Feng Z., van Ham M., Boyle P. & Raab G.M. (2014) A longitudinal study of migration propensities for mixed ethnic unions in England and Wales. Journal of Ethnic and Migration Studies 40 (3), 384-403.

http://dx.doi.org/10.1080/1369183X.2013.830885

A longitudinal study of migration propensities for mixed ethnic unions in England and Wales

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Abstract. *Most studies investigating residential segregation of ethnic minorities ignore the fact that the majority of adults live in couples. In recent years there has been a growth in the number of mixed-ethnic unions that involve a minority member and a white member. To our knowledge, hardly any research has been undertaken to explicitly examine whether the ethnic mix within households has an impact on the residential mobility of households in terms of the ethnic mix of destination neighbourhoods. Our study addresses this research gap and examines the tendencies of mobility among mixed-ethnic unions in comparison with their co-ethnic peers. We used data from the Longitudinal Study for England and Wales. Our statistical analysis supports the spatial assimilation theory: ethnic minorities move towards less deprived areas and to a lesser extent also towards less ethnically concentrated areas. However, the types of destination neighbourhood of minority people living in mixed-ethnic unions varied greatly with the ethnicity of the ethnic minority partner.*

Keywords: *Mixed-ethnic unions, Migration, Deprivation, Ethnic concentration, Longitudinal analysis*

INTRODUCTION

Residential integration is regarded as a measure of structural assimilation of ethnic minority populations and has drawn long-standing interest from academic studies (Allen and Turner 1996; Lieberson 1963; Massey and Denton 1985; Park and Burgess 1969; Burgess *et al.* 2005). Residential integration is not only an indicator of the degree of ethnic assimilation, but also further enhances social and cultural integration.

Conversely, ethnic segregation is deemed to hinder social interaction with majority populations, and to marginalise ethnic minority populations. Hence the British government has increasingly promoted community cohesion and residential integration.

While a body of research has examined aggregate levels of residential segregation of ethnic minority groups and the cross-sectional residential locations of ethnic minority populations at the individual level, few studies have examined the determinants of the actual residential migration of ethnic minorities in relation to characteristics of neighbourhoods of origin and destination (Finney and Simpson 2008). Little is known about how ethnic minority people move between neighbourhoods with different levels of concentration of their own groups and with different levels of deprivation, particularly in the UK.

Most existing studies of ethnic segregation ignore the fact that the majority of adults live in couples. In recent years there has been a growth in the number of mixed-ethnic couples that involve a minority ethnic group member and a white partner (Feng *et al.* 2010). We will refer to these here as mixed-ethnic unions. However, to our knowledge, almost no research has been undertaken to explicitly examine whether the ethnic mix within households has an impact on tendencies of residential migration between different types of neighbourhood. In the US, a few studies which examined the residential locations (but not mobility) of ethnic populations, have taken the ethnic mix within households into account. Ellis *et al*. (2006) used cross-sectional data in the US and came to the conclusion that mixed-ethnic households are less likely to live in minority ethnic neighbourhoods. White and Sassler (2000) also used US census data and found that Latinos and blacks who married a white spouse were more likely to reside in higher status neighbourhoods, while in contrast the marriage of a white person to a non-white person seemed to result in them residing in a lower-status neighbourhood than they might otherwise have done. Although Ellis *et al.* (2006) argued that their results are more likely due to mixed-ethnic couples choosing to live in mixed-ethnic neighbourhoods, rather than due to such neighbourhoods 'creating' these couples in the formation process, it is impossible with cross-sectional data to come to any firm conclusion about this. The same is true for the study by White and Sassler (2000) due to the use of cross-sectional data. In their review of geographies of mixed-ethnic unions, Wright *et al*. (2003) called for a longitudinal approach in the study of migration patterns of mixed-ethnic unions. Such an approach allows researchers to follow the movement of such couples over time.

With this study we contribute to the literatures on mixed ethnic unions and segregation, and use longitudinal data from the Office for National Statistics Longitudinal Study (ONS LS), to explore whether minority people in mixed-ethnic unions were more likely to move to areas which are less concentrated in their own group than ethnic minorities living in co-ethnic unions, where both partners are from the same minority ethnic group. Spatial assimilation theory also predicts that minority populations are likely to move toward less deprived neighbourhoods when they become better assimilated. Therefore in our analyses we also take the level of deprivation of neighbourhoods into account.

THEORETICAL BACKGROUND

Spatial assimilation theory asserts that ethnic minority people usually settle in an ethnic enclave when they enter the host country as immigrants. Over time they

improve their language skills, adopt local customs, accumulate human and social capital, move up the socio-economic ladder and convert their endowment into improved residential opportunities. This usually involves migration out of the ethnic enclave and into neighbourhoods which are characterised by less concentration of minority populations and by higher social status (Alba and Nee 1997; Ellis et al. 2006; Massey and Denton 1985). Spatial assimilation theory is subject to criticisms. The pluralistic theory suggests economic integration does not necessarily lead to residential integration. Minorities may choose to maintain distinct ethnic enclaves (Portes and Zhou 1993) which benefit their cultural and social network and support.

