

UK Internal Migration by Ethnicity

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Summary

Migration is a key component of population change for local authorities in the United Kingdom (UK). This paper assesses internal migration during the first decade of the 2000s, disaggregated by ethnic group, drawing upon data reported in the 2001 and 2011 Censuses and a time series of migration data for years between these censuses estimated by Lomax (2013). The patterns, trends and changes for the decade are identified and mapped and presented alongside an interpretation and discussion. These internal migration estimates are one component of a wider project tasked with projecting ethnic group populations in the UK (entitled NewETHPOP) and a brief summary of this project and its proposed outcomes will be offered.

KEYWORDS: Ethnicity; Migration; United Kingdom; Population Projection

1. Introduction

This paper forms part of a series of work which discusses and analyses the inputs to a model for projecting ethnic group populations in the UK entitled NewETHPOP. Migration is a key component of population change for local authorities in the United Kingdom (UK), so understanding patterns and propensities by ethnic group is crucial for accurate construction and calibration of the model. Information about the original ETHPOP model can be found in Rees *et al.* (2011; 2012). The paper proceeds as follows: the next section outlines the required migration by ethnic group input data for NewETHPOP; it then provides an overview of some patterns and propensities for migration by ethnic group which serve to highlight the importance of gaining an accurate understanding of these patterns; finally some conclusions are offered.

2. Migration inputs for NewETHPOP

The desired input data specification for the NewETHPOP projection is in- and out-migration for each one of the 406 local authorities in the UK by single year of age (0 ... 101+), gender (Male, Female) and ethnic group (1... 12). Table 1 outlines the ethnic groups used for this project. These ages, gender and the ethnic groups will be consistent with the fertility and mortality components of the model.

Because these data are not consistently available, they will need to be estimated for most areas. To provide a consistent measure, we choose as our leading indicator the Gross Migration Rate (GMR) which allows us to draw the best available data from both national and small area tables. GMR is the sum over all ages of the age specific migration rate (ASMR) which will be estimated for both in- and out-migration for each local authority. GMR measures the expected number of moves that an individual will make in their lifetime, assuming that the individual survives to the oldest age group (Boyle *et al.* 1998). The desired schedule, adapted from Pandit (1997):

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$$GMR_{ge} = \sum_{xge} M_{xge} I_{xge} \quad (1)$$

Where M_{xge} is the migration rate for age group x , gender g and ethnicity e and I_{xge} is the number of years in group xge .

Table 1 The required ethnic groups for analysis

Code	Groups included
WBI	White: British, Irish, Gypsy, Irish Traveller
WHO	White: Other White
MIX	Mixed/Multiple Ethnic Groups
IND	Asian/Asian British: Indian
PAK	Asian/Asian British: Pakistani
BAN	Asian/Asian British: Bangladeshi
CHI	Asian/Asian British: Chinese
OAS	Asian/Asian British: Other Asian
BLA	Black/Black British: African
BLC	Black/Black British: Caribbean
OBL	Black/Black British: Other Black
OTH	Other Ethnic Group

Aside from the model input, for further analysis of the time series, the flow between origin and destination (OD) is required. For this, three datasets will be drawn upon: the OD tables reported in the 2001 Census, the 2011 Census and a time series of OD data estimated by Lomax *et al.* (2013) by age and sex. The addition of the ethnic dimension will allow for substantial analysis to be undertaken on the patterns and propensities of migration. The method used will be Iterative Proportional Fitting for those years where the Origin-Destination data are not available, but the total in- and out-migration by age, sex and ethnicity for each local authority are. See Lomax (2013) for a comprehensive discussion of the requirements for estimating missing data in a matrix using IPF. The following section outlines some initial results which take advantage of the recently released 2011 Census Special Migration Statistics for England and Wales, disaggregated by ethnic group.

3. Ethnic migration: patterns and propensities

Using the 2011 Census, we can derive a range of indicators for migration by ethnic group. This provides us with an understanding of the migration patterns and propensities for our 12 ethnic groups which will inform decisions used in the projections. The propensities and patterns for the groups are very different so this section demonstrates that if the migration component were treated the same for all ethnic groups we would lose a lot of detail (especially as migration is such an important component of change).

