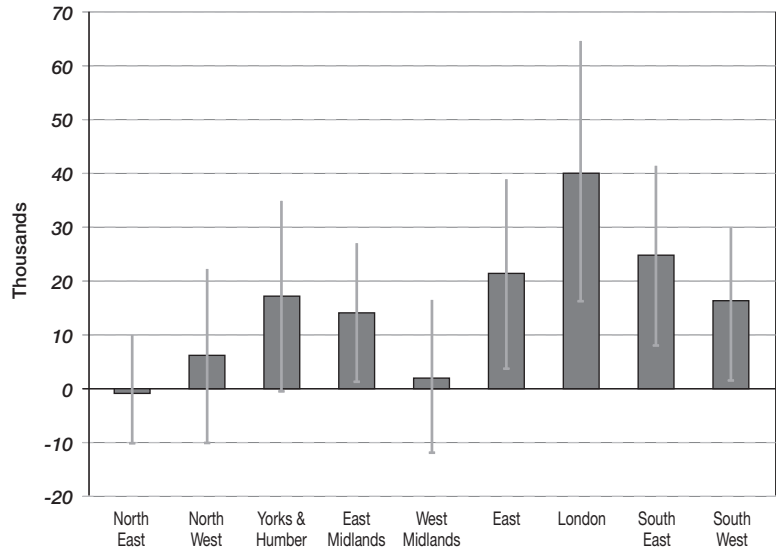
(DCLG, *Housing Statistical Release 8: Household Projections to 2031, England, March 2009*)

Regional international migration

Uncertainty in net international migration becomes far greater than was shown in Figure B2 when national data are subdivided into regional estimates, as shown in the IPS values in Figure B3.

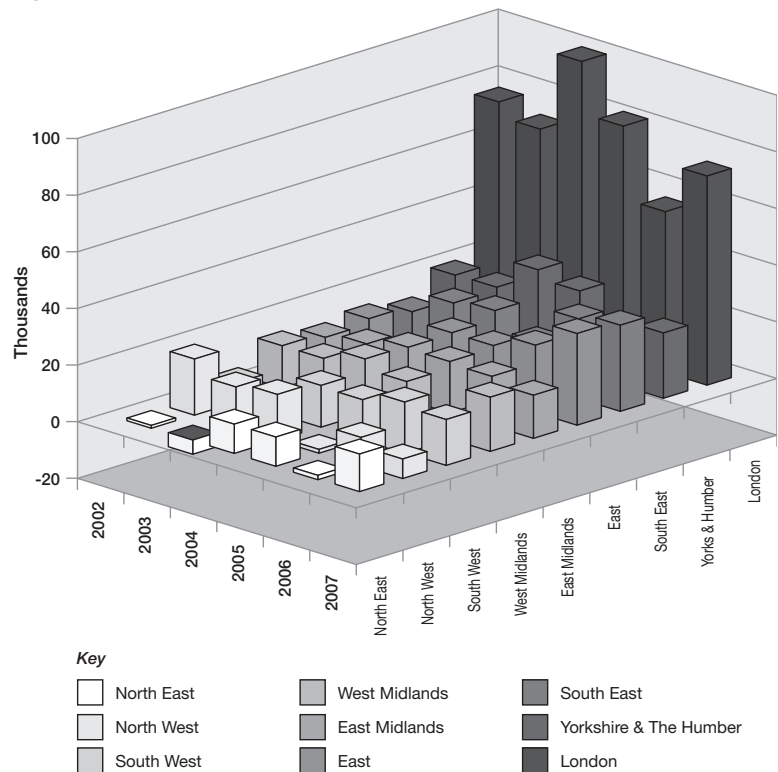
The error bars in Figure B3 show the width of the 95% confidence interval for the net migration for 2006. It is clear that, for some regions, there can be no confidence that there was any population increase as a result of international migration. However, the situation becomes less clear when trends in international and internal migration to the English regions are examined together. It is unclear how many of those who are recorded as arriving in a particular region from abroad (Figure B3) actually go to live in another region (Figure B5).

Figure B3: IPS net migration to the English regions



Source: National Statistics Online, series MN33, table 1.2, international migration from IPS

Figure B4: Trends in international migration to the English regions



Source: ONS, total international migration, table 2.06; National Health Service Central Register, inter-regional migration movement within the UK

Figures B5 and B6 show the movement of residents within the UK to and from regions and constituent countries. The region with the highest level of internal migration is the South East, followed by London, the East of England and the South West. Within the English regions, the North East experiences the lowest level of in-migration.

Combining figures for internal and international migration (Tables B3 and B5), gives the net migration for each region, as shown in Figure B7. This shows that London is the only region that significantly loses population due to migration.

In every year from 2002 to 2007 the largest four internal movements have been:

London to South East	38,200 to 48,000
London to East	31,000 to 40,800
South East to South West	10,700 to 17,200
London to South West	6,100 to 10,700

After these four the order is less consistent but, in general, the movements are:

- East to East Midlands, South West and South East
- West Midlands to South West
- South East to East Midlands

