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1: Population

The subject of this atlas is the population of Great Britain. Although this may appear a simple concept, saying precisely who is living in this country at any one time and where they are, let alone determining how that pattern is changing, is not necessarily easy. This chapter lays the foundation for the rest of the atlas by defining those who constitute British society, where they are and how their numbers have been changing.

The boundary of Great Britain delimits the population studied for statistical and geographical convenience. *Britain* is used to refer to England, Scotland and Wales, and therefore excludes the populations of Northern Ireland, the Isle of Man and the Channel Islands. It is difficult to collate comparable information for these areas. This is because data from the decennial censuses and other official statistics are used in the maps drawn here, and these data do not cover the United Kingdom in a uniform fashion.

To compare the population of a place over time it is necessary that the boundaries of that place do not alter, and if these boundaries have been constrained not to alter they are termed *frozen*. For most of the maps which follow, Britain is divided geographically into 9289 frozen local government wards in England and Wales and 1155 part postcode sectors in Scotland. These were the areas used for the 1981 census. *Wards* is used as shorthand for these areas even though they have changed in some parts of the country and differ from local government wards in Scotland. Small area statistics from the 1971 and 1991 censuses have been recalculated for these boundaries so that reliable comparisons of population change can be made over time (Atkins *et al*. 1993). The 459 frozen local government districts are also used as a geographical base in some maps.

The boundaries of both these sets of areas have their own geography which is shown in this chapter. These boundaries are again chosen for convenience rather than designed. The choice of boundaries and map projection can affect the patterns shown as much as the characteristics of the population being studied. However, where a number of contiguous areas show similar characteristics, that impression is unlikely to be an artefact of the boundaries. This is one reason why the detailed geography of wards is used so often in these maps, because such small places provide the greatest flexibility for producing robust patterns from contiguous areas showing similar characteristics.

The populations of larger or smaller wards, both in terms of land and people, have followed particularly distinctive changes over time. Ward size also tends to correlate strongly with land use, which is shown here in conjunction with population density, the most basic statistic to be calculated from a census.

This chapter begins with traditional equal area maps of Britain to show the distributions of people over the land and then progresses to equal population cartograms to show how that population is made up and how it is changing. The two types of projection are placed side by side in many of the prints so that the different impressions given can be compared and a feeling gained for how the use of cartograms alters the visual impression, even when the places depicted and their shading are identical.

The censuses are by far the most important source of geographically disaggregated social information on Britain; but even censuses can miss people. It is possible only to estimate from where people were missed, but the distribution of where people are difficult to contact for enumeration can be shown. Censuses also classify people in different ways depending on whether they were enumerated in their home or elsewhere. The characteristics of the population on census night who were not residents at a private address which was their usual home — visitors or the residents of communal establishments — are also often omitted from local statistics, so their geographical distributions and social characteristics are also presented here as the experiences of these groups cannot be included in most of the maps which appear later in this atlas.

The precise definition of the population being considered is important when changes in the size of population in different places are being compared over time. If the raw census figures are used the total resident population of Britain appears to have fallen in the 1980s by over half a million people. This was due to problems with data collection. In fact, the number of people living in Britain on census night is thought to have actually increased by one and a third million people between 1981 and 1991. The definition of the population employed in defining statistics makes as crucial a difference to the maps produced, as does the choice of boundaries and map projection.

Three aspects of change and three population definitions are used by the end of the chapter. The *population present* on census night is presented, as is the geography of its changes over the course of this century in local authority districts (with their boundaries frozen). The change in the numbers of people *usually resident* in wards between the 1971, 1981 and 1991 censuses is then depicted. Finally, the annual changes from 1981 to 1990 in the official *mid-year estimates* of the population of each district are shown. All these definitions count the night-time (or more correctly the bedtime) population in every place — where people are sleeping. Daytime population can be very different from the night-time count so it is important to realise which areas people are allocated to. The most extreme example of this daily oscillation is found in central London.

First, however, the geographical distribution of where people currently live in Britain is presented, both in its raw form and then using two more sophisticated mapping techniques. To understand the more subtle social characteristics of the population it is necessary first to know what that population is and where it is located. To comprehend changes in the social make-up of the population, changes in the geographical distribution of that population must be taken into account.

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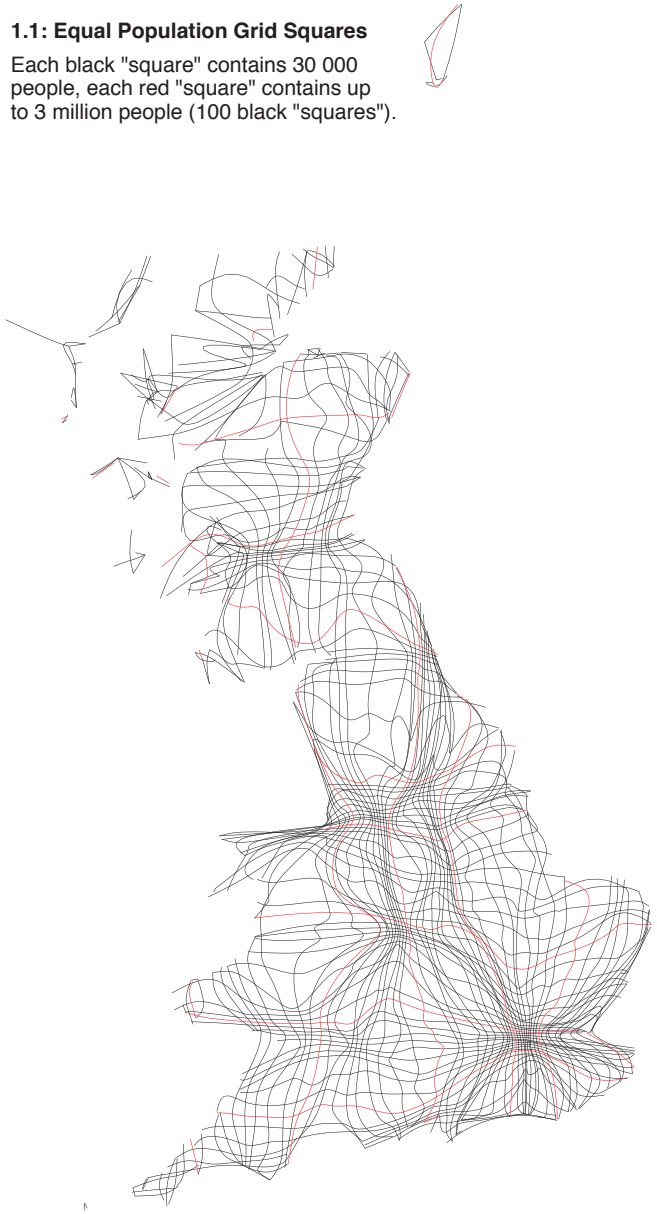
1.1: Equal Population Grid Squares

Each black "square" contains 30 000 people, each red "square" contains up to 3 million people (100 black "squares").



Distribution

The most basic distribution for any social atlas is of the population over the land. 55 889 000 people were identified as being present in the 151 700 enumeration districts and output areas of the 1991 census. Each of these areas is drawn as a dot on the map of population distribution shown opposite with county boundaries superimposed. Local features are apparent even at this scale, such as the unpopulated Lea Valley which splits north London in two. From this image, however, it is difficult to gain an overview of how concentrated the population is in different places and how concentrated it is overall. Most of the map is coloured white, showing where people do not live. The total area covered by black is less than the size of a one penny piece.

To understand the implications of population distribution it is useful to calculate a statistic such as population potential (Clarke 1987: 38) and use that to shade a map. The *population potential* of a ward is the total of the populations of all the other wards in Britain each divided by their distance from the centre of that ward. This is expressed in the rather abstract units of “residents per metre” which is highest at 1152 in Bayswater ward in the City of Westminster and lowest at 67 in postcode sector ZE2 9 in the Shetland islands. In the map each ward is classified into one of five groups which each contain a fifth of the total resident population of Britain.

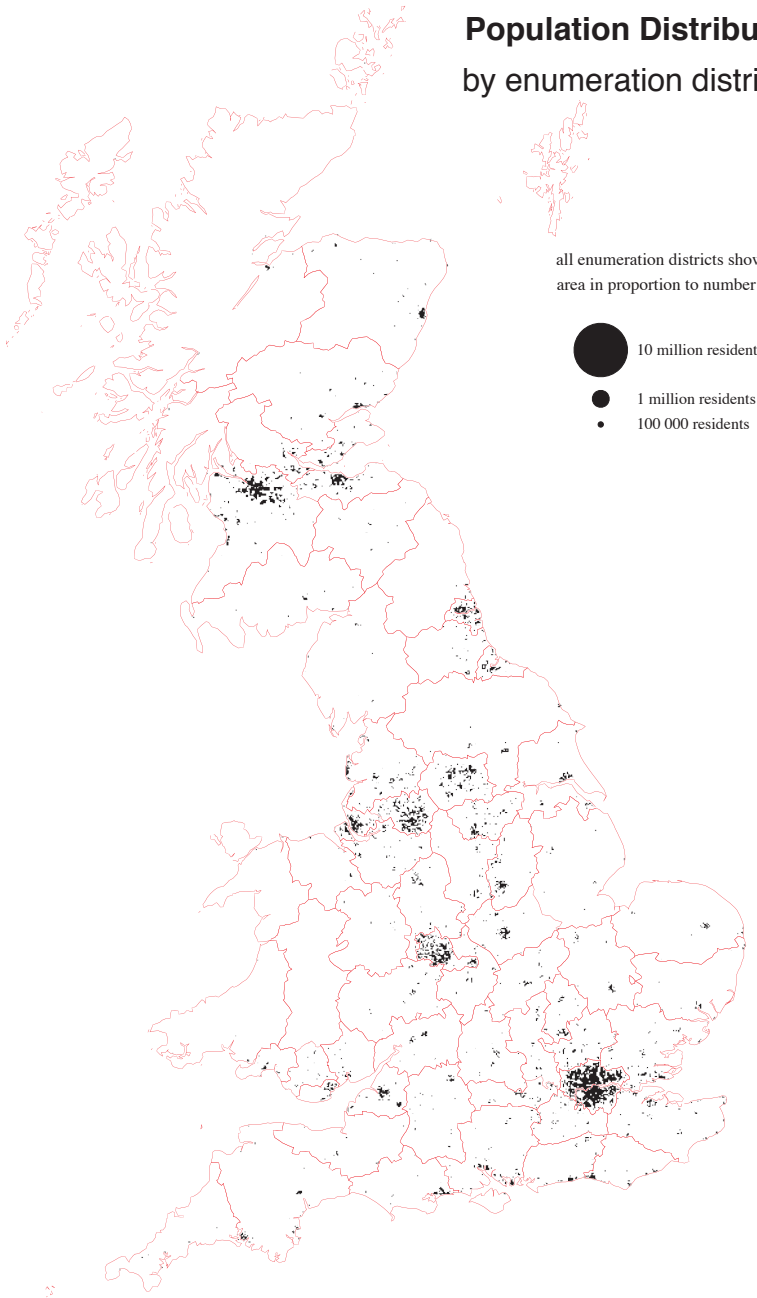
Only Greater London and the centres of the West Midlands and Greater Manchester fall in the highest quintile. The next quintile covers the hinterlands of these three centres, much of Merseyside, West Yorkshire, South Yorkshire, Chesterfield, Stoke-on-Trent, Derby, Nottingham and Leicester. The third quintile fills in the gaps between these places completing the belt from London to Liverpool within which over half the people of Britain live — the half who are closest to each other. Tyne & Wear, Cleveland and Glasgow are the only areas in the North of England and Scotland not shown in the bottom quintile.

What both maps also highlight is how little land the majority of the population occupy. In the next few pages the relationship between the people and the land is explored. Here an alternative method is used to show another way of looking at the basic distribution of people across the land. In Figure 1.1 almost 2000 “squares” cover the land area of Britain in a grid. The lines of this grid are curved so that each “square” contains the same number of people (Dorling 1993). Large cities pull the net inwards. Smaller ones, such as Norwich, can also be seen to have an effect. When the lines of the grid are pulled straight the map of Britain is transformed to form an equal population cartogram. Curved, as they are here, they give a graphical impression of the relative influence of the populations of different areas over the surface of the land.

Note that in Figure 1.1 the Shetland Islands are shown in their true position. On the far map opposite (and in all the other maps in this atlas) they have been moved southwards.

