More Households to be Housed: Where is The Increase in Households coming from: Technical Document

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Contents

Introduction and Purpose

1.   This paper sets out the detailed technical analysis of household projections and the sources of household growth over the next two decades based on the latest Government information. The initial baseline for this work was the research undertaken on 2005 for the TCPA (Holmans and Whitehead, 2005). This has been updated and extended in a further publication (Holmans with Whitehead, 2006) to which this document provides the technical support.

2.   The 2003-based projections of households in England published by the (then) Office of the Deputy Prime Minister (ODPM), the first set of official projections with a post-2001 census base, not only gave new estimates of the future number of households in future years, but revised the estimated number of households in earlier years. Revisions to the number of households in 1981 and 1991, and the estimate for 2001 are significant in a number of ways and need to be reviewed along with the future year projections themselves. Part of the projection method is trend-based, so what is considered to be the past history of changes in numbers of households can affect the assessment made of likely future prospects. Furthermore, past changes in numbers of households are set alongside changes in the number of dwellings in the housing stock and inferences drawn about pressure of housing demand and adequacy of the supply of new housing, both nationally and in different parts of the country.

3.   A comparison is therefore made of the 2003-based estimates of households in 1981 and 1991 with previous estimates. So too the estimate of the number of households in 2001 associated with the 2003-based set of projections is compared with other estimates. Similarly the 2003-based projections of households in future years are compared with previous projections. The 2003-based household projections published in March 2006 are the most recent in a sequence of official projections that began in 1968. It is not necessary to look that far back. But an analysis of the reasons why the most recent set of projections differs from the set that it supersedes is important for interpreting the factors and forces that are influencing the change (currently growth) in the number of households. The table that compares estimates of numbers of households in 1981, 1991, and 2001 is therefore extended to include projected totals in 2011 and 2021. For completeness the 2003-based projection for 2026 is shown, the first official household projection to reach that far ahead. This comparative analysis of estimates and projections of households at successive dates forms Part II of this note.

4.   The next part of the note (Part III) analyses the composition of past and projected changes in the number of households, to show where the changes are coming from. This is important for understanding the projections and assessing possible sources of uncertainty; and it also helps identify where future policy changes could potentially alter the rate of increase in the number of households. Migration is the obvious example. Part IV examines the regional household projections. Part V looks in summary form at implications of the 2003-based projections for the number of houses and flats to be built to achieve policy aims expressed in such terms as "the opportunity of a decent home for everyone".

II Estimates of Households in 1981 to 2001 and Projections of Households in 2011 and 2026

4.   Before attempting to compare household projections and estimates, a brief outline of the projection method is necessary so that possible sources of differences may be identified. The projection method (Department of the Environment (1995), Annex B and Department of the Environment, Transport and the Regions (1999) Annex B) depends on projections of the private household population analysed by sex, age, legal marital status and cohabitation status in future years; and on projected household representative rates (i.e proportions of members of specified population categories that "represent" a household) specific for sex, age, legal marital status, and cohabitation status. A household representative rate of 95 percent for widowed females aged 70-74, for example means that 95 percent of them "represent" a household. The concept is similar in most respects to the more familiar "head of household"; the reason for using it rather than head of household is explained in Department of the Environment (1995) page 61.   All households must have a representative and the total of household representatives is therefore equal to the number of households, by definition. The projected number of households in a given year (e.g 2021) thus depends on:

(a)   The projection of the resident population, subdivided by sex and age
(b)   The projected legal marital status and cohabitation status (in combination) of the resident population, specific for sex and age
(c)   Division of the resident population between the institutional population and the private household population.
(d)   Projected household representative rates, specific for sex, age, and legal marital status and cohabitation status

For the household projection work 15 age groups are distinguished: 15-19, then 5 year age groups to 80-84, and 85 and over, so there are 30 sex/age groups.   There are 8 marital/cohabitation categories: married, divorced, widowed, and single, each of which can be cohabiting (un-married) or non-cohabiting.

5.   Of the four components listed above, (a), the projected resident population comes from a set of population projections prepared by the Government Actuary's Department (now by the Office for National Statistics) for general use within government and elsewhere, with assumptions agreed between Government Departments.   Projections of marital status and cohabitation are also prepared by the Government Actuary's Department. The division between the institutional population and the private household population is part of the projection of households and is the responsibility of the Government Department that produces the projections or commissions them. The projection of household representative rates is also the responsibility of the Government Department that commissions the household projections. Changes between different sets of projections and divergences between actual household totals and projections can thus be due to any or all of the four elements listed in the previous paragraph. The institutional population is however a very small proportion of the resident population except at age 80 and above. Changes to household projections are primarily the consequence of changes to the projection of the total (resident) population, projected marital status, and household representative rates. Their contributions to the overall change in the projected number of households are discussed later in this note. Before that the estimated and projected numbers of

households may be shown. In Table 1 the figures for 1971, 1981, and 1991 are estimates, not projections. For 2001 the 1996-based figure is a projection; the others are estimates.

Table 1 Estimates and Projections of Households in England 1971-2026

								(thousands)
	<u>1971</u>	<u>1981</u>	<u>1991</u>	<u>2001</u>	<u>2011</u>	<u>2016</u>	<u>2021</u>	<u>2026</u>
(1) 1992-based projection	15,942	17,306	19,215	21,046	22,769	23,598	---	---
(2) 1996-based projection	15,951	17,306	19,213	20,992	22,599	23,323	24,000	---
(3) 2001-census-based estimate	---	17,306	19,090	20,614	---	---	---	---
(4) 2002-based "interim" projection with 1996 based representative rates	---		19,090	20,780	---	---		
(5) 2003-based projections	---	17,362	19,166	20,523	22,566	23,705	24,781	25,713

Sources: (1) Department of the Environment, *Projections of Households in England to 2016,* Table 1
                  (2) Department of the Environment, Transport and the Regions, *Projections of Households in England to 2021*, Table 1
                  (3) A.E. Holmans, *Households and Dwellings in England in 1991 and 2001,* Cambridge Centre for Housing and Planning Research (2004), Table 21
                  (4) Office of the Deputy Prime Minister, Press Release October 2004
                  (5) Office of the Deputy Prime Minister, Statistical Release March 2006

6.   The household figures in Table 1 for 1971, 1981, and 1991, and in rows (4) and (5) for 2001 were produced by applying household representative rates to official population estimates analysed by sex, age, and marital status and not taken directly from the census for those years. The census population totals for 1971, 1991, and 2001 were all considered to be under-counted. That conclusion was drawn about 1971 from the 1981 census. In 1991 the census total was considered too low relative to the "rolled forward" total based on 1981, with the difference popularly referred to as the "missing million". The estimate of the over-count in 1991 was subsequently revised downwards in the light of results from the 2001 census. This revision explains why the figure for 1991 in row (3) in Table 1 is 123,000 and 125,000 lower than the figures in rows (1) and (2).

7.   The reason why the figures for 1981 and 1991 in row (5) are higher than in row (3) (and for 1981 in rows (1) and (2)) is that in row (5) students whose term-time address is not the same as their vacation address were notionally assigned to their term-time address instead of the vacation address. That made the basis of the addresses of students in 1981 and 1991 comparable to that in 2001. When fed into the household projection model, the result was to raise the calculated number of households in 1981 and 1991. Nothing changed "on the ground", of course. What figure is the best estimate for 2001 is more complex and can be better discussed with the aid of regional figures (paragraph 12 and Annex A).

8.   An analysis may next be made of how the actual and projected changes in household numbers in rows (1), (2), and (5) in Table 1, the 1992-based, 1996-based and 2003-based households projections can be divided between the effects of changes in the total and age structure of the adult population, changes in marital and cohabitation status, and household representative rates. The effect of changes in the institutional population was too small to be

brought to account separately. The table includes entries for "remainder", which are the results of inter-actions between the components of change. The components of change in 1991-2001 in the 2003-based part of the table are calculated with a household total of 20,523,000 households in 2001. If the other post-census estimate of 20,614,000 were used, the effect of higher household representative rates would be about 300,000 instead of the 213,000 in Table 2.

