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OFFICE OF POPULATION CENSUSES AND SURVEYS

Grid references of centres of population Great Britain 1971

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Population Statistics Division, OPCS

Occasional Paper 1

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**Grid references of
centres of population,
Great Britain, 1971**

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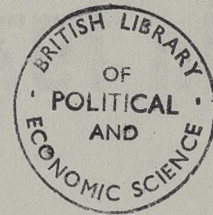
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INTRODUCTION

This booklet gives the national grid references of the centres of population of areas ranging in size from a local authority to the whole of Great Britain. These centres of population are averages derived from the location of all of the population of the area as enumerated in the 1971 Census. The average used is the arithmetic mean. Detailed definitions are given in the descriptions of the methods of calculation used. Possible uses of centres of population are:

- a. as a summary statistic (for example, changes over time in the location of the centre of population of an area provide a summary measure of the overall change in the direction of movement of the population)
- b. as a convenient way of calculating straight line distances (when it is satisfactory to use the same 'average' distances for all of the population of an area)
- c. as an aid to preparing maps and diagrams.

A centre of population as defined in this study is not necessarily in the most densely populated part of an area. For example in the case of an imaginary region consisting of two towns at opposite extremities the centre would fall in the sparsely populated middle of the region, and even for a town, the centre of population may fall outside the most densely populated areas. Accordingly for large areas - such as regions or countries - (a) above will be the main application of the results. For smaller areas, such as local authorities, (b) and (c) will probably be the more important.

Partly because of this difference in emphasis of the use of the results, and partly because of differences in data availability this booklet is in two distinct, though related, parts. Chapter 1 and Appendix Tables 1-3 refer to an analysis of the trends over time in the centres of population of Great Britain, the countries of Great Britain and the regions of England; this section is an updating, with methodological improvements of Chapter 3 of Population Density and Concentration in Great Britain 1931, 1951 and 1961.⁽¹⁾ Chapter 2 of this booklet and Appendix Table 4 give more detail for England and Wales for 1971. They extend the analysis in Chapter 1 by adding the grid references of centres of population down to local authority level (for both pre-1974 and post-1974 authorities). This analysis may also be regarded as a summary and extension of the 1971 Census Small Area Statistics (SAS) data.

No details of grid references for areas smaller than local authorities are given in this booklet. Requests for grid references, as given in the Census Small Area Statistics, for specified wards, parishes or enumeration districts, should be addressed to:

Customer Services, Office of Population Censuses and Surveys, Titchfield, Fareham, Hampshire. PO15 5RR.
Requests for any other information about the contents of this booklet should also be sent to this address.

1 NATIONAL AND REGIONAL TRENDS IN CENTRES OF POPULATION 1951-1971

1.1 Summary of work done

Calculations from Census data were made of

- arithmetic mean centres of population;
- the dispersion, or amount of 'scatter', of the population of an area (using two alternative measures);
- as (a) and (b) using measures related to physical size of an area instead of the population size;

The results are given for
Great Britain, England, Scotland and Wales;
regions of England (pre-1974);
conurbations (pre-1974).

The full results are given in the Appendix Tables. Details of the data and methods are set out in sections 1.4 - 1.6 and the results are discussed in section 1.7.

1.2 Relationship to previous work

This part of the study is an updating of parts of Population Density and Concentration in Great Britain 1931, 1951 and 1961 (1). A major difference is that the data used in this study give 100 per cent coverage and 1971 Census grid references are used whereas in the 1931-1961 study the data referred to a sample of wards (and parishes) and the grid references were more arbitrary. However, these methodological differences had little overall effect - as a comparison of the two sets of results show. Some complications regarding the areal units used in this study are described in section 1.5.

1.3 Significance of national and regional centres of population

Any change in the location of a centre of population for these larger areas indicates a general movement of population over time. That the 1971 arithmetic mean centre of population for Great Britain lies near the town of Swadlincote (6 km south east of Burton-upon-Trent) is little more than an interesting curiosity. What matters is whether or not it has moved since 1961, the size and direction of such a move and how the 1961-1971 movement compares with 1951-1961 and earlier movements. Answers to these questions are given later. Comparisons can also be made with the physical centre of a region or country which is the same point as the centre of a uniform population distribution.

1.4 Algebraic definitions

One definition of the centre of population of an area is the arithmetic mean of the grid references of each person within the area. In turn this requires the definition of which people belong to which area and a definition of the location of a person within the area. In this study both these subsidiary definitions were fixed by the Census procedures. Given these, starting from first principles a grid reference for each person is also required. In practice this is unnecessary as using grid references for small areal units (small relative to the area for which the calculation is being made) gives a good approximation. The formulae used in the calculations are set out below. The summations refer to the areal units - for example local authorities or wards and parishes - within the region or country; P is the population of the areal unit which has national grid references, in the Census, of (x, y).

Arithmetic mean centres of population

$$\begin{aligned} \text{Easting } \bar{x} &= \frac{\sum(Px)}{\sum P} && \text{) formula 1} \\ \text{and Northing } \bar{y} &= \frac{\sum(Py)}{\sum P} && \text{) } \end{aligned}$$

As \bar{x} and \bar{y} are independent of the set of coordinate axes used no rotation, or other change of axes, was necessary.

Root mean square deviation

$$= \left(\frac{[\sum P\{(x-\bar{x})^2 + (y-\bar{y})^2\}]}{\sum P} \right)^{\frac{1}{2}} \text{ formula 2}$$

Mean deviation

$$= \frac{\sum P\{(x-\bar{x})^2 + (y-\bar{y})^2\}^{\frac{1}{2}}}{\sum P} \text{ formula 3}$$

Measures related to physical size of areas. These are calculated as for the population measures except that the population (P) is replaced by physical size (A) as given in the Census reports. These area-weighted calculations give the same results as those for a uniformly distributed population, since then the population of each area would be directly proportional to A.