Although the overall level of segregation of non-white populations from white populations measured by index of dissimilarity is dropping from 1991 to 2001, minority ethnic groups are still shown to be segregated from the majority white population (Simpson 2007). Concerns have been raised that this segregation is partly caused by self-selected segregation whereby people choose to live with others of the same cultural or ethnic group (Clark 1992; Simpson and Finney 2009; Simon 2010). British studies have focused on the extent of geographical segregation for different ethnic minority groups while a few studies have also explored how these patterns have changed over time (Champion 1996; Johnston et al 2006; Philips 1998; Sabater 2010). Recent research at the district level has revealed that minority ethnic groups have exhibited dispersion from inner cities which were areas in high concentration of their own group (Simpson and Finney 2009; Stillwell *et al.* 2008). Catney and Simpson (2010) recently found that there is a clear social gradient in the propensity of moving away from immigrant settlement areas for minority people, where those with higher social positions were most likely to move away from the settlement areas.

Simon (2010) focused on whether ethnic populations tend to move to areas with a high concentration of their own ethnic group in Britain. Using a specially commissioned 2001 census table at the ward level, she found that people from ethnic minorities were more likely to move away from areas with a high concentration of their own group than to move away from areas with a low proportion of their own group. This finding differed from the assertion that minority people tend to self-select into areas of high ethnic concentration. Stillwell (2010) also used British aggregate census data to explore the propensity of migration among ethnic groups in London. He found that most people from non-white ethnic groups tend to move to wards with a lower proportion of those in the same ethnic group. He also found a tendency for all ethnic groups to move away from more deprived areas to less deprived areas within London.

Most of the literature on the migration patterns of ethnic minorities focuses on individuals and not on households. However, residential mobility usually results from a collective decision in which all household members play a role (Clark and Dieleman 1996; Coulter et al. 2012). Most studies do consider determinants such as household size, family type and income in the analysis of residential migration (McHugh *et al*. 1990), but studies rarely take into account the ethnic mix within the household.

In the past decades Britain has witnessed a growing ethnic diversity in populations. In England, for example, the percentage of ethnic minorities has risen from 4.6 % to 8.6 % between 1981 and 2001 (Rees and Butt 2004). It is estimated that nearly a million people report themselves as having a mixed-ethnic identity in Britain today (CRE 2006). Along with the trend in diversity the number of marriages and partnerships between people of different ethnic groups is also on the rise (Aspinall 2003; Coleman 1985; 2004; Song 2010; Voas 2009). The one per cent census sample from the Office for National Statistics (ONS) Longitudinal Study (LS) reveals that the

total number of mixed-ethnic unions reached 5,139 in 2001 in England and Wales, a 46 per cent increase from 1991 (Feng *et al.* 2010).

Unions across ethnic lines are generally viewed as an indicator of primary assimilation (Alba 1995; Gordon 1964; Kalmijn 1998). Theories of intermarriage suggest that minorities who are best assimilated are more likely to partner with a member of the majority group. Empirical studies revealed that minority individuals in mixed-ethnic unions were overrepresented among those better educated or in higher social classes, particularly for South Asians or Other Asians (Berrington 1996; Feng *et al*. 2010). However, Black people in mixed-ethnic unions were more likely to be of a lower social class or with lower qualifications.

People have preferences and aspirations on where to live and various aspects of place affect their mobility (Van Ham and Feijten 2008). Places can be 'racialised' and this contributes to the geographical polarisation of ethnic groups. The literature on ethnic segregation has revealed the multiple forces including individual preferences, structure and institutional factors which contributed to racialisation of areas (Ellis *et al.* 2012). Delaney (2002) emphasised that geography must be taken seriously in studies of ethnicity and that geography can enrich our understanding of relations between ethnic groups in a racialised world. An area with a high concentration of an ethnic group is likely to create local culture which is less favourable for people from other ethnic groups. Some authors have described experiences of being abused due to their multi-ethnic identities in ethnic neighbourhoods, no matter whether they visited predominantly white or predominantly black neighbourhoods (Hongo 1998; Mura 1998). Dalmage (2000, 95) showed that black-white mixed race families favour racially mixed neighbourhoods because they feel safer there. Ethnic background of the partner is also relevant in discriminatory housing markets where minority couples or mixed-ethnic couples are more likely to be refused to purchase a property in a white neighbourhood (White and Sassler 2000). Minority people in mixed-ethnic unions tend to keep their social network within their own groups (Benson 1981). Family ties are important factor in influencing mobility (Zorlu 2009). Therefore, they may prefer neighbourhoods where there is a mixture of both the majority and minority groups.

Ethnic minority people in mixed ethnic unions may take advantage of the social network of their partners from the majority white group to achieve upward social mobility. Recent studies in Australia (Meng and Meurs 2006) and Britain (Muttarak 2007) have shown that ethnic minority individuals in mixed-ethnic unions have a higher propensity of moving upward in terms of their income and socio-economic positions. Whether ethnic minority people who are in mixed-ethnic unions also achieve upward mobility by moving into less deprived areas, is not clear. To our knowledge there is no literature on this subject. We expect that minority people who are in mixed-ethnic unions are better integrated with the majority group and enjoy more connections with the mainstream society compared to those in co-ethnic groups. Therefore, minority individuals in mixed-ethnic unions are expected to be more likely to move into less deprived neighbourhoods than their peers in co-ethnic unions.

DATA AND METHODS

To investigate the mobility behaviour of minority people in mixed-ethnic unions we used the ONS LS data, which is a nationally representative one per cent sample of the English and Welsh population including approximately 500,000 people. The study

includes linked information from the 1971, 1981, 1991 and 2001 censuses of England and Wales. The sample was updated through intercensal births, deaths, immigrations, embarkations and re-entries. Besides census data, information is linked from the National Cancer Register, births to sample mothers and enlistments from the Armed Forces. The study was designed as a continuous, multi-cohort study with samples drawn from subsequent censuses using the same selection criteria. Data on the household members of ONS LS members are also part of the dataset, although these individuals are not followed over time. In addition to the individual-level micro data, the ONS LS include some variables from the censuses which capture the characteristics of the areas in which each sample member resided. Since the data is geo-referenced, it is possible to attach additional geographical variables – such as the ethnic composition of their neighbourhood – to individual ONS LS members.

