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Health, policy and geography: Insights from a multi-level modelling approach☆

Adriana Castelli [a], Rowena Jacobs [a,*], Maria Goddard [a], Peter C. Smith [b]

[a] Centre for Health Economics, University of York, York YO105DD, UK
[b] Imperial College Business School and Centre for Health Policy, Imperial College, London, UK

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ABSTRACT

Improving the health and wellbeing of citizens ranks highly on the agenda of most governments. Policy action to enhance health and wellbeing can be targeted at a range of geographical levels and in England the focus has tended to shift away from the national level to smaller areas, such as communities and neighbourhoods. Our focus is to identify the potential for targeting policy interventions at the most appropriate geographical levels in order to enhance health and wellbeing. The rationale is that where variations in health and wellbeing indicators are larger, there may be greater potential for policy intervention targeted at that geographical level to have an impact on the outcomes of interest, compared with a strategy of targeting policy at those levels where relative variations are smaller. We use a multi-level regression approach to identify the degree of variation that exists in a set of health indicators at each level, taking account of the geographical hierarchical organisation of public sector organisations. We find that for each indicator, the proportion of total residual variance is greatest at smaller geographical areas. We also explore the variations in health indicators within a hierarchical level, but across the geographical areas for which public sector organisations are responsible. We show that it is feasible to identify a sub-set of organisations for which unexplained variation in health indicators is significantly greater relative to their counterparts. We demonstrate that adopting a geographical perspective to analyse the variation in indicators of health at different levels offers a potentially powerful analytical tool to signal where public sector organisations, faced increasingly with many competing demands, should target their policy efforts. This is relevant not only to the English context but also to other countries where responsibilities for health and wellbeing are being devolved to localities and communities.

Introduction

Improving the health and wellbeing of citizens is high on the agenda of most governments and policies aimed at enhancing this key objective can be targeted at a number of different levels such as the individual, neighbourhood, community, locality, local authority, district, region, or national level. For some years, there has been an increasing policy focus in England on the level of community and neighbourhood, culminating most recently in the notion of the "Big Society" which has an emphasis on "localism" and "community" at its core (Lawless, 2011). Typically, health care reform is likely to involve a shift in policy focus to different geographical levels within the health care system and again, the most recent NHS reforms switch attention to smaller geographical areas (NHSCBA, 2012). Many of the public sector organisations (PSOs) responsible for implementing such policies are organised in geographical hierarchies with each organisation tasked with responsibilities that may affect the welfare of individuals within their jurisdiction, either at the hierarchical level where the PSO is positioned, or at lower levels in the hierarchy. Thus there is an interest in knowing where best to target policies in order to improve health and wellbeing. As health and wellbeing is influenced by actions taken not only by PSOs responsible for health care, but also by other bodies who may well operate within different geographical boundaries (Audit Commission, 2009), it is also of interest to explore the scope for organisations to exert an influence on health outside their direct jurisdiction.

At the same time there is a growing body of research that focuses on the influence of area of residence on the health and wellbeing of individuals, over and above the aggregate impact of the characteristics of individuals, although there is considerable debate about both the degree of influence and the nature of the specific

* Corresponding author. Tel.: +44 0 1904 321425; fax: +44 0 1904 321454.
E-mail address: rowena.jacobs@york.ac.uk (R. Jacobs).

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mechanisms involved (Macintyre, Ellaway, & Cummins, 2002). Reported associations between area of residence (defined in various ways) and measures of health and wellbeing include cardiovascular disease, coronary heart disease, mental health conditions, and a wide range of health related behaviours (Bell, Wilson, Bissonette, & Shah, 2012; Ellaway, Benzeval, Green, Leyland, & Macintyre, 2012). Disentangling the origin of such variations and the complex relationships between individual and place based characteristics is methodologically and conceptually challenging. Thus, research has focused both on trying to establish the relative role of place ("context") and that of the individual characteristics of people ("composition") (Macintyre et al., 2002); as well as moving beyond this dual outlook to recognise the interplay between the two and the "mutually reinforcing and reciprocal relationship between people and place" (Cummins, Curtis, Diez-Roux, & Macintyre, 2007). Whilst acknowledging the complexities of understanding the causal mechanisms at work, the place-based factors, which may have some role in influencing health and wellbeing of individuals include a range of economic conditions, physical conditions, environmental and cultural factors, access to health care resources and indicators of social capital (Kawachi, Subramanian, & Kim, 2008; Macintyre & Ellaway, 2003; Pickett & Pearl, 2001).