Population Distribution 1991

by enumeration district



all enumeration districts shown drawn with area in proportion to number of residents:

10 million residents

1 million residents

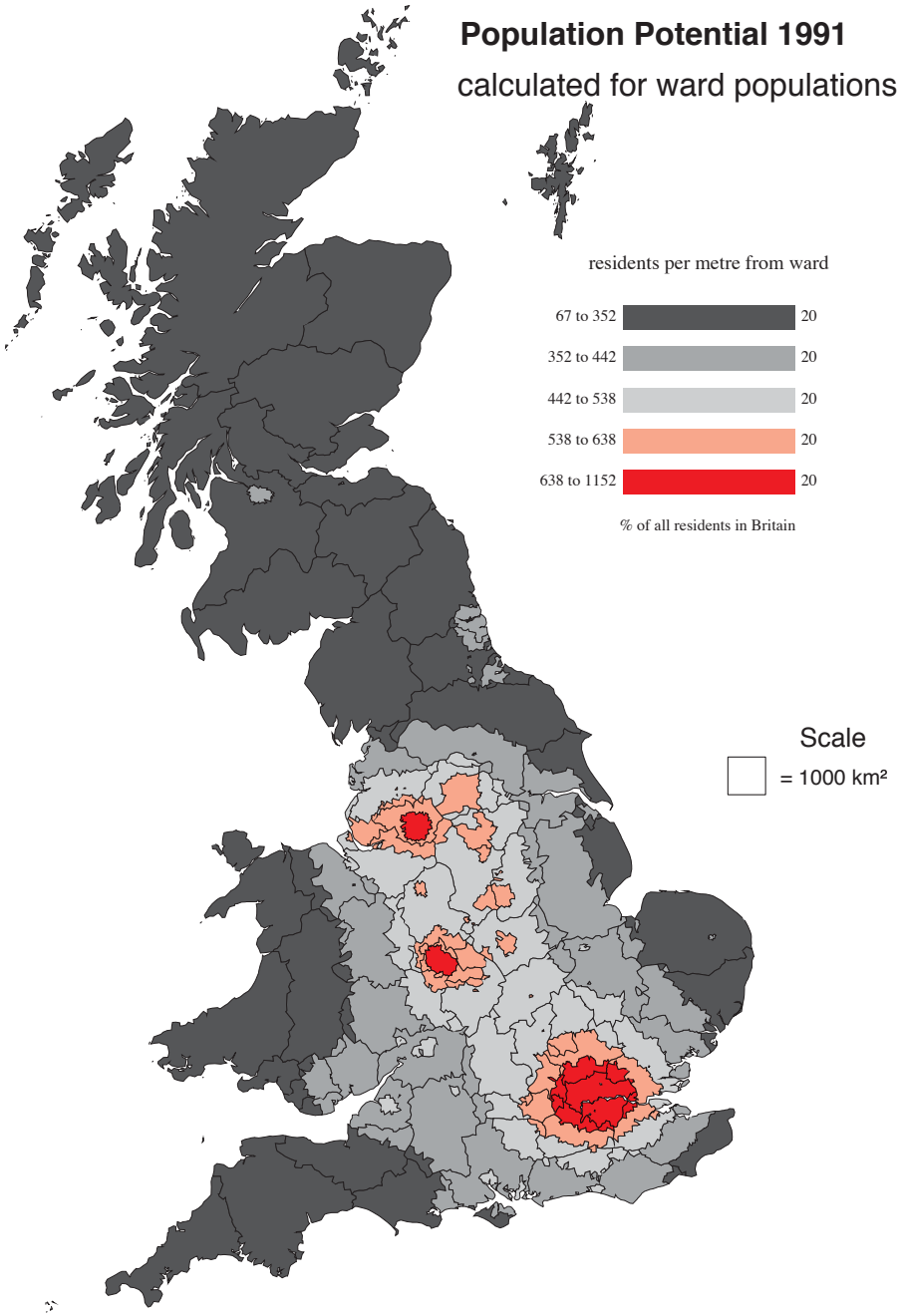
100 000 residents

Scale

= 1000 km²

Population Potential 1991

calculated for ward populations



residents per metre from ward

67 to 352	20
352 to 442	20
442 to 538	20
538 to 638	20
638 to 1152	20

% of all residents in Britain

Scale

= 1000 km²

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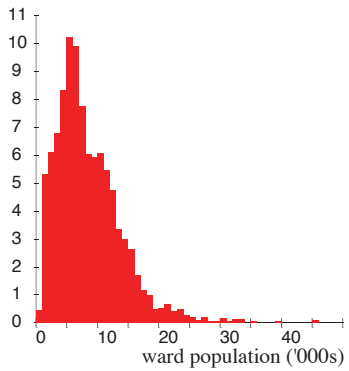
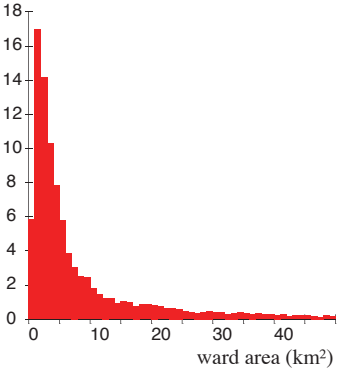
1.2: Residents by Ward Population 1991

% of all residents in Britain



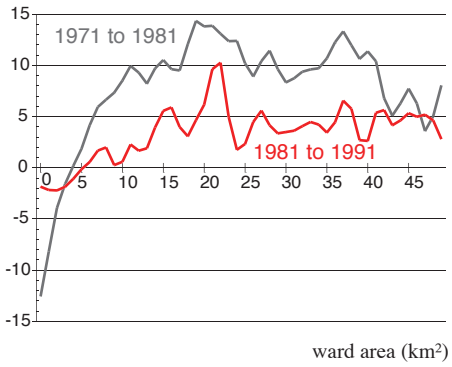
1.3: Residents by Ward Area 1991

% of all residents in Britain



1.4: Population Resident Change 1981–1991 and 1971–1981

% change in the number of residents by ward in Britain



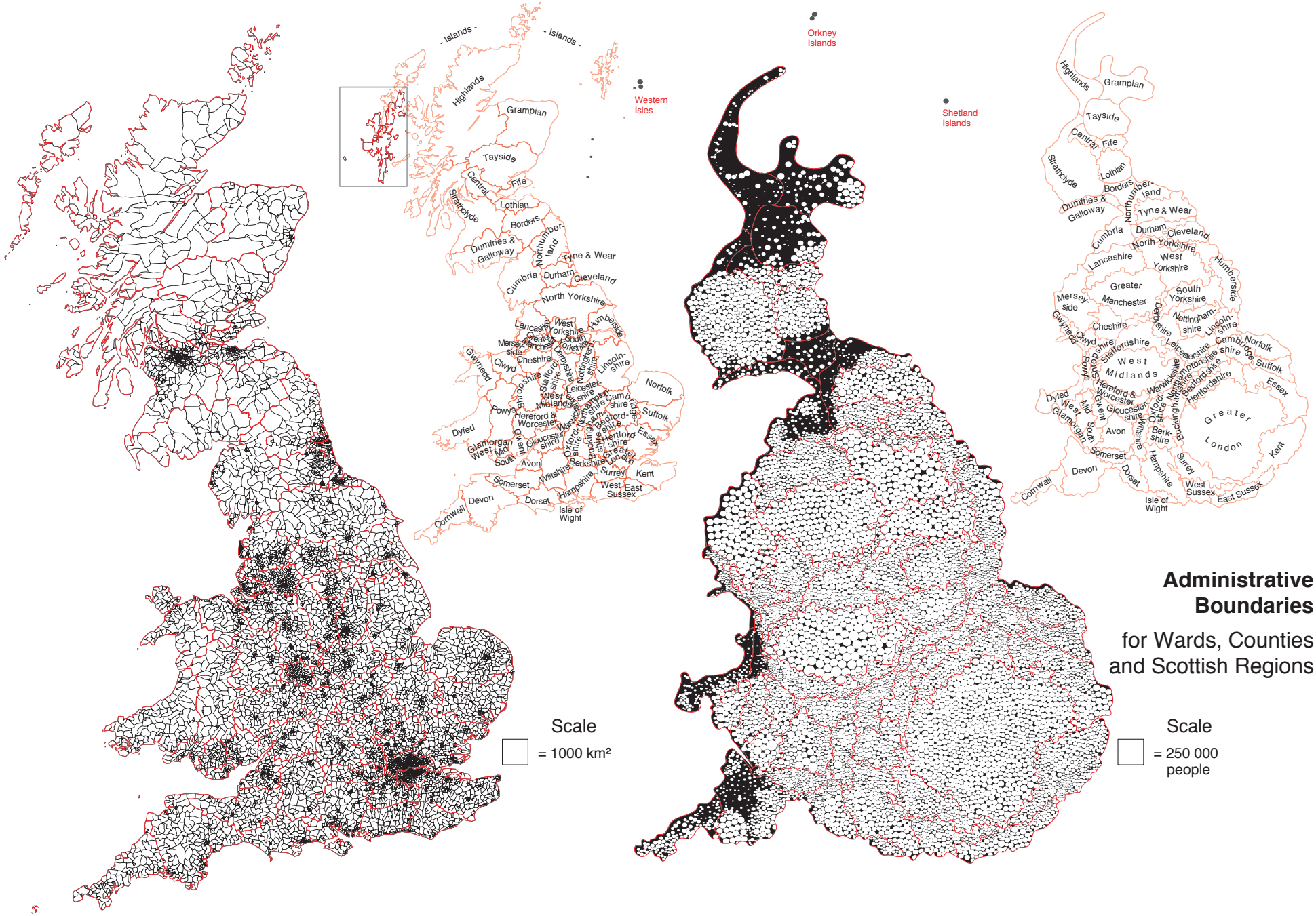
Boundaries

Maps are about boundaries. Many maps do not show the boundaries which are used in their creation but all maps present spatial boundaries of one form or another. In this atlas administrative boundaries are used to create the maps, and then the boundaries between areas with different levels of a variable are depicted. If the boundaries of too many areas are shown then parts of the map always appear black from the concentration of lines, as can be seen opposite. To avoid this only county boundaries are shown on subsequent ward equal area maps and population cartograms. These lines are included to provide a visual key to the areas.

The pattern of the boundaries is in itself interesting. As wards are designed for electing local councillors, they vary little in population within the same district. Because of this they tend to vary greatly in area. On the equal land area map, cities and market towns can be identified in England and Wales just from the dense clustering of their wards. In Scotland the boundaries were designed simply for the convenience of the Post Office (being part postcode sectors) and so vary more in population. The variations in population size and land area across all these small parts of Britain are shown in Figures 1.2 and 1.3.

On the ward cartogram “no man's lands” are to be found in the least populated places where the algorithm which reprojected the map did not pull such sparsely settled wards together. The three Island Areas have been individually identified. Shetland on the cartogram is displaced similarly to the equal area map. Small islands which are parts of other administrative areas are not shown here. What is most evident (from the boundaries on the cartogram) is how much larger are urban wards, in terms of people, than rural wards. Rural wards tend to be much larger in physical area and, as Figure 1.4 shows, it is these wards which have been growing most in population over the last twenty years.

The 64 counties and Scottish regions are labelled in the two insets to provide a key for the maps. Far more detailed keys are given at the start of this atlas to all the cartograms used. The detailed keys also describe how administrative and political boundaries changed in Britain over the last decade and how those changes are dealt with here. The only boundaries which have hardly been altered at all have been county boundaries. On the cartogram opposite the county boundaries allow the relative populations of these large areas to be crudely compared. The shape of Britain when drawn like this is also enlightening. London dominates the country surrounded by the Home Counties which are wrapped tightly around it. The large conurbations of the North West and Yorkshire, centred on Manchester, counter-balance London to an extent, while sandwiched between the two is Birmingham in the centre of the West Midlands. All other places are attached around this central belt. Wales is split north and south while Scotland is only held onto England by a thread of wards across the Borders.



Administrative Boundaries

for Wards, Counties and Scottish Regions

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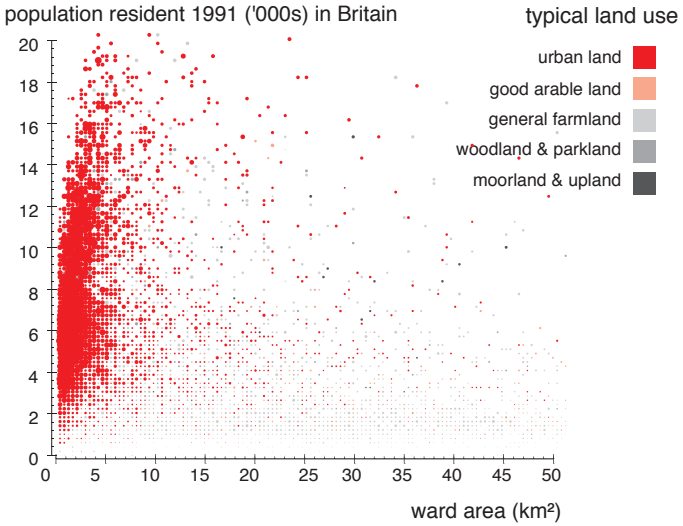
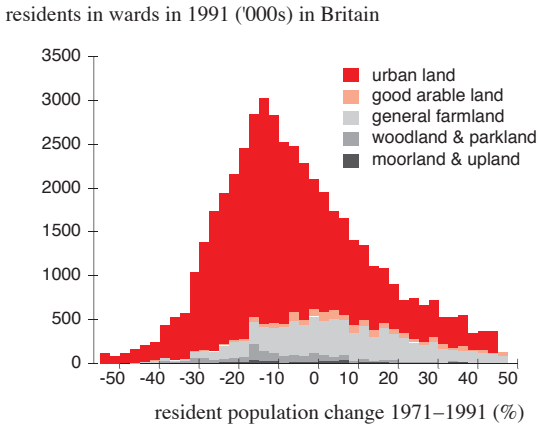
1.5: Ward Population by Area Shaded by Land Use Classification



1.6: Population Change by Land Use Classification 1971–1991



Land Use

The most widely used classification by which the population of Britain is divided is "urban and rural". It is also one of the worst defined. As these two terms are used repeatedly elsewhere in this atlas, an attempt is made here to define which areas are which. This divide is also used to describe the basic population distribution just outlined, and the distribution of population density covered next.

