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**Selective Migration and Neighbourhood Deprivation: evidence from 2001
Census Migration Data for England and Scotland**

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ABSTRACT

Selective migration flows are thought to be a key means by which the intended benefits of area-based initiatives “leak out” of target areas, undermining their effectiveness. To date, direct evidence on the scale or impact of these flows has been weak since they are difficult to assess using survey methods. Using 2001 Census data for England and Scotland, this paper looks at the scale and composition of flows for deprived neighbourhoods with a particular focus on educational attainment. It analyses the impacts of these flows on the characteristics of deprived areas, exploring differences between regions and comparing neighbourhoods involved in two major regeneration programmes with other deprived areas. The paper shows that selective migration flows do serve to reinforce spatial segregation but that the scale of this effect appears very modest and that impacts vary between regions. Flows for the regeneration areas are less adverse than for similarly deprived neighbourhoods.

1. INTRODUCTION

There is a long-standing concern in both academic research and public policy over the extent of spatial segregation within towns and cities and, consequently, over the concentration of the poorest households into “deprived neighbourhoods”. One kind of policy response (most common in North America) has been to promote mobility of individuals away from deprived neighbourhoods so limiting individual exposure to these “damaging environments”, as for example in the Gautreaux project (Rosenbaum et al, 2002). Such approaches are open to the criticism that, while they may benefit the individuals who move (and the evidence on that question is mixed), this is at the expense of the neighbourhoods they leave. An alternative response (more common in European countries) has been to target selected areas with additional resources through “area-based initiatives” (ABIs) (Parkinson, 1998). ABIs have been criticised on several grounds: that they tackle symptoms (localised concentrations of deprived households) rather than underlying causes (social inequality); that they are low-cost, tokenistic interventions done largely for political reasons; and that they are inequitable as only a limited proportion of “deprived households” live in “deprived neighbourhoods” (Kleinman, 1999). This paper is concerned with another possible criticism: that area-based initiatives are likely to be ineffective means of reducing spatial segregation because selective migration processes constantly erode any gains – the idea that “those who get on, get out” (SEU, 2001) to be replaced by individuals with higher levels of need.

The concern with selective migration also fuels the debate about whether the role of regeneration programmes is to target “people” or “places”. People-focussed interventions are those designed to alleviate household deprivation directly; examples might include the provision of additional health services, support for children or families, or employment and training programmes. Place-focussed interventions try to enhance the quality of housing and the physical environment, partly to benefit existing residents and partly to make the area attractive to less deprived households, thereby reducing the concentration of deprivation; examples might include housing or environmental improvements, or the improvement or social or economic amenities. Critics of people-focussed approaches argue that concentrating effort on individuals means that programme benefits may “leak away” as people move out of the area so that the overall level of deprivation may remain unchanged in spite of many years of intensive local action (McGregor and Fitzpatrick, 1995; ODPM Select Committee, 2003). It has even been argued that particular kinds of people-focussed programmes, notably those that focus on improving residents’ employability, may exacerbate selective migration by

increasing the number of people able to move and speeding up their replacement with households with higher levels of need (Cheshire et al, 2003). In this view, equal or greater effort needs to be spent on improving places. .

In spite of the importance of this issue, the evidence on the scale, composition and impacts of migration flows for deprived areas is very poor. The main reason is that these flows are very difficult to measure reliably (Dabinett et al, 2001; Carley, 2002; PMSU/ODPM, 2005). While it is relatively easy to identify recent in-migrants to an area through surveys, it is much more difficult to obtain a representative sample of those who have left. Without an understanding of the flows in both directions, it is impossible to assess the impacts of migration on area characteristics. This paper takes advantage of the unique strengths of the Census through the question on place of residence one year previously. This makes it possible to identify both in- and out-migrants for every small area in the country. From this, it is possible to measure the net flows and to assess the impact these have on the characteristics of the area.

The structure of the paper is as follows. The second section reviews the existing research on the scale and impacts of net migration in deprived neighbourhoods. It examines the different approaches that have been taken to try to shed light on this issue, and assesses their relative merits as well as the evidence they provide. The third section provides details on the data sources and methods used for the present study. Findings are presented in the fourth section while the fifth provides conclusions and a discussion of the implications for policy.

2. THE EVIDENCE ON NET MIGRATION FLOWS AND SPATIAL SEGREGATION

A number of studies provide evidence on selective migration in deprived neighbourhoods. For the purposes of this review, these have been grouped by the methods or data sources used because these have a significant bearing on the quality and scope of the evidence the studies offer. There are two issues in particular. First, the general measurement issues of bias and reliability are particularly important in this area. Net migration flows cannot be measured directly but must be derived from differences between in- and out-migration flows. A bias in the measurement of either of the latter will provide misleading estimates of the first, particular since net flows are often quite small in relation to gross flows. Second, caution

needs to be exercised with studies which cover only a limited number of deprived neighbourhoods. Many moves from one deprived area end in another deprived area. They are “horizontal” rather than “vertical” (Bailey and Livingston, 2007; Green et al, 2005) so one neighbourhood’s loss may be another’s gain.

Administrative data

One approach to assessing migration flows for deprived areas is to make use of administrative data from systems with much broader geographic coverage, most obviously national welfare benefit systems. This has the advantage that it should provide equal coverage of in- and out-movers and that it should be possible to extract large quantities of information relatively cheaply. The main limitation is that these sources provide flows only for part of the population (e.g. claimants of the relevant benefit) so they cannot reveal the impact of migration on neighbourhood population composition.

As part of their study of the impacts of employment and training programmes in a major Scottish ABI (the Urban Partnership areas), McGregor and Fitzpatrick (1995) used administrative data on claimants of unemployment benefit. One significant finding is that there are substantial flows of claimants into and out of the target areas and that, by comparison, net flows are very small. In one neighbourhood over a three year period, around 2000 unemployed people moved in or out but the net flow was a reduction in the number of unemployed of just 11. In the other area, with gross flows of around 600, there was a net reduction of 100. Without knowing how many *employed* people moved in each direction, however, it is impossible to identify the impacts of migration on the unemployment rates for these areas.

