

Counting Hackney's population using administrative data ~ An analysis of change between 2007 and 2011

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Neighbourhood knowledge
management

Executive Summary

Background

In March 2011 Hackney Council commissioned Mayhew Harper Associates to provide a robust count of the population, based on administrative data, together with analysis on the characteristics of that population.

A population count based on administrative data is valuable because it does not rely on Census survey techniques, which in the past have elicited a poor response in boroughs like Hackney and have lead official estimates to undercount the population.

The findings of this work will enable the Council to better plan services using accurate data on the population and its characteristics, and allow for analysis of the impact of population change and churn since 2007. The work also provides an evidence base to help quality assure the 2011 Census Outputs.

The 2011 study updates a previous piece of work using the same methodology conducted in June 2007. Details on the methodology are provided in Appendix A.

Population size

The population of Hackney in March 2011 is estimated to be 237,646, based on administrative data.

This represents a substantial discrepancy with official figures. The administrative count of 237,646 is over 18,000 persons higher than the ONS 2010 mid-year estimate, and 3,400 persons higher than the GLA's estimate for the same year.

Population growth

The results of the analysis show that the population grew by 6.5% from 223,171 in June 2007 to 237,646 in March 2011. This growth was driven by an increase in the young adult and young child age groups, with particular growth in 25 – 34 year olds and under 5s.

Analysis of this growth shows population growth does not have a single geographical pattern, but a mix of changes with the growth and relative decline in different parts of the borough. Particular growth has been seen in parts of Shoreditch, and certain areas around Dalston.

Several areas which have experienced decline, for example parts of the Woodberry Down area, are undergoing extensive regeneration, and a fall in the population may be linked to decanting of housing stock.

Migration and change

Analysis of migration and population turnover show that inflows into the borough through birth or in-migration since 2007 totalled 72,000 persons, and outflows through death or moving out of the borough totalled 65,000 persons.

Overall, and as highlighted in the summary on population growth above, people moving into Hackney tend to be younger than people leaving Hackney. Since 2007 it is also clear that the population has been boosted by a higher number of births.

Population churn or turnover meanwhile has ranged from between 20%-45% depending on the part of the borough examined. Given the intervening period between studies of nearly four years (between 2007 and 2011), higher turnover rates are expected and changes of this magnitude are not unusual.

As with the data on growth, there is not a single geographical pattern to population turnover. However, very broadly the areas with the highest levels of population turnover are largely in the west of the borough, particularly in the Shoreditch area and in the parts of the borough that border Islington.

Housing and Households

The results confirm that the most common household type are the 41,400 single adult households, followed by cohabiting adult households with no children (19,500) and then family households (17,700).

Between 2007 and 2011, the most notable changes in household types were increases in the number of single adult households with children which rose by 1,600, and a large increase in single adult households which rose by 6,900. There was however a fall in the number of three-generational households.

Analysis shows that there are 110,627 properties in Hackney, giving an average household size of 2.15 persons per household. Of the 110,627, it is estimated that 104,652 are occupied households, representing a vacant property rate of 5.4%.

Ethnicity & the Charedi Community

In terms of ethnicity, results show that of the total population 44.1% are White, 19.3% Black, 8% Asian, and 6.5% Mixed. The group 'Other/Unknown' accounts for about 22% of the total.

The analysis also shows a range of other distinctive communities, with many numbering over a thousand members, including Chinese, Somali, Kurdish and Vietnamese communities.

One large and distinctive religious group in Hackney is the Charedi community, part of the Jewish Orthodoxy, and this analysis shows the Charedi community make up 7.4% of the population of Hackney. It is estimated that the Charedi population is 17,587 persons, which is 2,178 more than the previous estimate in 2007.

The initial results of this study were communicated to Hackney Council in June 2011 for use in the Census Quality Assurance Programme. A statistical database containing the data on which this analysis is based will be transferred at the end of the project and owned by Hackney Council.

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Counting Hackney's population using administrative data ~ An analysis of population change in Hackney between 2007 and 2011 based on administrative data

1. Introduction

1.1 Background

The London Borough of Hackney wished to repeat the population study undertaken by Mayhew Harper Associates in 2007 which, using the Neighbourhood Knowledge Management (*nkm*) methodology, is used to match locally-held administrative records in order to count the number of people resident in the borough.

An important aspect of the new study is that it is designed to coincide with Census day which took place on 27th March 2011. Its findings will enable the council to analyse the impact of population change and churn since 2007, as well as provide an evidence base to help quality assure the 2011 Census outputs.

An independent study of the type described here is intended to provide robust evidence to highlight possible under-enumeration or misrepresentation. In achieving this aim, it is hoped to overcome perceived problems with the 2011 Census as a result of which Hackney's population may have been significantly under-enumerated.

There are four interrelated issues:

- The official methodology for counting the population relies on the decennial Census and postal survey techniques which tend to elicit a poor response in boroughs like Hackney
- ONS population counts do not use all available evidence especially administrative data which is more up to date and verifiable and so official figures are out of date before they are published
- The subdivision of populations based on official sources into constituent ethnicities does not deliver detailed or timely information about distinctive communities
- First results from the 2011 Census, in the form of summary data for local authorities, are not expected until September 2012. More detailed results, for a range of statistical and administrative areas, will not be available until 2013 and beyond.

High level results and detailed breakdowns of population by age and ethnicity based on this study were dispatched to Hackney on the 2nd of June 2011. This report sets out the results of this exercise, explains the methodology in detail and puts the results into context. It builds on the high level results dispatched to Hackney in June 2011.

Section 2 describes the headline population estimates; Section 3 analyses changes between 2007 and 2011; Section 4 focuses on housing and households; Section 5 analyses changes in income and deprivation; and Section 6 considers ethnicity. Section 7 evaluates the size and

demographic structure of the large Hackney Charedi community and Section 8 concludes. Annexes provide greater detail on the population estimation methodology (A), income deprivation among children, adults and older people (B) and maps of ethnicity by major group (C), and tables of alternative age groupings (D).

2. Estimates of the confirmed population

1.1 Population breakdown by age and sex

Table 1 shows Hackney's population at March 2011 by age and gender. It finds that there are 237,646 persons that can be confirmed as living at addresses in Hackney at the time. Of the total, exact age could not be established in 16,973 cases (16,870 in 2007) and gender in 4,943 cases (21,077 in 2007). In terms of gender, the results show that up to age 14 males are slightly more numerous than females, but from age 20 to 34 the gender balance alters with proportionately more females.

However, this conclusion is probably affected by the higher number of males than females with unknown ages who are likely to fall within this age range. Up to age 64 the genders are in balance but thereafter females are more populous than males with the oldest old (aged 85+) predominantly female. Figure 1 shows the same data in the form of a population pyramid with males on the left axis and females on the right.

Age group	Persons	males	females	no gender
Under 1	5,638	1,960	1,872	1,806
1-4	15,233	7,629	7,519	85
5-9	16,053	8,143	7,841	69
10-14	14,129	7,080	6,989	60
15-19	13,389	6,580	6,766	43
20-24	15,381	6,933	8,405	43
25-29	22,782	9,983	12,731	68
30-34	22,627	10,628	11,964	35
35-39	18,629	9,498	9,085	46
40-44	16,914	8,713	8,140	61
45-49	15,550	8,073	7,443	34
50-54	11,777	6,024	5,727	26
55-59	8,707	4,369	4,316	22
60-64	7,104	3,457	3,620	27
65-69	5,145	2,454	2,671	20
70-74	4,313	2,045	2,250	18
75-79	3,300	1,566	1,715	19
80-84	2,236	942	1,278	16
85-89	1,220	430	777	13
90+	546	166	377	3
age/unknown	16,973	8,294	6,250	2,429
Total	237,646	114,967	117,736	4,943

Table 1: Table showing the number of persons by age and gender based on nkm methodology

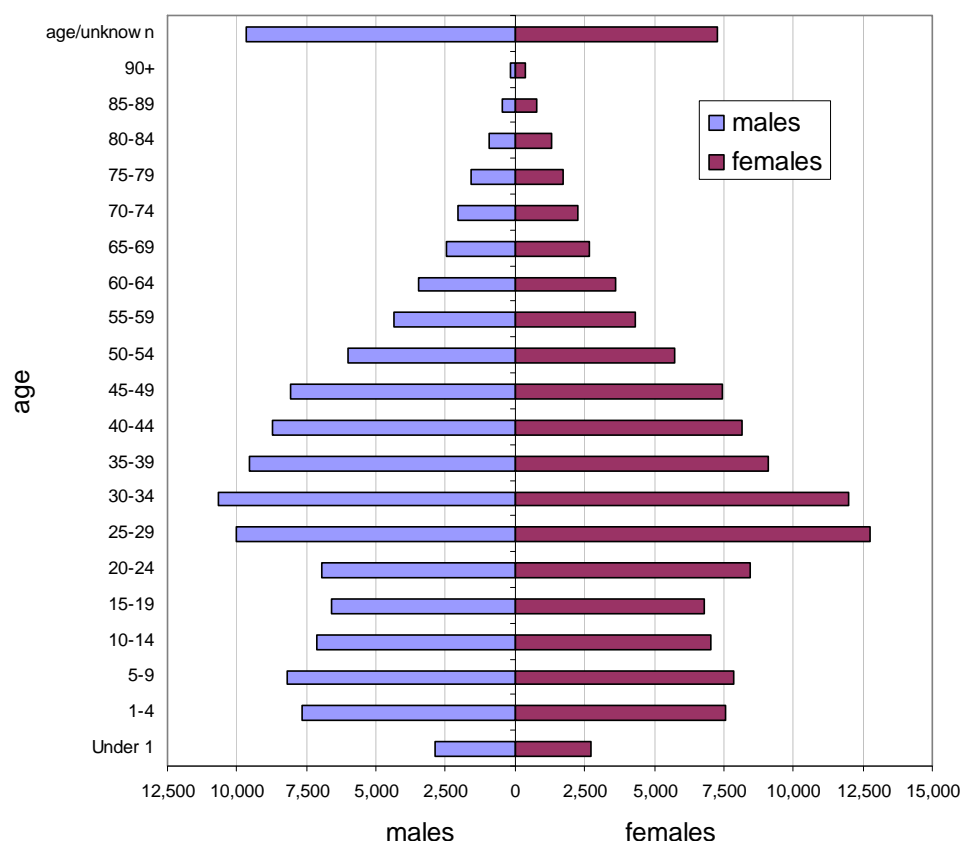


Figure 1: Population pyramid showing breakdown by age and gender in 2011

2.2 Comparison with GLA 2011 estimates and ONS 2010 MYEs

In order to compare our figures with other sources such as the GLA's, estimates of population or ONS, it is necessary to re-distribute the 'age unknowns' across other age groups based on their most likely age group. This is shown in Table 2 column 3, '*nkm adjusted for age unknown*'¹. Figure 2 is a chart comparing the various alternative estimations by age group.

Our results at the foot of column 2 and 3 of Table 3 show around 3,400 more people than the GLA² in the final column which in turn indicates 15,000 more people than the recently published ONS 2010 Mid-Year Estimates in column 4. The lower ONS estimate of 219,228 persons continues a trend of previously low estimates which date back to a baseline established at the time of the 2001 Census in which there were known under-enumeration problems.

¹ In this project the number of age unknowns was 16,973 which compares with a figure of 16,870 in 2007. *nkm* (1) assumes that *nkm* estimates are 'exactly right' where they exceed the GLA 2011 estimates in all age categories. It then redistributes the 'age unknown' population in proportion to the size of the differences, where the *nkm* estimates are below the GLA figures in a given group. This gives a plausible boost to age categories such as the 25-29 population, where under counts are thought to exist. Ultimately, this procedure is arbitrary and alternative methods will give different answers.

