Explaining Geographic Patterns of Small Group Internal Migration

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Abstract

Internal migration plays a key role in shaping the demographic characteristics of areas. In this paper, data from the 2011 England and Wales census are used to assess the geographic patterns of migration for four small cultural groups that each constitute about 0.5% of the population – Arabs, Chinese, Jews, and Sikhs – with a white British 'benchmark' group. It examines the sensitivity of the scale of inter-community moves to distance, having controlled for other migrant characteristics, through the development of spatial interaction models. The analysis finds that, where a choice exists, Jews are more averse to making a longer move than other small groups, all of whom favour shorter moves than the white British. The paper also investigates the influence of origin location and socio-economic characteristics on the choice of migration destination using multinomial logistic regression. It finds that the influence of student status, age, qualifications and home tenure vary by group though a number of patterns are shared between groups. Finally, it probes the presence in these smaller groups of patterns found historically in the wider population, such as counter-urbanisation. Overall, this paper broadens the understanding of minority group migration patterns by examining, for the first time, Arabs (identified separately only in the 2011 census) and two groups based on religion (Jews and Sikhs); and by re-visiting, with new questions, the white British and Chinese groups using the latest census data.

1. Introduction

Internal migration, 'permanent residential relocation that involves a change of usual residence within a country' (Smith, Finney, Halfacree, and Walford, 2015, p2),

has, in recent decades, been highlighted many times as playing a key role in shaping the demographic characteristics of areas (Champion & Fielding, 2015; Stillwell, Rees, & Boden, 1992; Boyle, Halfacree, & Robinson, 1998; Fielding, 2012; Rees et al., 2016; Findlay and Wahba, 2013). Insofar as quantitative population geographers are concerned, research has focused on the 'why' (underlying determinants and causes) or the 'where' (the geographic patterns) of migration. Work in this field has considered the population as a whole or has focused on a number of minority ethnic groups.

This paper takes forward research in this area in two distinct ways. Firstly, it seeks to encompass both the 'where' and 'why', by exploring and understanding how distance of move and the characteristics of migrants impacts on the choice of destination location, and whether the characteristics of those who move vary by geography of residential origin. Secondly, it broadens the examination of small minority groups by presenting information on Arabs, and extending the analysis beyond ethnic group to include, for the first time, two groups (Jews and Sikhs) identified by religion – a second element of cultural identity (Jacobson, 1997).

1.1 Established Migratory Patterns

Research carried out over the last 25 years has established some particular patterns of internal migration within England and Wales.

The 'counter-urbanisation cascade' (Champion & Atkins, 1996) describes net migration flows from inner to outer metropolitan areas; from conurbations to other cities; and from these areas to smaller towns and ultimately to remote rural areas (see also Champion, 2005; Simpson & Finney, 2009; Lomax, Stillwell, Norman, & Rees, 2014; Stockdale & Catney, 2014; Stockdale, 2016). A second finding is that the south east of England acts a 'regional escalator', attracting a more than proportional share of the potentially upwardly mobile young adults (Fielding, 1992; see also Champion, 2012; Lomax et al., 2014; Champion, Coombes, & Gordon, 2014).

A number of researchers have examined patterns found in ethnic group internal migration (Finney, Catney, & Phillips, 2015; Trevena, McGhee, & Heath, 2013). One area of research has focused on differing propensity to migrate between groups, and the extent to which this arises from differences in socio-economic characteristics. For example, Finney and Simpson (2008) found that prior to controlling for certain socio-economic characteristics the migration propensity for most non-white groups appeared

higher than for white Britons, with the opposite conclusion applying once variation in characteristics had been accounted for. Catney and Simpson (2010) found a social gradient benefitting professional and managerial classes for residential mobility, irrespective of ethnic group with the exception of Chinese.

Of more direct relevance to the current study has been research into geographic patterns of movement by ethnic group. Finney and Catney (2012) noted that relatively little is known about the impact of ethnicity on internal migration, echoing a concern raised by Stillwell, Hussain, and Norman (2008). Whilst the 'absolute geographies of migration differ between ethnic groups because they start from different places' (Finney et al., 2015, p36) there is, nevertheless, a consistency in the findings of various studies. The primary finding is one of movement away from settlement areas and away from areas of the groups' highest concentrations (Champion, 1996; Rees & Butt, 2004; Simpson & Finney, 2009; Stillwell & McNulty, 2012), with the Chinese group frequently showing exceptional behaviour. These patterns at a national level have also been found in studies examining some religion-based groups in individual cities (Muñoz, 2011; Gale, 2013).

An important finding for minority groups has been increased levels of migration effectiveness – how effective migration is in changing the population of an area – measured as net migration divided by the sum of in and out migration (Bell et al., 2002; Stillwell and Hussain, 2008). Other researchers have noted differences in likelihood of moving to particular destinations (Manley & Catney, 2012) and in the length of moves undertaken (Finney & Simpson, 2008) by various non-white ethnic groups compared with a white, or white British, control group. However, all of these results predate the release of relevant data from the 2011 census.

1.2 Focus and Aims of this Paper

In addressing cultural groups, this study differentiates itself from other studies that have focused on ethnic group alone. Arabs, Chinese, Jews, and Sikhs are the only distinct cultural categories (that is, excluding 'mixed' and 'other' groupings) that each constitute around 0.5% of the England and Wales population at the 2011 census. These smaller groups, most of whom having previously received limited attention, have been chosen for examination in this paper for a number of reasons:

- Unlike larger minority groups (and the dominant white British group), their small size has resulted in spatial distributions that are either geographically concentrated in a small number of localities – for example, the Jewish group (Newman, 1985), or widely distributed – for example, the Chinese group (Catney, 2015), but not both.
- Although religion and ethnic grouping can be seen as simply two aspects of overall cultural identity (Aspinall, 2000), the benefits of group congregation may manifest themselves in different ways between these two categories (Peach, 1996; Phillips, Cathy, & Ratcliffe, 2007).
- Despite their similarity in size, these four groups demonstrate different mixes of socio-demographic characteristics - for example, age profile, academic qualification levels, and UK or overseas country of birth (Sapiro, 2016a).

All of the above sources of difference between each of these groups, and between these groups as a whole and the white British majority, can be expected to give rise to different patterns of migration geography or migration distance. The focus of this paper is to investigate and understand the extent to which this is the case.

It should be noted that 77% of individuals who identified themselves as Jewish in the 2011 England and Wales census ticked the white British ethnic group option. However, despite the overlap, the Jewish group is distinct as it has a concentrated spatial distribution and a different socio-economic profile to the wider white British group in a number of key areas relating to migration propensity – for example, the level of self-employment; degree level qualifications, and professional and technical employment (Sapiro, 2016b; Reuschke, 2014). Conversely, as Jews make up only 0.4% of all white Britons, the inclusion of Jews within the white British category has a negligible impact on the migration patterns for that group. All other group overlaps – for instance, Chinese Jews or Arab Sikhs – are negligible in size.

This paper addresses three questions:

1 What is the sensitivity of the scale of inter-community moves to the distance involved in making those moves, and does this vary between cultural groups?

2 How strong are the influences of origin location and migrant demographic and socio-economic characteristics in determining the choice of destination location, and how does this vary between groups?

3 Do the resulting migration patterns for the groups illustrate aspects such as counter-urbanisation, dispersal, and migration effectiveness, previously found for the population as a whole or for larger ethnic groups?

Sections of this paper describe the development of spatial interaction models associated with addressing the first research question, and multi-nominal logistic regression models in respect of the second question. These analyses provide the backdrop to an examination of migration patterns mentioned in the third question.

The analysis makes use of routinely available census tables plus two, more specialised, outputs. First are the safeguarded local authority Special Migration Statistics religion and ethnic group files – basically a 348 x 348 matrix for each religion and ethnic group, indicating the number of moves by individuals between each local authority district in England and Wales in 2010-11; these are referred to as 'migration tables' in the remainder of this paper. The second source are the safeguarded 2011 individual microdata – a 10% sample of anonymised census returns providing regional origin, regional or local authority destination, and distance of move (or indicating no move made); various socio-economic, gender, age, and student status information is included.

The research presented here looks at the geographic pattern of moves; it contributes to research in this field by presenting, for the first time, nationwide information on the geography of migration patterns for Jews, Sikhs and Arabs. Although analysis in various forms has been presented previously for Chinese (and the white British group, which is used as a benchmark in this research), those assessments pre-date the release of information from the 2011 census, and this paper adds new material to the discussion of these groups, by addressing questions not previously asked.

2. The impact of distance on inter-community moves

So what is the influence of distance on the choice of destination for moves between congregations or agglomerations of members of the groups? That is, having controlled for variations in characteristics of people and places, how strongly does the distance to competing destinations influence the choice of destination? Two stages in the process are needed; first is a mechanism to identify group communities and the

distance and numbers of moves taking place between them and, secondly, the development of a modelling technique to control for other influences on moving.

'Communities' have been identified through an assessment based on consideration of group populations and population densities. 'Cliffs and valleys' evident in the mapping of population density of the groups were used to delineate communities (defined initially as groups of contiguous lower layer super output areas[1], but assessed as whole local authorities, or groups of local authorities, to allow use of the migration tables data); all areas with a group population in excess of about 2000 persons were identified. This threshold was large enough to ensure some form of social cohesion for the group would exist; for example, each of the localities identified for the Sikh group and Jewish group includes at least one gurdwara or synagogue (HM Passport Office, 2016); and 60% to 75% of all 2010-11 England and Wales internal group migration took place within or between these localities. The numbers of communities identified were: Arab and Jewish, 15 each; Chinese, 26; and Sikh, 18. The mapping was also used to identify a centroid for the community, from which the inter-community (Euclidian) distances were calculated.