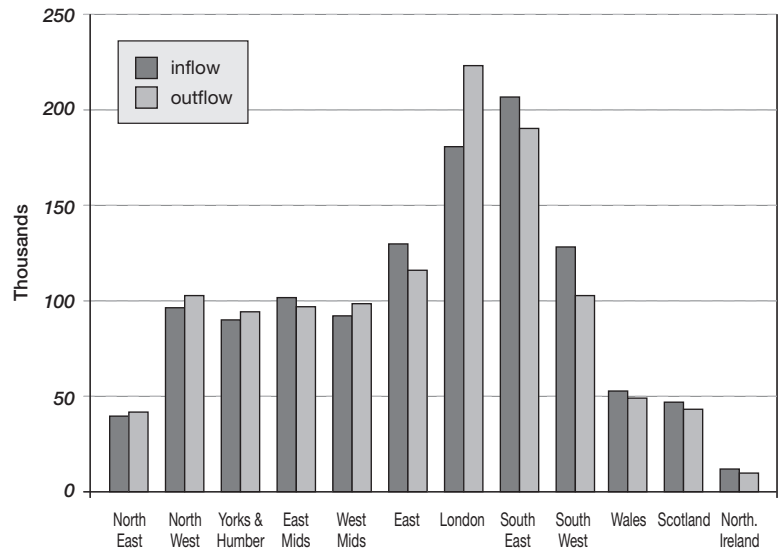
Two patterns of migration dominate internal movements:

- out of London
- into the South West

Over these six years the overall figures for London and the South West are:

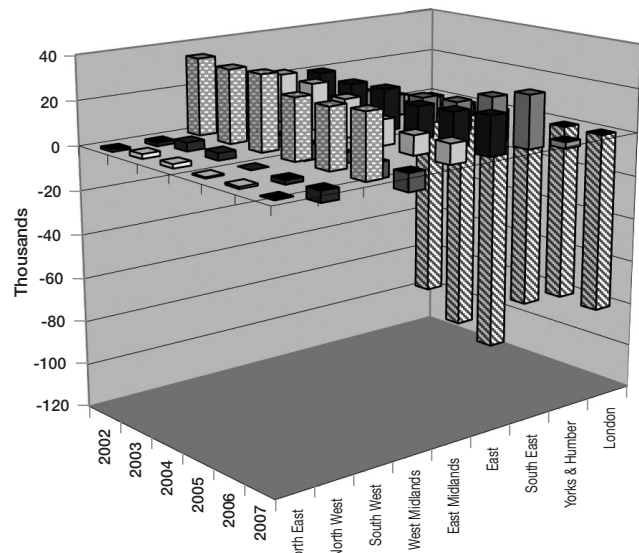
London	+445,000 from international
	-576,700 from internal
	losing 131,700
South West	+59,000 from international
	+184,500 from internal
	gaining 243,500

Figure B5: Internal migration, year end September 2008



Source: National Health Service Central Register, inter-regional migration movements within the UK, based on patients re-registering

Figure B6: Trends in (net) internal migration from within UK to the English regions



Key

North East	West Midlands	South East
North West	East Midlands	Yorkshire & The Humber
South West	East	London

Source: ONS, total international migration, table 2.06; National Health Service Central Register, inter-regional migration movements within the UK

However, when total figures for London are considered it must be remembered that due to its younger population, London's birth rate is higher and death rate lower than in the South West. For London, the differential between these means that the natural change is of the order of 75,000.⁴⁶

Summary

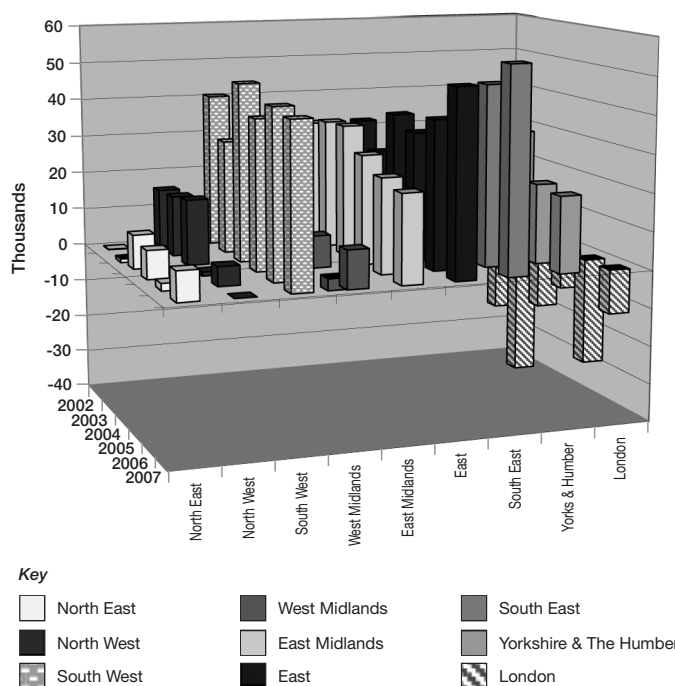
The uncertainty in net international migration is a large percentage of the value itself with the 95% confidence interval stretching about 35% above and below the estimate.

Migration churn is much more than a simple number. The characteristics of the migrants and their purpose in migrating should form a fundamental part of estimating their propensity to form households.

Regional subdivision of international migration data increases uncertainty.

Consideration should be given to assessing whether an element of internal migration is actually delayed international migration, particularly where a migrant moves to another region during the period for which data are recorded.

Figure B7: Sum of international and internal migration for the English regions



Source: ONS, total international migration, table 2.06; National Health Service Central Register, inter-regional migration movements within the UK

⁴⁶ Figure for 2007 from Greater London Authority, demography update 23-2008, December 2008.

Appendix C: Explaining the Growth of Household Projections (2003-based to 2006-based)

Figure C1 shows that the most recent overall projection (2006-based) is for a very large rise in the number of households. Between 2006 and 2031 the projected average annual rate of increase is 252,000, or just under 1.2 per cent of the total number of households.

To see how this differs from previous projections, Figure C2 shows the equivalent values from the 2003-based and revised 2004-based projections, published in 2006 and 2008 respectively. There has clearly been an increase each time.

The region on the previous graph from 2002 to 2007 has been expanded in Figure C3.