² 2010 Round SHLAA Projections - using 2008-based CLG Household projections

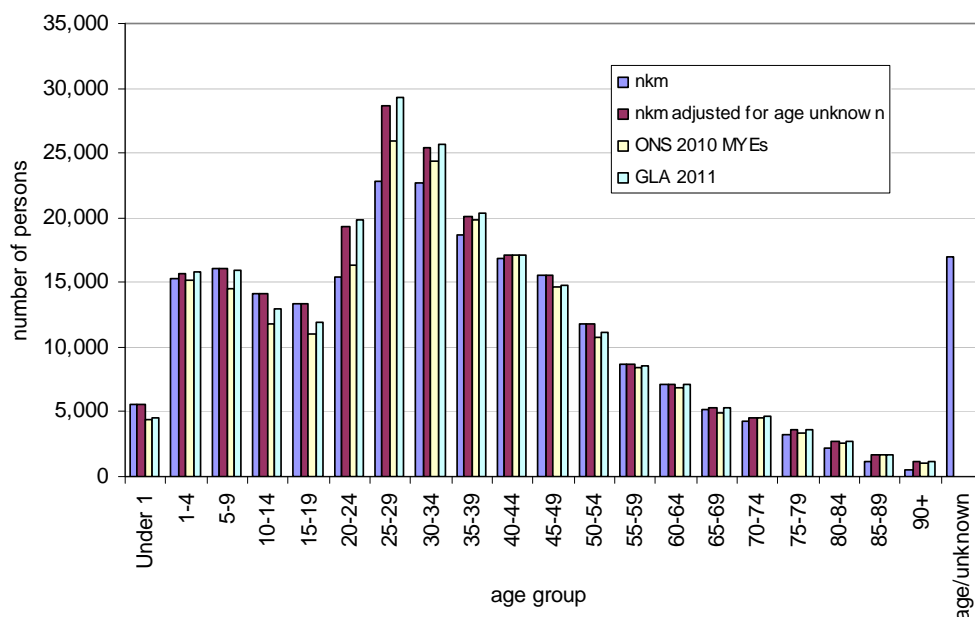


Figure 2: Comparative distribution of population by age according to nkm, GLA and ONS

Age group	nkm	nkm adjusted for 'age unknown'	ONS 2010 MYEs	GLA 2011
Under 1	5,638	5,638	4,418	4,546
1-4	15,233	15,739	15,224	15,793
5-9	16,053	16,053	14,459	15,971
10-14	14,129	14,129	11,740	13,000
15-19	13,389	13,389	10,964	11,926
20-24	15,381	19,367	16,356	19,796
25-29	22,782	28,608	25,873	29,235
30-34	22,627	25,365	24,352	25,659
35-39	18,629	20,127	19,819	20,288
40-44	16,914	17,115	17,099	17,137
45-49	15,550	15,550	14,689	14,754
50-54	11,777	11,777	10,715	11,198
55-59	8,707	8,707	8,399	8,578
60-64	7,104	7,155	6,906	7,160
65-69	5,145	5,292	4,940	5,308
70-74	4,313	4,602	4,562	4,633
75-79	3,300	3,577	3,380	3,606
80-84	2,236	2,668	2,608	2,715
85-89	1,220	1,680	1,655	1,730
90+	546	1,110	1,070	1,171
age/unknown	16,973			
Total	237,646	237,646	219,228	234,203

Table 2: Table showing number of persons by 5-year age band for nkm, nkm-adjusted, ONS and GLA (age adjusted column is rounded)

2.3 Independent checks

Differences in population estimates from each source are inevitable due to timing, methodological and definitional differences, but are useful as reasonability checks nevertheless. There is no other single independent source that covers the whole age range with the exception of the now very dated 2001 Census and its various derivatives such as the 2010 mid-year estimates.

It is possible, however, to provide independent albeit partial checks based on segments of the age range. Two government sources of administrative information that can sometimes provide assurance are State Pension and Child Benefit counts. These are routinely updated data sets with flows on and off as people are born and then die.

The State Pension is a widely available income replacement for males and females aged 65+, although eligibility depends on certain qualifying conditions and so it may not equate exactly to the 65+ population (e.g. some people defer take up of the state pension until after 65, others may not have made sufficient contributions).

Our analysis found that there were 16,760 people (18,929 age adjusted) aged 65+ living in Hackney, which is lower than the comparable estimated GLA figure of 19,162 persons for 2011. However, it is higher than the 15,705 people in receipt of the state pension aged 65+ based on DWP data for November 2010.

We identified some uncertainty as to the size of the oldest old in Hackney. Administrative sources, normally reliable at this age, identified 1,776 persons aged 85+ (unadjusted). GLA estimates put the figure at 2,901 which is an unexpectedly large gap.

Child Benefit is a universal benefit for all children in full time schooling. The most recent data record 53,240 children aged 0-15 receiving Child benefit living in Hackney in August 2010. Our analysis identifies 53,815 (54,321 adjusted) in the same age range and so is very close in comparison. The comparable GLA estimated figure is 51,686 for 2011.

3. Population change

3.1 Population change since 2007

Overall the population of Hackney has grown by 6.5% since 2007. After allowing for age adjustments, there has been an 8.0% increase in the 0-9 age group and a 9% increase in working age adults. The 10-19 group by contrast has remained broadly stable whereas the 65+ age group has declined by 6.1% as shown in Table 3³.

³ Different applications use other age ranges. Standard age ranges for employment data are 0-15, 16-64 and 65+. Annex D provides *nkm* adjusted and unadjusted data in these age brackets

Age group	diff. 2011-2007	% change
0-9	3,251	9.5
10-19	218	0.8
20-64	12,315	8.7
65+	- 1,309	-6.5
total	14,475	6.5

Table 3: Change in population by key age groups

3.2 Inflows and outflows by age band

Basing our analysis on each individual's NHS number, we used the confirmed population from the GP Registers in 2007 and 2011 to split the population into people: (a) that had remained in Hackney in 2007 and 2011; (b) were new to the borough in 2011 by birth or immigration; (d) lived in Hackney in 2007 but not in 2011 either through movement out of the borough or death.

We had no information on people in either snapshot who were not on the GP Register or had no date of birth, but had been confirmed by other data sets. For persons whose age is known and who have NHS numbers, the results show 72,000 newcomers to Hackney since 2007 and 65,000 leavers.

These figures are broken down into 5-year age bands in Figure 3. It shows that people moving into Hackney tend to be younger than the people leaving Hackney. Since 2007 it is also clear that the population has been boosted by a higher number of births.

This trend in inflows is most noticeable between the 25-34 age groups. Overall the chart shows the expected pattern of movement with young people joining and older people leaving. The sub-peak in the youngest age groups (particularly ages 1-4) is an indicator of young accompanying children or births since 2007.

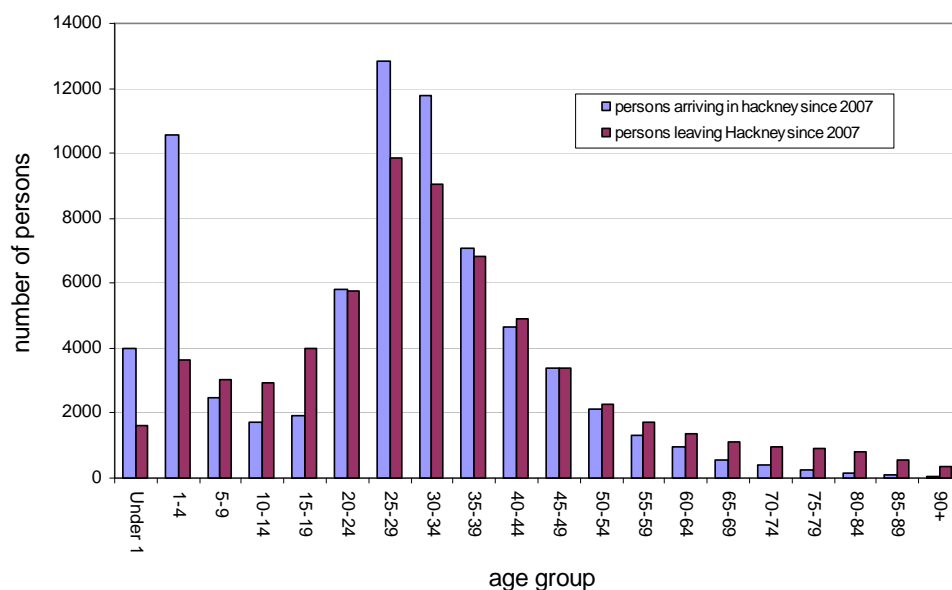


Figure 3: Inflows and outflows in Hackney between 2007 and 2011 by age band

3.3 Changes in population by LSOA population

The map in Figure 4 compares the difference in the Hackney population between 2007 and 2011 by LSOA (lower super output area). This map and others in the report work like spreadsheets with alphabetic columns A to N and rows 1 to 14. Each cell is identified by a letter (column) and a number (row) and equates to an area of 0.5 x 0.5 square kilometres. In the map, areas shaded in red were either static or experienced small decreases; those in blue experienced large increases and yellow experienced moderate increases.

The results indicate no particular geographical pattern, but a mix of changes with growth and relative decline in different parts of the borough. For example, the population in LSOAs situated in cells shaded dark red such as C3, G3, L8 F11 and D11 have declined in number, whereas the population situated in LSOAs in cells shaded dark blue, such as D4, I4-I5, K9-M9, E13-E14, F8 and C12, experienced increases of more than 20%.

Particular growth has been seen in parts of Shoreditch, and certain areas around Dalston (cell E8 and F8), which experienced increases of more than 20% over the period. In some cases this may be linked to Hackney's spatial planning policy, for example improvements in transport infrastructure, estate renewal, or additional social investment.

This policy is articulated in Hackney's Local Development Framework which aims for population growth which is mainly accommodated in higher density developments in appropriate locations around the town centres, new stations and renewed housing estates.

Several areas which have experienced decline, for example parts of the Woodberry Down area, are undergoing extensive regeneration, and a fall in the population may be linked to decanting of housing stock. Woodberry Down is in New River and Brownswood wards.

3.4 Population turnover at LSOA level

The difference in population size is a measure of the net change in population between two snapshots in time. Population turnover by contrast measures the magnitude of flows into and out of an area. For example, the population of an area may be unchanged, but the people that live there may be completely different from those at a previous snapshot.

The population P_2 in time t_2 equals the population P_1 in t_1 plus inflows minus outflows, where inflows and outflows include births and deaths. This can be written as $P_2 = P_1 + I - O$. Suppose an area retained exactly the same people between two points in time, then the turnover is defined as zero % in this case (i.e. $I=0$ and $O=0$).

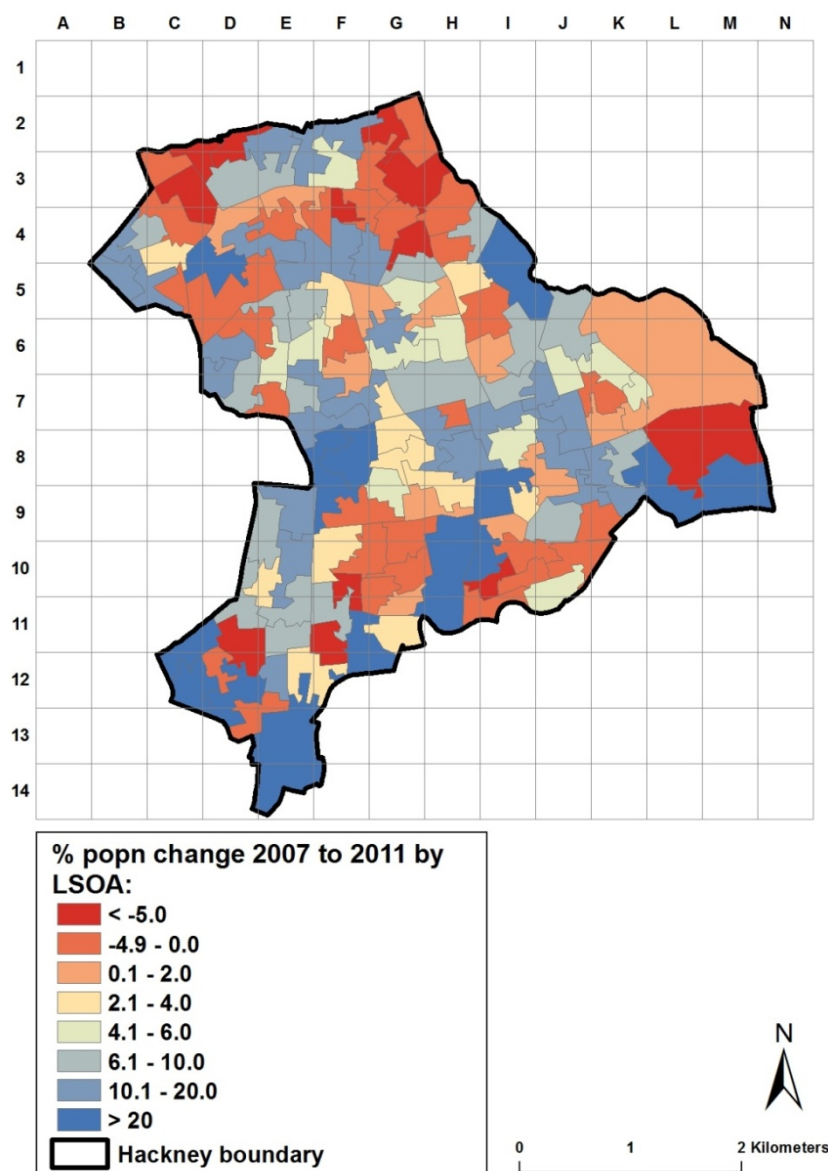


Figure 4: Percentage change in population by LSOA

However, if the population is unchanged in size but the incumbent population were all replaced by new people, the index would take a value of 100%. To take into account intermediate cases, we combine both inflow and outflow by creating the index $100 \times (I+O)/(P1+P2)$. For example, an LSOA that had 400 people, then lost 200 and gained 300 would have a turnover index of 55.5 % (i.e. $100 \times (300+200)/(400+500)$).

The results of applying this index to each LSOA are shown in the form of a map of Hackney in Figure 5. In the map, LSOAs are colour coded according to the amount of churn. Areas with the highest turnover are coloured dark blue and those with the least are coloured from green to yellow (least).

Turnover rates of over 40% are evident at various points in the borough with many corresponding to areas of population growth as might be expected. The longer the intervening period, this case nearly 3.75 years, the higher churn rates are expected to be so changes of this magnitude are not unusual. In the map there are only a few areas with churn rates of less than 25% and these are highlighted in yellow.