1.5 Areal units used

In principle local authority data would be quite satisfactory to give good estimates for regions and countries using the formulae set out above. In practice, however, the grid references for local authorities that were available from the Census SAS records contained some deficiencies (see sections 2.4 and 2.6a) which would, if uncorrected, lead to some bias in the results. For this

reason in some parts of the calculations ward and parish data were used since their grid references are not subject to the same deficiency as local authorities. When wards and parishes were not used corrections were made to allow for the deficiencies. Details are:

Arithmetic mean centres of population. For 1961 and 1971 the ward and parish data were used. For 1951 local authority data were used and the results adjusted by applying a correction factor derived from a comparison of the 1961 results using the two sources. For 1931 and earlier years the results given in the previous 1931-1961 study have been corrected so as to be comparable with the more accurate results of this study.

Root mean square deviation, mean deviation. These were calculated from local authority data. No adjustments were made as the biases should, more or less, be self correcting.

Area weighted calculations. These were adjusted as for the 1971 population weighted measures described above.

1.6 Data extracted

It was possible to obtain the data needed from the 1971 Census. At the local authority level Table 2 of the 1971 Census County Reports (2) for England and Wales and for Scotland gives the enumerated population figures for 1951, 1961 and 1971. These are for the areas as constituted in 1971 so the three sets of figures are wholly comparable and boundary changes have been allowed for. The physical size of the area is given in Table 3 of the County Reports. The grid references for the local authorities used in this part of the study are those from the Census Small Area Statistics (SAS) records. These are shown as eight figure references so the last figure is a 100m reference.

Similar remarks apply to the availability of ward and parish data. For rural areas in Scotland the data used was not that for parishes but for county council electoral divisions. But for this size of unit population data for 1951 were not published. A detailed discussion of the derivation of the Census grid references for local authorities as well as for wards and parishes will be found in sections 2.4 - 2.6a.

Thus for each areal unit data were combined from three separate Census sources. It was uneconomic to do this by computer linkage so the Census SAS records were printed out to form a coding sheet; this gave the grid references and a 1971 population. The other populations and the hectares were added manually. The information was punched and checked; it then formed the data input for the calculations.

1.7 Comments on results

a) Arithmetic mean centres of population. For Great Britain, England, Scotland and Wales, calculations were made for 1971 in the 1931-1961 study using short cut methods. The present calculations give results that differ only marginally, so at this level of aggregation, there is little new to add. Figure 1 summarises the trends in an historical context. The commentary in the 1931-1961 study said of an equivalent diagram:

'For England the 1961-71 annual rate of movement is somewhat larger than that for 1951-61 or 1931-51 (though smaller than that for 1901-31); the movement from 1931 to 1971 has been predominantly to the south (and not south-easterly). For Scotland the direction of the movement has been persistently to the south but the 1961-1971 movement is very small and is the least since 1801. For Wales up to 1931 the direction of movement was to the south east but since then has been erratic and small. The trend for Great Britain can be regarded as a weighted average of those of the constituent countries; for example the due eastwardly movement between 1901 and 1931 is a combination of the comparatively large north-eastwardly movement for England and the smaller predominantly southwardly movements for Scotland and Wales.' (paragraph 3.66)

It is not a rewarding exercise to try and analyse the arithmetical calculation to say why the changes in the population centres have occurred in terms of changes in the population of individual areas. It is best accepted as simply an overall measure of change.

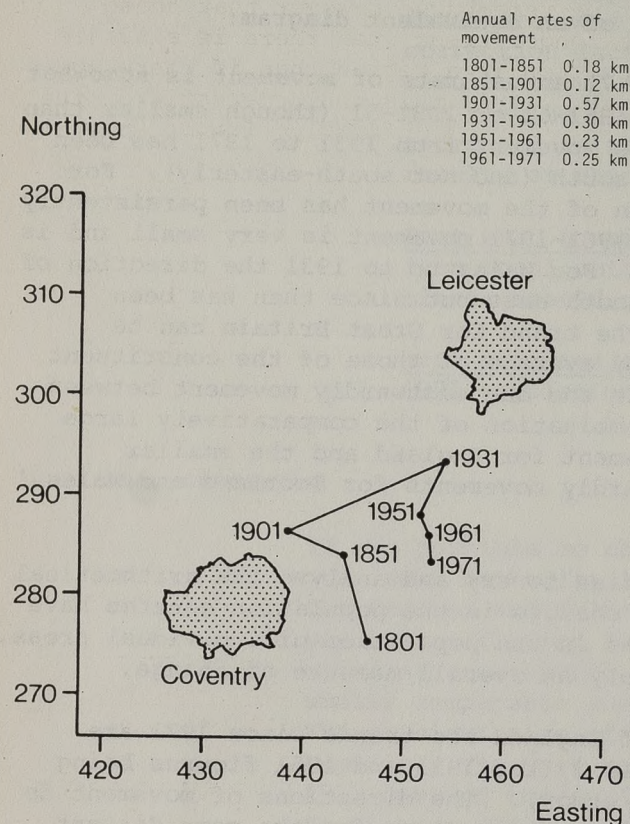
For the pre-1974 regions of England the trends since 1931 are summarised in Appendix Table 2 (the 1931 and 1951 figures being derived from the 1931-1961 study). The directions of movement do not show much uniformity - the centres for the more distant and rural regions of the South West and East Anglia both move towards London but elsewhere there is no general trend. It is of course possible for the trends within regions to differ (or be unchanged) and yet when the regions are combined for the national average to show a pronounced movement. For the latter reflects changes in the division of the population between regions as well as the distribution within the regions.

b) Comparison of arithmetic mean population centres with centres of a uniform distribution. The centre of a uniform population distribution is, as pointed out above, the same thing as the physical centre of an area and remains constant over time (boundary changes excepted). At a national level the broad picture is the same as in the 1931-61 study. Then, however, the measures were not calculated for the regions of England. They are now shown in Appendix Table 2.

