

Poverty in suburbia: Has Glasgow gone the way of American cities?

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Key points

- Suburbanisation of poverty is a growing concern because welfare policy and regeneration frameworks have historically been geared towards inner cities.
- An important challenge is how to measure uncertainty when investigating decentralisation.
- We provide the first rigorous analysis of suburbanisation of poverty in a Scottish context, and possibly the first attempt anywhere to present a robust estimate of suburbanisation uncertainty.
- We find that poverty has become noticeably less centralised in Glasgow over the 2001 to 2011 period both in terms of the location of Incapacity Benefits and Job Seekers Allowance claimants.

The traditional view of poverty as an inner city phenomenon is being challenged. Recent analysis of American cities finds that suburbia is now “home to the largest and fastest-growing poor population in the country and more than half of the metropolitan poor” (Economist 17/1/2002). As a result, the rise of suburban poverty is being highlighted as one of the most significant trends that may come to characterise twenty-first century cities.

Our research investigates whether there is any evidence of this trend emerging in Glasgow. While the suburbanisation of poverty has recently been explored in relation to English conurbations by the Smith Institute, there do not appear to be any studies that consider recent trends north of the border. This is an intriguing omission particularly given the closely drawn outcome of the recent Scottish Independence referendum. A big question in that debate was whether and to what extent Scotland is different to England. If it is fundamentally different socially, economically and



More complex patterns of poverty are emerging in modern cities. © Flickr, Danny Fowler.

politically, are policies designed in England to address English problems really the most appropriate for Scotland?

We have also sought to improve research methods in this field by developing a way of quantifying the uncertainty associated with decentralisation measurement. Our approach will help policy makers and researchers know whether or not an apparent change in the pattern of poverty is a real phenomenon and not just due to random variation in the data.

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Beyond the Regeneration Radar

Suburbanisation of social deprivation is not just an academic curiosity. It raises some tricky problems for policy makers because “the antipoverty infrastructure built over the past several decades does not fit this rapidly changing geography” (Kneebone et al., 2013). Post war urban regeneration policy in the UK has been structured almost exclusively around inner city regeneration.

So there is growing concern among social commentators that being poor in suburbia could bring with it added problems of social isolation and disconnect from the policy safety-net. Area-based policies only work if those in greatest need are concentrated in particular sectors of the city. Fragmentation and dispersal of poverty could bring with it new policy challenges.

The Problem of Uncertainty

But how can we be sure that apparent evidence for the suburbanisation of poverty is not spurious – due, for example, to random variations in population patterns over time? Even when using Census data we only have a brief snapshot of population change. Much of the variation from snapshot to snapshot could be due to random churn. And there may be additional white noise from measurement and coding errors. For example, respondents who ticked the wrong box when filling out their Census returns may not be evenly distributed but instead, by chance, concentrated in particular areas of the city.

These sources of uncertainty in empirical estimation are well known and statisticians have developed a battery of tools for addressing them. So why has research on suburbanisation of poverty not attempted to quantify the uncertainty associated with their estimates? Unfortunately, the problem of uncertainty becomes rather more tricky to address when computing

centralisation indices. This is because of the kind of data we are dealing with. Measures of poverty are spatially correlated and this means that the random errors we are trying to quantify are also likely to be spatially correlated, scuppering standard techniques for quantifying uncertainty.

A major focus of the current research, therefore, has been the development of methods for quantifying uncertainty for centralisation indices that take into account spatial correlations. We develop a Bayesian hierarchical model to estimate each centralisation index and to quantify the uncertainty associated with each estimate. Our approach uses a conditional autoregressive model to account for the spatial autocorrelation in the data. The results are noticeably more reliable than those from traditional “bootstrapping” approaches.

Measuring Decentralisation of Poverty

Having developed an appropriate method for quantifying uncertainty, the next challenge was to apply it to data on Glasgow to ascertain whether there has been a statistically significant fall in the extent to which urban poverty is concentrated near the centre of the city.

