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A Pragmatic Approach to Measuring Neighbourhood Poverty Change

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Abstract

This paper uses a new indicator to track poverty from 2001 to 2006 in small areas in Great Britain. The indicator, called Unadjusted Means-tested Benefits Rate (UMBR), was devised by Fenton (2013) and is the ratio of claimants of means tested benefits to the number of households in a small area. The analysis presented here is threefold. We first explore in detail the correlation between UMBR and the indices of multiple deprivation. While conceptually different, UMBR appears to capture different aspects of deprivation beyond out-of-work income poverty. Second, we outline the different patterns of change in poverty across Great Britain and show how small areas in deprived urban communities and multiethnic urban areas have changed considerably between 2001 and 2006. Finally, we draw on data from the Millennium Cohort Study to explore the association between residents' perceptions of their neighbourhood and the UMBR level of their area. We find that respondents living in areas of higher poverty tend to express more negative views of their neighbourhood and that those who changed area in search of a "better neighbourhood" end up in areas with lower poverty rates. However, small changes in poverty over time were not reflected in changes in residents' views.

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INTRODUCTION AND LITERATURE REVIEW

This paper was written as part of a wider research project investigating the patterns and impacts of residential mobility for children in the first five years of life, using the UK Millennium Cohort Study (MCS), which follows a sample of children born in 2000/01. The paper explores one of the measurement challenges of the project: how we might measure change in the neighbourhoods in which the children lived. The question of neighbourhood quality is a central one in studies of residential mobility, and has been particularly prominent in the US literature (for example Briggs, Popkin, and Goering 2010). But how in practice can we capture to what extent children's neighbourhoods got 'better' or 'worse' around them if their families did not move home or whether, if they moved, they experienced 'better' or 'worse' neighbourhoods as a result?

There are some enduring difficulties with the measurement of neighbourhood quality that we do not have the resources to tackle in this project. One is that in principle we would hope to capture the full range of characteristics which constitute and differentiate neighbourhoods and through which they might come to have an effect. Galster (2012) groups these under four broad rubrics: social-interactive (including social networks and norms); environmental (including physical environments, crime and violence); geographical factors such as accessibility; and institutions. However, in practice, far more data exists about some characteristics of neighbourhoods, notably the profile of their inhabitants, than others, such as amenities, the efficacy of local organisations, or social/ethnic relations. The other is that for measurement purposes, we are limited to administrative or statistical geographies that may not reflect subjective neighbourhood boundaries, which, in practice, are likely to be overlapping (Massey 1994; Kearns and Parkinson 2001) and to vary according to individual and household characteristics and patterns of daily life (Robinson 2010). Given that we are working with data collected in the early 2000s, we are not able either to augment our knowledge of neighbourhood characteristics nor to draw bespoke neighbourhoods for each respondent based on their subjective perception. Rather the paper utilises existing data on neighbourhood characteristics, for small-scale administrative areas, but examines the question of how we can best assess neighbourhood *change*.

In the UK, the most widely used set of neighbourhood measures is the Indices of Multiple Deprivation (IMD) in England (Office of the Deputy Prime Minister 2004) and the similar indices developed each of the other UK national administrations (National Assembly for Wales (Statistical Directorate) 2005; Northern Ireland Statistics and Research Agency 2005; Scottish Executive (Office of the Chief Statistician) 2004). These measures are the official measure of deprivation in small areas produced by the four national administration and they are widely used not only in the policy arena but also in social research. All these indices cover aspects of deprivation related to income, education, health, housing and access to services. Thus they fit well a conceptualisation of neighbourhood as consisting of different physical and social characteristics, albeit that physical and social measures are limited and a heavy weighting is given to economic deprivation. The indicators are constructed by combining different measures and this means that the final 'deprivation score' is not an easily interpretable number, because it is not a percentage or rate of something but a combination of the ranks of the scores on the individual components. Nevertheless, as an indication of the relative deprivation of any neighbourhood vs another, at any given moment in time, within a given country (the indices cannot be easily combined across the four constituent countries), the IMDs are extremely useful.

They were not, however, ever intended to become an instrument to track change over time, and are ill suited for such objective for at least two reasons. First, indices from different years use different measures,[5] with the differences being especially marked for Scotland and Wales. The SIMD 2006 and

[5] Two sets of indices were released in relation to the time span covered here, 2001-2006. In England these were the Index of Multiple Deprivation (IMD) 2004, using mainly data from 2001, and the IMD 2007, using mainly

the WIMD 2008 covered the domain of crime, which was not included in the earlier index and this addition led to the re-weighting of all other domains. Clearly, changes between the 2005 WIMD and the 2008 WIMD could be some mixture of 'real' change and artefacts of changes in the construction of the measure itself. A similar problem applies to Scotland.

The second reason for not using IMDs to measure change relates to the mathematical properties of the indices. As noted above the index scores are based on the ranking on the individual domain scores. These rankings are exponentially transformed in order to avoid a cancelling-out effect when different domains are combined in the overall index. The exponential transformation stretches the distribution of the sub-domain scores, so that the 10% most deprived areas are assigned a score between 50 and 100, while the remaining 90% are compressed between score 0 and 49. The sub-domains scores are then combined and weighted to produce the overall index of deprivation. This means that absolute changes in scores have no straightforward meaning. For our purposes (understanding the mobility behaviour of individual households), absolute change is what is of most interest. Has an area become better or worse as a place to live?

Relative change might also be relevant, although less so, and with the question of relevant relativities needing to be answered. For example, a neighbourhood in rural Cornwall might move down the English rankings because neighbourhoods in northern cities have tended to improve, but whether this is a meaningful change from the perspective of the Cornish inhabitants is debatable. The exponential transformation of the indices also makes the meaning of relative change hard to assess, since the same change in underlying scores will have a different effect on the overall score and rankings depending where in the rankings a neighbourhood is positioned. A change of 5 points in the overall deprivation score can result in a change of ranking of 6 places among the most deprived areas, or a change of 2000 places among the least deprived ones. For this reason, it is possible that recent analyses (Cox 2013; Greater London Authority 2011) which have reported very little relative change between IMD 2004, 2007 and 2010 may conceivably be underestimating change, although the general explanation for minimal change (that the deprivation map of Britain reflects a geography of industrialisation and deindustrialisation which will take a long time to change) is no doubt correct.

In this paper, therefore, we propose another measure – the Unadjusted Means-tested Benefit Rate (UMBR), which has been devised as a proxy measure explicitly for tracking micro-social changes in poverty over time. UMBR was developed by and is explained extensively by Fenton (2013a).[6] Importantly, it covers the whole of Great Britain, although not, unfortunately, Northern Ireland.

In contrast to the more complex indices of multiple deprivation, UMBR concentrates on just one variable, the ratio of claimants of means tested benefits to the number of households in a small area in Great Britain. The numerator is all claimants of Jobseekers Allowance (income-based or contribution-based), Income Support, Employment Support Allowance and Pension Credit (Guarantee Element), in each LSOA or (in Scotland) datazone, averaged over the four quarters of each calendar year. It does not include in-work benefits such as Working Tax Credits because of the long time it takes to publish small area statistics about them. Nor are the requisite data available to include Northern Ireland. The denominator of this ratio is the estimated number of households in the area, which is a proxy for the number of individuals or couples (benefit units) eligible to claim means-tested benefits. These estimates are derived from the Office for National Statistics (ONS) and the General Register Office for Scotland (GROS) small-area population estimates or each year by broad age and

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data from 2005. As for Scotland, there is a Scottish Index of Multiple Deprivation (SIMD) 2004, based mainly on 2002 data, and a SIMD 2006, using data from 2005. The Wales Index of Multiple Deprivation (WIMD) was realised in 2005 and based on 2001 data, while its successor, the WIMD 2008, was based on 2005 data.

[6] The dataset is freely available to download and is referenced at the end of the paper, together with the other datasets used in the analysis.

sex bands. After deducting the estimates for people in communal establishments, and age/sex specific household representative person (HRP) rates are used to give counts of households (for more details on the methodology, see Fenton 2013a).

Conceptually, UMBR is a proxy measure of neighbourhood-level income poverty rates. It is not, like IMD, a measure of the wider concept of multiple deprivation. As an indicator of poverty it is not perfect. It will understate the incidence of those in employment but on low earnings, as well as those of low income who do not claim these main means-tested benefits, and includes a small number of ESA and JSA claimants whose eligibility is based on contributions rather than an income test (see Fenton 2013a for a fuller analysis of the relationship between UMBR and estimated income poverty). Its advantages from our point of view are that it is a very straightforward measure: because it uses natural units it is easy to interpret. Furthermore, UMBR is available and comparable across the whole of Great Britain as well as over time, as it is capable of being updated annually. This makes it possible to track change overtime and compare levels of UMBR between two different years. Since it covers benefits received by claimants of all ages, it is a measure of the general level of poverty in an area, not specifically of the prevalence of children in households claiming benefits, such as is offered by indices of child poverty such as the Income Deprivation Affecting Children Index (IDACI) or the Children in Income Deprived Households Index (CIDI) (McLennan, Noble, and Barnes 2012). IDACI and CIDI serve to measure the probability that a child living in a certain area is poor. Given that we will be working with a dataset which has information on the actual circumstances of particular children, we are interested in gauging the general level and direction of conditions in their environment rather than needing an area index as a proxy for children's individual circumstances.[7]

This paper is the first to offer a full comparison between UMBR and the IMDs across Great Britain, the first to use it to analyse the extent of small area change in different types of areas, and the first to apply it to analysis of survey data. It provides a test case for the utility of UMBR as a measure of neighbourhood change.

In the first part of the paper, we describe the distribution of UMBR and compare it to other measures, in order to clarify what it does and does not measure, and to test its robustness and reliability. We then describe what UMBR tells us about small area change in Great Britain 2001-2006. Lastly, we explore how the UMBR measure compares with subjective measures of neighbourhood, and of neighbourhood change, in the Millennium Cohort Study. The last section concludes.

UMBR AND ITS DISTRIBUTION

In this section, we start by describing how small areas in Great Britain vary enormously in their level of UMBR, and then move on to compare UMBR with the indices of multiple deprivation in use in England, Scotland and Wales. We do so by showing how UMBR is closely related only to some of the domains covered by these indices. Finally we assess the robustness and reliability of UMBR by comparing it to a similar measure – the index of economic deprivation (EDI) – which is available for England.

As explained above, UMBR is a ratio, expressing the number of claimants of means tested benefits in a specific small area divided by the number of households in that area. As such, it can take values between 0 – in areas where nobody is claiming any of the means-tested benefits included in UMBR – and 1 – in areas where each household contains a benefit claimant.[8] Figure 1 reports the distribution of UMBR in 2001 across the 40,883 small areas (LSOAs/datazones) that were contained within

[7] UMBR is nonetheless highly correlated with IDACI, at least in cities, as shown by Lee et al 2014.

[8] In fact, as Fenton (2013: 62) explains and as it will be made clear later in the paper, there is a small number of LSOA/Datazone for which UMBR is greater than one. This is due mainly to the uncertainty of household population estimates at small area level and to the fact that some households may comprise more than one benefit unit, and thus may be counted twice at the numerator but only once at the denominator.

England, Wales and Scotland. Levels of UMBR between 5% and 10% were fairly common, with approximately one fifth of all areas included within these values. But as UMBR levels increased, the frequency dropped rapidly, and only 5% of all areas were reported to have an UMBR above 50%.

One of the advantages of UMBR is that it allows picking up differences across the three nations. Figure 2 shows that lower levels of UMBR were much more common among English small areas than was the case in Wales and Scotland. In England, half of the LSOAs had an UMBR below 15.5%. In Wales, only 31% of LSOAs were below that same level. Indeed, in Wales, approximately half of all LSOAs had an UMBR between 20% and 50%. Scotland appeared to be somewhat in between England and Wales: half of its datazones had an UMBR below 20%, while 42% had an UMBR between 20% and 50%. Scotland also appeared to have a slightly "thicker tail" – a higher number of datazones with very high levels of UMBR compared to the other two nations. This, however, is likely to be the result of the different definition of small area used in Scotland. Datazones are likely to reach higher levels of poverty than LSOA, because they are significantly smaller. In England and Wales small clusters of poverty are more likely to be `diluted' into larger LSOA than is the case in Scottish datazones.

These differences across nations reflect well-known regional patterns (Figure 3). Small areas in the South and in the East of England (excluding London) tended to have markedly lower level of UMBR, at around 14%. By contrast, London, the regions in the north of England, and the West Midlands, as well as those in Scotland and Wales, had a much higher prevalence of small areas with high levels of UMBR. In these regions, the average UMBR level was 21%. Overall findings based on UMBR appear to be in line with previous evidence of a North/South divide within England.

Although patterns shown by UMBR do not contradict previous evidence, it is important to understand how they relate to other measures commonly use to assess small areas. We do this by comparing UMBR with the indices of multiple deprivation in the three nations. UMBR is conceptually different from the various measures of multiple deprivation. Their aim is indeed to capture the multifaceted nature of deprivation and to examine different domains in which deprivation may arise. Although these indices are not constructed exactly in the same way in the UK countries, all of them share a common approach (National Assembly for Wales (Statistical Directorate) 2005; Office of the Deputy Prime Minister 2004; Scottish Executive (Office of the Chief Statistician) 2004). They measure distinct dimensions of deprivation separately and they conceptualise the overall index of deprivation as a weighted area level aggregation of the specific dimensions of deprivation chosen. Table 1 reports the domains and their weight for each nation's index.

In contrast to the indices of multiple deprivation, UMBR's objective is to proxy for income poverty. However, UMBR also captures employment deprivation, as it also includes Job Seeker Allowance claimants in its numerator. Since the indices of multiple deprivation are all heavily weighted on income and employment deprivation, we might therefore expect UMBR to correlate fairly closely with the IMD, even though conceptually different. Figure 4 confirms this assumption. It reports a plot indicating the relationship between small area ranks along UMBR and along the index of multiple deprivation in each country.[9] A higher rank denotes lower levels of UMBR or deprivation, so that small area at rank 1 is the poorest or most deprived. The correlation was stronger among poorest areas, but it is nonetheless very high across the entire distribution. Correlation was slightly higher in

[9] We report correlations between UMBR and the first set of indices – IMD2004, SIMD2004 and WIMD2005. We obtained almost identical results when using the second set of indices – IMD2007, SIMD2006 and WIMD2008, and therefore we do not report them here.