We present three summary measures in this section, which reveal that migration by ethnic group varies considerably. Turnover and Churn are measures utilised by Dennett and Stillwell (2008) and provide an overview of the level of stability or instability in an area. High turnover and Churn indicate higher instability. Turnover can be specified as:

$$TO_i^e = \left(\frac{D_i^e + O_i^e}{P_i^e} \right) 1,000 \quad (2)$$

Where TO_i^e is turnover for a given area by ethnic group, D_i^e is inflow for that group to area i , O_i^e is outflow for that ethnic group in area i and P_i^e is the population for that area group in the area.

Churn (CH_i^e) is similar, but with the addition of moves within area (W_i^e):

$$CH_i^e = \left(\frac{D_i^e + O_i^e + W_i^e}{P_i^e} \right) 1,000 \quad (3)$$

Finally, Crude Migration Intensity (CMI) provides a simple but effective measure of the proportion of the population at risk for each ethnic group (P^e) who migrate (M^e):

$$CMI = \left(\frac{M^e}{P^e} \right) 100 \quad (4)$$

All three measures are reported here as aggregate (whole country) measures but Turnover and Churn are available by individual local authority. Figures 1 and 2 demonstrate that for the year preceding the 2011 Census, there are clear differences by ethnic group in the rates of Churn, Turnover and CMI. Figure 1 demonstrates that both Churn and Turnover are highest for the Chinese ethnic group, while the lowest values can be seen for the Pakistani and Bangladeshi groups.

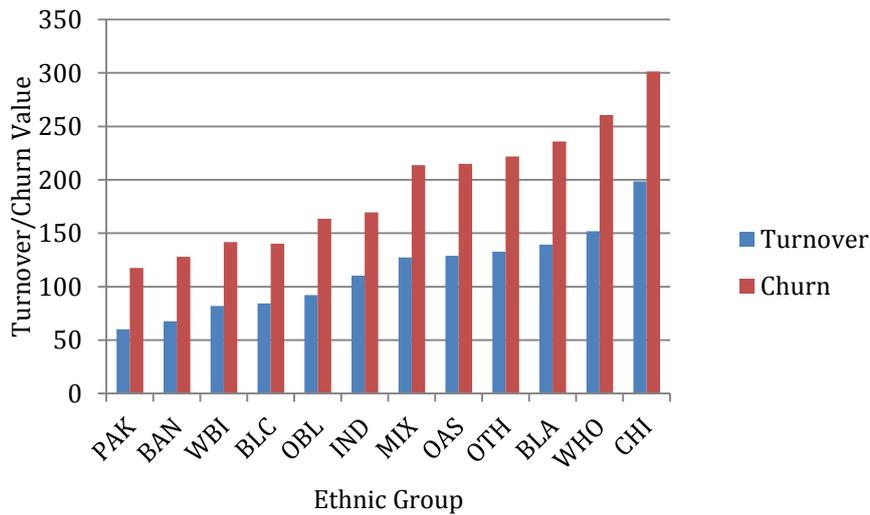


Figure 1 Aggregate Turnover and Churn for each Ethnic Group

When CMI is considered in Figure 2, we can conclude that the Chinese are the most mobile (over 20 per cent of people in this group migrated in the year before the census), closely followed by the White Other group (at 18.5 per cent). The least mobile are the Pakistani, Bangladeshi, Black Caribbean and White British groups, where fewer than 10 per cent of the population migrated during the census period.