A different approach had to be adopted for the white British group. As this group represents the majority of the population, the concept of a relatively small number of key localities encompassing the majority of the group population, or group population moves, cannot be applied. The small cultural groups are primarily located in the major conurbations and other large urbanised areas. For consistency the white British 'communities' were defined to focus only on densely populated areas, so as to reduce the possibility that any differences in behaviour might arise from rural/urban mix differences between the groups. The white British 'communities' were thus represented by London, the six metropolitan county areas, and the thirteen individual urban local authorities that each accommodate over 180,000 white British residents. (For an earlier example of the development of an internal migration model for England and Wales using data only for the most populous localities see Fotheringham and O'Kelly, 1989, pp98-106). [Tables S1 to S5 included in supplementary information show the identified communities for each group and 2010-11 inter-community moves].

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[1] lower layer super output area (LSOA) – a census reporting area, defined by the Office for National Statistics, each containing about 1500 residents in total.

The next step was to develop an appropriate model to allow the impact of distance to be isolated. Spatial interaction modelling (Fotheringham & O'Kelly, 1989) has a long history, but it was Wilson (1967) who highlighted the potential for these mathematical theories in modelling flows between places. These models are frequently referred to as 'gravity' models, due to the similarity of the formulation of those models with the classic Newtonian gravitational force model.

An unconstrained spatial interaction model (see Fotheringham & O'Kelly, 1989, Tiefelsdorf & Boots, 1995) can explain the link between the underlying characteristics that influence the pattern of movement and the frictional impact of distance on the propensity to move from place to place. The model would need to identify, and then control for, the characteristics that underpin inter-community moves, so that the impact of distance can be properly identified. The numbers of group members falling into each of seven characteristics were identified for each locality: three age ranges; student status (yes/no); degree holder (yes/no); living in rented accommodation (yes/no); and households without dependent children (yes/no). These were based on the variables which Sapiro (2016a) had found to influence propensity to migrate for these groups. Additionally, the total population and total number of students in each locality were determined. The inclusion of the latter two variables allows for the possibility of the overall size of a locality, and its popularity as a place of study more generally, to be influential in destination choice. [Note that Tables S6 and S7 in the supplementary material include information on the most popular places for study for each of the groups.]

As the distribution of inter-community trips is highly skewed, and the variance of the model differed from the mean, negative binomial regression using a logarithmic link function and maximum likelihood estimation was adopted (Flowerdew, 2010). Separate models were developed for Arab, Chinese, Jewish, Sikh, and white British internal migrations, using 2011 migration tables flows and characteristics taken from standard census output tables, aggregated into the communities that had been identified for each group. The modelling covered only moves internal to England and Wales and, as is standard practice for this type of model, excluded intra-community moves.

Each model had the potential to include nineteen covariates – the logarithm of the nine characteristics mentioned above, each calculated for origin and destination of the trip, plus the trip distance. Those making least contribution to the model (based on

the significance level calculated for that variable's contribution to the model) were progressively removed, until either all the variables still retained were making a contribution significant at the 5% level, or the point was reached when further variable reduction would lead to a worsening in goodness of fit values[2]. Model output is shown in Table 1. These goodness of fit values are not shown in the table as they cannot be compared between datasets, and the individual values alone do not have a meaningful interpretation. In order to give some appreciation of the quality of models, the table does include a value for the coefficient of determination (R^2) and a sum of squares F test; these give an indication of the amount of the variation in the number of movements that the model explains, and the goodness of fit of the model output to the census-observed inter-community flows. These figures (which cannot be derived for negative binomial models) relate to complementary ordinary least squares regression models – that is, using logged values of the dependent and relevant covariates used in the final negative binomial models. In all cases this proxy for model fit is significant at the 0.1% level, and the models explain around 80% of the variation in trip numbers for most of the small groups, and 90% for the white British group – a very high proportion.

The table indicates that the coefficient applicable to the distance covariate for the small cultural groups falls within a relatively narrow range. For a clearer understanding of the impact of the coefficient, we can envisage a set of characteristics that results in 100 moves taking place between two locations that are 10km apart, and consider how many trips might result if those localities were further apart (that is, all the origin and destination characteristics are held constant) – see Figure 1. If the separation was 250km, the mean number of moves would be Jewish 14; Sikh and Arab 17; Chinese 21; and white British 38. The results for the minority groups are close to the Newtonian inverse square relationship - the 'gravity' line shown on Figure 1.

The model parameters as a whole describe the overall relationship between origin and destination characteristics, spatial configuration of communities, and the level of moves that occur. The distance coefficients that have been determined can be thought of as measuring the steepness of the relationship between trip numbers and

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[2] Statistics for measuring goodness of fit for categoric variable models include: minus two log likelihood (-2LL), Akaike Information Criterion (AIC), and Schwarz Bayesian Information Criterion (BIC).

distance. That the Jewish group has the largest distance coefficient means there is a steeper relationship between numbers of moves and distance of separation between communities for that group than for the other small groups and particularly so when compared with the white British group.

In summary, for all groups, for matching sets of characteristics, people will tend to favour shorter moves over longer ones. As regards research question 1, we have established that where there is a choice of destinations meeting a set of characteristics, Jews are slightly more likely than Sikhs and Arabs, and significantly more likely than Chinese to reject a longer move in favour of a shorter one. All of these smaller groups more strongly prefer shorter inter-community moves than does the white British majority.

3. Underlying influences on regional migration

The previous section examined only inter-community moves, but is there an impact of geography on moves more generally? Can we identify whether the place (region) of origin of a move, and the socio-economic/demographic characteristics of migrants, has an influence on the place (region) of destination of the move, and provide an answer to the second research question?

Multinomial logistic regression was the appropriate form of model to adopt – with region of destination as the multinomial outcome. One of the difficulties with this type of regression is finding an appropriate balance between the number of independent variables to be included, and the number of categories to be adopted within each of these variables, whilst optimising the goodness of fit of the final model, and minimising the number of cells for which no observations would be available (Field, 2009). Ultimately, the solution adopted was to produce three models of destination choice - one for each origin super-region (London; SE & E England; and elsewhere in England and Wales), with student status, age, highest qualification, and home tenure as the four categorical covariates. Separate families of models were produced for each cultural group. An example of the model output (using the Jewish group) is shown in Table 2. [The level of inter-super-regional moves, and model output for the other groups, are shown in Tables S8 to S12 in the supplementary material].

By applying the logistic regression equations derived by these models, with relevant values of the parameters inserted, the influence of a characteristic (having

controlled for the other characteristics) on the probability of selecting a particular destination region can be determined [as detailed in Table S13 in the supplementary information]. The main distinctions in destination choice found for each group can be summarised as follows:

- White British: students, persons aged over 60, and home owners are far less likely to stay in London than those in other categories; and students originating in SE & E England are far more likely to move away from that region than non-students.
- Arab: as with the white British group, London students are far less likely than non-students to remain in the capital; and for students based in SE & E England, a move to the remainder of England and Wales is more likely than a move to London
- Chinese: persons without qualifications based outside of London are more likely to move within their super-region than persons with qualifications; and individuals aged 25 to 59 based in SE & E England are less likely to leave the region than those in other age bands.
- Jewish: around one quarter of London-based students choose moves to each of SE & England and the rest of England and Wales, compared with far fewer than 10% of non-students making each of those destination choices; Jewish degree holders living outside of London are considerably more likely than their less qualified neighbours to make a move to London.
- Sikh: London-based students are far more likely to move to the remainder of England and Wales than non-students; home owners are rather less likely than others to move between super-regions; degree holders based in SE & E England are much more likely than others to move to London.

Overall, the analysis demonstrates that the relative importance of student status, age, qualifications, and home tenure in influencing choice of destination region for a given region of origin varies quite noticeably across the various groups. The following paragraphs summarise the key high-level findings.

Outside of London and SE & E England, typically 9 out of 10 moves are within super region; notable exceptions are degree-qualified Chinese (82%), Sikhs (81%), and Jews (72%). Four out of five London-based movers remain within London;

groups where the proportion falls below 60% include: white British students, over 60s, and home owners (numerically a very large group); and Jewish students.

The white British group demonstrates a strong counter-urbanisation tendency, as demonstrated by over one-fifth of London-based movers relocating to SE & E England. Such levels are absent for the Arab and Chinese groups, and are limited to those aged over 60 for the Jewish group, and home-owning Sikhs.

The south east of England 'economic escalator' effect (Fielding, 1992) is still a strong feature of inter-regional migration, with typically three to six times the proportion of degree holders than those with no qualifications based outside of London and SE & E England moving to those parts of England and Wales for all groups. As these data are only a 2010-11 snapshot – we do not know the previous migration history of the individuals involved – it is not possible confirm the 'stepping off the escalator' (and returning north) theory investigated by Champion (2012). However it is certainly true to say that for white British persons based in London or the SE & E of England, those aged over 60 have a statistically greater likelihood of moving to a location beyond London and SE & E England than those in younger age groups.

4. Movement patterns

Section 1.1 of the paper has drawn attention to a number of migratory patterns that have been identified for the population as a whole – such as counter-urbanisation, and the SE England economic escalator effect. That section also documented some patterns found in larger minority groups in 2001 census data – for example, increased levels of migration effectiveness, and movements away from areas of the groups' highest concentrations. Building on the aspects summarised at the end of Section 3, can we establish the extent to which the movement patterns discussed in section 1.1 manifest themselves in small group migration within England and Wales?

4.1 London area counter-urbanisation

Counter-urbanisation has been considered in detail by investigating the level of moves between concentric circles around London. (Note that the numbers of movers are too small to extend this analysis to other cities, even in combination).

Seven 'rings' of local authorities were established, each approximately 15km deep - Circle 1 is inner London; outer London is found in Circle 2; and Circle 7 includes (for example) Oxford and Cambridge. The same circles have been applied to

all groups – see Table 3. Note that the table includes only moves wholly within the seven circle area.

The pattern of outward movement is very clear for the white British. For Jews and Sikhs there is a slight 'throttle' on the outward movement, with a focus on circles 3 and 4, and a lower level of onward dispersion into circles 5 to 7. The Chinese (and Arab) pattern implies some disillusionment with distant living and a move back to outer London.