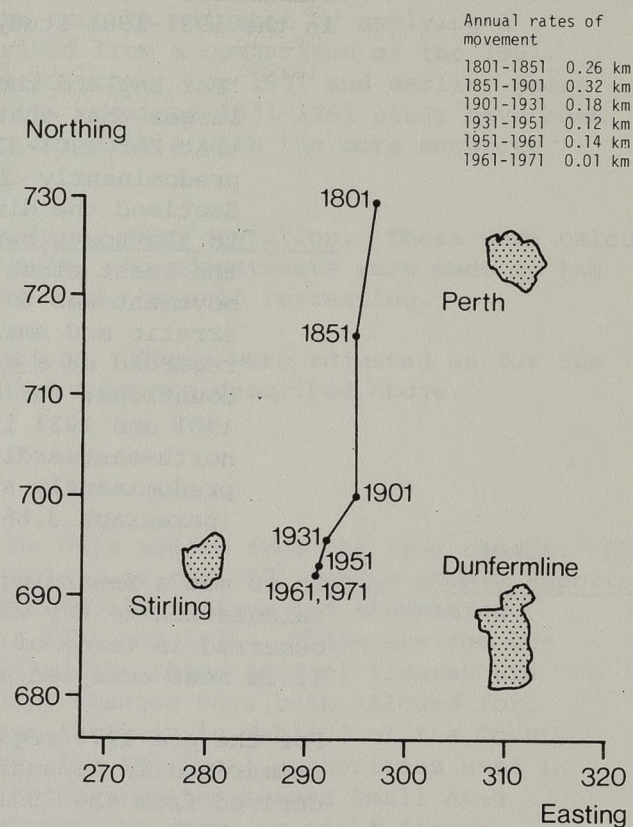
c) Measures of population dispersion. As well as the measures of average location two measures of population dispersion were calculated. Each is a measure of the average distance of the population of an area from a centre of population (for formal

Figure 1 Arithmetic mean centres of population

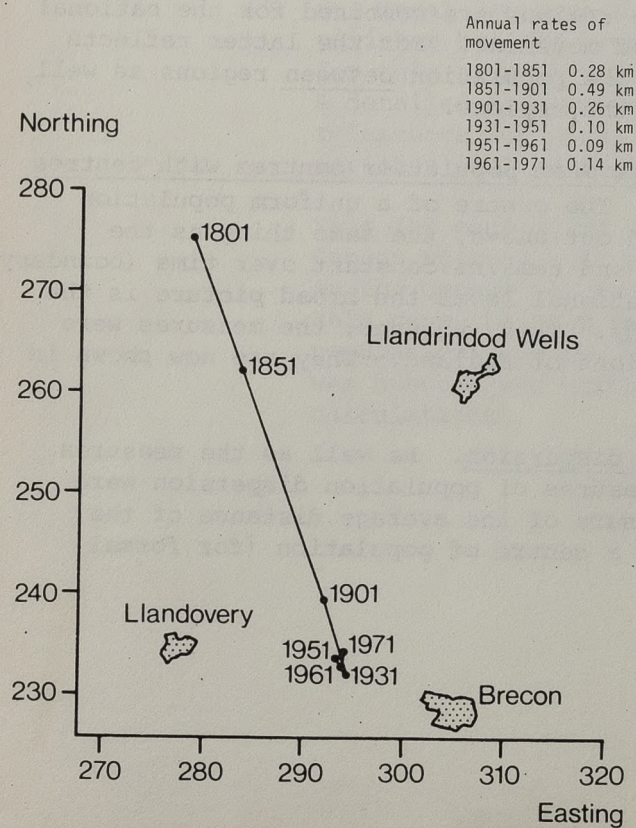
(a) England



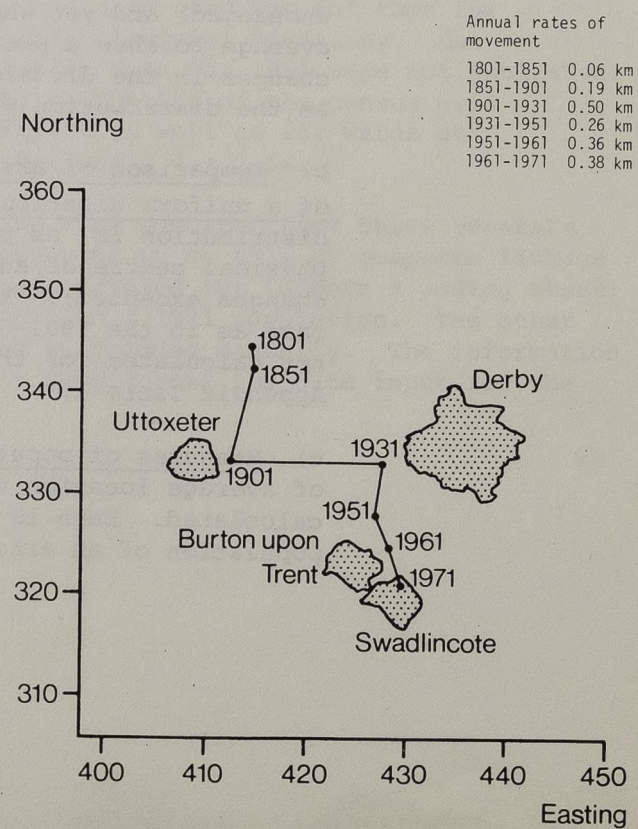
(c) Scotland



(b) Wales



(d) Great Britain



definitions see section 1.4). The results are given in Appendix Table 3 and though the absolute values differ - due to the different definitions used - the general patterns are similar. So for simplicity only one of the measures, the mean deviation, is discussed here. Figure 2 analyses the trend over time.

