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Who does not eat their greens? Geodemographics, health promotion and neighbourhood health inequalities

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1 Introduction

In November 2004 the UK Government released the Public Health White Paper, highlighting the requirement for action to reduce health inequalities at local scales. The environment we live in, our social networks, our sense of security, our socio-economic circumstances and the facilities and resources available in our local neighbourhood can all affect our health. The differences in people's health between neighbourhoods and socio-economic groups are officially deemed to be unacceptable (Department of Health, 2004). It follows that these differences must be addressed in order to improve population health outcomes.

Personal behaviour and lifestyles, community influences, living and working conditions, accessibility to services, educational attainment and health literacy can all impact upon an individual's health. There is an inherent geography to health and inequalities: Higgs and Gould (2001) identified a number of problems facing health agencies that are fundamentally geographical and local in character, and are thus worth analysing from a geographical perspective.

Much recent research has been carried out to quantify health inequalities, in terms of local geographies of deprivation, identifying those that have relatively adverse experiences of access to material necessities (for example ODPM 2004). A myriad of indices have been used to measure deprivation, for example: Townsend Measure, Jarman Index of underprivileged areas, Breadline Britain, and Index of Multiple Deprivation (IMD) 2004. Deprivation is a difficult concept to conceive, measure, and analyse due to its heterogeneity and a high degree of uncertainty of such representations (Longley and Harris, 2002),

Most of this research in the deprivation tradition conceives small areas as 'containers' of deprivation and its measurement is often restricted to poor surrogate measures of health related behaviour and experiences, and in some cases (such as Breadline Britain) the analytical solutions proposed may be suspect. This study looks at neighbourhood composition in terms of the differential behaviours and lifestyles, adding social context to our understanding of causes of health inequalities.

Geodemographic analysis of health inequalities can capture those differential lifestyle behaviours, and have already proved useful not only in improving customer segmentation in the commercial sector, but also to better target public services (Harris et al 2005). By applying geodemographic classifications to market research surveys (MRS) and NHS operational datasets at postcode level, interesting conclusions can be drawn in terms of differential lifestyle behaviour affecting health at very fine scales.

This paper explores the use of geodemographic data combined with other proprietary lifestyle datasets, to inform Public Health initiatives on a local scale, within the boundary of one NHS Primary Care Trust (Camden PCT). Camden is an inner London Borough, with an extremely high polarisation in its population in terms of wealth distribution, ethnic diversity, as well as education attainment and level of health. This reality requires an effective tool to locally identify the population with a higher health risk and their associated lifestyles at a very fine spatial resolution, what justifies the use of GIS and Geodemographic analysis in this study area.

The 2004 White Paper emphasised the role Public Health departments must have in empowering local communities to make informed healthy lifestyle choices. By applying geodemographic techniques within a public health setting, it will be possible to understand the neighbourhoods that show a higher propensity towards unhealthy lifestyles. Health promotion and education activities can be focused on the residents living in these neighbourhoods and assist people in acquiring information, enabling informed decision-making about lifestyle choices. Best working practices can be established and aid the tasks of disease prevention, and health education, promotion and empowerment.

2 Geodemographics for health

As yet, little use has been made of geodemographic indicators to differentiate population conditions of unhealthy lifestyles that lead to poor health. Geodemographic classifications study population types and their behaviour as they vary by geographical area, typically clustering small areas by postcodes, combining variables from the census of population and other socio-economic data such as housing, financial and lifestyle information to classify neighbourhoods into different types. Residents are then assigned particular characteristics according to the neighbourhood type within which they live.

Popular in the private commercial sector, national demographic databases are routinely used in finance and marketing industries to classify lifestyles and behaviours geographically. These databases are commonly used to segment customers to enable

more efficient, effective and exact marketing initiatives. Extensive in size they continuously gather and update data for tens of millions of individuals (Commission on the Social Sciences, 2003). Despite the obvious commercial and confidentiality constraints, such classifications are increasingly used in public service planning and delivery on a macro scale, for example to broaden access to education (Tonks and Farr, 2003).