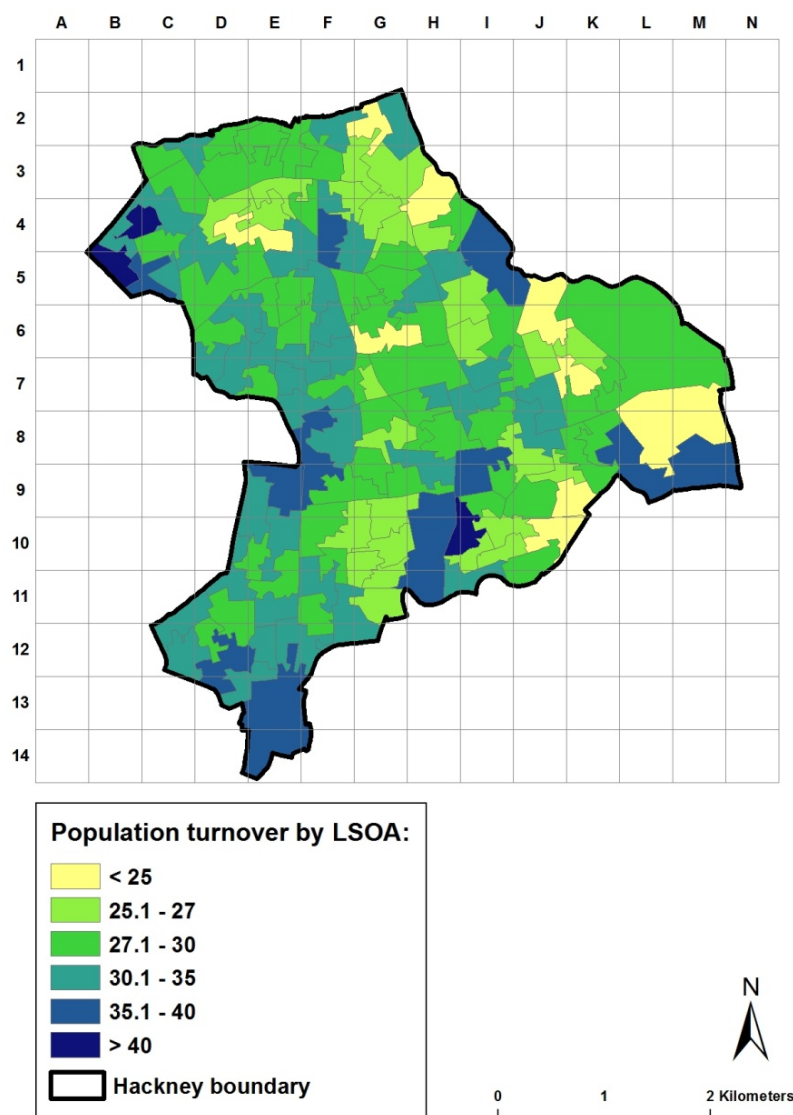


Figure 5: Population turnover by LSOA

3.5 Population change at ward level

Table 4 shows the changes in population at ward level and may be compared with the Ward map in Figure 6. Wards in which the population has increased tend to be situated more in the south and east whereas wards with more moderate growth tend to be in the north, although there are several exceptions to this rule. Of all wards Leabridge, Dalston, Chatham and Hoxton have experienced the greatest growth.

Ward	nkm 2007 population	nkm 2011 population	% change 2007 to 2009
Brownswood	9,764	10,089	3.3
Cazenove	13,398	13,543	1.1
Chatham	11,912	13,315	11.8
Clissold	11,476	12,159	6.0
Dalston	11,717	13,690	16.8
De Beauvoir	11,574	12,681	9.6
Hackney Central	11,404	11,937	4.7
Hackney Downs	11,310	11,929	5.5
Haggerston	12,172	12,950	6.4
Hoxton	12,270	13,561	10.5
King's Park	11,208	11,621	3.7
Leabridge	10,744	13,062	21.6
Lordship	11,682	12,134	3.9
New River	12,107	12,638	4.4
Queensbridge	12,265	12,975	5.8
Springfield	12,964	12,616	-2.7
Stoke Newington Central	11,498	12,041	4.7
Victoria	12,867	13,029	1.3
Wick	10,839	11,676	7.7
Total	223,171	237,646	6.5

Table 4: Population by ward in 2007 and 2011 (for ward map see Figure 5)



Figure 6: Electoral ward look up map of Hackney

3.6 Sources of change to 2011 population stock

Table 5 is based on a division of the population stock by ward in 2011 into four components: 1. the percentage of the stock in 2011 that was not born in 2007; 2. the percentage due to immigration; 3. the percentage that arises from internal movement within Hackney; and 4. the percentage that is unchanged since 2007.

All numbers are derived using NHS numbers of the confirmed population and do not therefore include a minority of people that are confirmed but do not have an NHS number. The results show that 57.8% of the population stock is unchanged; 7.8% of the stock were not born in 2007; 26.8% arrived from outside Hackney since 2007; and 7.6% of the stock moved between wards during the period.

These figures vary somewhat depending on ward. For example, over 30% of the population in Brownswood, Dalston, De Beauvoir, Haggerston, and Hoxton arrived from outside Hackney since 2007. The highest percentage of births since 2007 were in Cazenove, Lordship, New River and Springfield wards each accounting for over 10% of the ward population in 2011.

The largest unchanged stock was in Springfield at 65% and the smallest Leabridge (52.2%). The wards with the highest percentage of population sourced from other wards in Hackney were Hackney Downs (10.2%) and Leabridge (10.8%).

Ward	population in 2011	% change since 2007	% of 2011 stock born since 2007	% of 2011 stock new to Hackney by migration	% of 2011 stock due to internal movement	% of 2011 stock unchanged since 2007
Brownswood	10,089	3.3	6.7	34.2	3.9	55.1
Cazenove	13,543	1.1	11.0	22.1	6.1	60.8
Chatham	13,315	11.8	8.2	28.0	8.9	54.8
Clissold	12,159	6.0	7.0	27.8	6.0	59.1
Dalston	13,690	16.8	6.7	32.4	8.1	52.8
De Beauvoir	12,681	9.6	6.6	32.8	6.3	54.3
Hackney Central	11,937	4.7	6.8	27.9	6.9	58.4
Hackney Downs	11,929	5.5	7.0	26.3	10.2	56.5
Haggerston	12,950	6.4	5.2	33.2	7.3	54.3
Hoxton	13,561	10.5	5.8	33.1	6.5	54.6
King's Park	11,621	3.7	7.5	20.8	8.9	62.8
Leabridge	13,062	21.6	8.7	28.2	10.8	52.2
Lordship	12,134	3.9	10.3	21.5	7.1	61.1
New River	12,638	4.4	11.6	21.0	7.2	60.2
Queensbridge	12,975	5.8	6.5	26.1	7.7	59.7
Springfield	12,616	-2.7	10.5	16.9	7.6	65.1
Stoke Newington Central	12,041	4.7	7.3	29.4	6.3	57.0
Victoria	13,029	1.3	7.4	24.7	7.7	60.3
Wick	11,676	7.7	7.1	24.7	9.6	58.6
Hackney	237,646	6.5	7.8	26.8	7.6	57.8

Table 5: Sources of population stock in 2011 due to changes since 2007

4. Housing and households

4.1 UPRNs by usage and population

Table 6 is a breakdown by usage of addressable properties in Hackney based on the Local Land and Property Gazetteer (LLPG), which is a property database maintained by all local authorities in the United Kingdom. It also includes the number of people living in each category of usage, which is overwhelmingly residential as might be expected.

The LLPG extract used in this study is a snapshot of properties at a point in time which lists all properties, buildings and land units within the borough classified by usage. Each addressable property is given a UPRN or Unique Property Reference Number which we use as a basis for population and household analysis.

Many addresses are not relevant for residential occupation, and are removed for population estimation purposes. For example, records on the LLPG that are classified as 'leisure' usage, could be a local sports centre, and therefore would not have people living there.

UPRNs available for occupation are those with residential or unclassified usage. UPRNs with any other type of usage are only included if a confirmed resident has given such an address on any of the other datasets. Table 6 sets out the main usage categories, numbers of households and people in each.

Commercial designation in Table 6 is based on the LLPG UPRN BLPU usage classification for each address. This is a residual category to distinguish from specific commercial usage such as hotels/guest houses.

Dummy UPRNs are created for addresses sourced from the administrative data sets that are not found on the LLPG in their full form. This tends to be where a flat number is not found on the LLPG, but the parent shell is, and can indicate illegal conversions or where the LLPG has not yet caught up with changes on the ground. We assigned dummy UPRNs to 1,647 such addresses containing 2,050 people.

Category	usage	number of UPRNs	number of households	number of people	% of population
0	Residential*	107,355	102,320	232,694	97.92
1	Retail	49	49	73	0.03
2	Industrial/utilities	7	7	8	0.00
3	Commercial	1,028	1028	1,690	0.71
4	Health	3	3	3	0.00
5	Leisure	0	0	0	0.00
6	Hotels/guest houses	19	14	17	0.01
7	Education	28	28	50	0.02
8	Transport	1	1	18	0.01
9	Other / unclassified	2,137	1202	3093	1.30
	Total	110,627	104,652	237,646	100

**Includes dummy UPRNs*

Table 6: Breakdown of UPRNs by usage according to the LLPG

4.2 Differences by occupancy and tenure

Between 2007 and 2011 there was an increase of 14,499 in the number of UPRNs (addresses) on the Local Land and Property Gazetteer from 96,128 units to 110,627 units⁴. This, coupled with a population increase of roughly the same number, the net result has been a small reduction in occupancy rates from 2.32 to 2.15 per address and an increase in the transitional vacant property rate from 3.24% to 5.4%.

Table 7 and Figure 7 analyse occupancy according to the frequency of UPRNs. It shows that one-person households remain the most numerous and common form of household, followed by 2-person, 3-person etc. The filled occupancy rate (i.e. ignoring empty UPRNs) has decreased from 2.4 persons to 2.2 persons over the period.

An estimated 27,800 people live in 3,286 households with 7+ people (6 persons per address is the maximum allowed on a single 2011 Census form). This compares with a substantially higher number of 3,804 7+ person properties in 2007 containing 32,800 occupants. If we define multiple occupancy households as household with ten or more people then the data shows that their number has fallen from 1,017 in 2007 to 680 in 2011.

Number of people at a UPRN	Frequency	social housing	private tenure
0	5,975	999	4,976
1	49,284	21,193	28,091
2	22,803	11,691	11,112
3	12,592	7,566	5,026
4	8,972	5,703	3,269
5	5,107	3,551	1,556
6	2,608	1,829	779
7	1,371	903	468
8	753	457	296
9	482	243	239
10	256	109	147
11+	424	127	297
total	110,627	54,371	56,256

Table 7: Breakdown of UPRNs by occupancy and tenure

⁴ Note that on the 2011 LLPG, approximately 2,000 of the records that did not exist in 2007 refer to individual rooms in residential institutions, rather than the overall property itself, which may create an artificial increase to the total number of UPRNs to some extent. Approximately 7,000 LLPG addresses are not present on the Council Tax database, indicating that they may be in a state of change e.g. are being redeveloped.

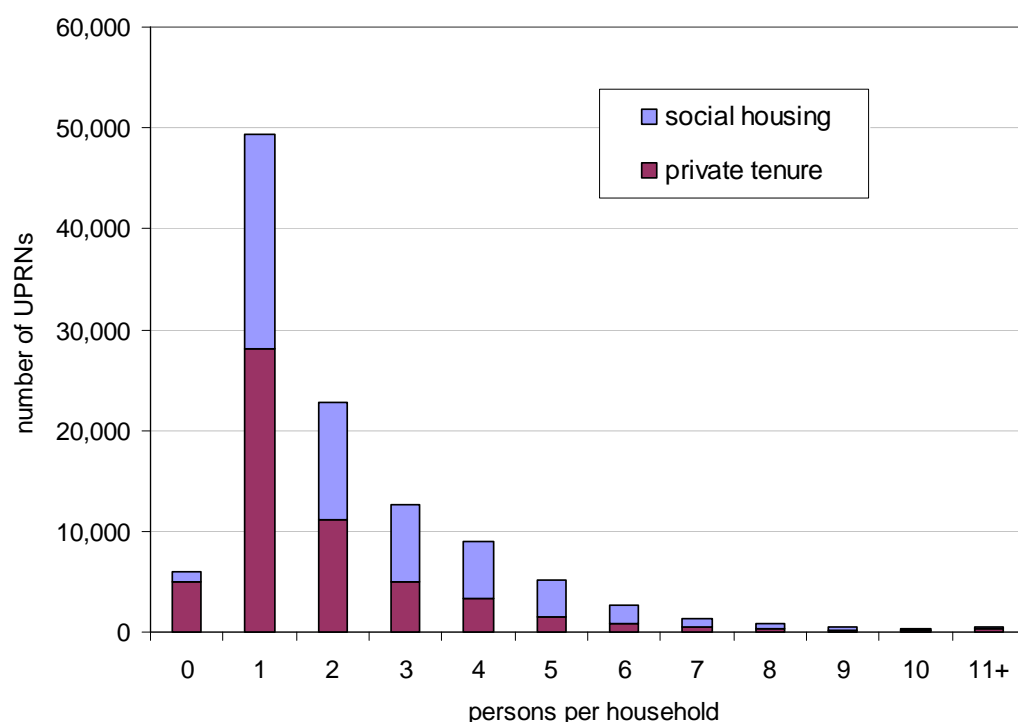


Figure 7: Chart showing frequency of households by number of occupants and tenure

4.3 Changes by type of household unit

Using the *nkm* population database each person is classified according to the demographic characteristics of the households in which they live. There are 8 categories defined altogether distilled from 81 different sub-types, which are shown in Table 8 below. These categories are mutually exclusive meaning that a household can only fall into one category so that there is no double-counting.