All the one kilometre grid squares of Britain can be classified by land use using remote sensing (Carver 1990). Here each ward is assigned to one of six aggregations of these land use classes on the basis of the activity in its most central grid-square. Almost exactly half the land area of Britain is categorised as general farmland by this method. Only one in six people (17%) live on that land. As the cartogram makes abundantly clear, three quarters of all the residents of Britain live in wards which are classified as urban, although these only cover 14% of the land. Both the map and the cartogram show how county boundaries tend to follow farmland.

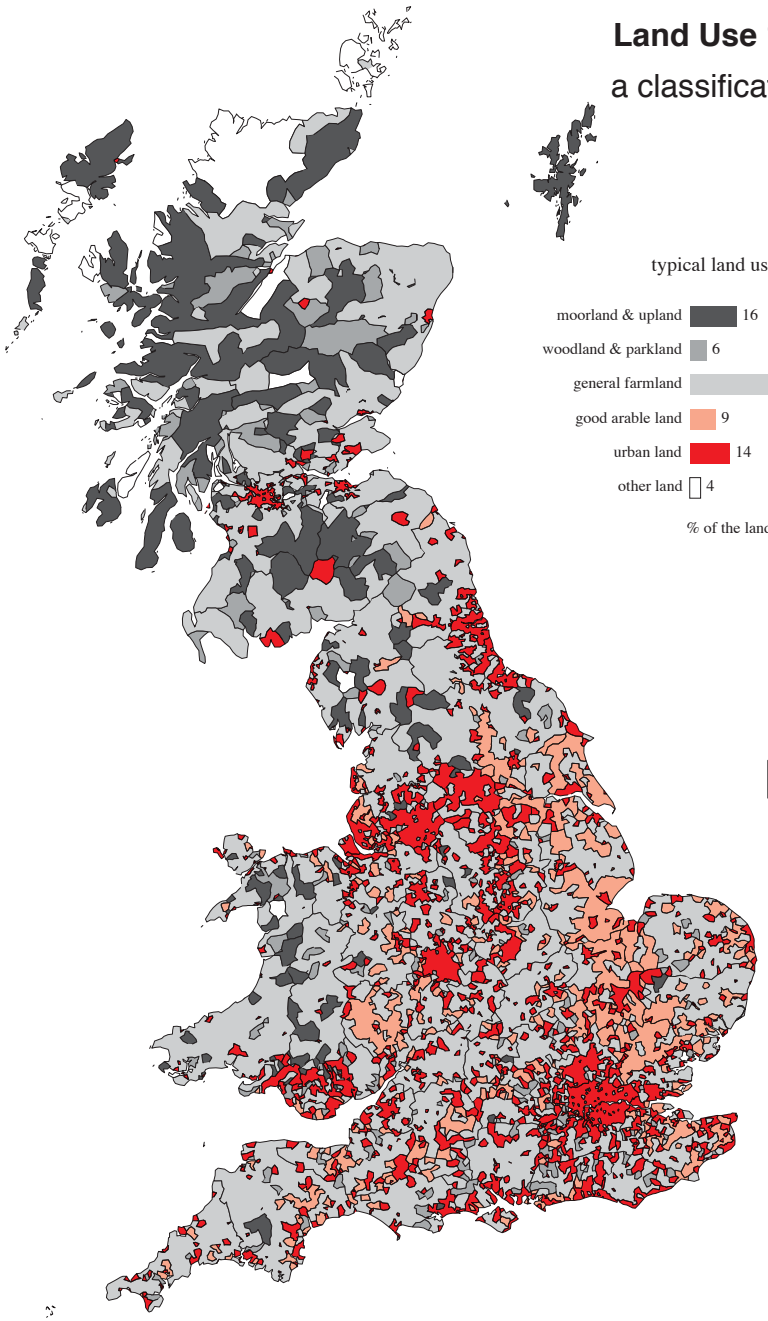
Agricultural land varies in quality so one subgroup has been extracted here — good arable land. In many countries it was the initial distribution of the best farmland which influenced many later developments, and Britain is no exception. The best agricultural land is to be found predominantly around the lowlands of the rivers Humber, Severn and the Ouse, in Kent and amid the claylands of East Anglia. This land is also more densely populated than farmland in general.

The land which contains the least people per hectare is moorland and upland. Together with the "other" category this constitutes one fifth of the land area of Britain but houses only 1% of the population. The "other" category includes wards with large lakes in their centres and other such oddities. The final category of land shown here is woodland and parkland. More than two dozen wards in London, as the cartogram shows, fall into this group when classified using remote sensing techniques.

Land use and ward area are closely related as Figure 1.5 illustrates. Urban wards tend to be high in population and low in area; the converse is true for rural wards. However, the divide between the two is not sharp. Rural wards are also more likely to have seen population growth over the last twenty years. Figure 1.6 shows the twenty year trend. The modal point for urban wards is a fall of 8% to 10% of their population over twenty years (2.5 million people live in wards which have experienced this). For the two agricultural categories combined the modal point is a rise of 8% to 10% over twenty years in areas where over half a million people now live. The distribution for woodland and parkland is bimodal but the median change is a fall of 7%, while for moorland and upland areas the population change has, on average, been static. However, these statistics hide a great deal of variation as is illustrated in Figure 1.6 which depicts most clearly the width of the range of population changes which have occurred on each type of land.

Land Use 1981

a classification of wards



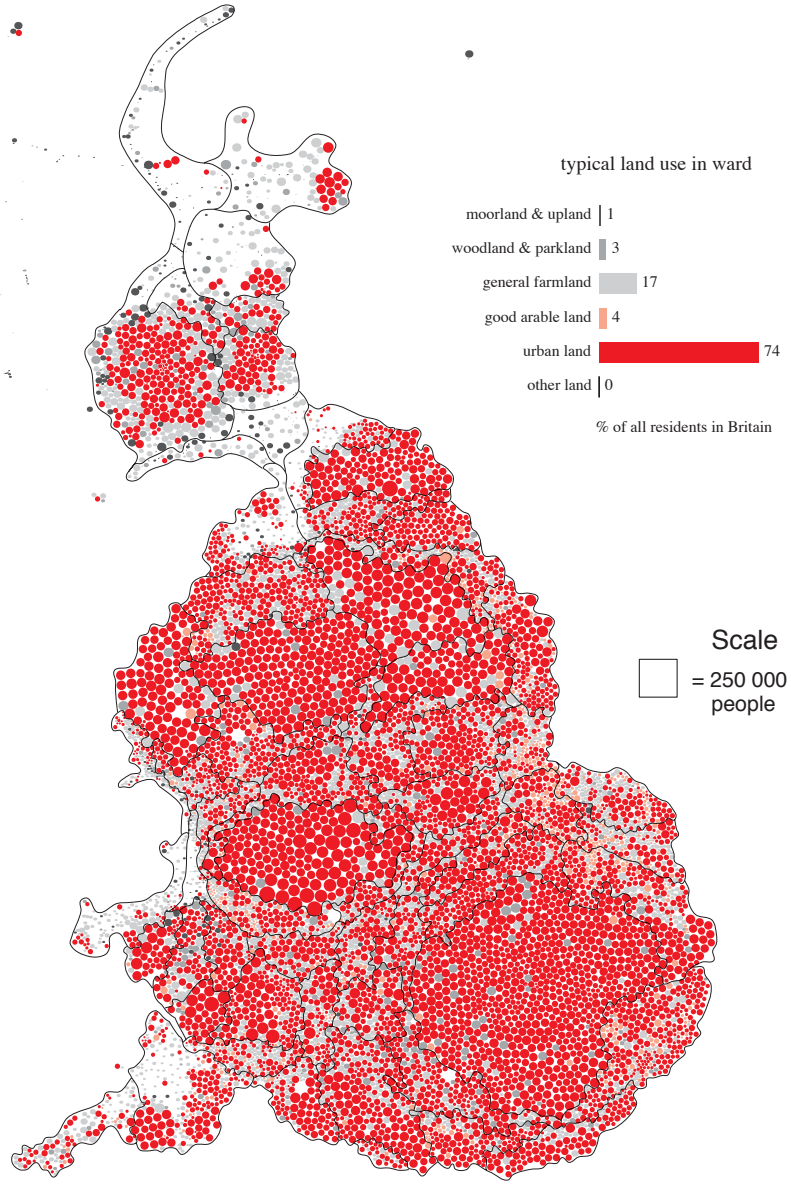
typical land use in ward

moorland & upland	16
woodland & parkland	6
general farmland	50
good arable land	9
urban land	14
other land	4

% of the land area of Britain

Scale

= 1000 km²



typical land use in ward

moorland & upland	1
woodland & parkland	3
general farmland	17
good arable land	4
urban land	74
other land	0

% of all residents in Britain

Scale

= 250 000 people

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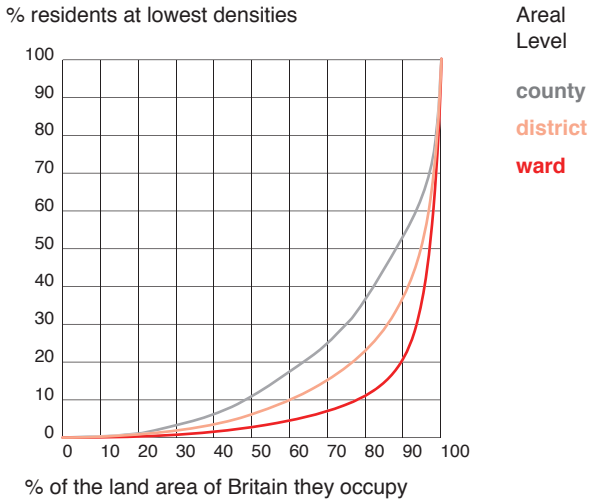
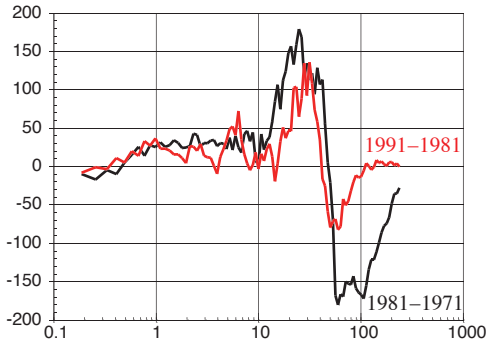
1.7: Population Density in Britain 1991 — Gini Curves



1.8: Population Density Change 1981–1991 and 1971–1981

absolute change in the number of residents in Britain by ward ('000s)



residents per hectare (log scale, using 100 divisions)

Density

Ten percent of the people live on eighty percent of the land — true? It depends on the areas you use to count the people. This is the basic problem with population density (Craig 1985). The *population density* of a place is simply its population divided by its area. For all of Britain in 1991 this was 245 people per km². The median population density for all wards, however, is 1775 residents per km², while 15% of the population live at ward densities of more than 5000 residents per km² (on only 0.5% of the land).

The map and cartogram opposite show the detailed distribution of population density. Although the density of individual wards depends as much on how the boundaries are drawn as on how many people live there, where a group of contiguous wards have similar densities the pattern is likely to be more robust. The largest cluster of wards of the highest density is in Inner London, the next largest is in Liverpool, both ends of the belt of high population potential. This map and cartogram can be compared to Colour Prints A and B respectively.

Inside cities the areas of low density often coincide with the places where the most affluent people live. These can be identified from the cartogram. Elsewhere the rings of very low densities, which on the cartogram circle the conurbations and on the map dominate the image, are also interesting. The large clusters of low density wards (in terms of population and hence area on the cartogram) are to be found around Norwich in Norfolk, in Lincolnshire and in North Wales. Here are where the largest expanses of people living at low densities in Britain are to be found.

So do just 10% of the people live on 80% of the land? The answer is yes, but only if wards are used to calculate this. Figure 1.7 contains three Gini curves (Lorenz 1905) which show how much land the groups of people living at the lowest densities live on. It illustrates that if the same statistics were calculated for the populations of counties, they would show that the 10% of the people who were least densely concentrated lived on just 50% of the land. For districts, that figure rises to 60%. For wards the figure rises again to 80%. If the curve were calculated using any areas taken from a cartogram a straight line would be the result. On the cartogram everybody is, in this sense, equal.

What is required to produce an unequivocal answer to the question first posed is an unambiguous set of areas — the land areas which people actually own or lease. Unfortunately, the spatial boundaries of these areas are not generally available. What they might well have shown, if they were digitised, is the gradual redistribution of land indicated by Figure 1.8, as the most dense areas have declined in population and the least dense have risen (in absolute terms as shown here, and even more so relatively). However, this process of counterurbanisation (Champion 1989) is slowing down. Precisely where and when this occurred is of great interest, and is a subject dealt with later in this chapter.

