



Updating the Department for Communities and Local
Government's household projections to a 2008 base
Final Report



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Executive summary

1. The Department for Communities and Local Government household projections have been updated to include the latest available data, principally the Office for National Statistics (ONS) 2008 sub-national population projections.
2. The 2008 household projections have been produced using a methodology that has been modified from the 2006-based and previous projections. The method to produce the household projection is now split into two stages; Stage one projects household representative rates and household population by age, gender and relationship status; Stage two disaggregates the outputs from Stage one to detailed household types.
3. The 2008-based results show an annual rate of growth in England from 2008 to 2033 of 232,000 households with average household size falling from 2.33 persons per household in 2008 to 2.16 by 2033. An increase in male and female one person households is the main contributor to the overall increase in households, accounting for 68 per cent of growth between 2008 and 2033.
4. The majority (72 per cent) of household growth in the 2008-based projections is driven by the projected growth in the population. Other components of change, such as marital status, age distribution and household representative rates have a much smaller impact on household change.
5. As with population growth, the growth in the number of households is not distributed evenly across England's regions. The greatest increase in terms of the number of households is found in the three regions of the Greater South East (South East, London and East of England) which together contribute 46 per cent of household growth between 2008 and 2033. The smallest increase is in the North East which accounts for just 3.5 per cent of total change in households between 2008 and 2033.
6. As with the regional level projections, local authority areas with higher levels of private household population growth will result in higher levels of growth in households. Districts within London, the East of England and the South West (in relative terms) and districts within Yorkshire and The Humber and London (in absolute terms) are prominent in the top 10 rankings of those districts with the highest levels of household growth in the 2008-based projections.
7. Methodological changes limit the extent to which the 2008 update can be compared directly with the 2006-based projections, however at the aggregate level there is a 695,000 reduction in households in the 2008-based projections, which is equivalent to a 2 per cent decrease compared to the 2006-base projections. The change is principally due to lower population projections.

Introduction

8. This report presents the methodology and results from updating the Department for Communities and Local Government household projections to a 2008-base.
9. Household projections are a key part of the evidence base on housing requirements used, amongst others, by Department for Communities and Local Government and local authorities in planning for future housing demand. The previous set of household estimates and projections were the 2006-based household estimates and projections, published in March 2009.
10. In August 2010, Department for Communities and Local Government commissioned Experian and Oxford Economics to update the Department's household projections to incorporate the 2008-based Sub-national Population Projections released by the ONS in May 2010. The 2008 update also incorporates the 2008-based marital status projections.
11. The 2008 update uses a methodology which differs in some respects to that used in the 2006-based and previous projections. The change in approach follows a review of the methodology published by the Department in 2009 and 2010. A summary of the methodology used to produce the 2008 update is detailed in section 1 of this report. The full methodological and technical report is available separate to this report.
12. The report is divided into five sections which are as follows:
 - Section 1 contains the methodological and technical summary.
 - Section 2 provides a commentary on the key trends at the national and regional level.
 - An exploration of the drivers of household growth at national and regional level is given in Section 3.
 - Section 4 presents the variant national projections, based on variant population projections.
 - Section 5 compares the 2008-based & 2006-based projections at a national and regional level.

Use and interpretation

13. The household projections show the long-term trend in household numbers if previous demographic trends in the population and household formation rates were to continue into the future. They provide the household levels and structures that would result if the assumptions based on previous demographic trends in the population and household formation rates were to be realised in practice. They essentially combine population projections with Census data to give a view on likely household numbers 25 years into the future. They do not attempt to predict the impact that future government policies, changing economic circumstances or other factors might have on demographic behaviour. While some short-term trends (since 2001) in household formation from the Labour Force Survey (LFS) are taken into account these are to provide a view on how long-term trends may be changing rather than to attempt to model short-term fluctuations in household formation or household formation across the economic cycle.
14. The actual number of households in existence at a point in time is related to a combination of factors; principally the demographic and social trends that the household projections methodology described above is designed to capture. Economic considerations such as the ratio of house prices to income (affordability) and the availability of finance also play a part. Housing affordability has deteriorated significantly over the last decade, with house prices rising faster than earnings and the average age of (unassisted) first-time buyers increasing. But even with prices now falling people are locked out of the housing market by a lack of available credit meaning that individuals and families continue to lack the opportunity to rent or buy a decent home at a price they can afford. Deviations from the long-term trend raise issues of interpretation for the projections. The household projections are not forecasts. They should be viewed as long-term trends rather than an attempt to track and forecast short-term fluctuations. This implies that over time the short term fluctuations balance out and do not affect the long term trend itself.
15. The household projections model also provides the number of households from the Census year of 2001 to the base year of the projections in 2008. The number of households in this period is derived from projected household representative rates applied to the ONS mid-year population estimates (incorporating revisions made by ONS due to improved migration estimates). These figures are therefore not direct estimates of the actual number of households in these historic periods, but reflect 'back-projections' from the model given population estimates and modelled household formation.

Section 1: Methodology

16. Following a review of the 2006 based household projection methodology published at the start of 2010, the 2008-based household projections have been produced using a new methodology. The drivers for the change were two fold; firstly testing revealed that a simpler model with less disaggregation would enhance the performance of projections for 2001 produced using data available up to 1991. Second, the proposed new typology allows the inclusion of the number of households with children which was absent from the previous projections.
17. The methodology is split into two stages; the first stage retains the principles of the 2006 methodology by applying projected household membership rates to a projection of the private household population disaggregated by age, sex and marital/cohabitational status and summing the resulting projections of household representatives. The method now uses a simplified three-way relationship categorisation. The categories are couples (including married couples who are living together and cohabiting couples); separated married, divorced and widowed; and single (never married) people. This is an aggregation of the detailed categories in the existing DCLG (Household Projections System, known as HOPS) model which captures the key household formation characteristics of the relationship status groups while retaining relative simplicity.
18. A revised projection methodology has also been introduced which aims to project forward using more aggregate data therefore reducing the potential for errors in the underlying data to influence the resulting projections. This weights together simple and dampened logistics trends. Cohort modelling is no longer used. The simplified time-series based projections are referred to as the Stage one projections to distinguish them from the detailed projections by household type described in stage two.
19. There are five key components to the household projections produced in stage one; population, marital status composition, institutional population, household representative rates and subnational controlling – each of which is outlined below.

Population estimates and projections

20. National and subnational populations are taken from the most recent population projections published by ONS on 21 October 2009 and 27 May 2010. For the 2008-based household projections, the 2008-based¹ population projections are used by sex and five-year age band at both national and subnational levels. The projections are trend-based, making assumptions about future levels of fertility, mortality and migration based on levels observed over a five-year reference period.

Marital status composition

21. The 2008-based population projections by marital status for England & Wales were published on the 24 June 2010 by the ONS and have been incorporated into the household projections. The projections cover both legal marital status and (opposite-sex) cohabitation for the period to 2033.
22. Population estimates from the eight marital status/relationship categories are aggregated to the three broader groups described above. This has the advantages of presenting a smaller and hence simpler set of groupings to aid user understanding and to minimise the potential impacts of errors in the projection data sets but still capture the key features of household formation behaviour:

Institutional population

23. The household projections are based on the projected household population rather than the total population. The difference between the two is the institutional population which comprises all people not living in private households. These include people living in nursing homes, halls of residence, military barracks and prisons. The 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. Data taken from the prison element in the mid year estimates of population component of change tables from 2002 to 2008 has been used to adjust institutional population.
24. The institutional population is subtracted from the total resident population projections by age, sex and marital status to leave the private household projection.

¹ <http://www.statistics.gov.uk/statbase/Product.asp?vlnk=8519>
<http://www.statistics.gov.uk/statbase/Product.asp?vlnk=997>

Household representative rates

25. The number of households is essentially the household population multiplied by the appropriate household representative rate. The household representative rate is the probability of anyone in a particular demographic group being classified as being a household representative and can take any value between 0 and 1.
26. The projections use a combination of two fitted trends; a simple logistics trend and a dampened logistics trend
27. LFS data has been incorporated into the England level projections for the 2002 to 2009 period. The LFS data for 2009 receives a 40 per cent weight derived as the maximum weight (50 per cent) multiplied by the time in years elapsed since the 2001 census divided by the maximum years between censuses (8/10). After 2009, the projections revert to the pre-LFS adjustment trends.

Regional controlling

28. The projections for the English Government Office Regions are calibrated to the national projections for England. This procedure is continued down the "tree", with the controlled projections for each area being used to calibrate the projections of its sub areas. The purpose of the regional controlling procedure is therefore to adjust the household projections so that there is consistency across spatial levels and in the age/ sex/ marital/relationship status composition of the population as given in the ONS resident population projections. Stage one projections are produced initially at the national level, then at the GOR level and finally at the Local Authority District (LAD) level with the GOR projections being controlled to the national projections and the LAD projections being controlled to the GOR projections.

Stage two household types

29. Stage two utilises adjusted 1991 and 2001 Census commissioned tables to disaggregate the household projections produced in Stage one into more detailed household types. This will enable the projections to provide information on size of household, particularly the number of dependent children and to some extent the number of adults in each household.
30. Stage two initially works with data at the LAD level. Adjacent five year age bands from stage one have been merged into 10 year age bands (except for the 55 to 59 and 60 to 64 year old age bands which have been kept to provide information on pensioner households). Stage one total household series are used to constrain the stage two household projections.
31. The proportions of households by household type and age group of the head of household are derived from the adjusted census tables for 1991 and 2001. This data is supplemented by data on non household reference persons by age band. The proportions of each household type and non household reference persons, known as the headship and non headship rates, sum to one within each age band.

Section 2: Key trends

National level household projections

34. The 2008-based household projections show an annual rate of growth in England from 2008 to 2033 of 232,000 households. The annual average rate of household population growth in the same period is 359,000 persons.
35. The average household size for England falls from 2.33 persons per household in 2008 to 2.16 by 2033.
36. Table 2.1 and Table 2.2 give the detailed household and household population projections respectively for England by age of the household representative. Over half of the growth in households (61 per cent) and household population (57 per cent) is in the over 65 age bands.