4.2 Regional migration effectiveness

The suggestion has been made that, in general, places with large outflows of migrants also have large inflows, reducing the overall 'migration effectiveness' but that this is less so for minority groups (Stillwell & Hussain, 2008). Table 4 shows net inter-regional migration flows and migration effectiveness for the groups.

The most accurate picture of the overall impact on group distribution is provided when the data are weighted by the group's overall size in each region, as summarised at the foot of the table. These figures indicate a broadly similar level of regional migration effectiveness for white British, Chinese, and Arab groups. The Jewish and Sikh groups show a higher level of migration effectiveness than the other groups for the groups as a whole. If the individual regional rates were to persist over a prolonged period, they would indicate that internal migration would have a noticeable impact on regional distribution of the groups.

4.3 Concentration or dispersal

Finally, we can encapsulate the impact of these various trends by considering whether groups are becoming more concentrated or more dispersed (due to migration). This was achieved through an assessment that divides the local authorities of England and Wales into five parts, independently for each group. The authorities were ranked, based on the proportion of their total population that the group represents (group density), and the list split into quintiles, each accommodating approximately 20% of the group population (see Simpson & Finney, 2009).

The net migration between the quintiles is summarised in Table 5. Clearly, the white British population is rather larger than the other groups, and gives rise to larger inter-quintile net migrations; percentage change figures are also shown in the table to allow for this.

There is a clear pattern of concentration (perhaps re-concentration following earlier dispersal) for Arab and Chinese groups; a clear pattern of dispersal for Sikhs; and a mixed message for the Jewish group - generally dispersal except for the most concentrated quintile (a move away from the 'middle ground'). The large volumes for the white British disguise the overall minimal impact in percentage terms.

It is worth noting that as the small groups (including larger minorities not considered here) have a very urban focus, the quintile pattern for the white British group is geographically reversed compared with the other groups. For the small groups, the densest quintile consists primarily of London authorities, whereas all bar one of the London Boroughs are in the least dense quintile[3] for white British residents.

Counter-urbanisation would thus manifest itself for the small cultural groups as movement away from the *most* dense quintile, and for the white British as movement away from the *least* dense quintile.

5. Discussion and Conclusions

It has long been recognised that the level of migration falls off with increasing distance between origin and destination (Ravenstein, 1885), and tools to quantify the migration / distance relationship have been available for a considerable period (Wilson, 1967; Fotheringham & O'Kelly, 1989). Nevertheless, there are few studies that have focused on quantifying the deterrence effect; see, for example: Makower, Marschak, and Robinson (1938), Schwartz (1973), and Yang, Cai, Qi, Liu, and Deng (2015) in a British, American, and Chinese context, respectively. Stillwell et al. (2016) suggest that this is because of the absence of suitable datasets that provide origin and destination location with sufficient accuracy (see also Niedomysl, Ernstson, & Fransson, 2015). Stillwell and colleagues' major study compares the frictional impact of distance on internal migration patterns across a large number of countries. They found fairly consistent frictional values across Western Europe, with lower values in North America. However, all these aforementioned studies have considered the population as a whole.

The research reported in the current paper appears to be the first to investigate how the geographical separation between cultural group communities influences the

[3] That is, the authorities in which the white British form the lowest proportion of the total population, rather than their density measured in persons per unit area.

propensity to move between them. The purpose of including as wide a range of characteristics as possible in the modelling process was to allow the other influences on the likelihood of making a particular move to be incorporated, so that the impact of distance could be established having controlled for other factors. Given the high proportion of variability that the models explain, this aim has been achieved, and significant weight can be attached to the distance coefficients that have been determined. The analysis has shown (in response to question 1) that there is indeed a difference between groups in the impact that increasing separation has on the choice of destination. Of the groups examined, Jews are most averse to choosing the longer of alternative inter-community moves, but all of those groups are more affected by distance than the white British dominant group.

It is not completely clear why this should be the case. However, it is likely that the basic configuration of community locations will have some influence – for example, the dominance of the London area as home to British Jewry means that the distances between some of the largest communities are smaller than equivalent distances for other groups. Furthermore, the benefits of group congregation (Peach, 1996), which have contributed to the pattern of communities, may act as a disincentive to consider more distant/less well known alternative destinations. In addition it is worth noting that the drivers behind inter-community moves (as indicated by the variables and regression coefficients shown in Table 1) differ by group, with the white British group (for whom distance has a reduced impact) strongly featuring the 25-59 age range and people living in rented accommodation. With the exception of 25-59 year old Chinese, these elements do not feature strongly for the other groups, with age under 25 (but not specifically students) being more important to Chinese, Jewish, and Sikh groups, together with an absence of dependent children being a feature of Arab inter-community moves. Inter-community movers for the majority group would thus exhibit a different balance of life-course stages and underlying purposes of move than the smaller groups; this might contribute to differences in the impact of inter-community distance.

The other area that has been examined in detail, this time through multinomial logistic regression, is the identification of characteristics that influence the choice of super-region of move destination, given the super-region of move origin. That analysis confirms the important influence of age, qualifications, home tenure and, in particular,

student status, in determining the destination for those who move. In respect of research question 2, the impact of characteristics does vary from group to group; however, some conclusions apply to many groups. For example, students based in London and the SE & E of England are far more likely to move to places in the rest of England and Wales than non-students. The south-east regional escalator (Fielding, 1992) is still present – with graduates in the north and west of England and Wales far more likely to move to London and the south-east than those with lesser qualifications. The difference in behaviour of those aged 60 and over lends some support to the 'stepping off the escalator'/return migration hypothesis (Champion, 2012), given the increased probability, for white Britons, of moving to outside of the south and east from within that corner of England and Wales, compared with younger age groups.

Examination of movement between group quintiles of population density indicates that the Chinese group is moving away from it sparsest quintile towards the densest population quintile. This result for 2010-11 repeats that for 2000-01 reported by Simpson and Finney (2009) who found that the Chinese group's behaviour was an exception to the other ethnic groups observed. The current study shows that this exceptional behaviour also applies to the Arab group. In contrast, the Sikh group (and Jewish group, except for the most densely populated quintile) is, in 2010-11, following the dispersing pattern demonstrated by most ethnic groups in 2000-01.

These patterns are reflected in the counter-urbanisation analysis presented by considering movement between rings around London – where material proportions of the England and Wales population for each of this study's minority groups are found. All groups have a net outflow from Inner London, but the Arab and Chinese move away from quintile of sparsest presence is reflected in their net loss from the outer rings up to 90km from central London. This may indicate disillusionment with semi-rural living leading to a re-grouping in urban areas. Based on the analysis for the London area, the white British group is continuing to demonstrate a strong counter-urbanisation pattern. Jews and Sikhs have developed some of the desire for semi-rural living which Champion (2001) noted for the population as a whole. This is reflected in these two groups demonstrating notably higher levels of regional migration effectiveness than Arabs and Chinese. In response to the third research question, the conclusion is that Jews and Sikhs more closely follow the trends found in the population as a whole and in previously studied ethnic groups, with the Chinese group frequently bucking the trend.

The high proportion of overseas-born / recently-arrived individuals in the Arab and Chinese groups, and the very high proportion of students in the Chinese group may explain the extent of difference in movement patterns between those groups and the white British.

Overall, this research has provided detailed assessments of the diverse patterns of 2010-11 internal migration in England and Wales for three groups not previously examined, and has, through the use of 2011 census data, provided an update on white British (and Chinese) behaviours found in other studies. It also paves the way for equivalent analysis to be carried out on other minority groups, and provides a modelling methodology that could be applied elsewhere.

The findings in relation to the differences in resistance to making longer distance moves, and the greater likelihood of making out-of-super-region moves for graduates (and the influence of age and home tenure on these patterns for some of the groups) raise issues about the future socio-economic and demographic mix of small cultural group populations in the various communities where they live. The changing mix over time will give rise to significant policy issues for communal organisations with an interest in social welfare of these groups, and the wider communities in which they reside.

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Tables

Table 1 Spatial Interaction Model Parameters [this table extends onto the next page]

Arab Model	B		Std. Error	Exp(B)
Parameter (logged)				
Intercept	-7.919	***	1.173	0.000
Distance (km)	-0.609	***	0.060	0.544
Group pop at dest age 60plus	-0.229	***	0.061	0.795
Total students at orig	0.325	***	0.083	1.384
Total students at dest	0.178	*	0.080	1.195
Group hholds with no dep ch at orig	0.410	***	0.056	1.506
Group hholds with no dep ch at dest	0.914	***	0.104	2.495
Scale parameter 1.08	Negative binomial parameter			0.32
Likelihood Ratio Chi-Square 285 (6df) ***	R^2 0.61		F 53	***
Chinese model	B		Std. Error	Exp(B)
Parameter (logged)				
Intercept	-7.751	***	0.526	0.000
Distance (km)	-0.719	***	0.027	0.487
Group pop at origin age under 25	0.625	***	0.170	1.869
Group pop at origin age 25-59	0.666	***	0.109	1.947
Group pop at dest age 25-59	0.750	***	0.121	2.117
Group pop at dest age 60 plus	-0.418	***	0.089	0.658
Group students at origin	0.168	**	0.052	1.183
Group students at dest	0.167	***	0.044	1.182
Group renters at dest	0.304	**	0.098	1.355
Group hholds with no dep ch at orig	-0.664	***	0.165	0.515
Scale parameter 1.00	Negative binomial parameter			0.17
Likelihood Ratio Chi-Square 1953 (9df) ***	R^2 0.76		F 226	***
Jewish model	B		Std. Error	Exp(B)
Parameter (logged)				
Intercept	-8.903	***	1.280	0.000
Distance (km)	-0.491	***	0.067	0.612
Group pop at origin age under 25	0.742	***	0.113	2.100
Group pop at origin age 25-59	-1.158	***	0.301	0.314
Group pop at origin age 60 plus	0.474	**	0.145	1.607
Group pop at dest age under 25	0.883	***	0.123	2.418
Group pop at dest age 25-59	-1.823	***	0.334	0.162
Group pop at dest age 60 plus	0.641	***	0.147	1.899
Total pop at destination	0.250	*	0.122	1.284
Group degree holders at origin	0.764	***	0.167	2.147
Group degree holders at dest	0.926	***	0.215	2.524
Scale parameter 0.98	Negative binomial parameter			0.28
Likelihood Ratio Chi-Square 430 (10df) ***	R^2 0.79		F 74.3	***
Sikh Model	B		Std. Error	Exp(B)
Parameter (logged)				
Intercept	-7.883	***	0.703	0.000
Distance (km)	-0.586	***	0.041	0.557
Group pop at origin age 60 plus	0.418	***	0.041	1.519
Total pop at origin	0.271	***	0.068	1.311
Group pop at dest age under 25	1.384	***	0.305	3.990
Group pop at dest age 25-59	-0.762	**	0.263	0.467
Group students at origin	0.137	***	0.031	1.147
Group students at dest	0.145	**	0.050	1.156
Scale parameter 0.98	Negative binomial parameter			0.10
Likelihood Ratio Chi-Square 653 (7df) ***	R^2 0.81		F 181	***

