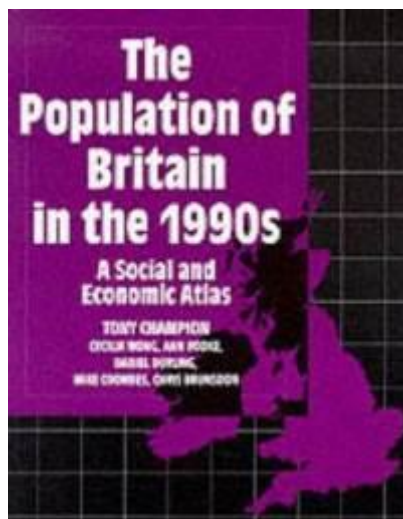**The Population of Britain in the 1990s - A Social and Economic Atlas**

Tony Champion, Cecilia Wong, Ann Rooke, Daniel Dorling, Mike Coombes, and Chris Brunsdon

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Contents

Preface

This atlas aims to portray key features of the human geography of Britain in the 1990s. It covers a wide range of topics which we have grouped under seven broad headings relating, in turn, to population distribution and composition, birthplace and ethnicity, employment and education, life chances, housing, transport and facilities, and political geography. In addition, the atlas has the secondary objective of illustrating how different types of maps and measures can portray a variety of different topics. In other words, it is hoped that the reader will remember that the map-maker was able to choose from many options when compiling any one map. In this introductory discussion we set out our justification for taking this new look at Britain at this time and highlight the types of decisions which we needed to take in planning the atlas.

In terms of presenting the case for this volume, the principal rationale lies in the pace and nature of the changes which have been affecting people in Britain over the past decade. Some of these changes constitute reversals of earlier trends, such as the shift from the substantial population growth and overall economic expansion of the early post-war decades to slower growth and recession more recently. Other changes represent an extension, and in some cases a reinforcement, of established trends which continue to alter the complexion of localities across Britain, such as the movement of people away from the larger cities to smaller settlements and more rural areas, and the shift of employment out of production sectors into services.

This is also an opportune time to carry out such an updating of Britain's human geography because of the wealth of fresh data available to us. While a range of official statistics are published on an annual basis, most of these derive from sample surveys which cannot provide reliable country-wide information below the scale of the standard region (e.g. East Anglia, South West). For more local information, the primary source is the Census of Population which is undertaken only once every ten years. The most recent Census took place in 1991, and the results of this nearly complete enumeration of people in Britain have been appearing steadily over the past four years, ending up with the special datasets on commuting and migration. We therefore now have available to us the full range of output from the 1991 Census and have been able to identify what we consider to be the major findings to be drawn from it. These make up about two-thirds of the contents of this atlas, with the remaining one-third using statistics drawn from other sources which complement or update the Census material.

In setting about the task of producing this volume, we have had to make a number of decisions about what to include and how the material should be presented. This approach is outlined in the next few paragraphs with the dual purposes of providing guidance on the way that information in the atlas should be interpreted and of trying to provoke critical thought about alternative methods of presentation. The key point is that we faced many choices, and it is quite likely that we opted for method of presentation which either fitted most closely to our expectations or showed things in what we considered to be a novel or interesting light.

The first decision to make is, of course, what topics should comprise the contents of the atlas. It is not really necessary here to emphasize that the range of issues which could be covered by an atlas of human geography is dauntingly wide and varied. The selection made here is unashamedly influenced by the personal interests of the authors, but it is even more influenced by data availability. For example, no map of average incomes by area is included here because there are no official statistics for this most funda- mental issue below the county level. Maps of 'poverty' or 'affluence' have to rely on indirect, or 'proxy', measures. Among

other basic issues which are not included here--because there are not even any plausible proxy measures which can be mapped--are, for instance, area averages of people's height, of their membership of religious or other organizations, of their first language, or of their leisure interests. The atlas seeks to compensate for some of these omissions with a diverse selection of measures which include some complex or unfamiliar statistics.