This shows clearly that the projection for the year 2006 (circled on the graph) that was made with the 2004-based data and the estimate for 2006 using 2006-based data are virtually identical (0.01 per cent reduction). As the increase in the projections is unrelated to past estimates of the number of households (or there would have been an increase in the value for the year 2006) it must be caused either by the projected increase in the population, by a projected change in the proportions of the different types of households, or by a recalculation of the average number of people in each household type.

Between the 2003- and 2004-based projections there was an increase of about 260,000 in the projected number of households in England in 2026. This was increased by a further 700,000 in the 2006-based projections. It is important to establish whether this increase in the

Figure C1: Projection of the number of households in England to 2031

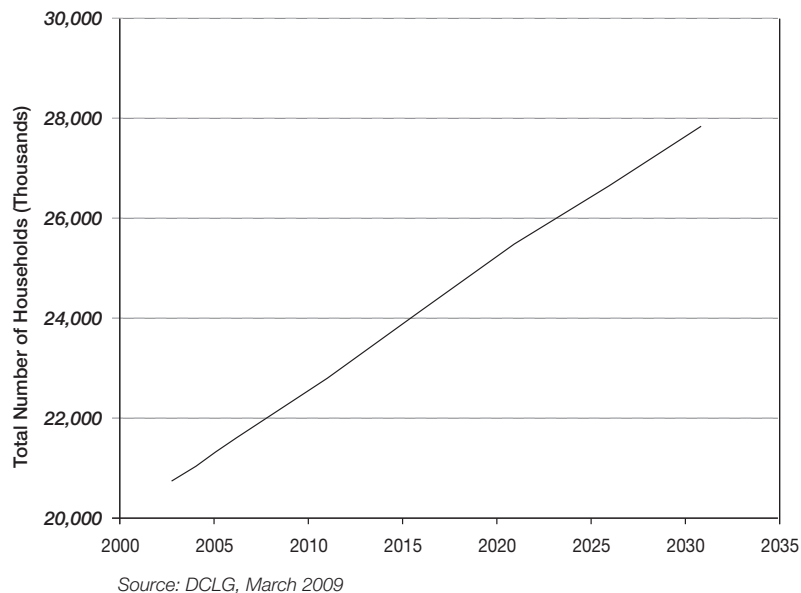
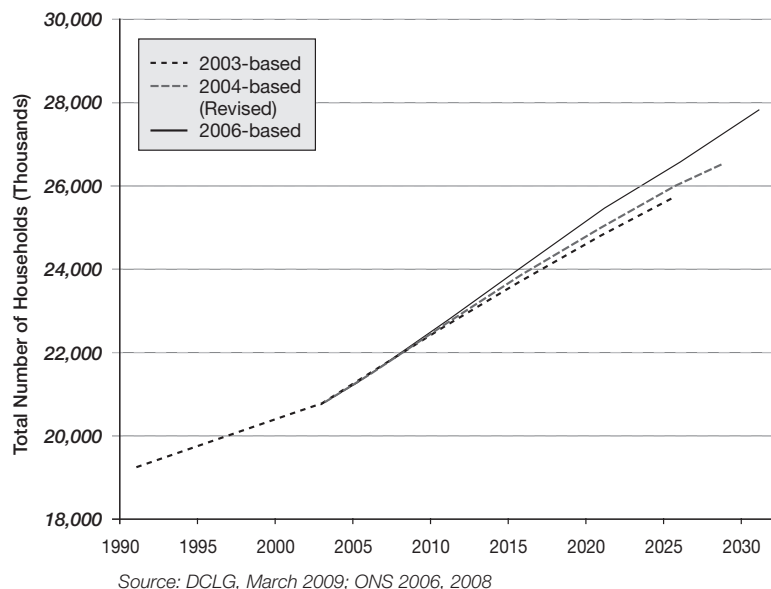


Figure C2: Comparison with previous projections of the number of households



projections of almost 1 million households by 2026 is attributable to the increase in the population projection or to other causes.

One of the most likely causes is a change in the projections of the percentages of the different household types. If, for example, it was now considered that the proportion of single-person and lone-parent households was expected to be much higher than had previously been supposed, then there would be a corresponding increase in the projected number of households and a reduction in the projected household size. This would imply that there were new data on household structures and trends that, in combination with the projected population increases, also increase the household projections.

Figure C4 shows the 2006-based projections of the percentages of each household type, overlaid with the equivalent values from the 2003-based projections. It is immediately apparent that there has been no significant shift in the projected percentages of each household type.

The percentages have remained constant but it is possible that the projections of the number of people in each multi-person household have gone down since the earlier projections, resulting in an increased number of households.

Figure C5 shows the opposite. Average household size has been projected to decline much less quickly than in the earlier projections.