Scotland, whose SIM2004 gave more importance to income and employment than the other two countries.[10]

When replicating the same exercise across the different domains, a few important points emerge. First, UMBR correlated more closely with the income domain and this was true in all three countries. The correlation coefficient was extremely high, at around .97 and almost identical across the three countries (Figure 13). At first sight, this is not surprising. Income deprivation were calculated in the same way across the whole of Great Britain on the basis of Department of Work and Pension figures on benefit claimants and among the benefits included there are Jobseeker Allowance and Income Support. Importantly, however, in all three countries the index included those claiming Working Families Tax Credit whose equivalised household income was below 60% of median before housing costs. Thus, the income deprivation index also captures those who are in employment but are on low wages and thus remain below the poverty line. The fact that the correlation between UMBR and the income subdomain of the indices was very strong allays fears that UMBR fails to capture areas where workers on low wages live. In 2001 low pay was most common in Wales and Yorkshire and the Humber, while least common in the South East (Low Pay Commission 2003 Figure 2.2, p.14). We could expect a weaker correlation between UMBR and the index of income deprivation in those regions. We checked for this and found no difference across Great Britain. [11] Finally, it should be noted that Lee et al (2014) find that, in cities, UMBR correlates well with poverty measured as the proportion of households claiming Housing Benefit at local authority level. As Housing Benefit is available to those who are on certain benefits or are in work but on low income, the measure includes those at the bottom of the income distribution irrespective of employment status.

The second point that emerged when looking at UMBR and the various deprivation domains is that the employment, health and education domains indices were strongly correlated with UMBR (Figure 6). With UMBR picking up the largest group of benefit claimants counted in the employment deprivation index, a strong correlation with the employment domain is to be expected (Figure 6, top row). What is perhaps more noteworthy is that UMBR had a correlation with the health deprivation domain of .85 and .93 in England and Scotland respectively. The higher correlation for Scotland is likely to be due to two factors: the smaller size of datazones relative to LSOA, and the inclusion in the Scottish measure of low birth weight, which tends to be highly correlated with low income (Pattenden, Dolk, and Vrijheid 1999). In Wales, on the other hand, the correlation between UMBR and health deprivation was weaker, at .67. This is likely to be explained by the fact that the Welsh health deprivation index was based on fewer measures, and did not include indicators that are more strongly correlated with low income, such as emergency admissions to hospitals (middle row, Figure 6). As for education, the correlation was somewhat weaker in England than it is the case in Scotland and Wales (bottom row, Figure 6). More specifically, in England we see a correlation of around .67 in the East, South East, South West and London, while in the other regions it was much higher, around .84 and thus in line with the Scottish and Welsh ones.

The third and final point concerns the correlation between UMBR and all the other domains. Here the picture is more mixed as there are also significant differences across the three countries (Figure 7). In particular, the English IMD combined access to housing and to services in one domain, although they had opposite correlation with income poverty. Indeed, UMBR was negatively correlated with barriers to services in all three countries. This index measured the distance to facilities such as a GP, a

[10] If one is prepared to accept UMBR as a common yardstick, Figure 4 gives some support for treating the three countries indices of multiple deprivation in the early 2000s as comparable, despite the differences in their composition and construction noted above.

[11] We also checked that the correlation remained high between UMBR and the later indices of multiple deprivation – IMD 2007, SIMD 2007 and WIMD 2008 – as eligibility to the Working Tax Credit was greatly increased in 2004. The results showed a similarly high correlation in all three countries.

primary school or a general store and was, effectively, a measure of "rurality" of an area.[12] As poverty is concentrated in cities, a negative correlation is not surprising. On the other hand, UMBR was positively correlated with those indicators capturing housing conditions. For Wales and Scotland, these were contained in the housing domain, while for England they straddled between the barriers to housing domain and the living environment one. The fact that UMBR correlated well with those measures aimed at capturing housing conditions is reassuring. Indeed, one of the shortcomings of UMBR is that it does not take into account differences in housing costs across the whole of Great Britain and therefore it underestimates the level of poverty in London or the South East where housing costs in particular are much higher than elsewhere. We checked the correlation between UMBR and the overcrowding indicator used in the barriers to housing sub-domain for the English IMD. We find a positive and strong correlation, which varies across English regions between .64 (in the East) to .82 (in the North East).

Overall, UMBR correlated well and strongly with the indices of multiple deprivation in England, Wales and Scotland. In particular, UMBR appeared to capture those aspects of deprivation that relate to income, employment, health and education. The correlation with income was especially strong, thus indicating that UMBR, despite not counting those with in work but below the poverty line, is a robust indicator of income poverty. UMBR also correlated fairly well with measures of housing conditions. On the other hand the UMBR was unsuitable to detect forms of deprivation that reduce access to basic services.

As a final check before embarking into using UMBR to measure area-level change, we compared it to the "Economic Deprivation Index" (EDI). This measure was devised by the same team based at Oxford University responsible for constructing the IMD and, similarly to the IMD, was commissioned by the Government and covers England only. Unlike the IMD though, the aim of EDI was precisely to track changes in deprivation at LSOA level. EDI had two component domains: income deprivation and employment deprivation. The first measured the proportion of people under age 60 claiming either Income Support or income-based Jobseeker's Allowance (Department for Communities and Local Government 2012). The second measured the proportion of working age people claiming Jobseeker's Allowance (income-based or contribution-based), Severe Disablement Allowance, Incapacity Benefit (Department for Communities and Local Government 2012). EDI was therefore, in all respects, very similar to UMBR. However, it should be noted that EDI combines those two rates – income and employment deprivation – by exponentially transforming the ranks in each domain. This means that the resulting index is not itself a rate and cannot be interpreted as the proportion of people who were either income or employment deprived.

Another important difference between UMBR and EDI and its subdomains relates to the denominator. While EDI used total or working age population, UMBR has as denominator the number of *households*. As explained by Fenton (2013a: 61-62), the use of households is more appropriate when comparing poverty rates across small areas, as they better account for differences in family size. For a given number of claimants and a given population count, using households at the denominator results in areas with larger families having a higher poverty rate than areas with small families, whereas they would have a similar poverty rate if population counts were used instead. While more suitable, the number of households is subject to similar estimation errors as the individual population count. Estimating population at small area level between decennial Censuses is notoriously difficult, and these problems affect the counts of both individuals and households. In addition, estimating the number of households requires further assumptions. Fenton explores two methods, preferring a demographic headship approach (using the proportion in each age-sex band believed to be heads of

[12] It should be noted however that the index uses simply distances and does not take into account whether those living in a remote area have a car or not. Arguably, only those without a car will struggle to access services located far away.

household to work from population to households) to an additive-change method (rolling forward numbers of households according to records of dwelling change) (Fenton 2013b). Aware that any such estimates are prone to error, especially the further one moves from the original Census count, we carried out a series of checks.

We start by showing that there was a strong correlation between the ranking along UMBR and the one along EDI (Figure 8). We also used data on the income domain within EDI to check if any LSOA had levels of UMBR which were unexpected given their level of income deprivation. More specifically, we run a simple regression of UMBR rates over income deprivation rates year by year, and we used the results to identify outliers.[13] We found 43 outliers, which we further examine by looking at the time trend in their households count, population, total number of means-tested benefit (UMBR numerator) and total number of Income Support or income-based Jobseeker's Allowance (income deprivation numerator). Among these 43, we identified four LSOAs which had very large and rapid increase or decrease in UMBR. A closer inspection revealed that these four LSOAs hosted large institutional population, as they contained organisations such as hospitals, naval bases or homeless hostels.[14] As UMBR does not deal with post-censal changes in institutional population, we took these four LSOAs out, while kept the remaining 39 in our dataset. Overall the exercise confirms that trends in UMBR and in the income deprivation subdomain of EDI mirror each other.

Because EDI was available for England only, we could not carry out a similar exercise on Scotland and Wales. Instead, we systematically examined whether any small area in these two countries displayed any large increase or decrease in household population or claimant counts from one year to the next. We did not find any unexpected spike. However, we reduced possible noise due to measurement error by calculating three year moving average of UMBR for the whole of Great Britain and used this derived variable instead of the original UMBR rate.

To recap, UMBR is a proxy for poverty at small area level. It is a rate, which divides the number of means tested benefit claimants by the number of households living in an area. As such, it is an easily interpretable indicator. Despite being conceptually different from the index of multiple deprivation, a comparison between the two reveals that they are highly correlated. In particular, UMBR captures well deprivation in the income and employment domains. Although it is a single statistics, the close examination carried out in this section reveals that UMBR is a solid indicator of income poverty. Nonetheless, to minimise possible measurement errors, in the rest of the analysis we "smooth" the raw rate and use a three year moving average instead of the original yearly indicator.

Finally, UMBR appeared to be closely in line with a similar indicator – EDI – which, however, covers England only. Indeed, one important advantage of UMBR is that it is available for the whole of Great Britain, making comparisons across nations possible. More importantly perhaps, UMBR allows tracking change over time. And to this point we now turn.

WHAT DOES UMBR TELL US ABOUT AREA CHANGE?

In this section we document stability and change using UMBR and seek to understand the where the areas which changed the most are located and what type of area they are. We also make an attempt to qualify the nature of their change, by examining both the numerator and denominator of UMBR.

In aggregate terms, the level of poverty as measured by UMBR remained almost identical from 2001 to 2006 (Figure 9). Likewise, when looking at the change experienced by individual small areas, the

[13] We consider outliers observations with a residual above .03, which includes less than 1% of the upper tail of the distribution.
[14] Two of them are located in Liverpool, one in London and the fourth in Portsmouth.

average change appeared to be rather small: less than half percentage point (Table 2). But this number masked larger changes among a small proportion of areas, as shown in

Figure 10. Compared to 2001, in 2006 UMBR had increased or decreased by at least 5 percentage points in 9.3% of all small areas. A change of this magnitude appeared to be more common in poorest areas, while lower levels of poverty were associated to very little change (Table 3).

While changes of 20 percentage points were arguably well visible to the inhabitant of a small areas, other changes were likely to be less so. This raises the question of what counts for change, and by how much an area must vary in order to be considered as improving or declining. Here we took a pragmatic approach, based on the distribution of change illustrated above. Too strict a definition of change would leave us with too few areas to analyse. So, we took the simple change and standardise it to have 0 as mean and 1 as standard deviation. We classified as "improving" those small areas whose UMBR rate fell by more than half a standard deviation, which corresponded, on average, to a reduction of almost 4 percentage points in the benefit recipient rate (3.8). Symmetrically, "decliners" were areas whose UMBR rate increased by more than half standard deviation, which was equivalent, on average, to an increase of 4 percentage points in UMBR. All those areas whose UMBR did not change more than half a standard deviation in either direction were considered as "unchanging".

We start by looking at the geographical distribution of small areas which have undergone different levels and directions of change (Figure 11). In the South of England, and especially in the South East, stability was conspicuously prevalent. More generally, in all regions, as well as in Scotland and Wales, the majority of small areas displayed no noticeable change. However, regions in the north of England stand out because there change tended to be for the better. The West Midlands appeared to have a unique pattern, with relative low level of stability and an especially high proportion of areas with growing poverty. By contrast, in Scotland a decrease in poverty was almost as widespread as stability (a pattern very similar to that of the North East of England).

But what kind of areas are those where we see improvements? We used the ONS classification of places (Bond and Insalaco 2007; Office of National Statistics 2008) to better understand this point. The classification is based on some key socio-economic characteristics of the residents as recorded by the 2001 Census. Figure 12 shows the number of areas that underwent change or experienced stability and classifies them according to the type of places they were. Two points clearly emerge. First, the countryside, areas on urban fringes and white collar urban areas underwent little change: here stability prevailed. Second, change appeared to be the norm in all other types of areas, although it is noticeable that areas with increases in poverty were largely concentrated among disadvantaged urban communities and miscellaneous built-up areas. Overall then, the ONS classification of places appeared to overlap rather conveniently with changes in poverty.

So far we have looked at where changes in poverty (or lack thereof) were concentred – in which regions and in what types of area. This is insightful, but cannot tell us much about the drivers of such changes. Given that UMBR is a ratio, it can change either because the number of benefit recipients changes or the number of households does. In order to distinguish between these two types of change, we classified areas also on the basis of the demographic change as this allowed capturing overall demographic trends and net migration patterns across areas. Similarly to UMBR, we used a normally standardised distribution of change in households count and again took half a standard deviation in either direction to identify change. Another reason for being interested in the direction of demographic change was to identify places which were losing inhabitants although the benefit recipient rate remained constant, where there may have been some adverse change not picked up by the means tested benefits indicator. Where the benefits data indicated the area was `improving', we could distinguish those where there was a net increase in 'population'. Where the benefits data

indicated a rise in poverty we distinguished those places where the population of households was also falling.

It should be noted from the start though that, as discussed earlier, estimates of household counts are subject to error, and are based mainly on demographic trends (fertility and mortality rates) supplemented by some administrative data sources such as GP patient register. These estimates are also bound by population estimates at local authority level. Instead, our numerator, number of benefit recipients, is based on continuously updated administrative data and thus is more sensitive to change than our denominator is. Indeed, between 2001 and 2006 households increased by 22 units on average. A decrease of half standard deviation corresponded to a decline of 6 households, while an increase of half a standard deviation was equal to 49 more households. These are small changes in absolute terms, an important point to bear in mind when we consider their relationship to subjective judgements of neighbourhood change. People were unlikely to have noticed depopulation at the level of 6 households. Nevertheless, we considered them significant in relation to an overall aggregate trend of increasing population.