Population Density 1991

average for ward populations

residents per square kilometre

up to 250	86
250 to 1000	8
1000 to 2500	3
2500 to 5000	2
5000 & above	1

% of the land area of Britain

Scale

= 1000 km²

residents per square kilometre

up to 250	16
250 to 1000	16
1000 to 2500	23
2500 to 5000	30
5000 & above	15

% of all residents in Britain

Scale

= 250 000 people

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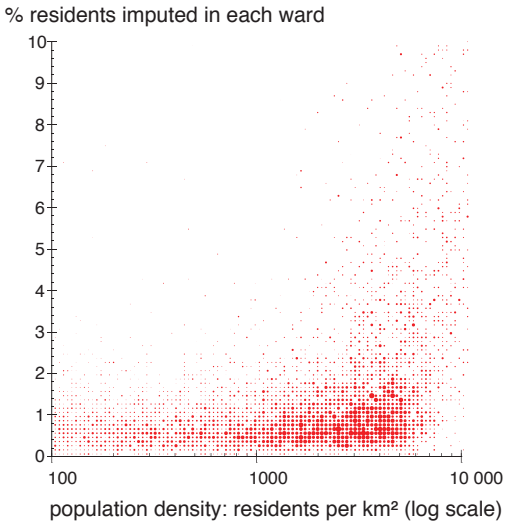
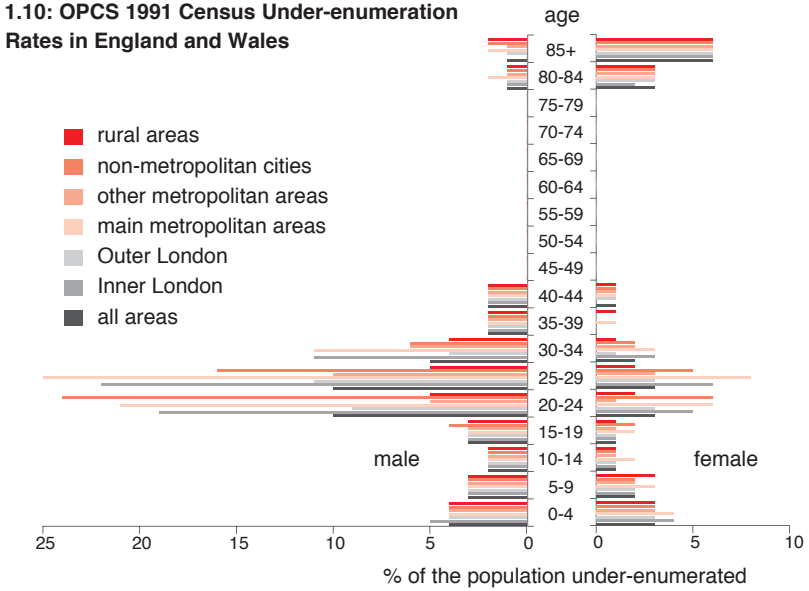
1.9: Residents Imputed and Population Density in Britain 1991



1.10: OPCS 1991 Census Under-enumeration Rates in England and Wales



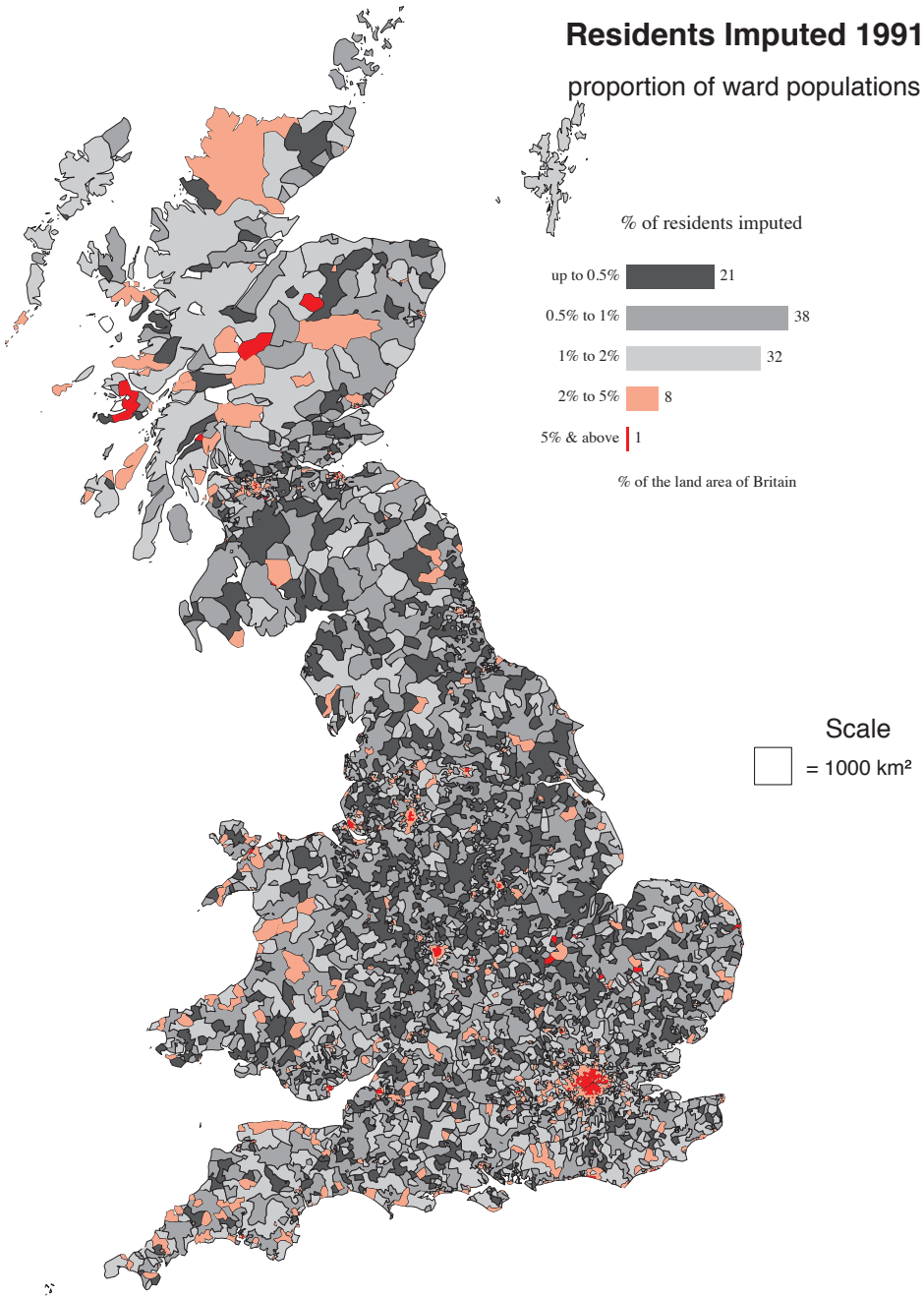
Imputation

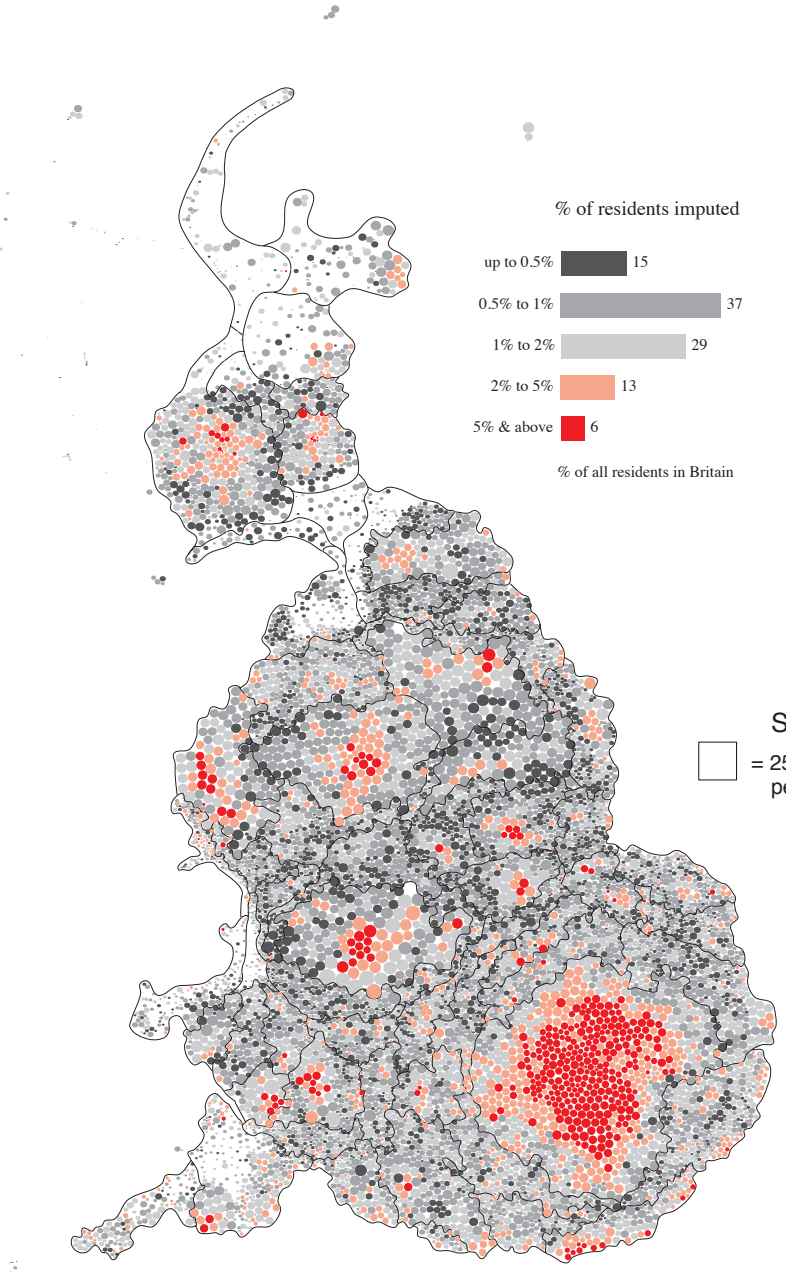
The 1991 census was the first British census in which some people were imputed. Where the census enumerator thought a household was absent, and a census form was left but not completed, values estimated by the enumerator were used to impute the residents of that household. *Imputation* was achieved for wholly absent households by duplicating the characteristics of the last household input which lived in similar accommodation (OPCS 1992: 5). Nationwide 450 000 households within which 870 000 people were thought to be living were imputed (1.6%). The fabricated characteristics of these people are contained in all the maps shown here which are based on the 1991 census small area statistics.

Fortunately, the proportion of households which were imputed (2.1%) is low enough to have only a marginal effect on the bias of the census sample. However, it is useful to know the geographical distribution of places where people are unwilling to answer the door or to return forms, or where they tend not to be at home. The cartogram emphasises large concentrations of more than one in twenty residents imputed in some urban areas although, as Figure 1.9 shows, the rise with population density is not uniform. The map over-emphasises high rates of imputation in a few rural wards with very low populations.

Unfortunately, the imputation procedure failed to compensate fully for all the people and households which were not enumerated. Nationally, 1 202 000 more people are thought to have been missed entirely by the 1991 census. This is a larger proportion of people (2.2%) than those imputed, but more importantly it is not a typical subgroup of people. Figure 1.10 gives the factors by which census users are advised to allow for under-enumeration in terms of age, sex and broad geographical area (OPCS 1994). This single diagram contains all the official information available at the time of writing on the characteristics of the "missing million" in England and Wales (see, however, page 217 for an as yet unofficial view of where they might have been living). We are told that, on average, a quarter of men aged between 25 and 29 who lived in the "main metropolitan areas" were not included in the census, but we do not know whether these young men were more likely to be out of work, to be in ethnic minorities, or were more likely to be the partners of "lone mothers", than their enumerated counterparts.

Inferences and assumptions can be made and it does appear likely that the people and households not represented in the remaining pages of this atlas tend to belong to particular social groups (Simpson *et al*. 1993). At a detailed geographical level they may follow the pattern of those who have been imputed (shown opposite). The census statistics are now a 96.4% sample of the population — fine for most purposes, although ward level mapping relies on particularly accurate data sources. In 1981, 99.6% of the people of Britain were found, although for operational reasons only 97.8% were included in the 1981 small area statistics (see Figure 1.13).