Mover surveys

Several studies of ABIs have used surveys of movers to try to identify the scale of selective migration. In contrast to administrative data, mover surveys offer the possibility of a representative picture covering all migrants. The main limitation of these surveys is the difficulty and expense of tracking out-migrants, with the danger that samples of this critical group tend to be small and may suffer from bias. In particular, there is a concern that more disadvantaged out-migrants with less stable lives will be more difficult to trace and will therefore be under-represented. This may lead to out-migrants appearing to be less

disadvantaged than they would otherwise, exaggerating any tendency for selective migration to increase the concentration of deprivation in more deprived neighbourhoods.

Four British mover surveys have been identified (McGregor and Fitzpatrick, 1995; Cheshire et al, 1998; Green et al, 2005; CRESR, 2005). Perhaps the most widely cited of these was Cheshire et al's (1998) evaluation of the Harlesden City Challenge (Cheshire et al, 1998), elements of which are also reported in Cheshire et al (2003). (City Challenge was an English neighbourhood regeneration programme which targetted large-scale, multi-sectoral interventions on 31 deprived neighbourhoods during the early 1990s (Russell et al, 2000).) Cheshire et al found that unemployment rates in the target area actually rose relative to other deprived areas over the five-year life of the initiative in spite of evidence of an effective programme of training and employment interventions. This finding was attributed directly to selective migration. The movers survey showed that out-migrants were significantly less likely to be unemployed than in-movers (9 per cent compared with 21 per cent for in-movers) and a much higher proportion were in full-time employment.

"Paradoxically, therefore, the very success of the programme - because it had induced selective mobility - had led to the deterioration in the unemployment rate of current residents at the end of the period." (Cheshire et al, 2003: p92)

CRESR (2005) is based on data from very large surveys undertaken for the national evaluation of the the largest neighbourhood regeneration programme under New Labour, the New Deal for Communities. As expected, the survey found that out-movers were less disadvantaged than either in-movers or stayers (CRESR 2005). The other two studies also report the same overall result.

In spite of the apparent unanimity, some caution should be exercised with these results. First, the samples involved are relatively small. In the case of Cheshire et al (1998), they are based on 63 in-movers and 48 out-movers (p92). CRESR (2005) is the largest in scale but still manages just 335 out-migrants. All four studies had fewer out-migrants than in-migrants in their samples. With Cheshire et al (1998), out-migrants were traced through the Electoral Register. Where movers were identified, there was a very high response rate (personal correspondence with the author). Nevertheless, there must be a concern that this source is likely to cover only a proportion of those leaving the target area, Raising questions about

possible bias. With the CRESR (2005) study, the response rate for the movers survey was 51 per cent compared with 70 per cent for the main household survey (MORI, 2005). Furthermore, all of these studies focus on a small number of deprived areas. None provides an overview of selective migration across all deprived areas.

National surveys

A broader picture of the impacts of migration flows on deprived areas could be gathered from national surveys using either a longitudinal design or a retrospective question on mobility. For longitudinal designs, the ability of the survey to retain migrants and more deprived households will be a key concern while, for retrospective questions, the usual problems of recall will apply. Overall sample sizes will also be an issue, especially for cross-sectional surveys, given the need to capture sufficient numbers migrating from deprived neighbourhoods over a single time-period.

In spite of the possibilities, such sources have not been exploited to a great extent to date. An extensive literature has examined the determinants of individual mobility, discussing in particular the relative contribution of housing and neighbourhood factors (for example: Speare, 1974; Newman and Duncan, 1979; Lee et al, 1994; Clark and Huang, 2003; Kearns and Parkes, 2003). As South and Crowder (1997) note, much of this literature takes no account of the geography of moves – whether individuals move to or from deprived neighbourhoods. Their study addressed that gap, and has been followed by further studies in the US and Europe (South et al, 2005; Bolt and van Kempen, 2003). These studies identify the factors which tend to aid escape from poor neighbourhoods or reduce the risk of entry. They confirm that more affluent groups are more likely to leave poor neighbourhoods and that less affluent groups are more likely to enter, supporting what South and Crowder (1997) term the human capital/life-stage model of mobility (the idea that individuals adjust their neighbourhood location to fit with changes in income driven largely driven by human capital development but also by changing preferences over the life-course such as the arrival of children). Quillian (2003) extends this work by looking at the factors that influence durations in poor neighbourhoods. What none of these studies do is to document the scale of the effect that these differentials in migration have on the concentration of poverty or the extent of segregation.

Census- and register-based studies

Census- or register-based studies offer several potential advantages over both administrative data and survey-based approaches. With (near) full population coverage, they not only provide evidence on all population groups, they are also able to provide detail for all deprived areas. This can be used to explore how selective migration flows are affected by the broader economic and housing market context within which the neighbourhood is located, through comparisons between regions and/or time periods. The main limitation is the relative lack of information on personal or household characteristics; with the UK Census, at least, almost all the personal data relates to the Census date, after any moves have taken place. In spite of these advantages, relatively little analysis has been conducted on the impacts of migration at the neighbourhood level.

The strongest evidence comes from two Scaninavian studies that take advantage of the sophisticated register-based datasets. Graversen et al (1997) examine migration in to and out of “problem housing estates” in Denmark in the early 1990s. Andersson and Bråmån (2004) look at flows for deprived areas in the Stockholm region. In both studies, net migration flows were seen to reinforce deprivation in these areas. A range of outcome measures were employed including labour market position, income and benefit dependency. Andersson and Bråmån (2004) also show that the patterns were consistent in two time periods with very different macro-economic context (the early 1990s when the Swedish economy saw a severe recession and the late 1990s when it grew fairly strongly).

In the study that comes closest to the analysis reported in this paper, Nord (1998) uses US Census data to examine differences in poverty-specific migration flows between poor and non-poor areas although his geographic focus is the US county, broadly equivalent to local authorities in the UK in terms of scale. Nord shows that net flows act to reinforce spatial segregation and, uniquely among studies examined here, he estimates the scale of the impact this had. Looking at the working-age population (30-64), the poorest quintile of counties has a poverty rate of 16 per cent and the effect of migration flows is to raise this by 0.5 per cent over the five years to 1990 (p338). The richest quintile has a poverty rate of 4 per cent and migration flows reduce this by 0.3 per cent. With an initial gap of 12 percentage points, migration flows act to increase this by 0.7 per cent. Furthermore, it is the net migration flows of both poor and non-poor that contribute to these outcomes. Poor people move away from affluent areas and to poor areas while non-poor move in the opposite direction.