By combining these two three-fold variables of change, we constructed a 6-fold classification of areas, which is reported in Table 4.[15] By looking at the frequencies and the percentages in Table 4, it is clear that the majority of areas did not change markedly (shaded in grey), thus confirming the results of Table 4. Yet almost half of all Great Britain small areas experienced change, with 25% of all small areas seeing a worsening of UMBR and 23% having UMBR falling. Figure 13 shows the relationship between change over time as captured by our classification and the level of UMBR in 2001 and 2006. Taking Great Britain as a whole, around one half (52%) showed no substantial change in the rate of benefit receipt. Of these, one in five showed signs of demographic decline at a constant, relatively high level of deprivation. But larger group (44.%) of areas with stable rates of benefit receipts also had stable or rising population and distinctly much lower levels of means tested benefit receipt – on average 14%.

About one quarter each of the small areas showed a non-negligible decline (23%) or increase (25%) in UMBR. The groups of places with changing UMBR were relatively disadvantaged, even at the less disadvantaged point of the change. The magnitude of change was greater where the demographic change was moving in a sympathetic direction - UMBR falling and population going up (Area type 6), UMBR rising and population going down (Area type 1). These 'extreme' types of areas (1 and 6) together accounted for about 17% of all areas. Area type 1 (UMBR rising and population falling) had the highest average rate of benefit claiming, both before and after the change.

This pattern varied across regions and across Great Britain regions and countries, as shown in Figure 14. Within England, the north-south divide emerged clearly when looking at the regions characterised by the greatest stability. The majority of LSOAs in East England, East Midlands, the South East and the South West belonged to the category 4, with low levels of UMBR in both 2001 and 2006 and population not falling. These same regions, however, had a sizable proportion (between 14 and 20%) of LSOAs experiencing an increase in UMBR in areas with no demographic decline (Area type 2). In the East of England and the South East in particular, the proportion of LSOAS with worsening UMBRs was higher than the proportion of improving ones, although UMBR displayed overall low levels. By contrast, regions in the north of England (the North East, North West and Yorkshire and the Humber) appeared to have experienced greater change, with improvement clearly outweighing deterioration. The situation of London and West Midlands was somewhat in between. They displayed a higher

[15] We did not generate the 9-fold variable that would be implied by cross classifying two three-fold variables for two reasons. First, with 9 categories some would have been too sparsely populated. Second, we were ultimately interested in linking this classification to survey data, and there are limits to the number of categories that can be used for this purpose in order to protect respondents' anonymity. Thus, we picked those combinations of demographic and benefit rate change which were of more interest.

incidence of change than the most stable group of regions, but deterioration outweighed improvement, with one third of LSOAs seeing an increase in UMBR.

Scotland was a different story. Here the fact that datazones are smaller than LSOA resulted in change being far more commonly manifest than elsewhere in Great Britain. Within that, improvement clearly outweighed decline. A similar story of net improvement held for Wales. Perhaps surprisingly, the picture that emerged from Wales was the most in line with that of Great Britain overall over this period – characterised by a substantial level of stability but where change in a positive direction prevailed over deterioration.

While looking at patterns across regions highlighted important differences in the level and direction of neighbourhood change, the classification of small areas by the ONS appeared to overlap with our own variable of change in UMBR and household population. In other words, change was concentrate in particular types of areas, as classified by the ONS. This pattern is illustrated in Figure 15. In urban fringe areas or countryside change was rather exceptional, particularly in the former type.[16] The average levels of UMBR were well below 20% at both time points in these types of area White Collar Urban areas are similar, albeit with a slightly lower level of stability, and slightly higher levels of UMBR. Instead, "all the action" seemed to occur in cities. Both Multicultural City Life and Disadvantaged Urban communities have much smaller proportions with unchanging UMBR and higher levels of UMBR. Decline was much more prevalent in the Disadvantaged Urban Communities which had the highest proportion with rising (and high) benefit rate in the context of falling population (Area type 1).

The overall impression was tranquillity in the more prosperous types of areas and a much greater turnover, if not turbulence, in more disadvantaged places. It is particularly in inner cities where localities experienced both improvements and declines.

RESULTS FROM MCS: HOW WELL DOES UMBR CAPTURE RESIDENTS' PERCEPTIONS OF THEIR NEIGHBOURHOOD?

In this last section of the paper we compare UMBR with residents' views of their area. We draw on the Millennium Cohort Study (MCS), which is a nationally representative sample of births covering around 19,000 children born in the UK between September 2000 and January 2002. Families were interviewed for the first time when the children were aged 9 months, between 2001 and 2002. They were followed up again when children were 3 year old, with interviews taking place in 2004, and when the children were aged 5, in 2006. Since then, MCS children and their families have been interviewed two more times, at age 7, in 2008 and at age 11 in 2012. In this paper we use data from the first three sweeps, thus concentrating on early childhood, before children enter compulsory schooling.

An important feature of MCS is its clustered sample design (see Hansen 2012; Plewis 2007). It oversamples children living in areas with high rate of child poverty or high minority ethnic populations. Such design fits well with the purpose of UMBR, which aims at capturing poverty at small area level. With any other representative population surveys it would be difficult to achieve a similarly large number of families living in high poverty areas. MCS sampling strategies also stratifies by UK nation, thus covering extensively also Scotland, Wales and Northern Ireland. As UMBR is unfortunately available only for Great Britain, we excluded the Northern Ireland sample from the MCS data.

[16] To note that the horizontal axis for Urban Fringe is on a different scale to accommodate its exceptional stability

MCS appears suitable to explore UMBR not only because of its sampling design but also because it targets a specific demographic group – families with small children. Amenities and resources in the immediate surroundings are likely to be very relevant to children, whose regular interactions with people and institutions, such as day centres or playgrounds, tend to occur within a limited distance from their home. And indeed, parents of young children who have the possibility to do so tend to be particularly careful in their residential choices, selecting areas offering good conditions and resources for bringing up a family (Shonkoff and Phillips 2000). In other words, they tend to be sensitive to the conditions of an area. In addition, families with young children have usually only recently moved to an area, and therefore have made their residential choice fairly recently. Indeed, among all families interviewed in MCS1, only 36% had lived at their address for more than 4 years.[17] By the time of the third sweep, more families had settled, with around 58% of families staying put between sweep 1 and sweep 3 (which are approximately 4 years apart).[18]

At all three sweeps, MCS recorded mothers' (or main respondents') views of the area they lived, and explicitly defined such areas as "within 20 minutes walk" from respondents' home. Such definition of area does not allow a clear cut distinction between immediate surrounding and larger neighbourhood (Kearns and Parkes 2003), as respondents could interpret it in either way. Moreover, such definition does not necessarily coincide with the ward area or with an LSOA or datazone. In densely populated areas, a 20 minute walk will cover more than one LSOA/datazone. Hereafter we use the term "locality" or "neighbourhood" to indicate the area subjectively defined by respondents, while we continue to use the term "area" to refer to LSOAs and datazones. The difference is terminology, although rather arbitrary, serves as a reminder that when comparing UMBR with residents' views of their locality we cannot be sure that "area" captured by the two measures is the same. We return to this point at the end of the section.

As for the questions asked, they differed between MCS1 and the subsequent sweeps. In MCS1, mothers were asked about their general satisfaction with their locality using a five point scale, from "very satisfied" to "very dissatisfied". Mothers' general level of satisfaction about the locality was once again elicited at sweep 2 and recorded on a five point scale. In addition, respondents were asked whether the locality was good "to bring up children". This latter question was repeated in MCS3, although no question about general satisfaction with the neighbourhood was asked. Therefore we did not have a question which was asked consistently across all three sweeps. In order to capture neighbourhood change through the eyes of residents, we had to rely on comparisons between the views expressed at each sweep. In particular, we could look at whether respondents expressed different levels of satisfaction at sweep 1 and sweep 2 and whether they changed their views on the locality being good for children between sweep 2 and sweep 3.

It should be noted our measure captures change in residents' views and not views about locality change. Indeed, respondents were not asked whether their neighbourhood had improved, stayed the same or deteriorated. Such a question would have not been possible in the context of MCS. As mentioned earlier, families with young children do often move home. Indeed, by the age of 5, almost half of the MCS children in the whole of UK had moved at least once. While we could not determine whether residents thought that their locality had changed, we could exploit the high residential mobility rate among MCS families. By looking at movers' views on their locality before and after the move, we could assess whether those who moved to areas with lower poverty levels expressed more positive views about their neighbourhood.

Before moving to the results, we describe our analytical sample. As mentioned earlier, we left out children observed in Northern Ireland. In addition, we restricted our sample to those families

[17] Our calculation on the entire sample of 18,552 families interviewed at MCS1. The value reported is weighted.
[18] Again, this is calculated on the entire sample of 13,538 families interviewed at MCS3. The percentage reported is weighted.

observed at all three sweeps. In order to define movers and stayers, we used two sources of information – self-reported moves and the geocodes attached to the place of residence. We defined as movers all those who have explicitly reported a move, while we dropped from our analytical sample those who appeared to have changed LSOA/datazone between either sweeps but, when asked, do not report the move (786 observations). We did so because we also use information on the reasons why respondents have moved, and, obviously, these could be elicited only from those who reported moving. Finally, we kept only those observations for whom we had complete information on their views about the neighbourhood. This left us with 10,240 observations. Throughout the analysis we used weights that take into account both the sample design and attrition up to sweep 3.

Table 5 summarises the main characteristics of the analytical sample. A few points are worth noticing here. First, UMBR levels are in line with the overall average for Great Britain, which, in 2001, was 21%. The second point relates to respondents' views of their neighbourhood. At both sweep 1 and sweep 2, the great majority of respondents (85% and 87% respectively) reported being either very or fairly satisfied with their locality. However, views on whether the neighbourhood was good for bringing up children were less positive, with 71% and 73% of respondents considering it good or very good. Finally, the table reports information of residential mobility (bottom rows). Around 60% of our sample was made of stayers. For these families, neighbourhood change happened "around" them. Among the 40% who moved, 35% mentioned wanting a "better area" among the reasons for the change. In constructing this variable we included not only those who explicitly said "better area", but also those who reported moving for "children's education", "school catchment area", or because they had "problems with neighbours" or because they wanted to "move away from crime". Other reasons listed in the survey comprised both positive reasons, such as wanting a bigger home or to be closer to families, as well as negative reasons, such as relationship breakdown or money problems.

But what is the relationship between UMBR and residents' views? Were those expressing more positive views concentrated in areas with lower poverty rates? We restricted our sample to those who remained put throughout the four years between MCS1 and MCS3. Figure 16 to Figure19 suggest that those with the most positive views were more likely to be in areas with low levels of poverty. Invariably, as views become dimmer, higher proportions of respondents appeared to live in areas with higher levels of UMBR. Likewise, when we divided our sample of residents between those who lived in the poorest 30% areas, and those who lived in the 70% least poor, a similar contrast emerged (Figure 20). In poorest areas, only 10% of residents said that their neighbourhood was excellent for bringing up children. This contrasted with 41% of residents in the least poor areas. Looking at the other end of the scale, while 17% of mothers in areas with high levels of UMBR considered their locality as very poor for bringing up children, this view was expressed by less than 2% of respondents in areas with lower UMBR levels. Similar results emerged when looking at neighbourhood satisfaction at both sweeps.

The finding that residents' views were in line with UMBR levels give supports to the idea that UMBR capture aspects of an area that matter to residents' opinions. We pushed this test further by looking at the relationship between *changes* in residents' views and *changes* in UMBR. Did people who lived in an area where UMBR had been falling express more positive views on their locality than they had done previously? To examine this question we constructed group residents' views into four groups, one for each of judgement. For neighbourhood satisfaction they were:

1. "Very satisfied" throughout
2. From less than "very satisfied" to "very satisfied"
3. From "very satisfied" to less than "very satisfied"
4. Less than "very satisfied" throughout

As for views on whether the locality is good for bringing up children, the categories were:

1. "Good" or "excellent" throughout
2. From less than "good" to "good" or "excellent"
3. From "good" or "excellent" to less than "good"
4. Less than "good" throughout.

Figure 21 and 22 plot the density of UMBR change for those groups who changed their views – groups 2 and 3. We would expect that those who revised their views upwards would live in improving areas, and, symmetrically, those who revised their views downwards would live in deteriorating areas. But that did not appear to be the case. Figure 21 and Figure 22 indicates that both groups were similarly likely to live in deteriorating areas. Thus, in relation to both variables – satisfaction and whether locality is good for bringing up children – there did not seem to be a relationship between the direction of change in UMBR and the change in views of residents.

So far we have only looked at stayers. However, 40% of MCS children moved home between age 9 months and age five. As one advantage of using UMBR, relative to IMD, is that we can quantify the change that areas undergo, we looked at the change in UMBR experienced by both stayers and movers and compare the two groups. Figure 23 shows that those families who did not move experienced little change. This is hardly surprising: the previous section has documented how the majority of areas changed very little between 2001 and 2006. By contrast, those families who moved home could experience fairly dramatic changes in the level of poverty of their area. Indeed changes of 10 percentage points, while extreme among stayers, appeared rather common among those who move. However, what is perhaps most interesting, is that movers tended to go in either direction. Although the distribution was slightly skewed towards area improvement, it remained the case that for many families moving home entailed ending in an area with a higher level of poverty than the original one.

We used information about movers to further test whether UMBR correlated with subjective views of the neighbourhood. In particular, here we looked at those who said – retrospectively – that they had moved for reasons related to the new locality. Implicitly, these respondents appeared to be saying that their current neighbourhood was better than the previous one. Thus, we expected that this group would have ended up living in areas with lower UMBR than their area of origin. Table 6 (first row) confirms this assumption: at MCS1 this group was living in areas with an average UMBR level of 22.5%, while by the time of MCS3, they had moved to areas with an average UMBR of 16.8%. By contrast, movers who did not attribute their move to a desire for a better neighbourhood, moved to areas with, on average, a similar level of UMBR (Table 6, second row). In addition to comparing average levels of UMBR across areas, we also ran a simple regression on the probability of UMBR at MCS3 being higher than at MCS1, which indicates a deterioration of the area. As a regressor, we constructed a binary variable indicating whether a family of movers had moved because they wanted a better area (=1) or for other reasons (=0). The results indicated that those who had reported moving for want of a better neighbourhood had half the odds of ending up in an area with higher level of UMBR of those who had moved for any other reason, whether positive or negative (Table 7).