The ethnicity question was first introduced in the 1991 census. However, the 2001 census question on ethnicity was altered to include new categories for people who reported 'mixed-ethnicity'. We have explored the possibility of constructing a classification that will allow similar ethnic groups to be identified in both 1991 and 2001 with reference to previous studies (Platt *et al.* 2005). We decided to adopt a broad classification and aggregate five groups: White, Black, South Asian, Other Asian, and Other (see Table 1). In our analyses we excluded the Other group as this is a quite heterogeneous group with very small numbers. The use of these five broad groups inevitably results in loss of detailed information on component groups. However, the classification scheme is the best we can achieve due to small number problems and it allows us to conduct a meaningful statistical analysis. The similar classifications have been also used in previous studies. For example Simon (2010) grouped Black Caribbean, Black African and Black Other in her research on migration of minorities.

Table 1 about here

Between 1991 and 2001 some individuals changed the way they categorised their ethnicity. This was most likely for members of mixed-ethnic and Black groups. In this analysis, we used the 2001 variable to establish the ethnicity for each LS member. In the 2001 census 2.9 per-cent of responses to the ethnicity question were imputed, falling to 2.1 per-cent among LS members who were linked between 1991 and 2001 (Platt *et al*. 2005). Imputation appears to be more common among those belonging to minority groups. Unfortunately the imputation is not very reliable and therefore we decided to restrict our sample to those LS members whose ethnicity was not imputed (Platt *et al.* 2005).

We chose wards (average population of 6,000) as the relevant geographies to represent large neighbourhoods. Our area ethnic composition measure is specific to each LS member's own group. So for Black people, the classification is based on the percentage of Black population in wards. Cut-off points of proportions for the Black group are chosen so that the Black population is distributed equally across neighbourhood types. We classified all wards into five groups of co-ethnic concentration separately for 1991 and 2001.

We adopted the Carstairs deprivation index as a measure of ward level deprivation. This is a census based indicator using four variables including male unemployment, over-crowding, car ownership and lower social class (Morris and Carstairs 1991). We used the quintile groups which classifies all wards into five groups with equal populations. We selected LS members who were aged 16 and over in 1991 and living

with an opposite-sex married or cohabiting partner and who were present in the 2001 census. The sample includes 1,191 Blacks, 5,611 South Asians, and 803 Other Asians.

RESULTS

We firstly describe the pattern of out-partnering for ethnic minority groups in 1991. Out-partnering here refers to a minority ethnic group member who is in a union with a white person. We have not investigated out-partnering from the perspective of members of the white majority group. Table 2 presents the number of minority LS members in co-ethnic and mixed-ethnic unions by ethnic group. Black people showed the highest propensity in out-partnering with white individuals with over a quarter of them in mixed-ethnic unions. Other Asian people also had a high rate of out-partnering with white partners at 22 %. South Asians displayed a much lower rate of out-partnering with whites at 4 %, below one fifth of the rate for Other Asians.

TABLE 2 about HERE

Based on the literature we selected a number of individual and household characteristics which we expected to affect people's migration propensity. These variables included gender, age, marital status, social class, qualifications, housing tenure, and region. Social class is based on occupation. We used Registrar General's social class and combined professional and managerial occupations into one category, and also combined partly skilled and unskilled occupations into one category. Skilled non-manual and skilled manual occupations remained separate categories. People who were unemployed, economically inactive, or did not report an occupation were combined into the 'not stated' category. Educational qualifications were measured as the highest qualification an individual obtained and categorised into two groups: with a university degree or higher qualification, and without any degree. Housing tenure was measured in three categories: owner occupied, private renting and social renting.

Table 3 shows percentages of ethnic minority members who lived with a white partner in 1991 (including cohabitation) by demographic and socioeconomic categories. Black men were the group with the highest out-partnering rate at 31%, while South Asian women had the lowest rate at 2.6%. The out-partnering rate decreased with age for Blacks and Other Asians but for South Asians the highest rate occurred for those who were in the 45 years old and over group. Ethnic minority members born in the UK had a much higher rate of living with a white partner than their peers born outside the UK. South Asians and Other Asians with a degree had higher out-partnering rates than those without a degree, for Blacks the reverse is true. Minority people who were cohabiting in 1991 were more likely to have a white partner than those who were married. For South Asians and Other Asians it was people in the higher social classes (professional and managerial) who had the highest out-partnering rates, and in contrast, for Blacks it was people in the lower social classes who had the highest out-partnering rates. An important conclusion from Table 3 is that there appear to be differences between ethnic groups in the propensity to be in a mixed-ethnic union with a white partner.

Table 3 about here

Table 4 shows the distribution of minority LS members in different types of residential neighbourhoods according to the concentration of their own group. We can see that for minority members in co-ethnic unions the distribution of LS members by the concentration of their own group in 1991 was more or less evenly distributed across the concentration quintiles. In contrast, for minority members in mixed-ethnic unions we find that their proportion decreases sharply with the concentration of their own group in 1991. For both co-ethnic and mixed ethnic uions the pattern in 2001 was similar to that in 1991. The UK patterns shown in Table 4 are consistent with what was found by Ellis *et al*. (2006), who showed in the Los Angles region that immigrants in mixed-ethnic couples were more likely to reside in areas with a lower proportion of their own group.