We measured the centralisation of poverty in the Greater Glasgow and Clyde Health Board using the Relative Centralisation Index (RCE) which compares the relative position of those who are poor to those who are not poor, in relation to their proximity to the city centre. RCE measures this along a scale from -1.0 to 1.0 with positive values indicating that poorer households tend to live closer to the city centre than more affluent households.

We compute RCE for three different measures of poverty in 2001 and in 2011:

Table 1: Relative Centralisation Index (RCE) in 2001 and 2011

	2001	2011	% change	Statistically significant?*
Income Support	0.1131	0.0824	-27%	Yes
Incapacity Benefit	0.0797	0.0329	-59%	Yes
Jobseekers' Allowance	0.0533	0.0275	-48%	Yes

*Differences are deemed to be statistically significant if the 95% Bayesian credibility intervals for the estimates in 2001 and 2011 do not overlap.

- Proportion of people in receipt of Income Support
- Proportion of people in receipt of Incapacity Benefit
- Proportion of people in receipt of Job Seeker's allowance.

Results

Overall pattern of poverty

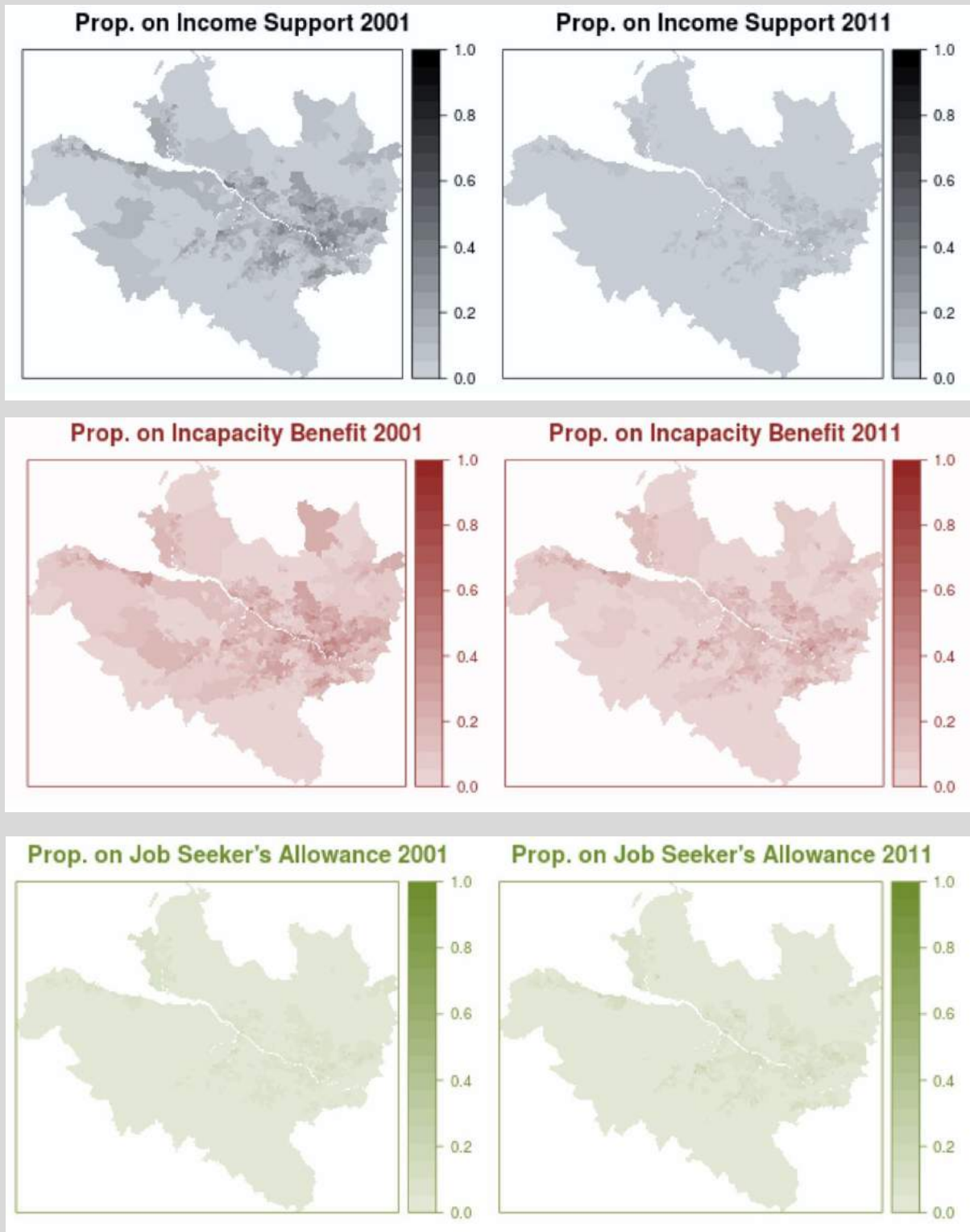
- As might be expected, poverty tends to be centralised