They range from single person dwellings (type G), family households with dependent children (type A), single parent households (type B), cohabiting adult households with no children (type F), and then older and three generational households (types C, D, and E). There is also a small category (type H) called 'other' households that do not fall into any of A to G.

In more detail, households with one adult aged 65+ living alone would be classified as D. Those with at least one adult aged 65+ would be classified as C, an older cohabiting household if there was another adult at the address. In some cases a household with member(s) aged 65+ may also be categorised as E, a three generational household, if there are young people at the address aged 19 or under and also at least one adult aged 20-64.

Type H households are a residual category for households that do not fit into another group. They could comprise for example cases where there was an older person(s) 65+ living with a young person(s) age 19 or under. It could also comprise examples of households with teenagers who are also young parents.

Households can be further classified according to which housing band they belong to for Council Tax purposes (a proxy measure of housing wealth), whether they receive means tested benefits (a measure of income deprivation) and so on.

There is no separate classification for multiple occupancy households which are subject to different definitions based on the number of people at an address. However, in the analysis below measures of average occupancy by household type are provided. Typically occupancy ranges from one person in the cases of Type D and G households which are one-person by definition. Highest average household size occurs in household Types A and E.

category	Description
A	family households with dependent children
B	single adult households with dependent children
C	older cohabiting households
D	older person living alone
E	three generational households
F	cohabiting adult households no children
G	single adult households
H	other households

Table 8: Classification and definitions of households

Table 9 is a breakdown by household type of the Hackney population in 2011 according to frequency by household type, benefit and tenure status, and the number of properties banded A to C for Council Tax purposes⁵. The results show that Type G, single adult households, with 41,400 cases are the most common, followed by Type F cohabiting adult households (19,500) and then Type A family households (17,700).

There are 9,800 Type B single adult (parent) households with children, 6,500 households with older people living on their own and 1,800 examples of Type E three-generational households. The data show that Types B, D, and E households are more likely to be on benefits than other household types and slightly more likely to live in social housing.

Table 10 shows that the most notable changes between periods were increases in the number of Type B single adult with children households which rose by 1,600 and then a large increase in Type G single adult households which rose by 6,900. The data records a small fall in the number of 3-generational households which is likely to be partly the result of the expansion of the housing stock in the period.

Around 63% of households are banded A-C for Council Tax purposes with these percentages falling slightly in the case of Types A, E and H households and increasing in the case of Type D households. Over the period the percentage living in homes designated A-C has fallen by nearly 5% mainly reflecting the changing structure of the housing stock.

The number of households on benefits increased over the period by an average of 1.1% which appears to be due in part to trends in unemployment. For example, official figures state that it increased from 8.7% in 2008 to 10.7% in 2010 which would be consistent with an upward trend. Over this period, there were small reductions in average household size of 0.1 person overall.

⁵ The banded system ranges from A to H with A the lowest valued properties and H the highest.

Household type	frequency	population	% housing units banded A-C	% households on benefits	% social housing	average occupancy or household size (persons)
A: family households with dependent children	17,753	85,896	57.3	50.5	63.5	4.8
B: single adult households with dependent children	9,869	28,188	67.3	61.9	65.7	2.9
C: older cohabiting households	5,554	14,061	57.8	57.7	67.1	2.5
D: older person living alone	6,467	6,467	81.2	73.0	77.0	1.0
E: three generational households	1,772	10,088	46.4	64.6	65.2	5.7
F: cohabiting adult households no children	19,534	47,217	59.4	28.6	46.6	2.4
G: single adult households	41,422	41,422	65.0	26.3	37.9	1.0
H: other households	2,281	4,307	47.3	39.7	41.9	1.9
Total	104,652	237,646	62.8	39.7	51.0	2.3

Table 9: Breakdown of households by household type in 2011

Household type	change in frequency	population change	% change in households banded A-C %	% change benefits households	% change social housing	change in occupancy
A: family households with dependent children	229	-1803	-2.5	2.9	11.2	-0.2
B: single adult households with dependent children	1,620	5,487	-5.0	9.9	5.6	0.1
C: older cohabiting households	263	699	-2.6	0.6	10.6	0.0
D: older person living alone	94	94	-2.2	-1.0	2.9	0.0
E: three generational households	-227	-2,082	-0.6	3.3	11.9	-0.4
F: cohabiting adult households no children	2,031	4,243	-2.6	1.3	12.2	0.0
G: single adult households	6,883	6,883	-7.0	0.8	4.7	0.0
H: other households	743	954	-20.6	-10.1	-1.7	-0.3
Total	11,636	14,475	-4.6	1.1	6.9	-0.1

Table 10: Breakdown of changes in Hackney household structure by household type, population, Council Tax Band, benefit status and housing tenure in 2011 as compared with 2007 in percentage terms

4.4 Household transitions

Households occupying UPRNs may change designation for example from a type A to a type B single parent household. The people living at an address in 2011 may consist of some or all of the people that lived at that address in 2007. Relative changes in the designation of households between time periods may be informative for a range of purposes.

Our analysis showed that UPRNs most likely to remain unchanged in designation were type A family households (71% of total), type C older cohabiting households (78%) and type D older people living alone (82.2%). UPRNs most likely to change household status between periods were type B single parent households (53% remained the same), and type E three generation households (60% remained the same).

Type F cohabiting adults households were most likely to transition into type G single adult households and type G single adult households were most likely to transition into type F cohabiting adult households. Other transitions of note were from type E three generation households to type A family households; type B single parent households to type A family households and type A households to type B single adult households.

4.4 Tenure by age

Tenure is split into two categories for the purposes of our analysis – either private tenure or social housing. Within these categories private tenure can include privately rented properties whereas social housing can include council owned or registered social landlord (RSL) properties.

Figure 8 shows housing tenure status by single year of age based on current residence in 2011. It shows that around 70% of children and young people between ages 14 and 16 occupy social housing. This is more than at any other age group apart from those aged 70+. There is then a dip to age 40 before the percentage gently rises again.

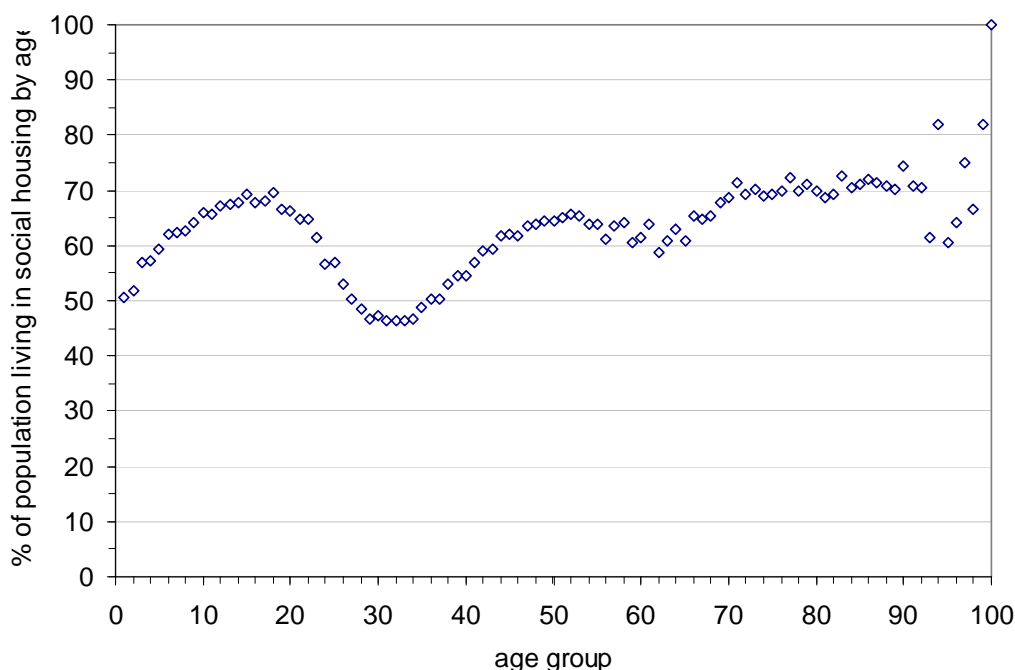


Figure 8: Percentage of population by single year of age living in social housing

4.5 Deprivation by age

Whether an individual lives in a household on means tested benefits or not can be predicted with accuracy on the basis of a few simple risk factors relating to the household. In Annex B, we segment the population further in order to profile income deprivation by broad age group: 0-19, 20-64 and 65+.

The main findings are that:

- A majority of young people age 0-19 (58.4%) live in households in receipt of means tested benefits. The key risk factors that correlate strongly with benefit claimant status are living in social housing, living in a single parent household and having 2+ siblings. If all three risk factors are present then the odds are much higher than if only one is present rising to 82% of this sub-group
- Among working age adults living in social housing, being the only adult in the house and having at least one child are highly correlated with benefit status. On average 39.6% of adults live in households on benefits but this increases to 71% if all three risk factors are present in the sub-group
- In the older population, the risk factors that are highly correlated with benefit status are whether an older person lives in social housing, whether living alone or being aged 75+. On average 63% of older people live in households on benefits but this increases to 80% when all three risk factors are present in a sub-group

5. Ethnicity in Hackney

5.1 General approach

One of the few consistent, albeit partial sources of information about ethnicity is the School Pupil Census (previously known as PLASC). This is a register of pupils attending state schools in Hackney containing names, ethnicity and other useful information. It identifies up to 100 different sub-groups using a mixed nomenclature based on country, region or other information (e.g. dialect).

In order to quantify the Hackney population, we use a database of unique surnames based on a large number of School Pupil Census data sets in which each name is assigned a probability of belonging to one of a number of ethnic groups. For children and their families assignment is unique but for a household without children probabilistic assignment is used. A limitation is that not all names are on the database and these cannot be assigned an ethnicity (they are allocated to 'unknown').

The level of accuracy of this process depends also on how many ethnic groups are defined at the outset. In addition, assignment by nationality rather than by ethnic group will be more or less accurate depending on the nationality and distinctiveness of the names involved.

We divide the population into 3 tiers for classificatory purposes: Tier 1 broadly coincides with the high level categorisation based on the Census, namely White, Black, Asian, Mixed and Other. Tier 2 splits each of these into broad sub-groups such as African Caribbean and

'Any other Black' in the case of the Black population. Tier 3 is individual country breakdowns.

Not every country can be identified using this method, as when for example there is no corresponding School Pupil Census category. This applies, for example, to former Soviet bloc countries including Russia and the Baltic states which are bracketed under East European. With around 3,473 members this grouping is comparable in size to, for example, the Pakistani community, although this is difficult to verify exactly.

The Arab category is another example in which individuals are either assigned to specific countries such as Yemen or Morocco or included under a general heading 'Arab'. The results for this group identified only 452 cases in 2011.

5.2 Results

Tables 11 to 15 set out the main results and categories by Tier 1 and Tier 2. All totals are rounded. A small caveat is that Tier 1 Asian comprises of anyone from the sub-continent including India, Bangladesh, Pakistan and Sri Lanka; note that Tier 2 Asian includes Chinese, who are separately identified under Tier 3, and other south-east Asian.

All the tables in each Tier breaks down the population into three age groups: 0-19, 20-64, and 65+. A further category is included for 'age unknown', although most of this harder to identify group will fall into the 20-64 age bracket. Two further columns show the estimated percentage of each group living in households on benefits or in social housing.

The results show that the White population with 104,865 members is the largest group in Tier 1 followed by Black, Asian and then Mixed and Unknown groupings. Of the total population 44.1% are White, 19.3% Black, 8% Asian, and 6.5% Mixed. The residual group 'Other/Unknown' accounts for about 22% of the total or 52,293 people.

The results indicate that the Black population numbers are more likely to be of African origin rather than Black Caribbean. Among the Asian population, the Indian community is the largest with 7,700 members followed by the Bangladeshi and then Pakistani communities with 5,600 and 3,300 members respectively.

The Mixed group which totals 15,500 members cannot be broken down with reliable accuracy because sub-categories are very limited in scope and many people fall into the 'Other Mixed'. Insofar as it is possible to identify specific Mixed sub-groups, the largest are White and Black Caribbean with 5,700 members, followed by White and Black African 1,900 and White and Asian 1,700.