Table 2.1: Households by Age of Household Representative, England (thousands)

	2001	2008	2013	2023	2033	Change per annum 2008-33
15_19 ²	98	103	102	112	131	1
20_24	640	761	798	719	849	4
25_29	1,376	1,399	1,589	1,555	1,615	9
30_34	1,993	1,703	1,901	2,279	2,089	15
35_39	2,196	2,159	1,918	2,452	2,420	10
40_44	1,981	2,316	2,206	2,165	2,559	10
45_49	1,781	2,117	2,306	1,913	2,400	11
50_54	1,931	1,862	2,128	2,193	2,135	11
55_59	1,659	1,804	1,864	2,335	1,957	6
60_64	1,458	1,845	1,765	2,091	2,152	12
65_69	1,384	1,447	1,803	1,788	2,249	32
70_74	1,336	1,339	1,393	1,683	2,023	27
75_79	1,194	1,181	1,228	1,632	1,625	18
80_84	838	909	966	1,139	1,410	20
85&	657	786	901	1,266	1,920	45
Total	20,523	21,731	22,868	25,320	27,536	232

Source: ONS, DCLG, Experian & Oxford Economics.

² Household representative rates are assumed to start at the 15_19 age band therefore household projections for representatives for the 0 to 4, 5 to 9 and 10 to 14 age bands are zero.

Table 2.2: Household Population, England (thousands)

	2001	2008	2013	2023	2033	Change per annum 2008-33
0_4	2,921	3,126	3,293	3,414	3,399	11
5_9	3,117	2,844	3,131	3,344	3,409	23
10_14	3,209	3,024	2,823	3,271	3,392	15
15_19	2,887	3,171	2,957	3,037	3,250	3
20_24	2,840	3,390	3,511	3,081	3,529	6
25_29	3,267	3,393	3,861	3,744	3,825	17
30_34	3,816	3,222	3,528	4,099	3,672	18
35_39	3,892	3,728	3,258	4,020	3,905	7
40_44	3,468	3,938	3,722	3,553	4,122	7
45_49	3,112	3,612	3,895	3,215	3,972	14
50_54	3,347	3,145	3,557	3,628	3,470	13
55_59	2,817	3,004	3,053	3,747	3,099	4
60_64	2,382	3,027	2,875	3,338	3,423	16
65_69	2,144	2,267	2,841	2,774	3,448	47
70_74	1,927	1,967	2,076	2,523	2,979	41
75_79	1,596	1,612	1,705	2,342	2,335	29
80_84	1,048	1,146	1,237	1,513	1,904	30
85&	769	919	1,056	1,523	2,375	58
Total	48,558	50,534	52,379	56,164	59,508	359

Source: ONS, DCLG, Experian & Oxford Economics

Table 2.3: Households by Household Type, England (thousands)

Type	2001	2008	2013	2023	2033	Change per annum 2008-33	
One person households	Male	2,678	3,265	3,690	4,532	5,360	84
	Female	3,626	4,050	4,402	5,170	5,919	75
One family and no others	Couple: No dependent children	5,434	5,864	6,229	6,811	7,374	60
	Couple: 1 dependent child	1,265	1,231	1,254	1,300	1,276	2
	Couple: 2 dependent children	1,702	1,590	1,520	1,488	1,417	-7
	Couple: 3+ dependent children	750	726	704	728	725	0
	Lone parent: 1 dependent child	592	725	835	1,065	1,221	20
	Lone parent: 2 dependent children	398	461	513	645	719	10
	Lone parent: 3+ dependent children	185	212	237	302	336	5
A couple and one or more other adults	No dependent children	1,532	1,342	1,233	1,040	916	-17
	1 dependent child	460	382	355	313	276	-4
	2 dependent children	200	185	181	178	172	-1
	3+ dependent children	98	99	101	111	117	1
Lone parent and one or more other adults	1 dependent child	162	173	186	212	229	2
	2 dependent children	67	76	83	103	117	2
	3+ dependent children	34	40	45	58	66	1
Other households	1,341	1,308	1,299	1,263	1,297	0	
Total	20,523	21,731	22,868	25,320	27,536	232	

37. Table 2.3 summarises the 2008-based projections by household type to 2033. An increase in male and female one person households is the main contributor to the overall increase in households, accounting for 68 per cent of the growth. Households comprising of couple households with no dependent children and no other adults account for around a quarter of the growth. However this is partly offset by a decrease in couple households with other adults present.

Regional level household projections

38. Regional level projections have been derived by applying the 2008-based regional household representative rates to regional projections of household population. The 2008-based projections showed that the biggest increase in the number of households between 2008 and 2033 was in the South East, London and East of England. The smallest increase was in the North East.

Table 2.4: Household projections by region (thousands)

	2001	2008	2013	2023	2033	Change per annum 2008-33
North East	1,075	1,112	1,155	1,246	1,324	8
North West	2,827	2,935	3,044	3,279	3,473	22
Yorkshire and the Humber	2,069	2,203	2,339	2,623	2,879	27
East Midlands	1,737	1,868	1,978	2,206	2,411	22
West Midlands	2,154	2,242	2,329	2,525	2,701	18
East	2,236	2,406	2,565	2,903	3,212	32
London	3,036	3,244	3,416	3,798	4,145	36
South East	3,294	3,480	3,668	4,081	4,467	39
South West	2,093	2,241	2,375	2,660	2,923	27
England	20,523	21,731	22,868	25,320	27,536	232

Source: ONS, DCLG, Experian & Oxford Economics

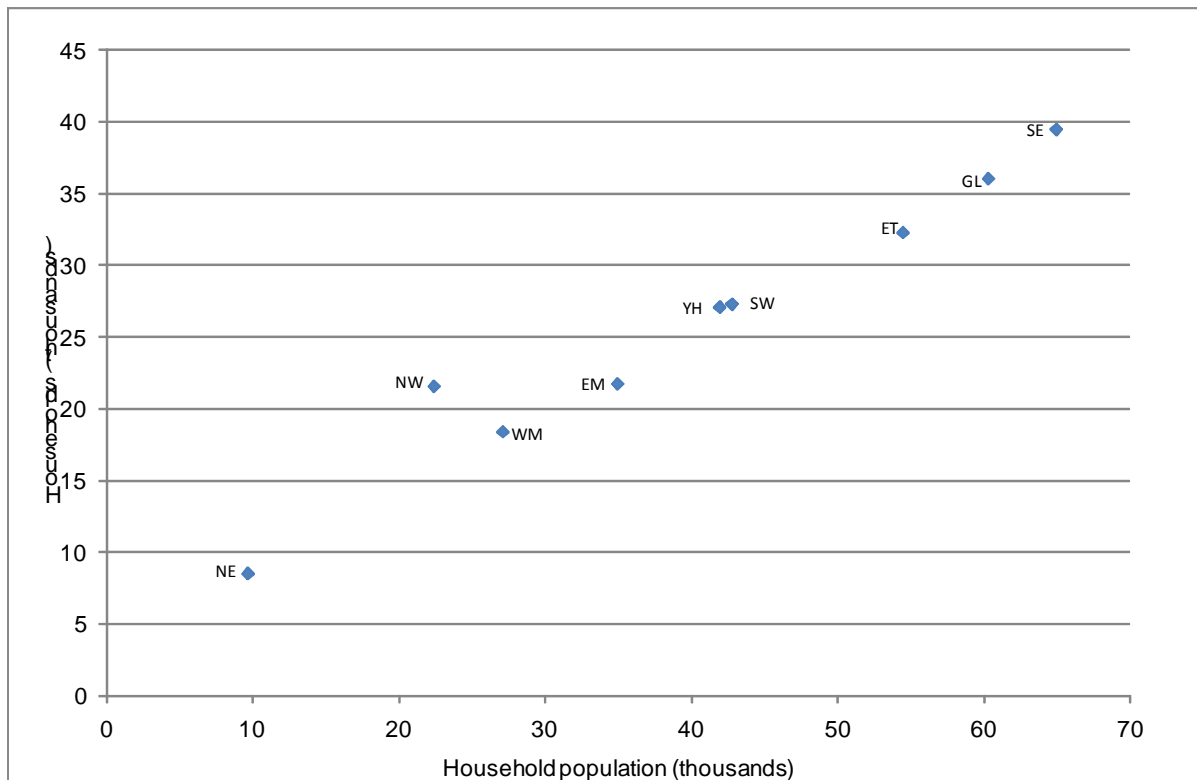
Table 2.5: Household population projections by region (thousands)

	2001	2008	2013	2023	2033	Change per annum 2008-33
North East	2,497	2,525	2,575	2,680	2,768	10
North West	6,659	6,755	6,868	7,116	7,316	22
Yorkshire and the Humber	4,892	5,130	5,349	5,787	6,179	42
East Midlands	4,113	4,347	4,526	4,895	5,221	35
West Midlands	5,200	5,322	5,454	5,744	6,000	27
East	5,309	5,620	5,900	6,476	6,983	55
London	7,229	7,574	7,912	8,548	9,083	60
South East	7,833	8,172	8,495	9,173	9,797	65
South West	4,827	5,089	5,301	5,745	6,160	43
England	48,558	50,534	52,379	56,164	59,508	359

Source: ONS, DCLG, Experian & Oxford Economics

39. Figure 2.1 shows that the growth in households is directly associated with a growth in household population although regions do not generate households (from changes in the household population) at the same rate as each other. The underlying structure of the population, e.g. the age and gender distribution also have an impact on household formation.