White British Model	B		Std. Error	Exp(B)
Parameter (logged)				
Intercept	-10.302	***	0.773	0.000
Distance (km)	-1.198	***	0.040	0.302
Group pop at origin age 25-59	4.100	***	1.021	60.354
Group pop at origin age 60 plus	2.241	***	0.545	9.404
Group pop at dest age 25-59	4.273	***	0.952	71.766
Group pop at dest age 60 plus	1.904	***	0.557	6.711
Group students at origin	0.177	***	0.044	1.193
Total students at dest	0.234	***	0.047	1.264
Group degree holders at origin	1.424	***	0.175	4.155
Group degree holders at dest	1.718	***	0.179	5.574
Group renters at origin	2.936	***	0.448	18.848
Group renters at dest	3.506	***	0.458	33.322
Group hholds with no dep ch at orig	-9.962	***	1.676	0.000
Group hholds with no dep ch at dest	-10.728	***	1.641	0.000
Scale parameter 1.07	Negative binomial parameter			0.18
Likelihood Ratio Chi-Square	1011 (13df)	***	R^2 0.92	F 306 ***

Significance level: * 5% ** 1% *** 0.1%

Source: Output from author-developed models as described in the text.

Table 2 Multinomial Logistic Regression Parameter Estimates (Jewish Movers)
(for other groups see Tables S9 to S12 included in the supplementary material)

super region of destination		B	Std. Error	Sig.	Exp(B)
	Movers originating in London				
London	Intercept	2.06	0.55	***	
compared with	Not student	2.53	0.29	***	12.58
Rest of E & W	age up to 24	-1.20	0.32	***	0.30
	age 60 and over	-1.87	0.39	***	0.15
	intermediate quals	-1.17	0.32	***	0.31
	degree qualified	-0.65	0.36		0.52
	home not owned	0.02	0.29		1.02
SE & E	Intercept	1.90	0.66	**	
compared with	Not student	0.79	0.37	*	2.20
Rest of E & W	age up to 24	-1.35	0.39	***	0.26
	age 60 and over	-0.97	0.44	*	0.38
	intermediate quals	-0.81	0.38	*	0.45
	degree qualified	-0.86	0.43	*	0.42
	home not owned	-0.95	0.33	**	0.39
	Movers originating in SE & E England				
London	Intercept	0.84	1.02		
compared with	Not student	1.51	0.51	**	4.53
Rest of E & W	age up to 24	0.27	0.50		1.31
	age 60 and over	0.50	0.70		1.65
	intermediate quals	-0.78	0.59		0.46
	degree qualified	-0.03	0.61		0.97
	home not owned	-0.96	0.50		0.39
SE & E	Intercept	3.31	0.95	**	
compared with	Not student	1.00	0.46	*	2.70
Rest of E & W	age up to 24	-0.92	0.47		0.40
	age 60 and over	0.04	0.67		1.04
	intermediate quals	-0.82	0.56		0.44
	degree qualified	-1.06	0.59		0.35
	home not owned	-1.17	0.48	*	0.31
	Movers originating in the Rest of England & Wales				
London	Intercept	-5.21	0.70	***	
compared with	Not student	1.38	0.38	***	3.97
Rest of E & W	age up to 24	1.45	0.31	***	4.26
	age 60 and over	0.10	0.50		1.11
	intermediate quals	0.71	0.46		2.03
	degree qualified	2.26	0.43	***	9.62
	home not owned	-0.09	0.28		0.91
SE & E	Intercept	-4.84	1.00	***	
compared with	Not student	1.24	0.61	*	3.46
Rest of E & W	age up to 24	0.73	0.45		2.08
	age 60 and over	0.21	0.61		1.23
	intermediate quals	-0.08	0.61		0.92
	degree qualified	1.29	0.53	*	3.63
	home not owned	-0.03	0.40		0.97

Reference covariates category: student, age 25-59, home owner, with no qualifications
Significance level: * 5% ** 1% *** 0.1%

Source: Output from author-developed models as described in the text.

Table 3 London Circles and Counter-urbanisation

Net migration increase and effectiveness 2010-2011

	Arab		Chinese		Jewish		Sikh		White British	
London Circle	Net mig	Mig eff	Net mig	Mig eff	Net mig	Mig eff	Net mig	Mig eff	Net mig	Mig eff
inner London	-210	-0.07	-90	-0.02	-280	-0.09	-170	-0.13	-7790	-0.07
circle 2	160	0.05	340	0.06	-130	-0.03	-880	-0.27	-15930	-0.13
circle 3	60	0.07	10	0.00	220	0.12	420	0.21	-790	-0.01
circle 4	70	0.11	50	0.03	40	0.06	420	0.24	2110	0.02
circle 5	50	0.12	-70	-0.06	-10	-0.02	90	0.15	5580	0.06
circle 6	-50	-0.14	-20	-0.02	60	0.13	50	0.15	5530	0.07
circle 7	-80	-0.15	-210	-0.10	90	0.14	70	0.18	11290	0.14

Note: Net mig - net migration; Mig eff - migration effectiveness.
Source: Author calculations based on 2011 census migration tables

Table 4 Regional Migration Effectiveness

Net migration increase and effectiveness 2010-11

	Arab		Chinese		Jewish		Sikh		White British	
Region	Net mig	Mig eff	Net mig	Mig eff	Net mig	Mig eff	Net mig	Mig eff	Net mig	Mig eff
North East	-50	-0.10	100	0.08	80	0.19	10	0.03	3530	0.06
North West	-160	-0.11	-10	0.00	-80	-0.06	70	0.10	-4950	-0.04
Yorks & Humber	70	0.04	-180	-0.06	30	0.04	-60	-0.07	4470	0.03
East Midlands	100	0.08	120	0.04	160	0.24	200	0.10	1500	0.01
West Midlands	-30	-0.02	-10	0.00	160	0.24	-210	-0.07	-8120	-0.06
East of England	-30	-0.02	-650	-0.15	160	0.06	180	0.11	-4120	-0.02
Inner London	20	0.00	850	0.09	-280	-0.07	-20	-0.01	5220	0.03
Outer London	290	0.07	150	0.02	-510	-0.09	-850	-0.19	-28200	-0.15
South East	-110	-0.05	-80	-0.01	120	0.08	580	0.18	5080	0.02
South West	-230	-0.27	-280	-0.10	140	0.19	60	0.11	18440	0.10
Wales	120	0.16	-10	-0.01	30	0.14	50	0.18	7160	0.09
Group Population weighted average										
Mean (absolute)		0.06		0.05		0.09		0.12		0.05
Standard deviation		0.05		0.05		0.09		0.16		0.03

Note: Net mig - net migration; Mig eff - migration effectiveness.

Source: Author calculations based on 2011 census migration tables

Table 5 Movements between population density quintiles 2010-11

	Net migation increase 2010-2011									
	Arab		Chinese		Jewish		Sikh		White British	
densest population quintile	300	0.6%	700	0.9%	230	0.4%	-440	-0.5%	-60	0.0%
second population quintile	300	0.7%	980	1.2%	-370	-0.7%	-640	-0.8%	-1170	0.0%
middle population quintile	190	0.4%	590	0.8%	-480	-0.9%	-20	0.0%	250	0.0%
fourth population quintile	10	0.0%	-500	-0.6%	10	0.0%	80	0.1%	18180	0.2%
sparsest population quintile	-800	-1.7%	-1780	-2.3%	600	1.1%	1010	1.2%	-17200	-0.2%

Source: Author calculations based on 2011 census migration tables and standard census outputs