In this section we have explored the relation between subjective views of locality and UMBR using MCS data. Overall, the two indicators were correlated, with people living in areas of higher poverty reporting lower satisfaction with their neighbourhood or dimmer views on whether their locality was good for bringing up children. We have also examined whether *changes* in views were correlated to changes in UMBR. For those who continued to reside in the same area, no correlation emerged. This may be due to several factors. First, changes in personal circumstances may have affected the opinion expressed by residents at the two points in time when their opinion on the neighbourhood was elicited. Indeed, we constructed an indicator of change based on residents' views of their neighbourhood at two points in time. This measure was different from residents' views on how their

locality had changed – a measure which would have better suited our purposes, but that was not available in MCS. Second, we do not know exactly what "area" means for MCS respondents and, more importantly, whether it coincides with the LSOA/Datazone for which UMBR is measured. Third, this misalignment between change in UMBR and changes in views suggested that parents may have valued aspects of a neighbourhood which are not captured by UMBR. We return to the last point in the next section. Finally, when we looked at movers, good correspondence between UMBR and reasons for moving emerged. In particular, those who moved in search of a better neighbourhood, are more likely than other movers to end up in lower poverty areas.

CONCLUSIONS

This paper has presented and explored a new indicator of poverty at small area level. UMBR was created by Fenton (2013a) and is a ratio of the number of means tested benefit recipients in an area over the household population of that same area. One of the advantages of UMBR is that it is easily to calculate and to interpret. UMBR above 50% indicates high level of poverty – as half of the households in that area would be in receipt of means tested benefits. And we have shown how UMBR at 50% was fairly uncommon, with only 5% of all small areas in Great Britain above this threshold in 2001, while one in five area had an UMBR between 5 and 10%. Such overall distribution remained almost identical in all the years examined – 2001-2006.

The simplicity of the measure makes it easy to compare areas not only in relative terms, but also in absolute ones. This marks an important difference between UMBR and the indices of multiple deprivation, which cannot be used to infer how much more deprived an area is relative to another. In addition, and more importantly in relation to change, UMBR can be tracked over time and comparisons can be made between one year and another. This makes it possible to understand whether small areas have changed their level of poverty over time. Again, this is a crucial difference from the indices of deprivation, which can only be used to examine changes in ranking, but cannot tell us anything about what has happened to the actual level of deprivation of an area.

We looked at changes in UMBR between 2001 and 2006. This was a time of economic and employment growth, with constantly low unemployment rate hovering at around 5% (Office for National Statistics (ONS) 2006: 58). The overall level of UMBR also remained stable. However, within this context of favourable economic conditions and stability, our analysis uncovered different patterns of improvement and deterioration. Our results showed that while the majority of areas maintained low levels of UMBR throughout the period examined, change did occur and was concentrated in specific types of area. In particular, areas in disadvantaged urban communities were more likely than areas elsewhere to witness an increase in UMBR, which appeared to be driven by an increase in number of benefit recipients combined with household population fall. By contrast, areas belonging to multicultural city life type showed a more balanced trajectory, with increases in UMBR as common as stability and decreases.

The simplicity of UMBR comes however at some costs – narrowness. UMBR is a single statistics, which covers almost exclusively out-of-work poverty. However, our systematic comparison between UMBR and the sub-domains of the indices of deprivation, shows how, empirically, UMBR correlates very highly with indicators capture other aspects of poverty. In particular, UMBR correlates very highly with measures of income deprivation which include the working poor. In addition, our results show that UMBR is also strongly correlated with other aspects of deprivation such as poor health and poor education.

A more general shortcoming of UMBR is that it focuses on characteristics of the inhabitants of an area, leaving out important aspects of the "multi-dimensional package" that constitutes an area or

neighbourhood (Galster 2012). Clearly there is a strong correlation between the characteristics of residents and those that pertain to the area itself, with more poor residents concentrating in resource-poor neighbourhoods. But it remains the case that UMBR captures an aspect of poverty which may not feature prominently in determining residents' satisfaction.

By using data from the MCS, we find that the broad correlation holds: residents in areas with high level of UMBR tended to express lower satisfaction about their neighbourhood than those living in areas with lower UMBR. Poorer areas were not only correlated to lower satisfaction, they were also viewed as worse places where to bring up children. In addition, families who moved because they wanted a better neighbourhood ended up in areas which were considerably less poor than their areas of origin. Thus what constitutes "better neighbourhood" appeared to partly correlate to UMBR levels. However, the correlation between UMBR and residents' views of their locality did not emerge in relation to *small* changes in UMBR, such as the variations of a few percentage points which occurred in the majority of areas.

Many factors can influence residents to change views about their neighbourhood, from their personal circumstances to changes in the infrastructure and services available in the area. It is important to remember that the years considered here – 2001-2006 – saw a remarkable increase in area-based programmes and interventions, usually targeting areas with high levels of poverty. One example, relevant for MCS families, is the creation of Sure Start Local Programmes (SSLP) a flagship government programme for young children in England (Belsky, Barnes, and Melhuish 2007; Eisenstadt 2011). As noted by Stewart (2013), an important aspects of SSLP was the actual construction or conversion of buildings, of which 635 had been completed by 2004. Parents were extremely positive about them, especially because they were built in areas characterised by poor housing and no communal facilities for families with children.

Clearly UMBR does not and is not intended to capture this kind of change, however important for families it is. UMBR's focus lies on the characteristics of the people in the area, not the conditions or amenities of such area. Nonetheless, this paper has shown how, empirically, UMBR is able to satisfactorily capture several aspects of deprivation that may affect the residents of an area and has also shown how UMBR is broadly in line with the views and moving behaviour of families with young children surveyed in the MCS.

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Table 1: Correlation between UMBR and the indices of deprivation domains and subdomains that relate to housing

Country, domain, sub-domain	Indicator	Correlation with UMBR
England - IMD 2004		
Barriers to Housing and Services		-.012416
- Barriers to housing	- Overcrowding	.683622
	- Difficulty of access to owner-occupation	na
	- Homelessness	na
- Barriers to services	- Distance to GP	-.391764
	- Distance to primary school	-.387714
	- Distance to post office	-.373573
	- Distance to food store	-.294556
Living environment deprivation		.578783
- Indoor living environment	- Poor housing conditions	.533371
	- Lack of central heating	.437021
Wales - WIMD 2005		
Geographical access to services deprivation		-.413515
Housing deprivation		.552742
Scotland - SIMD 2004		
Geographical access and telecommunications deprivation		-.317239
Housing deprivation		.700313

Table 2: UMBR change across small areas in Great Britain, 2001-2006

	Average (Percentage points)	Min	Max
$UMBR_{2006} - UMBR_{2001}$	0.3	-49.5	25.5

Notes: $UMBR_{2001}$ is a two year moving average and $UMBR_{2006}$ is a three year moving average of the original yearly UMBR. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Table 3: Incidence of UMBR change in Great Britain, 2001-2006

Change in UMBR between 2001 and 2006 ($UMBR_{2006} - UMBR_{2001}$) in percentage points	Frequency	Percent	Average level of UMBR in 2001 (%)
5+	3,802	9.3	36.5
2.5 - 5	8,896	21.8	25.5
1 - 2.5	13,711	33.5	18.4
0 - 1	14,470	35.4	15.3

Notes: $UMBR_{2001}$ is a two year moving average and $UMBR_{2006}$ is a three year moving average of the original yearly UMBR. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Table 4: Classification of change

Area type code	Area type label	Frequency	Percent	Average level of UMBR in 2001 (%)
1	UMBR rising, population falling	4,503	11.02	29.1
2	UMBR rising, population NOT falling	5,796	14.18	19.8
3	UMBR steady, population falling	3,432	8.40	23.8
4	UMBR steady, population NOT falling	17,856	43.68	14.2
5	UMBR falling, population NOT rising	6,731	16.47	28.2
6	UMBR falling, population rising	2,561	6.26	26.3

Notes: UMBR and population are defined as rising (falling) if their increase (decrease) between 2001 and 2006 was greater than 0.5 standard deviations. Population refers to household count. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Table 5: Characteristics of analytical sample (weighted means)

	Mean (%)	Std. Err.	[95% CI]	
UMBR in 2001	20.9	0.006	19.7	22.2
UMBR in 2004	20.7	0.006	19.5	21.8
UMBR 2006	20.4	0.005	19.3	21.5
Satisfaction with locality at MCS1				
Very satisfied	44.5	0.011	42.3	46.6
Fairly satisfied	39.1	0.008	37.5	40.7
Neither satisfied nor dissatisfied	7.0	0.003	6.4	7.6
Fairly dissatisfied	6.1	0.003	5.4	6.7
Very dissatisfied	3.4	0.003	2.8	3.9
Satisfaction with locality at MCS2				
Very satisfied	49.5	0.011	47.4	51.6
Fairly satisfied	37.0	0.008	35.4	38.7
Neither satisfied nor dissatisfied	4.9	0.003	4.4	5.5
Fairly dissatisfied	5.2	0.003	4.6	5.8
Very dissatisfied	3.3	0.003	2.9	3.8
Whether locality is good for bringing up children at MCS2				
Excellent	32.4	0.011	30.2	34.7
Good	40.2	0.009	38.5	41.9
Average	19.4	0.006	18.2	20.6
Poor	4.9	0.003	4.3	5.5
Very poor	3.0	0.002	2.5	3.5
Whether locality is good for bringing up children at MCS3				
Excellent	31.9	0.011	29.9	34.0
Good	41.6	0.008	40.0	43.1
Average	20.2	0.007	18.9	21.6
Poor	4.3	0.003	3.8	4.9
Very poor	1.9	0.002	1.6	2.3
Residential mobility (explicit)				
Stayers	59.6	0.008	58.0	61.3
Movers	40.4	0.008	38.7	42.0
Of whom				
Mentioned "better area" as reason for moving	35.0	0.011	32.9	37.1

Notes: Figures are weighted using MCS3 overall weights. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 data.

Table 6: Average level of UMBR among movers, by reason for moving

	Average UMBR at MCS1				Average UMBR at MCS3			
	Mean (%)	Std. Err.	[95% CI]		Mean (%)	Std. Err.	[95% CI]	
Moved because wanted a better area	22.5	.008	21.0	24.0	16.8	.005	15.7	17.8
Mover for all other reasons	22.2	.007	20.8	23.6	22.5	.006	21.4	23.7

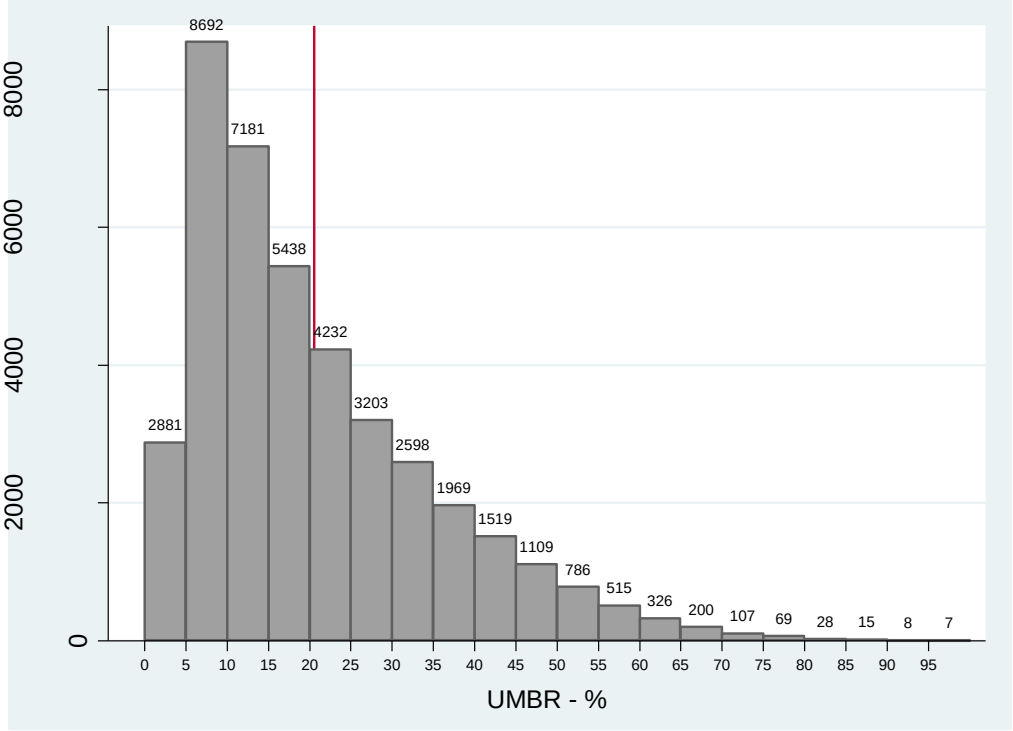
Notes: Figures are weighted using MCS3 overall weights. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 data.