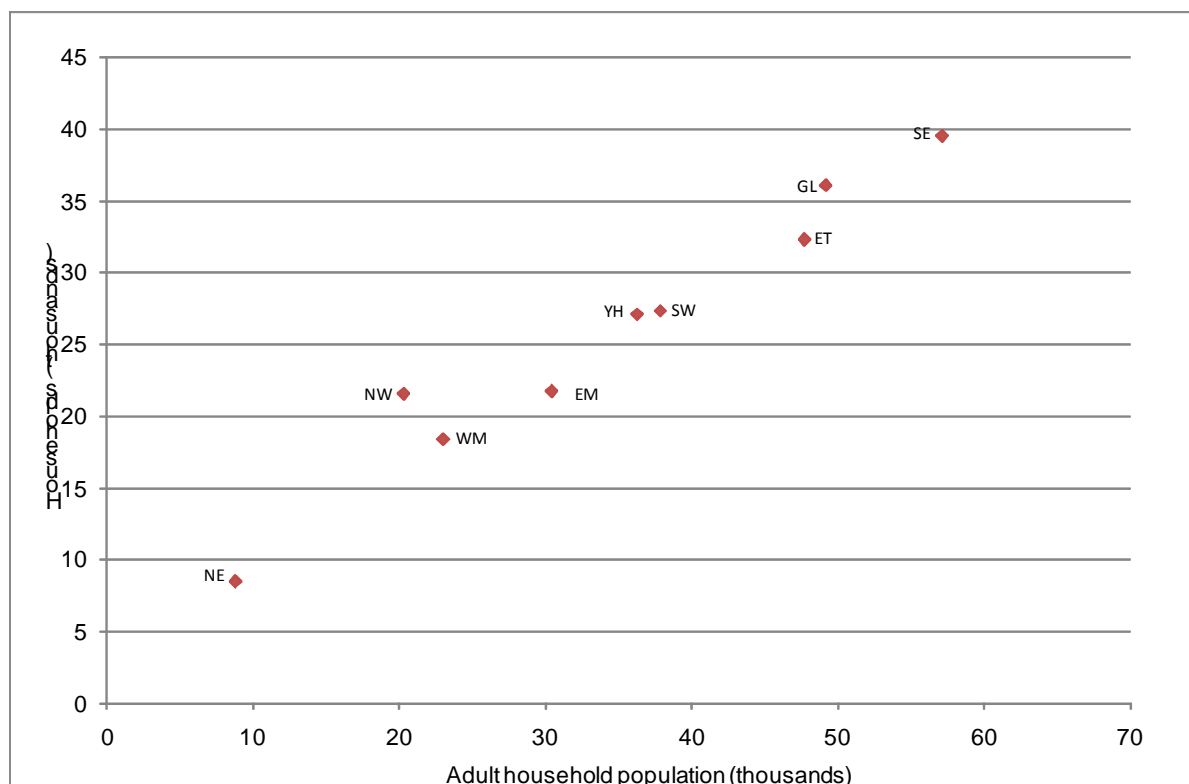
Figure 2.1: 2008 - 2033 Annual change in Household population and Households for region (thousands)



Source: ONS, DCLG, Experian & Oxford Economics

40. Figure 2.2 shows the same chart as above but plots growth in the regional adult household population against household growth rather than total household population. Stripping out those aged under 15 has had only a marginal impact on the relative position of each region and does not explain why the North West is creating more households than would be expected given the growth in adult household population. However, the North West does have an older age profile than other regions, especially post retirement and these age bands have the highest household formation rates.

Figure 2.2: 2008 - 2033 Annual change in Adult household population and Households for region (thousands)



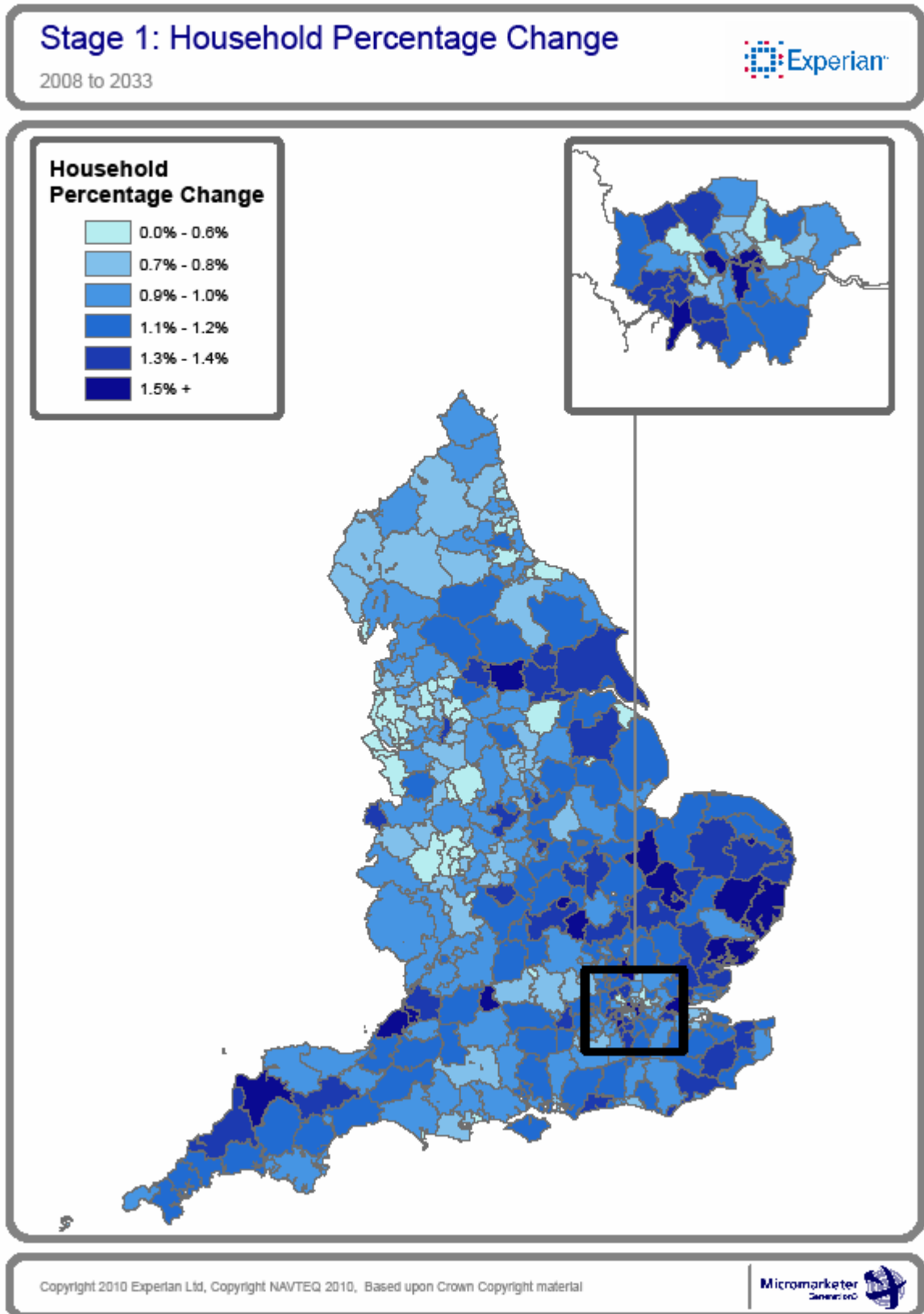
Source: ONS, DCLG, Experian & Oxford Economics

Sub-regional projections

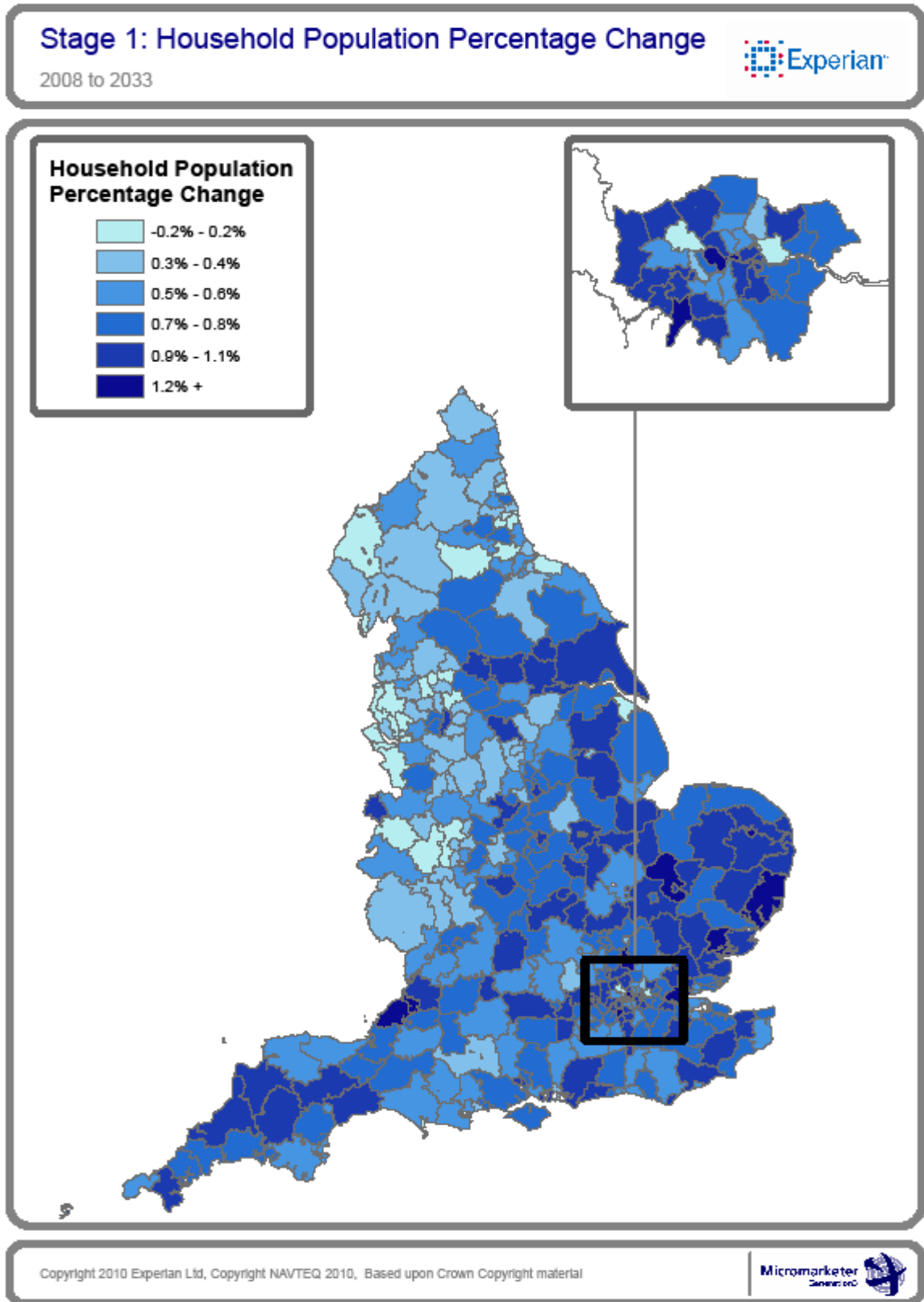
41. Sub-regional level projections have been derived by applying the 2008-based sub-regional household representative rates to sub-regional projections of household population. Sub-regional household projections are controlled to sum to the 2008-based household projections for each region.
42. Districts within London, the East of England and the South West (in relative terms) and districts within Yorkshire and The Humber and London (in absolute terms) are prominent in the top 10 rankings of those districts with the highest levels of household growth in the 2008-based projections. The large increases in the number of households in these districts is caused in part by the revised migration assumptions in the 2008-based population figures which are, in turn, feeding through to the growth in household projections.
43. As with the regional level projections, local authority areas with higher levels of private household population growth will result in higher levels of growth in households (see map 2.1 and map 2.2). This is generally true for absolute growth levels and relative growth rates; in a scatter plot of the annual change in household population plotted against the annual change in households, the r-squared³ value for the linear trend was 0.96 and 0.91 for absolute growth rates and relative growth rates respectively.