Among the regions of England, the South East and the North were becoming more dispersed and the South West and the East Midlands more concentrated. It must be remembered however that these measures will show a much stronger trend when there is a single large concentration of population in a region than if there are several of roughly equal size. It is this characteristic of the measures that probably accounts for the differing trends shown in Appendix Table 3. Whereas the years 1951-1961 saw a levelling off of the 1931-1951 trends, over the period 1961-1971 a tendency towards greater dispersion is evident from the diagram.

Comparisons between the absolute mean deviations of the population of areas partly reflect differences in the physical sizes of the areas. This is allowed for by expressing the absolute distances as a ratio of the measure calculated for a uniform population distribution (that is area weighted). The results are shown in Table 1. This is a more refined procedure than that followed in the 1931-1961 study; the standardising factors are constant so the trends over time are the same as those shown in Figure 2.

Table 1 Mean deviations, 1971

	Area weighted (km)	Population weighted (km)	Population weighted / Area weighted x 100
England	159.0	138.6	87.2
North	57.6	38.4	66.6
Yorkshire/Humber	53.2	37.0	69.6
North West	39.0	28.0	71.8
East Midlands	43.4	35.4	81.6
West Midlands	44.2	26.4	59.8
East Anglia	43.8	48.2	110.0
South East	65.1	42.6	65.5
South West	79.1	77.4	97.8
Wales	67.1	69.0	102.7
Scotland	134.6	68.3	50.7
Great Britain	254.5	169.1	66.4

Figure 2 Population dispersion : mean deviation within regions of England, Wales, 1931-1971

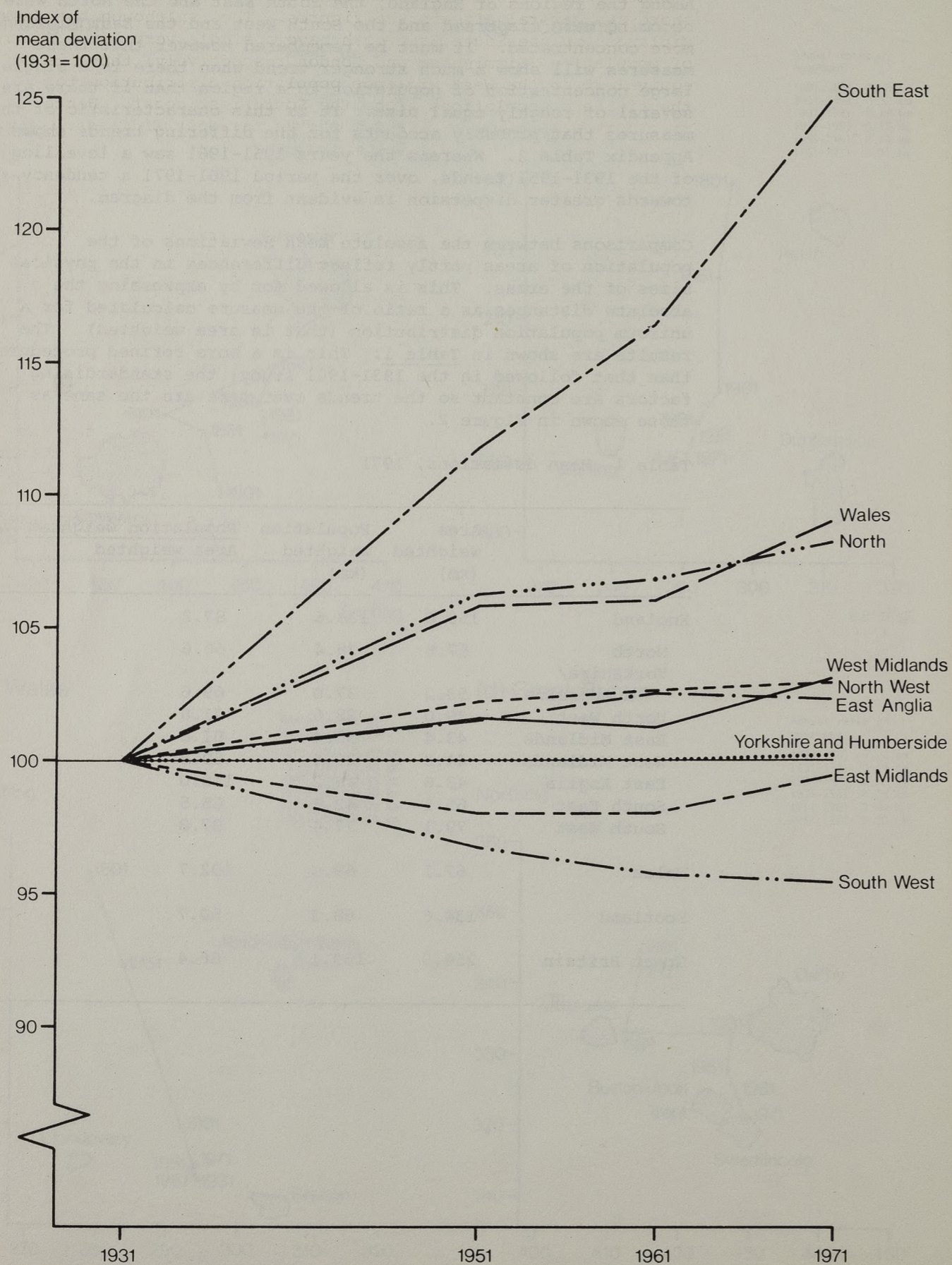
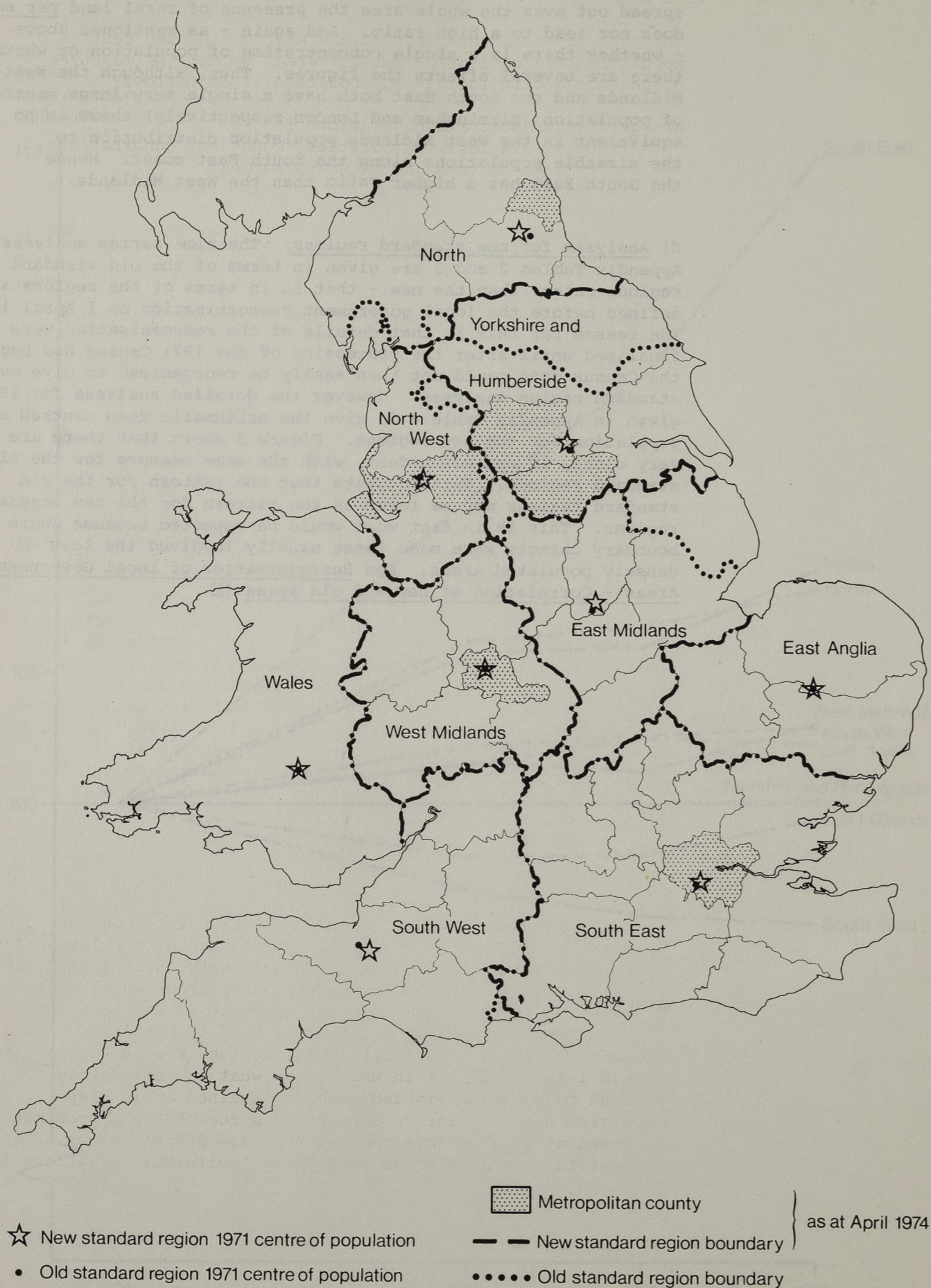