Figure C3: Detail from previous projections of the number of households

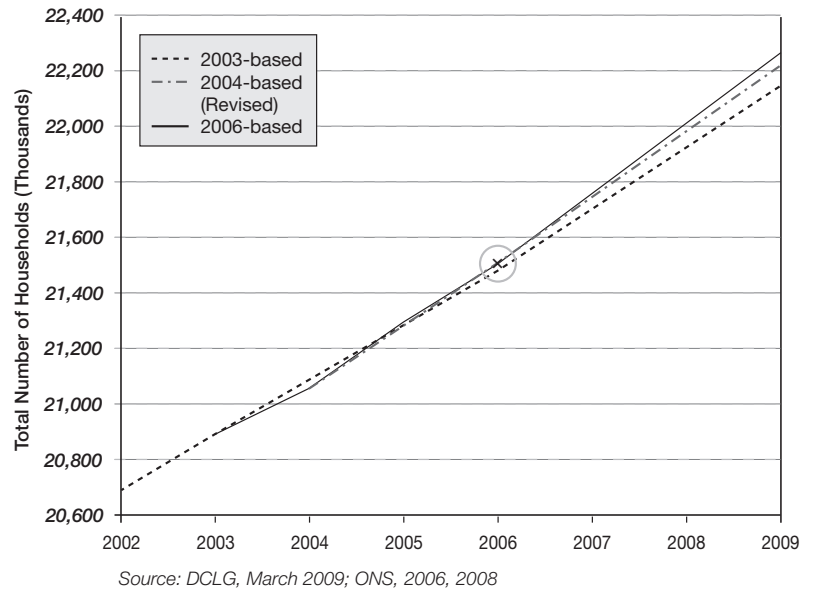
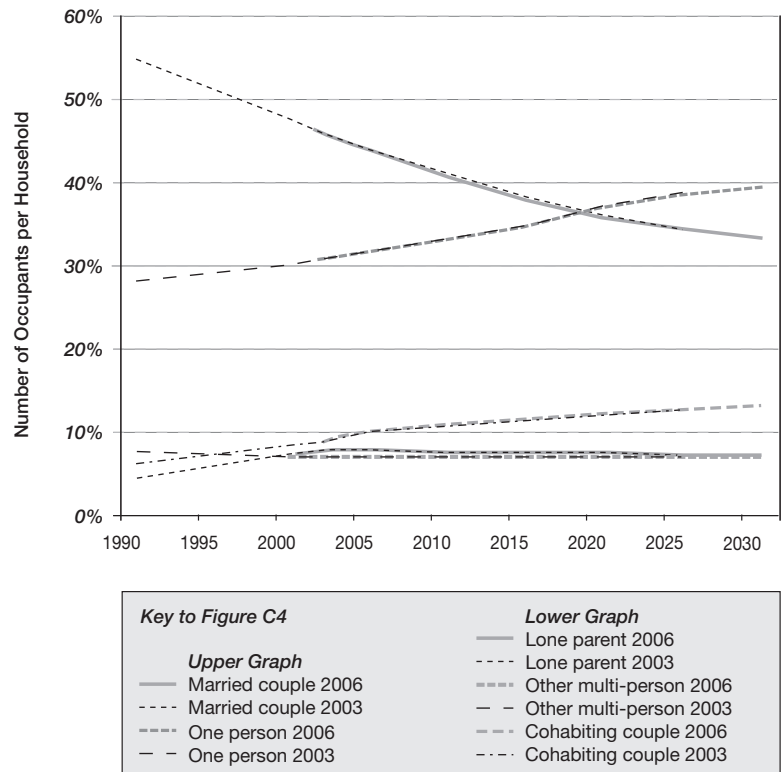


Figure C4: Projected percentage of each household type



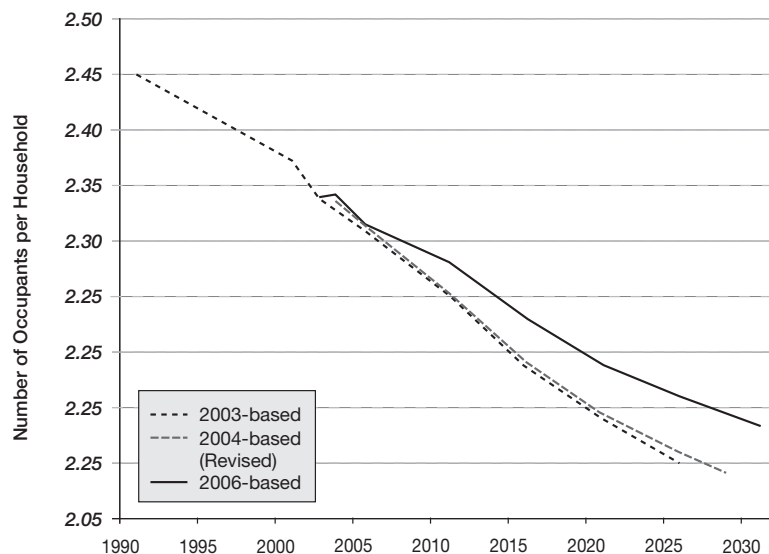
In summary, the projection of the private household population increased considerably between the 2003-, 2004- and 2006-based projections. The projection for 2026 rose from 54 million to 54.8 and then 57.6 million. The projected number of households also increased. The figures for 2026 are 25.7, 26 and 26.7 million for the three projections (Figure C2).

The projected percentage of households to be occupied by each household type was unaltered across the three projections (Figure C4).

The average size of each household projected for 2026 was successively increased from 2.10 to 2.11 and then 2.16 (Figure C5). If, therefore, the projected proportion of each type of household is unchanged but the projected number of people per household has risen, then the implication is either that there will be significantly more children per household, implying an increase in the birth rate, or that there will be more adults per household. There are several possible explanations for an increase in the number of adults per household, including social, economic and ethnic causes, but the increase in birth rate is key. Figure 4, in the main body of the report, showed that the birth rate has risen over the last five years, reversing the decrease over the previous 20 years, and will have influenced the most recent trend-based projection.

Overall, the successive increase in the household projections from the 2003-based projections to the 2004-based projections and to the 2006-based projections (published in March 2009) can be attributed almost entirely to the growth in the population projections, including the rise in the projected birth rate.

Figure C5: Successive projections of household size



Source: CLG, March 2009, ONS 2006, 2008

Appendix D: Analysis of Household Projections by Experian for NHPAU

In its research paper for NHPAU⁴⁷, Experian stated, ‘We adopt a combination of “top-down and bottom-up” approaches to produce forecasts at the Government Office Region level. At all stages, the national macroeconomic forecast is the main control, followed by the regional forecast.’ The analysis is orientated to an economic approach, but it is made clear that an assumption is that population growth will occur as in GAD’s central projection. Therefore, the conclusions are wholly dependent on the reliability of the population projections.