³ In this instance the r-squared values provide an estimate of the proportion of the total variation in the regional series that is explained by the linear trend model. An r-squared value of 1 would indicate that 100 per cent of the variance in households is attributable to the variance in household population.

Map 2.1: 2008-based annual average percentage change in Households, 2008 - 2033



Map 2.2: 2008-based annual average percentage change in Population, 2008 - 2033



Section 3: Drivers of household growth

Components of growth – National level

44. Analysis has been made of the impact of each of the components of household growth on the total number of households by 2033. The analysis is performed by fixing one component of change at 2008 values and leaving the values of the other components to change over time as per the baseline. Table 3.1 shows the contribution that each component of household change makes to the change in total households under the baseline between 2008 and 2033.
45. The majority of household growth between 2008 and 2033 is attributable to population growth. Over 72 per cent of the change in the total number of households over the period is due to the change in the level of population. If population remained at 2008 levels and all other components of change are included in the model, the number of households would increase by just 64,000 over the period compared with 232,000 under the baseline. Changes to population by age contribute to a further 20 per cent of the change in total households.
46. Updated marital status projections have a relatively muted, but negative impact on total household growth over the projection period. Leaving all other components of unchanged from the baseline and fixing the marital status at 2008 values accounts for a 5 per cent reduction in the growth in the number of households between 2008 and 2033.
47. The trends in household representative rates captured within the household projections have less of an impact on the scale of household change than pure demographic changes. Just 15.5 per cent of household growth between 2008 and 2033 is attributable to changes in household representative rates.
48. A small proportion of the growth in households is attributable to the interaction between the components of growth. This occurs because the components of change are interdependent, with a change in one variable impacting upon another.

Table 3.1: Contributions to Projected Change in Household Numbers, England 2008-2033

Component held constant	Average annual change	Difference from baseline projection	
		Level, 000s	per cent
Population	64	168	72.3
Age Distribution	185	47	20.2
Marital Status Distribution	244	-12	-5.0
Household Representative Rates	196	36	15.5
Interaction between components	239	-7	-3.1
Total baseline change		232	100

Components of growth – Regional level

49. The same analysis presented in the previous section has been conducted at regional level. Population change remains the most important component of household growth across all regions, but the proportion of growth in households attributable to population varies from 51.6 percent in the North East to 78.2 in East of England. This directly reflects the relative scale of population change in each of the regions – the North East has the lowest levels of population growth as a proportion of its population, whilst East of England has the highest.
50. Household representative rates show the opposite impact. In the North West and the North East the impact of household representative rates on the change in total households explain almost 24 percent of the change in households, and in the East the figure is just 12 percent. The variance is largely explained by the demographic effects noted above; in the North East and North West, the population growth accounts for a much lower proportion of change in the number of households so the household representative rates have a relatively large impact, whereas the opposite is true in the East.

Table 3.2: Contributions to Projected Change in Household Numbers
Proportion of Change 2008-33

	Population	Age Distribution	Marital Status	Household Representative Rates	Interaction between Components
North East	57.2	29.0	-9.8	23.7	-0.1
North West	51.6	29.5	-7.9	23.8	3.0
Yorkshire and The Humber	72.9	19.5	-5.7	14.6	-1.3
East Midlands	75.3	20.8	-7.2	14.1	-3.0
West Midlands	67.8	21.9	-9.9	21.3	-1.0
East of England	78.2	19.6	-5.5	12.0	-4.3
London	76.1	13.9	0.2	14.6	-4.8
South East	75.6	22.3	-4.5	13.1	-6.4
South West	75.3	20.3	-5.8	13.4	-3.2
England	72.3	20.2	-5.0	15.5	-3.1

Section 4: Variant projections – National level

51. ONS publishes variant population projections based on alternative, but still plausible, assumptions allowing users to consider the impact upon the population if future fertility, mortality and migration assumptions differ from the assumptions made for the principal projection. Analysis of the components of household growth in section 3, demonstrated the importance of population growth to the scale of household growth in the future. It is therefore useful to consider how the projected number of households varies with the variant population projections. These give a broad indication of the sensitivity of the household projections to the demographic assumptions and present plausible alternative scenarios rather than upper or lower limits to future demographic behaviour. This section presents the impact of the variant ONS population projections, which are only produced at national level, on the household projections.
52. ONS originally published 9 standard variants to sit alongside the principal projections and subsequently published a further 13 special case variants. Variant household projections at national level have been produced for the following 10 population variants:
 - Standard single component variants for high and low assumptions on fertility, life expectancy and net migration
 - Standard combination variants for high population and low population
 - Special case variants for no mortality improvement and zero net migration.

High fertility

53. The high fertility variant assumes that the long-term fertility rate (average number of children per woman) is 2.05 for England compared with a rate of 1.85 used in the principal projection. The high variant assumes a sharp increase in total fertility rates to 2009-10 and then more gradual increases to long-term levels. All other components of population change use the assumptions from the principal projections.
54. The high fertility variant sees population increase by an additional 68,000 people per year which translates into 2,500 households a year formed above the principal projection between 2008 and 2033. The change in households is relatively small compared to the population change as the 25-year projection horizon does not allow the increase in fertility rates to fully translate into population age groups which have high household formation rates.
55. The changes in the household projections due to high fertility assumptions begin to feed into the youngest age bands from 2025 onwards but given the 25-year projection horizon, only have an impact on the under 25 age bands.

Table 4.1: High fertility variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	102	112	145	2	1
20_24	760	798	719	894	5	2
25_29	1,398	1,589	1,555	1,615	9	0
30_34	1,703	1,901	2,279	2,089	15	0
35_39	2,158	1,918	2,452	2,420	11	0
40_44	2,317	2,206	2,165	2,559	10	0
45_49	2,117	2,306	1,913	2,400	11	0
50_54	1,860	2,128	2,193	2,135	11	0
55_59	1,804	1,864	2,335	1,957	6	0
60_64	1,845	1,765	2,091	2,152	12	0
65_69	1,447	1,803	1,788	2,249	32	0
70_74	1,338	1,393	1,683	2,023	27	0
75_79	1,181	1,228	1,632	1,625	18	0
80_84	909	966	1,139	1,410	20	0
85&	786	901	1,266	1,920	45	0
Total	21,728	22,868	25,320	27,596	235	2

Low fertility

56. The low fertility variant assumes that the long-term fertility rate for England is 1.65 compared with 1.85 under the principal projection. The low variant assumes that total fertility rates fall quite sharply for several years after 2008-09, before slowly bottoming out at their projected long-term levels.
57. The low fertility variant sees population decrease by 67,000 people per year relative to the principal projection which translates into 2,300 fewer households a year formed than the principal projection between 2008 and 2033.
58. As in the high fertility variant, the changes in the household projections due to low fertility assumptions begin to feed into the youngest age bands from 2025 onwards but given the 25-year projection horizon, only have time to impact the under-25 age bands.

Table 4.2: Low fertility variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	102	112	117	1	-1
20_24	760	798	719	804	2	-2
25_29	1,398	1,589	1,555	1,615	9	0
30_34	1,703	1,901	2,279	2,089	15	0
35_39	2,158	1,918	2,452	2,420	11	0
40_44	2,317	2,206	2,165	2,559	10	0
45_49	2,117	2,306	1,913	2,400	11	0
50_54	1,860	2,128	2,193	2,135	11	0
55_59	1,804	1,864	2,335	1,957	6	0
60_64	1,845	1,765	2,091	2,152	12	0
65_69	1,447	1,803	1,788	2,249	32	0
70_74	1,338	1,393	1,683	2,023	27	0
75_79	1,181	1,228	1,632	1,625	18	0
80_84	909	966	1,139	1,410	20	0
85&	786	901	1,266	1,920	45	0
Total	21,728	22,868	25,320	27,477	230	-2

High life expectancy

59. The mortality projections used in the population projections assume that for most ages improvements to mortality rates will gradually converge to common 'target rates' of improvement, at each age and for both sexes, by the year 2033, and continue to improve at that constant rate thereafter.
60. The high variant assumes a 2 per cent annual improvement in life expectancy by 2033 and thereafter the annual improvement remains at 2 per cent.
61. The life expectancy variants have a greater impact on total household numbers than the fertility variants. For the high life expectancy variant, an additional 14,200 households a year between 2008 and 2033 are created above the base.
62. The changes in household projections due to high life expectancy assumptions impact all age bands but for age bands below 60 do not show in the table as the difference from the baseline position is less than 500 households per annum. As we would expect, the impact increases with age.

