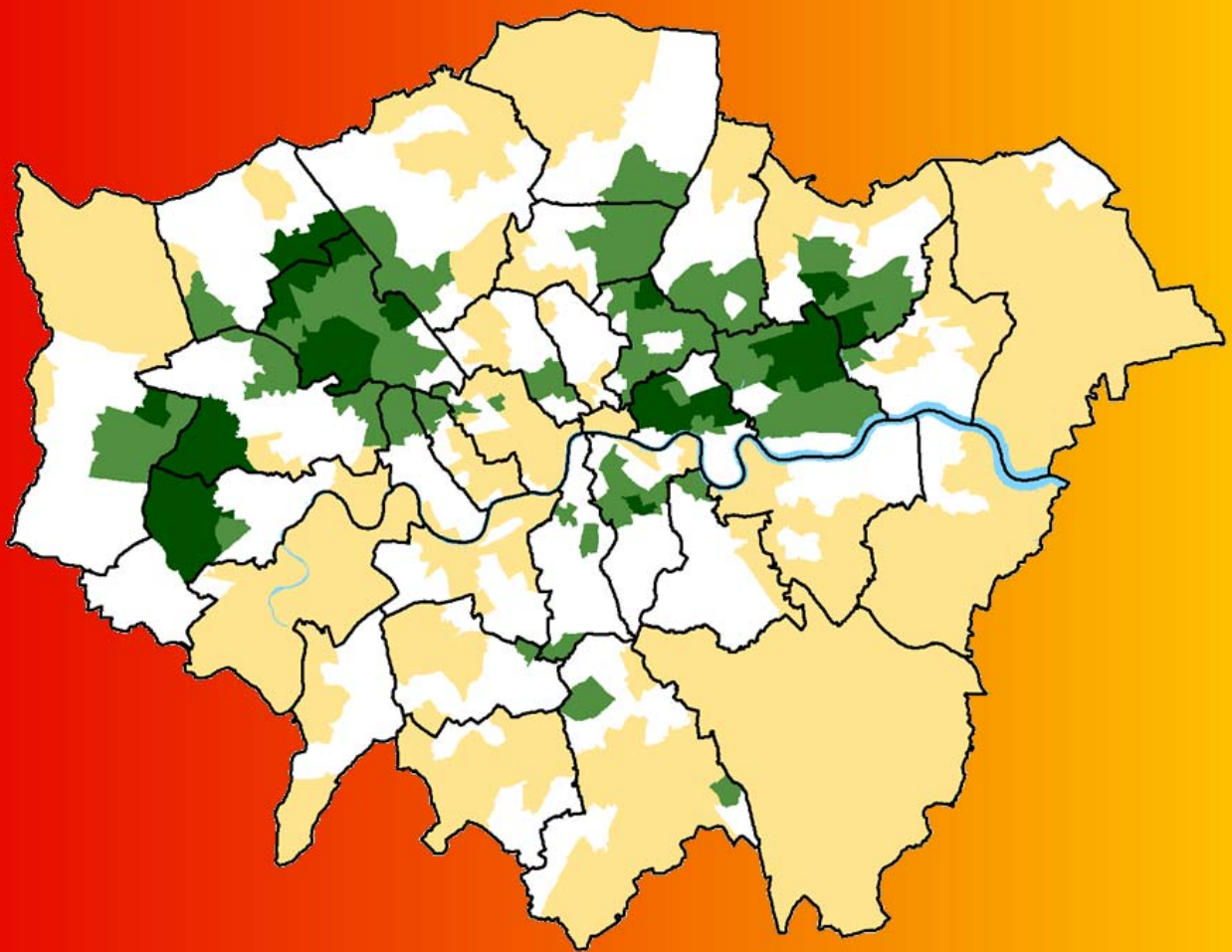


Data Management and Analysis Group

Ward Risks of Population Change



DMAG Briefing 2005/24

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Ward Risks of Population Change

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2001 Census

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Front Page

The data presented on the front cover of this *Briefing* are the ward population change risks from the 2001 Census. Full data are available on request.

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Executive Summary

Variables at ward level from the 2001 Census were selected to indicate the likelihood of population change occurring in a ward if local housing opportunities were presented that could reduce housing stress.

Some variables were rejected, eg sharing households, age structure, emigration, immigration, vacancy and communal establishments.

Six variables were selected, on the basis of correlations, to form an index.

The six variables were:

- average household size in the ward,
- overcrowded households,
- large (5+ member) households,
- concealed families,
- households scoring low on occupancy rating, and
- 'other' households with dependent children.

Individual households could feature in all of the five household/family variables.

Households scoring low on occupancy rating, ie needing at least one more room on the basis of the household composition, amount to 522 thousand in Greater London and would be the largest group to benefit from planned improvements in the supply of homes.

The index shows that 50 wards exhibited a very high risk of population decanting should appropriate housing become available. The highest index value is found in Southall Broadway (Ealing).