Table 2 Components of Change in Estimated and Projected Household Totals in England 1971-2021

				(thousands)
	1981-91	1991-2001	2001-11	2011-21
1992-based				
Adult population	803	615	1,012	---
Sex and age structure	497	607	123	---
Marital status	-186	-69	114	---
Household representative rates	665	603	444	---
Remainder	131	75	29	---
Total	**1,910**	**1,831**	**1,724**	**---**
1996-based				
Adult population	803	694	1,004	745
Sex and age structure	498	594	118	497
Marital status	-167	-222	-13	7
Household representative rates	624	613	405	231
Remainder	149	89	14	3
Total	**1,906**	**1,779**	**1,527**	**1,481**
2003-based				
Adult population	668	691	1,381	1,192
Sex and age structure	447	498	145	585
Marital status	-149	-251	0	-8
Household representative rates	692	213	470	412
Remainder	146	206	39	34
Total	**1,803**	**1,357**	**2,043**	**2,215**

Sources: 1992-based from *Projections of Households in England to 2016,* Table II
1996-based from *Projections of Households in England to 20211,* Table 4
2003-based from ODPM Statistical Release *New Projections of Households for England and the Regions to 2006* (March 2006); and working detail of the projection provided by the Population and Housing Research Group, Anglia Ruskin University.

9.   Several features of the increase in the number of estimated and projected increases in the number of households stand out from Table 2.

(i)   The importance of the upward revision to the projection of the resident population in explaining why the 2003-based household projection is so much higher than the previous official projection. Of the difference of 1,250,000 between the 1996-based and 2003-based projections of the increase in households between 2001 and 2021, 824,000 is explained arithmetically by the larger increase in the adult population and 115,000 by the change in the age and sex structure. Three-quarters of the difference is thus the result of the 2003-based population projection.

(ii)   Whereas the revision of the projected marital status of the population in the 1996-based projection had a substantial effect on the increase in households, 153,000 between 1991 and 2001, and 127,000 between 2001 and 2011, marital status and cohabitation has a very small effect on the increase in households between 2001 and 2021. A comparison of the projected totals of households in 2016 (*Projections of Households in England to 2021* Table F.1*)* shows that different projections of marital status lowered the total of households in 2021 by 397,000, which was partly offset by a larger increase in the projected population. The difference between the marital status projections was due to a technically superior method being adopted to ensure compatibility between the assumptions about marital status (by age) of men and women. It produced nearly half a million fewer widows in 2021, and hence many fewer female one-person households.

(iii)   The actual increase in households between 1991 and 2001 due to increases in household representative rates (in the 2003-based part of Table 2) is a long way below the 1992-based and 1996-based projections, and also below the actual increases from higher household representative rates in 1971-81 and 1981-91. The contrast is enhanced by the very low figure for households in 2001 associated with the 2003-based projections. But even if the higher estimate of households in 2001 (Table 1) is taken and the effect of higher household representative rates put at about 300,000, that is still only one-half of the increases in households due to higher household representative rates in 1971-81 and 1981-91. Beyond doubt is that the increase is the number of households relative to population was much slower in 1991-2001 than in previous decades. This fact can be shown alternatively by reference to average household size (private household population divided by the number of households); 2.86 in 1971; 2.67 in 1981; 2.45 or 2.46 in 1991; and 2.37 or 2.36 in 2001.

(iv)   In the 2003-based projection, the increase in households due to rising household representative rates is greater in the projection period than

during the decade before the projection period. This was not so with either the 1992-based or 1996-based projection.

10.   That the average annual increase in households due to increasing household representative rates that is projected for 2001-11 and 2011-21 is distinctly higher than the actual increase in 1991-2001, whichever figures for the "actual" increase are used, a paradox of the 2003-based household projection.

11.   Household representative rates are projected from values from previous censuses, from 1971. New information, in the present instance from the 2001 census, does not lead to the previous information being discarded: the new information modifies the conclusions drawn from what went before. It is therefore useful to compare the actual number of households in 2001 with the number that there would have been if the projected household representative rates (1996-based) had applied, but to the actual 2001 population. Table 3 shows this comparison, at regional level. Three sets of figures are shown: (A) hypothetical totals with 1996-based household representative rates; (B) estimates used in the 2003-based projection (row (5) of Table 1); and (C) census-based direct estimates (row (3) of Table 1).

Table 3 Households in 2001: Regional Analysis

					(thousands)
	(A)	(B)	(C)	(D)	(E)
	Hypothetical 1996-based HRRs	2003-projection estimate	Direct estimate	(B) minus (A)	(C) minus (A)
North East	1,081	1,075	1,082	-6	+1
North West	2,833	2,827	2,850	-6	+17
Yorkshire and Humber	2,087	2,069	2,074	-18	-13
East Midlands	1,738	1,737	1,737	-1	-1
West Midlands	2,157	2,154	2,162	-3	+5
East of England	2,259	2,236	2,235	-23	-24
London	3,175	3,036	3,094	-139	-81
South East	3,348	3,294	3,295	-54	-53
South West	2,101	2,093	2,087	-8	-14
England	**20,780**	**20,523**	**20,614**	**-247**	**-166**

Note: Small discrepancies are caused by rounding
Source: As Table 1

12.   Comparison of the 2003-based projection estimates of households and the direct estimates in columns (B) and (C) shows fairly close agreement except for London and the North West. The direct estimate for the North West might well be too high; but for reasons discussed in Annex A (household estimates in 2001) the direct estimate for London is sufficiently supported by evidence as to make it more realistic than the projection-based total. A shortfall of

139,000 households during a decade looks improbably large, given that the population figures are the same. That the shortfall of actual households relative to the 1996-based projection (which included only Labour Force Survey (LFS) information post-1991) was concentrated in London, the South East, and East of England regions points to there having been influences at work there to depress household formation below what was expected from trends up to 1991; but not in the rest of the country. Since all the figures in Table 3 are derived from the same population estimates, the differences between them imply that in London and the South East the increase in household representative rates in the 1990s was slower than projected from previous trends.

13. Unless this departure from previous trends could be accounted for by specific causes that could be seen to be unlikely to recur, the slower than previously projected rise in household representative rates could be expected to feed through into projections beyond 2001. A components of change analysis on the lines of that for England as a whole in Table 2 is not immediately available at regional level. Instead average private household population per household (average household size) in 1981 and 1991 may be compared with the estimates for 2001 and the projections for 2011 and 2021. Of the two figures for 2001 (B) is from the 2001 direct estimates and (A) from the 2003-based projections.

Table 4 Average Household Size by Region to 1981 to 2021

	Estimated			Projected	
	1981	1991	2001(A)/2001(B)	2011	2021
North East	2.67	2.43	2.32/2.32	2.18	2.06
North West	2.69	2.47	2.36/2.35	2.22	2.10
Yorkshire and Humber	2.66	2.45	2.36/2.36	2.24	2.13
East Midlands	2.70	2.47	2.37/2.36	2.24	2.13
West Midlands	2.76	2.52	2.41/2.41	2.28	2.17
East of England	2.71	2.48	2.37/2.38	2.26	2.16
London	2.54	2.40	2.38/2.35	2.27	2.17
South East	2.69	2.46	2.38/2.37	2.27	2.17
South West	2.62	2.40	2.31/2.31	2.19	2.09
England	**2.67**	**2.45**	**2.37/2.36**	**2.25**	**2.14**

Sources: 1991, 2001(A), 2011 and 2021 from Table E of ODPM Statistical Release
               New Projections of Households in England and the Regions to 2026

14. To bring out the implications of the actual and projected changes in average household size by region, decade by decade changes are shown in Table 5. The 2001(B) figures are used for the changes in 1991-2001 and 2001-11 in view of the contention (paragraph 12 above) that the household totals from which they were derived are to be preferred to estimates from the 2003-based projections.