in Glasgow: on average, people in poverty tend to live closer to the centre than people not in poverty.

- This is borne out by all the centralisation indices computed for both 2001 and 2011 being positive (in Table 1), and by the concentration towards the centre of dark shaded areas of the maps in Figure 1.

- The question of real interest is whether this pattern of poverty has changed and, in particular, whether it has become less centralised since 2001?

Figure 1: Observed proportions in 'poverty' in 2001 and 2011





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Maps suggest a fall in poverty between 2001 and 2011

- The spatial maps of the Greater Glasgow and Clyde health board region (Figure 1) show quite clearly that most data zones have experienced a decrease in the proportion of people in poverty in terms of Income Support and Incapacity Benefit between 2001 and 2011.

- For Jobs Seekers allowance, however, the maps are ambiguous. Also, it is not clear from any of the maps whether poverty has become more suburbanised.

- So, while visual inspection of the data is useful, because of the changes in the level of claimants as a whole, it is difficult to research the phenomenon of poverty suburbanisation using maps alone. So what about the centralisation indices? Do they reveal a clear pattern?

Evidence that poverty has become less centralised

- From Table 1 we can see noticeable falls in our centralisation index for all three measures of poverty, and these changes are statistically significant.

- Evidence of decentralisation is particularly strong for Incapacity Benefit claimants – relative centralisation drops by more than a half (59%) from 0.0797 to 0.0329.

- There is also strong evidence of suburbanisation of Job Seekers Allowance claimants – the relative centralisation measure falls by nearly a half (48%) from 0.0533 to 0.0275 between 2001 and 2011.

Conclusion

Has Glasgow gone the way of American cities in terms of a growing prevalence of poverty in suburbia? Working as an interdisciplinary team of statisticians and social scientists, we have sought to address this question without shying away from the thorny methodological problem of estimating uncertainty.

- We have proposed a methodologically robust way of estimating uncertainty for centralisation indices (based on Bayesian hierarchical modelling).

- We find a large, statistically significant fall in relative centralisation of Incapacity Benefit and Job Seekers Allowance claimants which suggests that Glaswegians in poverty have become less centralised relative to those not in poverty, even when we take into account the possibility of random variation.

So, using a measure of relative centralisation we find quite strong evidence of suburbanisation of poverty in Glasgow, even when taking into account random variation. It is perhaps too early to tell whether this trend is long-term or a one-off artefact of the 'Great Recession'. Nevertheless, our results do raise some important questions about whether historical focus on area based regeneration initiatives will be fit for purpose as more complex patterns of poverty emerge in modern cities. Our results also provide an imperative for research on the causes of suburbanisation of poverty in the UK and the extent to which the causes and effects vary between cities and across countries.

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References

Kneebone, Elizabeth; Berube, Alan (2013-05-20). *Confronting Suburban Poverty in America* (Kindle Locations 172-174). Brookings Institution Press. Kindle Edition.