Table 5 provides proportions of minority LS members by different types of residential neighbourhoods according to deprivation measured by the Carstairs deprivation index. We can see that minority people in co-ethnic unions are very likely to live in the most deprived neighbourhoods (true for all three ethnic groups). In contrast, minority people in mixed-ethnic unions with whites are more likely to live in less deprived areas. Again, the pattern in 2001 was almost identical to that in 1991 although for Blacks in co-ethnic unions there was a growth in proportion of living in the most deprived areas. The results support the findings reported in the U.S. by White and Sassler (2000) where minority people who partnered white people were overrepresented in high status neighbourhoods.

Table 4 about here

Table 5 about here

In order to analyse neighbourhood (ward) migration characterised by the concentration of the ethnic-group-specific concentration, we compared the 1991 neighbourhood type with the 2001 neighbourhood type. Based on this we constructed a variable indicating movement status between 1991 and 2001. If the LS member did not move between 1991 and 2001 or the LS member moved between similar types of neighbourhoods, movement status was coded as 0. If the LS member moved to a ward with a higher own group concentration, movement status was coded as 1. If the LS member moved to a ward with a lower own group concentration, movement status was coded as 2. In total, about a third of the minority people (2551 people) moved out of their original residence to a new residence between 1991 and 2001. However, only 19 % of them (1411) moved to a neighbourhood with a different level of own group concentration.

Multinomial logistic regression models were used to estimate probabilities of moving into less concentrated areas and moving into more concentrated areas in comparison to staying in the same area or moving within the same type of area. We controlled for gender, age, country of birth, marital status, educational qualifications, social class, number of children, housing tenure and region in 1991. Table 6 presents the results from multinomial logistic regressions for three ethnic groups. For each group, the first column shows the parameter estimates referring to the log odds ratio of moving into more ethnically concentrated areas and the second column presents the parameter estimates referring to the log odds ratios of moving into less ethnically concentrated areas.

The variable of main interest identifies those in co- and mixed-ethnic unions (union type in Table 6). The largest effect found is the much lower propensity of Other

Asians in mixed-ethnic couples, compared to those in co-ethnic couples, to move into areas with a high concentration of their own ethnic group. Although the parameters for blacks or South Asians are also negative, the effects are not significant. Therefore, there is no evidence that Black or South Asian mixed-ethnic couples are more or less likely than co-ethnic couples to move into less concentrated areas.

Before we look at these results in more detail, we first discuss the effects of the control variables on the probability to move to more concentrated areas. The control variables show that there is no gender effect on the probability of moving to more concentrated areas. For South Asians, people aged 16-34 year olds in 1991 appeared to be more likely to move to more concentrated areas while people aged 45 and over in 1991 were less likely to move into more concentrated neighbourhoods. For Blacks the pattern was the same as that for South Asians. Country of birth only had an effect on the probability to move into more concentrated areas for Blacks and Other Asians. Blacks born in the UK were more likely to move into more concentrated areas whilst Other Asians born in the UK showed a lower propensity to move into more concentrated areas. Marital status did not have any significant effects on mobility. Education was only significant for South Asians and blacks. Blacks who had a degree were more likely to move into more concentrated areas whilst South Asians who had a degree appeared to be less likely to move into more concentrated areas. There are some scattered effects of social class and region on mobility. Notable are the effects of housing tenure. Compared to owners, people from all three minority groups who rent privately were more likely to move to more concentrated areas. For South Asians this is also the case when they rented from local governments.

With regard to moving to less concentrated areas we find that South Asian women were less likely to move to less concentrated areas than South Asian men. Age again appeared to be an important factor. People aged 16-34 in 1991 were more likely to move into less concentrated area while people aged 45 and over in 1991 were less likely to move into less concentrated neighbourhoods. There was no effect of country of birth and marital stats. The education effect showed that Black people with a degree were more likely to move into less concentrated neighbourhoods than those without a degree. Other Asians also showed similar trends to that for Blacks. South Asians and Other Asians with 2 or more children were less likely to move into less concentrated areas. Black people in professional and managerial occupations, skilled non-manual occupations, and skilled manual occupations, and South Asians in professional and managerial occupations or skilled manual occupations, had a higher propensity of moving into less concentrated areas. However, on balance, South Asian people in professional and managerial occupations were more likely to move into more concentrated areas than to move into less concentrated areas (0.383 vs 0.305). South Asians and Other Asians who rented from private landlords showed a higher propensity of moving into areas with a lower concentration of their own groups. Blacks in the South region were less likely to move into less concentrated areas while South Asians in Midlands were more likely to move into less concentrated areas.

Table 6 about here

To facilitate the interpretation of the effects of being in a mixed-ethnic union on mobility, we calculated relative risks. The relative risk is the ratio of the probability of moving into less concentrated areas and the probability of moving into more concentrated areas. Therefore, if the relative risk is equal to one it indicates that the probability of moving into less concentrated areas is equal to the probability of

moving into more concentrated areas. A value above one indicates a higher risk of moving into less concentrated areas while a value below one indicates otherwise. Figure 1 presents the adjusted relative risks of moving into a less concentrated area over moving into more concentrated areas. South Asians and Other Asians both had higher propensities to move into less concentrated areas, whereas the propensities for Blacks were not markedly different from unity (1.00 for co-ethnic unions and 1.09 for mixed-ethnic unions). For South Asians and Other Asians those in mixed-ethnic unions had markedly higher relative risks of moving into less concentrated areas than those in co-ethnic unions.