Conclusions

There is a consistent finding across the studies reviewed here that net migration flows act to maintain the gap between deprived areas and the average and, as a result, work to undermine efforts to regenerate deprived neighbourhoods. At the same time, doubts remain over the scale of these effects, especially in the UK where there has been a heavy reliance on mover surveys in particular. Net flows appear small in relation to in- and out-flows and therefore sensitive to the measurement of the latter. Although there is some evidence that net migration flows are not affected by macro-economic cycles, relatively little is known about whether they vary between different areas of the UK which have quite different labour and housing market contexts.

3. DATA AND METHODS

This paper is based largely on 2001 Census data for neighbourhoods in England and Scotland, although it also uses data from official indices of area deprivation. Separate analyses must be conducted for each country as the deprivation indices are not directly comparable. A decision was therefore taken to limit the analyses to the two largest countries within the UK, omitting Wales and Northern Ireland, on grounds of resources and the likely diminishing returns that would be obtained from extending the work further. Population coverage within the Census is very high (an estimated 94 per cent in England and 96 per cent in Scotland) and the response rate to the question on migration is also very good (95 per cent in both countries) (ONS, 2005; GRO, 2003a). The ‘One Number Census’ methodology makes adjustments to the data before publication to allow for both individual and item non-response (ONS, 2005). Missing values are imputed or estimated by using the characteristics of an individual or household believed to be similar in other respects. All analyses in this paper are based on the adjusted data.

Alongside its strengths, certain limitations should be acknowledged. First, around nine per cent of all moves are missed where people move more than once within a year, or move but die before the Census (Rees et al, 2002). Second, around one-in-ten responses to the migration question has been imputed as noted above. Wholly-missing individuals are most likely to be in their early twenties but there is also a higher incidence for very young children

(0-4) and the oldest age groups. These are also the groups with the highest migration rates. It follows that migration data is particularly dependent on the quality of the imputation methodology. Census microdata have been used to examine the determinants of individual migration and, with that data, it is possible to distinguish between actual and imputed responses. Although not published, these analyses showed that the determinants were very similar for the two groups. This is not the same, however, as being able to say that imputed records correctly represent the missing responses. Third, Census data is affected by the steps taken to protect individual confidentiality, introducing limited random error (ONS, 2005).

In this paper, the geographical units chosen to represent the “neighbourhood” are the Super Output Area (SOA) for England and the Datazone (DZ) for Scotland. These units were developed as part of the programme of work to improve neighbourhood statistics in the UK in support of neighbourhood renewal efforts, and they have several advantages over previous alternatives such as the ward. They are smaller than wards and closer to most individuals’ understanding of their neighbourhood; SOAs have an average population of 1500 and DZs 750 whereas wards averaged around 5-6,000. They are also much more even in size across the country whereas wards tended to be several times larger in cities than in rural areas. The new units have a policy significance as they are employed for official area deprivation indices - the Indices of Multiple Deprivation (IMD) for England and the Scottish Indices of Multiple Deprivation (SIMD) (ODPM, 2004; Scottish Executive, 2004). Based largely on data for 2001/2 and using very similar methods, these Indices provide a relative ranking of neighbourhoods within each country (Noble et al, 2006). As they are purely relative measures, the Indices cannot be used to make comparisons between countries so all analyses are conducted for England and Scotland separately.

The present study is based on a precise definition of the term “migrant” rather than just taking all those captured by the Census question. First, our definition focuses on the household population only. Residents in communal establishments are excluded on the basis that their moves are either determined by others (prisoners or those in military establishments, for example) or based on a very limited choice (students in halls or residence or people in nursing homes, for example). In addition, many of those in communal establishments have little or no interaction with the neighbourhood population or are very transient (prisoners or students, for example). Second, people who moved into the UK from elsewhere are excluded (around 5 per cent of all migrants). The Census does not capture those who left the UK so

including in-migrants from overseas would create an imbalance in the measurement of net flows. Third, people with no usual address one year before the Census were treated as non-migrants, i.e. it was assumed that they had been resident in the same area where they were enumerated at the Census. As no information is recorded on where they were usually resident one year before the Census, it is not possible to assess whether they have made a contribution to net flows or not.

The Census provides very little information on individual characteristics one year prior to the Census, with the exception of place of residence. This is an important limitation if we want to examine the impacts of migration flows on the social composition of an area. In some cases, characteristics one year ago can be inferred (age, ethnicity) but others may have altered. The analysis presented below therefore focuses on educational attainment for 25-74 year olds. The small size of the flows in many areas led to the use of a binary classification of qualifications (higher or lower) to minimise the impacts of disclosure control measures on the data. The classification of educational attainment varies slightly between England and Scotland, reflecting differences in educational systems. In England, the lower category covers people with qualifications up to and including “Level 1” in the Census classification (CSEs only, 1-4 O-levels, or NVQ Level 1, for example). In Scotland, it covers those up to and including “Group 1” (any number of Standard Grades or an SVQ Level 2, for example). The Scottish threshold is therefore slightly higher but, in both cases, the cut-off divides the population 25-74 broadly in half.

It would have been desirable to examine a wider range of indicators of deprivation such as employment status or health. Confidentiality constraints meant that Office for National Statistics would only produce the necessary tables for migration broken down by a single variable (in addition to age). Education appeared the strongest single indicator for a number of reasons. First, there is a strong correlation between educational attainment and deprivation, at both individual and area level. Having fewer qualifications puts an individual at much greater risk of unemployment or low income, and hence of poverty (Card and DiNardo, 2002; Bailey, 2006). According to the Census data, the most deprived decile of areas in England has 72 per cent of people with low qualifications compared to just 42 per cent in the least deprived decile. In Scotland, the comparable figures are 80 and 35 per cent. Second, educational attainment changes only slowly over time and gains cannot be reversed. We can therefore say with some confidence how net migration flows have altered the educational

composition of each area even though attainment has only been measured after moves have taken place; Green et al (2005) use educational attainment for the same reason. This assumption is obviously more problematic for young adults who may have completed their formal education in the year prior to the Census and that is why we exclude those under 25 from this analysis. Third, there is little reason to think that a move would be strongly linked to a change in educational attainment, at least for those 25 and over. With employment status, on the other hand, a change in status may be a trigger for a move or a move may be undertaken to change the status. It is much easier therefore to talk about the impacts of migration on the educational composition of an area than to talk about the impacts on employment composition.