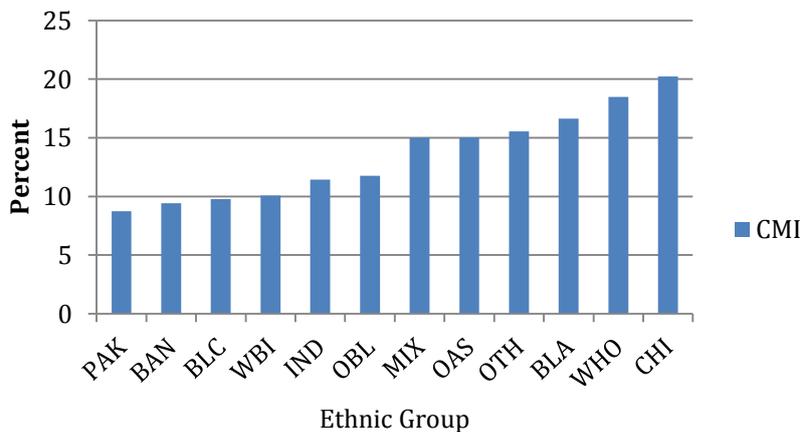


Figure 2 Crude Migration Intensity for each ethnic group

These aggregate patterns mask substantial variation at LAD scale however, which is why it is so important to consider each ethnic group at an appropriate spatial disaggregation. Figure 3 presents the net migration rate (NMR) for four ethnic groups which are at different ends of the scale for CMI, Churn and Turnover as identified above.

$$NMR = \left(\frac{D_i^e - O_i^e}{P_i^e} \right) 1,000 \quad (5)$$

Where D_i^e is the total in-migration to area i for ethnic group e , O_i^e is the total out-migration and P_i^e is the total population for that ethnic group in the area. It is expressed as a rate per 1,000 people.