Higher tier census category	0-19	20-64	65+	age NA	total	% on benefits	% living in social housing
White	23520	63489	9161	8694	104865	42.5	49.1
Black	16470	24604	2822	1969	45865	49.6	77.5
Asian	6461	10710	1068	855	19094	60.7	59.6
Mixed	4354	8865	1289	1021	15529	46.0	61.4
Other Unknown	13636	31803	2420	4434	52293	45.9	49.1
total	64442	139471	16760	16973	237646	46.3	56.2

Table 11: Tier 1 All

Lower tier census (white)	0-19	20-64	65+	age NA	total	% on benefits	% living in social housing
UK	14508	47562	7845	7316	77231	35.8	44.8
Irish	391	1072	177	136	1778	38.9	51.9
Any other White background	8621	14854	1139	1242	25856	63.1	61.6
total	23520	63489	9161	8694	104865	42.5	49.1

Table 12: Tier 2 White

Lower tier census (Black)	0-19	20-64	65+	age NA	total	% on benefits	% living in social housing
African	11360	15641	1281	1033	29315	49.2	81.4
Caribbean	5034	8730	1508	914	16186	50.4	70.6
Any other Black	75	233	34	22	364	46.7	71.9
total	16470	24604	2822	1969	45865	49.6	77.5

Table 13: Tier 2 Black

Lower tier census (Asian)	0-19	20-64	65+	age NA	total	% on benefits	% living in social housing
Indian	2496	4406	436	376	7714	53.5	49.2
Pakistani	991	1969	231	165	3356	60.9	58.2
Bangladeshi	2314	2852	256	160	5583	75.7	74.8
Any other Asian background	1935	4196	337	398	6867	58.9	65.9
total	7737	13424	1260	1100	23520	61.4	61.4

Table 14: Tier 2 Asian

6.3 Tier 3 country breakdown

Table 15 provides the same age breakdown by country of origin based on Tier 3. The countries included in Tier 3 are limited to those with 100 or more members based on our estimates. Some of the counts e.g. those only identifiable as 'Black African' by their names cannot be allocated to a specific country. The practical effect is that some African countries in this table may be underestimated for this reason.

The table shows that after 'White British' the largest group is the Black Caribbean community with approximately 16,200 members, followed by the Turkish community with

11,400 members. The next three groups are the Indian (7,700), Nigerian (7,400) and Bangladeshi communities (5,600).

There is a wide range of highly distinctive communities, with many numbering over a thousand members most notably including the Chinese, Somali, Kurdish, and Vietnamese communities. Each tier also shows the estimated percentages of each community that live in social housing or receive benefits.

Country	0-19	20-64	65+	age NA	total	% on benefits	% living in social housing
White British	13,694	46,958	7,812	7,284	75,748	35.6	45.2
Black Caribbean	5,034	8,730	1,508	914	16,186	50.4	70.6
Turkish	3,956	6,858	412	271	11,497	81.9	81.7
Indian	2,490	4,389	434	374	7,687	53.5	49.2
Nigerian	3,137	3,788	283	203	7,411	39.1	85.1
Bangladeshi	2,314	2,852	256	160	5,583	75.7	74.8
Pakistani	997	1,987	233	167	3,384	60.9	58.2
Ghanaian	1,412	1,576	91	81	3,161	43.7	86.1
Chinese	463	1,488	128	187	2,266	47.5	58.4
Somali	1,050	1,005	105	53	2,213	79.3	78.6
White - Irish	391	1,073	177	136	1,778	38.9	51.9
Kurdish	621	1,027	51	42	1,741	85.6	83.6
Vietnamese	510	899	66	41	1,515	77.2	83.8
Congolese	707	303	5	10	1,025	80.7	87.2
Sierra Leone	290	290	17	13	609	47.8	87.3
Greek	87	309	90	49	537	57.9	63.6
Afghan	186	198	14	15	414	67.5	71.4
Albanian	196	167	6	6	375	74.5	87.3
Traveller of Irish Heritage	162	178	18	12	370	76.9	78.7
Portuguese	49	190	14	25	278	43.7	54.6
Angolan	170	101	4	4	278	73.2	90.4
Gypsy / Roma	65	143	9	26	243	51.9	45.4
Filipino	32	121	11	19	183	31.3	46.9
Kosovo	34	99	5	7	145	69.1	69.1
Sri Lanka	15	94	11	15	135	31.6	49.6
Korean	11	82	5	17	115	27.1	44.0
All Hackney	64,442	139,471	16,760	16,973	237,646	46.3	56.2

Table 15: Tier 3 country breakdown of ethnicity.

6. The Charedi community

6.1 Enumerating the Charedi community

Hackney consists of many different communities usually recognisable by their ethnicity rather than their religion. Hackney Council believes it is useful to build up a picture of them, whether defined by socio-economic criteria such as age, gender, ethnicity or different religious affiliations, in order to understand better their size and distribution and to design services that better meet their needs and expectations.

Whilst the Census enumerates people of different ethnicities it does not sufficiently distinguish specific groups or communities e.g. Turkish, Kurdish, Somali or Vietnamese. In addition the last Census was conducted in 2001 and results from the 2011 Census at this level of detail are not expected before 2013.

One very large and distinctive religious group is the Charedi community, part of the Jewish orthodoxy that has been part of Hackney for many years and whose numbers, according to our calculations in this report, account for 7.4% of the Hackney population.

In the study in 2007, the publicly available Shomer Shabbos directory was used as the starting point for estimating the size of the Charedi population in Hackney. Based on the addresses therein it suggests that most Charedi households are situated in Hackney and the rest mainly in Haringey.

We used names on the Shomer Shabbas in 2007 to estimate the Charedi population in Hackney in 2011. Based on the distinctive names therein, we estimated the probability of people with these names in 2011 extending our search to include the whole population.

Based on this, we estimated that there are 17,587 people in the Charedi community which is 2,178 more than in our previous estimate in 2007. Table 16 provides our breakdown of the Charedi population by age group and gender based on building up a profile of each household from available administrative sources⁶.

6.2 Age structure

The Charedi population has a highly distinctive age structure which is significantly skewed towards young children and adults, as a consequence of which households tend to be very large and the number of old people very small. This is well illustrated in the population pyramid in Figure 9 which compares the structure of the general Hackney population with the age structure of the Charedi community.

Figure 10 illustrates that higher percentages of Charedi adults lives in households on benefits between ages 0 and 5 and 20 and 44 but that after age 50 this pattern tends to reverse with a smaller percentage of Charedi living in households on benefits than in the general population. However, they are three times *less* likely to live in social housing as compared with the general population.

6.3 Households

Using the same methodology as above, we estimated the total number of possible Charedi households or addresses. Around 2,800 can be identified with a 100% certainty, 3,200 with a 90+% certainty and 3,600 with a 75%+certainty. The maximum likely number of addresses with some Charedi connection based on family name is 4,200.

⁶ This study provides an estimate of both the size and the characteristics of the Charedi population using the *nkm* methodology as described. Other intelligence on the Charedi population is available through Interlink Foundation <http://www.interlink-foundation.org.uk/>

Age group	nkm at March 2011 persons	age group as % of Hackney population	Charedi persons	age group as % of Charedi population
0-4	20,871	8.8	3,262	18.5
5-9	16,053	6.8	2,415	13.7
10-14	14,129	5.9	2,061	11.7
15-19	13,389	5.6	1,680	9.6
20-24	15,381	6.5	1,544	8.8
25-29	22,782	9.6	1,319	7.5
30-34	22,627	9.5	992	5.6
35-39	18,629	7.8	776	4.4
40-44	16,914	7.1	583	3.3
45-49	15,550	6.5	476	2.7
50-54	11,777	5.0	436	2.5
55-59	8,707	3.7	421	2.4
60-64	7,104	3.0	413	2.3
65-69	5,145	2.2	192	1.1
70-74	4,313	1.8	160	0.9
75-79	3,300	1.4	112	0.6
80-84	2,236	0.9	108	0.6
85-89	1,220	0.5	80	0.5
90+	546	0.2	35	0.2
age unknown	16,973	7.1	522	3.0
total	237,646	100.0	17,587	100.0

Table 16: Size and age structure of the Charedi population compared with whole of Hackney

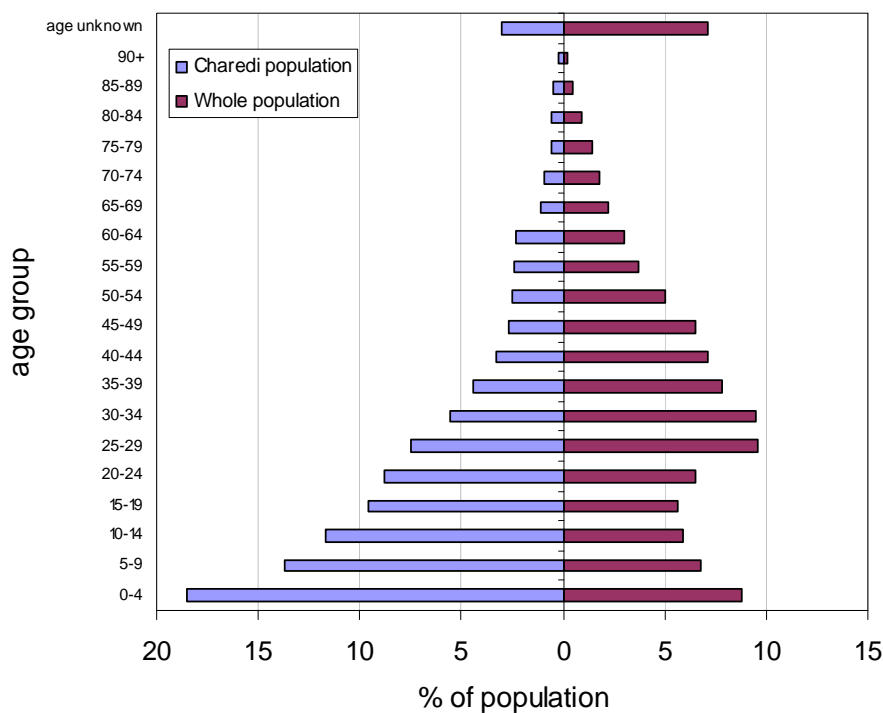


Figure 9: Population pyramid comparing the percentage of Charedi by age group with the percentage in the Hackney population

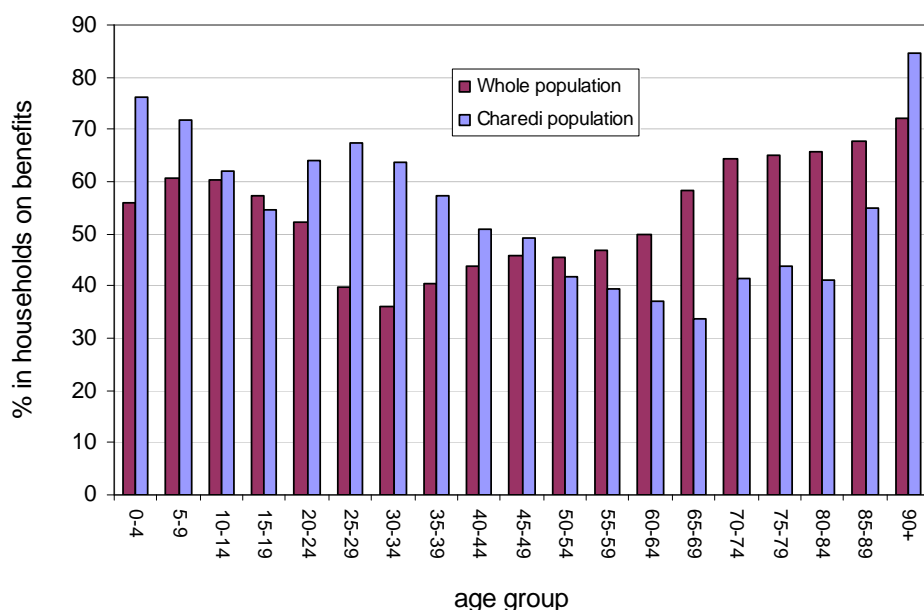


Figure 10: the percentage of Charedi population by age group living in households on benefits as compared with the percentage in the general Hackney population

6.3 Mapping the Charedi community

The Charedi community is particularly concentrated in the northeast corner of the borough along the border with Haringey. This is well illustrated in the map in Figure 11 which shows the percentage of each LSOA population that is Charedi. A comparison based on a similar map from 2007 shows hardly any change to this pattern. This pattern may be compared with the ward analysis in Table 5 especially Springfield, New River, Cazenove and Lordship wards.

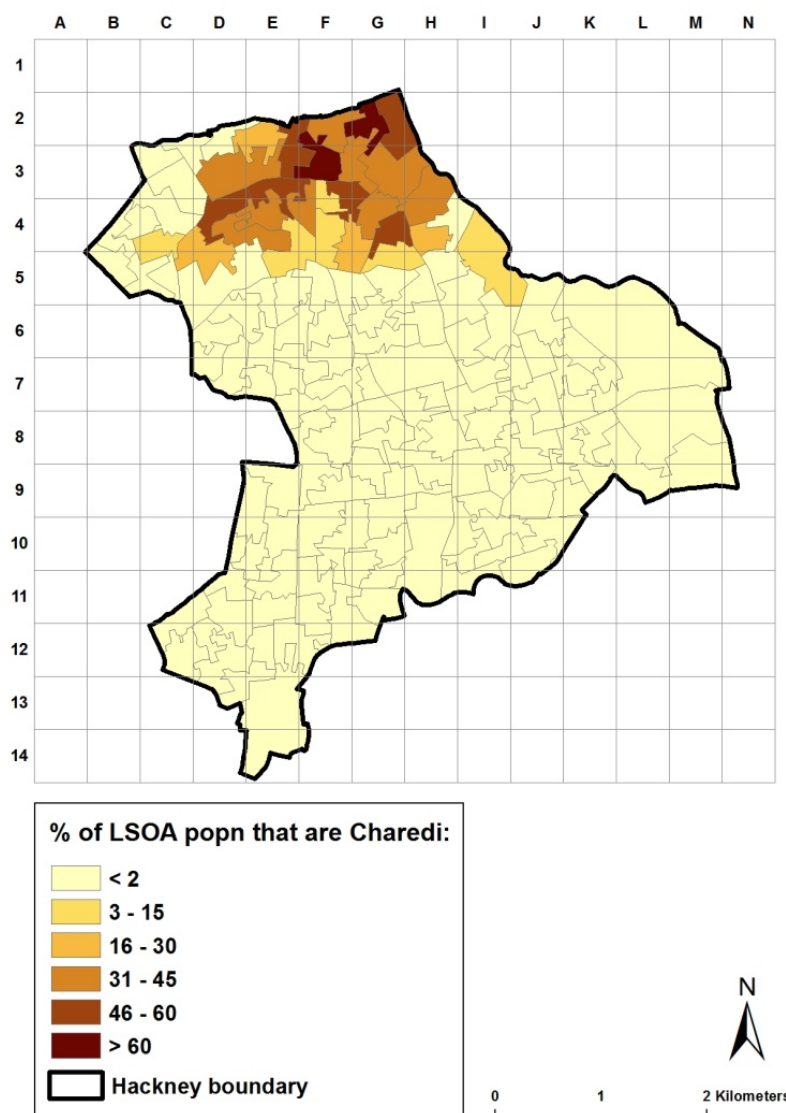


Figure 11: Map showing percentage of population that is Charedi by LSOA in 2011

7. Conclusions

This report finds that the population of Hackney grew by 6.5% from 223,171 in June 2007 to 237,646 persons in March 2011. The headline figure for 2011 is 3,400 higher than the GLA's estimates for the same year, which in turn are 15,000 higher than the ONS 2010 Mid-year Estimates just published.