Table 1 shows that the more rural regions of England (East Anglia, South West) and Wales have the higher ratios. The figure for Scotland, however, is a reminder that if the population is not spread out over the whole area the presence of rural land per se does not lead to a high ratio. And again - as mentioned above - whether there is a single concentration of population or whether there are several affects the figures. Thus, although the West Midlands and the South East both have a single very large centre of population (Birmingham and London respectively) there is no equivalent in the West Midlands population distribution to the sizeable populations along the South East coast. Hence the South East has a higher ratio than the West Midlands.

d) Analyses for new standard regions. The time series analyses in Appendix Tables 2 and 3 are given in terms of the old standard regions rather than the new - that is in terms of the regions as defined before the local government reorganisation on 1 April 1974. The reason for this is that details of the reorganisation were not finalised until after the processing of the 1971 Census had begun; the Census data could not then easily be reorganised to give new standard region analyses. However the detailed analyses for 1971 given in Appendix Table 4 do give the arithmetic mean centres of population for the new regions. Figure 3 shows that there are very close, if not coincident, with the same measure for the old standard regions. This suggests that the pattern for the old standard regions may be taken as the pattern for the new standard regions. This is in fact what would be expected because where boundary changes were made these usually involved the less densely populated areas. See Reorganisation of Local Government Areas - Correlation of new and old areas. (3)

Figure 3 Centres of population, new and old standard regions 1971



2 CENTRES OF POPULATION OF AREAS IN ENGLAND AND WALES, 1971

2.1 Summary of work done

The data given in this section are arithmetic mean centres of population for regions or smaller areal units. No measures of dispersion are included. The coverage is as follows:

- a) grid references and populations for
 - (i) pre-1974 local authorities, counties, conurbations, conurbation centres and standard regions
 - (ii) post-1974 districts, counties and standard regions.
- b) 1971 Census Small Area Statistics centres of population for pre-1974 local authorities. These differ a little from the data shown as part of (a) for reasons to be described.

The main differences from Chapter 1 are therefore that the results refer to smaller areas; that they refer only to 1971; and that they are wholly derived from Census enumeration district data.

2.2 Grid references in the 1971 Census

The 1971 Census was the first in which grid references were included as part of the Census records. This was done so that Census statistics for grid squares could be produced. Full details of the procedures and of the plans for grid square statistics were given in *Census Information Papers Nos 1 and 5* (4). A grid reference for each area was included in the Small Area Statistics which are available for enumeration districts, wards, parishes and local authorities. This study provides a listing of these grid references for local authorities, but although grid references for wards, parishes and enumeration districts are available, the publication of a complete listing does not seem justified and requests should be sent to OPCS (see page 1). Some readers requiring this type of information may find the *Ordnance Survey Gazetteer* an alternative source, though the grid references obtained from it will not usually coincide exactly with the Census references.