The next decision to be made by the map-maker involves choosing how to analyse the chosen dataset to produce a measurement, or other form of information, which can then be mapped. For those datasets where data availability is less of a problem, straightforward counts, ratios, percentages, and trend analyses are usually presented here to help the reader by choosing easy-to-understand measures wherever they would be appropriate. In some cases, however, one or more datasets have to be analysed in non-standard ways in order to provide the most meaningful measure--perhaps as a proxy for a 'missing' dataset, perhaps because the aim is to represent a rather abstract issue.

For any one topic which the map-maker has selected as the primary feature, there is often another issue which provides the context within which it can best be understood. Glancing through this atlas, it may seem that only one or two of the map--such as

Information cities--deal with more than a single topic at the same time. Yet this is to forget how a map is read. How many people look at a map of Britain without the knowledge that London is in the south-east while the least populated regions are in the northern and western periphery? Most readers will also know that the central areas of the country are largely characterized by the effects of industrialization, and so will see in many maps the influence of industrial traditions or long-term economic decline. In other words, the map may feature only one topic explicitly, but can be presented in a way which allows most people to 'read into it' a more considered underlying pattern. Of course, the reader needs to be careful not to read patterns into maps in which the evidence is more ambiguous or, indeed, may be presented by the map-maker in such a way as to exaggerate the strength of the evidence for one interpretation of the data rather than another.

How can one 'reading' of a map pattern be promoted at the expense of other alternatives? Quite apart from the commentary provided in the accompanying text, the other nearby material can stimulate a particular way of looking at the map. For example, there may be one or more adjacent maps in which, say, a North-South divide of the country is starkly evident. It will then be instinctive for the reader to check all other maps nearby to see if they echo this pattern. Adjacent diagrams or graphs may also raise spatial contrasts (e.g. between metropolitan and rural areas) which are then likely to be uppermost in the mind when the nearby map is being examined.

The overall impression given by a map itself is largely the product of a series of technical map-making decisions which will have been taken to emphasize that aspect of the input data which is considered to be of most interest. On its own, Britain covers quite a small area of the globe so the choice of projection (e.g. Mercator) is not very influential in shaping most maps of this country. Two of the maps in this atlas (see *Voters' apathy* and *Election results 1992*, as well as the key map in Appendix 2), however, show that there is a still more fundamental question of how to present a 'human geography' map. This option is a cartogram, which serves as a reminder of one of the assumptions usually made when reading a map. This assumption is that a certain-sized area of map surface represents a certain-sized area of land surface (subject to any distortion caused by the projection). On the cartogram, however, the

map is scaled so that a constant area of map covers a constant number of people. This is one, particularly dramatic, example of the map-maker's key technical decisions radically affecting the way the maps in this atlas appear. The cartogram is an option which presents itself when the map-maker needs a secondary issue (in this case, population distribution) to be a very evident part of the background to the primary topic of the map.

The way in which population distribution shapes the cartogram acts as a reminder of how 'area distribution' forms the background to the more familiarly shaped maps. As a result, the conventional map can tend to draw attention to the parts of the country where few people live, simply because areas such as the Highlands of Scotland take up a large proportion of the land--and hence map--surface. For an atlas of human geography, it is a relevant question whether the maps should be emphasizing those areas where there are more sheep than people! The 'trade-off' which the map-maker faces is between, on the one hand, the problem of conventional maps overemphasizing rural areas and, on the other hand, the cartogram's unfamiliarity which makes it harder for readers to recognize and interpret the patterns by using their prior knowledge and understanding in the way discussed earlier. One reason why the cartogram's pattern tends to be harder to interpret is that the coastline of Britain provides the usual link between the reader's prior information and the data on the new map: for example, the pattern of values in and around most of Britain's largest conurbations can soon be identified by the many people who know their location near to the coastline and the recognizable estuaries such as the Thames, Mersey, and Clyde in particular. The cartogram doesn't provide the conventional coastline by which the reader tends to orientate.