Our estimates are very similar to published figures for Child Benefit claimants in the 0-15 age range. Our figure is 53,800 as compared with 53,200 for the Child Benefit count. Similarly, we estimate 16,700 people aged 65+ and the number of state pensioners in the same age range is 15,700 at November 2010. There are some conflicting estimates of the 'oldest old' (those aged 75+) with the GLA and ONS both reporting higher figures.

A majority of the growth between 2007 and 2011 took place in younger age groups, but there was also growth in the number of working age adults. In absolute terms it finds that the 0-9 age range grew by 2,745 and the 20-64 age range by 12,754. The only age group to decline were the 65+ which fell by 6.1%.

Much of the growth in population is on the back of a significant rise in the number of residential properties. An analysis of the Local Land and Property Gazetteer between the two dates shows that there has been a 14,500 net increase in the number UPRNs (residential addresses). Currently, we estimate that 5.4% of the total stock is currently vacant as compared with 3.2% in 2007.

Inflows into the borough through birth or in-migration since 2007 totalled 72,000 and outflows through death or moving out of borough totalled 65,000. The data show that population growth is not localised, and has tended to occur in various parts of the borough. Population churn or turnover meanwhile has ranged from between 20% and as high as 45% in some localities over the period.

The results show that single adult households, with 41,400 units are the most common, followed by cohabiting adult households with no children (19,500) and then family households (17,700).

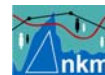
Between 2007 and 2011, the most notable changes in household types were increases in the number of single adult (parent) households with children which rose by 1,600 and a large increase in single adult households which rose by 6,900. There was however a fall in the number of three-generational households.

Between these periods, there has also been an increase of around 2% of the number of people living in households on benefits particularly in family and single parent households. There has been a rise in unemployment in Hackney from 8.7% in 2008 to 10.2% in 2010 which may partly explain the increase. However, other factors may be involved such as changes in household structure.

In terms of ethnicity, the results show that the White population with 104,865 members is the largest group followed by Black, Asian and then Mixed and Unknown groupings. Of the total population 44.1% are White, 19.3% Black, 8% Asian, and 6.5% Mixed. The residual group 'Other/Unknown' accounts for about 22% of the total or 52,293 people.

After 'White British' the largest group is the Black Caribbean community with approximately 16,200 members, followed by the Turkish community with 11,400 members. The next three groups are the Indian (7,700), Nigerian (7,400) and Bangladeshi communities (5,600). The White population is more likely to be older and the Black and Asian populations younger. People from East European countries cannot be identified separately but our combined estimate suggests a total of 3,500.

There is a range of other distinctive communities, with many numbering over a thousand members most notably including the Chinese, Somali, Kurdish, and Vietnamese communities. There is also very wide variation according to which groups are most likely to live in social housing or are on benefits; for example, the Black population is more likely to



live in social housing but the Asian population is more likely to live in a household on benefits.

Hackney is home to the Charedi, a distinctive community from the Jewish Orthodoxy which account for around 7% of the Hackney population. We estimate that the Charedi population is about 2,000 more than in 2007, totalling 17,600. The Charedi population is highly skewed towards children and average household sizes are much larger than the Hackney average. In addition, the Charedi are three times *less* likely to live in social housing but about one and half times *more* likely to receive means tested benefits.

The initial results of this study were communicated to Hackney Council in June 2011. A statistical database containing the data on which this analysis is based will be owned by Hackney and transferred at the end of the project.

Annex A: Methodology

Annex A explains how the population estimates in section 1 were derived using administrative data sources. The approach follows the same general methodology as in 2007 based on administrative databases which included a detailed analysis of the following administrative data sets at March 2011:

- The GP register (GP reg.)
- The School Pupil Census (formerly PLASC)
- Persons liable for Council Tax
- Households in receipt of Council Tax Benefit or Housing Benefit
- The Electoral Register (ER)
- Housing Waiting List (HWL)
- Connexions
- Resident Parking Permits
- The Local Land and Property Gazetteer (LLPG)
- Hospital Admissions (for Births and Deaths)

The GP Register and Hospital Admissions data were provided by Hackney Primary Care Trust, with School Census and Connexions datasets provided by the Learning Trust, and the rest by Hackney Council. The method works by matching all administrative records to the LLPG using address matching techniques from which primary information about residential location, gender, date of birth etc are extracted.

This information provided was then analysed according to a set of rules which are designed to eliminate any double counting and to ensure that each person identified at an address is the latest person at that address as confirmed by as many data sets as possible.

Each data set is managed and kept up to date by the data owners in different ways with variations in updating procedures and other processes, which means they may not be entirely current or of the same quality as each other and so they need to be used with caution and carefully cross-referenced.

In the approach, several tests are therefore undertaken before a person is deemed to be a current resident:

- Only persons on datasets with a UPRN assigned, and therefore a relevant address, are considered
- A person is 'confirmed' if they are on the GP Register and on another data set
- If they are on the GP Register, but not on any other database, they are classified as 'confirmed' if they are the latest person registered with a GP at that address, or related to someone who is confirmed at that address by name, or are a child living with confirmed adults
- A person may also be included if an address would otherwise be vacant; this is ascertained after checking for people on other data sets with that address and removing duplicates to avoid double counting

- Any people present at more than one address is allocated at their most recent property and removed from other addresses
- People who are on data sets considered less reliable are only used for confirmatory purposes

People are not included (i.e. counted as 'confirmed') if:

- They do not have a recognised address in the borough
- They are on the GP Register but have not met the confirmation rules and are therefore considered as 'list inflation'
- They are on other datasets but not on the GP Register and have a UPRN that is already occupied by persons on the GP Register

The first category is known as the 'confirmed' population and the second category as the 'unconfirmed' population⁷. Also included in the report is an analysis of ethnicity. Because no single data set specifying ethnicity covers the whole population, it is necessary to resort to statistical methods to fill in the gaps.

Table A1 is an audit trail for the confirmed population based on the above steps and data sets. The figure at the foot of the table of 237,646 confirmed persons is the result of these stages which becomes the starting point for the analysis that follows on in later sections.

The size of the 'unconfirmed population' increases substantially with the number of data bases that are used and is a function of the regularity with which individual databases are maintained and validated. Thus, it cannot directly be used as a proxy for measuring 'hidden populations'.

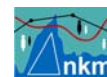
Many records will be duplicates and can be removed, but a significant number are the same person but cannot be matched as such due to different addresses or name spellings. In the categories listed above, 12,500 did not have a valid address or lived outside the borough, 22,300 could be assigned a valid UPRN, and 53,000 occupied addresses that are already occupied by persons and families already on the GP register.

⁷ Further information on the methodology may be found in two articles published in the Journal of Applied Spatial Analysis and Policy. These can be accessed at:

http://www.cass.city.ac.uk/__data/assets/pdf_file/0019/82711/Using_administrative_data_to_count_populations_harper_mayhew_full_text_JASP_0411.pdf

http://www.cass.city.ac.uk/__data/assets/pdf_file/0009/82692/Applications_of_population_counts_harper_mayhew_full_text_JASAP_0411.pdf

Counting Hackney's population



Stage	Summary	Main Comments	Population Count
1 – Clean GP Register	Identify current registered patients at each UPRN	<input type="checkbox"/> 22,272 GP patient records could not be assigned a UPRN <input type="checkbox"/> 87,050 of Hackney UPRNs are on the cleaned GP Register <input type="checkbox"/>	+ 211,442
2 – Identify additional people from other datasets	Eliminate people on other datasets who are already on GP Register	<input type="checkbox"/> Eliminated 230,671 people using person matching across all datasets – people will be duplicated <input type="checkbox"/> Leaves 109,832 records to check	
3+4 – Allocate people to UPRNs not on the GP Register	Identify which of the remaining 109,832 records are in non-GP Register UPRNs, and remove duplicates	<input type="checkbox"/> 32,112 records across datasets have these UPRNs <input type="checkbox"/> Reduced to 28,606 people after removing duplicates using available criteria <input type="checkbox"/> Leaves 67,343 records to check that do not have a non-GP Register UPRN	+ 28,606
5 – Add births and remove deaths		<input type="checkbox"/> 2,930 births from the previous 12 months are additional <input type="checkbox"/> 7 deaths from the previous 12 months can be removed	+ 2,930 -7
6 – Remove irregular records		<input type="checkbox"/> Remove duplicate people at different addresses (maintain most recent address) <input type="checkbox"/> Remove people living at UPRNs outside of Hackney <input type="checkbox"/> Remove duplicate births (child NHS number provided later)	-3,893 -222 -1,173
Population Base = Covers 104,652 UPRNs Leaves 5,975 unallocated UPRNs of a total 110,627 = 5.4%			<u>237,646</u>

Table A1: Stage summary and audit trail of the population estimation phase

Annex B: Income deprivation by age and risk factor

B 1.1 Introduction

This annex analyses income deprivation by broad age group by segmenting the population into smaller risk groups and assessing the characteristics of each. There is no local data on income by household; however, a suitable proxy for low income is indicated by whether or not a household is in receipt of means tested benefits.

Households are eligible for means tested benefits, such as Council Tax Benefit, if they have an income that would put them below the Government poverty line based on their circumstances. We initially consider different age groups in single year steps and whether they live in households on benefits.

Figure B1, based on single year of age from age 0 to 100, typifies the patterns obtained between 2007 and 2011. On the vertical axis is the percentage of population at each age that lives in households on mean tested benefits and on the horizontal axis age. The results show that the probability of living in a household on low income rises from birth to a peak at around 10 years of age of 60% before declining to a low of 30% at age 30 and then increasing again to around 80% at the oldest ages.

Between periods there has been an increase of around 2% of the number of people living in households on benefits. As the chart shows, this change has mainly impacted on households with young families. Overall the differential between ages is small suggesting a stable pattern between snapshots.

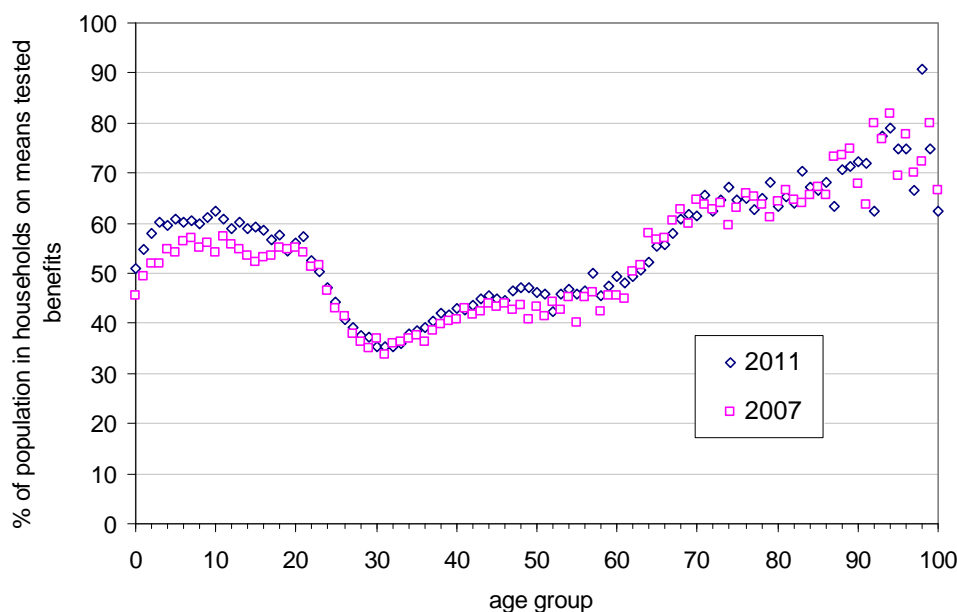


Figure B1: The relationship between the population living in households on means tested benefits and age in 2007 and 2011

B 1.2 Income deprivation segmented by risk factor

In this sub-section, we analyse and segment income deprivation by broad age group. The aim is to disaggregate income poverty by key risk factors to measure the range of income deprivation as well as numbers of people in different risk sub-groups. We concentrate on three age groups: 0-19, 20-64, and 65+ and use risk factors that have been shown in over 20 studies⁸ to be highly significant predictors of income deprivation.