2.3 Algebraic definition

The argument and definition given in section 1.4 about the use of data for small areas to derive the centres of population for larger ones again applies. When working with local authorities, enumeration districts are relatively small areas which it is convenient to take as the unit for aggregation and so a population weighted mean of enumeration district data is obtained. A more approximate method of calculation is to take P as a constant in formula 1 (see page 3) in which case what is customarily referred to as an unweighted mean is obtained; this step simplifies the calculation and may be a reasonable approximation for enumeration districts because they are defined so as to give enumerators a roughly equal task; this limits the variations in

the size of population - especially within a local authority. Because the population of enumeration districts varies less than their physical size such an approximation will produce an answer nearer to the population centre than to the physical centre; it also enables the aggregations to be done before the population data become available.

2.4 Grid references of enumeration districts in the 1971 Census

Although grid references of enumeration districts are not listed in this publication they are the basic unit from which the grid references of the larger scale units are derived and so an explanation of the methods used must start with them. Generally in the Census the intention was to allocate a unique reference to each enumeration district and it was of secondary importance that this should be the centre of population of the enumeration district. So in practice, as a measure of the centre of population, the reference given was often fairly arbitrary and because the grid reference of the enumeration district was to act as an independent check on the grid references given for the households it could not be derived from the latter. A particular problem arises with 'shipping' enumeration districts. These are special enumeration districts which are used to enumerate the crew and passengers of ships. Because a ship has no fixed address the convention was adopted that all such enumeration districts were given the grid reference of a point in the North Sea (6000, 4000); this leads to complications when aggregating enumeration districts (see section 2.6a). Apart from this the enumeration district grid references are satisfactory as the basic (x, y).

2.5 Method of calculation

The main method used on this part of the study was population weighted aggregation of the Census enumeration district data excluding both population and grid reference data for shipping enumeration districts. Readers can make their own calculations of the centre of population of any area which can be defined in terms of those included in this report by taking the grid references given and weighting these by the populations shown in Census publications (for example the County Reports or the Age, Marital Condition and General Tables) (5). However the results of the weighted aggregations for wards/parishes and local authorities may not agree with the unweighted grid references shown in the Census SAS statistics. This, in turn, leads to further possible differences if still greater aggregations (for example for counties or regions) are done. These complications are considered in the next section.

2.6 Comments on results

There is no comment by way of general interpretation. What follows is a comment on the consequences of the methodological problems.

2.6

a) Local authorities - difference from Census Small Area Statistics results. Appendix Table 4(b) shows that there are some differences in the centres of population obtained by applying the population weighted method from the unweighted centres of population shown in the Census Small Area Statistics. This subsection explains the reasons for this. For wards and parishes the Census method was to calculate the grid references from the enumeration district data using the unweighted method (see section 2.3) with the added step that, having obtained an unweighted mean, the grid reference assigned was that of the enumeration district nearest to this mean. This ensures that the grid reference of the ward lies at a point within the ward or parish and at a point at which there is some concentration of population; these are important common-sense requirements with certain shapes of area or with certain distributions of population. The assignment of a ward or parish grid reference to the nearest enumeration district causes the arithmetic mean formula to be an approximation to the grid reference finally allocated.

The same procedure was followed for local authorities but the starting point was the unweighted ward and parish grid references. Such unweighted and repositioned Census SAS grid references may of course differ from a population weighted calculation. In practice there was a further source of differences. This occurred because in making the unweighted Census SAS calculations for local authorities the shipping enumeration districts and wards - see section 2.4 - were included with their North Sea grid reference of (6000, 4000). This meant that the unweighted mean, for local authorities with shipping enumeration districts was that of the ward/parish nearest to the North Sea or even, in extreme cases, the point (6000, 4000) itself. This occurred when only two areas were being aggregated and has subsequently been amended. Of course only a minority of local authorities include shipping enumeration districts and they can be identified from the Census County reports; and at the ward and parish level shipping enumeration districts were kept separate. However as the population weighted calculations excluded shipping enumeration districts this study gives the user, for whom their inclusion in the Census SAS grid references is a serious deficiency, an alternative set of references.

Appendix Table 4(b) shows that for most local authorities the differences between the population weighted method and the unweighted method are small; but there are a few areas for which users may need to make a careful choice. The population weighted method is the more accurate as a calculation of the population centre, but, if Census Small Area Statistics data are already being used, this additional accuracy must be balanced against the practical inconvenience of replacing the SAS unweighted grid references.

Apart from the discrepancies caused by the shipping enumeration districts differences between the two methods are greatest for a local authority when size of the wards or parishes is strongly correlated with location and the population distribution is not

symmetrical. For example, these conditions are met in a rural district which is more densely populated at one extremity than the other; this commonly occurs when the rural district adjoins an urban area in one direction and a true rural area in the opposite direction. Thus Wharfedale RD in West Yorkshire adjoined the West Yorkshire conurbation to the south but had the Pennine moors to the north. Consequently, for the reasons outlined, this led to the population weighted centre being to the south of the unweighted centre (by 3 km). Since this rural district averaged some 10 km from its northern to southern boundaries this is a relatively large difference. And of course the Easting may be similarly affected; the differences in Eastings and Northings are not necessarily correlated. Wharfedale is by no means an extreme example though differences of more than 5 or 6 km are rare (again with the exception of areas affected by shipping enumeration districts). On the other hand for many rural districts the differences are small and invariably are so for urban areas because of their smaller physical size.