Table 4.3: High life expectancy variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	102	112	131	1	0
20_24	760	798	719	849	4	0
25_29	1,398	1,590	1,555	1,616	9	0
30_34	1,703	1,901	2,280	2,090	15	0
35_39	2,158	1,918	2,453	2,423	11	0
40_44	2,317	2,206	2,166	2,562	10	0
45_49	2,117	2,306	1,914	2,405	12	0
50_54	1,860	2,129	2,196	2,142	11	0
55_59	1,804	1,865	2,340	1,966	6	0
60_64	1,845	1,766	2,097	2,167	13	1
65_69	1,447	1,805	1,797	2,273	33	1
70_74	1,338	1,395	1,694	2,054	29	1
75_79	1,181	1,231	1,649	1,663	19	2
80_84	909	971	1,158	1,461	22	2
85&	786	912	1,317	2,088	52	7
Total	21,728	22,896	25,447	27,890	246	14

Low life expectancy

63. The low life expectancy variant assumes zero per cent annual improvement at 2033, thereafter mortality rates remain constant, compared with 1 per cent for the principal projection.
64. The low life expectancy variant has a similar scale of impact on the average number of households per year as the high life expectancy variant, although the effect is negative rather than positive, with 14,600 fewer households per year between 2008 and 2033 relative to base.
65. As in the high life expectancy variant, the changes in household projections due to low life expectancy assumptions impact older age groups more.

Table 4.4: Low life expectancy variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	102	112	131	1	0
20_24	760	798	718	849	4	0
25_29	1,398	1,589	1,555	1,615	9	0
30_34	1,703	1,901	2,279	2,088	15	0
35_39	2,158	1,918	2,451	2,418	10	0
40_44	2,317	2,206	2,164	2,555	9	0
45_49	2,117	2,305	1,911	2,395	11	0
50_54	1,860	2,127	2,190	2,128	11	0
55_59	1,804	1,863	2,330	1,948	6	0
60_64	1,845	1,764	2,084	2,135	12	-1
65_69	1,447	1,801	1,779	2,224	31	-1
70_74	1,338	1,390	1,670	1,989	26	-1
75_79	1,181	1,224	1,614	1,585	16	-2
80_84	909	961	1,120	1,356	18	-2
85&	786	891	1,215	1,755	39	-7
Total	21,728	22,839	25,193	27,169	218	-15

No mortality improvement

66. The no mortality improvement variant is one of the special case variants and this is the first time it has been included in the household projections report. This variant assumes that age/sex specific mortality rates will remain constant at the values assumed for the first year (2008-09) of the principal projection. Although actual age/sex specific mortality rates for 2008-09 were not known when the principal projection was carried out, the assumed rates were consistent with provisional estimates of total deaths for the year. This projection combines assumed no mortality improvement with the principal assumptions of fertility and migration.
67. The no mortality improvement variant reduces population substantially and causes a 62,100 per annum reduction in the number of households formed between 2008 and 2033 relative to the base.

Table 4.5: No mortality improvement variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	102	112	131	1	0
20_24	760	798	718	848	3	0
25_29	1,398	1,589	1,552	1,611	9	0
30_34	1,703	1,900	2,275	2,082	15	0
35_39	2,158	1,918	2,448	2,411	10	0
40_44	2,317	2,205	2,162	2,548	9	0
45_49	2,117	2,304	1,907	2,387	11	-1
50_54	1,860	2,126	2,182	2,117	10	-1
55_59	1,804	1,862	2,318	1,931	5	-1
60_64	1,845	1,760	2,067	2,105	10	-2
65_69	1,447	1,795	1,750	2,168	29	-3
70_74	1,338	1,382	1,619	1,906	23	-5
75_79	1,181	1,206	1,525	1,456	11	-7
80_84	909	942	988	1,140	9	-11
85&	786	864	937	1,143	14	-31
Total	21,728	22,753	24,560	25,982	170	-62

High migration

68. The assumed annual level of long-term migration under the high migration population projection is 217,000 for England. This is assumed from 2014-15 onwards, and is 60,000 a year higher than the principal assumption of 157,000.
69. Of the standard variants, the migration variants have the largest impact on the household projections. A contributing factor to this high impact is the scale of the population variant at +/- 60,000 per annum. Under the high migration variant, there are 31,400 additional households formed per annum between 2008 and 2033 than under the base.
70. The changes in household projections due to changing high migration assumptions are concentrated among the 30-49 age bands, reflecting the age distribution of international migrants and different household formation rates at different ages.

Table 4.6: High migration variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	102	113	135	1	0
20_24	760	808	734	873	5	1
25_29	1,398	1,615	1,608	1,676	11	2
30_34	1,703	1,924	2,370	2,193	20	4
35_39	2,158	1,934	2,538	2,548	16	5
40_44	2,317	2,218	2,223	2,690	15	5
45_49	2,117	2,314	1,951	2,507	16	4
50_54	1,860	2,133	2,220	2,208	14	3
55_59	1,804	1,868	2,353	2,007	8	2
60_64	1,845	1,769	2,103	2,186	14	1
65_69	1,447	1,805	1,798	2,274	33	1
70_74	1,338	1,394	1,690	2,040	28	1
75_79	1,181	1,228	1,636	1,637	18	0
80_84	909	966	1,141	1,418	20	0
85&	786	902	1,267	1,926	46	0
Total	21,728	22,981	25,747	28,318	264	31

Low migration

71. The low migration variant is 60,000 per year lower than the principal assumption of 157,000 per year. Again, the long run assumption is assumed from 2014-15 onwards.
72. Under the low migration variant, there are 31,200 fewer households formed per annum between 2008 and 2033 than under the base.
73. The change in household projections due to low migration assumptions is concentrated among the 30-49 age bands. The household population for this variant also sees a fall in the young adult age bands but the impact on households is muted as these age bands have lower household formation rates.

Table 4.7: Low migration variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	101	111	127	1	0
20_24	760	788	703	825	3	-1
25_29	1,398	1,564	1,502	1,554	6	-2
30_34	1,703	1,878	2,189	1,985	11	-4
35_39	2,158	1,902	2,365	2,293	5	-5
40_44	2,317	2,194	2,107	2,427	4	-5
45_49	2,117	2,298	1,874	2,294	7	-4
50_54	1,860	2,123	2,167	2,063	8	-3
55_59	1,804	1,861	2,318	1,908	4	-2
60_64	1,845	1,762	2,078	2,118	11	-1
65_69	1,447	1,800	1,778	2,225	31	-1
70_74	1,338	1,391	1,675	2,006	27	-1
75_79	1,181	1,227	1,627	1,614	17	0
80_84	909	965	1,137	1,402	20	0
85&	786	901	1,264	1,915	45	0
Total	21,728	22,755	24,894	26,755	201	-31

Zero (natural change only) migration

74. The zero migration assumption assumes zero net migration at all ages. It therefore shows the consequences of the principal assumptions of fertility and mortality in the absence of migration, or where migration inflows and outflows are exactly equal at every age.
75. In 2033, there are 2,081,000 fewer households under the zero migration variant relative to the principal projection. This is equivalent to an average of 83,100 fewer households per year between 2008 and 2033 relative to the base.
76. The change in household projections due to the zero migration assumptions has a negative effect which is concentrated among the 25-49 age bands albeit this is marginally offset by a small positive effect in the 60 and above age bands.

Table 4.8: Zero migration variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	99	109	116	0	-1
20_24	760	723	628	731	-1	-5
25_29	1,398	1,430	1,242	1,294	-4	-13
30_34	1,703	1,830	1,824	1,591	-4	-20
35_39	2,158	1,895	2,122	1,861	-12	-22
40_44	2,317	2,197	2,058	2,030	-11	-21
45_49	2,117	2,319	1,896	2,085	-1	-13
50_54	1,860	2,131	2,202	2,047	7	-3
55_59	1,804	1,880	2,368	1,960	6	0
60_64	1,845	1,794	2,139	2,206	14	2
65_69	1,447	1,826	1,856	2,334	36	3
70_74	1,338	1,401	1,741	2,102	31	3
75_79	1,181	1,231	1,664	1,697	21	3
80_84	909	965	1,148	1,458	22	2
85&	786	902	1,267	1,945	46	1
Total	21,728	22,621	24,263	25,455	149	-83

High population variant

77. The high population variant is one of the standard 'combination' variants. It combines the high assumptions from the fertility, mortality and migration variants.
78. The high population variant increases the number of households formed each year between 2008 and 2033 by 48,000. This is consistent with the cumulative gain from the high fertility, high mortality and high migration variants.
79. The changes in household projections due to high population assumptions affect each age band positively and on the whole seem to be evenly distributed among all age bands.