Figures

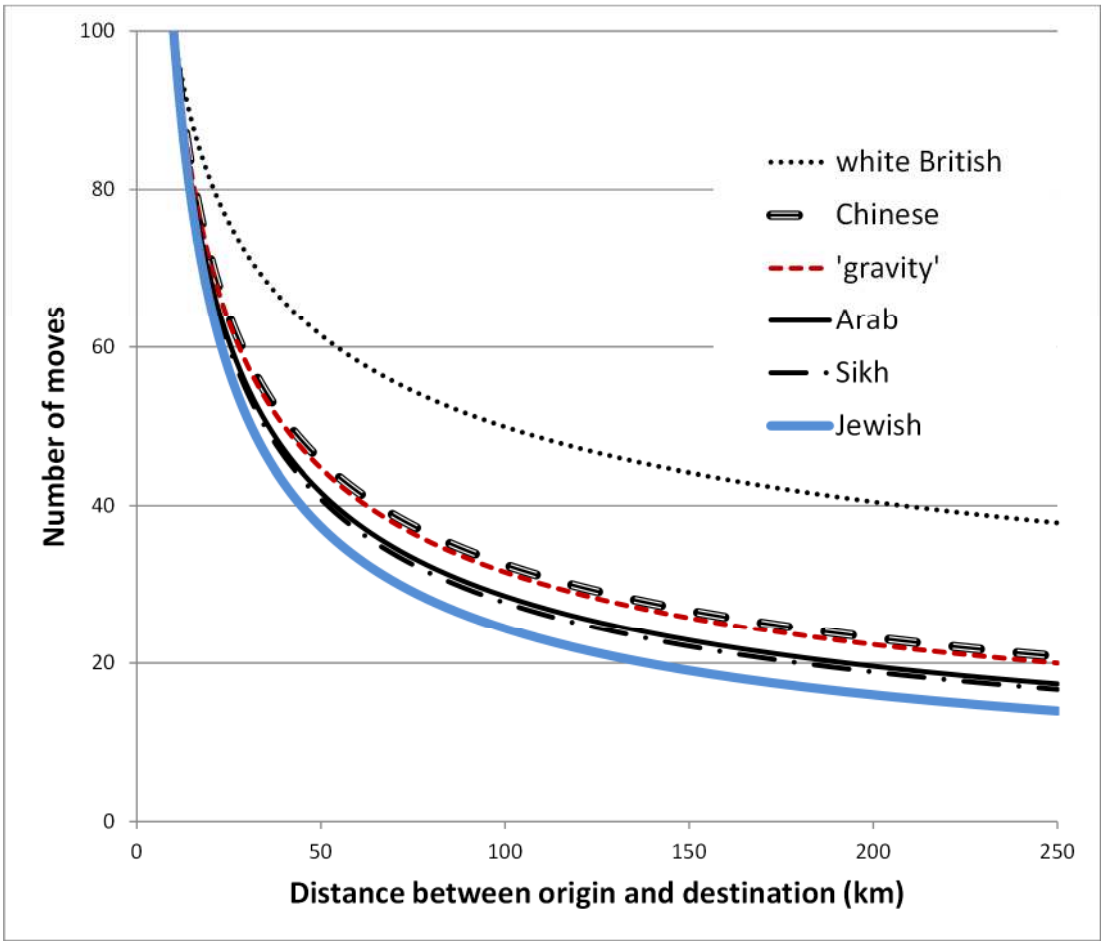

Figure 1 – Impact of Distance Coefficient on number of moves

Explaining Geographic Patterns of Small Group Internal Migration: Supplementary Material

Table S1 Arab Inter-Community moves 2010-11

	Destination Arab community															
Origin arab community	NW & W London	NE London	Manchester	Birmingham	Sheffield	SW London	Liverpool	Cardiff	Leeds	Bradford	Leicester	Newcastle	Nottingham	Brighton	Coventry	Total
NW & W London		448	47	26	34	219	24	23	24	6	15	9	8	14	21	918
NE London	455		23	8	3	21	3	0	2	0	17	6	3	6	4	551
Manchester	82	8		22	26	0	35	0	26	12	11	5	5	1	11	244
Birmingham	70	5	19		13	4	2	2	8	9	6	0	4	0	7	149
Sheffield	31	3	19	7		6	14	7	23	4	8	0	5	4	0	131
SW London	172	11	4	6	3		0	0	5	0	7	3	2	5	2	220
Liverpool	8	12	28	6	8	0		0	4	25	2	0	2	1	6	102
Cardiff	47	6	11	2	0	5	0		1	0	10	0	4	4	3	93
Leeds	32	22	23	6	9	6	9	6		18	12	9	5	3	7	167
Bradford	9	0	6	6	1	0	5	0	19		2	3	4	0	5	60
Leicester	24	11	11	12	7	0	6	1	6	0		0	9	0	1	88
Newcastle	31	1	4	0	7	0	6	0	6	1	0		4	1	8	69
Nottingham	13	10	3	8	7	6	3	0	4	0	26	0		0	6	86
Brighton	31	4	17	1	2	0	19	0	2	0	14	1	0		13	104
Coventry	14	2	5	10	4	1	0	1	1	14	20	8	0	0		80
Total	1019	543	220	120	124	268	126	40	131	89	150	44	55	39	94	3062

Source (for Tables S1 to S5): Author calculations based on 2011 SMS tables

Table S2 Chinese Inter-Community Moves 2010-11

	Destination Chinese Community																										
Origin Chinese community	E & SE London	Inner N London	NW London	Manchester	Birmingham	West London	Liverpool	Leeds	SW London	Sheffield	Nottingham	Newcastle	Croydon	Leicester	Cambridge	Bristol	Redbridge	Cardiff	Coventry	Oxford	Southampton	Brighton	Milton Keynes	Portsmouth	York	Hull	Total
E & SE London		921	302	52	68	168	24	24	223	13	24	6	229	33	47	22	149	18	25	22	65	18	9	11	13	6	2492
Inner N London	1269		409	30	25	305	3	3	87	14	16	17	52	10	59	21	18	18	19	47	20	7	5	1	13	5	2473
NW London	311	310		39	28	112	7	23	54	12	13	6	41	33	19	15	25	8	15	17	9	4	6	11	3	4	1125
Manchester	74	80	18		42	15	36	59	7	33	17	13	10	24	15	12	3	7	10	5	7	2	9	4	10	4	516
Birmingham	70	57	22	31		12	15	10	5	15	29	24	8	29	25	8	0	13	23	9	5	4	9	5	5	2	435
West London	246	157	91	7	34		4	8	72	6	18	5	15	17	10	6	2	4	4	7	12	12	5	5	3	4	754
Liverpool	24	18	8	93	32	3		16	2	16	20	6	4	5	2	14	0	0	12	4	2	3	3	3	4	0	294
Leeds	38	25	19	64	15	8	23		12	24	16	25	7	21	5	5	1	2	11	2	3	1	0	0	18	14	359
SW London	139	88	19	9	3	31	5	2		6	5	4	55	17	11	4	3	0	4	3	8	2	0	2	3	2	425
Sheffield	21	28	5	54	21	12	13	26	4		24	10	0	21	2	9	0	13	12	7	10	1	4	1	5	2	305
Nottingham	35	55	32	20	40	12	9	23	2	10		7	1	35	9	11	1	2	20	2	8	1	5	0	8	7	355
Newcastle	22	24	16	31	5	5	2	16	4	4	16		2	11	5	6	0	1	8	4	6	0	0	2	7	4	201
Croydon	127	55	17	9	3	10	2	0	21	4	3	5		7	5	4	1	0	10	3	2	6	2	0	1	1	298
Leicester	58	31	13	27	51	6	9	20	5	3	24	5	1		6	5	1	2	12	4	9	5	7	1	1	2	308
Cambridge	88	121	19	25	31	16	0	12	21	15	14	5	3	21		9	2	3	10	37	18	19	2	7	6	0	504
Bristol	34	35	11	22	19	11	1	4	6	3	1	3	1	4	11		1	18	7	1	7	3	10	1	5	1	220
Redbridge	76	20	11	6	2	18	0	1	3	2	4	1	14	6	2	0		1	5	2	2	2	0	2	1	1	182
Cardiff	26	18	4	17	11	0	1	1	0	0	1	1	8	3	7	16	0		3	3	6	0	0	1	0	0	127
Coventry	73	41	14	9	63	5	0	3	4	3	3	5	3	32	6	10	0	9		3	8	0	4	0	5	3	306
Oxford	64	85	10	10	20	10	3	4	2	1	4	2	3	7	25	7	0	3	8		3	3	1	2	8	2	287
Southampton	31	23	6	10	14	19	0	0	6	2	1	0	4	1	5	4	0	2	6	6		1	0	7	4	1	153
Brighton	33	31	7	15	8	9	0	0	6	9	8	6	9	7	6	6	1	0	5	5	5		0	2	4	0	182
Milton Keynes	8	8	4	5	4	7	0	1	3	4	3	2	2	13	4	4	0	0	1	3	3	2		0	1	0	82
Portsmouth	7	4	7	0	5	4	8	2	2	6	3	1	0	11	0	1	0	0	3	4	14	3	0		1	2	88
York	20	22	6	17	5	3	0	17	4	4	3	6	2	8	6	1	0	4	4	3	3	0	0	0		0	138
Hull	9	4	6	16	19	3	3	9	0	5	6	4	0	2	0	5	0	2	3	0	5	0	0	2	7		110
Total	2903	2261	1076	618	568	804	168	284	555	214	276	169	474	378	292	205	208	130	240	203	240	99	81	70	136	67	12719

Table S3 Jewish Inter-Community Moves 2010-11

	destination Jewish community															
Origin Jewish community	NW & W London	Manchester	Hackney	NE London	S & SW London	Leeds	Gateshead	Brighton	Birmingham	Liverpool	Southend	Bournemouth	Nottingham	Oxford	Cambridge	Total
NW & W London		150	297	65	275	101	74	60	183	19	10	70	168	89	65	1626
Manchester	208		24	8	12	56	56	1	35	52	0	1	44	5	4	506
Hackney	323	53		22	37	2	34	3	0	3	1	5	0	1	0	484
NE London	170	5	22		24	19	1	0	8	3	14	10	19	1	6	302
S & SW London	237	7	41	13		7	0	14	1	3	0	2	4	7	2	338
Leeds	112	57	5	8	8		7	1	8	4	4	2	8	2	4	230
Gateshead	34	61	6	0	1	6		0	1	0	0	0	1	1	1	112
Brighton	46	2	5	3	9	5	1		0	0	0	1	0	2	4	78
Birmingham	84	19	0	12	4	6	0	0		1	0	4	3	1	1	135
Liverpool	24	14	1	0	3	7	0	1	8		0	0	2	0	0	60
Southend	24	1	2	4	0	1	0	1	2	4		0	1	0	0	40
Bournemouth	28	4	3	4	1	0	0	0	4	0	0		0	0	0	44
Nottingham	71	21	2	10	3	5	2	0	6	0	0	3		1	2	126
Oxford	52	2	2	0	6	2	0	5	4	1	0	0	1		1	76
Cambridge	74	0	2	3	7	2	1	0	5	0	0	0	1	1		96
Total	1487	396	412	152	390	219	176	86	265	90	29	98	252	111	90	4253