Fig 1 about here

We used a similar method to analyse the probability of moving into less and more deprived areas. For this purpose we compared the level of deprivation of the ward where each ethnic minority member lived in 1991 and 2001. We identified three types of outcomes as our dependent variable: did not move or moved within the same type of area; moved into a less deprived area; and moved into a more deprived area. About 12%, 11% and 18% of respectively Blacks, South Asians and Other Asians moved to a neighbourhood with a different level of deprivation. Again we used multinomial regression to estimate the probability of moving into different types of neighbourhood controlling for age, country of birth, social class, education level, housing tenure, number of children and region.

We found that only Black people who were in mixed-ethnic unions with a white partner exhibited a higher propensity to move into both more and less deprived areas compared with their peers in co-ethnic unions. There were no significant effects for the other ethnic groups. We now briefly describe the effects of the control variables. There is no notable effect of gender on the probability to move into less deprived areas. Age appeared to be an important factor. People aged 16-34 were more likely to move into less deprived areas while people aged 45 and over were less likely to move into less deprived areas. First generation Other Asians who were born outside the UK were less likely to move into less deprived areas while there are no significant effects for Black and South Asian people who were born abroad compared to those born in the UK. Cohabiting blacks are more likely to move into less deprived areas than married blacks. And Blacks and Other Asians with a degree were more likely to move to less deprived areas than those without a degree. South Asians who had 2 or more children seemed to be less likely to move to less deprived areas compared to those without children. Black and South Asians in professional and managerial, skilled non-manual and skilled manual occupations were more likely to move to less deprived areas.

The parameters for the probability of moving to more deprived areas show that younger people were more likely to move to more deprived areas and older people were less likely to move to more deprived areas. There are no significant effects of gender, country of birth, marital status, and qualifications. South Asians and Other Asians with 3 or more children were less likely to move to more deprived areas. Interestingly South Asians in professional or managerial occupations, and skilled non-manual occupations were more likely to move into more deprived areas. People in private renting also showed a higher propensity to move into more deprived areas.

Table 7 about here

Again we calculated relative risks of moving into less deprived areas over moving into more deprived areas. Figure 2 shows that all ethnic minority people were more likely to move into less deprived areas than to move into more deprived areas. South Asians who partnered Whites were slightly more likely to move into less deprived areas than co-ethnic South Asian couples. In contrast, Blacks and Other Asians in mixed-ethnic unions, were slightly less likely to move into less deprived areas than those in co-ethnic unions.

Fig 2 about here

CONCLUSIONS

Theories of spatial assimilation describe a progressive process where over time ethnic minority populations move into the neighbourhoods where majority white populations dominate historically. There is little longitudinal research which has directly examined the patterns and determinants of ethnic minority migration into different types of neighbourhoods measured by ethnic mix or by deprivation. And there is almost no research which investigates whether the ethnic mix *within* households has an impact on the migration propensity of ethnic minorities. In this paper we used 1991 and 2001 ONS LS data to explore whether minority people who partnered a white individual displayed different migration propensities in comparison with their peers who were in co-ethnic unions.

Using longitudinal data we found that the tendencies of moving into different types of areas vary between different ethnic groups and different union types. Black people did not show a different propensity of moving to black concentration neighbourhoods, regardless of whether they lived with a Black partner or a White partner. While South Asians and Other Asians had higher relative risks of moving into low concentration neighbourhoods if they were in mixed-ethnic unions with white partners. With regard to the level of deprivation of destination neighbourhoods we found that all ethnic minority individuals were more likely to move into more affluent neighbourhoods, regardless of whether their partner was white or co-ethnic. The difference between relative risks of moving into less deprived areas in comparison with moving into more deprived areas did not vary much by whether minority people lived with white or co-ethnic partners. Our study supports the spatial assimilation theory; ethnic minorities disperse towards less deprived areas and towards less ethnically concentrated areas. However, whether minority people in mixed-ethnic unions were more likely to leave ethnic concentration areas varies between ethnic groups.

In our descriptive analyses we found that in 1991 minority people who were in mixed-ethnic unions with white people were overrepresented in areas with a lower concentration of their own group and overrepresented in areas with a lower level of deprivation in comparison with their peers in co-ethnic unions. These findings are in line with previous studies from the US (Ellis *et al.* 2006; White and Sassler 2000) which argued that it is more likely that these mixed unions moved to these lower concentration areas than that they formed there. However, using cross-sectional data it was impossible to separate the different processes. Using longitudinal data we found that South Asians in mixed-ethnic unions do show a higher risk of moving into neighbourhoods with a lower level of concentration of their own group while Blacks in mixed-ethnic unions did not show an elevated risk. In a separate study we found that Blacks who lived in an area with a lower level of concentration of their own

group exhibited a higher propensity of out-partnering with white people (Feng *et al.* 2010). Therefore from these two findings we would argue that the residential pattern identified by Ellis *et al.* (2006) for the US was not necessarily a result of migration preference for minority people in mixed-ethnic unions. For the UK we found that for Blacks the pattern might result largely from the formation process while for South Asians the pattern might result from both formation and migration processes.