The model used for the migration forecasting by Experian is relatively complex and involves influences such as unemployment rates and house prices as well as the population projections and the migration history. Household forecasts are derived for a number of different economic scenarios and give a range of household formation rates for 2006-2031.

Several features of both the methods and the results are unsatisfactory in terms of practical use and statistical validity:

- a) The description of the way in which the two modelling methods are combined has a number of phrases (highlighted in the following quote) that imply that the results are pre-defined: ‘The short-term and long-term models are then brought together, and the results **constrained to the UK view**, to produce an initial regional forecast. This is **inspected and adjusted by regional and sector experts** both internal and external to the company. **Alterations are made** for significant pieces of inward investment, or infrastructure development, or changes to European
- b) Apart from the baseline forecast the report considers four other economic models, described as convergence, divergence, Regional Economic Strategy (RES) target and individual RES target. The RES target for each region includes assumptions about growth in employment and investment in the building industry. Such a target is therefore wholly inappropriate as a basis for forecasting household formation as the target itself implies the forecast.
- c) In the scenario described as RES target the regional employment levels were not constrained to UK level assumptions, but the total population and net migration were constrained to national levels. The scenario therefore assumed that all regions could, together, give a Gross Value Added growth for the UK comfortably exceeding the 2.5 per cent per annum assumed, but the population and net migration are constrained.
- d) The scenario described as individual RES target assumed that each region achieved its own RES target whilst all of the others grew in line with the baseline. This is not unreasonable as an experimental scenario but in the summary results in the final table, Experian has added together the annual household formations that

funding, in the form of “**add factors**”. A new forecast is then produced, which is again subject to rigorous inspection. **This process continues until those ultimately responsible for the forecast are satisfied with the results.**’

⁴⁷ NHPAU, Regional household forecasts & scenarios, March 2008.

result to give an England total. This makes no sense as the result for each region precludes the others.

- e) There is no mention in the report of variability or uncertainty in the data, assumptions or models. Forecasts are given for each scenario, for 25 years into the future, with no range given, just a single value for the average annual newly forming households. The fact that five alternative scenarios are considered gives an element of sensitivity testing to the output but, ignoring the meaningless total for the individual RES target, there is a spread from 280,941 to 282,846 per annum. This is a spread of less than 0.7 per cent in a forecast of over 7 million new households despite widely varying economic models. The study has therefore produced a housing forecast that is higher than any other, with virtually no uncertainty.
- f) In light of the adjustments highlighted in the quote above (and in the following further extract) this lack of variability removes any credibility from the results, which, from a statistical point of view, should not be used as the basis of any planning process.
- g) Experian states: 'There is also an element of **second guessing** future central government interventions in planning strategies. The sum of the existing Regional Spatial Strategies or draft Regional Spatial Strategies falls well short of the government's housing targets which are based on the trend-based household projections so **further intervention to close the gap between the national target**

and the sum of the regional targets is to be expected... This procedure essentially uses a mix of **various bits of information with the aim of producing the most accurate forecasts** for our clients.'

Appendix E: Regional Information

The main report outlines the background to the national population and household projections. This appendix provides an analysis of successive projections at the regional level.

Regional projections of household numbers

The 2006-based household projections published by DCLG on 11 March 2009 are given in Table E1 for England and the regions.

Although the estimated values for 2006 are, on average, marginally lower than in the revised 2004-based projections issued last year, the projections are, after 2011, all higher than before, as shown in Table E2.

Stability and regional variation

One of the greatest problems in analysing the regional household projections is the lack of stability. The subdivision of the national projections into the regions introduces considerable additional uncertainty.

International migration to the regions has a much wider band of uncertainty than international migration as a whole, as shown for a single year in Figure B3. When this data is processed to identify a trend then, as Figure B2 showed, the variability for each region causes great uncertainty in the projection.

This is exacerbated by the variability of inter-regional movement (Figure B5) to give a projection of internal migration. Regional planning bodies are then faced with the difficulty of planning ahead when the projections oscillate wildly each year.

Table E1: 2006-based regional household projections

2006-based Projections	2006	2011	2016	2021	2026
England	21,515	22,746	24,106	25,439	26,672
North East	1,110	1,154	1,201	1,244	1,281
North West	2,931	3,067	3,221	3,367	3,497
Yorkshire and the Humber	2,181	2,332	2,492	2,649	2,792
East Midlands	1,849	1,990	2,138	2,280	2,413
West Midlands	2,237	2,340	2,454	2,566	2,668
East of England	2,371	2,536	2,715	2,891	3,056
London	3,178	3,337	3,516	3,697	3,867
South East	3,447	3,629	3,838	4,048	4,244
South West	2,211	2,361	2,529	2,697	2,854

Table E2: Percent change since the 2004-based projections

% Change	2006	2011	2016	2021	2026
England	-0.01	0.44	1.13	1.87	2.68
North East	0.27	1.14	2.13	3.07	4.23
North West	-0.31	-0.23	0.19	0.66	1.27
Yorkshire and the Humber	0.14	1.44	2.85	4.21	5.56
East Midlands	0.05	1.38	2.74	4.01	5.37
West Midlands	-0.09	0.26	0.86	1.54	2.34
East of England	-0.04	0.60	1.38	2.12	2.96
London	0.09	-0.06	0.14	0.43	0.83
South East	0.12	0.30	0.81	1.38	2.02
South West	-0.14	0.21	0.84	1.54	2.33