Table 5 Reduction in Average Household Size by Region 1981 to 2021

	1981-91	1991-01	2001-11	2011-21
North East	0.24	0.11	0.14	0.12
North West	0.22	0.12	0.13	0.12
Yorkshire and Humber	0.21	0.09	0.12	0.11
East Midlands	0.23	0.11	0.12	0.11
West Midlands	0.24	0.11	0.13	0.11
East of England	0.23	0.10	0.12	0.10
London(A)	0.14	0.02	0.11	0.10
London(B)	0.14	0.05	0.08	0.10
South East	0.23	0.09	0.10	0.10
South West	0.22	0.09	0.12	0.10
England	**0.22**	**0.09**	**0.11**	**0.11**

Note: The (A) row for London is calculated from the (A) column in Table 4, and the (B) row from the (B) column in Table 4.

15.   In all the regions the reduction in average household size was smaller in 1991-2001 then in 1981-91, but particularly in London. If the 2001 figure for London from the 2003-based household projections is taken the sequence of actual reductions in average household size in 1981-91, actual in 1991-2001, and projected in 2001-11 is 0.14, 0.02, 0.11; if the direct estimate is taken (row (B) for London in Table 5) the sequence is 0.14, 0.05, and 0.08. A difference as great as between 0.02 in 1991-2001 and 0.11 in 2001-11 would not look reasonable without specific evidence to support it. In the absence of such evidence, the case for accepting something close to the direct estimate for London in 2001 is strengthened. Putting in the higher of the figures for households in London does not in itself put a query over the projected increase in households in England as a whole, because the projection model is a "top down" model, in which regional projections are controlled to the national total. A higher figure for London in 2001 would raise the household figures for London in 2006 and beyond, but the higher figures for London would be offset by downward revisions to the projections for the other regions. A full run of the model would be required to work out the changes to the published household projections that would result from using the direct estimate of households in London in 2001.

16.   That the household projection model is "top down" means that the anomalous figure for London in 2001 does not help explain the apparent paradox of the projected increase in households due to higher household representative rates in 2001-11 being considerably greater the actual increase in 1991-2001. If the direct estimate of households in 2001 is taken, then the increase between 1991 and 2001 would be about 300,000 in place of the 213,000 shown in Table 2. But that is well below the projected figure of 470,000 in 2001-11. There is nothing inherently implausible, of course about the projected rise in household representative rates in 2001-11 being higher than the actual rise in 1991-2001, because the projection is a trend projection that takes on board information for 1981 and 1971 as well. Confidence in the steeper increase in household representative rates in 2001-11 (and 2011-21) would be strengthened, however, if restrictive

influences could be identified that operated strongly in 1991-2001 but are unlikely to do so in 2001-11. As noted in paragraph 12 above, the comparison with the 1996-based projection indicates such influences would have to act primarily in London and the South. Possible candidates are shortage of supply of dwellings; much higher house prices relative to incomes; and lower rates of household formation among recently arrived immigrants. Household formation by migrants is discussed in Annex B.

17.   The main features of this review of the 2003-based household projections in relation to previous projections may be summarised:

(a)   The increase in households due to the projected growth of the population and changes in its age structure, 165,000 a year in 2001-21 is much higher than in previous projections, 118,000 a year in the 1996-based projection and 116,000 a year (in 2001-16) in the 1992-based projection

(b)   The increase in households due to projected higher household representative rates, 44,000 a year in 2001-11, is distinctly higher than in the 1996-based projection, 32,000.

(c)   In the 2003-based projection the increase in household due to higher household representative rates is larger in the first projection decade (2001-11) than in the preceding "actual" decade, in contrast to the 1992-based and 1996-based projections.[1]

The aspects of changes in numbers of households noted in (b) and (c) place a query over the projected increase in households due to higher household representative rates. But even if the projected effect of higher household representative rates is shaded down, for instance to the "actual" 30,000 a year in 1991-2001 (based on the direct estimate of households in 2001), the average increase in households in 2001-2021 would still be very close to 200,000. That is far higher than any previous projection. The explanation lies in the demographic part of the projection, the population and its structure.

III The Increase in Households Due to Demography

18.   Table 2 above showed that out of the projected increase of an average of 213,000 a year in the number of households between 2001 and 2021, some 165,000 a year comes from the growth of the population and changes in its age structure, and 44,000 from more separate households formed relative to population. The effect of changes in marital status and cohabitation is projected to be neutral. The projected increase in households of 165,000 a year due to population change is far larger than in 1971-81, 1981-91, and 1991-2001, respectively 83,000, 112,000, and 119,000 a year (Table 2).

19.   Changes in population in total are, by definition, the result of births, deaths, and migration. In a projection 20 years ahead, the effect of future births on the number of

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[1] Formally the first projection decade does not start until 2003. But since the 2003 figure in itself a projection it is legitimate to treat the 2001-2011 as the first decade of the projection.

households is negligible. Of household representatives in England in 2001, less than 0.5 percent were aged under 20. Past variations in the numbers of births, however, can have an important effect since household representative rates differ according to age. Persons born in the "baby boom" decade, 1961 to 1971, were aged 30-39 in 2001 but will be 50-59 in 2021. In 2001 54 percent of persons aged 30-39 were household representatives, but 58 percent of persons aged 50-59. The interaction of ageing with past variations in births would thus generate an increase in the number of households even with household representative rates held constant. Demographic causes of the projected increase in the number of households that are brought to account are: (a) the effect of increasing longevity during the projection period; (b) the effect of net inward migration; (c) the effect of breakdown of couple households and formation of successor households; and (d) a remainder which is positive owing to the interaction between changes in the age structure and the way in which households representative rates vary with age. The remainder necessarily accumulates the effect of any errors in the other three components. The effect of net inward migration is the difference that would be made if immigration just balanced outward migration instead of exceeding it. The effect of the breakdown of couple households is the difference from what there would be if formation of couple households was unchanged but none of the couples separated. That is compatible with changes in the projected marital status of the population having a neutral effect on the household projection (Table 2).

Longevity

20.   The effects of falling mortality rates and hence improved longevity have attracted much attention in connection with pensions; but the effect on the number of households and hence demand and need for housing has gone largely un-noticed. The question to consider is how much of the projected increase in the population is the result of assumed future reductions in mortality and hence how much of the projected increase in households. This question can be answered from a "variant" population projection by the Government Actuary's Department in which no improvement in mortality was assumed after the base date of the projection. This projection is 2002-based; but its assumptions about mortality were taken into the 2003-based projection (on which the household projection is based) without change. Table 6 compares the constant mortality projections for 2021 with the principal projections. The projections are for the United Kingdom. Figures for England are derived at a later stage. The comparison is made separately for males and females.

Table 6 Comparison of Principal and Constant Mortality Population Projections: United Kingdom 2021

	Males			Females		
	Principal Projection	Constant mortality	Difference	Principal Projection	Constant mortality	Difference
Age						
0-19	7,058	7,047	11	6,770	6,762	8
20-29	3,904	3,896	8	3,897	3,895	2
30-39	4,191	4,184	7	4,295	4,291	4
40-49	3,769	3,760	9	3,963	3,955	8
50-54	2,170	2,159	11	2,245	2,237	8
55-59	2,140	2,117	23	2,248	2,235	13
60-64	1,881	1,846	35	1,973	1,956	17
65-69	1,598	1,546	52	1,715	1,690	25
70-74	1,573	1,472	101	1,747	1,685	52
75-79	1,160	1,020	140	1,364	1,258	106
80-84	775	615	160	1,002	859	143
85 and over	680	455	225	1,123	855	268
Total	**30,897**	**30,117**	**780**	**32,342**	**31,679**	**663**

(thousands)

Notes: Minor discrepancies are due to rounding
Source: Office for National Statistics

21.   For males and females together, the constant mortality population projection for the UK is some 1,440,000 lower by 2021 than the principal projection in which a continuing improvement in mortality is assumed. The projected improvement in male mortality is greater than the improvement in female mortality, in line with the recent past trends on which the projected improvement in mortality in the future is based. That is significant here, owing to the higher proportion of males that are household representatives.