Table 7: Probability that area of destination has higher UMBR than area of origin, logit regression

	Odd Ratio	Std Err	t	P>|t|	[95% Conf. Interval]	
Moved for a better area	0.467249	0.041882	-8.49	0.000	.3917098	.5573561
Constant	0.775079	0.040016	4.94	0.000	.7002201	.8579404
Number of obs						3979
F(1, 324)						72.06

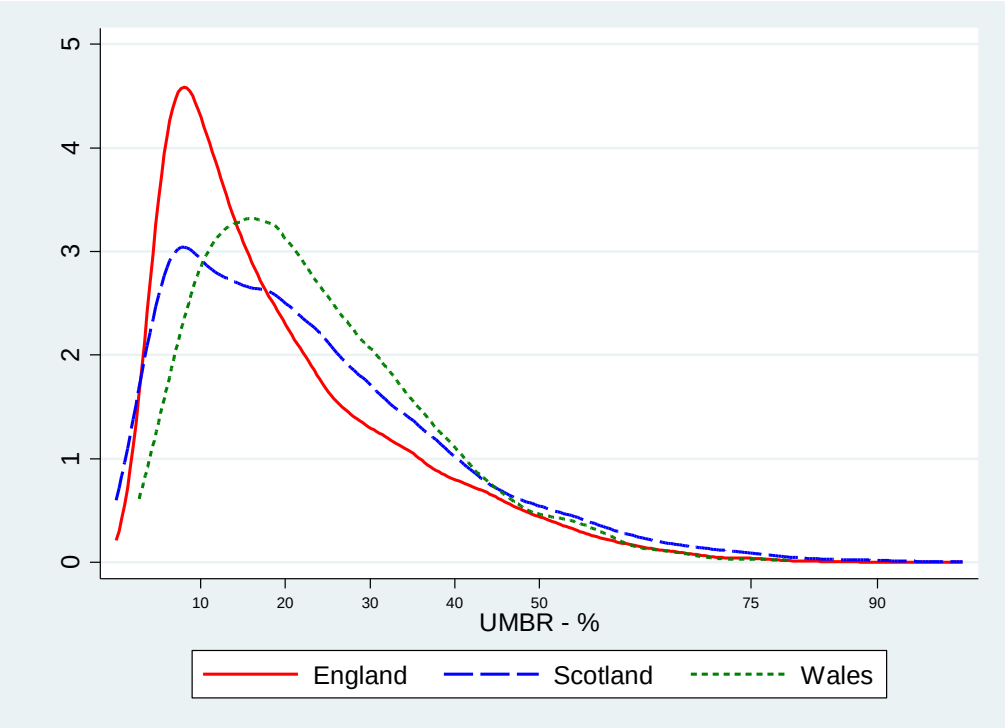
Notes: The dependent variable is 1 if the LSOA at MCS3 has a higher level of UMBR than the LSOA at MCS1. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 data. Sample all movers between MCS1 and MCS3. Results take into account the survey design.

Figure 1 Distribution of UMBR across small areas in Great Britain, 2001



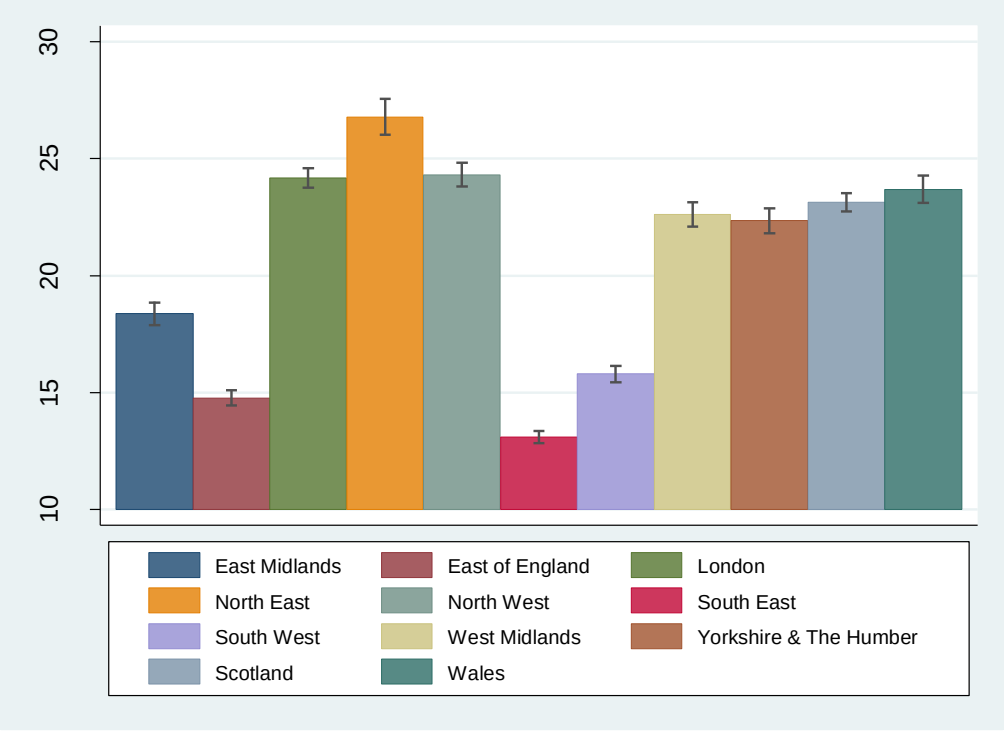
Notes: $UMBR_{2001}$ is a two year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Figure 2: UMBR distribution in England, Wales and Scotland, 2001



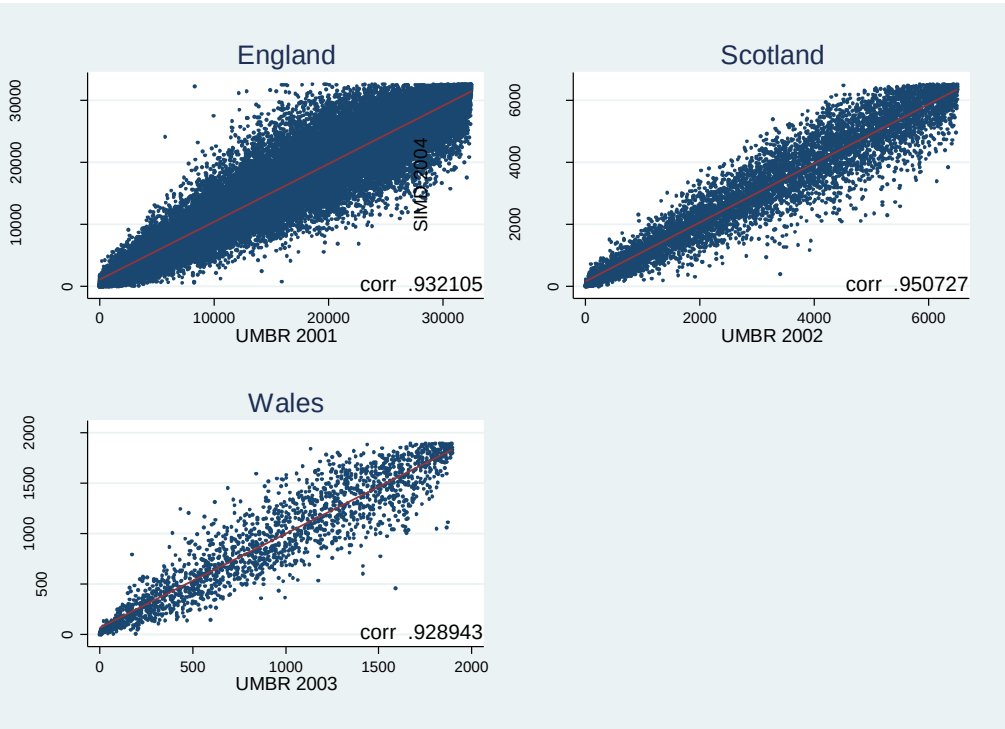
Notes: $UMBR_{2001}$ is a two year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Figure 3: Average UMBR by English region and in Wales and Scotland, 2001



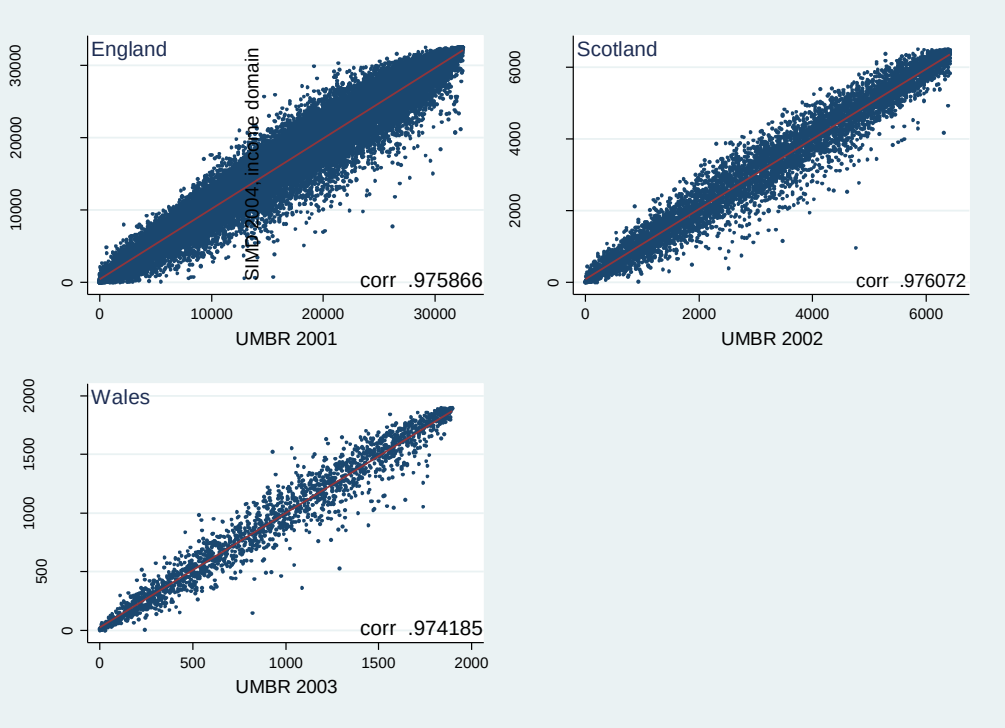
Notes: $UMBR_{2001}$ is a two year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Figure 4: Correlation between UMBR and the indices of multiple deprivation



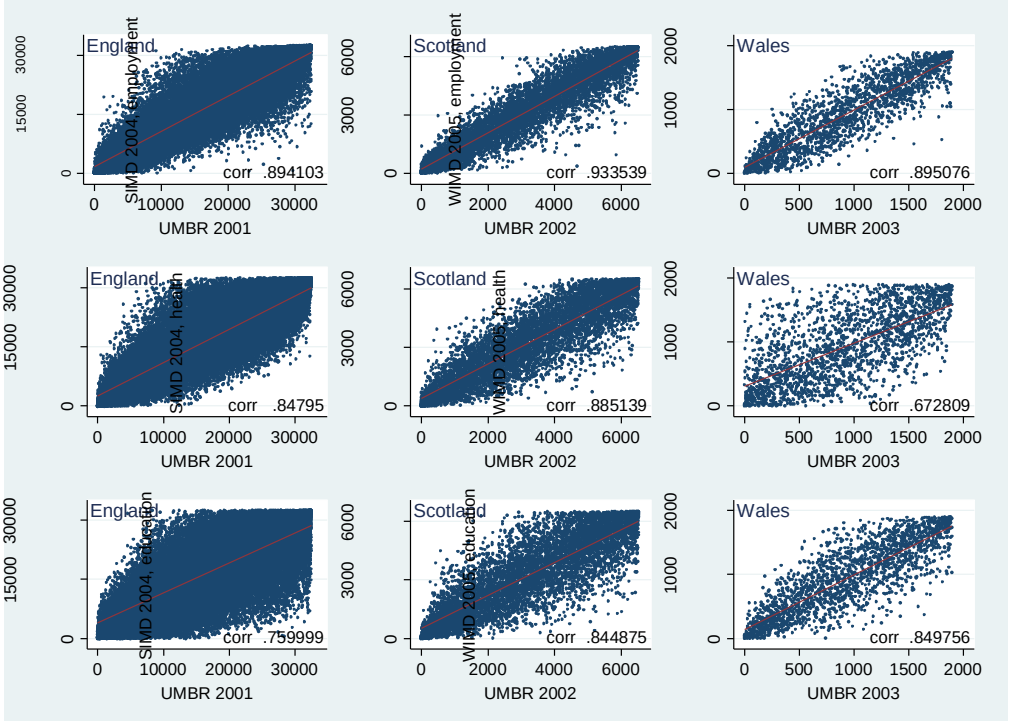
Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and the indices of multiple deprivation in England, Scotland and Wales (see list of datasets for details).

Figure 5: Correlation between UMBR and the income domain of the indices of deprivation



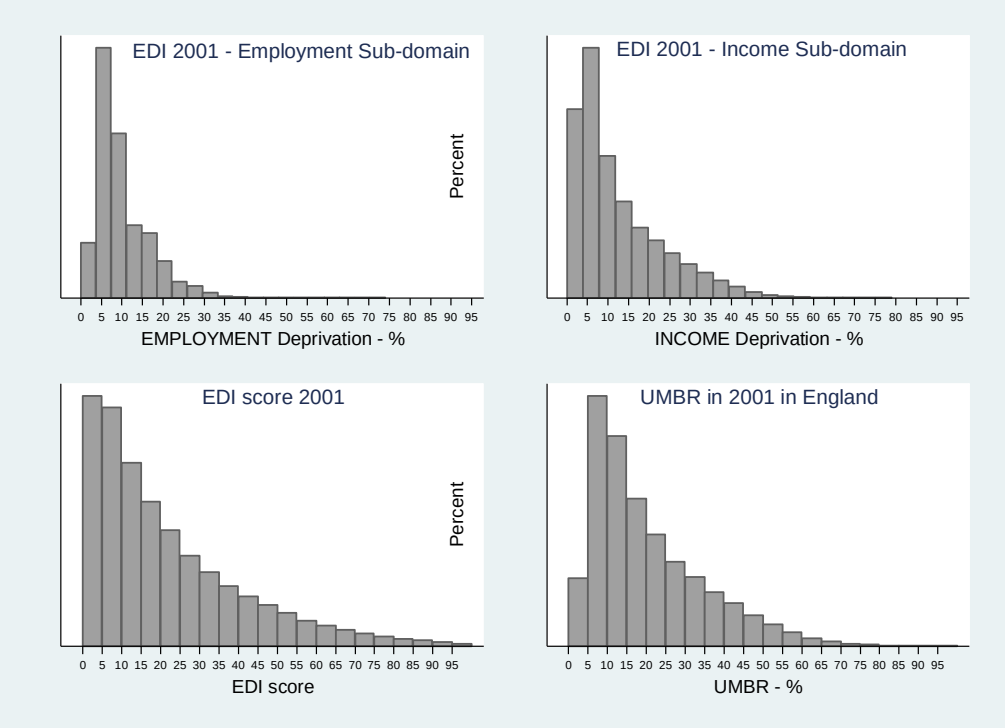
Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and the indices of multiple deprivation in England, Scotland and Wales (see list of datasets for details).