Table S4 Sikh Inter-Community Moves 2010-11

	Destination Sikh community																		
Origin Sikh community	West Midlands	W London/Slough	NE London	Coventry	Leicester	Leeds/Bradford	Gravesend	Derby	SE London	Luton	Nottingham	Manchester	Southampton	Bedford	Huddersfield	Bristol	Telford	Wokingham	Total
West Midlands		162	57	129	104	45	18	22	17	23	99	68	11	7	14	16	18	4	814
W London/Slough	246		81	52	86	16	56	13	22	24	59	11	23	10	7	15	6	28	755
NE London	64	126		9	30	6	32	0	35	12	9	5	12	3	3	8	8	2	364
Coventry	158	43	18		57	5	10	7	4	1	35	5	4	2	2	3	1	0	355
Leicester	129	51	24	38		9	13	19	9	5	32	7	2	6	6	1	3	1	355
Leeds/Bradford	42	51	11	21	15		0	13	0	0	11	21	1	3	19	1	1	1	211
Gravesend	27	32	21	5	8	2		1	15	2	3	1	3	0	3	0	0	1	124
Derby	54	20	13	12	17	8	3		1	0	25	10	2	0	0	3	3	1	172
SE London	6	37	34	3	10	4	36	0		2	2	3	0	0	2	0	0	0	139
Luton	28	16	16	8	2	4	1	0	0		8	2	2	3	0	1	0	0	91
Nottingham	32	15	12	6	13	4	2	3	2	1		2	0	2	0	3	4	2	103
Manchester	20	18	7	2	3	6	1	6	0	2	0		2	0	0	2	1	0	70
Southampton	9	14	5	5	1	0	1	11	0	1	1	1		0	0	0	0	1	50
Bedford	26	12	2	1	7	2	2	0	0	5	2	0	0		0	0	0	0	59
Huddersfield	13	15	3	2	3	14	3	0	0	0	1	1	0	0		0	0	0	55
Bristol	5	12	1	0	1	0	1	1	1	1	1	1	0	0	0		0	0	25
Telford	22	6	0	2	6	4	2	0	0	0	0	1	0	0	0	4		0	47
Wokingham	7	26	1	2	5	0	0	0	0	1	1	1	0	0	0	0	2		46
Total	888	656	306	297	368	129	181	96	106	80	289	140	62	36	56	57	47	41	3835

Table S5 White British Inter-Community Moves 2010-11

Destination white British community

Origin white British community	London	Gtr Manchester	W Midlands	W Yorkshire	Merseyside	S Yorkshire	Tyne & Wear	Bristol	Cardiff	Plymouth	Hull	Medway	Brighton	Swansea	Stoke-on-Trent	Nottingham	Warrington	Derby	Southampton	Milton Keynes	Total
London		2629	2232	2279	1066	1052	977	1698	644	467	177	1440	3254	310	121	1226	133	216	942	593	21456
Gtr Manchester	3392		941	3417	2857	1531	671	274	175	125	113	85	116	64	190	399	1412	99	67	103	16031
W Midlands	2763	966		828	560	702	245	321	271	181	58	66	154	141	275	633	73	362	177	128	8904
W Yorkshire	3289	3040	744		921	3519	1384	192	124	82	392	37	127	37	69	449	146	166	62	104	14884
Merseyside	1480	3004	429	1013		645	355	121	90	50	64	38	74	18	78	127	838	48	32	44	8548
S Yorkshire	1378	1192	573	3202	415		576	134	84	70	244	51	73	31	59	331	67	161	34	47	8722
Tyne & Wear	1420	707	233	1130	278	416		87	35	45	70	19	41	15	31	123	27	39	25	31	4772
Bristol	1991	232	268	184	89	130	60		311	195	9	13	106	97	7	67	6	27	77	29	3898
Cardiff	1034	152	187	77	69	44	32	398		86	9	21	35	494	9	34	2	9	70	22	2784
Plymouth	527	98	154	60	69	50	48	254	101		18	33	59	37	16	16	5	22	46	31	1644
Hull	231	135	85	433	82	255	96	15	6	19		1	10	3	8	27	11	17	7	11	1452
Medway	892	54	84	48	26	33	34	22	24	14	14		73	5	5	31	8	14	45	20	1446
Brighton	2344	103	92	85	63	74	52	118	49	22	11	45		12	5	29	3	12	77	20	3216
Swansea	337	48	91	41	38	21	27	111	690	31	2	10	18		7	17	5	6	26	16	1542
Stoke-on-Trent	140	225	207	97	97	106	22	21	5	24	7	6	8	4		46	24	62	10	10	1121
Nottingham	1290	204	278	249	82	255	84	84	23	19	20	28	36	7	14		34	163	17	27	2914
Warrington	168	1319	107	257	848	135	61	19	13	19	7	7	13	13	26	23		4	9	12	3060
Derby	211	142	215	135	68	209	24	32	22	16	19	20	9	11	35	261	10		10	25	1474
Southampton	926	62	85	50	33	31	29	127	66	45	1	20	99	11	8	14	5	17		24	1653
Milton Keynes	505	96	144	66	64	81	32	21	16	19	12	5	38	9	9	94	3	19	28		1261
Total	24318	14408	7149	13651	7725	9289	4809	4049	2749	1529	1247	1945	4343	1319	972	3947	2812	1463	1761	1297	110782

Table S6 Most popular receiving authorities for students

Arab		Chinese		Jewish		Sikh		white British	
Manchester	511	Manchester	1896	Gateshead	737	Birmingham	648	Leeds	21,222
Leeds	384	Nottingham	1458	Birmingham	552	Nottingham	450	Sheffield	19,911
Sheffield	374	Birmingham	1424	Nottingham	523	Leicester	318	Manchester	18,881
Liverpool	314	Camden	1352	Leeds	354	Manchester	235	Nottingham	16,377
Cardiff	287	Sheffield	1281	Manchester	314	Sheffield	167	Newcastle	14,639
Westminster	272	Cambridge	1096	Oxford	287	Coventry	152	Cardiff	14,125
Camden	254	Coventry	978	Cambridge	218	Hillingdon	140	Birmingham	14,012
Leicester	247	Leicester	947	Salford	167	Leeds	131	Liverpool	13,572
Nottingham	232	Oxford	900	Bristol	149	Welwyn Hatf'd	106	Bristol	11,744
Southampton	224	Liverpool	842	Liverpool	143	Southwark	103	Oxford	11,695

Numbers are the gross gain in students non-term to term time in 2011

Source: Author calculations based on analysis of 2011 standard and out-of-term output area tables (ethnic group and religion)

Table explanatory note. The SMS and the microdata both provide information on continuity or change of address from the date 12 months prior to the census and census day. That is, between a term time date in 2010 and a term time date in 2011. Use of standard census output tables and census out-of-term time tables can provide a comparison of out of term time addresses lived at at any point in the 12 months prior to the census, and the census (March 2011) term time addresses. This comparison does not provide migration information as such, but permits the popularity of various locations for non-home-based study to be identified. Using Output Area (OA) geography - the basic building blocks of census output with about 300 residents – and assuming that each is either a supplier or a receiver of students, Table S6 can be constructed. It shows the top 10 localities for study for each group. For most groups, their top 10 fall within the top 20 for all England and Wales residents. Notable exceptions are Gateshead, location of a series of seminaries rather than any secular institution, in the Jewish list, and Hillingdon, Welwyn Hatfield, and Southwark (home to Brunel University, the University of Hertfordshire, and London South Bank University, respectively) in the Sikh top 10. We can also contrast the north-south balance of place of normal residence of the groups, and the proportion of term time locations in each area (see Table S7). The disparity is particularly stark for the Jewish group.

Table S7 Proportion of E&W total found in London, SE, and E England (2011)

	Arab	Chinese	Jewish	Sikh	White British
Place of usual residence (whole group)	59%	54%	76%	47%	35%
Term time locality (students)	42%	42%	30%	36%	29%

Table S8 Inter-Super Region Migration Patterns 2010-11

		Destination				Destination as percentage of flow from origin		
Group	Origin	London	SE & E England	Rest of E & W	Total	London	SE & E England	Rest of E & W
Arab	London	13900	800	**700**	15400	90%	5%	**5%**
	SE & E England	800	**4100**	**900**	**5700**	14%	**72%**	**16%**
	Rest of England and Wales	1000	800	**16200**	**18000**	6%	4%	**90%**
	Beyond England and Wales	4800	**2600**	**8200**	**15500**	31%	**17%**	**53%**
	Total	20400	**8200**	**26000**	**54600**	37%	**15%**	**48%**
Chinese	London	**19700**	**2200**	**1700**	**23600**	**83%**	**9%**	**7%**
	SE & E England	**2400**	**11100**	**2400**	**15900**	**15%**	**70%**	**15%**
	Rest of England and Wales	**2500**	**1900**	**35700**	**40000**	**6%**	**5%**	**89%**
	Beyond England and Wales	**8600**	**8300**	**24500**	**41400**	**21%**	**20%**	**59%**
	Total	**33200**	**23400**	**64200**	**120800**	**27%**	**19%**	**53%**
Jewish	London	12700	1700	**1100**	15500	82%	11%	**7%**
	SE & E England	1200	3600	**600**	5400	22%	67%	**11%**
	Rest of England and Wales	800	400	**6600**	**7800**	10%	5%	**85%**
	Beyond England and Wales	2800	**700**	1100	4700	60%	**15%**	23%
	Total	17600	6400	**9400**	33400	53%	19%	**28%**
Sikh	London	8400	1700	**900**	11000	76%	15%	**8%**
	SE & E England	800	4700	**900**	6400	13%	73%	**14%**
	Rest of England and Wales	900	800	16400	18000	5%	4%	91%
	Beyond England and Wales	**2300**	1000	**2600**	**6000**	**38%**	17%	**43%**
	Total	12400	8100	20800	41300	30%	20%	50%
White British	London	314000	93300	43100	450400	70%	21%	10%
	SE & E England	64000	1028100	**133300**	1225500	5%	84%	**11%**
	Rest of England and Wales	49400	105000	2714500	2868900	2%	4%	95%
	Beyond England and Wales	33000	57300	108900	199200	17%	29%	55%
	Total	460400	1283800	2999800	4744000	10%	27%	63%