22.   The UK figures in Table 6 are scaled to England pro-rata to population in each 5 year age group from 20-24 upwards. Numbers of household representatives, and hence households were derived from the counterpart for England of the "difference" columns in Table 6 by in each 5 year age group by multiplying first by the ratio of private household population to total household population and then by the overall household representative rate.   The private household population and household representatives in 2021 were taken from the detail of the 2003-based household projection (made available by DCLG). This calculation produces figures of 600,000 households with male heads and 290,000 with female heads for the difference made to household totals in 2021 by assuming no improvement in mortality. Because the projections are 2002-based, the difference between the projections for 2021 is for a 19 year period, not 20.

Owing to cumulative effects of differences in mortality rates, the difference between a 20 year and 19 year period is rather more than pro-rata. Pro-rata scaling would give 936,000; so 950,000 is taken as the effect on the projected number of households in 2021 from assuming no improvement in mortality instead of the improvement actually assumed.

International Migration

23.   Among the variant household projections published by ODPM (*New projections of households for England and the regions to 2026*, Table D) is a projection with zero net migration. This projection is shown as giving an annual average net increase between 2003 and 2026 of 144,000 a year, i.e 65,000 a year less than the 209,000 a year increase shown by the main projection. This figure of 65,000 a year is not however a best estimate of how much lower the average annual increase in households would be if inward migration from outside the United kingdom were to be in balance with outward migration instead of being 130,000 a year higher in the longer term, as assumed in the main projection. The household projection with zero net migration comes from a population variant in which there is no inward or outward migration, that is to say that the population changes only as a result of future births and deaths. But in reality, there will be both inward and outward migration. Unless inward and outward migrants have the same age structure and the same propensities to form households, an assumption of no migration inwards or outwards cannot simulate the effect on the number of households of inward migration balancing outward migration instead of being 130,000 a year higher.

24.   An attempt is therefore made to assess the long term effect on the number of households if inward migration were to run 130,000 a year lower. The statistical definition of a migrant (in the International Passenger Survey and migration statistics generally) is someone entering the United Kingdom who expects to stay more than a year, or someone leaving who expects to stay abroad for more than one year. "Migrants" therefore include considerable numbers of people who enter the UK but will not become permanent residents. Information about the household status of inward migrants is available from the 2001 census and the Labour Force Survey. The census included a question about place of usual residence one year previously, from which the circumstances of people entering the United Kingdom during the previous year can be analysed. In the Labour Force Survey (LFS) respondents are asked whether their place of birth is in the United Kingdom, and if not what was the year in which they entered the UK, the most recent year if more than one. Both the census and the LFS collect information about household status; but the International Passenger Survey collects only individual information, with nothing about the households to which sample members belong. Table 7 summarises the 2001 census information about the age of people who only one year previously lived outside the UK, and whether they were "household reference persons". The census collected information about persons living in institutions as well as in households. The Labour Force Survey samples households and therefore does not include the institutional population. Census information is immediately available for England and Wales, not England, but since the population of England is between 94 and 95 percent of the population of England and Wales, Table 7 can be taken as applicable to England. In analyses of this kind, "household reference persons" have the same function as household representative (see paragraph 4). The number of household reference persons is by definition equal to the number of households. The household reference persons in

Table 7 are of wholly moving households, i.e the address one year previously was the same for all household members.

Table 7 Household Status of Persons Resident Outside the UK One Year Previously: England and Wales 2001

					(thousands)
	All persons				
	Communal establishments	Private households	Total	Household reference persons	Percent reference persons(a)
Age					
0-15	3.4	54.0	57.4	---	---
16-24	31.8	74.2	106.0	8.1	11
25-34	12.1	109.5	121.6	30.9	28
35-49	2.8	56.3	59.1	24.8	44
50 and over	1.0	25.4	26.4	10.7	42
Total	**51.1**	**319.4**	**370.5**	**74.4**	**---**

Note: (a) Base is population in private households, as only residents in private households can be reference persons

Source: *Census 2001 National Report for England and Wales Part 2,* Tables S008 and S009

25. Of the persons whose usual residence one year previously was outside the United Kingdom, 84,000 were students (*National Report for England and Wales* Part 2, Table T33). The published census tables do not include analyses that would give the age distribution of students or the numbers that lived in communal establishments. But it is likely that most of the residents of communal establishments in the 16-24 and 25-34 age ranges were students. Students from overseas who will go home in due course should probably be excluded from an analysis of household formation by inward migrants. Not all students go back to their countries of origin, however. Only assumptions are possible about the numbers that stay. For present purposes, 70,000 are taken from the numbers in Table 7, divided between the 16-24 and 25-34 age group pro-rata to the numbers of communal establishment residents in these age groups. Also taken out are the residents of communal establishments in the other age ranges. Table 8 shows the resulting estimate of longer stay inward movers in total and the age distribution of 130,000 inward movers, derived pro-rata from the total.

Table 8 Estimate of Longer Stay Inward Migrants from Outside the United Kingdom: Analysis by Age

		(thousands)
	Total	Hypothetical 130,000 a year
Age		
0-15	54	24
16-24	55	24
25-34	103	46
35-49	56	25
50 and over	25	11
Total	**293**	**130**

Source: Table 7 and see text

26.   For evidence about proportions of household reference persons according to age among inward migrants, reference is made to the Labour Force Survey (LFS) information about the household status of persons born outside the United Kingdom. That is not exactly the same in coverage as the census information in Table 7, because people whose residence one year previously had been outside the United Kingdom could include British born people coming back. The LFS information analyses the population born outside the UK ("foreign born") according to length of time since they came to the UK. Table 9 shows their number. Estimates for 2002, 2003, 2004, and 2005 are combined together to reduce the effect of sampling variations.

Table 9 Place of Birth and Length of Time in the United Kingdom: Residents of England in 2002-05

	Household reference persons		All Persons	
	Number (thousands)	Percent of Total (a)	Number (thousands)	Percent of Total (a)
Born outside UK				
Entered UK less than 5 year before	323	1.6	1,028	2.2
Entered UK 5 years but less than 10 years before	243	1.2	636	1.3
Entered UK 10 years but less than 20 years before	314	1.6	718	1.5
Entered UK 20 years or more before	1,232	6.1	2,009	4.2
Total born outside UK(b)	**2,133**	**10.5**	**4,430**	**9.4**
Born in UK	**18,122**	**89.5**	**42,855**	**90.6**
Not known if born outside UK	343	---	1,374	---
Total private household population	**20,588**	**---**	**48,659**	**---**

Notes:
(a) Base for percentage excludes not known if born outside UK
(b) Includes a small number (23,000 for reference persons and 39,000 for all persons) for whom the length of time in the UK was not stated

Source: Labour Force Survey, made available by the Office of the Deputy Prime Minister

27. The information about the number of foreign born persons in total and reference persons in Table 9 is analysed in tables from LFS by age. Age-specific ratios of household reference persons to all person totals can therefore be calculated according to length of time since coming to the UK. These ratios are shown in Table 10.