These 50 wards together with a further 99 high risk wards are mainly found in three clusters:

- an east London cluster that extends up the Lee Valley and eastwards into Newham and south Redbridge,
- a north-western cluster that includes most of Brent, and
- a western cluster centred upon Southall in Ealing.

Low risks were found mainly in an arc in outer south and east London spreading from Richmond upon Thames to Havering. The lowest index value being found in Copers Cope (Bromley).

The index values will be used in the GLA ward population projections to indicate how communities within boroughs may respond in terms of population change and so benefit from the proposed developments within their own and adjacent wards as indicated in the London Housing Capacity Study.

Introduction

New borough and ward population and household projections for London will soon be prepared using the latest London Housing Capacity Study (LHCS)¹ as the guide to new development up to 2027. The new LHCS will indicate the likely numbers of new homes at the borough level, but will not be as prescriptive of new developments at ward level as was the original study².

It has therefore been necessary to investigate 2001 Census data relating to all wards in London in order to create an assessment of the risks that the present population in the current housing stock in a ward may decline at a faster rate to the overall pattern for the local borough, or even for London as a whole, as new local housing opportunities are made available.

This study has selected a number of variables known to be either direct indicators of population change or to be associated with housing pressure and hence to indicate the potential for a change in the circumstances of individual households and therefore a locality. These variables have been assessed for their predictive possibility and lead to the construction of an index of the potential for population change.

The variables have been built into an index that will be used within the GLA ward projections to assess relative changes amongst the wards in each borough.

¹ 2004 London Housing Capacity Study (GLA, 2005)

² London's Housing Capacity (GLA, 2000)

Variable Selection

A number of indicators based on 2001 Census variables were chosen on the basis that they could identify those wards in which the population was living under greater housing stress than in London as a whole. A number of other variables that display the likelihood of migration, and hence population decline, were also used.

The variables that consider household circumstances likely to lead to the decanting of population should more homes be available are:

- Average Household Size
- % of families that were concealed (ie did not contain the household representative of the household in which they lived)
- % of households scoring low on the occupancy rating (ie requiring at least one more room) based on the household structure and number of available rooms
- % of large households (ie with 5+ persons)
- % of households living at 1.0 person per room (ppr) or more (overcrowded)
- % of 'Other' households with dependent children (ie households containing more than one family that also included a dependent child)
- % of households in shared dwellings

Additional variables that may be associated with potentially high levels of population turnover, and hence the possibilities of significant short-term population changes are:

- % of residents with a different address 1 year previously (immigration)
- % of residents that had moved to the rest of the UK in the previous year (emigration)
- % of 0-4 year olds in the population
- % of 20-34 year olds in the population

Two further variables have also been considered, one of which indicates the presence of a large non-household population and which may be seen as a brake on overall population change, and one that indicates where the housing stock is at present underutilised.

- % of population resident in Communal Establishments
- % of household spaces vacant

Some of the chosen variables indicate a high potential for average occupancy to fall, and others to rise (ie high immigration).

Wards with high average household size, high numbers of concealed families and high numbers of persons per room may expect to see average occupancy levels fall if suitable new housing becomes available locally, particularly if it were priced appropriately, while areas with high housing vacancy levels at 2001 could see a potential for population increases independent of new housing.

Areas with a high proportion of the population resident in communal establishments are at risk of population decline due to the closure or relocation of facilities, however if the establishments remain open overall population change is likely to be slowed, all else being equal. The impact of any communal establishment changes on the local community will depend upon the type of facility involved.

Initial Analysis of the Variables

It is clear that some of the variables chosen are quite highly correlated. In fact amongst the first seven variables a small group show strong inter-correlations. These are concealed households, large households, overcrowded households and 'other' households with dependent children. Average household size and households scoring low on the occupancy rating adjoin this group. Correlations between the variables are shown in the following table.

	AHS	CON-CEALED	LOW OCC RAT	LARGE HHOLDS	OVER-CROWDED	OTHER + DEP CHILD	SHARING
AHS	1.0000	0.6169	-0.1820	0.8694	0.3836	0.6519	-0.4457
CONCEALED		1.0000	0.4254	0.8299	0.7353	0.8517	0.0167
LOW OCC RAT			1.0000	0.2486	0.7976	0.5403	0.5826
LARGE HHOLDS (%)				1.0000	0.7279	0.8678	-0.1743
OVERCROWDED					1.0000	0.8587	0.2418
OTHER HH W DEP CHILD						1.0000	0.0195
SHARING (%)							1.0000

The sharing variable is not strongly correlated with any of the other six variables and is negatively correlated with both average household size and large households, implying that it is mainly small households that share. Sharing is also positively correlated with households scoring low on the occupancy rating, but is generally either weakly or negatively correlated with most of the other variables. Sharing clearly is a different phenomenon within the housing market with more impact on small households, and the subsequent analysis has not continued to use this variable.