Bold numbers indicate that students make up at least 30% of the category
Underlined bold numbers indicate that students make up at least 60% of the category
Source: Author calculations based on 2011 SMS tables; student proportions derived from 2011 microdata

Table S9 Multinomial Logistic Regression Parameter Estimates (Arab Movers 2010-11)

super region of destination		B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
	Movers originating in London						
London	Intercept	1.74	0.76	*			
compared with	Not student	1.55	0.39	***	4.69	2.19	10.06
Rest of E & W	age up to 24	-0.23	0.38		0.80	0.38	1.69
	age 60 and over						
	intermediate quals	-0.56	0.50		0.57	0.22	1.51
	degree qualified	-0.34	0.56		0.71	0.24	2.12
	home not owned	0.49	0.43		1.64	0.71	3.79
SE & E	Intercept	-1.12	1.17				
compared with	Not student	0.68	0.59		1.98	0.63	6.23
Rest of E & W	age up to 24	-0.56	0.60		0.57	0.18	1.83
	age 60 and over						
	intermediate quals	0.46	0.83		1.59	0.31	8.10
	degree qualified	0.93	0.89		2.54	0.45	14.41
	home not owned	0.04	0.60		1.04	0.32	3.37
	Movers originating in SE & E England						
London	Intercept	-2.50	1.27	*			
compared with	Not student	2.41	0.62	***	11.08	3.31	37.12
Rest of E & W	age up to 24	0.32	0.56		1.38	0.46	4.14
	age 60 and over						
	intermediate quals	1.79	0.77	*	5.99	1.34	26.88
	degree qualified	1.25	0.86		3.48	0.65	18.69
	home not owned	-0.31	0.78		0.73	0.16	3.36
SE & E	Intercept	0.73	0.97				
compared with	Not student	1.48	0.47	**	4.40	1.75	11.09
Rest of E & W	age up to 24	0.00	0.41		1.00	0.45	2.20
	age 60 and over						
	intermediate quals	0.86	0.59		2.36	0.75	7.45
	degree qualified	0.50	0.64		1.64	0.47	5.72
	home not owned	-0.44	0.66		0.65	0.18	2.37
	Movers originating in the Rest of England & Wales						
London	Intercept	-6.59	1.01	***			
compared with	Not student	1.19	0.38	**	3.27	1.55	6.91
Rest of E & W	age up to 24	1.18	0.38	**	3.24	1.55	6.78
	age 60 and over						
	intermediate quals	1.24	0.44	**	3.45	1.46	8.14
	degree qualified	1.84	0.50	***	6.31	2.36	16.87
	home not owned	1.34	0.74		3.82	0.90	16.25
SE & E	Intercept	-3.76	0.97	***			
compared with	Not student	0.44	0.50		1.56	0.58	4.18
Rest of E & W	age up to 24	0.64	0.48		1.90	0.74	4.86
	age 60 and over						
	intermediate quals	0.47	0.53		1.59	0.57	4.49
	degree qualified	0.12	0.68		1.13	0.30	4.25
	home not owned	-0.53	0.52		0.59	0.22	1.62

Reference covariates category: student, age 25-59, home owner, with no qualifications

Significance level: *** 0.1% ** 1% * 5%

Source: Output from author-developed models as described in the text.

Table S10 Multinomial Logistic Regression Parameter Estimates (Chinese Movers 2010-11)

super region of destination		B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
	Movers originating in London						
London	Intercept	3.04	0.50	***			
compared with	Not student	0.44	0.25		1.55	0.95	2.53
Rest of E & W	age up to 24	-0.15	0.25		0.86	0.53	1.39
	age 60 and over						
	intermediate quals	-0.40	0.34		0.67	0.35	1.30
	degree qualified	0.20	0.34		1.22	0.63	2.36
	home not owned	-0.60	0.26	*	0.55	0.33	0.92
SE & E	Intercept	1.68	0.58	**			
compared with	Not student	0.37	0.31		1.44	0.78	2.67
Rest of E & W	age up to 24	-0.17	0.30		0.84	0.47	1.52
	age 60 and over						
	intermediate quals	-0.86	0.39	*	0.42	0.20	0.91
	degree qualified	-0.36	0.39		0.70	0.33	1.50
	home not owned	-1.06	0.30	***	0.35	0.20	0.62
	Movers originating in SE & E England						
London	Intercept	0.76	0.57				
compared with	Not student	0.31	0.27		1.37	0.81	2.31
Rest of E & W	age up to 24	-0.45	0.27		0.64	0.38	1.08
	age 60 and over	-1.40	0.76		0.25	0.06	1.10
	intermediate quals	-0.19	0.40		0.83	0.38	1.80
	degree qualified	0.27	0.39		1.31	0.61	2.81
	home not owned	-0.59	0.27	*	0.56	0.33	0.94
SE & E	Intercept	3.73	0.47	***			
compared with	Not student	-0.14	0.22		0.87	0.57	1.35
Rest of E & W	age up to 24	-1.14	0.23	***	0.32	0.21	0.50
	age 60 and over	-1.38	0.54	*	0.25	0.09	0.73
	intermediate quals	-1.00	0.31	**	0.37	0.20	0.68
	degree qualified	-0.90	0.32	**	0.41	0.22	0.76
	home not owned	-0.60	0.23	**	0.55	0.35	0.86
	Movers originating in the Rest of England & Wales						
London	Intercept	-5.77	0.45	***			
compared with	Not student	0.73	0.17	***	2.08	1.48	2.91
Rest of E & W	age up to 24	0.74	0.17	***	2.10	1.50	2.93
	age 60 and over	-0.31	1.03		0.73	0.10	5.55
	intermediate quals	1.70	0.35	***	5.45	2.73	10.87
	degree qualified	2.48	0.34	***	11.90	6.09	23.23
	home not owned	0.51	0.20	**	1.67	1.13	2.47
SE & E	Intercept	-4.42	0.40	***			
compared with	Not student	0.34	0.19		1.40	0.96	2.04
Rest of E & W	age up to 24	0.30	0.19		1.35	0.94	1.94
	age 60 and over	1.21	0.51	*	3.37	1.25	9.07
	intermediate quals	0.94	0.29	**	2.55	1.44	4.51
	degree qualified	1.50	0.28	***	4.48	2.59	7.78
	home not owned	0.24	0.20		1.27	0.86	1.88

Reference covariates category: student, age 25-59, home owner, with no qualifications
Significance level: *** 0.1% ** 1% * 5%
Source: Output from author-developed models as described in the text

Table S11 Multinomial Logistic Regression Parameter Estimates (Sikh Movers 2010-11)

super region of destination		B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
	Movers originating in London						
London	Intercept	1.82	0.62	**			
compared with	Not student	1.32	0.34	***	3.73	1.91	7.30
Rest of E & W	age up to 24	-0.44	0.31		0.64	0.35	1.17
	age 60 and over	-1.27	0.54	*	0.28	0.10	0.82
	intermediate quals	-0.90	0.41	*	0.41	0.18	0.91
	degree qualified	-1.17	0.42	**	0.31	0.14	0.71
	home not owned	0.72	0.26	**	2.05	1.22	3.42
SE & E	Intercept	0.59	0.73				
compared with	Not student	0.73	0.41		2.08	0.93	4.66
Rest of E & W	age up to 24	-0.27	0.36		0.77	0.38	1.55
	age 60 and over	-1.04	0.67		0.35	0.10	1.30
	intermediate quals	-0.04	0.47		0.96	0.38	2.42
	degree qualified	-0.45	0.50		0.64	0.24	1.68
	home not owned	-0.44	0.31		0.64	0.35	1.17
	Movers originating in SE & E England						
London	Intercept	-0.67	0.97				
compared with	Not student	0.74	0.50		2.11	0.79	5.58
Rest of E & W	age up to 24	-0.15	0.44		0.86	0.37	2.02
	age 60 and over	-0.07	1.47		0.93	0.05	16.53
	intermediate quals	-0.82	0.63		0.44	0.13	1.51
	degree qualified	-0.07	0.65		0.93	0.26	3.32
	home not owned	0.99	0.36	**	2.68	1.32	5.46
SE & E	Intercept	2.84	0.75	***			
compared with	Not student	0.81	0.39	*	2.25	1.05	4.80
Rest of E & W	age up to 24	-0.59	0.34		0.55	0.29	1.07
	age 60 and over	0.24	1.07		1.27	0.16	10.38
	intermediate quals	-1.76	0.49	***	0.17	0.07	0.45
	degree qualified	-1.94	0.52	***	0.14	0.05	0.40
	home not owned	0.04	0.29		1.04	0.59	1.83
	Movers originating in the Rest of England & Wales						
London	Intercept	-4.90	0.59	***			
compared with	Not student	0.18	0.32		1.20	0.64	2.25
Rest of E & W	age up to 24	0.90	0.28	**	2.45	1.42	4.23
	age 60 and over	0.35	0.76		1.42	0.32	6.24
	intermediate quals	0.61	0.38		1.84	0.87	3.88
	degree qualified	1.77	0.37	***	5.85	2.84	12.06
	home not owned	0.78	0.26	**	2.19	1.31	3.64
SE & E	Intercept	-5.16	0.67	***			
compared with	Not student	0.22	0.38		1.25	0.59	2.62
Rest of E & W	age up to 24	0.62	0.30	*	1.86	1.03	3.36
	age 60 and over	1.17	0.58	*	3.21	1.04	9.92
	intermediate quals	0.88	0.47		2.41	0.96	6.05
	degree qualified	2.25	0.45	***	9.47	3.94	22.76
	home not owned	0.43	0.27		1.54	0.90	2.63

Reference covariates category: student, age 25-59, home owner, with no qualifications
Significance level: *** 0.1% ** 1% * 5%
Source: Output from author-developed models as described in the text