The Census does not record whether migrants lived in a household or in a communal establishment one year prior to the Census, only their place of origin. Implicitly, a migrant's status in this respect is assumed not to have changed. As a result, areas that have a communal establishment with a large number of people arriving from or going to private households each year can see a severe distortion in their migration figures. People who leave the communal establishment and are part of the household population at the Census are recorded as out-migrants from the *household* population at their place of origin. In Scotland, for example, Datazone 2028 close to Edinburgh University records a net loss of 1470 people from the household population (against a total at the Census date of 724) and a net increase of 1474 in the communal establishment population (against a total at the Census of 1638). The areas thought to be most affected (around one per cent of the total) are therefore omitted; these are fairly evenly distributed across deprivation deciles.

Part of the analysis below seeks to compare selective migration patterns in different regional contexts within England. With net migration flows broken down by educational attainment and by deprivation, there is a limit to the number of geographic categories that could be covered before noise in the data became problematic. It was also important to work with whole functional city-regions to avoid migration related to life-stage (of young people into the most urban areas, and older adults with families towards suburbs and smaller towns) distorting the picture. A decision was therefore taken to use four broad regional groups, chosen to maximise differences in housing and labour market context. The North covers three standard regions (North-East, North-West and Yorkshire and Humberside) while the Midlands covers two (West Midlands, East Midlands). London is the city-region is defined

according to the boundaries developed by Coombes et al (1996) to encompass the wider functional area; the population is approximately double that for the administrative area known as Greater London. South is the rest of the three regions (East, South-East and South-West) outside London. Based on a range of indicators, the North and the Midlands are both characterised by relatively loose housing and labour markets compared with London and the South, with the North especially weak.

4. FINDINGS

Net population change

For neighbourhoods in England and Scotland, the average net change in population through within-UK migration was close to zero as there were no significant population shifts between England, Scotland and other parts of the UK in 2000-1. As noted above, however, around one per cent of neighbourhoods has the kind of communal establishment that appears to lead to a highly distorted measurement of migration flows for the household population. Since these areas all record net migration losses for the household population, excluding them leaves the remainder with an average net migration gain of 0.2 per cent in both England and Scotland. All subsequent results quoted are based on this slightly reduced set of neighbourhoods unless otherwise noted.

There are wide variations in net flows between neighbourhoods (Table 1). At the extremes, net change can vary from a decline of 34 per cent to a growth of 152 per cent in a single year – a range of over 180 per cent. The asymmetry reflects the choice of population at the start of the time period as the denominator when calculating rates. The Scottish figures have greater variations, and this is partly, if not wholly, because the spatial units there are much smaller. More commonly, net change is relatively modest. Half the neighbourhoods in England have a net change between +/- 1.3 per cent while, in Scotland, half fall between +1.4/-1.8 per cent. In absolute terms, this represents a net change of +19 to -19 people out of an average population of 1480 in England and +12 to -14 people out of 760 in Scotland. Since an individual household can comprise several people, it is clear that the timing of one or two moves relative to the Census could have a significant impact on the net migration figures, especially in Scotland. We should be cautious about attaching too much importance to figures for individual neighbourhoods, especially when looking at flows for population sub-groups.

Table 1: Net change in population at neighbourhood level

	England		Scotland	
	All	Excluding areas with distorted flows	All	Excluding areas with distorted flows
Mean	0.0%	0.2%	0.0%	0.2%
25 th centile	-1.3%	-1.3%	-1.8%	-1.8%
75 th centile	+1.3%	+1.3%	+1.4%	+1.4%
Minimum	-72.2%	-34.0%	-67.0%	-20.9%
Maximum	+70.1%	+70.1%	+151.7%	+151.7%
Number of areas	32,482	32,130	6,505	6,463
Average population	1476	1476	761	760

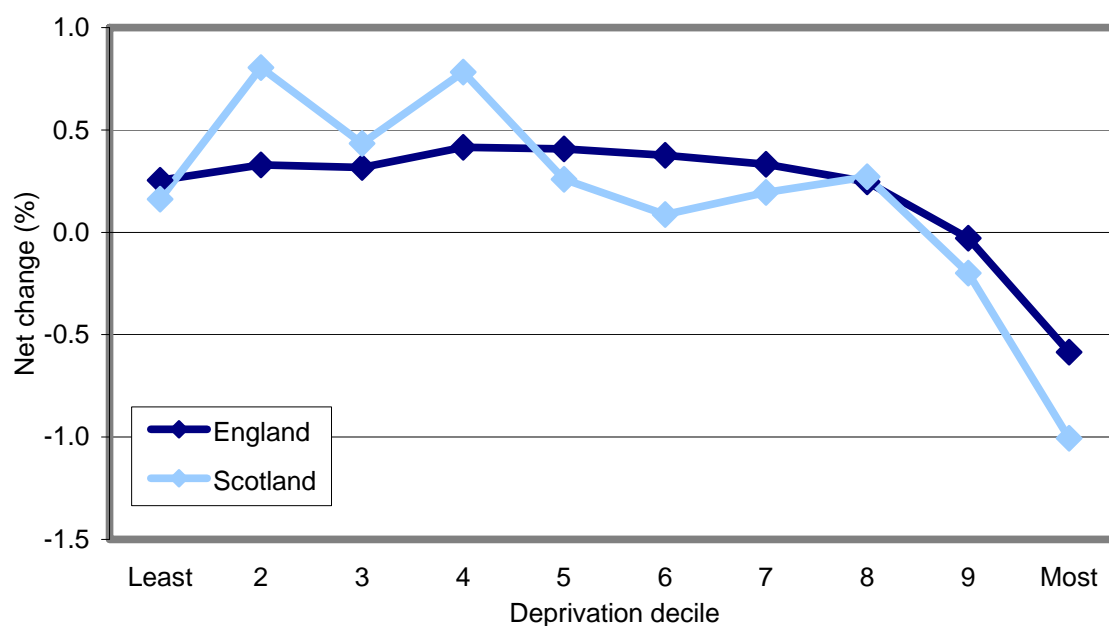
Source: Census 2001, Commissioned Tables C0572, © Crown copyright.