Whether drawing a cartogram or a conventional map, the next key decision is usually the level of detail which will be employed to reveal the contrasting spatial pattern of that topic. For most maps in human geography, this decision boils down to the choice of areal units--the 'building block' of the map. There will be purely technical constraints, with the size of the eventual printed image preventing too detailed a breakdown of the country. Often, the available data provides the limit to the detail which could be presented. At the same time, there can be good arguments to counter the natural presumption that showing the fullest possible detail is the ideal choice. Readers may well find it harder to interpret a pattern which is hugely fragmented, and be less able to compare it with, and add it to, the knowledge they already have about Britain's geography. A complex image can contain a huge volume of information, yet it may be far less intelligible than a simpler one.

A more abstract issue arises at this point--the so-called 'modifiable areal unit problem'. Put simply, the same basic data can present very different patterns when it is grouped and presented for different sets of areas. For example, Glasgow's tenement districts include some of the most densely populated areas of the country, but if the city's statistics are grouped with the other districts in the region of Strathclyde then this region is seen to have a lower population density than any of the English metropolitan counties with which it would normally be compared. This particular example may be explained by the inclusion within Strathclyde of some very sparsely populated rural areas which lower the region's overall density value, but it still serves to demonstrate the fundamental sensitivity of the analysis to the areal units used.

This modifiable areal unit problem can thus be seen as something which should force map-makers to consider which areal units are *appropriate* for presenting each particular measure they have chosen to map. In many cases, the problem revolves around the question of whether cities are over- or under-bounded (where Glasgow is hugely over-bounded when

represented by Strathclyde). Any 'given' set of areal units, such as counties and Scottish regions, can lead to misleading comparisons between cities because some are more generously bounded than others. Even if each set of areas was consistent in its treatment of all cities, there would still remain the question, for any particular map, of whether it would be more appropriate to have generously or narrowly bounded cities. For many socio-economic issues, it has long been recognized that city regions, or labour-market areas, are the appropriate units of analysis because they will include both the inner-city residents and the rural commuters who live within the same urban system, and who depend on the same economic prospects. Unfortunately, Census data is not published for any set of areas of this kind. For this atlas, therefore, a special set of areas has been devised to divide Britain into a meaningful and comparable set of 'places' (see the notes to Ethnicity and opportunity).

For maps which are not labour-market related topics, standard administrative areas are often used because in these cases the 'trade-off' tips in favour of the greater familiarity of these units, and of recognizable boundaries such as the counties along much of England's south coast. To aid the reader, a set of key maps showing counties and Scottish regions, local government districts, 'places', and political constituencies (on their cartogram basis) is provided at the end of the atlas in order to identify individual areas and localities.

Having decided on the topic(s), measure(s), and areal units for the map, the remaining choices are more cartographic in nature. Would the values be more intelligible if the map plotted, in each area of the country, a device such as columns or proportionally sized circles (as for *Born outside marriage* or *Wealth*)? The column could perhaps itself take the form of a bar chart (as for *House prices and negative equity*), while the circle could take the form of a divided pie chart (as for *Exam results and qualifications*). Other options include flow maps using arrows or lines of linkage proportional to the amount of interaction between areas (as for *Migration between regions* and *Patterns of commuting*).

The most familiar form of map in human geography, however, is the shaded or 'choropleth' map. The distribution of a particular population subgroup (such as *The elderly*), say, or the intensity of a problem such as unemployment relative to that of other areas (as for *Men without work*), is readily shown and understood as the intensity of the shading within that area's boundary. The use of colour clearly increases the options available, which can be particularly valuable if the map is of trends over time, and some values can be positive and others negative (as for *Patterns of population change*). The map's shading may be presented solely by colouring of different intensity, or by different forms of hatching--or indeed by some combination of these (as in *Ethnicity and opportunity*). Such decisions may appear quite technical, but do starkly affect the image which is presented and hence the way the map will be read.