Table S12 Multinomial Logistic Regression Parameter Estimates (White British Movers 2010-11)

super region of destination		B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
	Movers originating in London						
London	Intercept	1.02	0.09	***			
compared with	Not student	1.29	0.05	***	3.62	3.26	4.02
Rest of E & W	age up to 24	-0.40	0.05	***	0.67	0.61	0.73
	age 60 and over	-1.02	0.06	***	0.36	0.32	0.41
	intermediate quals	-0.48	0.06	***	0.62	0.56	0.69
	degree qualified	-0.35	0.06	***	0.71	0.63	0.79
	home not owned	0.75	0.04	***	2.12	1.97	2.28
SE & E	Intercept	0.93	0.10	***			
compared with	Not student	0.82	0.06	***	2.27	2.01	2.57
Rest of E & W	age up to 24	-0.39	0.05	***	0.68	0.61	0.75
	age 60 and over	-0.37	0.07	***	0.69	0.60	0.79
	intermediate quals	-0.44	0.06	***	0.65	0.57	0.73
	degree qualified	-0.74	0.06	***	0.48	0.42	0.54
	home not owned	-0.26	0.04	***	0.77	0.71	0.83
	Movers originating in SE & E England						
London	Intercept	-2.40	0.08	***			
compared with	Not student	0.83	0.05	***	2.30	2.10	2.52
Rest of E & W	age up to 24	0.09	0.04	*	1.10	1.02	1.18
	age 60 and over	-0.78	0.07	***	0.46	0.40	0.52
	intermediate quals	0.32	0.06	***	1.38	1.24	1.53
	degree qualified	1.25	0.06	***	3.48	3.12	3.88
	home not owned	0.59	0.04	***	1.80	1.67	1.93
SE & E	Intercept	1.45	0.05	***			
compared with	Not student	1.51	0.03	***	4.55	4.31	4.80
Rest of E & W	age up to 24	-0.30	0.03	***	0.74	0.70	0.78
	age 60 and over	-0.64	0.03	***	0.53	0.49	0.56
	intermediate quals	-0.54	0.03	***	0.58	0.55	0.61
	degree qualified	-0.93	0.03	***	0.40	0.37	0.42
	home not owned	0.14	0.02	***	1.15	1.10	1.20
	Movers originating in the Rest of England & Wales						
London	Intercept	-6.70	0.09	***			
compared with	Not student	-0.30	0.04	***	0.74	0.68	0.80
Rest of E & W	age up to 24	0.85	0.03	***	2.34	2.19	2.50
	age 60 and over	-0.06	0.08		0.94	0.81	1.10
	intermediate quals	1.51	0.07	***	4.53	3.93	5.23
	degree qualified	3.34	0.07	***	28.33	24.64	32.56
	home not owned	0.63	0.04	***	1.87	1.74	2.01
SE & E	Intercept	-4.11	0.05	***			
compared with	Not student	-0.19	0.03	***	0.83	0.78	0.88
Rest of E & W	age up to 24	0.56	0.02	***	1.75	1.67	1.83
	age 60 and over	0.64	0.04	***	1.89	1.76	2.03
	intermediate quals	0.63	0.03	***	1.88	1.77	2.00
	degree qualified	1.47	0.03	***	4.34	4.08	4.62
	home not owned	-0.09	0.02	***	0.91	0.87	0.95

Reference covariates category: student, age 25-59, home owner, with no qualifications
Significance level: *** 0.1% ** 1% * 5%
Source: Output from author-developed models as described in the text

Table S13 Probability of Selecting a Particular Destination Region

		Student status		Age			Qualification level			Home tenure	
Origin	Destination	student	not student	up to 24	25 to 59	60 and over	no quals	inter-mediate quals	degree qualified	home owned	home not owned
Arab Residents											
London	London	**0.79**	**0.93**	0.92	0.92	0.92	**0.95**	0.90	0.90	0.88	0.92
	SE & E	**0.06**	**0.03**	0.03	0.04	0.04	*0.02*	0.04	*0.05*	0.05	0.03
	Elsewhere	0.14	0.04	0.05	0.04	0.04	0.03	0.05	0.04	0.07	0.04
SE & E	London	**0.07**	**0.19**	0.15	0.11	0.11	0.06	0.16	0.13	0.12	0.13
	SE & E	**0.67**	**0.75**	0.73	0.76	0.76	0.73	0.74	0.74	0.79	0.74
	Elsewhere	0.26	0.07	0.12	0.13	0.13	0.21	0.09	0.13	0.09	0.13
Elsewhere	London	0.02	0.07	0.08	0.03	0.03	*0.02*	0.05	*0.10*	0.01	0.05
	SE & E	0.02	0.03	0.04	0.02	0.02	0.03	0.04	0.03	0.05	0.03
	Elsewhere	0.95	0.90	0.88	0.95	0.95	0.96	0.91	0.88	0.94	0.92
Chinese Residents											
London	London	**0.83**	**0.86**	0.85	0.86	0.86	*0.81*	0.84	*0.87*	0.84	0.85
	SE & E	0.10	0.09	0.09	0.10	0.10	**0.14**	0.09	0.09	**0.13**	**0.08**
	Elsewhere	0.07	0.05	0.06	0.05	0.05	0.05	0.07	0.04	0.03	0.06
SE & E	London	**0.13**	**0.19**	0.19	0.13	0.10	**0.08**	0.15	0.20	0.17	0.16
	SE & E	**0.75**	**0.69**	0.63	**0.80**	0.66	**0.85**	0.71	0.67	0.75	0.70
	Elsewhere	0.12	0.13	0.18	0.07	0.24	0.06	0.14	0.12	0.08	0.14
Elsewhere	London	**0.04**	**0.07**	0.07	0.03	0.02	**0.01**	0.05	0.10	0.03	0.06
	SE & E	0.04	0.06	0.05	0.04	0.13	**0.02**	0.05	0.08	0.04	0.05
	Elsewhere	0.92	0.87	0.88	0.92	0.85	**0.97**	0.90	0.82	0.92	0.89
Jewish Residents											
London	London	**0.52**	**0.89**	**0.85**	**0.89**	**0.70**	0.88	**0.81**	0.88	**0.81**	**0.89**
	SE & E	**0.26**	**0.08**	0.08	0.09	**0.18**	0.09	*0.12*	*0.08*	**0.16**	**0.07**
	Elsewhere	**0.23**	**0.03**	0.07	*0.02*	*0.12*	*0.02*	*0.07*	0.04	0.04	0.04
SE & E	London	**0.17**	**0.27**	**0.38**	**0.17**	**0.25**	0.19	0.19	**0.38**	0.24	0.26
	SE & E	0.68	0.67	**0.53**	0.77	0.70	0.77	0.73	**0.55**	**0.73**	**0.64**
	Elsewhere	0.15	0.05	0.09	0.05	0.05	0.04	0.08	0.07	0.04	0.10
Elsewhere	London	0.03	0.12	0.13	0.03	0.04	0.03	0.05	**0.21**	0.08	0.07
	SE & E	0.02	0.05	0.04	0.02	0.03	0.03	0.02	0.07	0.04	0.03
	Elsewhere	0.95	0.83	0.83	0.94	0.93	*0.95*	0.92	*0.72*	0.89	0.89
Sikh Residents											
London	London	**0.62**	**0.80**	0.75	*0.80*	*0.66*	**0.87**	0.74	0.74	**0.66**	**0.84**
	SE & E	0.19	0.14	0.15	0.14	0.14	**0.09**	0.18	0.15	**0.24**	**0.09**
	Elsewhere	0.19	0.07	0.10	0.07	0.20	0.04	0.08	0.10	0.10	0.06
SE & E	London	0.11	0.12	0.14	0.10	0.08	**0.05**	**0.10**	**0.22**	**0.08**	**0.18**
	SE & E	0.69	0.78	0.71	0.80	0.84	**0.92**	0.74	0.62	**0.80**	**0.72**
	Elsewhere	0.20	0.10	0.15	0.09	0.08	0.03	0.16	0.16	0.12	0.10
Elsewhere	London	0.03	0.04	0.06	0.03	0.04	*0.02*	0.03	*0.09*	**0.03**	**0.06**
	SE & E	0.03	0.03	0.04	0.02	0.07	*0.01*	0.03	*0.09*	0.03	0.04
	Elsewhere	0.94	0.93	0.90	0.95	0.89	*0.97*	0.94	*0.81*	0.95	0.90
White British Residents											
London	London	**0.55**	**0.73**	**0.70**	**0.73**	**0.56**	**0.70**	**0.67**	**0.74**	**0.58**	**0.78**
	SE & E	**0.24**	**0.20**	0.19	0.20	**0.29**	0.23	0.23	**0.17**	**0.31**	**0.15**
	Elsewhere	**0.21**	**0.08**	**0.10**	**0.07**	**0.15**	**0.06**	0.09	0.09	**0.11**	**0.07**
SE & E	London	**0.06**	**0.04**	**0.05**	0.04	0.03	**0.02**	**0.04**	**0.12**	**0.03**	**0.05**
	SE & E	**0.66**	**0.88**	**0.84**	**0.88**	**0.82**	**0.92**	**0.86**	**0.75**	0.86	0.86
	Elsewhere	**0.28**	**0.08**	**0.11**	**0.08**	**0.15**	**0.06**	**0.10**	**0.13**	**0.11**	**0.09**
Elsewhere	London	0.01	0.01	0.01	0.01	0.01	0.00	0.01	**0.05**	0.01	0.01
	SE & E	0.04	0.03	0.04	**0.02**	0.04	0.02	0.03	**0.07**	0.03	0.03
	Elsewhere	0.95	0.96	0.94	**0.97**	0.95	**0.98**	**0.96**	**0.88**	0.96	0.96

Bold indicates no overlap of 95% confidence interval with that of other categories

Italic indicates no overlap of 95% confidence interval with that of other italicised category

Source: Author prepared from logistic regression model output