2.6

b) Regions and countries - effect of areal unit used in summation. Regional centres of population could be calculated by taking population weighted aggregations of either Census SAS enumeration district grid references, or of Census SAS ward/parish grid references, or of Census SAS local authority grid references. Had the population weighted method been used in deriving the Census SAS grid references all three data inputs would have given the same answer; but as explained in section 2.5 the unweighted method was used with various other refinements. Hence the three different sets of areal units may give differing results.

Comparative calculations were made for the regions and countries using all three levels of data input. But to avoid confusion the results quoted in the Appendix Tables are those derived from the population weighted enumeration district data. An examination of the unpublished figures shows that it makes very little difference whether wards/parishes or enumeration districts are used. This was so even for individual local authorities. But there is a marked difference between the results using local authority data and those using either enumeration district or ward and parish data. The next two paragraphs describe these findings.

The very close similarity between the results obtained from ward/parish and enumeration district data could not be assumed beforehand - it might be expected, for example, that the results would reflect the fact that wards and parishes are an intermediate unit between enumeration districts and local authorities. That this does not occur must be related to the distribution of population within wards and parishes. Either there is less variability in enumeration districts' population than there is in ward population within a local authority and/or there is less correlation between population size and location. Both of these possibilities seem plausible though neither has been actually tested.

The size of the discrepancies between the results obtained using the Census local authority grid references and those obtained by using either of the smaller units is shown in Table 2 for the pre-

April 1974 regions. It will be seen that the signs and sizes of the local authority discrepancies are as would be expected if the differences were mainly due to the errors introduced by shipping enumeration districts with their grid references of (6000, 4000). The figures in the last two columns were the adjustments applied in Chapter 1 to all the arithmetic mean centres of population.

Table 2 Differences in centres of population with different data inputs

Area	Summation of enumeration district data		Discrepancy * for			
			Ward/parish data		Local authority data	
	Easting	Northing	Easting	Northing	Easting	Northing
North Yorkshire and Humberside	4232	5430	0	0	+14	- 8
North West	4476	4191	0	0	+ 5	+ 1
East Midlands	3627	4025	0	-1	+10	+ 3
West Midlands	4613	3277	0	0	+ 2	0
East Anglia	4011	2935	0	0	0	0
South East	5891	2339	0	0	- 4	+ 5
South West	5226	1712	-1	0	0	+ 9
England	3304	1328	+1	+1	+12	+10
Wales	4528	2836	0	0	+ 4	+ 4
	2944	2340	0	0	+14	+ 3

* Ward/parish (or local authority) result less enumeration district result.

REFERENCES

- 1 Population Density and Concentration in Great Britain 1931, 1951 and 1961, Studies on Medical and Population Subjects No 30, HMSO 1975
- 2 1971 Census: County Reports, HMSO 1973 to 1975
- 3 Reorganisation of Local Government Areas - Correlation of new and old areas, HMSO 1975
- 4 Census Information Paper No 1: Geocoding in the 1971 Census and
Census Information Paper No 5: Statistics for grid squares; both available from Customer Services, OPCS, Titchfield, Hampshire, PO15 5RR
- 5 1971 Census: Age, Marital Condition and General Tables, HMSO 1974.

Appendix Table 1 Arithmetic mean centres of population 1801-1971

Great Britain, England, Wales, Scotland

	Location of centre of population						
	1801*	1851*	1901*	1931	1951	1961	1971
Great Britain							
Easting	4150	4150	4130	4281	4270	4286	4296
Northing	3455	3423	3330	3330	3279	3247	3210
England							
Easting	4466	4440	4386	4541	4517	4527	4528
Northing	2755	2841	2836	2936	2882	2861	2836
Wales							
Easting	2792	2839	2923	2946	2935	2940	2944
Northing	2754	2620	2392	2318	2335	2327	2340
Scotland							
Easting	2971	2950	2948	2920	2915	2912	2912
Northing	7292	7160	6999	6953	6930	6920	6920

	Movement (average/decade)					
	1801-1851	1851-1901	1901-1931	1931-1951	1951-1961	1961-1971
Great Britain						
Distance (km)	0.6	1.9	5.0	2.6	3.6	3.8
Direction	S	SSW	E	SSW	SSE	S
England						
Distance (km)	1.8	1.2	5.7	3.0	2.3	2.5
Direction	NNW	WNW	ENE	SSW	SSE	S
Wales						
Distance (km)	2.8	4.9	2.6	1.0	0.9	1.4
Direction	SSE	SSE	SSE	NW	SE	NNE
Scotland						
Distance (km)	2.6	3.2	1.8	1.2	1.4	0.1
Direction	S	S	SW	SSW	SSW	SW

*Figures for these years were originally calculated from data for counties (see *Population Density and Concentration in Great Britain 1931-1961*). In this study they have been adjusted so as to be comparable with the new 1971 data.

Appendix Table 2 Arithmetic mean and physical arithmetic mean centres of population 1931 - 1971

Great Britain, England, Wales, Scotland, regions of England

	Location				Movement/Decade	
	Arithmetic mean centre		Physical arithmetic mean centre		Arithmetic mean centre	
	Easting	Northing	Easting	Northing	Distance (km)	Direction
Great Britain						
1931	4281	3330	3665	4528	2.6	SSW
1951	4270	3279			3.6	SSE
1961	4286	3247			3.8	S
1971	4296	3210				
England						
1931	4541	2936	4368	2960	3.0	SSW
1951	4517	2882			2.3	SSE
1961	4527	2861			2.5	S
1971	4528	2836				
Wales						
1931	2946	2318	2807	2719	1.0	NW
1951	2935	2335			0.9	SE
1961	2940	2327			1.4	NNE
1971	2944	2340				
Scotland						
1931	2920	6953	2708	7663	1.2	SSW
1951	2915	6930			1.4	SSW
1961	2912	6920			0.1	SW
1971	2912	6920				
Regions of England						
North						
1931	4230	5437	3979	5359	0.6	NW
1951	4221	5444			0.6	ESE
1961	4226	5441			1.2	SSE
1971	4232	5430				
Yorks/Humberside						
1931	4447	4196	4643	4248	1.0	ESE
1951	4466	4191			0.5	ESE
1961	4471	4190			0.5	ENE
1971	4476	4191				
North West						
1931	3641	4032	3633	4079	0.6	SW
1951	3633	4028			0.5	WSW
1961	3628	4026			0.1	SW
1971	3627	4025				