There is a less obvious, but at least its influential, set of decisions on the shading categories for the map. Choosing how many different categories will be shown, and where in the distribution of values to split one category from the next, affects greatly the clarity of the final map by determining whether, for example, many small areas will be shaded similarly and strongly. Equally obviously, the setting of the class limits--the values at which one category is split from the next--directly controls whether 'extreme' values appear to be widespread or to be concentrated in only certain parts of the country.

A few maps in this atlas (for example, *Railways and motorways*) appear to be closer to the 'topographic' style of a road map than to the shaded 'polygon' map which has been the focus

for much of the discussion here so far. Yet these apparently simple maps clearly also involve fundamental decisions on what information to include, and how to present it. For example, the map of *Major tourist attractions* was just as much the product of technical decisions on which categories to present, what class limits to use, and what areas to show as background, as were the choropleth maps in the atlas.

A map reader might feel that all these subjective decisions mean that the cliché of 'lies, damned lies, and statistics' can be applied to the eventual map, because it is essentially an artefact of the map-maker's own point of view. It is inevitably true that the map-maker will highlight one particular aspect of the topic: the justification has to be that this aspect is arguably the most significant or interesting. In this atlas, the accompanying text to the maps makes no claim that there is only a single possible 'reading' of the data; the aim here is the simpler one of providing some initial material and ideas to prompt further thought and examination of a wide range of topics. This introductory discussion, of the decisions lying behind the maps which are presented in this atlas, explicitly recognizes that many very different atlases of Britain's human geography could have been produced from the range of data which has been drawn upon here. Hopefully, what we have presented in this atlas will inspire--or provoke--readers to develop their own alternative perspectives and to go on to examine a wider range of topics from the types of sources which we have used here.

In terms of using the atlas, we have contrived to make the atlas as user-friendly and informative as possible. Each of the sixty-four topics has been designed as a self-contained double-page spread, with its own commentary. Any cross-referencing between topics is done by showing a topic heading highlighted in italic type. The sources of the data for each topic are given in separate notes at the back of the atlas, along with any more technical information about methods of calculation and guidance as to how to interpret the data shown. Also included at the end, as mentioned above, are key maps for all the main map bases which we have used.

As suggested by the multiple authorship listed on the title page, this atlas results from a team effort involving regular meetings to plan the atlas and discuss the draft material. As in all good teams, however, division of labour was the order of the day. Ann Rooke handled all the final cartography, constantly impressing the rest of the team with her dexterity on her AppleMac, and devising eye-catching icons in her attempts to diversify away from the standard choropleth map. Daniel Dorling set up the digital boundaries and data aggregation programs as the basis for data analysis and mapping. In terms of taking the lead on individual topics, Chris Brunsdon was primarily responsible for *Projecting future employment patterns*, *Contrasting employment sectors*, *Offenders and crimes*, *The future of private housing*, *Projecting voting patterns*, and *Tactical voting and a future political map*. Daniel Dorling took the lead on *Exam results and qualifications*, *Wealth*, *Death chances*, *House prices and negative equity*, *Voters' apathy*, and *Election results 1992*. Mike Coombes contributed *New and old universities*, *Patterns of commuting*, *Railways and motorways*, *International gateways*, *Major tourist attractions*, *Information cities*, and *Sporting cities*. Cecilia Wong and Mike Coombes worked together on *Ethnicity and opportunity*, *Men without work*, *Lacking skills and jobs*, *Staying on at school*, *Matching ability to responsibility*, *New enterprise*, *Waged and unwaged*, *Growing up in poverty*, *Housing choice*, *Leaving the car at home*, and *Places to visit*. Tony Champion prepared the other thirty-four topics and had overall editorial responsibility for the atlas.

Mike Coombes, Tony Champion
Newcastle upon Tyne
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