Within England, there has been a long-standing drift of population from north to south but this has been slowing in recent years. On the Census figures for within-UK migration, there was no net shift between north and south with both growing at close to the average rate of England as a whole of 0.2 per cent. The Midlands gained very marginally through migration while the North lost, also very marginally. There was a significant redistribution within the south, however, as the South (outside London) gained (up 0.6 per cent) while London lost (down 0.1 per cent). The smaller administrative area of Greater London lost population through migration at a faster rate than the broader functional area, reflecting decentralisation within the region. It should be noted that these migration figures do not show total population change; that requires additional data on natural change (births/deaths) and international migration.

Within-UK migration flows result in a shift in the population from more deprived to less deprived areas. In both countries, the most deprived decile saw a significant net migration loss (0.6 per cent in England, 1.0 per cent in Scotland) while Deciles 1 to 8 all saw growth (Figure 1). There were notable differences between the regions within England (Figure 2). (In the regional analyses here and below, deprivation decile is based on rankings of neighbourhoods within each region to prevent the concentration of deprived areas in the north

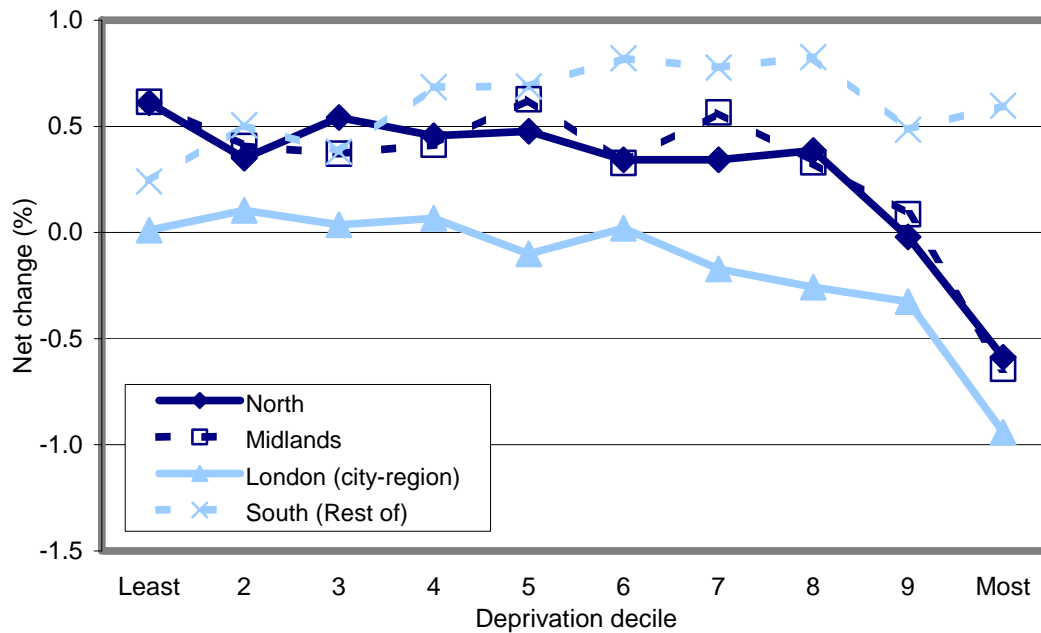
distorting results.) In the North, Midlands and London, the pattern follows the national picture with a net shift from the most deprived decile to the rest, with the shift slightly greater in the North and Midlands. In the South, however, net migration tends to redistribute population from less deprived to more deprived areas. Here it appears that tight housing markets have led to demand for even the most deprived neighbourhoods. In the slacker regions, by contrast, relatively easy access to alternative areas has led to net migration losses for deprived areas. As Meen et al (2005) argue, the new outflows from deprived areas may be exacerbating problems of low demand in these regions. Again, it should be noted that the migration figures do not show the impacts of natural population change or international migration, nor do they tell us about new household formation rates or housing supply changes in these areas.

Figure 1: Net migration by deprivation



Source: Census 2001, Commissioned Tables C0572, © Crown copyright. Neighbourhoods where communal establishments severely distort household flows are excluded (around one per cent of areas).