Figure 6: Correlation between UMBR and the employment, health and education domains of the indices of deprivation



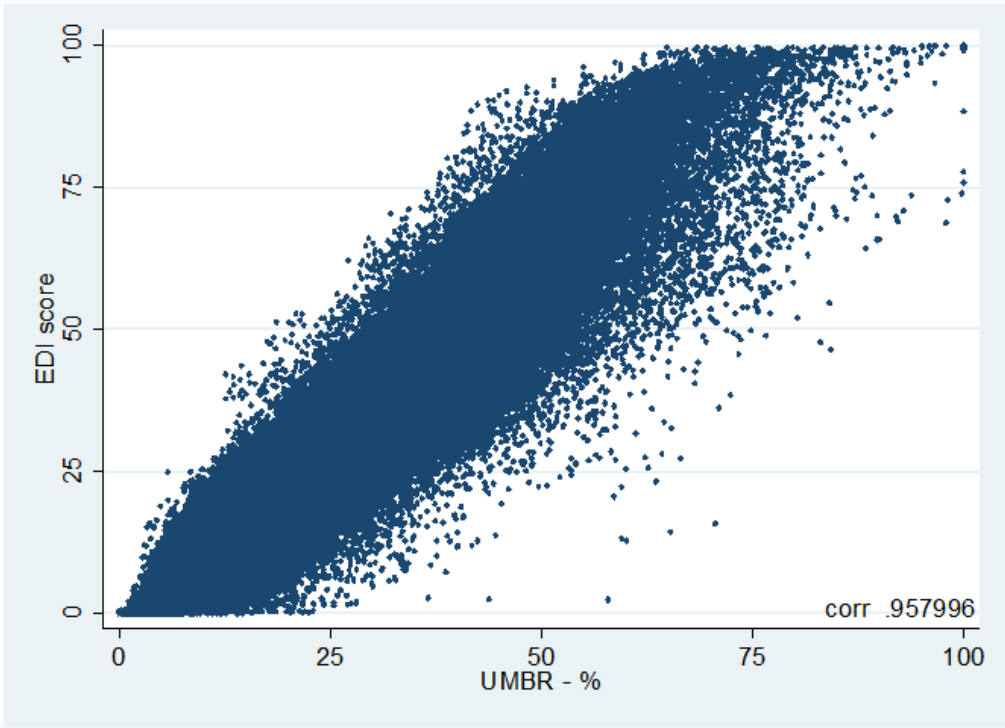
Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and the indices of multiple deprivation in England, Scotland and Wales (see list of datasets for details).

Figure 7: Economic Deprivation Index, its domains and UMBR, 2001



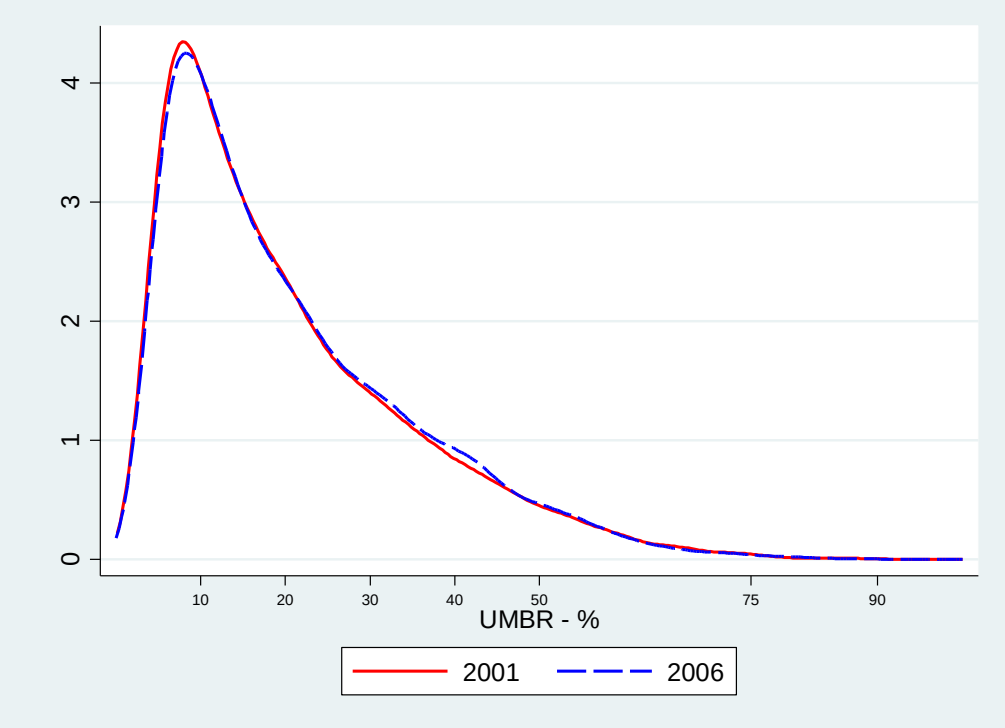
Notes: $UMBR_{2001}$ is a two year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR).* Data on EDI come from data tables that accompany the Statistical Release 'Tracking Economic and Child Income Deprivation at Neighbourhood Level in England, 1999 – 2009 by DLCG.

Figure 8: Correlation between EDI and UMBR, 2001-2009



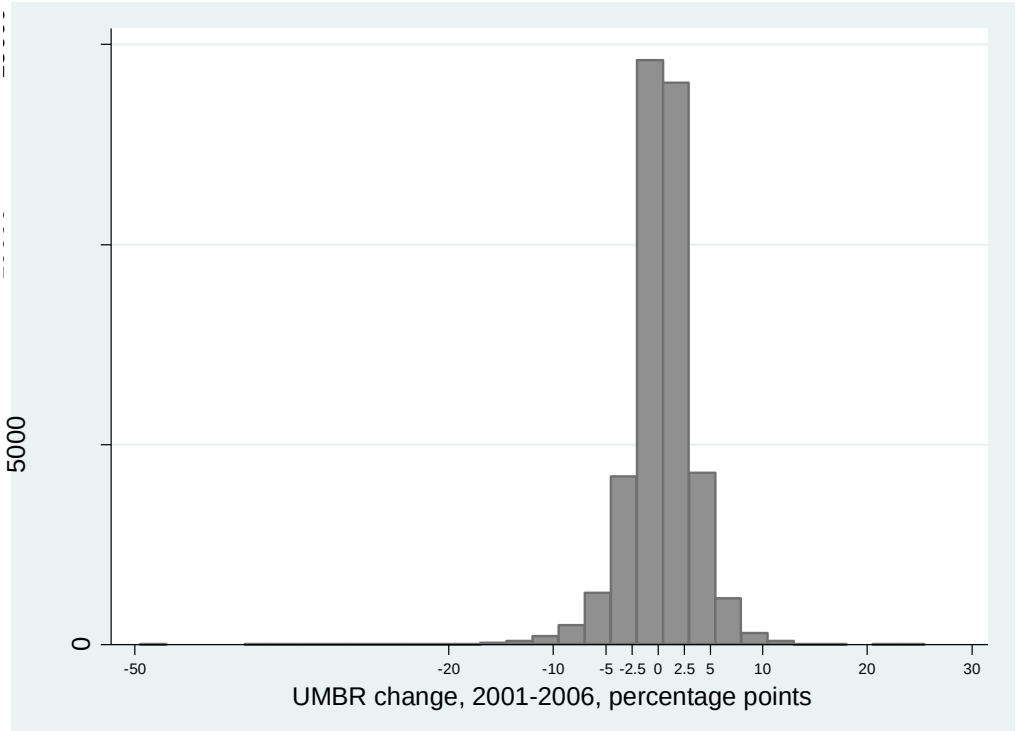
Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*. Data on EDI come from data tables that accompany the Statistical Release 'Tracking Economic and Child Income Deprivation at Neighbourhood Level in England, 1999 – 2009 by DLCG.

Figure 9: The overall distribution of UMBR in 2001 and in 2006 in Great Britain



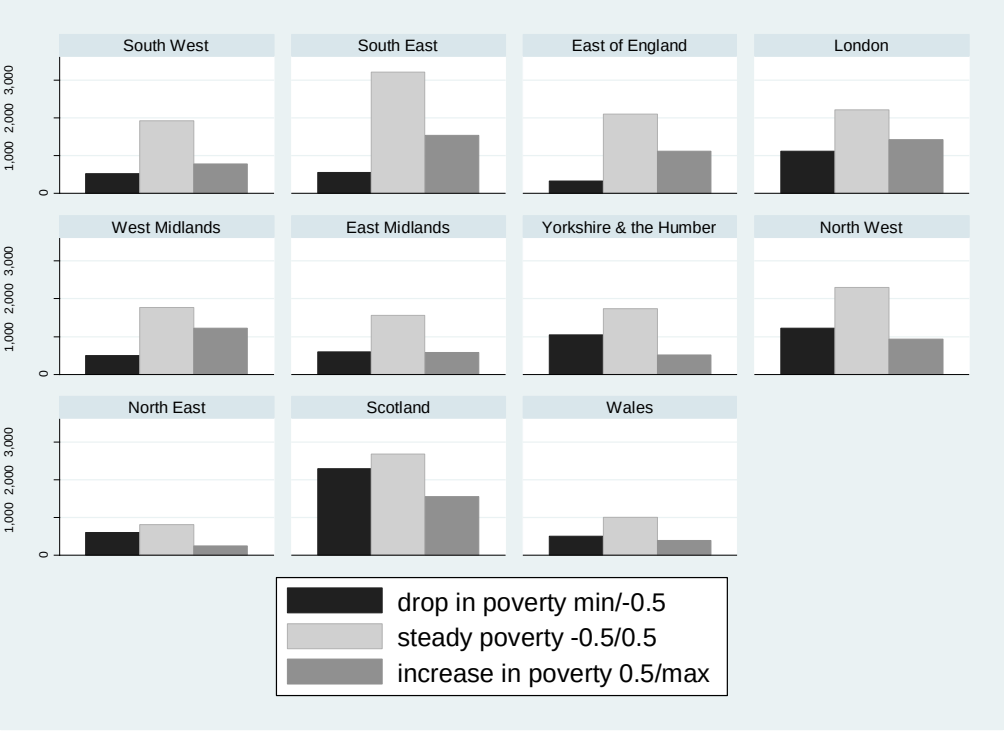
Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average.
Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR).*

Figure 10: Distribution of change in UMBR (UMBR2006 – UMBR2001) in Great Britain



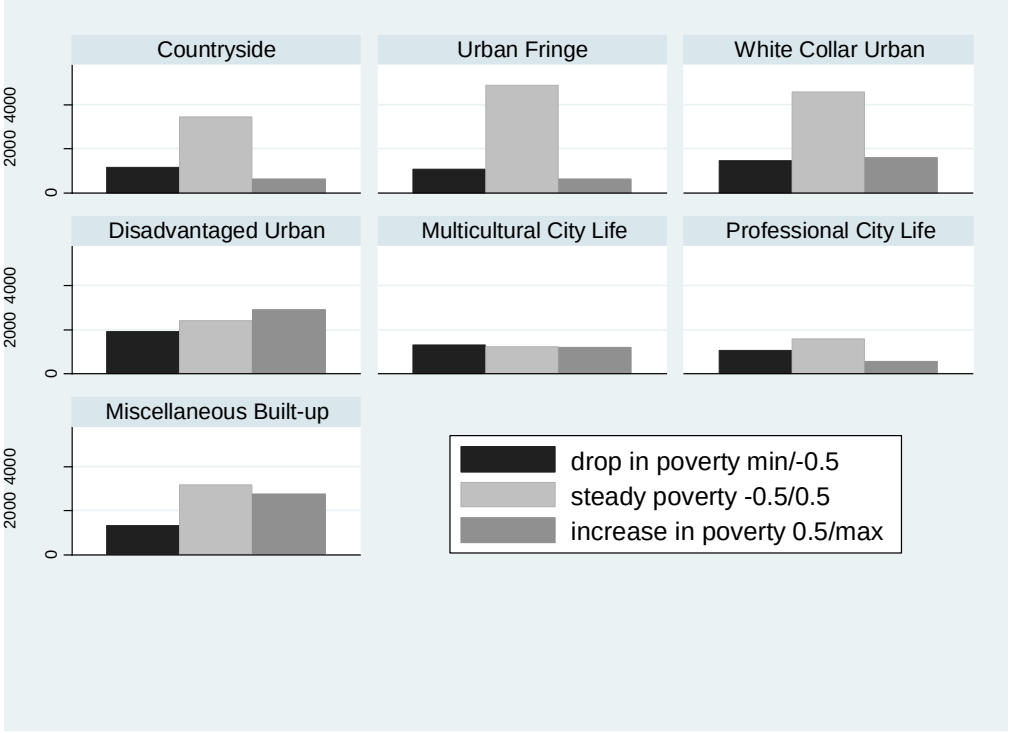
Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average.
Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR).*

Figure 11: Number of small areas experiencing different changes in UMBR, by region