The methodology uses a technique called 'risk ladders', which have been developed to identify and quantify groups and their levels of exposure to risk. In this case, the risk outcome is income deprivation. Since there is no data at a local level on income by household we use take up of means tested benefits as a proxy.

The main findings are that:

- A majority of young people age 0-19 (58.4%) live in households in receipt of means tested benefits. Key risk factors correlating with benefit status are living in social housing, living in a single parent household and having 2+ siblings. If all three risk factors are present then the odds are much higher than if only one is present
- Among working age adults living in social housing, being the only adult in the house and having at least one child are highly correlated with benefit status. On average 39.6% of adults live in households on benefits but this increases to 71% if all three factors are present
- In the older population the risk factors correlating with benefit status are whether living in social housing, whether living alone or being aged 75+. On average 63% of older people live in households on benefits but this increases to 80% when all three risk factors are present

0-19 year olds

Category	frequency	social housing	single adult	3+children under 20	on benefits	lower CI%	upper CI%
1	5,200	Y	Y	Y	81.5	80.4	82.5
2	7,205	Y	Y		69.4	68.3	70.5
3	14,391	Y		Y	68.6	67.9	69.4
4	2,177		Y	Y	64.6	62.6	66.6
5	13,368	Y			59.3	58.5	60.2
6	9,671			Y	53.1	52.1	54.1
7	3,870		Y		41.9	40.3	43.5
8	8,560				28.1	27.2	29.1
total	64,442	40,164	18,452	31,439	58.4	58.0	58.8

Table B1: Risk ladder showing the number and percentage of children and young living in households receiving means tested benefits by risk group (CI = 95% confidence interval). (Note: 'Y' indicates that given risk factor applies)

⁸ See: http://www.nkm.org.uk/case_studies.html for examples of links to studies using risk ladders

Table B1, an example of a risk ladder, covers the whole of the age group 0-19 years. The risk factors used to estimate the risk of income deprivation are whether the child lives in a single adult household (i.e. there is only one adult aged 20+ at an address), if there are 3+ children living at the address and by housing tenure (whether private or social housing).

Each row shows the numbers of children and young people in each of 8 mutually exclusive categories ranked from most to least income deprived. The totals at the foot of the columns show the number of people to whom a particular risk factor applies. For example 40,164 children and young people out of a total of 64,442 live in social housing (see foot of column 3); 18,452 live in households with only one adult; and 31,439 live in households with 3+ children.

Of the 64,442 children identified, 58.4% live at addresses receiving means tested benefits (58.0% to 58.8% with 95% probability). The categories at most risk of income deprivation are located in row 1 in which 5,200 children and young people are identified that live in social housing, in single adult (parent) households, in which there are also at least two other children. Of these 81.5% (80.4% to 82.5% with 95% probability) live in households receiving benefits.

The group at least risk on this measure and to whom none of these factors applies is situated in row 8 of the table. There are 8,560 children and young people in this group of whom only 28.1% are in households on benefits (27.2% to 29.1% with 95% probability).

Further analysis using statistical regression techniques shows that the odds of living in a household on benefits increase:

- 2.6 times if living in social housing
- 1.7 times if living in a single adult household
- 2 times if there are 3+ children in the household

These odds are multiplicative so that for a person in the highest risk group to whom all risk factors apply the odds increase $2.6 \times 1.7 \times 2 = 8.9$ times. The odds of being on benefits are comparable to previous work in 2007 except that, because the percentage on benefits has spread to other risk groups *not* in social housing, the effect of social housing has lessened from 3.7 to 2.6.

Figure B2 is a chart showing the robustness of this relationship in which the predicted percentage on benefits based on the statistical model are plotted against the observed percentage on benefits.

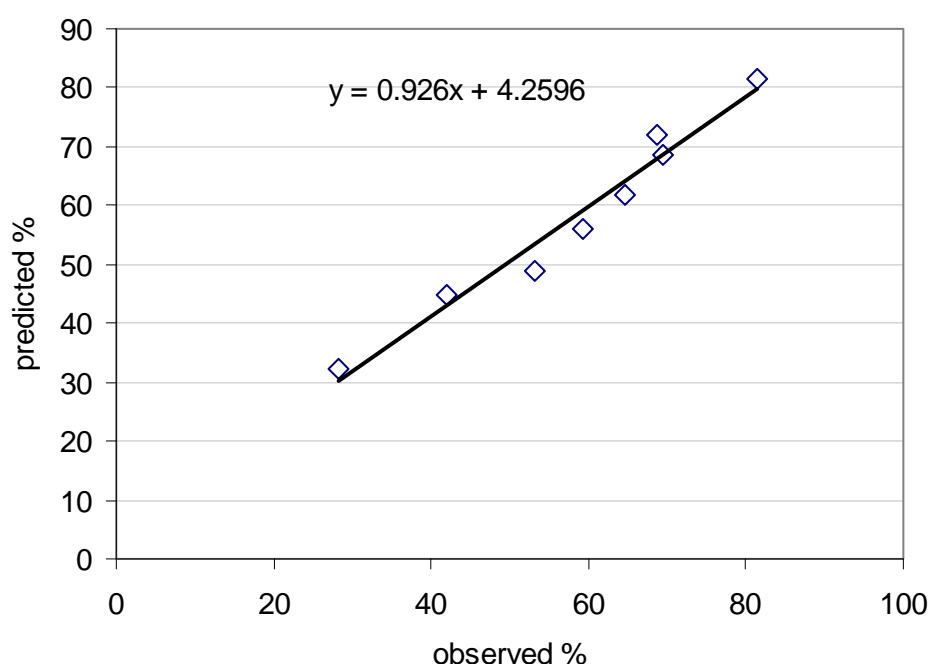


Figure B2: Predicted risk of income poverty based on the given risk factors versus observed risk

20-64 year olds

Table B2 shows the equivalent table for the 20-64 age group, i.e. persons of working age. There are 156,444 people in this group of whom 39.6% live in a household on means tested benefits (39.6% to 39.3% with 95% probability). The risk factors used in this case are whether a person lives in a single adult household, there is at least one child at the address, or a person lives in social housing.

The highest risk category is located in row one to which all three risk factors apply, which comprises 6,483 persons, of whom 70.8% live in households in receipt of benefits (69.6% to 71.9% with 95% probability). The least income deprived group in this age range is situated in row 8, in which there are 25,722 persons of whom only 13.9% are on benefits (13.4% to 14.3%).

By comparing the rows in this table with the previous table for young people, we observe that working age adults are less likely to incur the same extremes of income deprivation. Further analysis shows that compared with households in which none of the risk factors applies, the odds of income deprivation increase:

- 3.6 times if living in social housing
- Evens if it is a single adult household
- 2.2 times if there are children at the address

This compares with 5.7, 1.1 and 1.8 times in 2007, mirroring the observation in the 0-19 age group that the impact of social housing has lessened as a risk factor between periods.

Category	frequency	social housing	single adult household	child or young person at address (<20)	on benefits	lower CI%	upper CI%
1	6,483	Y	Y	Y	70.8	69.6	71.9
2	32,130	Y		Y	60.8	60.2	61.3
3	27,567	Y			48.7	48.2	49.3
4	15,700	Y	Y		46.7	45.9	47.5
5	3,386		Y	Y	45.0	43.4	46.7
6	18,254			Y	36.7	36.0	37.4
7	27,202				19.2	18.7	19.7
8	25,722		Y		13.9	13.4	14.3
Total	156,444	81,880	51,291	60,253	39.6	39.3	39.8

Table B2: Risk ladder showing the number and percentage of working age adults living in households receiving means tested benefits by risk group (CI = 95% confidence interval)

65+ population

Table B3 is the equivalent risk ladder for older adults aged 65+. The three risk factors in this case are whether an older person lives alone, is aged 75+ or lives in social housing. The table shows that there are 16,760 people aged 65+ living in Hackney based on our analysis. Of the total 11,579 live in social housing, 6,467 live alone, and 7,302 are 75+.

Based on the given risk factors, we find that the group at highest risk live alone and are in social housing whether aged 75+ or not. They are situated in the first two rows of the table. They account for 4,979 persons out of the 16,760 people in this age group of whom 80%+ live in households on benefits.

Those where none of these risk factors applies number 2,280 persons of whom 33.3% live in households on benefits (31.4% to 35.3% with a 95% probability). This group, situated in row 8 of the table, compares with an average 63.3% for the whole of the 65+ age range.

In this age group, an older person is:

- 4 times more likely to be on benefits if living in social housing
- 1.7 times if living alone
- 1.1 times if aged 75+

Hence a person to whom all three risk factors apply is $4 \times 1.7 \times 1.1 = 7.4$ times more likely to be on benefits as compared with someone to whom none of these risk factors applies.

Category	frequency	social housing	living alone	75+	on benefits	lower CI%	upper CI%
1	2,365	Y	Y		80.3	78.6	81.9
2	2,614	Y	Y	Y	80.2	78.6	81.7
3	2,544	Y		Y	69.0	67.2	70.8
4	4,056	Y			68.8	67.4	70.2
5	731		Y	Y	55.5	51.9	59.2
6	757		Y		42.3	38.7	45.9
7	1,413			Y	40.8	38.2	43.4
8	2,280				33.3	31.4	35.3
Total	16,760	11,579	6,467	7,302	63.3	62.5	64.0

Table B3: Risk ladder showing the number and percentage of 65+ persons living in households receiving means tested benefits by risk group (CI = 95% confidence interval)

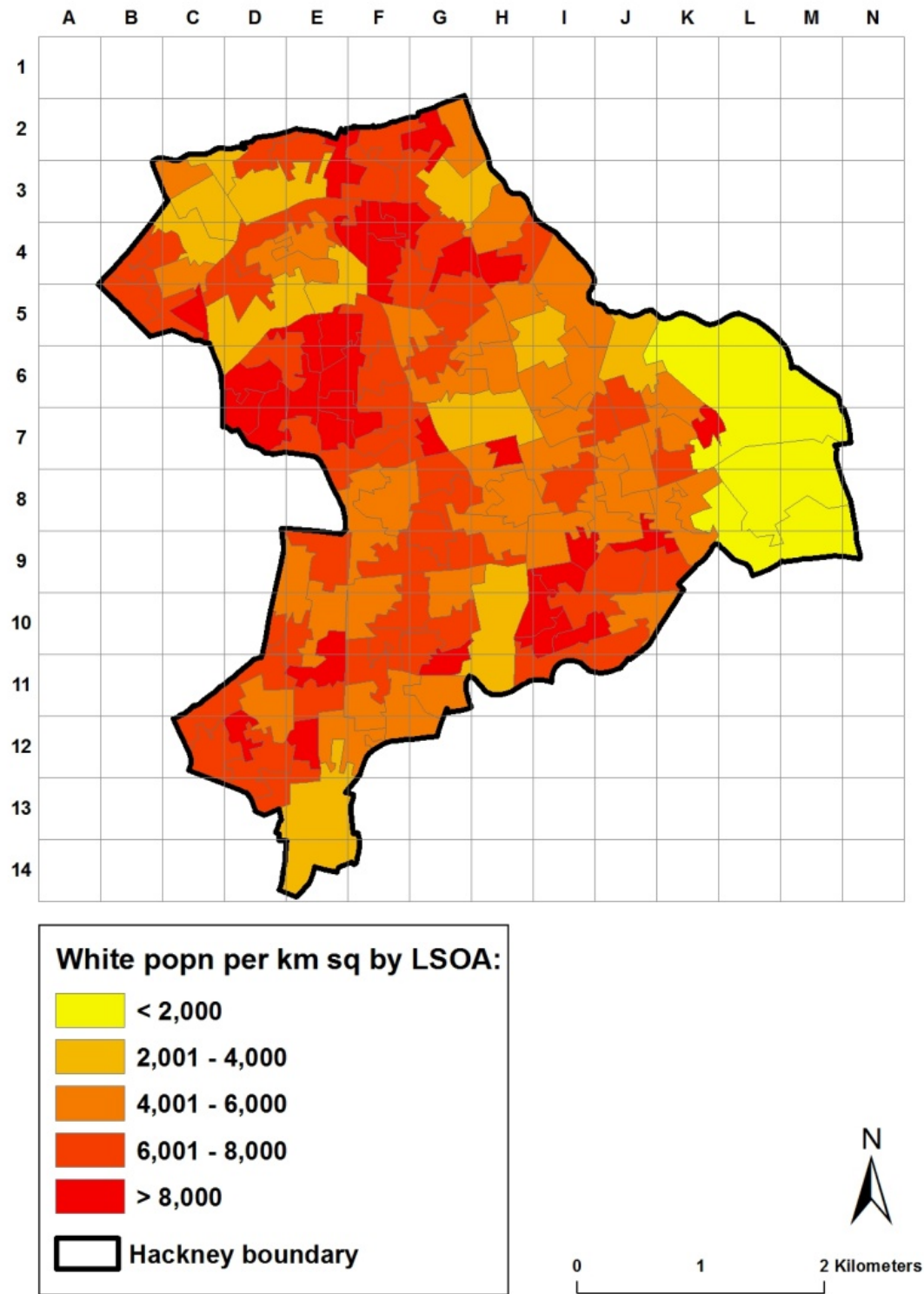
Annex C: Mapping ethnic communities

The three main Tier 1 ethnic categories are White, Black and Asian. The maps in Figures C1 (a – c) show the distribution of ethnic groups in Tier 1 categories.