Figure 2: Net migration by deprivation – English regions

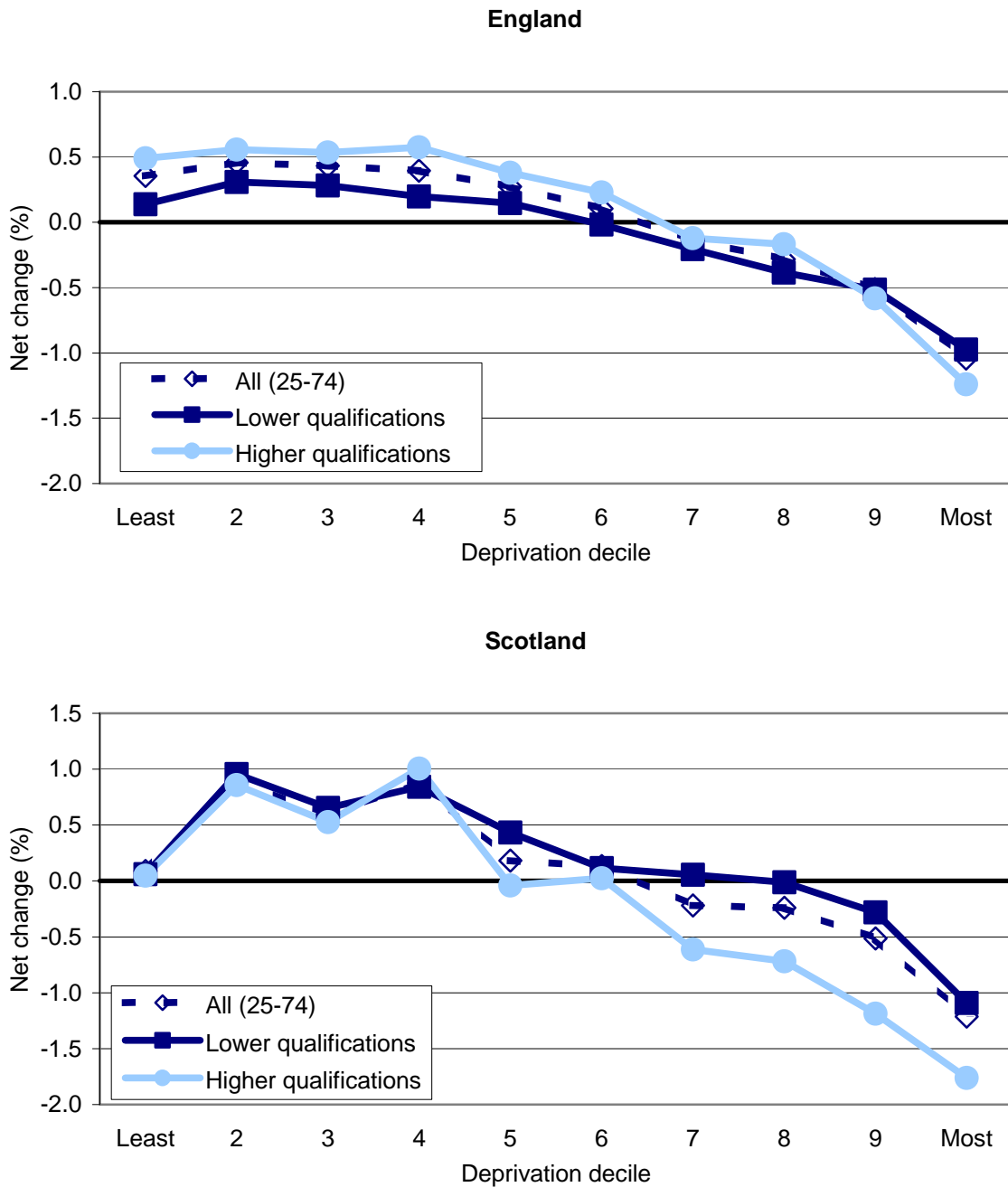


Source: Census 2001, Commissioned Tables C0572, © Crown copyright. 'London' is the city-region defined by Coombes et al (1996). Neighbourhoods where communal establishments severely distort household flows are excluded (around one per cent of areas).

Area change

One approach to analysing selective migration is to look at the relative net migration rates for those with higher and lower qualifications (Figure 3). In both England and Scotland, the Census data shows that net migration flows do act to reinforce existing patterns of spatial segregation. The flows increased the concentration of people with lower qualifications into more deprived areas while reducing their concentration in the less deprived areas. In England, the least deprived deciles (1-8) saw greater net in-migration for higher educational groups than lower, indicating that the social mix in these areas was becoming less deprived as a result of migration. Conversely, for more deprived deciles (9 to 10), there was faster net out-migration for higher educational groups suggesting the social mix was becoming more deprived. In Scotland, there was a slight difference as almost every type of area saw net in-migration of people with lower qualifications at a faster rate than for people with higher qualifications as Scotland lost higher-qualified individuals to England overall. The gap between the two was much greater for more deprived areas (deciles 7 to 10), however, so the impact of migration on social mix is the same as in England.

Figure 3: Net migration by deprivation and regional group



Source: Census 2001, Commissioned Tables C0572, © Crown copyright. Neighbourhoods where communal establishments severely distort household flows are excluded (around one per cent of areas).

Having shown that migration flows reinforce segregation, the next question is how strong this effect is. Figure 4 shows the change in social mix resulting from net migration alone. The change is derived by comparing the proportion of people in each area with low educational attainment at the Census with the proportion one year previously, allocating migrants back to their place of origin. By doing this, the impacts of migration on population mix are isolated from the effects of any other changes (births, deaths and maturation). As previously, there is an assumption here that migrants' educational status has not changed in that period (or, at least, that the effects of any changes are similar across the different areas). This seems a reasonable assumption given the analysis is limited to those over 25 years old. For England, Figure 4 shows that the proportion of people with lower qualifications fell in the less deprived areas but rose in the more deprived areas as expected. In Scotland, while there is more noise in the data, there is a similar trend. Few of the Scottish areas saw a fall in the proportion with low qualifications due to the net loss of more qualified people from Scotland to England, as noted above.

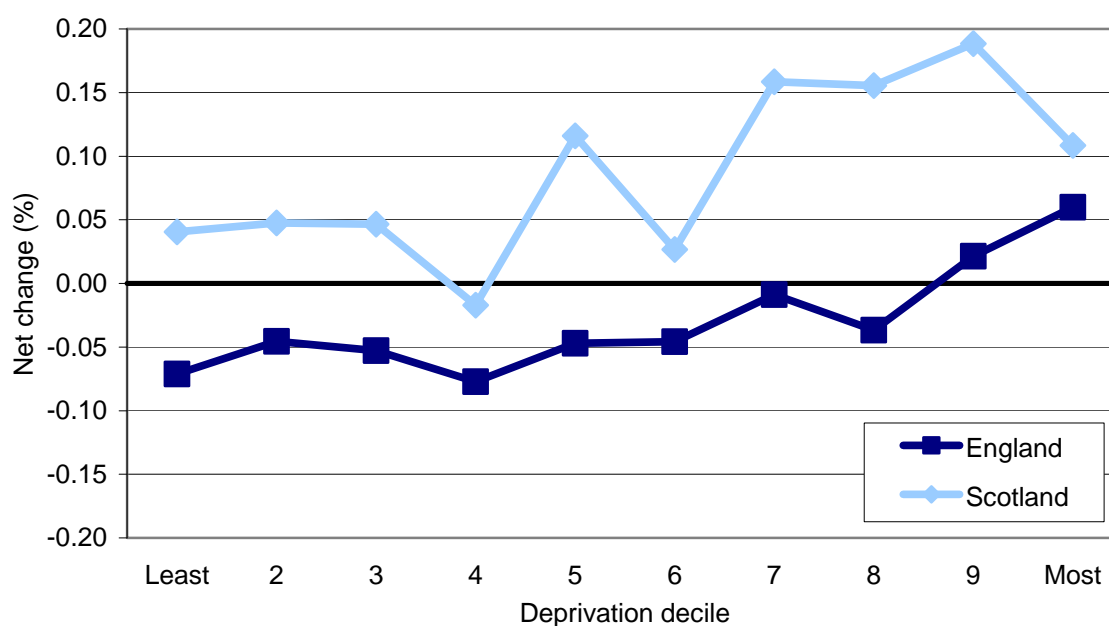
It is also important to note, however, that the scale of the migration effect appears relatively small. For the most deprived decile in England, net migration flows in the year leading up to the Census effectively raised the proportion of people with lower qualifications by 0.06 per cent. For the least deprived decile, net flows reduced the concentration of the same group by 0.07 per cent. The average fell by 0.03 per cent due partly to in-migration from other parts of the UK (and partly to the omission of areas with flows distorted by communal establishments). The gap between most and least deprived areas rose by 0.13 per cent due to net migration, compared with a starting gap of 30 per cent. In Scotland, we need to average over two deciles to smooth out the ups and downs. Doing this, the proportion of people in the most deprived two deciles with lower qualifications rose by 0.15 per cent. The concentration of this group into the least deprived two deciles also rose but more slowly (by 0.04 per cent) so that the gap increased by 0.10 per cent, compared with a starting gap of 40 per cent. Overall, the average across all areas rose by 0.09 per cent.