Table 10 Ratios of Household Reference Persons to Total Private Household Population: England 2002 to 2005

					(percent)
	Age				
	16-24	25-29	30-44	45-64	65 and over
Born outside UK					
Entered less than 5 years ago	23.8	37.9	49.1	57.8	29.4
Entered UK 5 years but less than 10 years ago	19.6	43.3	52.9	57.9	43.6
Entered UK 10 years but less than 20 years ago	10.5	45.9	55.6	60.5	50.5
Entered UK 20 years or more ago	23.5	41.4	58.1	60.0	69.8
Born in the UK	13.7	45.9	57.3	59.1	70.5
Whole private household population (a)	**13.7**	**43.5**	**56.3**	**59.0**	**70.1**

Note: (a) Included not known whether born outside UK. See Table 9
Source: As Table 9

28.   In Table 10 the household reference person ratios among persons that entered the United Kingdom within the previous 5 years are lower than among those that entered the UK between 10 and 20 years or more previously or 20 years or more previously. Among those that entered the UK 20 years or more previously the household reference person ratios were very similar to those of the UK-born population, except in the 16-24 age group. Persons born abroad who were aged 16-24 and had been in the United Kingdom for 20 years or more must have been 4 years old or less when they came, and hence few in number. The picture is therefore one of household formation rates among inward migrants being initially lower than for the UK-born population, but converging over time. The apparent convergence is shown in Table 11. The ratios compared are not for the same persons at different intervals since entering the UK, but for different persons, hence the use of the term "apparent convergence".

Table 11 Differences Between Household Reference Person Rates for Persons Born Outside the United Kingdom and the Whole Population

				(percentage points)
	25-29	30-44	45-64	65 and over
Whole population household reference person rate (percentage)	43.5	56.3	59.0	70.1
Differences in rates for persons born outside UK				
Entered UK less than 5 year before	-5.6	-7.2	-1.3	-40.7
Entered UK 5 years but less than 10 years before	-0.1	-3.4	-1.2	-26.5
Entered UK 10 years but less than 20 years before	+2.4	-0.7	+1.5	-19.6
Entered UK 20 years or more before	-2.1	+1.8	+1.0	-1.3

Source: Derived from Table 10

29.   The very large differences in household reference person rates for the 65 and over age group appear to be explained, arithmetically at least, by those persons who have entered the UK within the previous 20 years being much more likely to live with relatives than those who were younger when they came to the UK and have grown older here. 49 percent of persons aged 65 and over who came to the UK less than 5 years before the survey interview were "other relatives" (i.e not spouse or partner) of the reference person; 45 percent of those came 5 but less than 10 years previously; and 31 percent of those who came 10 years but less than 20 years before. In contrast, of persons aged 65 and over who came to the UK 20 years or more before, only 6 percent were "other relatives" of the reference person.

30.   A calculation is required of the number of households that would be formed from 130,000 inward migrants a year with the age distribution in Table 8 and the household reference person proportions in Table 10. For 5 years the proportion in the "entered less than 5 years before" row would apply. In the next 5 years the proportion in the "entered 5 but less than 10 years before row, but with the inward migrants 5 years older. The combination of the effect of

ageing and higher household reference person rates makes for a complicated calculation, which is put in Annex B. It produces an average figure of 55,000 a year as the difference that would be made, over a 20 year period, if inward migration from outside the UK were to run 130,000 a year lower.

31.   The third category of increases in households due to demographic causes is separation of couple households and formation of successor households. Whether this results in a net increase in households depends on how many of the former members of separating couples form couple households with new partners; and of those that do not, how many live independently and so are "households representatives". Estimating the net effect of separations of couple households on the number of households is made more difficult and uncertain by the growing prevalence of un-married cohabitation. Divorces of married couples are legal events and so leave records from which the totals of divorcing couples and their ages can be counted. Separations of cohabiting couples leave no record, so only fragile estimates of their number are possible.

32.   With constant divorce rates the number of divorces would decline owing to the reduction in the number of married couples, particularly in the younger age groups most at risk to divorce. The number of divorces is taken to diminish in proportion to the number of married couple households under age 50, which would result in an average of 114,000 divorces a year over the whole period from 2001 to 2021. The working detail of the estimate of the effect that this would have on the number of households is in Annex C. The number of successor households formed by the ex-members of 114,000 divorcing couples is put at 143,000 (Table C.1) and the net increase in households at 29,000.

33.   The first stage of an estimate of the effect of separations of cohabiting couple households is to use the projected number of cohabiting couple households to calculate the annual average number of separations there would be if separation rates, age for age, were the same as divorce rates. Evidence discussed in Annex C shows that separation rates for cohabiting couples are higher than married couples' divorce rates, but how much higher is uncertain. The assumption made is that separation rates for cohabiting couples will run at half as high again as divorce rates; and that formation of successor households will be similar, relative to the number of separations, as for ex-members of divorcing couples. On these assumptions the net increase in households as a result of separations of cohabiting couples would run at an average of 23,000 a year over the two decades from 2001 to 2021. The net increase in the number of households as a result of separations of couple households in total is put at 52,000 a year. There are uncertainties about this figure; but beyond doubt is that separation of couple households makes a substantial contribution to the overall increase in households.

34.   Out of the overall projected net increase of 165,000 in the number of households between 2001 and 2021 due to demographic causes (Table 2), 47-48,000 a year is the result of projected future falls in mortality (paragraph 22). 55,000 a year is the difference that would be made if inward migration were 130,000 a year lower, and so in aggregate balanced assumed outward migration. 52,000 a year is the net effect of separation of couple households, as compared with formation of couple households running as assumed, but with no separations at all. That leaves a residual of 10,000 a year. Of this 4,000 a year is the arithmetical effect of starting with 2001 instead of 2003 and so including the high level of inward migration in 2001-02 and 2002-03.

The remainder includes the effect of interaction between changes in age structure and the differences in households representative rates related to age (paragraph 19). It also includes any errors in the other quantities.

35. The sources of the projected increase of 213,000 households a year between 2001 and 2021 are summarised in Table 12.

Table 12 Composition of Projected Increase in Households in England 2001-2021

	(thousands per year)
Population growth and change	
Longevity	48
Migration (difference from zero net migration)	55
Separation of couples	52
Other changes in total and age structure	10
Sub-total	165
Marital status and cohabitation	0
Higher household representative rates	44
Other (interaction effects)	4
Total	**213**

Source: See text (paragraph 34)

36. The sources of household growth (excluding the interaction effects, which are purely arithmetical) can be looked at from two standpoints: how predictable they are; and how far they might be influenced by future changes in policy.

IV The Regional Distribution of the Projected Increase in Households

37. Regional household projections are shown in Table 13, with estimates for 1981 and 1991 for comparison. The household estimates for 1981 and 1991 differ from those previously published owing to students being counted at their term-time address (as in 2001) instead of at their home address (as formerly). There are questions to raise here about how to interpret the resulting changes in the number of households, since there were no changes "on the ground".

Table 13 Regional Household Projections 2001-2021

	1981	1991	2001	2011	2021
North East	979	1,046	1,075	1,136	1,194
North West	2,558	2,722	2,827	3,055	3,290
Yorkshire and Humber	1,831	1,987	2,069	2,248	2,437
East Midlands	1,415	1,600	1,737	1,942	2,146
West Midlands	1,869	2,050	2,154	2,338	2,526
East of England	1,772	2,032	2,236	2,504	2,797
London	2,634	2,796	3,036	3,374	3,756
South East	2,659	3,028	3,294	3,626	4,013
South West	1,646	1,905	2,093	2,342	2,622
England	**17,362**	**19,166**	**20,523**	**22,566**	**24,781**

Source: *New Projections of Household for England and the Regions to 2026*
            Table E. 1981 from ODPM

38.   The dominant influence on the regional distribution of increases in households, both past and projected, is regional population changes. Internal migration within the UK is projected from estimated migration flows in the previous five years. External migration flows are allocated between regions on the basis of census information about inward migrants and information from the International Passenger Survey. Past inter-regional differences in mortality are assumed to continue. Table 14 shows the distribution between regions of the increase in households in 1981-1991 and 1991-2001, and the projected increase between 2001 and 2021. 1981-91 and 1991-2001 are shown separately as London's share of the increase in the population in the two decades was very different. The projected increases in 2001-11 and 2011-21 are not shown separately because the projections are trend-based and hence there is little difference between the decades.