These seven variables do have some strong correlations with the other six variables chosen. Average household size has a strong negative correlation with immigrants, confirming that it is mainly individuals or couples that move into London, while low occupancy rating is strongly correlated with the population aged 20-34, a group that does not mind 'roughing it', at least for a few years. Shared dwellings has only one strong positive correlation – with immigrants.

Looking at the correlations between the second group of six variables, the only strong correlations are, as expected, between immigrants, emigrants and the population aged 20-34.

	IMMIGRANTS	EMIGRANTS	VACANCY	COMM EST)	0-4	20-34
IMMIGRANTS (%)	1.0000	0.9083	0.4447	0.2933	-0.1859	0.8985
EMIGRANTS (%)		1.0000	0.3814	0.4520	-0.1868	0.8889
VACANCY (%)			1.0000	0.3567	-0.2158	0.2689
COMM EST (%)				1.0000	-0.2959	0.2503
0-4					1.0000	-0.0358
20-34						1.0000

The 0-4 year old group is not strongly correlated with any other variables and, surprisingly, has weak negative associations with both immigrants and emigrants and virtually no association at all with 20-34 year olds.

Emigration is also positively correlated with households scoring low on the occupancy rating and sharing and is negatively correlated with average household size. Vacancy and communal establishments are not strongly correlated with any other variables – which is no real surprise

On the basis of the correlations it was decided not to continue to look at immigration, emigration, vacancy, sharing, communal establishments, 0-4 year olds and 20-24 year olds together with the other six variables.

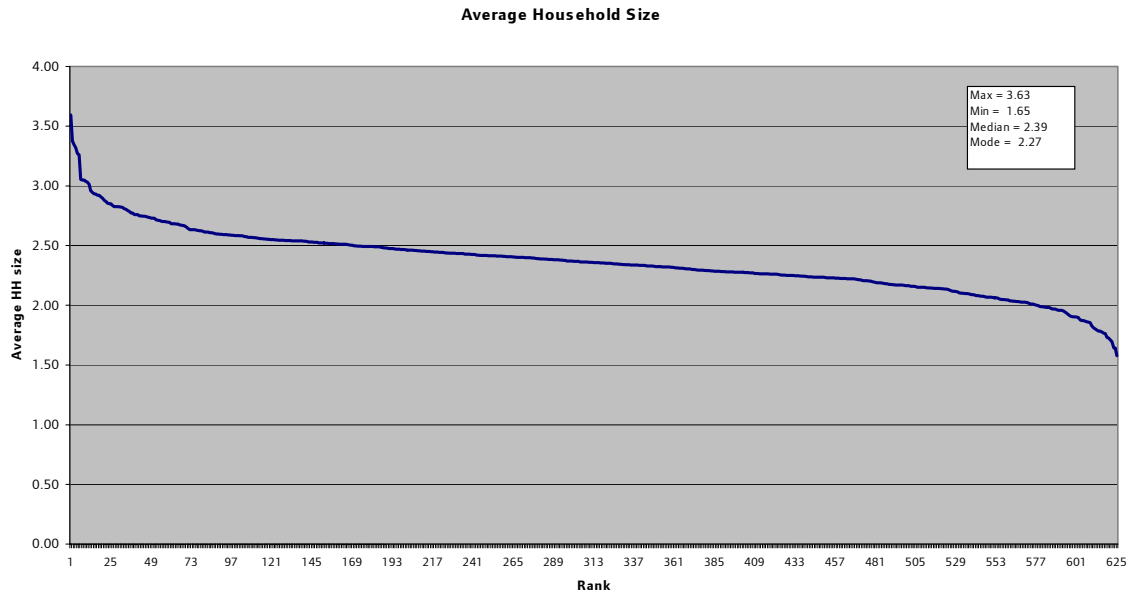
The overall London picture on the six variables selected for further attention is as follows:

	London Average	High Ward	Low Ward	Numbers (London)
Average Household Size	2.35	3.39	1.58	-
Concealed Families	1.95%	9.89%	0.26%	35500
Low Occupancy Rating	17.32%	43.40%	1.77%	522300
5+ persons	8.34%	30.37%	1.29%	251400
Overcrowding	4.97%	21.01%	0.37%	149900
Other with Dep. Children	3.65%	14.07%	0.91%	110000

The subgroup of households most likely to be impacted by the availability of additional homes appears to be those with a low occupancy rating that amount to more than half a million, equivalent to more than one household in every six in London. By definition these are households most likely to be in some degree of housing stress since they require at least one additional bedroom to meet standards set on the basis of the household composition. Some of these households would include concealed families, many would have 5+ members and many would be overcrowded on the basis of persons per room. To reduce their housing stress, therefore, most of these households would need to move to larger accommodation, although the situation would also be instantly improved were concealed families able to move to their own accommodation.