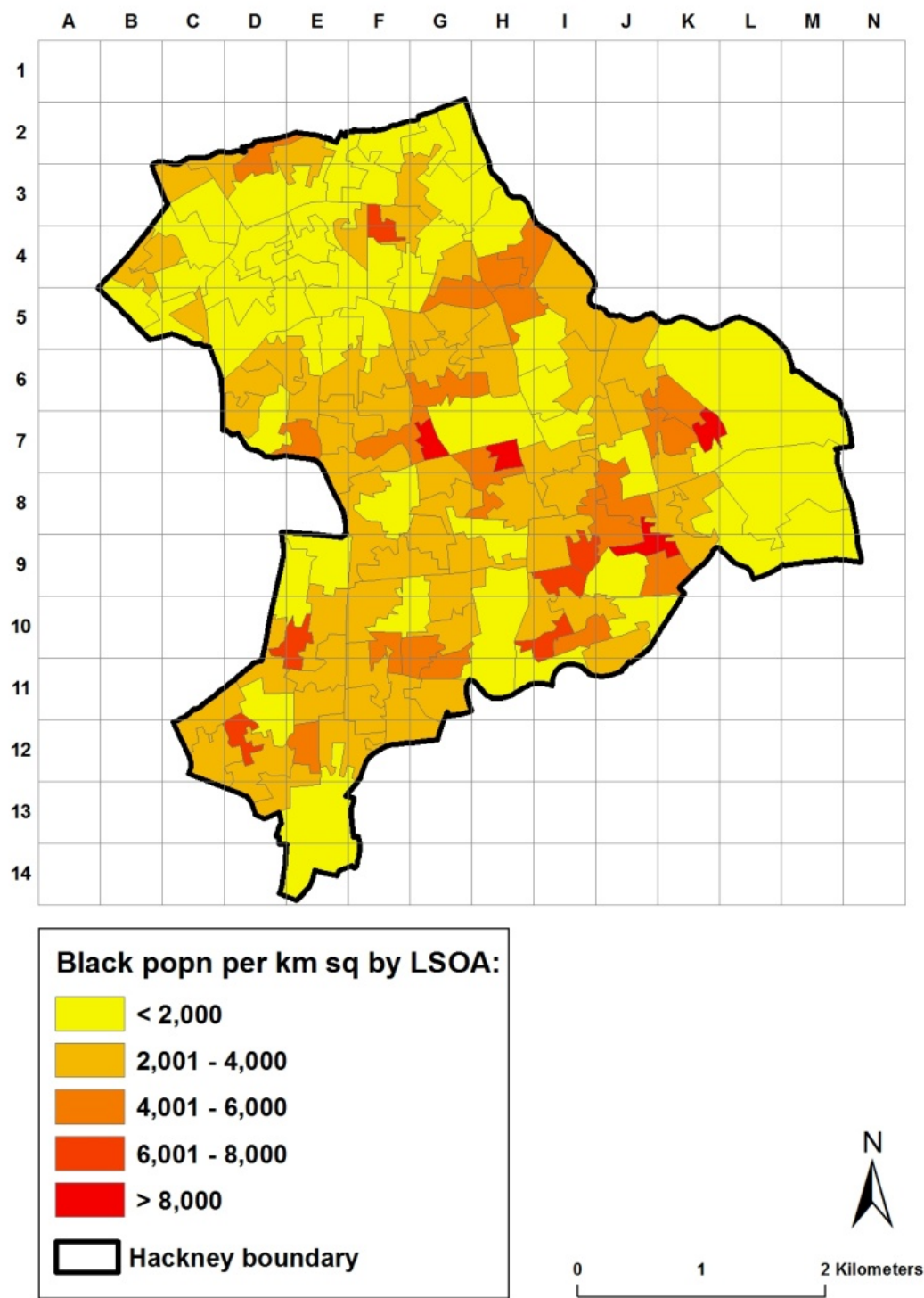
The maps show occasional distinctive patterns. For example, the White population (a) is the most widely distributed with a strong presence in all the main populated areas of the borough and especially to the north.

Black communities (b) tend to concentrate in the south of row 7. The Asian population (c) by contrast is less dense on the ground and is most concentrated between rows 4 and 7 and F and J.

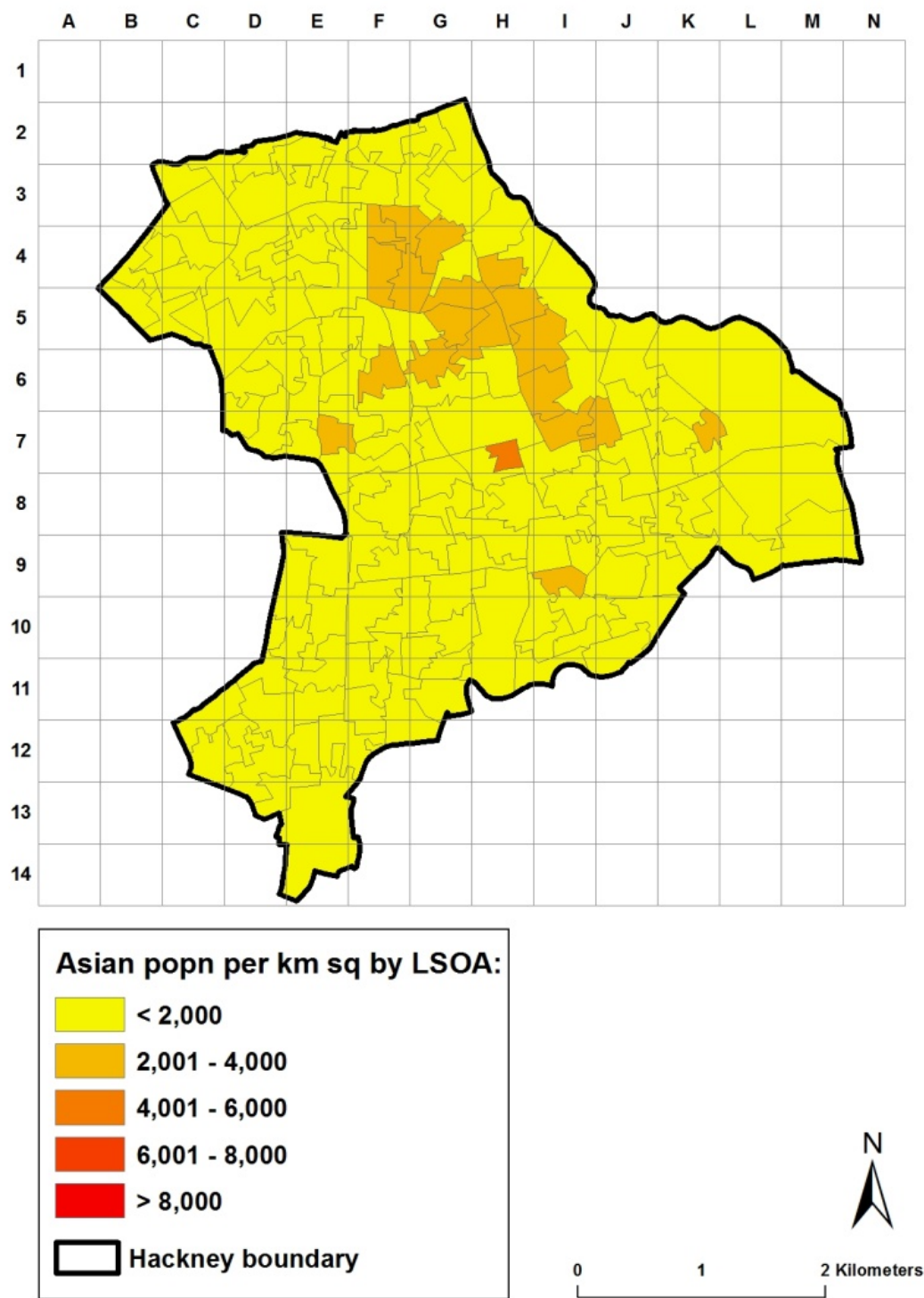
Figure C (d) is a map showing the proportion of the population resident in each LSOA (Lower Super Output Area) that is categorised as White. The results show that the white population is in a majority (>50%) in most LSOAs with the exception of LSOAs located between rows 4 and 9 and columns F and M. In two LSOAs, located in K7 and H7, they are under 30% of the population.



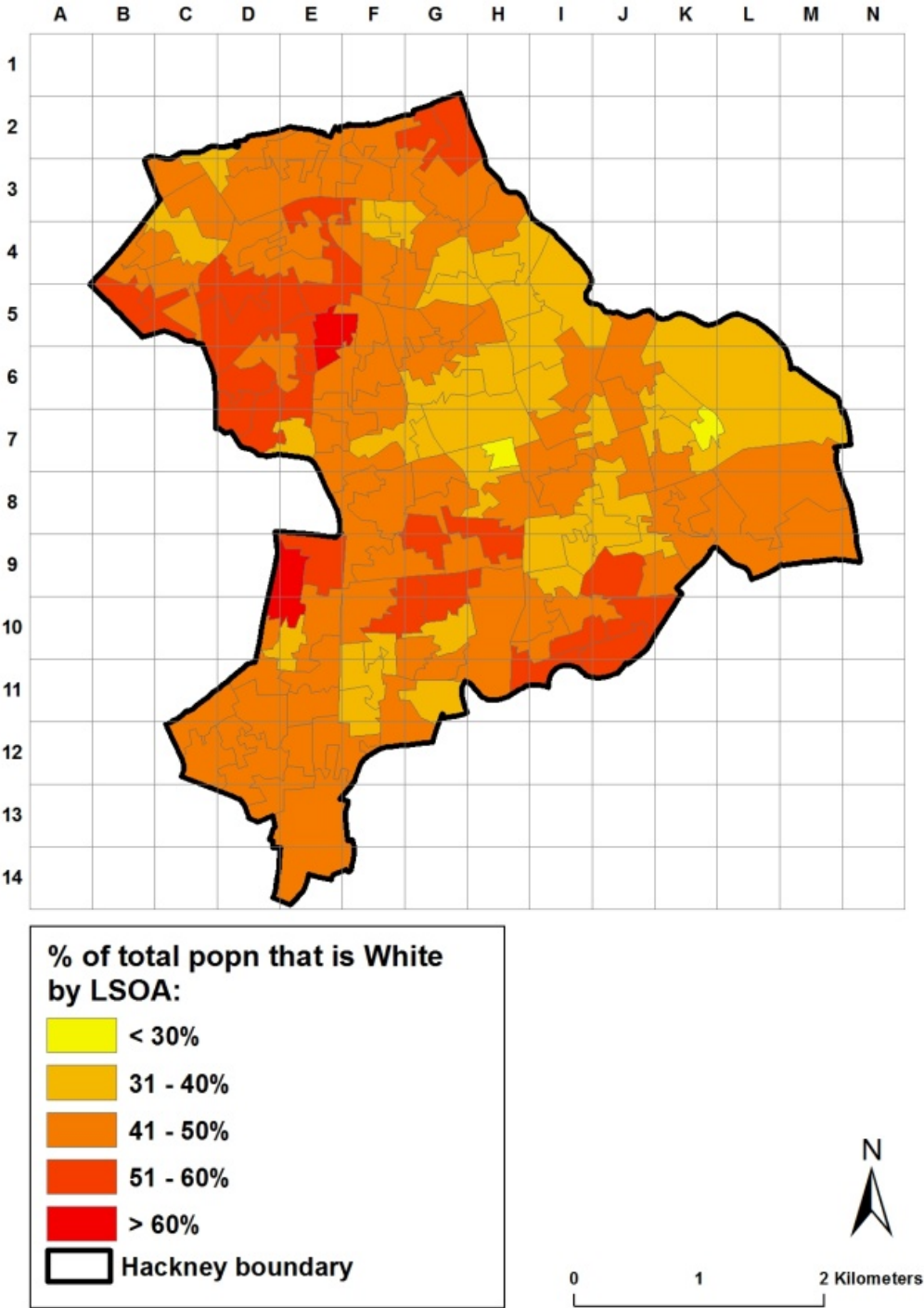
(a) Density of White population



(b) Density of Black population



(c) Density of Asian population



(d) Percentage of population that is White

Figure 11: Ethnicity maps of Hackney based on Tier 1

Annex D: Age unadjusted and adjusted for typical age groups

(a) 0-15, 16-64, 65+

Age group	<i>nkm</i> unadjusted	<i>nkm</i> adjusted	males	females
0-15	53,815	54,321	27,481	26,840
16-64	150,098	164,397	79,618	84,779
65+	16,760	18,929	8,502	10,427
age unknown	16,973			
total	237,646	237,646	115,600	122,046

(b) 0-19, 20-64, 65+

Age group	<i>nkm</i> unadjusted	<i>nkm</i> adjusted	males	females
0-19	67,192	68,410	34,398	34,012
20-64	136,721	150,307	72,701	77,606
65+	16,760	18,929	8,502	10,427
age unknown	16,973			
total	237,646	237,646	115,600	122,046