Residents Imputed 1991
proportion of ward populations
% of residents imputed
up to 0.5% 21
0.5% to 1% 38
1% to 2% 32
2% to 5% 8
5% & above 1
% of the land area of Britain
Scale
= 1000 km²


% of residents imputed
up to 0.5% 15
0.5% to 1% 37
1% to 2% 29
2% to 5% 13
5% & above 6
% of all residents in Britain
Scal
= 250 0
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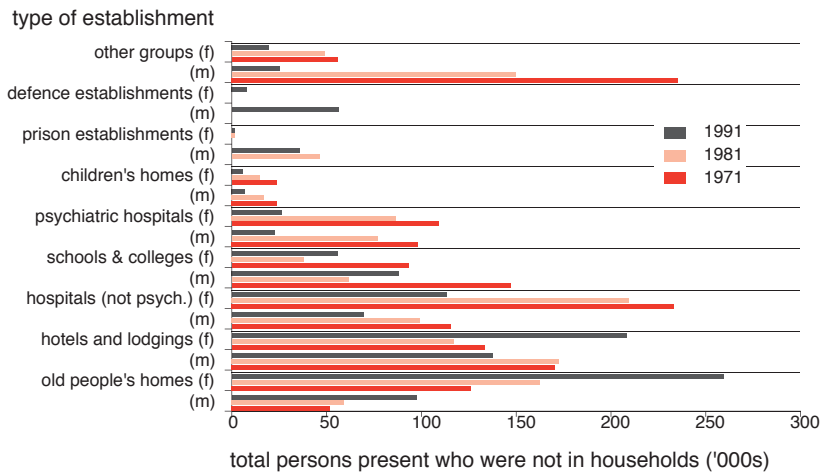
1.11: Some Characteristics of Residents Living in Communal Establishments in Britain 1991

Type of Establishment	Total	Male	Female	Children	16-44	44 -P.A.	P.A.+	White	Black Groups	South Asian	Chinese & other
All Residents in Britain	**54 888 800**	**48%**	**52%**	**20%**	**42%**	**19%**	**19%**	**95%**	**2%**	**3%**	**1%**
communal residents (non-staff)	735 700	41%	59%	3%	28%	8%	61%	95%	2%	1%	2%
residential home (private)	175 700	26%	74%	0%	7%	5%	87%	99%	0%	0%	0%
nursing home (private)	134 000	24%	76%	0%	2%	3%	95%	99%	0%	0%	0%
Local Authority home	113 600	31%	69%	1%	11%	6%	82%	99%	1%	0%	0%
hospital (NHS — other)	58 400	39%	61%	1%	36%	14%	49%	96%	2%	1%	1%
defence establishment	49 600	87%	13%	0%	98%	1%	1%	95%	2%	0%	3%
hotels and boarding houses	48 600	64%	36%	12%	62%	17%	10%	84%	8%	4%	4%
psychiatric hospital (NHS)	30 500	47%	53%	0%	19%	18%	63%	97%	2%	1%	1%
schools and colleges	26 700	61%	39%	6%	86%	4%	4%	64%	10%	5%	22%
other misc. establishments	22 600	42%	58%	11%	53%	12%	25%	90%	4%	3%	2%
Housing Association home	21 100	46%	54%	1%	34%	13%	51%	93%	4%	1%	2%
hostels and lodging houses	19 400	70%	30%	9%	54%	24%	13%	86%	8%	3%	4%
prison service establishment	15 300	96%	4%	0%	86%	13%	1%	82%	12%	4%	2%
children's home	9400	56%	44%	100%	0%	0%	0%	88%	8%	2%	3%
hospital (private — other)	4500	39%	61%	1%	28%	17%	54%	95%	3%	1%	2%
psychiatric hospital (private)	2700	51%	49%	1%	27%	19%	53%	95%	3%	1%	2%
persons sleeping rough	1900	84%	16%	0%	73%	25%	2%	98%	2%	0%	0%
ships, boats and barges	1200	85%	15%	2%	75%	22%	1%	89%	5%	1%	6%
campers	300	49%	51%	23%	41%	10%	26%	97%	0%	0%	3%

Note: percentages between bars sum to 100%; P.A. stands for Pensionable Age; see page 40 for the definitions of ethnic group categories used here.

1.12: People Living in Communal Establishments by Sex in Britain, 1971–1981–1991



Communal Establishments

There is a second reason, besides under-enumeration, why some British people's characteristics will not appear in the following pages of this atlas — they live in communal establishments, not households. Although these people were enumerated by the census, most of the census tables omit them as being "uncharacteristic of the general population". In total, as can be ascertained from Figure 1.11, the non-staff residents of communal establishments constitute only 1.3% of the enumerated population; the majority of these people are elderly. Apart from tending to be old and hence to include more women, there are significant ethnic minority concentrations in particular establishments. For instance, as Figure 1.11 indicates, the census shows that young black men are seven times more likely to be in prison than their white counterparts.

Prison populations are some of the most dispersed and smallest communities shown on the district based population cartograms opposite. Only in two small south coast districts do the residents of prisons number just over 1% of the total population. The residents of educational establishments reach this proportion only in the City of London, Cambridge and Oxford. The (non-staff) population in hotels exceeds the 1% level in the City, Westminster, Kensington and Chelsea. As well as highlighting these exceptional cases, the cartograms show overall geographical patterns. Nursing and residential homes are spread around the coast; psychiatric hospitals tend to be located in rural areas; other hospitals are more numerous (in terms of patients in beds) in central London and eastern Scotland (see Figure 5.12). It is defence establishments, however, that show the most concentration — among the populations of East Anglia and the South West.

Successive census counts of people in communal establishments provide a good record of how their populations have changed over time, although prisoners were not distinguished in 1971 and (some) defence establishments were admitted to exist only in 1991. Figure 1.12 shows the changing absolute populations of different types of establishment subdivided by sex. The biggest rise is of women in old people's homes, while the biggest fall is of men in unidentified establishments (due largely to the recent declassification of so many military bases). What is most probably a switch from falling boarding school numbers to rising university residence is demonstrated by this figure, as are the declines of the populations of hospitals, childrens' homes and prisons. The counts used in this figure include all people present in communal establishments, so the rise of women in hotels is due to fewer men working there as well as more women guests.

As well as people living in communal establishments the census also attempted to count travellers and campers, people sleeping rough and civilians on ships in dock. Only the last category was enumerated with any accuracy. Special "shipping" wards were created for each of the last three censuses. The total number of people present in these has fallen from 37 500 in 1971, to 11 900 in 1981 and then to 4700 in 1991.

Residents of Communal Establishments 1991

proportion of population within 1991 local authority district boundaries

MAGENTA

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1.13: Number of People in Britain on Census Night

	1971		1981		1991	
Residents	('000s)		('000s)		('000s)	
Resident present in private households at enumeration	51 658	95.7%	52 077	94.7%	51 533	91.5%
Absent residents (part of household present)	—	—	684	1.2%	974	1.7%
Absent residents (wholly absent households)	—	—	1005[1]	1.8%	680	1.2%
Imputed residents (wholly absent households)	—	—	—	—	869[2]	1.5%
Present residents of communal establishments	909	1.7%	797	1.4%	833	1.5%
Residents (enumerated and imputed)	52 567	97.4%	54 562	99.2%	54 889	97.4%
Visitors						
Visitors resident in the United Kingdom	1257	2.3%	(1222)	(2.2%)	(1535)[3]	(2.7%)
Visitors resident outside the United Kingdom	155	0.3%	190	0.3%	255	0.5%
Total Population Present (enumerated and imputed)	53 979	100.0%	54 752	99.6%	55 144	97.9%
Under-enumeration						
Accounted for by validation survey	—	—	215	0.4%	299	0.5%
Not accounted for by validation survey	—	—	26	0.0%	899	1.6%
Total Population						
Estimated number of people in Britain on census night	53 979	100.0%	54 993	100.0%	56 342	100.0%

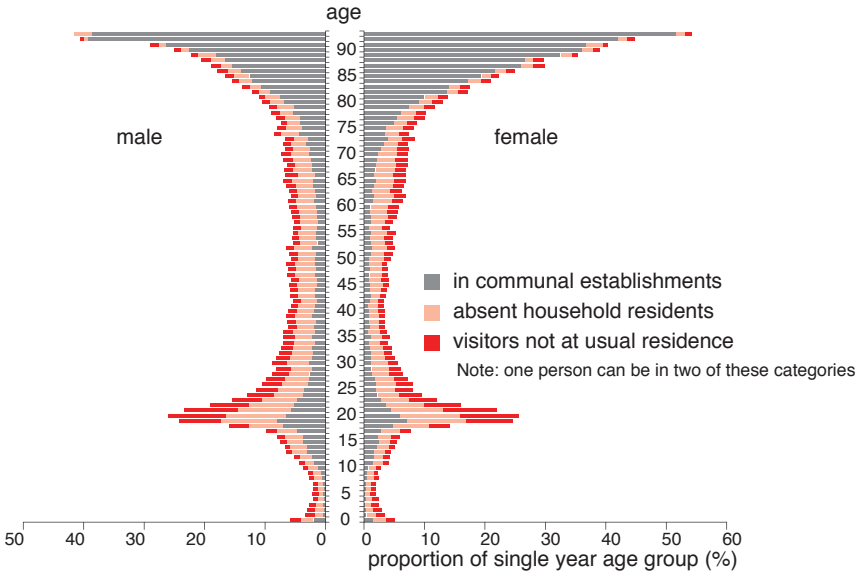
Source: Champion 1995, and the 1971 and 1981 Small Area Statistics files

Note 1: 1005 000 residents from wholly absent households were not in the 1981 small area statistics

Note 2: Imputed residents will include some households who were out of the country on census night

Note 3: 249 000 visitors were not included in the 1991 enumeration district small area census statistics

1.14: Age and Sex Distribution of People not Resident in Households in Britain 1991



Visitors

After those who were not enumerated and the residents of communal establishments the final group of people living in Britain who are often forgotten are visitors. *Visitors* are people who are not usually resident at the address at which they are enumerated. Only 14% of all visitors have a usual residence outside the United Kingdom. However, these people have a very marked geographical distribution, as is evident opposite.

Visitors are seen as a great annoyance for census takers; some no doubt wish it were still possible to order the population to move back "home" for census night (The Bible, Luke 2:1-3). Figure 1.13 shows how visitors have been dealt with at successive censuses to try to estimate more accurately how many people usually live in each place. The figure also shows how many people were actually thought to be in Britain at the time of each census, which has increased between 1971 and 1991 even though the number of people enumerated at home each year has decreased. This is due partly to an increase in the rate of visiting, as mobility has risen overall.

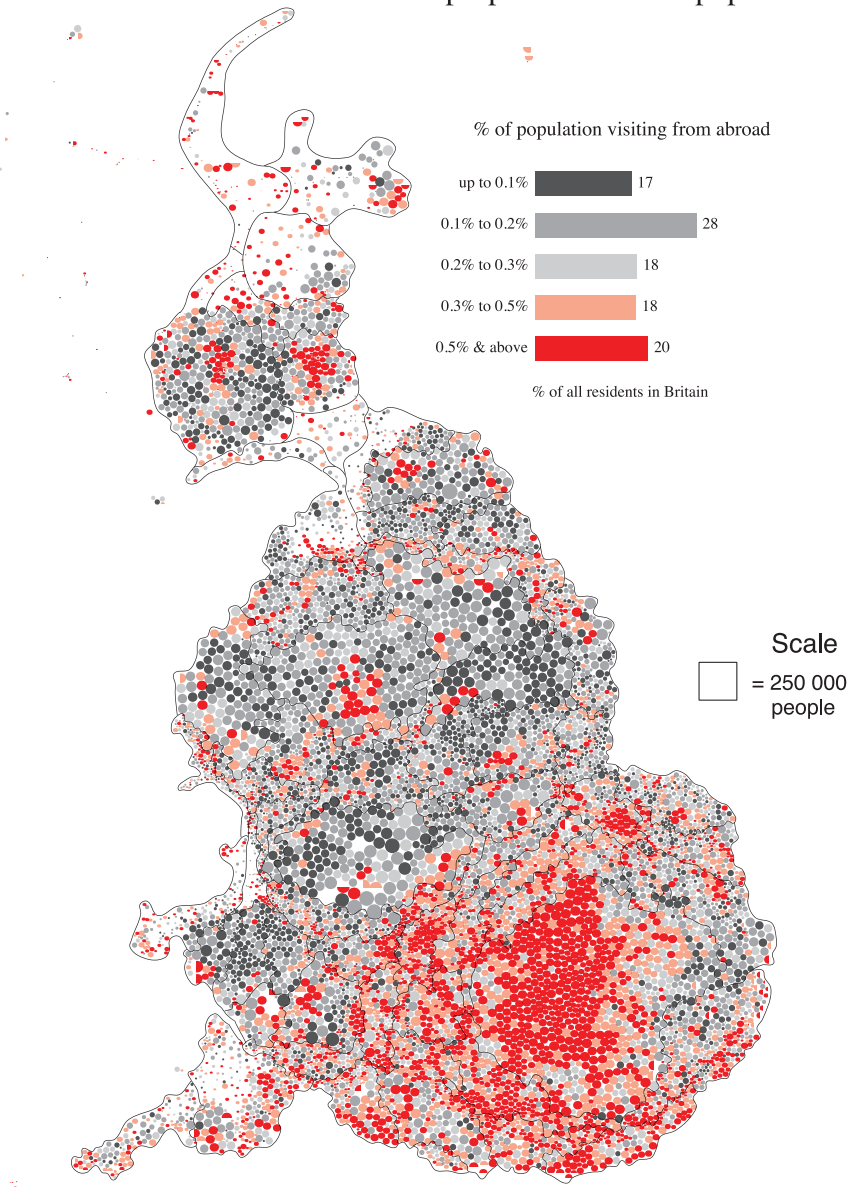
Visitors are not a uniform cross section of the population, they tend to be young; in 1991 half were aged between 18 and 30. Figure 1.14, derived from the Sample of Anonymised Records, shows that when the population of communal establishments, absent residents and visitors are combined a quite dramatic age–sex profile is established (although these categories may overlap somewhat). Over half of the very old live in communal establishments, while over a quarter of 21 year-olds in the sample were not recorded as being present at their usual residence on census night.

An unusual category of visitors are those living in a household where everyone said they were a visitor. These *visitor households* were specifically identified because it was thought that they would "give an approximate measure of those in second homes..." (OPCS 1992: 24). A significant proportion of students (10%) was recorded as visitors on census night so it is perhaps not surprising that those wards with the highest proportions of people in visitor households should cluster around universities — see opposite. Indeed, one in three of these households contains only students. Some people with second homes may be classifying their "country residence" as their usual residence but this is unlikely to account for the remainder of the pattern.

Combined, the distribution of wholly absent households and imputed residents may give an indication of where the missing million are most likely to be, because these are the areas where census taking is most difficult. Unofficial estimates (page 217) have also used the distribution of unemployment (page 89) as an indicator. The rise in the proportion of the population in Britain who are overseas visitors begs the question: how many young and old people who are now thought to be in Britain are actually overseas visitors elsewhere? As national and international mobility increases, the traditional methods of enumerating the population become increasingly inadequate.