Table 14 Inter-Regional Distribution of Actual and Projected Increases in Households 1981-2021

				(percent)
	1981-91	1991-01	1981-01	2001-21
North East	3.7	2.1	3.0	2.8
North West	9.1	7.7	8.5	10.9
Yorkshire and Humber	8.6	6.0	7.5	8.6
East Midlands	10.3	10.1	10.2	9.6
West Midlands	10.0	7.7	9.0	8.7
East of England	14.4	15.0	14.7	13.2
London	9.0	17.7	12.7	16.9
South East	20.5	19.6	20.1	16.9
South West	14.4	13.9	14.1	12.4
England (thousands = 100%)	**1,804**	**1,357**	**3,161**	**4,258**

Source: Calculated from Table 13

39.   The features of the changing regional distribution of population and households in England that tend to attract most comment are slower growth and in some places decline in the North of England, especially the cities; and its converse, the increases in the South of England, with London as a special case. Slower growth in the North has a long history as a perceived problem which dates back to the late 1950s and indeed the inter-war years; London (meaning here the Greater London area) experienced a falling population from the 1940s to the early 1980s, but then a turn round to population growth occurred which gathered pace in the 1990s. 40-45 percent of migrants to England from outside the United Kingdom to London, but only just over 30 percent of outward migrants come from London (Table 2.8 of ONS, *International Migration Statistics* Series MN No. 30). The increase in inward migration fuelled London's population growth; the projected future growth of the population and therefore the number of households there depends heavily on the assumption about international migration, more so than in any other region.

40.   Table 14 shows that the North of England's share of the projected increase in households in 2001-21 is higher, 22.3 percent as against 19.0 percent, than the share of the actual increase in 1981-2001. If the comparison is made with 1991-2001 (15.8 percent) the contrast is even greater.   The much larger national increase in the number of households and the larger proportion in the North of England explain the much higher projected increase in households there in comparison with the actual increases up to 2001. In the North East, North West and Yorkshire and Humber regions, the projected annual average increase in 2001-21 is 48,000 a year, as against only 22,000 a year between 1991-2001. A note of caution is in order, however, because the migration flows within the United Kingdom are projected from a time when the gap between house prices in the South and North were at its highest (1998 to 2003). Since then net inward migration to the three Northern regions has declined, and in the first half of 2005 (the most recent period for which there if information – *Population Trends* Summer 2006 Table 8.1)

there was a net outflow from all three regions to the rest of the United Kingdom. The longer term flows will be strongly influenced by the strength of the economy in the North of England. Because the population and household projections are "top down" a slower than projected increase in population in the North of England would imply larger than projected increases in households in the rest of the country, notably London and the South East. That would be over and above 100,000 a year in London and the East of England and South East region shown in Table 14.

41.   A partial analysis is possible at regional level of the projected increase in households on the lines of the national analysis in Table 12. The estimate of the effect of inward migration can be apportioned pro-rata to the international migration inflow. The effect of improving longevity can be apportioned on the basis of the age structure of regional populations. Table 6 shows that some 72 percent of the difference between the main projection (with improving mortality) and the mortality projection is at ages 75 and over and 22 percent at ages 65-74. With the exception of London (where the proportion of the population aged 65 and over is well below the national average) and the South West (where it is higher), the age structures of the regional populations are very similar. The longevity effect is apportioned pro-rata to population aged 75 and over and 65-74 weighted in proportion 3:1. The increase in the number of households generated by the separation of couple households may be apportioned between regions pro-rata to the projected number of couple households in 2001 and 2021. The effect of increases in household representative rates may as a first approximation be apportioned pro-rata to the number of households in the base year. The "other changes in total and age structure" and "other (interaction effects)" in Table 12 are allocated pro-rata to total households. A full analysis at regional level would require estimates of the effect of internal migration on numbers of households. That would be complex, because the age structures of inward and outward migration flows can be different (e.g retirement migration to the South West) and is not attempted here. The residual from the total projected households in each region (Table 15) can be interpreted as the effect of internal migration, but of course it accumulates any errors in the other components.

Table 15 Components of the Projected Increase in Households 2001-21: Regional Analysis

	Longevity	External Migration	Separation of couples	Household representative rates	Other changes(A)	Residual	Total
							(thousands per year)
North East	2	1	3	2	1	-3	6
North West	7	4	7	6	2	-3	23
Yorkshire and Humber	5	4	5	4	1	-1	18
East Midlands	4	2	5	4	1	4	20
West Midlands	5	4	5	5	2	-2	19
East of England	5	4	6	5	2	6	28
London	6	25	6		2	-9	36
South East	8	8	9	7	2	2	36
South West	6	3	6	5	1	5	26
England	**48**	**55**	**52**	**44**	**14**	**0**	**213**

Note: (a) Comprises "other changes in total and age structure" (of the population) and "other (interaction effects)" (Table 12)

Source: Table 12 and see text

Part V Implications of the Households Projections for Estimates of Housing Demand and Need

42. Comments were made in Part II of this note which tended in the direction of the projections being at greater risk to being too high rather than too low. This comment was based on the fact of the projected effect of increasing household representative rates in 2001-11 and 2011-21 considerably higher than the actual effect in 1991-2001, which was lower than the projected effect in the 1996-based projections. For this to be wholly convincing a one-off effect, or group of effects, would have needed to depress the increase in household representative rates in 1991-2001, but which is unlikely to persist beyond 2001.

43. Even if that argument is accepted and the projected increase of 213,000 a year (209,000 in 2003-26) adjusted downwards, the 2003-based projected increase in households would still be the highest ever produced for England. Any likely adjustment would still give close to 200,000 a year, far in excess of the 175,000 which caused such a furore when it was published in 1995. What has changed is the underlying population projection, which is much higher owing to the combined effects of a greater than previously projected improvement in longevity and higher net inward migration. Both are subject to uncertainty, but of course in very different ways.

42. In consequence, demographically-based estimates of future housing demand and need should be revised upwards. To illustrate the scale of the revision, Table 16 shows an up-dating of an estimate of newly arising demand and need for housing published in 2005 by Shelter in *Building for the Future 2005*. Only the increase in households has been altered, and the increase

in vacant dwellings (because the unchanged vacancy rate has to be applied to a larger increase in the dwelling stock to match the increase in households. In a full revision more recent evidence about the other components of the estimate would be reviewed.

Table 16 Demographic Estimate of Newly Arising Demand and Need for New Housing Provision in England in 2001-21

	(thousands)	
	As published	Revised
Net increase in households	3,529	4,258
Vacant dwellings (a)	106	128
Second homes (b)	0	0
Replacement of losses (c)	420	420
Total	4,055	4,806
Annual average	**203**	**240**

Notes: (a) Constant proportion of stock
            (b) and (c) As in the original

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Annex A

The Number of Households in 2001

1.   Estimates of the number of households in a given year (in this instance 2001) can differ for two sets of reasons: differences in the estimate of the total and age structure of the population; and differences in the number of households relative to population.

2.   Official estimates of the population refer to mid-year. A mid-2001 estimate of the population would therefore differ slightly from the census total owing to the time interval since census date (April 29th). Adjustments were also made for census under-counts of the very young and the very old; under-counting them is a regular feature of censuses. The census-based total for England arrived at in this way was 49,181,000 at mid-2001. This figure was far below what was expected from "rolling forward" the mid-1991 estimate by adding births, subtracting deaths, and including net migration, plus or minus. The Office for National Statistics (ONS) undertook work to attempt to explain the difference, which included local studies in collaboration with local authorities that were concerned that their populations had been under-counted. As a result of these post-census investigations the estimate of the population at mid-2001 was raised in stages to 49,450,000. The estimated population in 1991 (which included a large adjustment for under-enumeration) was revised downwards.