In this paper, we bring together the two strands outlined above by exploring the variation in a range of health-related indicators at a number of geographical levels. We do not seek to explain the nature of the mechanisms through which place or area is linked with health, nor do we propose any causal mechanisms through which this might work. Our focus is instead on identifying the potential for targeting policy interventions at appropriate geographical levels. Our rationale suggests where variations in health and wellbeing indicators are greater, there may be more potential for policy intervention targeted at that geographical level to have an impact on the outcomes of interest, compared with a strategy of targeting policy at the levels where relative variations are smaller. Similarly, comparison of the degree of variation between areas, but within the same geographical level, may also serve to focus policy attention where the greatest variation is apparent. In both cases, it is feasible that the patterns of variation may differ according to the specific indicator of health and wellbeing under consideration, which also has implications for the policymaker interested in influencing different aspects of the welfare of citizens. Intervention is therefore justified from three perspectives: first, at the geographical level where variations are larger; second, for PSOs within the same geographic scale where variations are larger; and third, for the specific health indicators where the greatest variation is apparent. Of course, even where little variation exists, intervention may still be appropriate, but our argument is that identification of relative variations can be a guide to targeting policy effort more appropriately.

Whilst we focus in this paper on PSOs and the health and wellbeing of the citizens living in the area for which they are responsible, we do not argue that policies targeted at addressing variations at specific geographical levels are necessarily best undertaken by the PSOs that exist at that level. Actions may be undertaken by PSOs at any level and may be targeted at the entire area for which the PSO is responsible or at specific areas under their jurisdiction. Indeed, as we describe later, it is possible that there are no obvious PSOs at those levels identified as being most appropriate to target. However, since organisations and policy-makers are increasingly facing a range of multiple and competing demands for their attention, we seek to give a signal of where the policy efforts of PSOs at any level in the hierarchy are best targeted.

Policy background

Major policy shifts in England have given rise to two important issues that can best be understood by applying a geographical lens to the analysis of health and wellbeing. First, there has been an increasing emphasis on the "local" dimension in relation to many aspects of public policy making, including health care; and second, a formal change in the responsibilities of Local Authorities has recently been made in order to reflect their role in influencing the health and wellbeing of local populations.

There has been a local dimension to the structure, organisation and focus of health care services and policy for many years (Exworthy, 1998), reinforced by the Darzi review, which put localities at the heart of driving and delivering change in the NHS (Department of Health, 2009a), and most recently encapsulated by a number of changes which focus on strengthening local power and decision-making. These include the devolution of responsibility and budgets for purchasing health care services to local consortia and to individual GP practices within the consortia and the greater involvement of patients and the public in running these services (Department of Health, 2010a). At the same time, reform of the public health function in England has moved a significant element of the public health function from Primary Care Trusts into local government. Local Authorities have a new duty to promote the health of their population, because "Local government is best placed to influence many of the wider factors that affect health and wellbeing" (Department of Health, 2010b).

In addition to the formal blurring of the boundaries between the jurisdictions and remit of PSOs, the strategy also reflects the shift of geographical focus, "… radically shifting power to local communities" where "Localism will be at the heart of [the] system" (Department of Health, 2010b, p. 4). This builds on developments such as the New Deal for Communities which was "one of the most intensive and innovative area-based initiatives ever introduced in England", running for a 10 year period from 1998 (Batty et al., 2010, p. 5) and placed communities at the heart of the initiative. The Localism Act encapsulates this strategy, devolving "power, money and knowledge to those best placed to find the best solutions to local needs: elected local representatives, frontline public service professionals, social enterprises, charities, co-ops, community groups, neighbourhoods and individuals" (Department for Communities and Local Government, 2010, p. 2). Structures, organisations and financial arrangements are changing in order to reflect the shared responsibility of health and local government organisations for the wellbeing of their local communities.

The nature of these changes suggest that we should look beyond the usual geographical levels of regional, local authority or health district area level to smaller geographical areas that may be more representative of local communities or neighbourhoods, as well as considering the role of local government agencies, rather than just health agencies, on the health and wellbeing of citizens.

The geographical hierarchical structure

Our aim is to measure the degree of variation in a group of health indicators at different geographical hierarchical levels. As described earlier, where variations are largest, there may be relatively greater potential for policy intervention targeted at that particular geographical level to have an impact on the outcomes of interest, compared with a strategy of targeting levels at which variations are relatively smaller. This is especially important given the policy trends outlined above.

We take account of the fact that PSOs are often structured such that administrative organisations operate at geographically defined levels, with some organisations being clustered within the boundaries of others, in a hierarchical structure. PSOs are usually tasked with addressing variations in health related outcomes for the populations in the geographical areas for which they are responsible. For example, in England large organisations such as Government Regions and Strategic Health Authorities (SHAs) are at