Visitors to the UK 1991

proportion of ward populations



% of population visiting from abroad

up to 0.1%	17
0.1% to 0.2%	28
0.2% to 0.3%	18
0.3% to 0.5%	18
0.5% & above	20

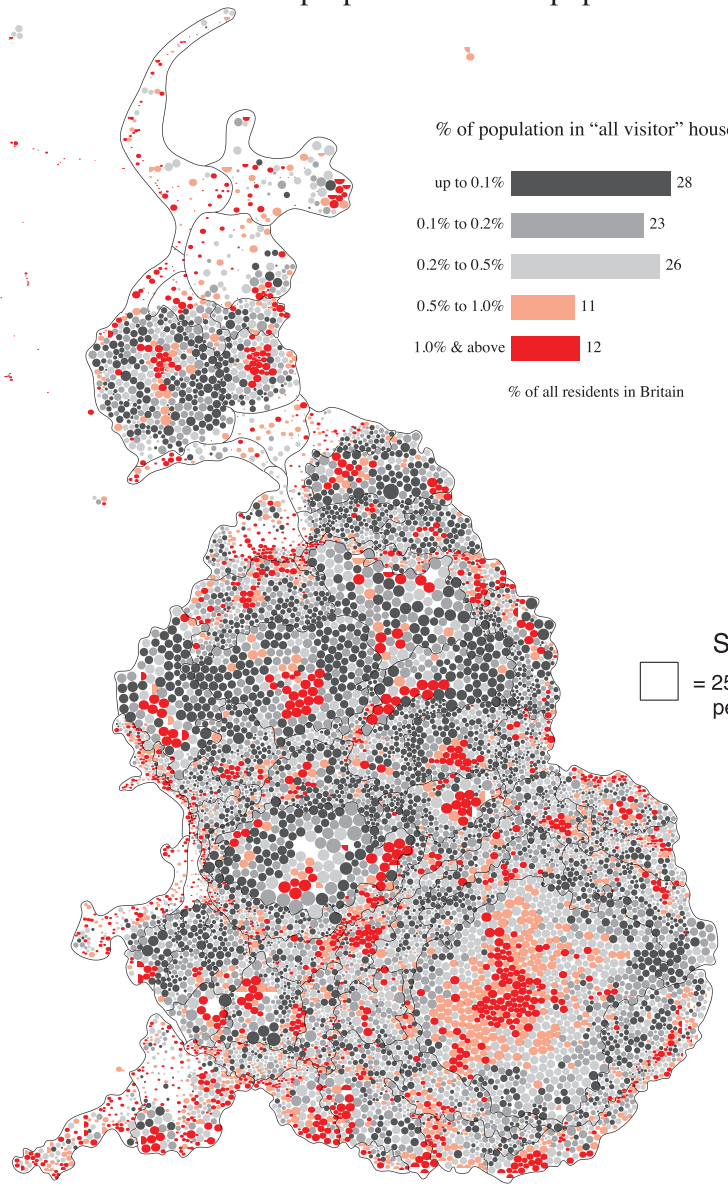
% of all residents in Britain

Scale

= 250 000 people

Visitor Households 1991

proportion of ward populations



% of population in “all visitor” households

up to 0.1%	28
0.1% to 0.2%	23
0.2% to 0.5%	26
0.5% to 1.0%	11
1.0% & above	12

% of all residents in Britain

Scale

= 250 000 people

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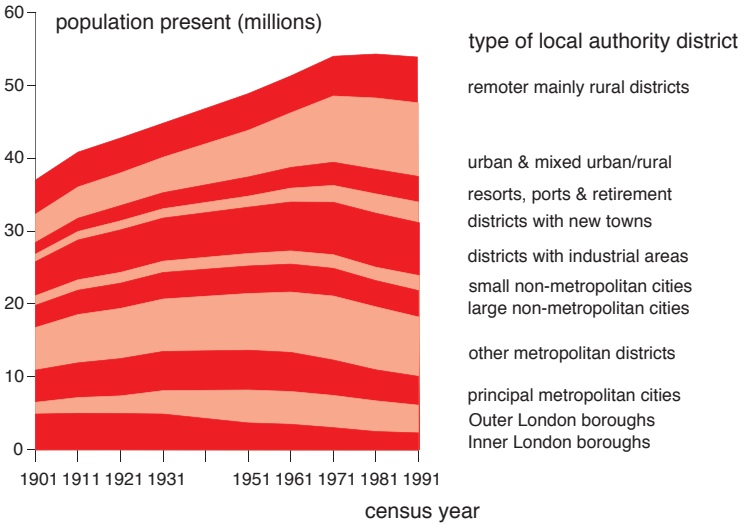
1.15: Average and Extreme Population Present Changes in Britain 1901–1991

Change Period	National Average	District and County Growing Most Quickly	Total Growth	District and County Declining Most Quickly	Total Decline
1901–1911	10.4%	Southend-on-Sea	102.8%	City of London	-27.0%
		Mid Glamorgan	37.2%	Scottish Islands	-3.0%
1911–1921	4.7%	Crawley	117.9%	Eastwood	-52.7%
		Gwent	13.6%	Highland	-8.3%
1921–1931	4.7%	Barking and Dagenham	209.2%	Argyll and Bute	-22.7%
		Hertfordshire	20.1%	Scottish Islands	-12.1%
1931–1951	9.1%	Corby	283.4%	Tower Hamlets	-52.8%
		Hertfordshire	50.4%	Mid Glamorgan	-10.3%
1951–1961	5.0%	Harlow	830.2%	Richmondshire	-20.7%
		Hertfordshire	40.3%	Scottish Islands	-9.2%
1961–1971	5.2%	Cumbernauld and Kilsyth	144.5%	Islington	-22.7%
		Buckinghamshire	26.0%	Scottish Islands	-7.0%
1971–1981	0.6%	Milton Keynes	86.1%	Kensington and Chelsea	-26.2%
		Scottish Islands	21.6%	Merseyside	-8.7%
1981–1991	-0.4%	Milton Keynes	39.2%	City of London	-32.2%
		Cambridgeshire	11.8%	Scottish Islands	-9.8%

1.16: Population Change by District Type in Britain 1901–1991



Population Present 1901–1991

Few series of British social statistics extend back before the 1970s with any degree of geographical detail. The 1971 census was the first to be made available in digital form, which is why that marks the earliest date in many of the maps shown here. Total population figures have, however, been estimated for a single set of small places using census figures back to 1901 (Mounsey 1982). These places are local authority districts with their boundaries frozen in 1981. The only definition of the population which is consistent across this time period is of the population present and enumerated in each district on census night. There was no census held in 1941 due to the war. The spatial patterns of almost all that is known of ninety years of population change in Britain are shown opposite.

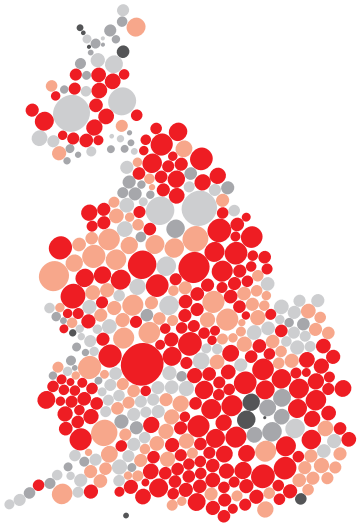
A consistent set of shades is used so that different times can be compared. It should be remembered that the period from 1931 to 1951 is twice the length of the others so it is not surprising that shading categories then tend to be more extreme. The decline of the population of Inner London had begun even before the century started, in sharp contrast to the strong growth of other urban areas in the first decade. By the last decade the pattern shown for London is deceptive as so many of its people were not enumerated on census night in 1991 (see page 10). The capital is actually thought to have grown in size by 84 300 people over the decade to 1991, once under-enumeration has been taken into account. The only indication of this from the illustration is the rise in the population present in Tower Hamlets.

Seventy years ago the buzz-word was suburbanisation, which the red rings of districts surrounding the centres of the major cities show. Over the twenty years around the Second World War the population decline of the capital accelerated along with ports like Liverpool, South Tyneside and Portsmouth, and the Welsh coalfield. The 1950s and 1960s saw a new phenomenon — counterurbanisation — which became even more distinct by the 1970s and 1980s as so many more cities began to lose large numbers of people when national population growth stabilised. Figure 1.15 lists those districts and counties which saw the most extreme changes in each period. The last period of change is covered in greater detail below.

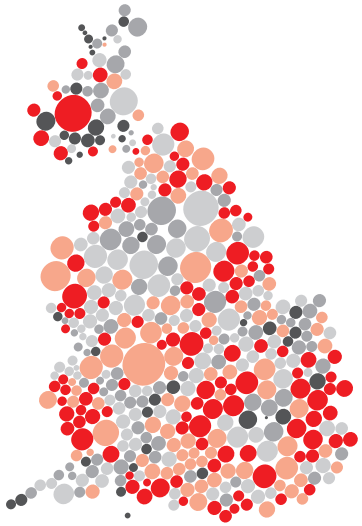
A useful way to summarise the detailed changes shown opposite is to use a categorisation of districts into types based largely on the urban–rural dichotomy following Craig (1987). Figure 1.16 shows how the change in the total population of Britain is built up from the changes in eleven types of districts. Local features, such as the reversal of the sizes of Inner and Outer London, are evident as well as the general trend towards growth in rural areas and decline of the cities. However, with smaller households who prefer cities (page 105) predicted (Figure 4.6), these trends, which can already be seen to be slowing down, could eventually move into reverse.