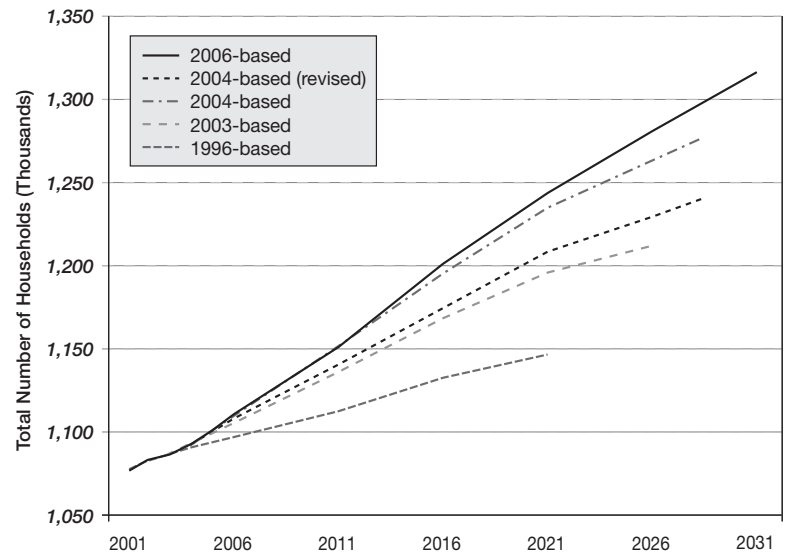
Regional planning bodies should take note of the reaction of the projections to the increases in inward migration and birth rate between 2003 and 2006 and recognise that these trends have probably not continued beyond 2007. The projections issued over the next three years are likely to show a different picture with significantly lower projections in the short and long term.

Each region shows a different pattern of change since the 1996-based projections that were issued in 1999. Although there is, in general, a large increase from the 1996-based to the 2006-based projections, this increase is neither steady nor consistent and the purpose of this section is to identify the main characteristics of the change in each region. All of the 1996-based projections have been corrected to take account of the discrepancies found by the 2001 census.

There has been an overall increase in the projections for the North East but this was disrupted, as discussed above, when the revision to the 2004-based projections caused a significant reduction.

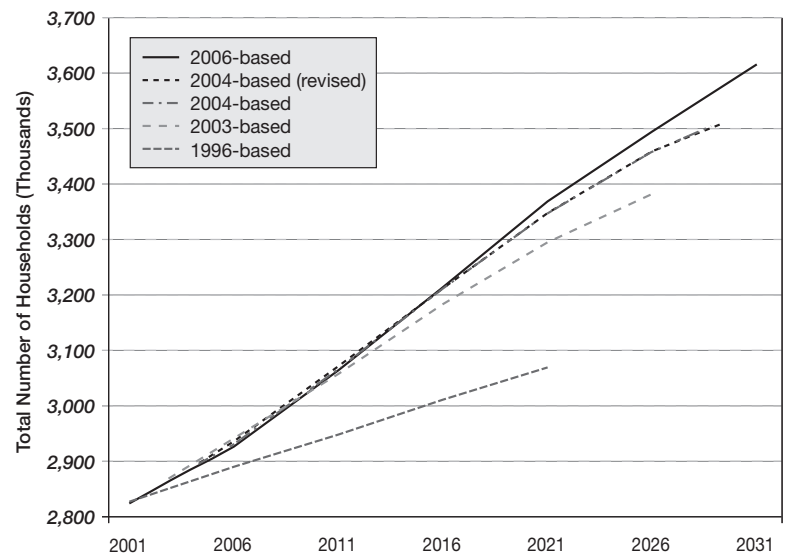
The North West showed a lower percentage increase than the North East between the 2003-based and 2006-based projections. The increase for 2021 since the 1996-based projection, however, was over 300,000, (10 per cent of the total number of households).

Figure E1: Household projections - North East



Sources: DCLG, March 2009; ONS, 2006, 2008; Department of the Environment, Transport and the Regions, 1999

Figure E2: Household projections - North West



Sources: DCLG, March 2009; ONS 2006, 2008; Department of the Environment, Transport and the Regions, 1999

The incremental nature of the projections is most obvious in Yorkshire and the Humber. When the projections for 2021 are compared it can be seen that each new set of data caused an increase (5.3 per cent in 2003, 4.3 per cent in 2004, and 4.2 per cent in 2006). It is difficult to understand how such a regular progression can occur when most of the historical data is unchanged. The overall increase since the 1996-based projections is 14.5%.

The East Midlands showed the second highest percentage increase – 13.4% – for 2021 between the 1996-based and 2006-based projections. Each new projection showed an increase, with over 4 per cent between the revised 2004-based and 2006-based projections. To put this value in a planning perspective, the number of additional households from 2006 to 2021 increased from 344,000 to 431,000 or over 25% on the basis of two additional years of data.