Table 4.9: High population variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	102	113	150	2	1
20_24	760	808	734	919	6	3
25_29	1,398	1,615	1,608	1,677	11	2
30_34	1,703	1,924	2,370	2,195	20	4
35_39	2,158	1,935	2,539	2,550	16	5
40_44	2,317	2,218	2,225	2,694	15	5
45_49	2,117	2,314	1,953	2,512	16	4
50_54	1,860	2,134	2,223	2,214	14	3
55_59	1,804	1,869	2,358	2,016	8	2
60_64	1,845	1,770	2,110	2,201	14	2
65_69	1,447	1,808	1,807	2,297	34	2
70_74	1,338	1,397	1,702	2,072	29	2
75_79	1,181	1,232	1,653	1,674	20	2
80_84	909	971	1,160	1,469	22	2
85&	786	912	1,318	2,094	52	7
Total	21,728	23,009	25,873	28,734	280	48

Low population variant

80. The low population variant is one of the standard 'combination' variants. It combines the low assumptions from the fertility, mortality and migration variants.
81. The low population variant reduces the number of households formed each year between 2008 and 2033 by 48,100. This is consistent with the cumulative fall from the low fertility, low mortality and low migration variants.
82. The changes in household projections due to low population assumptions affect each age band negatively and on the whole seem to be evenly distributed among all age bands.

Table 4.10: Low population variant household projections, England

	2008	2013	2023	2033	Change per annum 2008-33	Difference from base p.a. 2008-33
15_19	103	101	111	113	0	-1
20_24	760	788	703	780	1	-3
25_29	1,398	1,564	1,502	1,554	6	-2
30_34	1,703	1,878	2,189	1,983	11	-4
35_39	2,158	1,902	2,364	2,290	5	-5
40_44	2,317	2,193	2,105	2,423	4	-5
45_49	2,117	2,297	1,872	2,288	7	-5
50_54	1,860	2,123	2,164	2,056	8	-3
55_59	1,804	1,860	2,313	1,898	4	-2
60_64	1,845	1,760	2,071	2,101	10	-2
65_69	1,447	1,798	1,769	2,200	30	-2
70_74	1,338	1,389	1,663	1,972	25	-2
75_79	1,181	1,223	1,609	1,573	16	-2
80_84	909	960	1,118	1,348	18	-2
85&	786	890	1,214	1,750	39	-7
Total	21,728	22,726	24,767	26,331	184	-48

Section 5: Comparison of 2008-based & 2006-based projections – National and regional level

83. Table 5.1 and Table 5.2 compare the 2008-based household and household population projections by age of household representative with the 2006-based projections. The methodology used for the 2008-based projections does differ slightly to that used for the 2006-based projections which limits the extent to which direct comparisons can be made. In particular the household typology has been revised and therefore comparisons are only presented by the age of the household representative.
84. The 2008-based projections show a decrease in households and household population compared to the 2006-based projections for each year in the projections to 2031 (the end point of the 2006-based projection period). The change in the household projections is principally due to lower population projections. These in turn result from the lower national levels of migration (particularly in the young adult age bands) and increases in the life expectancy assumptions (impacting the over 85s) in the population projections. At the aggregate level, the decrease in the household projections compared to the 2006-based projections is greater than the equivalent decrease in the household population series. This reflects the methodology changes which give greater weight to recent trends from the Labour Force Survey data. The overall impact of adjustments made to the LFS data reduced the projected number of households in 2033 by 292,000, or 1.0 per cent compared to what would have been produced using the unadjusted household representative rates. The 695,000 reduction in households in the 2008-based projections is equivalent to a 2 per cent decrease compared to the 2006-based projections.
85. The outcome of the above is a higher average household size by 2031 in the 2008-based projections compared to the 2006-based projections (2008-based: 2.17 in 2031, 2006-based: 2.13). The increase in average household size in the 2008-based projections by 2031 compared to the 2006-based projections reflects the increased weight given to the LFS data in the new method. The effect of this increased contribution of LFS data has been only partially offset by an increase in the 85 and over age group in the 2008-based population projections. Older age groups tend to have higher representative rates.

**Table 5.1: Household Comparison by Age of Household Representative, England (thousands)
2008-based – 2006-based**

	2008	2018	2031
15_19 ⁴	-11	-9	-7
20_24	-30	-24	-4
25_29	-46	-29	13
30_34	-27	-64	-35
35_39	-33	-125	-142
40_44	-23	-83	-155
45_49	-8	-81	-163
50_54	1	-34	-90
55_59	-3	5	-27
60_64	-8	-22	-50
65_69	-9	-24	3
70_74	-10	-32	-17
75_79	-13	-26	-45
80_84	-7	-9	-16
85&	4	16	41
Total	-223	-542	-695

Source: ONS, DCLG, Experian & Oxford Economics

**Table 5.2: Household Population Comparison by Age of Household Representative, England (thousands)
2008-based – 2006-based**

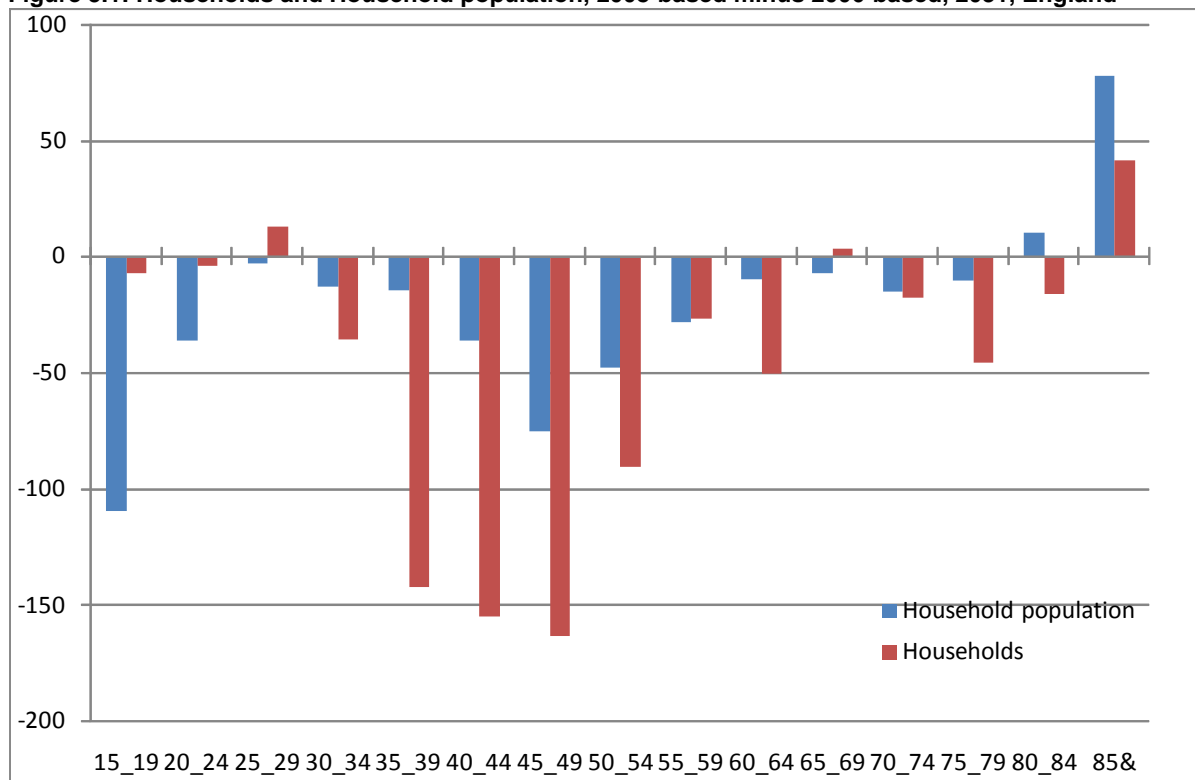
	2001	2008	2018	2031
0_4	0	3	-74	-2
5_9	0	-1	-84	-12
10_14	0	-1	-5	-51
15_19	0	4	-5	-109
20_24	0	-6	0	-36
25_29	0	-30	15	-3
30_34	0	-6	-27	-13
35_39	0	-5	-67	-14
40_44	0	-9	-27	-36
45_49	0	2	-26	-75
50_54	0	3	-8	-47
55_59	0	-3	6	-28
60_64	0	4	-7	-10
65_69	0	-1	-17	-7
70_74	0	-1	-14	-15
75_79	0	3	1	-10
80_84	0	0	7	10
85&	0	7	30	78
Total	0	-37	-304	-381

Source: ONS, DCLG, Experian & Oxford Economics

⁴ Household representative rates are assumed to start at the 15_19 age band therefore household projections for representatives for the 0 to 4, 5 to 9 and 10 to 14 age bands are zero.

86. Figure 5.1 shows that the decrease in household growth is concentrated in the 35 to 54 age bands whereas the over 85s have experienced the greatest upward revision. The decrease in the 35 to 54 age bands can be explained by the joint impact of LFS adjustments and revisions in the marital status projections. Incorporating the latest marital status projections has increased the number of married people within these age bands and decreased the number of “never married” resulting in an overall decrease in household representative rates. The increase in the oldest age band can be explained by higher levels of life expectancy at birth for both males and females in the 2008-based ONS population projections.

Figure 5.1: Households and Household population, 2008-based minus 2006-based, 2031, England



87. With the exception of London, the household projections for all regions show a smaller number of projected households in the 2008-based projections compared to the 2006-based projections; with the largest projected decrease being in the North West followed by the East Midlands. At the regional level it does not necessarily follow that the household projections move in the same direction as household population. The South East for example experienced an increase of 106,000 in household population by 2031 but the household projections are 32,000 lower than in the 2006-based series. Again this can be explained by the joint impact of LFS adjustments and revisions in the marital status projections.