Population Change 1901-1991

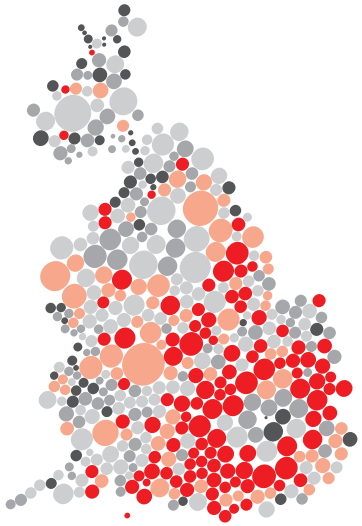
change in district populations



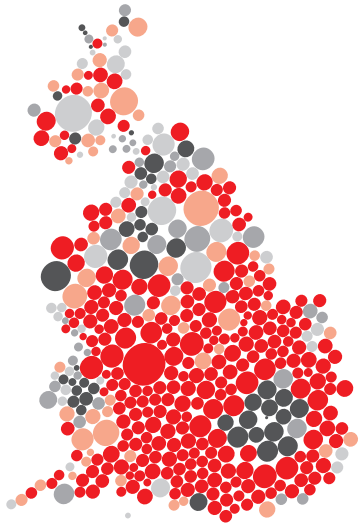
1901-1911



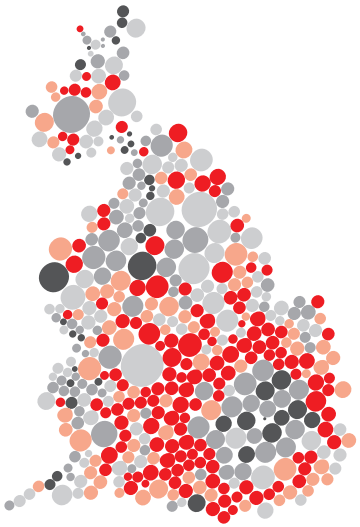
1911-1921



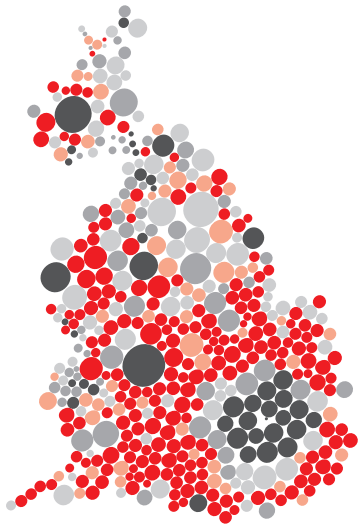
1921-1931



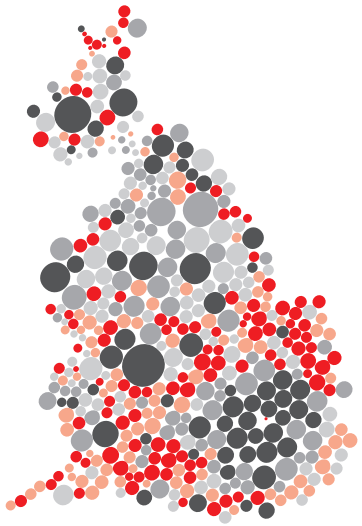
1931-1951



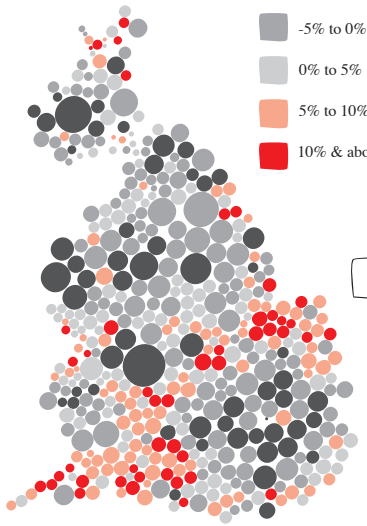
1951-1961



1961-1971



1971-1981



1981-1991

% change in population present

- up to -5%
- -5% to 0%
- 0% to 5%
- 5% to 10%
- 10% & above

Scale

= 1 000 000 people in 1981

MAGENTA

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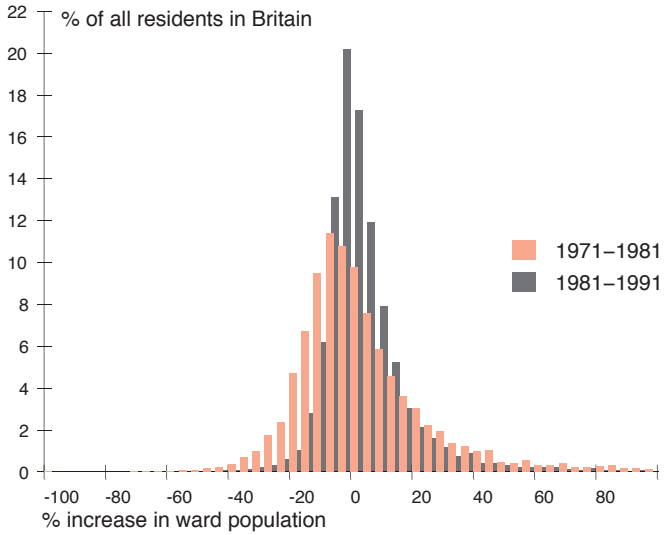
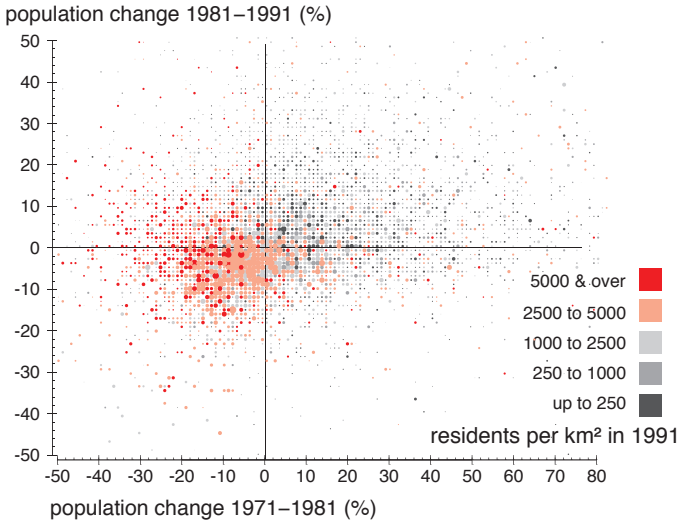
1.17: Distributions of Population Change 1971–1981 and 1981–1991



1.18: Population Change in Britain 1971–1981 / 1981–1991 Shaded by Density



Usual Residents 1971–1991

Figures for how many people are usually resident in wards have only been available since 1971. This is often seen as a better measure to use when looking at population change as it is not influenced by temporary moves. In theory, when the usual resident definition is used the timing of the census should not affect the population sizes of, for instance, university cities with very mobile populations. In 1971 only usual residents who were present on census night were counted, representing 97.4% of the population. However, this proportion is comparable with those enumerated in 1991 (see Figure 1.13).

Both cartograms opposite use the same shading categories to highlight the greater diversity of changes in the 1970s compared with the 1980s. These are also the same categories as used previously to show the changes at district level. The variety of experiences within cities is highlighted here, particularly in the second period. Distinct clusters of wards in almost all large cities can be seen to have lost more than one in twenty of their population in the 1970s, while 30% of people now live in areas which then saw a net population growth of more than one in ten.

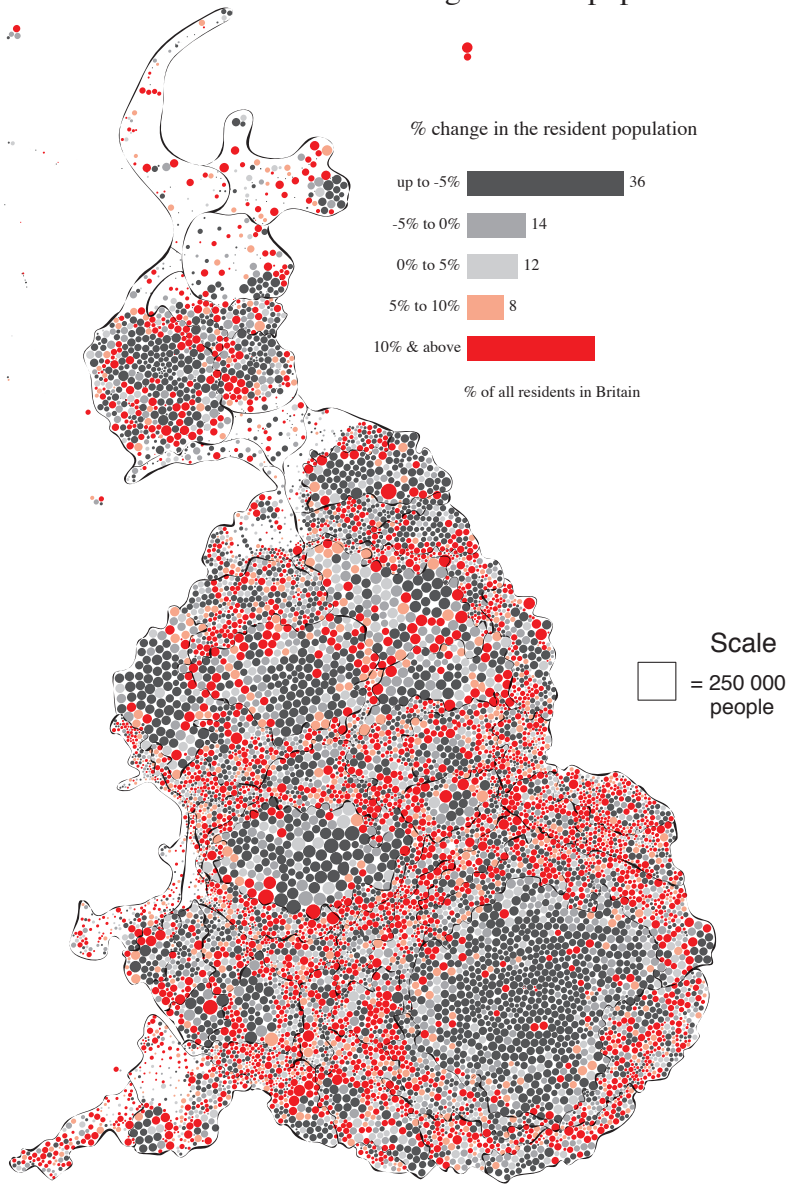
The extremes of change were less marked by the 1980s but were often still in the same general direction. However, many wards across Inner London experienced rapid growth due to redevelopment and immigration. The other conurbations did not experience a similar turnabout. Figure 1.17 shows how less variable were the changes in 1981–91 compared to the previous decade. In 1971–81, three quarters of all people lived in wards with changes of more than 5% either way; that proportion fell to just over a half.

Although side-by-side the two cartograms suggest that wards which saw a rise of population in one period were likely to see a rise in the next, this is not necessarily true. Figure 1.18 illustrates the relationship between the two changes, showing how variable it is. The figure also shows, for both decades, a strong relationship between high population increases and low population density. It may well be that, although individual wards were not especially likely to see a high increase in the 1970s followed by an increase a decade later, their neighbouring wards may (if they did not grow in the first period). This is because population growth often requires new dwellings to be constructed, and one development may well preclude another in the same very local area.

It is important to remember that we are not comparing the same people or even the same number of people when rates of social characteristics are compared across areas over time. Places which have lost people are likely to have lost particular sub-groups of people, predominantly the mobile and the old, this will change their social make-up. Similarly, Inner London in the 1990s does not contain the same mix of people as it did in the 1980s, not because the people there have changed, but because different people have moved in and others have left. When we compare the populations of areas over time we are charting the evolution of communities which are themselves changing shape.

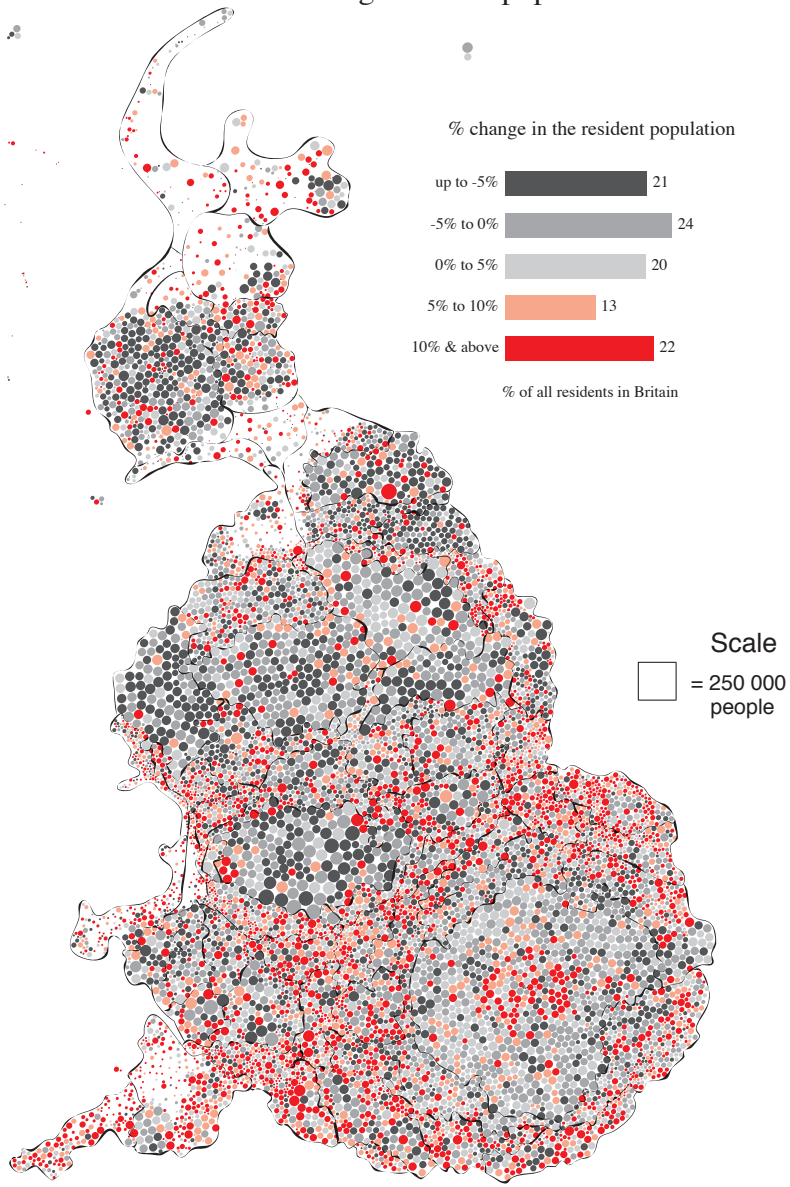
Population Change 1971–1981

change in ward populations



Population Change 1981–1991

change in ward populations



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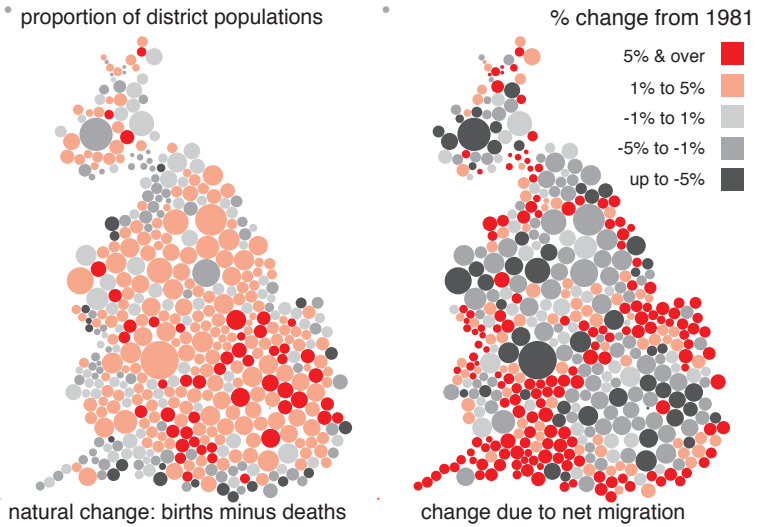
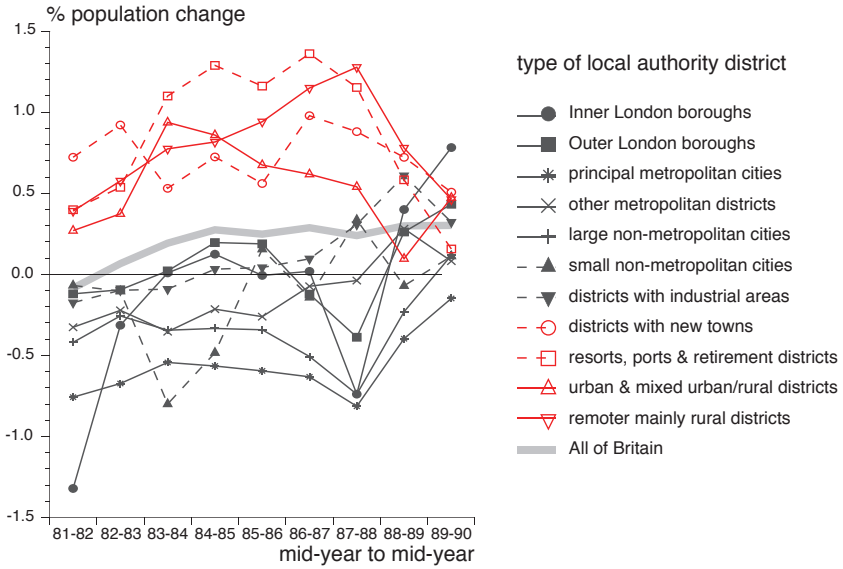
1.19: Components of Mid-Year Estimated Population Change 1981–1991



1.20: Annual Population Change by District Type 1981–1990



Mid-Year Estimates 1981–1991

This chapter ends with a more detailed look at trends during the 1980s using a different source and a somewhat different definition of the population. *Mid-year estimates* are made by the Government Statistical Service for the number of people resident in each local authority on the 30th of June each year. Not only does the timing of these statistics differ from the census, but there are other significant differences. Students are taken to be at their term-time residence; estimates are made of the number of people missed by the censuses, and birth, death and migration statistics are all incorporated in updating these figures annually.