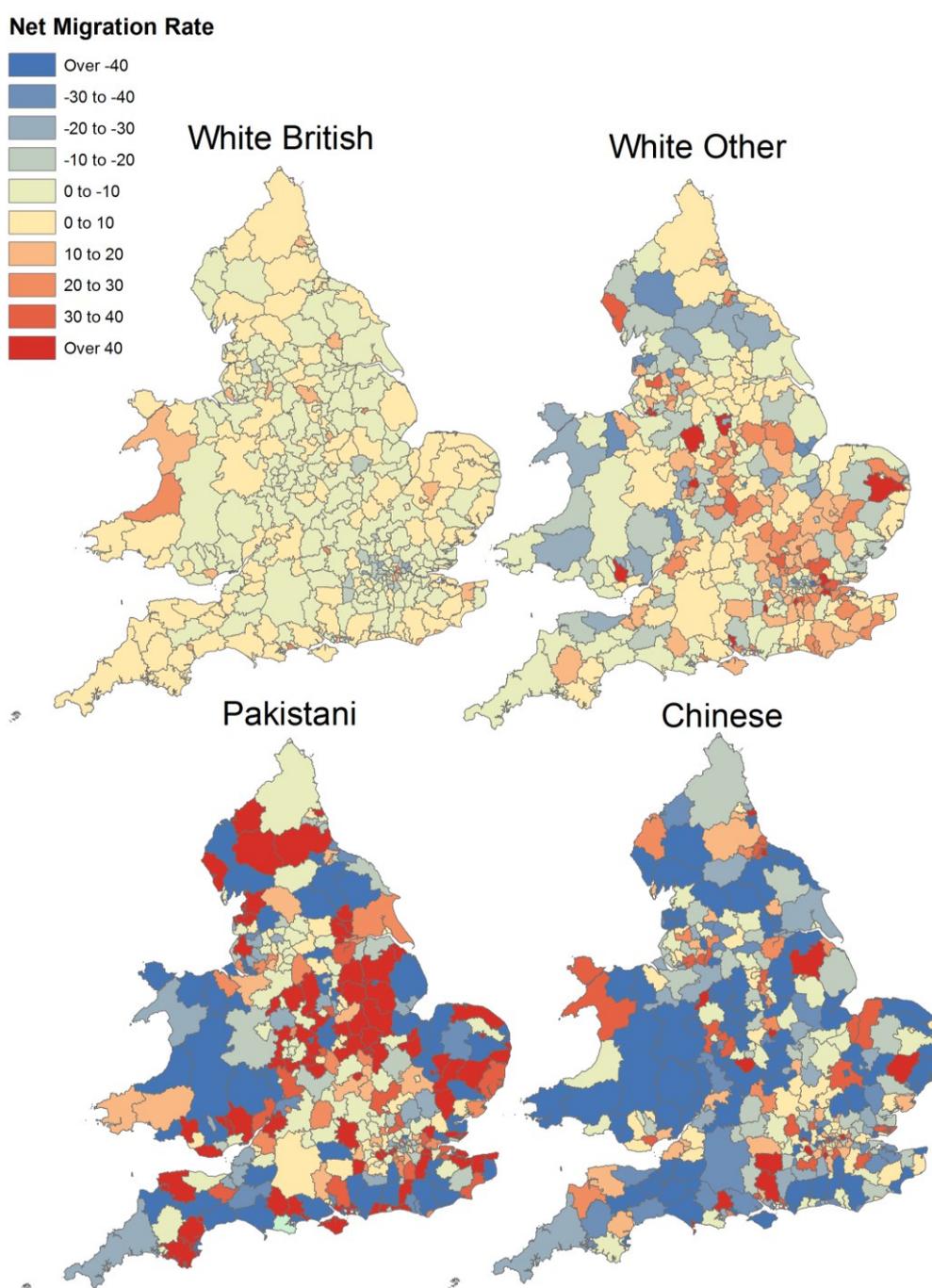


Figure 3 Net migration rates for four ethnic groups in 2011

Clear variances can be seen in Figure 3, both in terms of the values presented and the distribution of net gain and net loss across England and Wales. NMRs for the White British group are lower than the other groups, with evidence of population loss from London (where the majority of Boroughs have a rate of -20 to -30 per 1,000 people). The White Other group demonstrates similar net loss in London, but there are substantial gains to those areas surrounding the capital and to some local authorities on the south east coast. The Pakistani group shows some substantial net gain in some rural areas, especially Lincolnshire, North Derbyshire, East Yorkshire and the North of England. The Chinese group show net gains in a number of London Boroughs, and in the North East, with substantial net loss from a large number of local authorities.

There is apparently some difference in NMR for each group by size of local authority, so this final analysis assesses the relationship between Turnover, Churn and population density. Density is often used as a proxy for the level of urbanness or rurality for an area (e.g. Lomax *et al.*, 2014).

Table 2 The correlation between population density, churn and turnover for each ethnic group

Ethnic Group	Turnover	Churn
WBI	.656**	.654**
WHO	.375**	.447**
MIX	.000	.078
IND	-.021	-.003
PAK	-.205**	-.177**
BAN	-.147**	-.137*
CHI	.321**	.369**
OAS	.070	.100
BLA	-.425**	-.385**
BLC	-.328**	-.279**
OBL	-.317**	-.289**
OTH	-.175**	-.100

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

n = 326

Table 2 demonstrates that there are differences when Turnover, Churn and population density are compared, although not all results are significant. The comparison takes in to account in-, out- and within-area migration so provides a measure of stability or instability for an area's ethnic population. All black groups show a significant negative correlation between population density, Turnover and Churn suggesting that the population is less stable in rural areas for these groups. This pattern is also true for the Pakistani and Bangladeshi groups. The White British, White Other and Chinese groups demonstrate a positive correlation, suggesting that there is a higher rate of churn and turnover in urban areas than in rural areas. These results may be influenced by the fact that some more rural areas have low numbers of people in certain ethnic groups, so these populations are by default fairly stable.

4. Conclusions

This paper has outlined the migration component of a larger ethnic group population projection model entitled NewETHPOP. It has specified the required inputs to the model, made a case for understanding the patterns and propensities of migration disaggregated by ethnic group and presented some results from the recently released 2011 Census migration data by ethnic group. These results show that there is considerable variance in migration patterns and propensities by ethnic group, especially where the local authority scale is considered. There also appears to be some difference where local authorities are considered on an urban-rural continuum. Further data are being processed to produce a consistent time series estimate of migration by ethnic group which will be disaggregated by sex and by single year of age.

5. Acknowledgements

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6. Biography

Nik Lomax is a lecturer in Population and Migration. His research focuses on the demographic composition of local areas, which influences policy and resource allocation decisions. This work incorporates measurement and estimation of migration, births and deaths as well as assessment of how these patterns change over time.

Philip Rees is Emeritus Professor of Population Geography at the University of Leeds, with interests in ethnic population projections, health outcomes and ageing of the population.

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