The ONS LS was a unique and very rich dataset, which provided the best available data for the analysis of migration tendencies for minority people by union status in England and Wales. However, we acknowledge that the data has some limitations. Firstly we had to combine the original detailed ethnic groups, such as Black Caribbean and Black African and Black Other, into one Black group due to small numbers in the dataset. Therefore we have not been able to reveal the potential heterogeneity within the Black group in their propensity of residential mobility. Secondly, we did not have information on migration between two censuses. Some couples might move more than once between 1991 and 2001. The British Household Panel Survey (BHPS) is a panel dataset which provides annual information for sample couples. However, the number of mixed-ethnic unions in the BHPS is too few for a meaningful statistical analysis. Thirdly, the other limitation is that self-reported ethnicity can change over time. It is not a big problem for South Asians as they reported their ethnic identity very consistently over time. But the consistency was not high for Black Others who were part of the Black group in our analysis (Platt *et al.* 2005). Therefore our results here should be treated with caution. Nevertheless, by using unique longitudinal data, our paper makes important contributions to our understanding of migration of minority populations by comparing propensities of people who lived with white or with co-ethnic partners. An increase in mixed-ethnic unions and in dispersal of minorities from ethnic enclaves or deprived areas will lead to changes in patterns of ethnic segregation. Further research is needed to explore whether ethnic mix in the households and in local areas is associated with socio-economic integration of minority populations.

Acknowledgements

This research is funded by the ESRC under the Understanding Population Trends and Processes (UPTAP) programme (Award Ref: RES-163-25-0045). The permission of the Office for National Statistics to use the Longitudinal Study is gratefully acknowledged, as is the help provided by Julian Buxton and Rachel Stuchbury of the Centre for Longitudinal Study Information & User Support (CeLSIUS). CeLSIUS is supported by the ESRC Census of Population Programme (Award Ref: RES-348-25-0004). The data from ONS is Crown copyright and reproduced with the permission of the controller of HMSO and Queen's Printer for Scotland. This work uses research datasets which may not exactly reproduce National Statistics aggregates. The authors alone are responsible for the interpretation of the results.

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Table 1. 1991 and 2001 census ethnicity definitions

Ethnic group	1991 (ETHNIC9)	2001 (ETHGRP0)
White	White	British Irish Other white
Black	Black-Caribbean Black-African Black other Black & White	Black-Caribbean Black-African Other Black White & Black Caribbean White & Black African
South Asian	Indian Pakistani Bangladeshi	Indian Pakistani Bangladeshi
Other Asian	Chinese Other Asian	Chinese Other Asian
Other	Other ethnic group: non-mixed origin Other ethnic group: mixed origin	White & Asian Other mixed Other ethnic group

Source: ONS LS

Table 2. Number of LS members by ethnic group and union type

Ethnic group	Co-ethnic unions	Mixed-ethnic unions	% mixed-ethnic unions
Black	868	323	27.1
South Asian	5399	212	3.8
Other Asian	625	178	22.2

Source: ONS LS, authors' calculations

Table 3. Percentage of ethnic minorities living with a white partner by ethnic group

Variable	Category	Black		South Asian		Other Asian	
		%	total	%	total	%	total
Gender	Males	31.2	638	4.8	2921	21.9	433
	Females	22.4	553	2.6	2690	22.4	370
Age	16-34	37.8	365	3.5	1985	26.1	238
	35-44	27.1	284	3.4	1894	22.1	303
	45+	19.9	542	4.6	1732	18.7	262
Country of birth	Outside the UK	17.2	884	3.2	5326	20.8	768
	In the UK	55.7	307	14.4	285	51.4	35
Marital status	Married	24.8	1040	3.4	5563	20.3	774
	Cohabiting	43.0	151	50.0	48	72.4	29
Qualification	No degree	27.7	1101	3.0	5170	19.7	665
	With degree	20.0	90	12.5	441	34.1	138
Social class	Professional & managerial	24.4	295	10.2	1138	35.6	275
	Skilled non-manual	27.2	158	5.4	722	24.0	154
	Skilled manual	28.2	241	2.6	859	11.1	108
	Partly skilled & unskilled	28.3	315	1.4	1313	16.7	96
	Not stated	28.0	182	1.0	1579	8.8	170

Source: ONS LS, Authors' calculations

Table 4. Proportion of minority LS members living in different types of neighbourhoods according to own ethnic concentration in 1991 and 2001

Union type	Concentration	1991			2001		
		Black	South Asian	Other Asian	Black	South Asian	Other Asian
Co-ethnic	1-Lowest	19.2	20.8	21.6	16.7	19.1	21.4
	2	23.3	19.3	25.6	23.0	20.2	25.0
	3	20.6	20.4	20.0	20.7	20.7	18.7
	4	19.4	20.3	19.5	20.5	20.2	16.5
	5-Highest	17.5	19.2	13.3	19.0	19.8	18.4
Mixed-ethnic	1-Lowest	64.1	67.9	52.8	63.8	69.3	53.4
	2	15.8	15.6	18.0	19.5	17.5	16.3
	3	10.2	9.0	15.2	7.7	7.5	15.7
	4	<10.2	<9.0*	8.4	5.6	<7.5*	<15.7
	5-Highest	<10.2*	<9.0*	5.6	3.4	<7.5*	<15.7*

Source: ONS LS, Authors' calculations

* % calculated based on counts below 10, thus the actual figures are not shown due to disclosure control.