3.   The census total of households in England was 20,451,000. Households were not as such considered in subsequent revisions to the total population. But clearly it is possible that if over 250,000 persons were not counted in the census a considerable number of households were missed. Separate from under-enumeration of the population is the possibility of an under-count of households due to the definition of a separate household not being applied correctly by some enumerators. That had been a cause of difficulty in past censuses. Information from the Survey of English Housing (SEH) provides an estimate of the number of sharing households in England at (approximately) the date of the census which is higher than the published census figure. The census reported a total of 66,000 sharing households in England, in 20,700 shared dwellings *2001 Census Report for England and Wales,* Table O49. SEH put the number of households in non-self-contained accommodation at 239,000 in 2001/01 and 159,000 in 2001/02 (*Housing in England 2001/02.* Table A1.17). In view of sampling variation an average may be taken, which gives 199,000. The difference of 133,000 from the census could be due two or more households in shared dwellings being counted as one household; or sharing household missed altogether and shared dwellings being counted incorrectly as singly occupied. If the figure of 199,000 (say 200,000) sharing households is accepted, then the total of households would be revised upwards from 20,451,000 (see Holmans (2004) page 25 for the calculation).

4.   Information about the number of dwellings was looked at, as was Council Tax information. Inferences drawn are discussed in some detail in Holmans (2004), pages 24-31. The adjustments made to the census figures of the numbers of households are shown in Table A.1. The column headed "population and sharing" refers to the additional households derived from the Survey of English Housing's figures for households in non-self-contained accommodation (see previous paragraph), which were apportioned between regions by reference to the upward revision to the estimated population, translated into households.

Table A.1 Adjustments to Census Totals of Households

					(thousands)
	Census	Population and sharing	Council tax comparison	More dwellings	Revised totals
North East	1,066	1	---	15	1,082
North West	2,813	7	---	30	2,850
Yorkshire and Humber	2,065	2	---	7	2,074
East Midlands	1,733	4	---	---	1,737
West Midlands	2,154	8	---	---	2,162
East of England	2,232	3	---	---	2,235
London	3,016	59	19	---	3,094
South East	3,288	7	---	---	3,295
South West	2,086	1	---	---	2,087
England	**20,451**	**92**	**19**	**52**	**20,614**

Source: Holmans (2004) Table 20

5.   The difference between the adjusted totals for households in 2001 shown in Table B.1 of Holmans (2004) and the totals used in the household projections (Table 3 of the main text) is due primarily to whether the persons "found" by ONS's investigations and added to the population estimate in 2003 were additional numbers of enumerated households, or whether some at least were 'representatives' or 'reference persons' of households that were missed. In the work on the household projections the former view was taken, on the advice of ONS. Whether ONS had regard to the SEH information about sharing households is not known. The greatest difference is made to the number of households in London, where sharing is much more prevalent than in the other regions.

Annex B

Estimate of the Number of Households Formed From an Annual Net Inflow of 130,000 Migrants

1.   The age distribution of the 130,000 inward migrants is in Table 8 of the main text, and the ratios of household reference persons to all persons according to age and length of time since coming to the United Kingdom are in Table 10. The age ranges in Table 10 are 0-15, 16-24, 25-29, 30-44, 45-64, and 65 and over; and in Table 8 0-15, 16-24, 25-34, 35-49, and 50 and over. The numbers in the age groups 25-34, 35-49, and 50 and over were redistributed between the ages of persons whose usual residences one year previously were outside the U.K.   This information (*Census 2001 National Report for England and Wales* Part 2 Table S008) is in 5 year age groups. Table B.1 shows the age distributions on the two bases.

Table B.1 Assumed Age Distribution of Inward Migrants from Outside UK

	As table 8	As table 10
0-15	24	24
16-24	24	24
24-34	46	---
25-29	---	31
35-49	25	---
30-44	---	35
50 and over	11	---
45-64	---	13
65 and over	---	3
Total	**130**	**130**

Source: Table 8 and see text

2.   The relevant part of Table 10 of the main text is repeated here in Table B.2 for convenience of reference.

Table B.2 Ratios of Household Reference Persons to Private Household Population: Persons Born Outside the United Kingdom

						(percent)
				Age		
		16-24	25-29	30-44	45-64	65 and over
(1)	Entered less than 5 years ago	23.8	37.9	49.1	57.8	29.4
(2)	Entered 5 but less than 10 years ago	19.6	43.4	52.9	57.9	53.6
(3)	Entered 10 but less than 20 years ago	10.5	45.9	55.6	60.5	50.5
(4)	Entered 20 years or more ago	23.5	41.4	58.1	60.0	69.8

Source: Table 10

3.   To be estimated is the number of households formed from 130,000 inward migrants a year over a 20 year period, with ratios of household reference persons to private household population (which stand proxy for household representative rates) for age and duration in the UK as shown in Table B.2. For purposes of calculation the period is taken to be divided into segments of five years. In the first 5 years after entering the age-specific ratios in row (1) apply. In the next 5 years the ratios in row (2) apply, but the persons are 5 years older. So, for instance, persons aged 25-29 in the first segment will be aged 30-34, so that the ratio for years 30-44 will apply. Owing to the differing widths of age ranges, interpolation is necessary to capture the ageing effect. The ratios calculated in this way are in Table B.3. The age groups are those of when inward migrants entered the UK. For a 20 year period only the ratios in the first 3 rows are relevant. With a calculation over a 25 year period row (4), 20 years or more would be relevant.

Table B.3 Ratios of Reference Persons at Successive Durations for a 5 Year Cohort of Migrants

			Age at entry to UK				
Years since entering	0-15	16-24	25-29	30-44	45-64	65 and over	Total
Number of persons	24	24	31	35	13	3	130
0-4	0	23.8	37.9	49.1	57.8	29.4	
5-9	0	43.4	52.9	54.6	57.9	53.6	
10-14	0	52.4	55.6	58.9	60.5	50.5	
15-19	23.8	55.6	55.6	60.5	60.5	50.5	

Note: Percentages are shown to the first decimal place for arithmetical purposes only

4.   Totals of households formed are shown in Table B.4, from the number of persons shown in Table B.3 multiplied by the ratios there.

Table B.4 Number of Households Formed from 130,000 Migrants by Length of Time Since Entering the UK

	Age						
	0-15	16-24	25-29	30-44	45-64	65 and over	Total (rounded)
Years since entering UK							
0-4	0	5.7	11.7	17.2	7.5	0.9	43
5-9	0	10.4	16.4	19.1	7.5	1.5	55
10-14	0	12.6	17.2	20.6	7.9	1.5	60
15-19	5.7	13.3	17.2	21.2	7.9	1.5	67

5.   Table B.4 shows that an estimated 43,000 households would form initially from 130,000 inward migrants, but with the passage of time this would increase to 67,000 as a result of ageing and the converging of household reference person ratios. With 130,000 persons a year entering the UK, those entering in the first 5 years would form 5 x 43,000 = 215,000 initially, but their number would grow to 5 x 67,000 = 335,000 by the end of the 20 years. The building of the number of households from 130,000 inward movers is shown in Table B.5.

Table B.5 Number of Households Formed from 130,000 Inward Migrants Annually Over a 20 Year Period

				(thousands)
	Duration in UK from start year			
	5 years	10 years	15 years	20 years
Year entering UK				
1-5	215	275	300	335
5-10	---	215	275	300
11-15	---	---	215	275
16-20	---	---	---	215
Total	**215**	**490**	**790**	**1,125**

6.   Over a period of 20 years, 1,125,000 households form from 130,000 inward movers annually, i.e an average of 56,000 a year. This is a gross figure in that it takes no account of deaths of migrants, or of the possibility that some may return to their countries of origin. In view of the ages assured for the inward migrants ('Tables B.1 and B.3) the number of deaths is likely to be small. But in recognition of the possibility of return migration the annual average may be rounded down to 55,000.