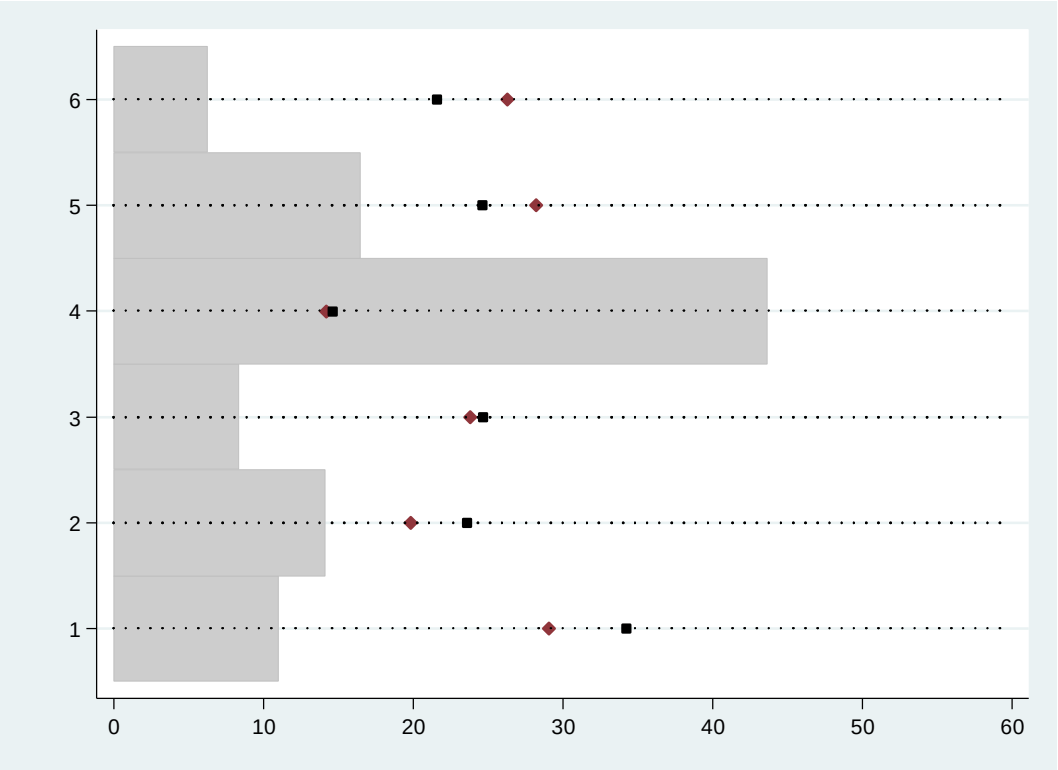
Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average.
Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR).*

Figure 12: Number of small areas experiencing different changes in UMBR, by area classification



Notes: $UMBR_{2001}$ is a two year moving average; for all other years it is a three year moving average.
Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR).*

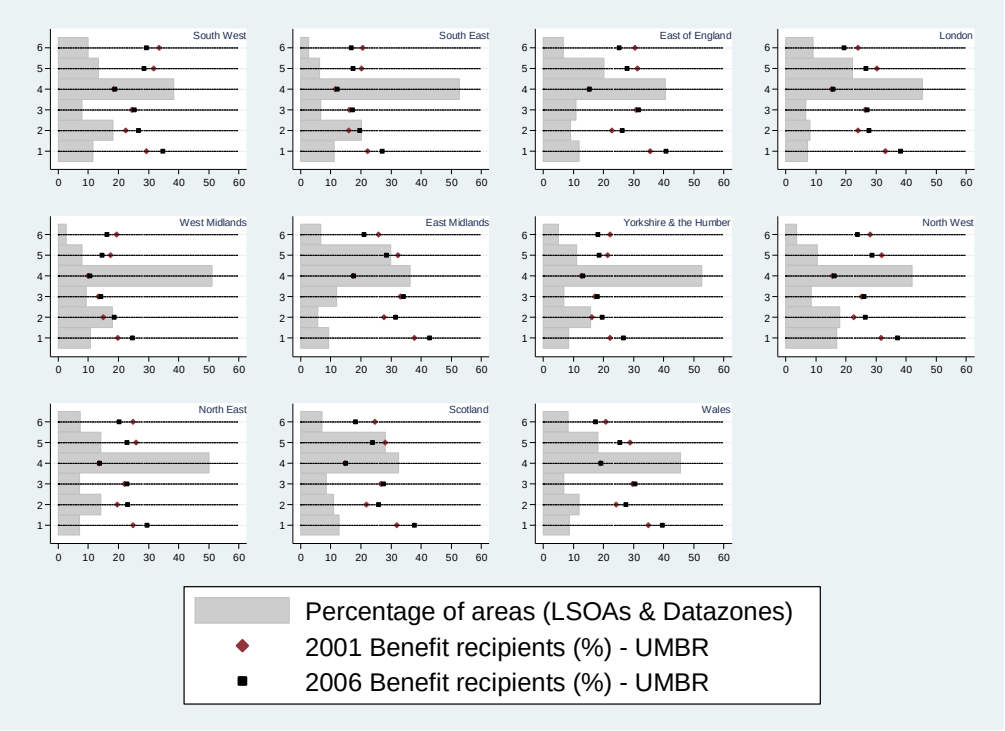
Figure 13: UMBR and Population change



Area type code	Area type label
1	UMBR rising, population falling
2	UMBR rising, population NOT falling
3	UMBR steady, population falling
4	UMBR steady, population NOT falling
5	UMBR falling, population NOT rising
6	UMBR falling, population rising

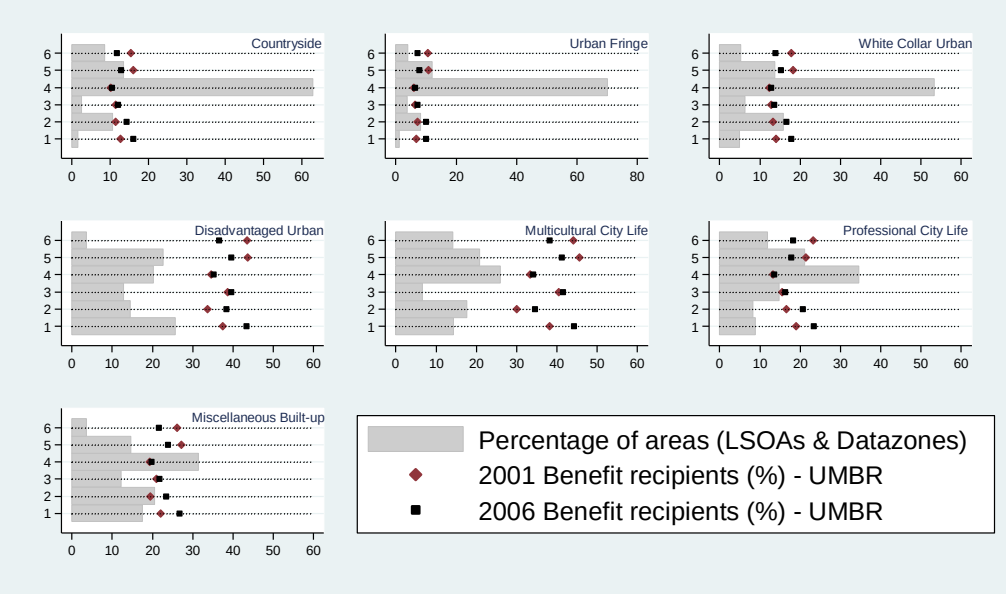
Notes: UMBR and population are defined as rising (falling) if their increase (decrease) between 2001 and 2006 was greater than 0.5 standard deviations. Population refers to household count. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Figure 14: UMBR and Population change by region



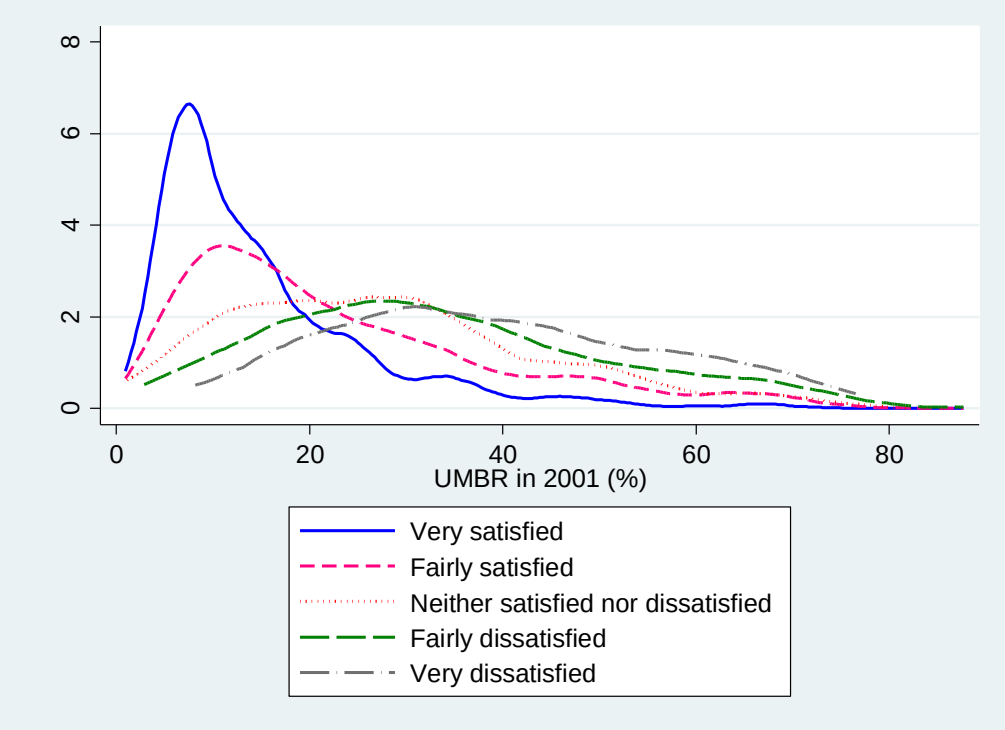
Notes: UMBR and population are defined as rising (falling) if their increase (decrease) between 2001 and 2006 was greater than 0.5 standard deviations. Population refers to household count. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Figure 15: UMBR and population change by ONS classification of places



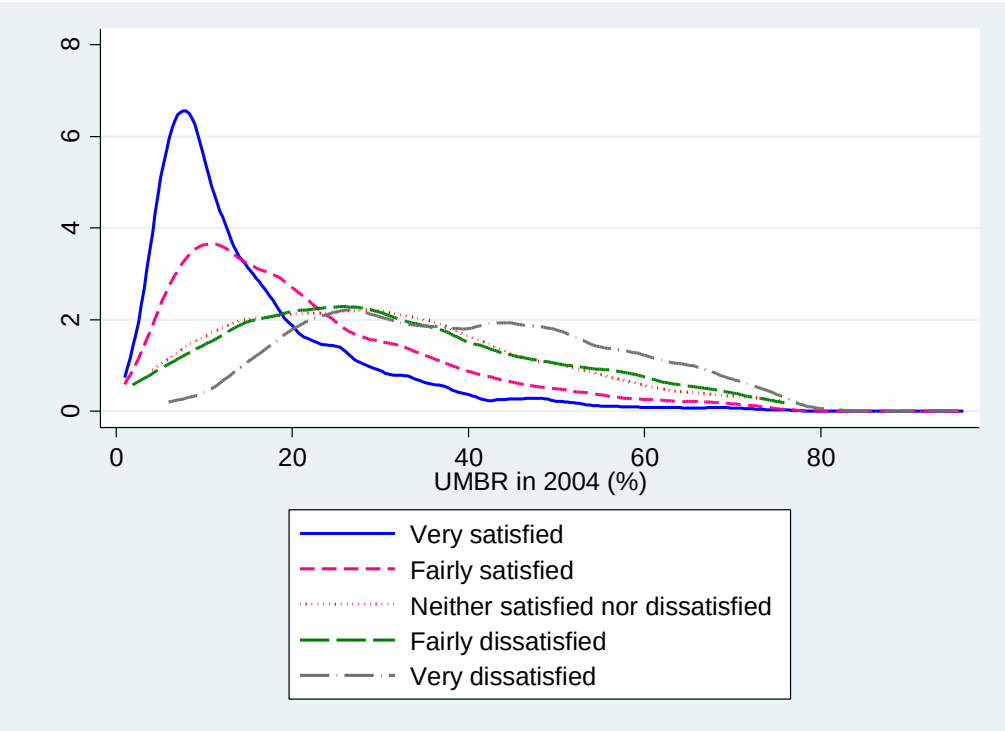
Notes: UMBR and population are defined as rising (falling) if their increase (decrease) between 2001 and 2006 was greater than 0.5 standard deviations. Population refers to household count. Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)*.

Figure 16: UMBR in 2001 by neighbourhood satisfaction - MCS1



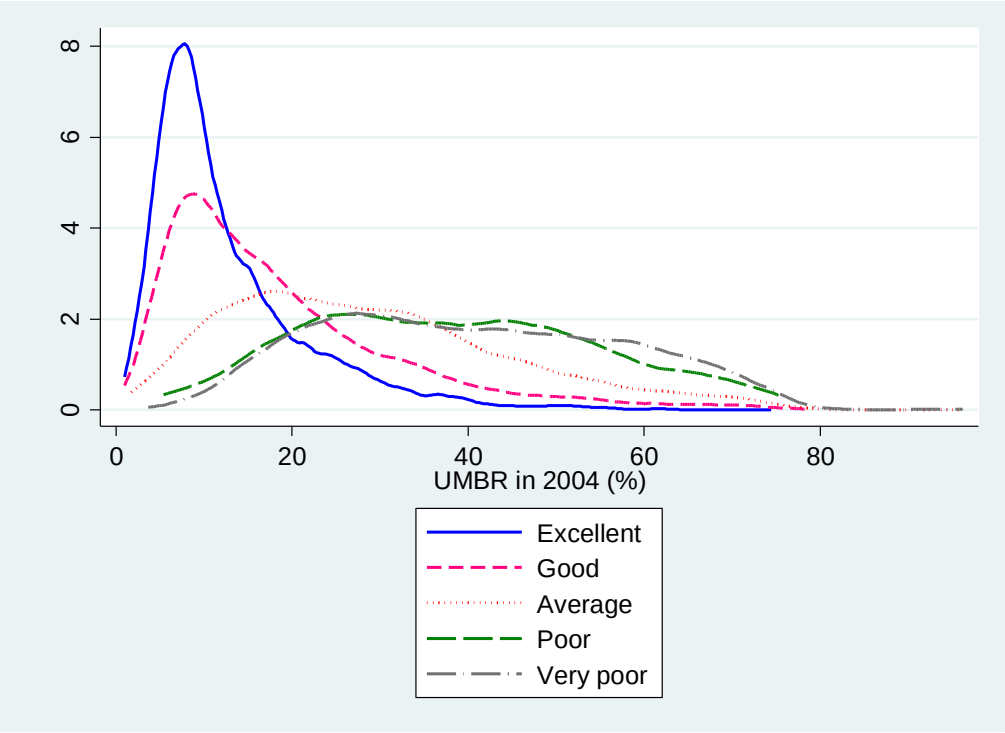
Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Sample: MCS1. Weighted using MCS3 overall weights.