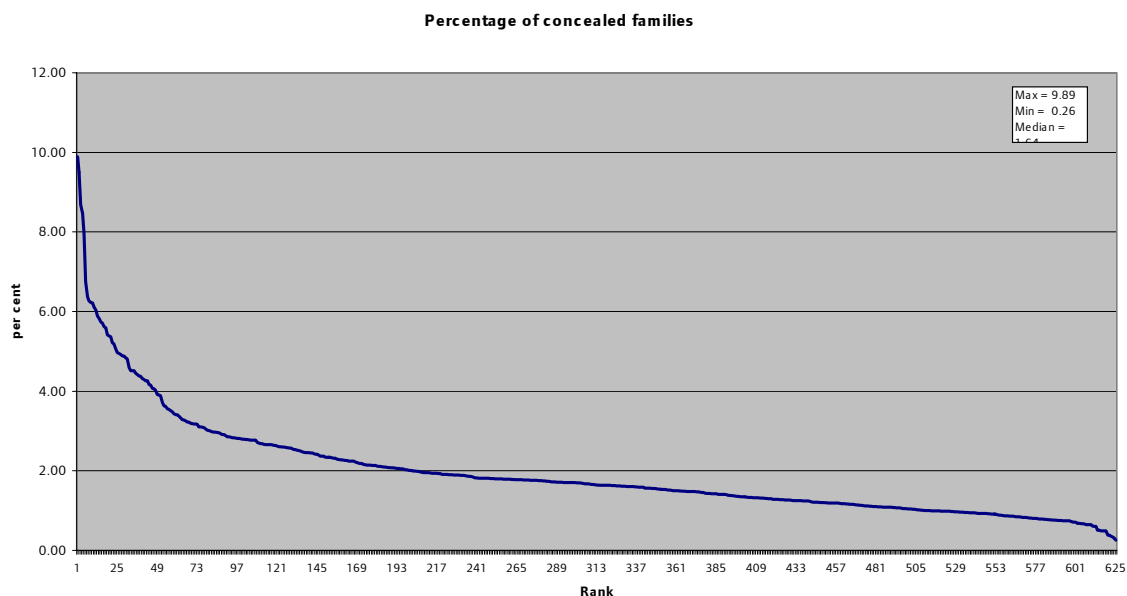
Distribution of the Six Variables

Average Household Size



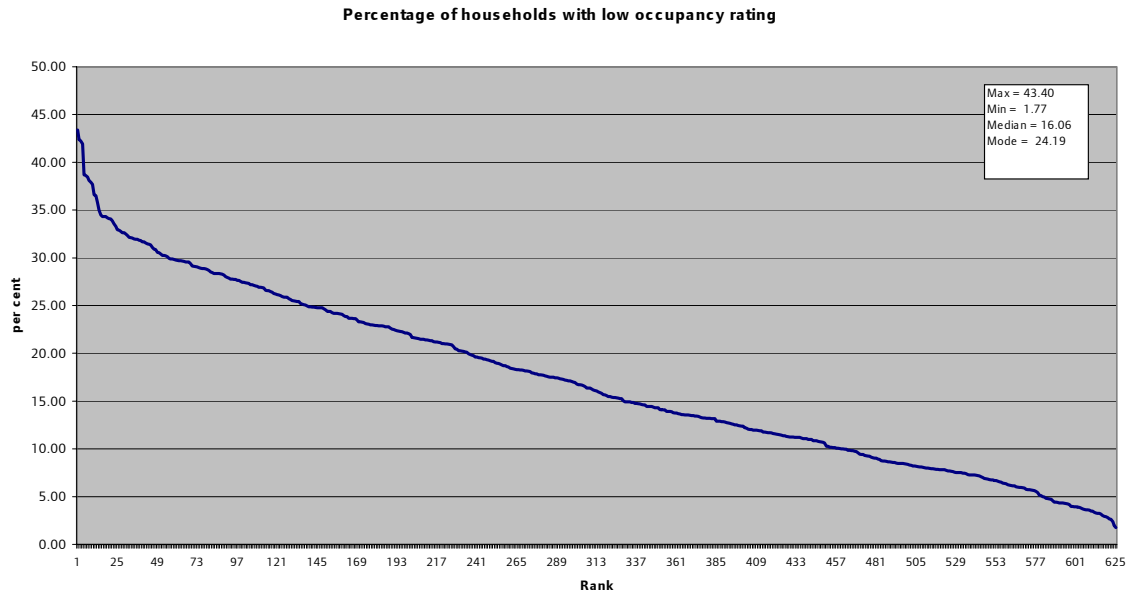
The distribution of average household size is normal with 25 outliers with values in excess of 2.85. The highest value (3.59) is found in Southall Broadway (Ealing) and 16 of the top 25 wards are in West London (Brent – 6, Ealing – 5, Harrow – 3 and Hounslow – 2) with 5 more in Newham and 4 in Redbridge. Many of these wards have high Asian populations