Table 5. Proportion of minority LS members living in different types of neighbourhoods according to deprivation in 1991 and 2001

Union type	Deprivation	1991			2001		
		Black	South Asian	Other Asian	Black	South Asian	Other Asian
Co-ethnic	1-least deprived	4.1	6.5	13.6	5.2	6.4	14.0
	2	4.8	8.2	14.9	7.3	8.9	16.2
	3	15.0	12.2	15.8	10.5	12.5	16.1
	4	24.9	19.7	23.0	20.3	18.5	21.5
	5-most deprived	51.2	53.4	32.6	56.8	53.7	32.3
Mixed-ethnic	1-least deprived	15.8	22.6	23.6	13.6	26.4	31.5
	2	11.1	18.4	21.9	14.2	18.4	18.5
	3	18.6	17.9	20.2	21.7	17.0	20.2
	4	22.9	23.1	18.5	23.8	22.2	14.6
	5-most deprived	31.6	17.9	15.7	26.6	16.0	15.2

Source: ONS LS, Authors' calculations

Table 6. Coefficients (log-odds of moving) estimated from multinomial logit regression on probability of moving into neighbourhoods of lower or higher concentration

Variable	Category	Black		South Asian		Other Asian	
		More concentrated (N=106)	Less concentrated (N=106)	More concentrated (N=455)	Less concentrated (N=565)	More concentrated (N=86)	Less concentrated (N=93)
Union type	Mixed	-0.328	-0.246	-0.496	0.030	-0.830**	-0.473
Gender	Female	-0.301	-0.332	-0.111	-0.395***	-0.339	0.110
Age	16-34	0.783***	0.635**	0.423***	0.707***	0.474	1.096***
	45+	-0.993***	-1.046***	-0.493***	-0.540***	-0.841***	-0.262
	Outside UK	0.518*	-0.276	-0.275	-0.113	-1.286***	-0.641
Marital status		0.132	0.460	0.229	-0.376	0.897	-0.291
Qualification	Degree	0.750**	1.148***	-0.366*	0.231	-0.100	0.664*
Number of children	1	-0.358	-0.040	0.127	-0.069	0.353	-0.181
	2	-0.540*	-0.426	-0.066	-0.199	0.317	0.018
	3+	-0.747**	-0.338	-0.233	-0.274*	-0.546	-0.669*
Social class	Professional & managerial	0.363	0.842**	0.383**	0.305**	0.410	-0.439
	Skilled non-manual	0.237	1.065***	0.076	0.151	0.483	-0.351
	Skilled manual	0.140	0.684*	-0.226	0.285*	0.148	-0.368
	Not stated	0.621*	0.971	-0.068	0.216	0.506	-0.380
Housing tenure	Social renting	0.247	0.473*	0.843***	0.254	-0.256	0.185
	Private renting	1.527***	0.456	0.725***	0.711***	1.517***	1.012**
Region	North West/Wales	1.573	0.272	0.296	0.323	1.519**	0.939
	Midlands	0.472	0.246	-0.009	0.414**	0.760	0.726
	South	1.394	-1.094*	-0.132	-0.070	0.432	0.309
	London	2.165**	0.510	0.339*	0.193	0.862	1.017*
Constant		-4.260	-2.883	-2.240	-2.293	-1.744	-2.015

* 10% ** 5% *** 1% significant level. Reference categories: co-ethnic unions, male, age 35-44, born in the UK, married, with no degree, no children, partly or unskilled occupations, owner occupied, North East and Yorkshire & Humberside

Table 7. Coefficient (log-odds of moving) estimates from multinomial logit regression on probability of moving into less deprived and into more deprived neighbourhoods

Variable	Category	Black		South Asian		Other Asian	
		Less deprived (n=143)	More deprived (n=88)	Less deprived (n=621)	More deprived (n=327)	Less deprived (n=145)	More deprived (n=71)
Union type	Mixed-ethnic	0.383*	0.525**	0.299	0.140	-0.163	-0.053
Gender	Female	-0.336	-0.090	-0.079	-0.135	-0.381*	-0.180
Age	16-34	0.365	0.622*	0.745***	0.272**	0.571**	0.481
	45+	-1.261***	-0.660*	-0.568***	-0.545***	-1.288***	-0.320
Country of Birth	Outside UK	0.066	-0.394	-0.062	0.002	-0.904**	0.937
Marital status	Cohabiting	0.624**	-0.060	-0.035	0.114	0.295	-0.298
Qualification	Degree	0.695**	0.205	0.247	-0.170	0.528*	-0.298
Number of children	1	-0.091	-0.141	-0.109	-0.155	-0.222	0.201
	2	-0.249	-0.381	-0.444***	-0.238	-0.392	-0.458
	3+	-0.426	-0.421	-0.666***	-0.569***	-0.980***	-0.886**
Social Class	Professional & managerial	1.399***	0.304	0.672***	0.865***	-0.250	0.393
	Skilled non-manual	1.203***	-0.336	0.625***	0.495**	0.242	0.418
	Skilled manual	0.958***	-0.146	0.314**	-0.136	0.184	-0.024
	Not stated	1.136***	0.610*	-0.014	0.032	0.297	0.308
Housing tenure	Social renting	-0.187	0.044	-0.030	0.101	-0.979**	-0.224
	Private renting	0.528	1.474***	0.488**	1.070***	0.563	1.120**
Region	North West / Wales	-0.107	0.449	0.340	0.536	0.376	0.557
	Midlands	-0.507	0.764	0.343*	0.198	-0.084	0.274
	South	-0.239	1.074	0.346*	0.855***	-0.163	0.492
	London	-0.677*	1.232	0.052	0.673**	-0.268	-0.093
Constant		-2.202	-3.326	-2.309	-3.130	0.149	-3.227

* 10% ** 5% *** 1% significant level. Reference categories: co-ethnic unions, male, age 35-44, born in the UK, married, with no degree, no children, partly or unskilled occupations, owner occupied, North East and Yorkshire & Humberside