Figure E3: Household projections – Yorkshire and the Humber

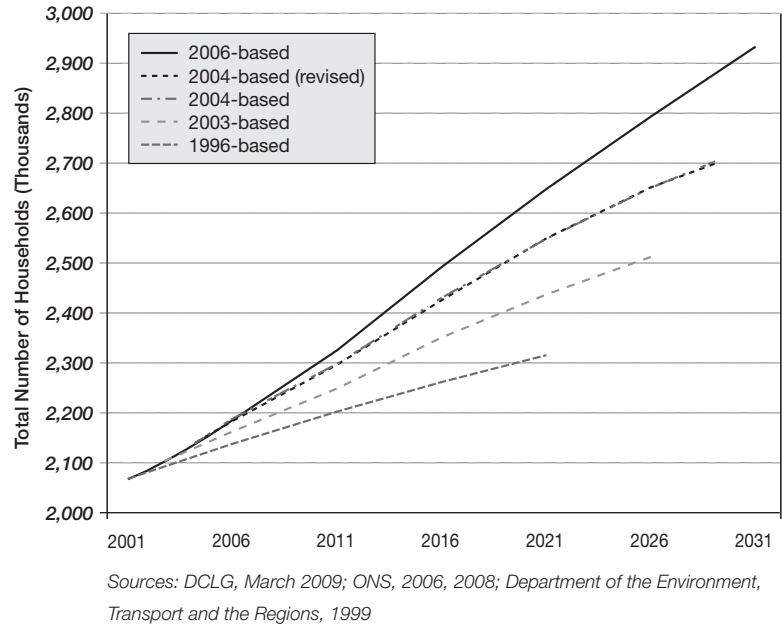
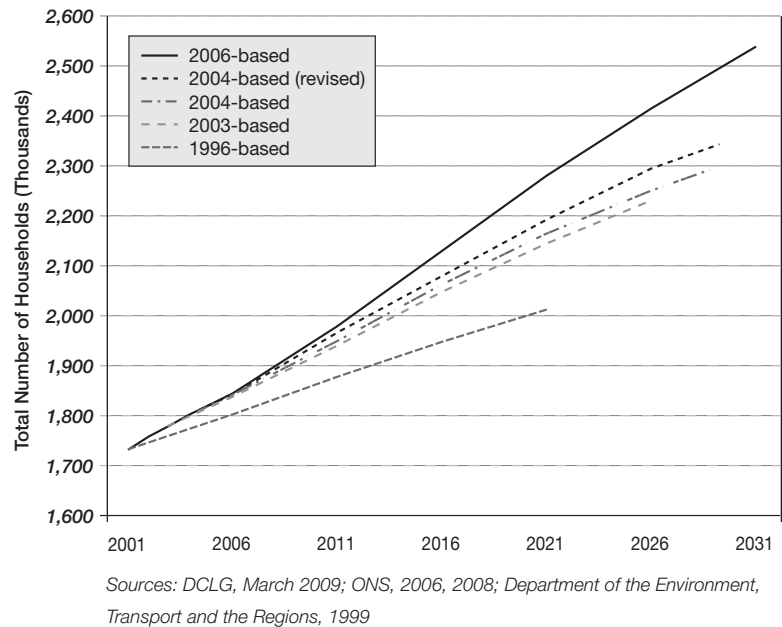


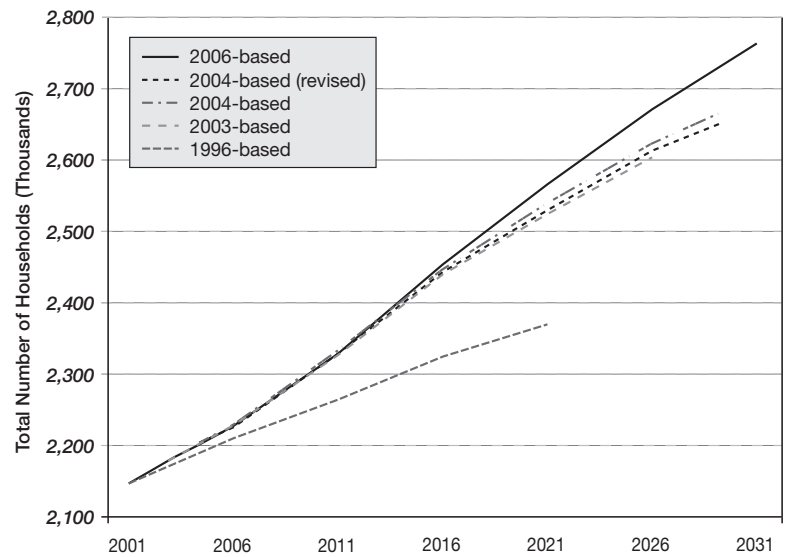
Figure E4: Household projections – East Midlands



The increase for 2021 for the West Midlands (6.7 per cent) mostly occurred between the 1996-based and 2003-based projections. There was then little change until a further 1.5 per cent increase in the 2006-based projections.

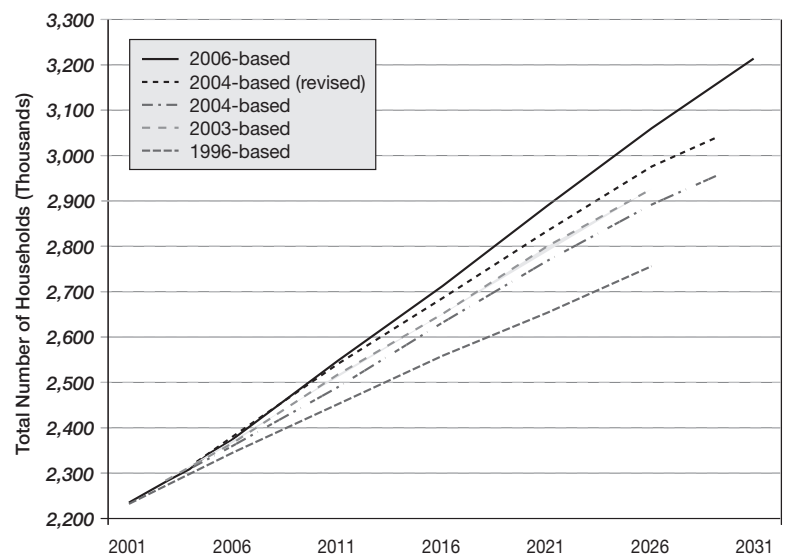
The 2004-based projections for the East of England showed a slight reduction in households, but this was reversed when these projections were revised the next year. Overall there has been an increase for 2021 of just under 9 per cent.