Concealed Families



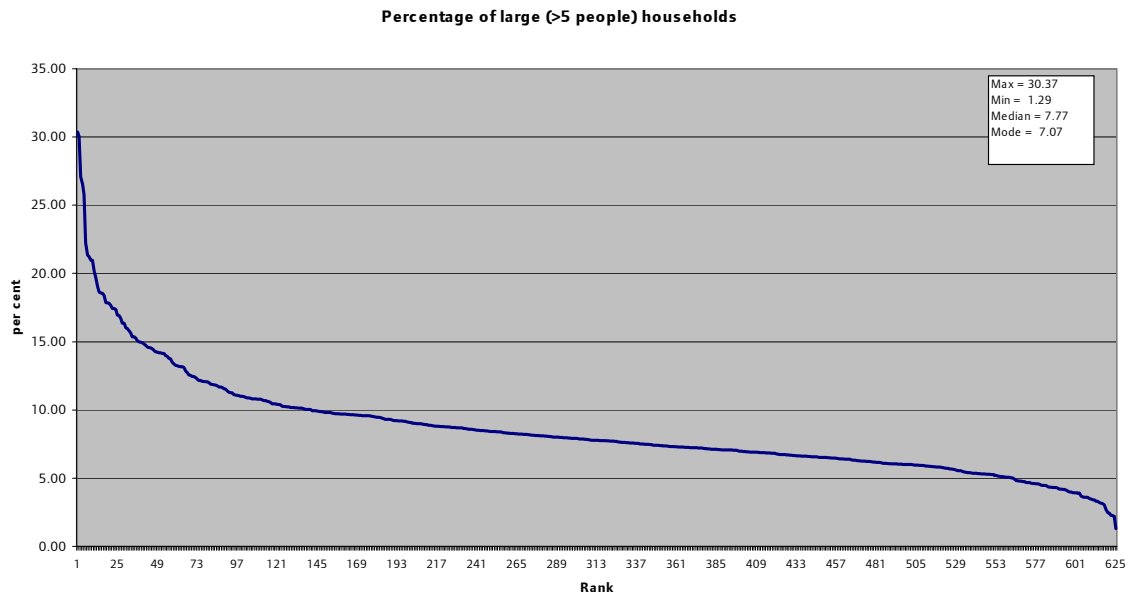
The distribution is more skewed with a long tail of 50 values above 3.9%. The top ward is again Southall Broadway (9.89%). There is again a West London cluster (14 wards in Ealing, Brent, Hounslow and Harrow) and an East London cluster of 11 wards in Newham, Tower Hamlets and Redbridge. The main change is the addition of the four Tower Hamlets wards in the Whitechapel/Spitalfields area that have high proportions of Bangladeshi residents. Concealed families are in many cases multi-generational families in which the younger family is living with in-laws.

Low Occupancy Rating



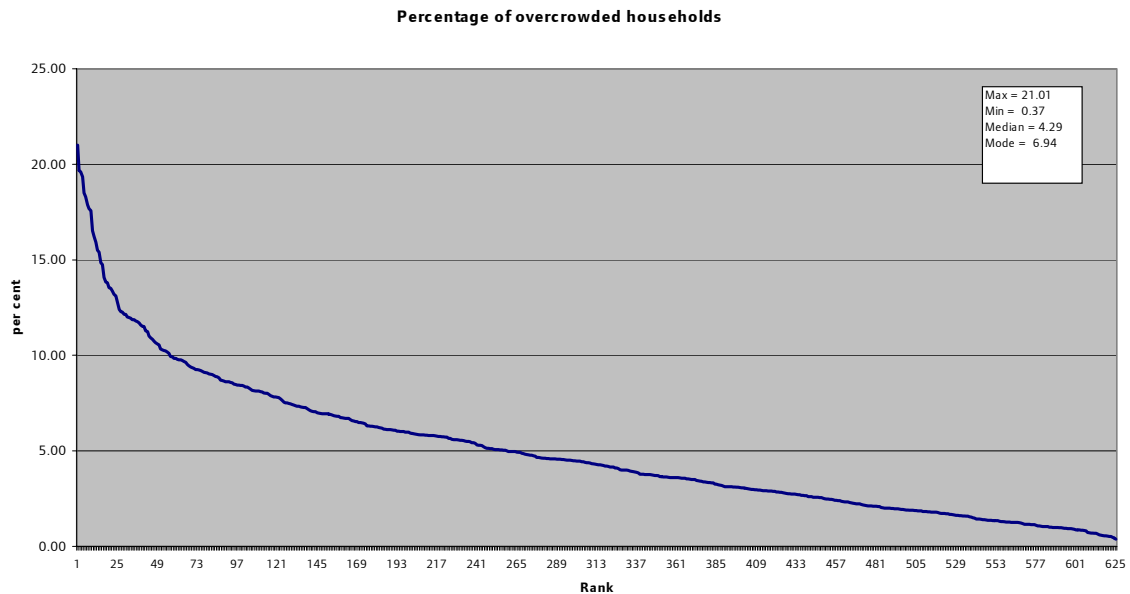
This variable presents a much flatter normal distribution with a tail of about 30 wards with values in excess of 32.5%. Looking at the top 25, the highest value is found in Bloomsbury (Camden) at 43.4% and 15 wards are in central London (Camden – 6, Kensington & Chelsea – 4, City of Westminster – 4 and the whole of the City of London). There is again a cluster, of five wards, in Whitechapel/Spitalfields area of Tower Hamlets as well as three wards in Southwark and singles in Brent and Newham. These wards appear to be polarised between those where young living groups tend to form and those where there are large, multi-generational families.