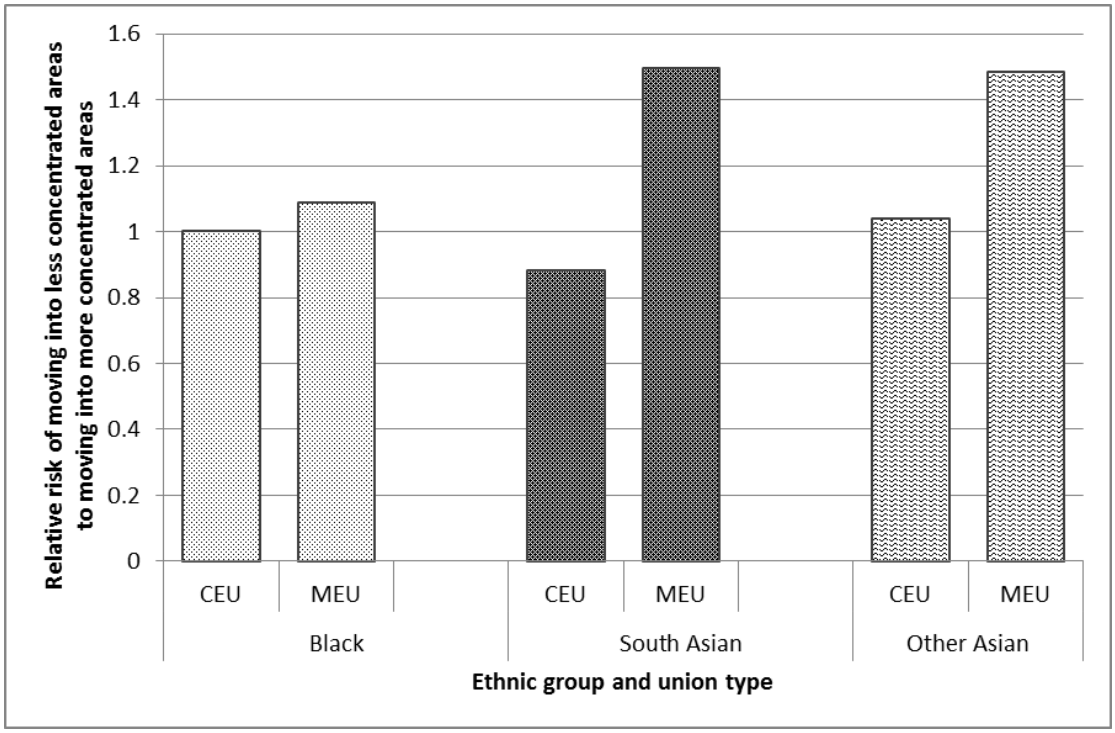

Figure 1. Relative risks of moving into less concentrated areas compared to moving into more concentrated areas, adjusted for factors in Table 7 (CEU: co-ethnic unions; MEU: mixed-ethnic unions)

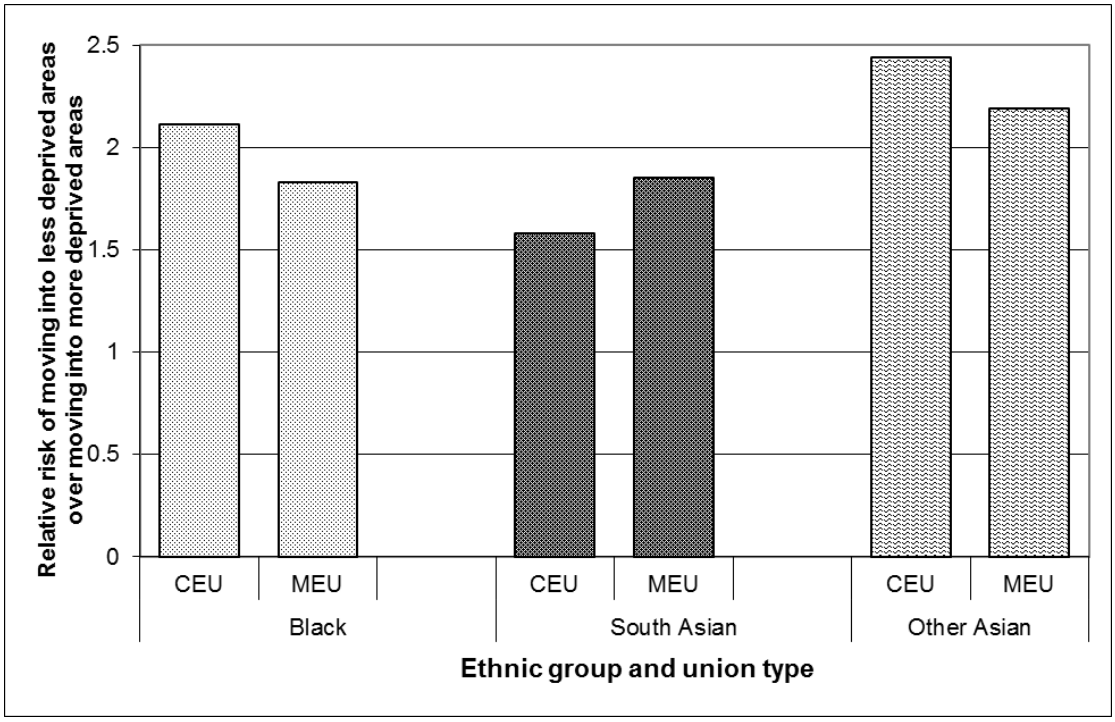

Figure 2. Relative risk of moving into less deprived areas compared to moving into more deprived areas, adjusted for factors in Table 8 (CEU: co-ethnic unions; MEU: mixed-ethnic unions)