Studies of demography investigate both the individual and group characteristics to explore behaviour and lifestyle patterns. The underlying principle upon which geodemographics is constructed, is the notion that all things are related, but near objects are more related than far objects (Tobler, 1970). Similar people live in similar types of neighbourhoods, go to similar places, do similar things and behave in a similar manner. The scale at which demography is socio-economically studied will influence the richness and detail of data and the ensuing analysis of the population. A corollary of this view is that geodemographic neighbourhood analysis will provide detailed understanding of the disaggregated approach to studying lifestyle and health behaviour.

3 Data Issues

Good quality data underlie the functioning of Public Health. Data provide the building blocks to understanding population lifestyle and behaviour, health needs, service demand and health system usage. Various issues exist which surround the use of health data. Accessibility to disease registers and the like are carefully controlled and subject to data protection and confidentiality legislation.

Health data sets are often incomplete or not as current they should be. They are derived from disparate sources; GP registers, Hospital Episode statistics (people who are admitted to hospital), Child Registry and Accident and Emergency, all adhering to different standards. Data collection and storage are different and often varies between General Practices who utilise different systems and techniques. Cross-referencing between these datasets is technically difficult because of these issues. Consequently unless the quality of geodemographic analysis is reliable, a complete picture cannot be ascertained. For example when exploring ethnicity and country of origin of patients, both important determinants of health, data is often not available. It is important to understand the ethnic diversity of neighbourhoods as disease prevalence varies across ethnic groups (London Health Observatory, viewed 9th December 2004). Therefore, geodemographics classifications can provide the most likely ethnic group of individuals through their postcode, which enhances the value of public health datasets.

4 Analysis

Exploratory spatial data analysis has been undertaken, using commercially available geodemographic classification data (Mosaic developed by Experian), in combination with other consumer lifestyle behaviour and market surveys, together with National Health Service datasets. Key variables in the market research surveys that represented dietary

consumption was correlated with different neighbourhood types enabling the identification of socio-economic groups and their most likely eating habits; are they more or less likely to eat 5 pieces of fruit and vegetable a day?

Date representing individuals admitted to hospital and the condition for which they are suffering was then linked to the previously described datasets, via each individual's postcode. It was possible to establish the likelihood of people living in certain neighbourhood type having certain lifestyle profiles, such us poor diet or low exercise, and the types of illness they are admitted to hospital for, giving an insight into the differential lifestyle behaviour affecting health outcomes by socio-economic group (Mosaic Type).

Through the socio-economic types, different gradients of 'unhealthy behaviours' were attributed to the different neighbourhoods in the PCT by postcode using a GIS. Such neighbourhood classifications allowed a range of spatial analyses to be performed by combining the socio-economic types with census-derived variables and NHS service uptake datasets, enabling the visualisation not only of health inequalities at the micro-scale level, but most importantly the distribution of the socio-economic factors that influence actual health outcomes. The derived profiles can then be attached to other public health initiatives databases in order to more efficiently segment the population of the PCT and target the adequate groups at risk.

5 Conclusion

Our preliminary findings will be drawn together in this paper, enabling us to appraise the usefulness of the exploratory analysis of health geodemographics in preventive healthcare planning. In particular, we will gauge the efficacy of such initiatives in targeting of Health Promotion initiatives to different population groups.

The broader implications of this work will be appraised with regard to the dissemination of information to positively influence change in reducing population health risks. We will argue that these techniques will also provide intelligence to justify the appropriateness of resource allocation. This is particularly relevant to funding applications tied to specific community programmes that tackle health inequalities within Camden PCT's boundary.
The still broader question is whether health geodemographics will be a useful tool in the effort to reduce health inequalities.

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7 Biography

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Richard Webber is Visiting Professor at CASA. He has worked at the London Centre for Environmental Studies, at CACI (where he developed ACORN, the first geodemographic system) and Experian (where he developed MOSAIC, and became the Director of its Micromarketing Division).

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