Large Households



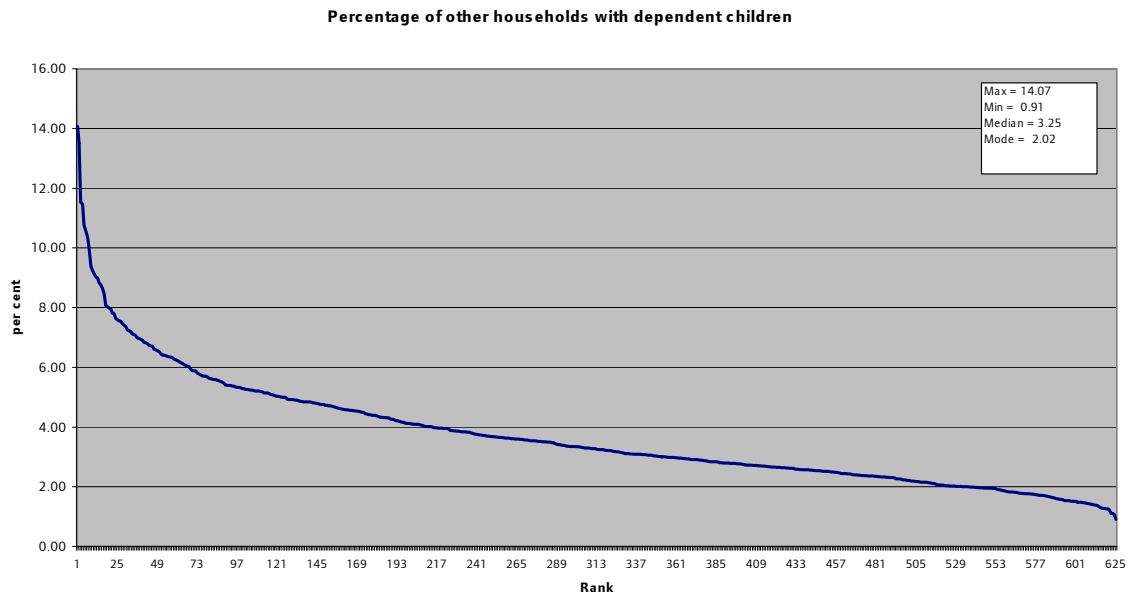
This variable shows a long tail with about 40 wards having values in excess of 15.0%. The top value (30.37%) is found, again, in Southall Broadway. There is an East-West split with 16 wards in Newham, Tower Hamlets, Redbridge and Hackney and 9 in Ealing and Brent.

Overcrowding



This variable shows a long tail of 25 wards having values in excess of 12.75%. The top 25 list is dominated by Newham (7 including the highest value in Green Street East) and Tower Hamlets (9). Ealing and Brent each have 3 wards while there are singles in Southwark (Peckham), Hackney (Springfield) and Kensington & Chelsea (Golborne).

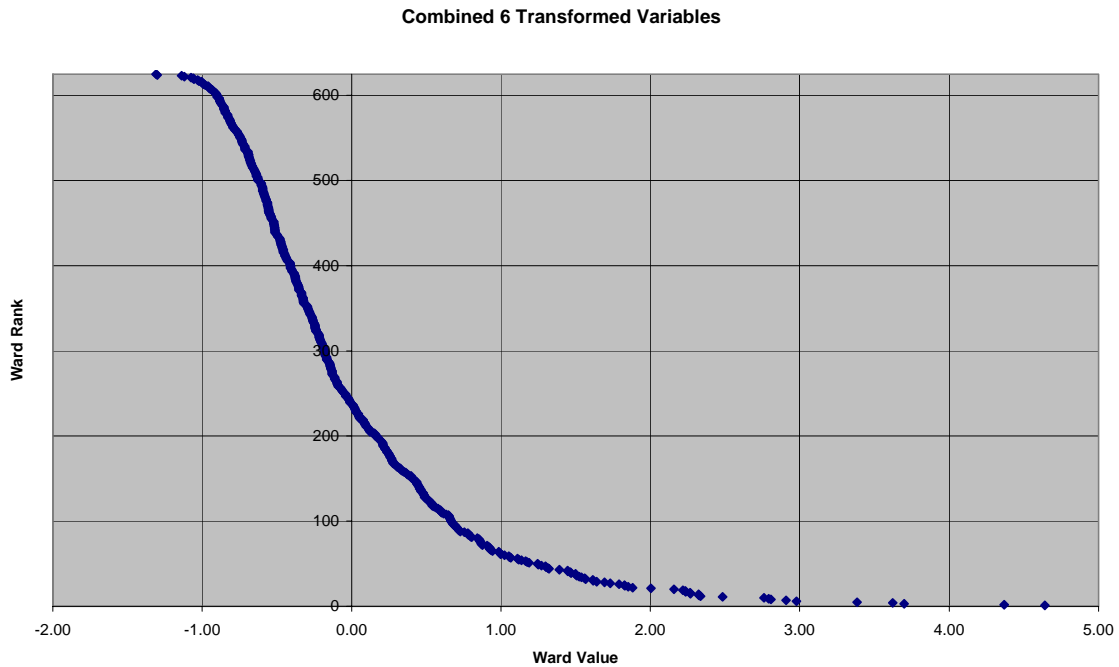
Other Households with Dependent Children