To put this in perspective, we can look at what other changes might be needed to prevent the gap between deprived areas and the average from widening. This might be achieved either by "people-based" interventions designed to upgrade the qualifications of existing residents or by "place-based" interventions designed to attract or retain people with higher qualifications. In England, the gap between the most deprived areas and the average widened by 0.13 per

cent. The movement of 1.3 residents per thousand from lower to higher educational groups would be enough to offset this change. Alternatively, the attraction of 1.8 more in-migrants with higher educational qualifications per thousand residents would achieve the same result. In Scotland, the equivalent figures were 1.0 and 1.3 per thousand residents as the gap widened by 0.10 per cent. On the face of it, these do not appear to be impossible targets.

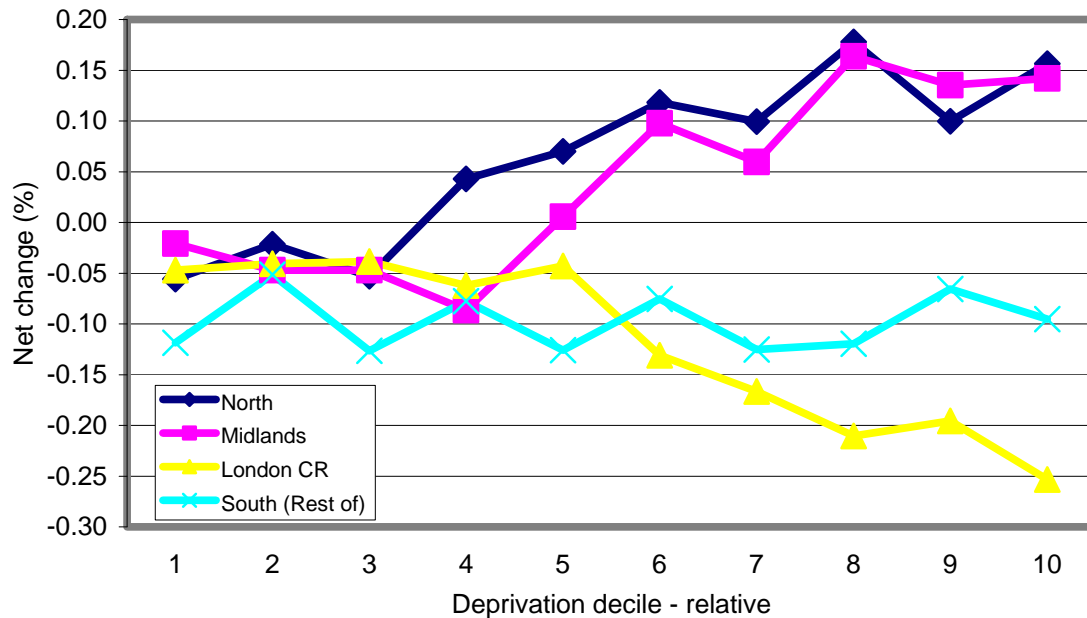
The impacts of net migration on segregation varied across England (Figure 5). In the North and the Midlands, the migration flows acted to increase the gap between the most deprived decile and the average (by 0.21 and 0.16 per cent respectively). In the South, there was almost no change (down 0.02 per cent) but in London, the gap actually fell as a result of net migration flows (by 0.21 per cent). Again, regional context appears to matter, with regions which had slacker housing markets showing greater problems of adverse selective migration.

Figure 4: Change in concentration of low educational attainment by deprivation



Source: Census 2001, Commissioned Tables C0572, © Crown copyright. Neighbourhoods where communal establishments severely distort household flows are excluded (around one per cent of areas).

Figure 5: Change in concentration of low educational attainment by deprivation and by region



Source: Census 2001, Commissioned Tables C0572, © Crown copyright. Neighbourhoods where communal establishments severely distort household flows are excluded (around one per cent of areas). Area deprivation is measured within each region.

Regeneration areas

As discussed above, there have been criticisms of some kinds of ABIs (especially those that focus on improving residents' employment opportunities) that they may inadvertently fuel selective migration (Cheshire et al, 2003). This hypothesis cannot be tested directly without detailed knowledge of the range of ABIs in operation in 2000/1 and an understanding of the approach that each was adopting. Such data is not readily available. Nevertheless, it is possible to examine whether the migration flows varied between neighbourhoods that were in one of the two major regeneration initiatives at that time and other similarly deprived areas. For simplicity, these are termed "intervention" and "non-intervention" areas respectively. In England, the intervention areas are defined as those which were part of the New Deal for Communities (NDC) programme, a national programme with a very high level of funding that started in 1998/9 (CRESR, 2005). In Scotland, the equivalent areas are the Social Inclusion Partnerships (SIPs), also a well-funded national programme, started in 1999 (CEA, 2003). (Some SIPs were thematic or client-group focussed rather than area-based but the

former are ignored in the current analysis.) The boundaries of the intervention areas do not align neatly with our neighbourhood units. Instead, we count an SOA or DZ as being an intervention area where at least 75 per cent of the population fall within an NDC or SIP. The intervention areas are concentrated into the most deprived decile in particular, especially in England (68 per cent of NDC areas and 55 per cent of SIP areas). Both programmes were in relatively early stages of implementation so the Census data provides a snap shot of migration as their work was getting underway. Nevertheless, these were the two largest and best-funded programmes in operation at this time by a long way. In both countries, a range of other programmes were at work, including well-funded national programmes with a narrower functional focus (e.g. Health Action Zones or Educational Action Zones) as well as a range of locally-initiated programmes. In some cases, these will overlap with NDC and SIP areas but not always.