Annex C

Net Increase in the Number of Households Due to Separations of Couple Households

1.	The effect of separations of couple households on the number of households in total depends on: (a) the number of couples that separate; (b) the number that form new couple households ("re-partnering"); and (c) of those that do not join up with new partners the proportion that become heads of other kinds of households: lone parent households; other multi-person households; or one-person households. There is information from the 2001 census about the proportions of divorced (not re-married) men and women who were cohabiting; and of those that were not cohabiting the proportions that headed independent households (technically "household representatives"). Comparing the number of re-marriages of divorced men and women with the number of divorces gives an indication of the proportion of divorced men and women that re-marry. From this information, and proportions of divorced men and women cohabiting an approximate figure can be worked out for the number of successor households that will be formed by the ex-members of a given number of divorcing couples, and hence the net increase in households.

2.	Divorces are legal events which leave records from which statistical data can be compiled, as are re-marriages. Formations of cohabiting couples are not events that leave a record, nor are separations of cohabiting couples. With the very limited information now available, the best that can be done is to work from estimates of successor households resulting from divorce by reference to the number of cohabiting couples in the age ranges where divorce rates are highest, with allowance (see below) for separation rates being higher for cohabiting couples than for married couples. Calculations are therefore made first for the increase in households generated by separation of married couples, then (by inference) of separation of cohabiting couples.

Separation of Married Couple Households

3.	An estimate is first required of the number of married couples that will separate, represented here by the number of divorce decrees made absolute. In making such an estimate, account must be taken of the fall in the number of married couple households shown by the most recent official household projections. 80 percent of men and 86 percent of women who divorced in 2001 and 2002 were under age 50. The number of married couple households under age 50 is projected to fall from 4.39 million in 2001 to 3.49 million in 2011 and 2.82 million in 2021. The number of married couples most at risk to divorce is thus likely to fall sharply, by just over 35 percent if the projection is taken literally. With a constant divorce rate the number of divorces year by year would fall. The number of divorces (decree absolute) in England and Wales in 2001, 2002, and 2003 averaged 148,000 a year. There is no readily available figure for England; but a deduction for Wales pro-rata to the married population under age 50 should be adequate in the present context, which gives a base year figure for England of 140,000 a year. With a constant ratio of divorces to married population under age 50 the number of divorces would average 126,000 a year in 2001-2011 and 101,000 a year in 2011-2021. For the whole period from 2001 to 2021 the annual average is put at 114,000.

4.   There are three stages in deriving an estimate of the net increase in households that would result from 114,000 married couple households separating: (a) formation of new couple households by re-marriage; (b) formation of new couple households by cohabitations that do not become re-marriages; and (c) ex-members of divorcing couples who do not form couple households with new partners. For (a), the proportion of divorced men and women that re-marry, an approximate figure can be obtained from numbers of divorces and re-marriages. In 2001-03 the number of re-marriages averaged 49 percent of the number of divorces. This is only an approximate indicator owing to time-lags between divorcing and re-marrying, but will serve the present purposes. For (b), the proportion of divorced men and women that form cohabiting couples with new partners, an estimate can be derived from 2001 census information about the proportions of divorced (and not re-married) men and women who were cohabiting. This information is available by age (in the working detail of the official 2003-based households projections), which can be used to calculate proportions that take account of the ages at which divorces take place. The estimates produced in this way are 38 percent of divorced (and not re-married) men cohabiting, and 31 percent of divorced women.

5.   The proportions of non-cohabiting divorced men and women heading households was derived from the age distribution of divorces, the proportions cohabiting (see previous paragraph) and census-based "household representative rates" taken from the working detail of the 2003-based households projections. By this reckoning 78 percent of non-cohabiting divorced men and 90 percent of non-cohabiting women head households. The difference is due to divorced women with lone parent households.

6.   With 48 percent of divorced men and women re-marrying, and 38 percent of the remaining divorced men cohabiting, 68 percent of divorcing men would have formed new partnerships. A similar calculation for divorcing women gives 64 percent forming new partnerships. Out of 114,000 divorcing men, 78,000 become members of new couple households and by statistical convention "household representatives" for these households. Similarly 73,000 divorcing women become members of new couple households, of which (by the same convention) they cannot be household representatives. There would thus be 36,000 divorcing men and 41,000 divorcing women (out of 114,000) who neither re-married nor cohabited. 78 percent and 90 percent respectively are household representatives (see previous paragraph), hence 28,000 divorcing men and 37,000 divorcing women will be non-cohabiting household representatives (= households). From these figures the effect of the assumed 114,000 divorces annually on the number of separate households can be worked out as in Table C.1.

Table C.1 Net increase in Households Generated by Divorces: annual Averages

		(thousands)
(1)	<u>Married couple household dissolved</u>	<u>114</u>
	Successor households	
(2)	New couple households formed	78
(3)	Households representatives (male) of new households other than couples	28
(4)	Households representatives (female) of new households other than couples	37
(5)	<u>Total successor households</u> (=(2) plus (3) plus (4))	<u>143</u>
(6)	<u>Net Increase in Households (=(5) minus (1))</u>	<u>29</u>

Source:　　　　See text (paragraph 4, 5 and 6)

7.　　An assumed 114,000 divorces a year (strictly speaking the separations that lead to divorce) is estimated to result in at net increase of 29,000 a year in the number of households. The relationship is proportional: if a different annual number of divorces were assumed, the net increase in households generated would change pro-rata.

Separations of Cohabiting Couples

8.　　As mentioned above, there is not the information with which to make an independent estimate of the net increase in households generated to by separation of cohabiting couples. It is necessary therefore to work from the figuring for divorces in the previous section, by reference to the numbers and ages of cohabiting couples and evidence that points to higher rates of breakdown of cohabiting couples than of married couples.

9.　　The first stage is to estimate the number of breakdowns of cohabiting couples that there would be if the breakdown rate were the same, age for age, as divorce rates for married couples. The age-specific divorce rates were calculated, and then applied to the average number of cohabiting couples (represented by the age of cohabiting men) in each age range. The number of cohabiting men in each age range over the projection period (2001 to 2021) is represented by the mean of the number in 2001 and 2021. This calculation gives an average of 61,000 a year as the number of breakdowns of cohabiting couple households over the whole period from 2001 to 2021. That the figure is as high as this in comparison with divorces is due to higher proportions of cohabiting couples being younger, at the ages where divorce rates are highest. Even in 2021 76 percent of cohabiting men are projected to be under age 50, the ages at which 80 percent of divorces occur, as compared with only 32 percent of married men.

10.　　With 61,000 separations of cohabiting couples a year there would be a net increase of 16,000 households a year, if the proportions forming new couple households and other kinds of successor households were the same as for divorcing married couples. Information reviewed in *Divorce, Housing and Remarriage* (pages 148-152) is from the National Child Development Study (NCDS) and the ONS Longitudinal Study. The information from NCDS is about the status of cohort members aged 23 (in 1981) and when aged 33. The information from the

Longitudinal Study compares the marital status in the 1991 census of sample members who were married in 1981 and "de facto spouses" in that year. Both have their limitations. "De facto spouses" in 1981 were probably not the totality of cohabiting men and women in 1981 – the status was imputed, and the information from NCDS is for one specific age in 1981. The separation rate for NCDS members that were cohabiting were some 1.7 times that for members that were married. The separation rates for "de facto spouses" were more than twice as high for married couples, which look implausibly high when cohabiting couples are as numerous as they had become by 2001. Better information might be obtainable from the ONS Longitudinal Study with data for 2001 linked to earlier censuses, and from the survey of the NCDS cohort at ages 41-42 in 1999/00. But here and now a partly judgemental figure must be used.

11.   A separation rate for cohabiting couples half as high again as for married couples is assumed here, lower than for 1981 "de facto spouses" and slightly lower than in NCDS. A lower ratio would seem reasonable in view of the much increased prevalence of cohabiting. Many couples cohabit whose counterparts a decade back would have married. The reason need not be a wish to be able to separate and join up with new partners with the minimum of formality. A separation rate for cohabiting couples one-and-a half times the assumed divorce rate would put the average net increase in households due to separations of cohabiting couples at 23,000 a year. With a net increase of 29,000 households annually as a result of divorces, the total net increase in households in the projection due to breakdowns of couple households is put at 52,000 a year.