This is another variable with a long tail of high values – 27 wards having values in excess of 7.5%. The highest value is again found in Southall Broadway (14.07%) and Ealing (5), Newham (7) and Brent (5) occupying the top 13 places and 3 more of the top 25 places. There are 1s and 2s in Southwark. Redbridge, Harrow, Tower Hamlets and Hounslow.

Index of the Six Variables

In order to create a single index representing the combined impact of the six variables each of the raw variables were first transformed to distributions having mean of 0 and a standard deviation of 1. The transformation means that the data may then be added without undue influence of one or more variables with a very extreme distribution. The values for each ward on these six transformed variables were then added and averaged by dividing by 6. The distribution of this combined index variable will also have a mean of 0. However, its standard deviation is 0.824, implying a more compact distribution around the mean than each of its six components.



While the distribution is quite compact it also exhibits an extremely long tail of high values. Fifty wards have values in excess of 1.25 (approximately 1.5 standard deviations from the mean). The list of these wards together with their boroughs and their index values are shown overleaf.

Ealing	Southall Broadway	4.64
Newham	Green Street West	4.37
Newham	East Ham North	3.70
Newham	Green Street East	3.62
Ealing	Southall Green	3.38
Tower Hamlets	Whitechapel	2.98
Brent	Wembley Central	2.91
Tower Hamlets	Spitalfields and Banglatown	2.81
Ealing	Dormers Wells	2.79
Ealing	Lady Margaret	2.76
Newham	Wall End	2.48
Newham	East Ham Central	2.34
Tower Hamlets	Bethnal Green South	2.32
Redbridge	Clementswood	2.32
Ealing	Norwood Green	2.27
Tower Hamlets	Bromley-by-Bow	2.27
Tower Hamlets	St. Dunstan's and Stepney Green	2.24
Tower Hamlets	Shadwell	2.23
Brent	Alperton	2.22
Newham	Manor Park	2.16
Brent	Queensbury	2.00
Newham	Little Ilford	1.88
Southwark	Peckham	1.85
Brent	Stonebridge	1.83
Newham	Forest Gate South	1.83
Hackney	Cazenove	1.79
Hounslow	Heston West	1.73
Brent	Dollis Hill	1.69
Tower Hamlets	Mile End East	1.64
Hounslow	Hounslow West	1.62
Brent	Tokyington	1.61
Hounslow	Heston East	1.57
Hounslow	Cranford	1.56
Hounslow	Heston Central	1.54
Harrow	Queensbury	1.52
Redbridge	Cranbrook	1.51
Harrow	Kenton West	1.50
Newham	Plaistow North	1.50
Harrow	Kenton East	1.47
Hackney	Springfield	1.47
Redbridge	Loxford	1.45
Tower Hamlets	Weavers	1.45
Brent	Northwick Park	1.39
Tower Hamlets	Bethnal Green North	1.32
Newham	Boleyn	1.31
Hounslow	Hounslow Heath	1.30
Hillingdon	Barnhill	1.30
Brent	Kenton	1.27
Harrow	Edgware	1.25
Tower Hamlets	East India and Lansbury	1.25

These 50 wards are spread between ten boroughs as follows:

Newham	10
Tower Hamlets	10
Brent	8
Hounslow	6
Ealing	5
Harrow	4
Redbridge	3
Hackney	2
Southwark	1
Hillingdon	1

At the other extreme of the distribution comes the City of London and ten wards, spread amongst Richmond upon Thames (4), Bromley (2), Sutton (2), Kingston upon Thames (1) and Croydon (1), which all have values on the combined transformed variable of less than -1.00. The lowest value of all is found in Bromley (Copers Cope) at -1.31.

The accompanying chart shows the following groups of wards

- Very High risk - the 50 wards with Index values of the summed transformed variables that are more than 1.5 standard deviations above the mean.
- High risk – the 99 wards with Index values between 0.5 and 1.5 standard deviations above the mean
- Average risk – the 254 wards with Index values less than 0.5 standard deviations from the mean
- Low risk – the 222 wards with Index values more than 0.5 standard deviations below the mean (Note that only two wards had Index values of more than 1.5 standard deviations below the mean. They are included in this Low risk group.)