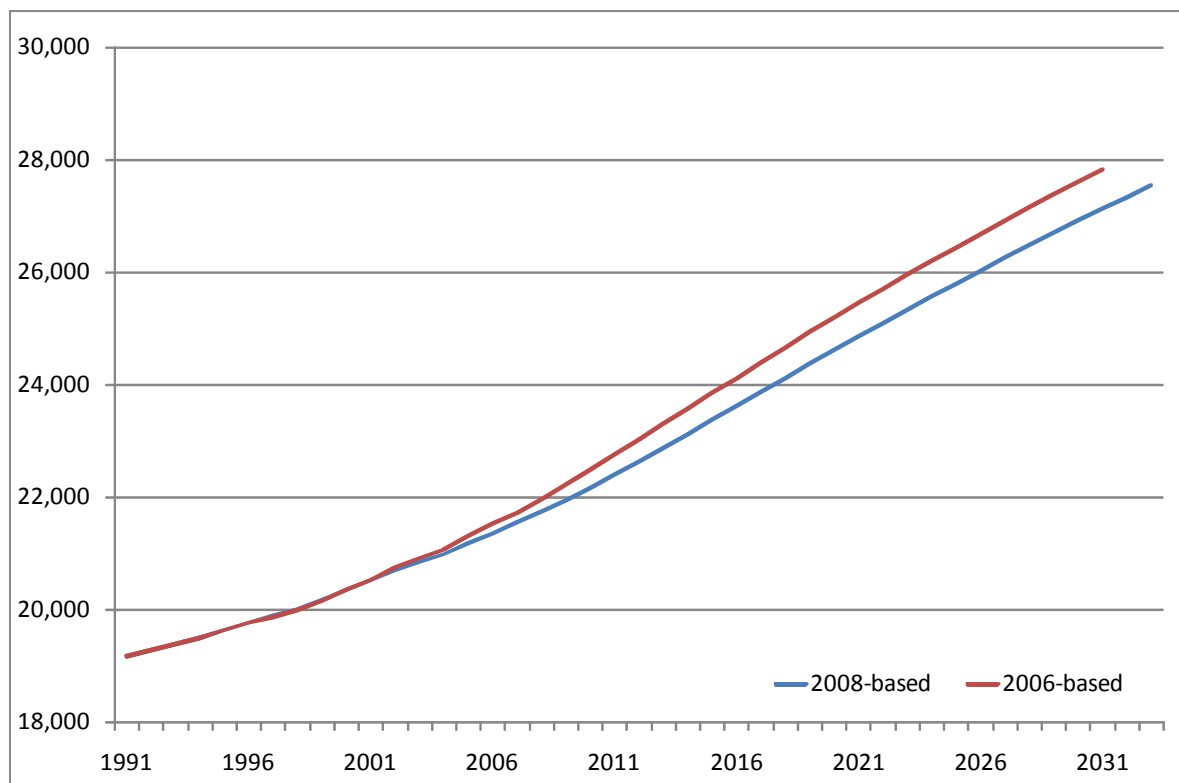
**Table 5.2: Household Comparison by Region (thousands):
2008-based minus 2006-based**

	2008	2018	2031
North East	-15	-17	-8
North West	-43	-116	-178
Yorkshire and the Humber	-34	-74	-100
East Midlands	-33	-103	-165
West Midlands	-33	-73	-93
East	-25	-52	-57
London	15	18	64
South East	-31	-48	-32
South West	-24	-78	-126
England	-223	-542	-695

Source: ONS, DCLG, Experian & Oxford Economics

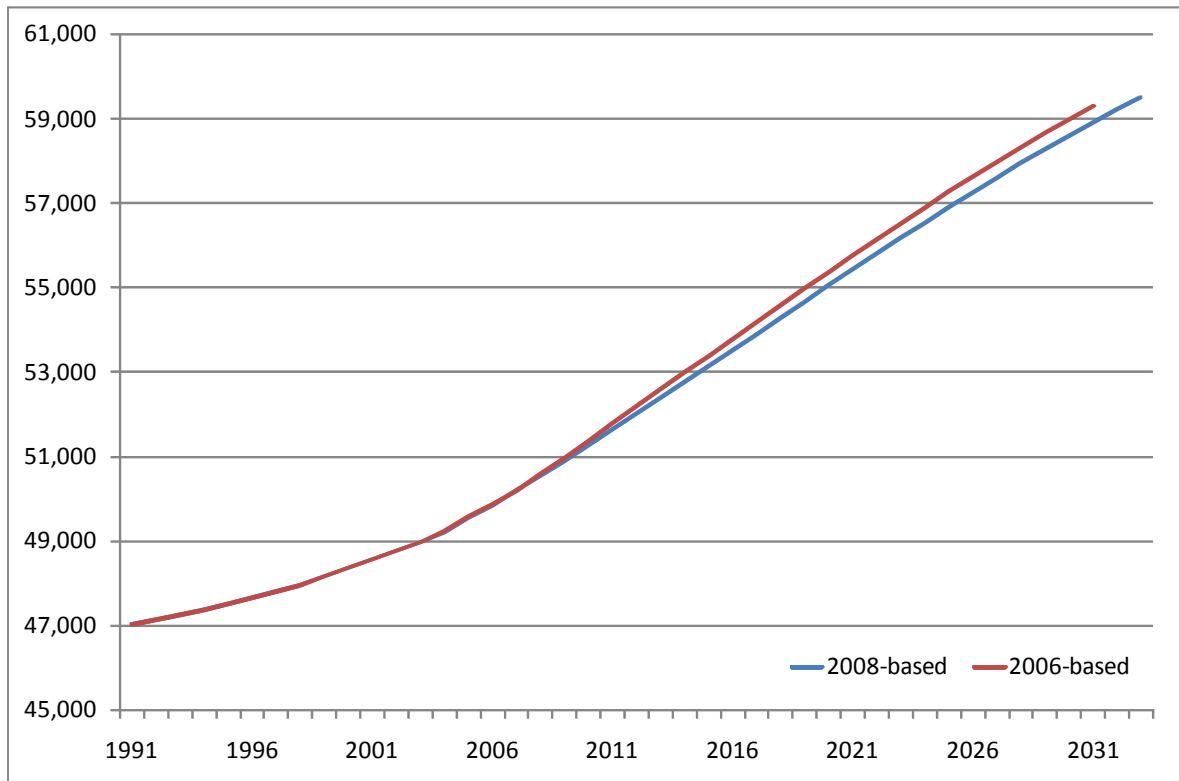
88. Figures 5.2 to 5.4 compare the 2008-based household projections with the 2006-based projections. The axes have been truncated to demonstrate the change between the sets of projections which should be borne in mind when interpreting the trends.

Figure 5.2: Household projection comparison, England (thousands)



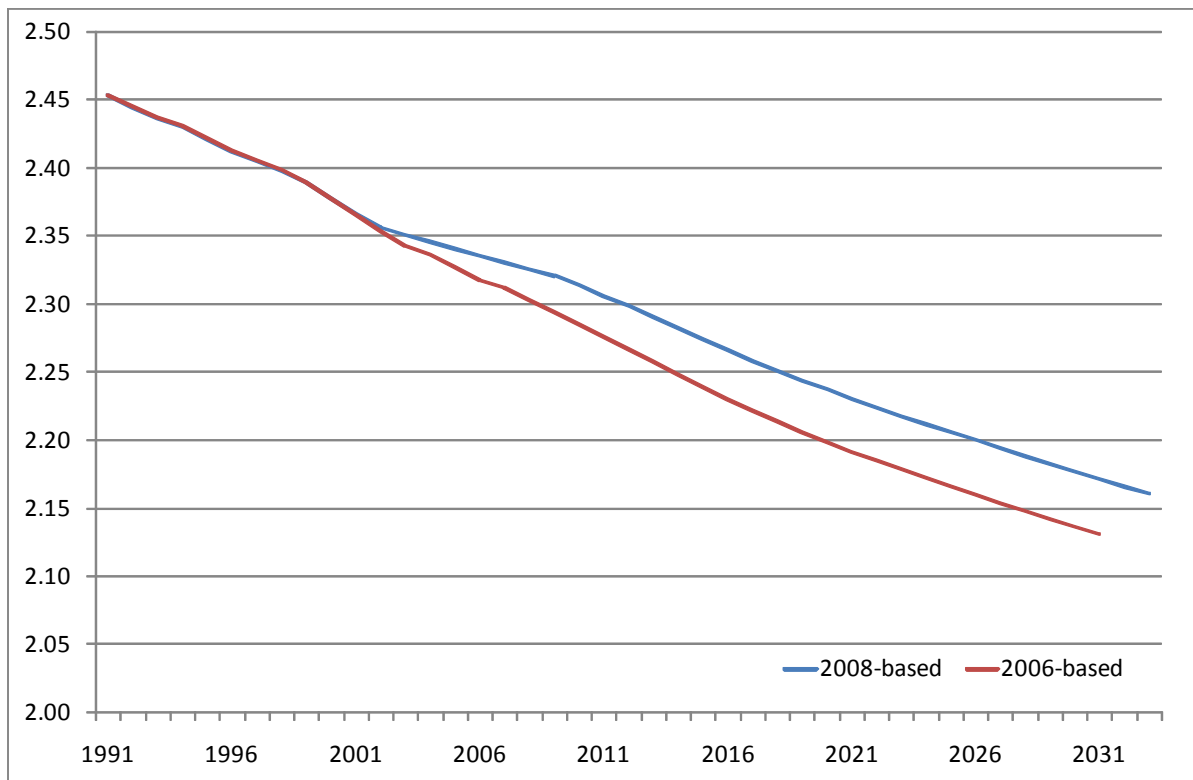
Source: ONS, DCLG, Experian & Oxford Economics

Figure 5.3: Household population projection comparison, England (thousands)