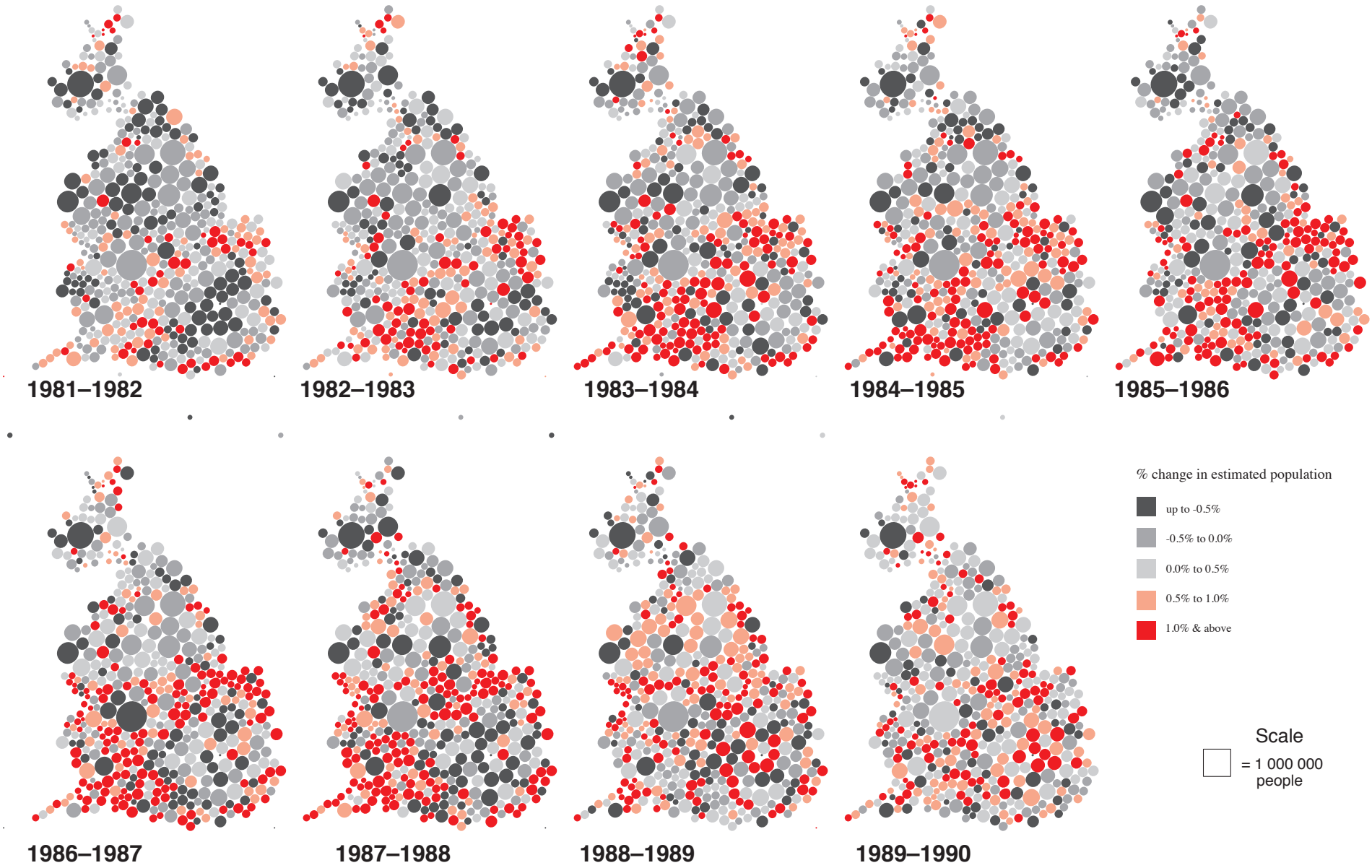
Because the components of population change are included in these calculations they are also made available for study. Figure 1.19 shows the geographical distributions of the changes *in situ* (births and deaths) and those due to migration in each district over the last decade (GRO(S) 1993, OPCS 1993). The latter can be seen to be very much more important than the former. Deaths outweigh births in those areas with an older population, hence the coast is grey. Migration shows a more varied and extreme pattern. Only one central London borough has had an overall population rise through net migration. This is not because migration into the capital is low, just that out-migration is greater (although less in net effect than the number of births over deaths resulting from an influx of so many younger in-migrants). In terms of migration the coast is coloured red, as old people move there, while the major northern conurbations on the west of the country have been losing people through out-migration.

The annual geographical anatomy of these changes is shown opposite for each of the nine pairs of years 1981–82 to 1989–90. The counterurbanisation of 1981–82 is hardly evident by 1989–90, with some Inner London boroughs having the largest rises by then. This may well be due to the recession, but there was also a recession in the early 1980s. In between these two periods the sustained growth of the districts of the South West and East Anglia is most evident, along with the relentless decline of Liverpool and Glasgow.

Finally, the changes are shown in a single illustration — Figure 1.20. Here the same eleven types of district are used as for charting change over the century (see Figure 1.16). Until 1988 the four most rural types (shown by red lines) were always growing faster than the national average and the seven more urban types (in grey) growing slower. Suddenly the lines converged in the last two years and there may even be an indication that some are crossing over. The dramatic rise of Inner London is clear, but so too is the fall in population of the ports and retirement districts. These figures are to be updated following the findings of the 1991 census (hence they stop in 1990, see page 23) but they do illustrate how much diversity of change there was over the period which is being studied here. Will the 1990s see the reversal of the population deconcentration which has predominated since 1951 or a continuation of the post-war exodus to the countryside?

Population Change 1981–1990

•change in mid-year district populations



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Conclusion: People and Land

Distribution

The population of Britain is highly concentrated. A third of the population live in the seven metropolitan counties which occupy only 3% of the land. With the exception of Tyne & Wear these counties are in the central belt of Britain running from London to Liverpool. The majority of people in Britain live within the cities of this belt. Colour Print A shows the locations of these cities in detail, illustrating how the boundaries of metropolitan counties have been drawn around the most densely populated areas. The map also shows how the locations of physical features such as mountain tops and navigable harbours are reflected by the detailed distribution of the population. Colour Print B shows this same detailed distribution of population densities drawn upon the cartogram using identical colour shading. The majority of the population live in wards at densities of over two thousand people per square kilometre. On the cartogram the detailed patterns of density to be found within these peoples' cities are revealed. For instance, the most dense wards in London form a ring around the centre of that city. The cartogram also shows how the boundaries of non-metropolitan counties often traverse the least densely populated parts of the country. Different levels of population density can be crudely associated with many social distributions, such as the chance of children living with their married parents (Figure 6.5), or the likelihood of people not filling in census forms (Figure 1.9). This is because population density acts as a useful surrogate for social divisions between urban and rural Britain.

Mapping People: Colour Prints A and B

The maps in Colour Prints A and B should be compared with the maps on page 9, which show the same dataset over the same areas using the same projections. The maps drawn in full colour show much greater detail, and convey more information by using fifteen categories of density ordered on an approximate logarithmic scale. Full colour maps can also be more confusing to read than two colour maps because of the more complex patterns they can show. To make these maps most legible, a rainbow shading scheme is used to colour them as that allows a greater number of categories to be differentiated on an intuitively ordered spectral scale. Maps inevitably simplify, and the cartographic choices of shading, categorisation and projection determine what can be revealed in them. Similarly the statistics on which maps are based can also simplify, and sometimes misrepresent, the situation. These maps are based on the density lived at by people who were successfully enumerated or imputed by the 1991 census, treating the missing million as if they were invisible. Inclusion of the best estimates of where the missing million residents live would make some of the densest areas much denser.

Population Change

Another misleading impression which may be read from some maps and cartograms is that the pattern they show is static. In 1901 the population of Britain consisted of just under 37 million people. Ninety years later it exceeded 56 million residents. The population grew most slowly in the depressions of the 1930s and 1980s. Although initially the most remote areas lost people, later the most accessible inner city districts were experiencing the greatest declines. Growth before the second world war was typically suburban, but since then it has been progressively more rural and orientated towards small market towns. A decentralisation of the population has been seen to have occurred. The components of this decentralisation can be illustrated by considering the post war changes in the sizes of three different geographical definitions of the same fraction of the population. In 1951 the least densely populated 314 districts contained 40% of the population, their share rose to 42% in 1961, 45% in 1971, 49% in 1981 and to 50% by 1991. The areas which are currently constituted as metropolitan counties contained 40% of the population of Britain in 1951, 38% in 1961, 36% in 1971, 33% in 1981 and 32% in 1991. There has also been a gradual southwards shift of the population. The counties which make up the three southernmost standard regions contained 40% of the population in 1951. This share rose to 41% in 1961, 42% in 1971, and to 43% by 1991. People in Britain are being spread more evenly over the available land, and most of this under-occupied but easily habitable land is in the south of England. They are also following the migration of employment in Britain which has moved southwards at a faster rate than people over the last two decades (page 69).

Missing Million

The figures given above for population change are based upon mid-year estimates of the population for 1991, rather than on census counts. This is because more than a million people avoided being enumerated by the last census, with just under a million more not being available to complete their census forms (which were completed for them by imputation, see page 10). These factors mean that the characteristics of young men are under-represented in metropolitan areas on many of the maps which follow. A further three quarters of a million communal establishment residents and one quarter of a million visitors from abroad are also often omitted from social statistics. This practice is also followed here as most of the maps in this atlas are about “usual residents in private households”. Because of this, the locations and some of the characteristics of visitors and of people who live in communal establishments have been presented in some detail in this chapter. Only the maps based on mid-year estimates of the population show all the

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population. A rough impression of whose social characteristics are most under-estimated by the 1991 census can be gained by knowing where people lived who were missing from the census. The precise location of the missing million is returned to in a section on electoral registration in the concluding chapter of the atlas (page 216).

Recent Change

Analysis of the most recent trends in population shows that, in general, population decentralisation is continuing, but with some interesting exceptions. Until 1988 the four most rural district types were growing most quickly (Figure 1.20), but this situation had changed by 1990 so that — after over fifty years of continuous decline (Figure 1.16) — the population of Inner London boroughs rose to become the fastest growing of the eleven district types. More recent mid-year estimates (which became available just before this book was printed) show that the revival of the Inner London population has continued through to 1993, but also that the three most rural district types have reinstated their position of having the strongest growth following the unusual circumstances of 1991. Large and small non-metropolitan cities have also experienced above average population growth. This is due to high inward migration rather than a large excess of births over deaths (as has occurred in London). All other types of district have grown less rapidly than the national average. In particular, principal metropolitan cities — Manchester, Liverpool, Sheffield, Newcastle upon Tyne, Birmingham, Leeds and Glasgow — have, as a group, continued to grow most slowly due to continually high rates of out-migration. Because of this, the national share of the population living in metropolitan counties has continued to decline since 1991, despite the growth of Inner London. Inner London's growth has, however, helped the southwards shift of population to continue unabated, but the overall shift to less dense areas has also continued. At the local authority district level it is affluent areas which have experienced the strongest population growth in the first two years following the last census, with seven districts experiencing rises of at least four people in every hundred (Cotswold, Cambridge, Forest Heath, Hertsmere, Three Rivers, Kincardine & Deeside, and Northavon).

Population Projections

Much more information is available on population numbers than on any other aspect of the social geography of Britain because these statistics are required in order to interpret most other information. This is also true in terms of future projections, which are made first for population and then for other social statistics. The population of Britain is projected to grow by 3.4% between 1991 and 2001, by 2.4% in the decade up to 2011, by 1.5% in the decade up to 2021 and to grow by less than 0.2% per decade by 2031, after which it is projected to fall (CSO 1995). These projections assume net immigration over the next four decades They also show that the population of Scotland is due to start declining by the start of next century, while East Anglia and the South West are projected to grow most quickly. Population estimates and projections can thus provide a context for other social statistics which are available for much more limited periods. For instance, population mobility was very low at the time of the 1991 census, and statistics derived from that source used later in this atlas, such as migration rates, may not be typical of more usual times. By studying population changes around census dates it is possible to gain an impression of how unusual are the census years which we are often obliged to use to analyse social change. Similarly, by observing where the population missing or excluded from other sources resides, an estimate can be made of the direction and importance of the biases introduced by these factors. Studying simple population distribution and change is an essential prerequisite to understanding more complex patterns and developments in the social geography of a country.

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