Figure E5: Household projections – West Midlands



Sources: DCLG, March 2009; ONS 2006, 2008; Department of the Environment, Transport and the Regions 1999

Figure E6: Household projections – East of England

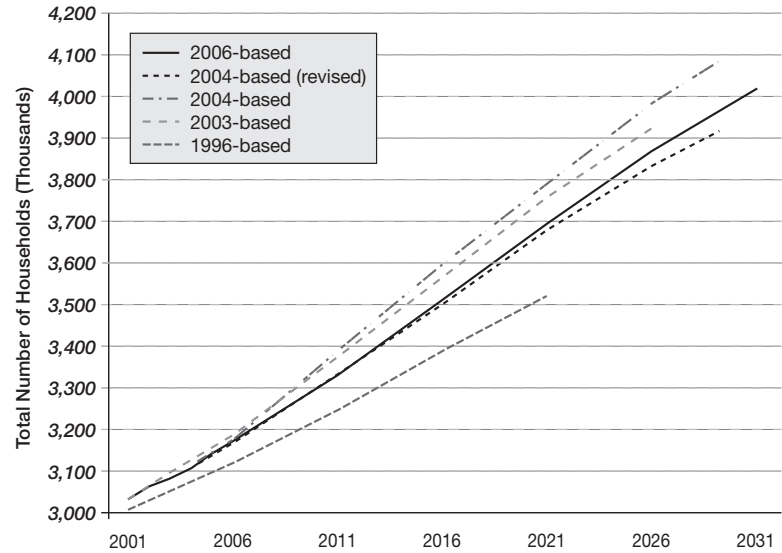


Sources: DCLG, March 2009; ONS, 2006, 2008; Department of the Environment, Transport and the Regions, 1999

As described above, London is the only region in which the 2006-based projections are not the highest ever. They are, however, slightly higher than the revised 2004-based projections and over 5 per cent higher (for 2021) than the 1996-based projections.

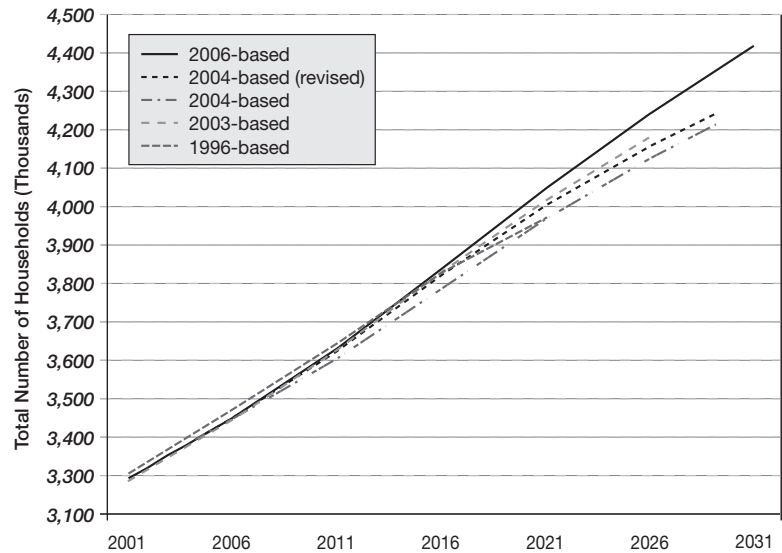
The South East region has seen the lowest overall increase – less than 2 per cent for 2021. This is partly because the projections have been more stable but also because the 1996-based projections were very high. In fact, the recorded number of households for 2006 was 1 per cent below the 1996-based projection.

Figure E7: Household projections - London



Sources: DCLG, March 2009; ONS, 2006, 2008; Department of the Environment, Transport and the Regions, 1999

Figure E8: Household projections – South East



Sources: DCLG, March 2009; ONS, 2006, 2008; Department of the Environment, Transport and the Regions, 1999

The South West shows a gradual increase in households at each new projection. The overall increase for 2021 is over 8 per cent, with the majority of the change occurring between the 1996-based and 2003-based projections. There has been an increase of less than 3 per cent since then.

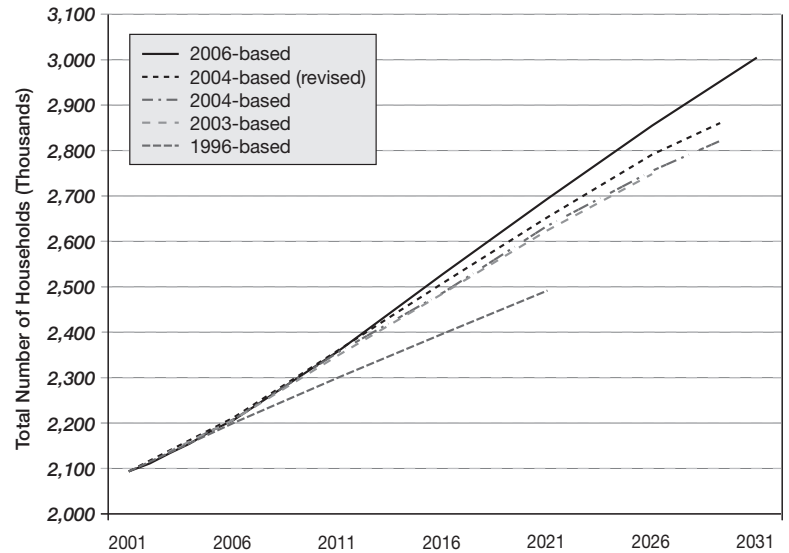
Summary

Although the estimated numbers of households for 2006 are, on average, marginally lower in the 2006-based projections than in the revised 2004-based projections issued in 2008, after 2011 the projections are all higher than before.

When compared with the national projections, regional projections suffer from the usual problems of smaller samples. There is much more uncertainty in the data and therefore volatility in the projections.

Most regions show a rising trend in the household projections issued from 1996 to 2006, apart from London for which the 2006-based projection was lower than the 2003-based projection.

Figure E9: Household projections – South West



Sources: DCLG, March 2009; ONS, 2006, 2008; Department of the Environment, Transport and the Regions, 1999