Source: ONS, DCLG, Experian & Oxford Economics

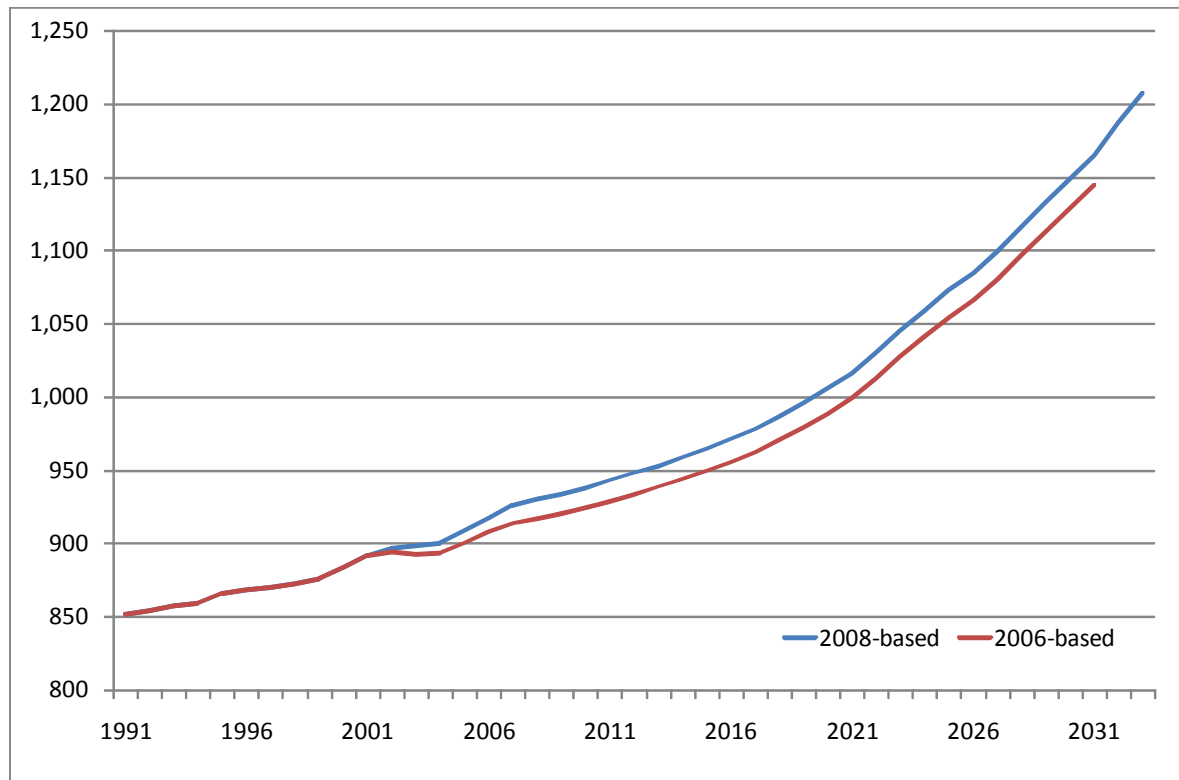
Figure 5.4: Average household size projection comparison, England



Source: ONS, DCLG, Experian & Oxford Economics

89. Figure 5.4 shows the average household size projections, comparing 2008-based projections for England to the equivalent 2006-based series. In the 2008-based projections, the LFS data receives a 40 per cent weight derived as the maximum weight (50 per cent) multiplied by the time in years elapsed since the 2001 census divided by the maximum years between censuses (8/10). This explains why the divergence between series starts in 2002. After 2009, the projections revert to the pre-LFS adjustment trends.

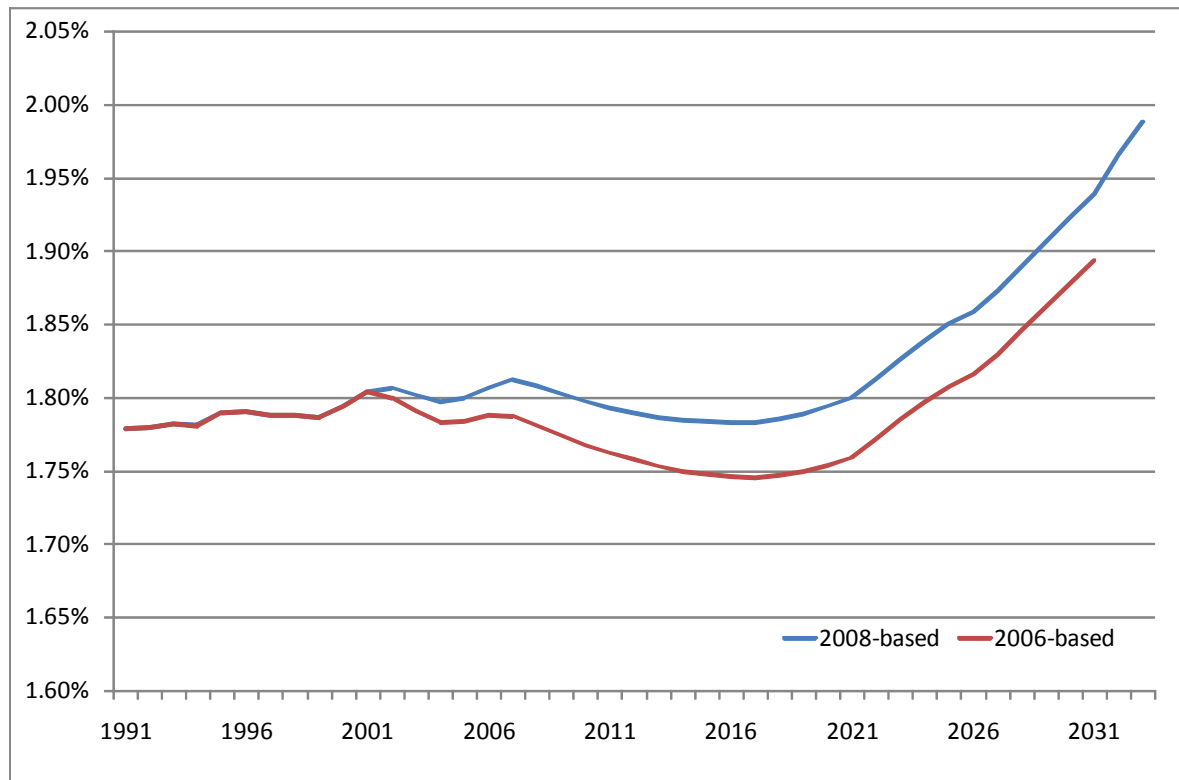
Figure 5.5: Institutional Population projection comparison, England



Source: ONS, DCLG, Experian & Oxford Economics

90. The institutional population is higher in the 2008-based projections because of two factors: a higher population in the over-75 age bands in the 2008-based population projections compared to the 2006-based projections and the impact of revisions made to estimates of the prison population for 2002 to 2008 (further details can be found in the methodology report). The immediate changes since 2001 will be as a result of the incorporation of prison population.
91. Figure 5.6 shows that the share of institutional population in total population is higher in the 2008-based projections than in the 2006-based projections. Changes to the prison population are mainly responsible for the increase between 2002 and 2008. Post 2008, the changing age distribution drives the change in institutional population as a share of total population. This is especially noticeable post 2021, as growth in total population within the over 75 age bands outstrips growth in younger age bands resulting in an increase in the share in institutional population to the end of the projection period.

Figure 5.6: Institutional percentage share of total population projection comparison, England



Source: ONS, DCLG, Experian & Oxford Economics

Glossary of terms

Dwelling

A household's accommodation (a household space) is defined as being in a shared dwelling if it has accommodation type 'part of a converted or shared house', not all the rooms (including bathroom and toilet, if any) are behind a door that only that household can use and there is at least one other such household space at the same address with which it can be combined to form the shared dwelling. If any of these conditions is not met, the household space forms an unshared dwelling. Therefore a dwelling can consist of one household space (an unshared dwelling) or two or more household spaces (a shared dwelling).

Econometric forecast

Forecasts derived on the basis of the past statistical relationship between demand and its determinants.

GOR

Government Office Region – of which there are nine within England.

Households

Throughout this report Experian uses the Census definition of households. 'A household is defined as one person living alone, or a group of people (not necessarily related) living at the same address with common housekeeping – that is, sharing either a living room or sitting room or at least one meal a day.'

Household Reference Person

The concept of Household Reference Person (HRP) was new to the 2001 Census output. It replaces Head of Household, which was used in 1991. For a person living alone, it follows that this person is the HRP. If the household contains only one family (with or without ungrouped individuals), the HRP is the same as the Family Reference Person (FRP). If there is more than one family in the household, the HRP is chosen from among the FRPs using the same criteria as for choosing the FRP (economic activity, then age, then order on the form). If there is no family, the HRP is chosen from the individuals using the same criteria. In 1991, the Head of Household was taken as the first person on the form unless that person was aged under 16 or was not usually resident in the household.

Household representative rates

Household representative rates refer to the projection of people within a population group that can be regarded as household representatives.

Household resident

Detailed below is the Census definition of a household resident.

'A household resident is any person who usually lives at the address, or who has no other usual address. For people with more than one address (e.g. Armed Forces personnel, people who work away from home) the usual address is where the person spends the majority of his/her time, unless they have a spouse or partner at another address. In the latter instance, the usual address is where the person's family resides. Students and schoolchildren studying away from the family home are treated as resident at their term-time address.'

Household space

A household space is the accommodation occupied by an individual household or, if unoccupied, available for an individual household.

Local Authority

The most local level of Government in any part of the UK; includes: non-metropolitan districts, metropolitan districts, unitary authorities and London boroughs in England; unitary authorities in Wales; council areas in Scotland; and district council areas in Northern Ireland.

Population

Detailed below is the Census definition of population base.

'The 2001 Census has been conducted on a resident basis. This means the statistics relate to where people usually live, as opposed to where they are on Census night. Students and schoolchildren studying away from the family home are counted as resident at their term-time address. As in 1981 and 1991, residents absent from home on Census night were required to be included on the Census form at their usual/resident address. Wholly absent households were legally required to complete a Census form on their return. No information is provided on people present, but not usually resident.'

Relationship categories

1. People who are part of a mixed-sex couple. This includes both married couples (where they live together) and cohabiting couples. This does not include people in same-sex couples;
2. Male and female separated, divorced or widowed (once married) households. This category does not include previously cohabiting (not married) people who are now separated;
3. Male and female singles never married, not cohabiting people (single as in not in a couple or separated, divorced or widowed; not necessarily a one-person household). This group, for example, will include single (never married) lone parents and people living in other multi-person households.

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