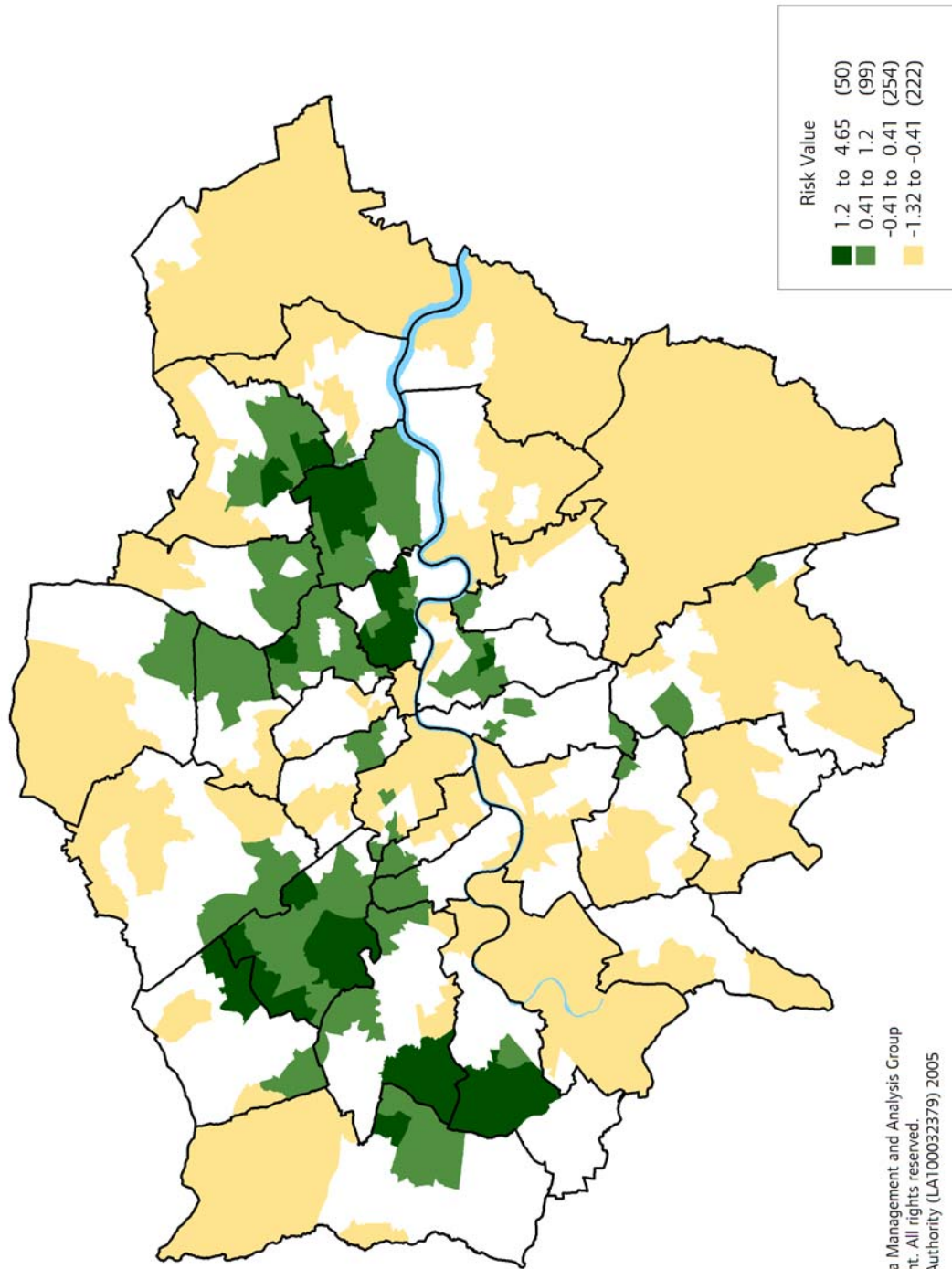
Apart from a few outliers the Very High and High groups form three clusters:

- An east London cluster that extends up the Lee Valley to south-east Enfield that encompasses eastern parts of Haringey, most of Hackney and Newham, the central and western parts of Tower Hamlets, south Waltham Forest and southern areas in Redbridge. This cluster of wards will include many households that could improve their housing circumstances as a result of the extent of the proposed developments in the Thames Gateway and the Stansted-Cambridge Corridor.
- A north-western cluster that includes most of Brent plus adjacent parts of Harrow, Barnet and Hounslow and the northern parts of Hammersmith & Fulham and Kensington & Chelsea.
- A western cluster centred upon Southall in Ealing and including adjacent parts of Hillingdon and Hounslow. This group could benefit from the large development proposed in Southall itself.

Low risks are experienced mainly in Outer boroughs, particularly Bexley, Bromley, Havering, Richmond upon Thames and Sutton, together with major parts of City of Westminster, Kensington & Chelsea and Wandsworth in Inner London.

These index values will be used in GLA ward population projections to give guidance as to how communities within boroughs may benefit from the future developments within their own and adjacent wards.

Ward Population Change Risk: 2001 Census



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