The effect of being in one of these intervention areas can be estimated using a simple linear regression model with change in concentration of low educational attainment as the dependent variable and a dummy variable to identify intervention areas (Table 2). Controls are included for level of deprivation (rank) so that intervention areas can be compared with similarly deprived areas, and for net change in total population since the scale of total population change limits the possibility for change in composition. In England, separate models were produced for each region as well as the country as a whole. Overall, the results support the earlier analyses, showing that migration flows act to sustain or increase spatial segregation. In England and Scotland, more deprived areas showed a greater rise in the concentration of people with low qualifications. In this sense, efforts to reduce area deprivation are working against the predominant flows. Having said this, there were important variations between the regions of England. In the North and Midlands, spatial segregation was increasing through migration more rapidly than the national average but the South showed no significant relationships while in London (city-region), migration flows were reducing segregation. It is clear that regional context is important.

Table 2: Basic models for change in concentration of low educational attainment

	England	North	Midlands	London (city-region)	South	Scotland
Constant	-0.05 ***	-0.02	-0.03	0.01	-0.08 ***	-0.46 *
Rank (high=more deprived)	0.07 ***	0.16 ***	0.19 ***	-0.30 ***	0.06	0.62 *
Intervention area (>75% of population)	-0.16 **	-0.15	-0.12	-0.24 *	-0.12	-0.08 *
Net population change	-0.08 ***	-0.08 ***	-0.09 ***	-0.08 ***	-0.07 ***	-0.07 ***
N	32130	9313	6154	9097	7571	6463
Adjusted R2	8%	8%	10%	8%	6%	10%

Source: Census 2001, Commissioned Tables C0572, © Crown copyright.

In addition, the models show that being in an intervention area was associated with less adverse selective migration rather than more. Intervention areas were more likely to show a *reduction* in the concentration of deprivation through migration than non-intervention area with similar levels of deprivation – or they showed less of a rise in the concentration of deprivation. The effect was significant at national level (England and Scotland) and in London but the direction of the effect was the same in every other region.

5. CONCLUSIONS AND DISCUSSION

The most general finding from this work is that migration flows do tend to reinforce spatial segregation as expected, increasing the concentration of groups with low educational attainment in the more deprived areas. Individuals with higher levels of qualifications (and hence higher incomes and lower risks of unemployment, on average) tend to gravitate away from deprived areas. On the other hand, the strength of this selective migration appears more modest than previous studies have suggested. If the educational attainment of just one or two residents per thousand in deprived areas could be raised from the lower to the higher category each year, this would be enough to cancel out the effects of net migration flows and prevent the gap between deprived areas and the average from widening. The attraction or retention of a similar proportion of more highly-qualified individuals would have the same effect. This is quite a striking finding and is clearly at odds with much of the conventional wisdom about deprived areas, including many statements in policy.

The evidence presented here might be seen as partial, being based on educational attainment alone and omitting a group of adults (18-25 year olds) with high mobility rates. An income measure, for example, might be expected to yield evidence of more adverse selective migration; there might be nearly equal number of people with degrees moving into and out of deprived areas but we might expect those moving in to have lower incomes than those moving out. Educational attainment on its own may therefore understate the problem to some extent. The exclusion of young adults, however, seems likely to have the opposite effect. Deprived areas overall see a net in-flow of young adults, and young adults tend to have higher levels of qualifications than older adults (Bailey and Livingston, 2007). Overall, the strong impacts of educational attainment on employment rates and wages, and hence on risks of household deprivation, mean that educational attainment appears to be a very good indicator

for this work. Alternative explanations for the divergence between this and earlier British studies might be made by looking at methods. For reasons identified above, mover surveys may have over-stated problems of adverse migration through biases in the measurement of out-migration. In addition, the use of Census data has enabled this analysis to examine all deprived areas and not just a small subset, giving a more complete picture than previous assessments. In particular, the impact of moves between deprived areas is taken into account.

In relation to policies to reduce spatial segregation, the findings support the idea that ABIs are fighting an uphill struggle, with selective migration undermining their efforts, but they also suggest that the scale of this problem should not be overstated. At the same time, this raises new questions. If the effects of migration on segregation are relatively weak, this suggests either that past efforts to reduce segregation have been correspondingly ineffectual or that other factors must play a greater role in explaining the persistence of this phenomenon. One alternative explanation is that area effects may be more significant than past research has suggested: i.e. segregation is maintained due to the erosion of opportunities and damage to outcomes from living in areas with concentrated deprivation. The direct quantitative evidence for this has been weak or inconclusive but it is also an area where measurement and analysis are difficult.

The findings also show that the migration dynamics of neighbourhoods are influenced by regional context. Adverse selective migration was more significant in the slacker housing markets of the north of England than in London or the South. In the latter two regions, the ability of groups on moderate incomes to move away from deprived areas appears more constrained. Indeed, in the South (outside London), migration flows were tending to reduce spatial segregation, at least as measured by educational attainment. This suggests there may be a role for efforts at higher spatial scales to contribute to reducing spatial segregation, including the policies of regional planning bodies and strategic regeneration partnerships such as those that operate at the local authority-level in England and Scotland. Effort to reduce the over-supply of housing in parts of the north and to tackle problems of low demand at an authority- or city-wide scale would appear to support efforts to reduce concentrations of deprivation.

For the set of areas included in the two major ABI programmes in 2000/1, the selective migration flows were less adverse than for similarly deprived areas. Previous studies of

migration in ABIs have looked only at the flows in initiative areas and not in comparable non-intervention areas. As noted above, the current analysis is not intended as a direct test of Cheshire et al's hypothesis which concerns the impacts of particular kinds of interventions. It relates to one group of ABIs undertaking a range of people- and place-focussed interventions, and in their early years of operation. The less adverse flows in the ABIs covered here may reflect a focus on "place" rather than "people", for example. Alternatively, the extent of selective migration may be affected by the stage of an intervention as well as the nature of the intervention. The declaration of a major ABI for an area may lead to a "bounce" in demand as people who might have left defer moving to see how the initiative works. This might be followed in later years by raised levels of adverse selective migration where hopes are not subsequently realised. The results of evaluations might therefore be sensitive to the timing of the measurements.

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