Figure 17: UMBR in 2004 by neighbourhood satisfaction – MCS2



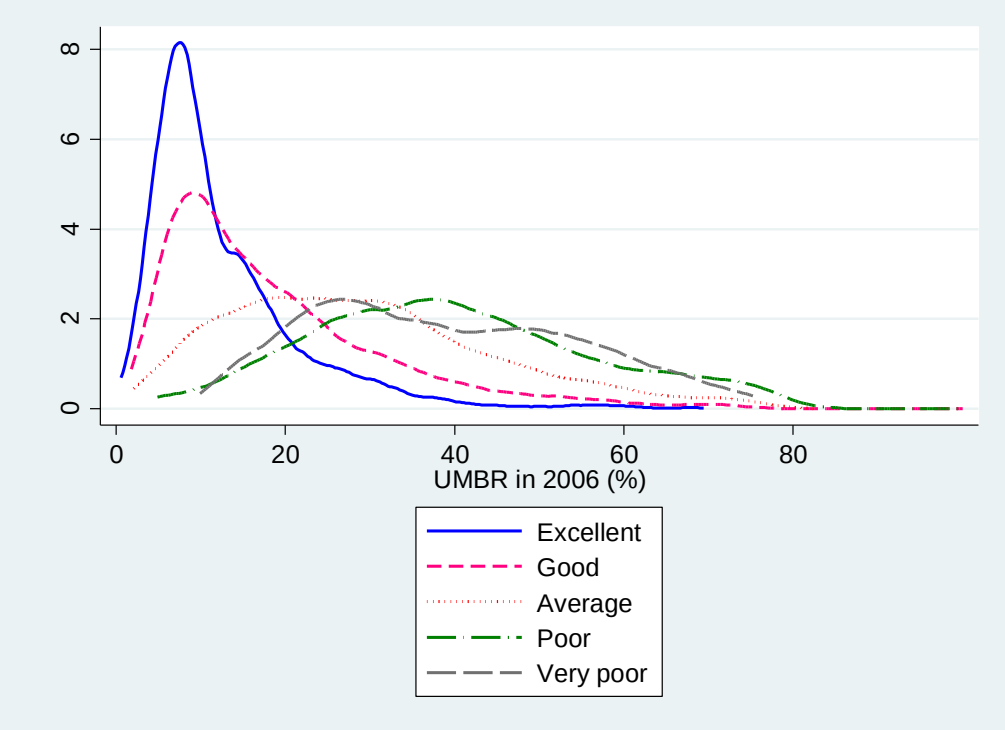
Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Sample: MCS2. Weighted using MCS3 overall weights.

Figure 18: UMBR in 2004 by whether neighbourhood is good for kids - MCS2



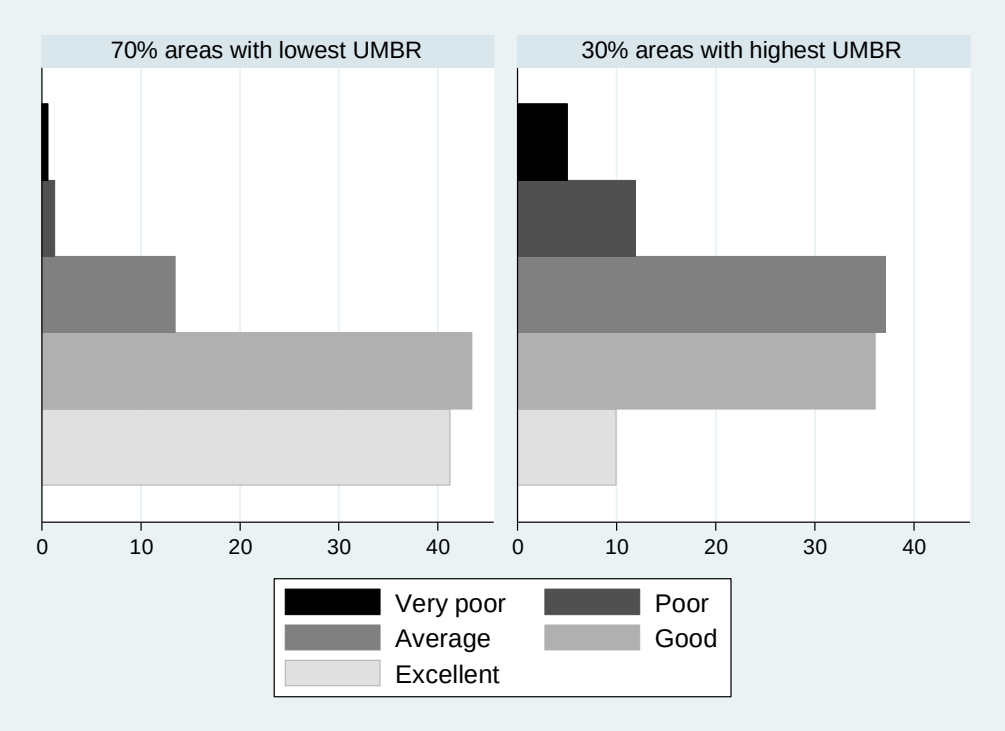
Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Sample: MCS2. Weighted using MCS3 overall weights.

Figure 19: UMBR in 2006 by whether neighbourhood is good for kids – MCS3



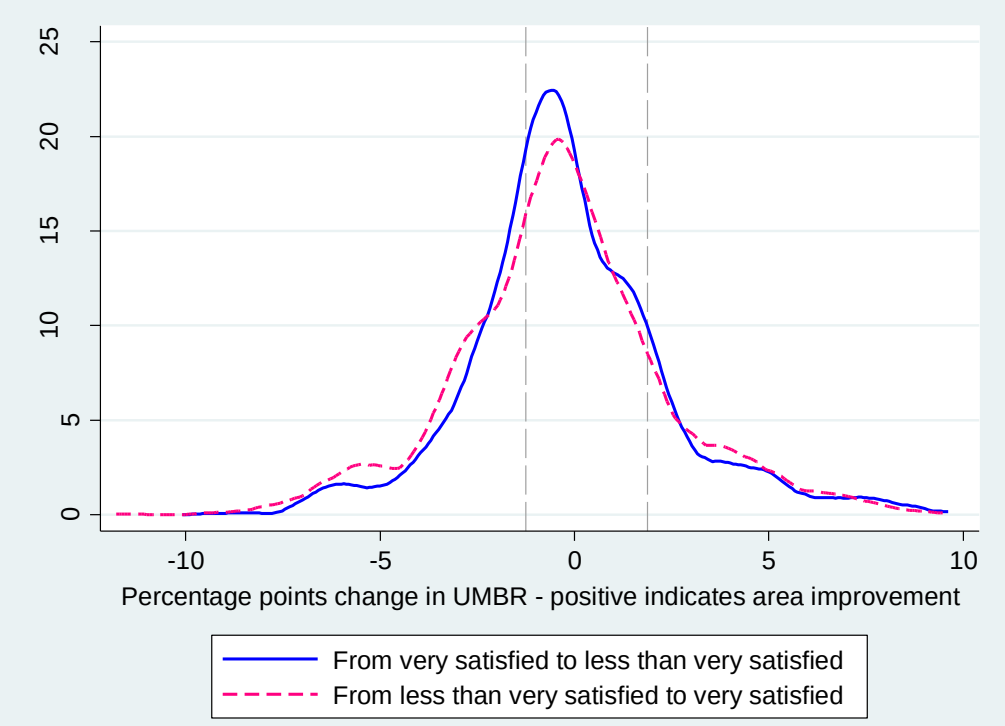
Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Sample: MCS3. Weighted using MCS3 overall weights.

Figure 20: Residents' view on how good their neighbourhood is for bringing up children by UMBR levels, MCS3



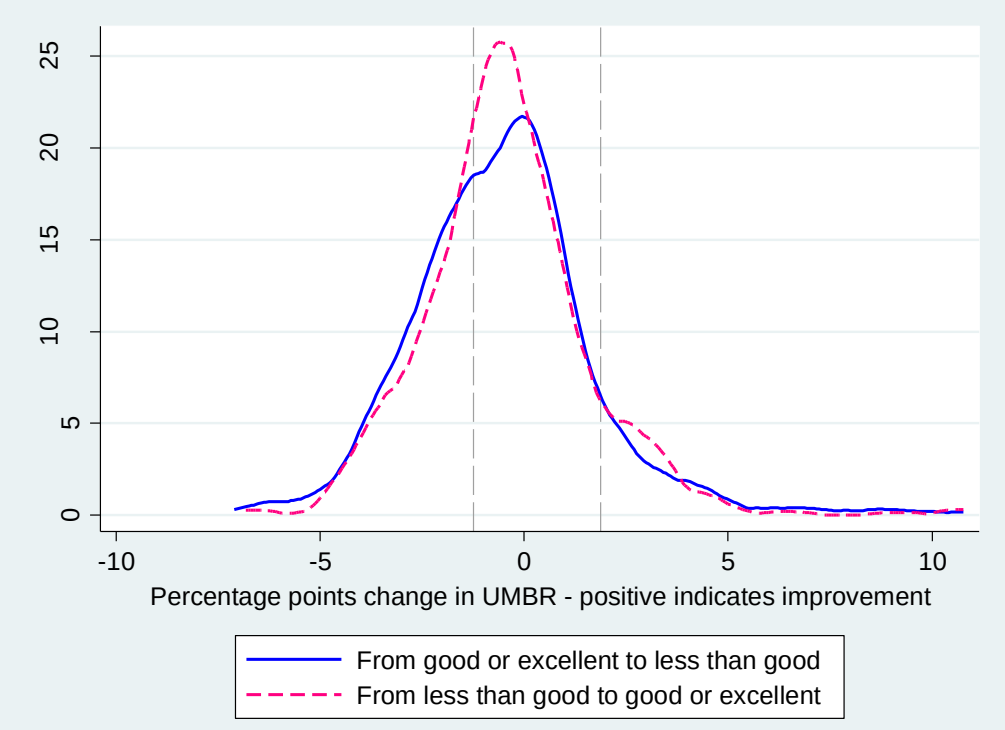
Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Sample: MCS3. Weighted using MCS3 overall weights.

Figure 21: Changes in UMBR by changes in residents' satisfaction with neighbourhood, MCS1 and MCS2



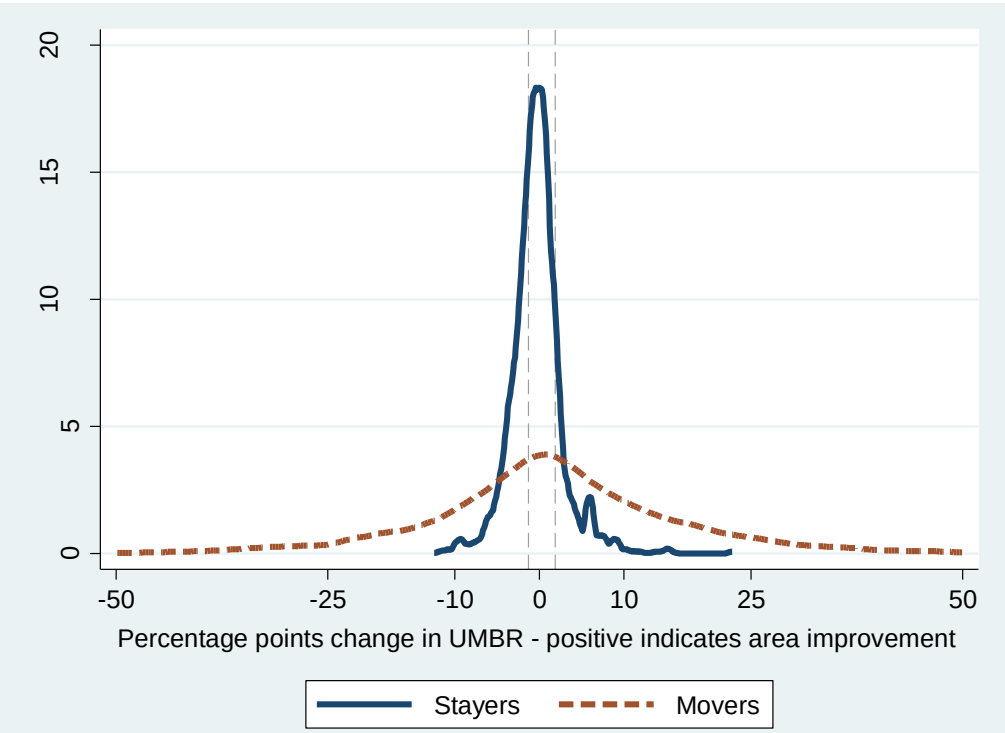
Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Sample: MCS1 and MCS2. Weighted using MCS3 overall weights.

Figure 22: Changes in UMBR by changes in residents' views on whether their neighbourhood is good for bringing up children, MCS2 and MCS3



Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Sample: MCS2 and MCS3. Weighted using MCS3 overall weights.

Figure 23: UMBR change between MCS1 and MCS3 for Movers and Stayers



Notes: Authors' calculations on the basis of the dataset *Unadjusted Means-tested Benefits Rate (UMBR)* and MCS1-MCS3 datasets. Weighted using MCS3 overall weights.