Appendix Table 2 - continued

	Location				Movement/Decade	
	Arithmetic mean centre		Physical arithmetic mean centre		Arithmetic mean centre	
	Easting	Northing	Easting	Northing	Distance (km)	Direction
East Midlands						
1931	4603	3275	4735	3244	0.9	NNE
1951	4609	3292			0.3	SSE
1961	4610	3289			1.2	SSE
1971	4613	3277				
West Midland						
1931	3999	2938	3821	2865	0.2	ENE
1951	4002	2939			0.8	ESE
1961	4009	2935			0.2	E
1971	4011	2935				
East Anglia						
1931	5936	2881	5851	2872	1.8	SW
1951	5914	2857			1.4	WSW
1961	5902	2850			1.6	SW
1971	5891	2839				
South East						
1931	5262	1716	5147	1718	1.0	W
1951	5241	1714			0.6	WNW
1961	5235	1715			1.1	WSW
1971	5226	1712				
South West						
1931	3236	1286	3193	1236	2.3	ENE
1951	3270	1310			2.6	NE
1961	3297	1325			0.8	ENE
1971	3304	1328				

Appendix Table 3 Measures of dispersion, 1931-1971

Great Britain, England, Wales, Scotland; regions of England

kilometres

	Area weighted	Population weighted			
		1931	1951	1961	1971
Root mean square					
Great Britain	280.7	200.8	199.1	197.8	196.5
England	176.0	154.7	153.5	152.7	152.3
Wales	72.5	73.7	76.4	76.7	78.2
Scotland	170.2	99.6	97.6	95.3	94.1
<i>Regions of England</i>					
North	62.9	45.6	47.7	47.8	48.1
Yorkshire and Humberside	58.5	42.2	42.2	42.1	42.2
North West	43.6	30.0	30.7	30.8	31.0
East Midlands	46.9	40.2	39.6	39.5	39.5
West Midlands	47.3	32.8	33.0	32.8	33.0
East Anglia	46.6	49.3	50.0	50.5	50.5
South East	70.1	46.8	49.9	51.0	53.2
South West	88.7	90.1	88.1	87.6	87.5
Mean deviation					
Great Britain	254.5	173.4	171.6	170.4	169.1
England	159.0	141.7	140.2	139.3	138.6
Wales	67.1	63.3	67.0	67.1	69.0
Scotland	134.6	72.2	70.3	68.8	68.3
<i>Regions of England</i>					
North	57.6	35.5	37.7	37.9	38.4
Yorkshire and Humberside	53.2	36.9	36.9	36.9	37.0
North West	39.0	27.2	27.8	27.9	28.0
East Midlands	43.4	35.6	34.9	34.9	35.4
West Midlands	44.2	25.6	26.0	25.9	26.4
East Anglia	43.8	47.1	47.8	48.3	48.2
South East	65.1	34.1	38.1	39.7	42.6
South West	79.1	81.1	78.4	77.6	77.4

Appendix Table 4(a) Arithmetic mean centres of population, 1971

England and Wales; old standard regions, subdivisions of regions, conurbations and conurbation centres. (pre-April 1974 boundaries)

Area	Grid reference of centre of population		Area	Grid reference of centre of population	
	Easting	Northing		Easting	Northing
England	4528	2836	West Midlands	4011	2935
<i>Regions</i>			West Midlands Conurbation	4027	2899
<i>Northern</i>	4232	5430	West Midlands Conurbation Centre		
Tyneside Conurbation	4283	5656	<i>Sub-divisions</i>		
Tyneside Conurbation Centre	4247	5646	Central North	3966	3121
<i>Sub-divisions</i>			Central South	3986	2657
Industrial North East			Coventry Belt	4350	2793
- North	4287	5622	Conurbation	4027	2899
- South	4435	5240	North Staffordshire	3891	3472
Rural North East			Rural West Midlands	3492	2842
- North	4070	5940	East Anglia	5891	2839
- South	4568	4901	<i>Sub-divisions</i>		
Cumberland and Westmorland	3284	5282	East Anglia		
Yorkshire and Humberside	4476	4191	- South East	6119	2508
West Yorkshire Conurbation			- North East	6257	3071
West Yorkshire Conurbation Centre	4210	4292	- North West	5396	3050
<i>Sub-divisions</i>			- South West	5467	2627
North Humberside	5060	4309	South East	5226	1712
South Humberside	5100	4089	Greater London	5307	1802
Mid Yorkshire	4584	4531	Greater London Conurbation Centre	5296	1806
South Yorkshire	4374	3887	<i>Sub-divisions</i>		
South Lindsey	5214	3781	Outer Metropolitan Area		
Yorkshire Coalfield	4473	4082	- West	4847	1837
West Yorkshire	4192	4302	- North	5166	2126
North West	3627	4025	- East	5683	1932
Merseyside Conurbation	3356	3900	- South East	5665	1614
Merseyside Conurbation Centre	3353	3904	- South	5282	1435
SE Lancashire Conurbation	3842	3992	- South West	4983	1579
SE Lancashire Conurbation Centre	3840	3983	Outer South East		
<i>Sub-divisions</i>			- Essex	5922	2221
South Cheshire and High Peak	3729	3688	- Kent	6143	1542
South Lancashire	3587	3971	- Sussex Coast	5323	1067
Manchester	3838	3992	- Solent	4450	1100
Merseyside	3375	3928	- Beds/Bucks	5000	2432
Furness	3238	4734	- Berks/Oxon	4483	2034
Fylde	3333	4368	South West	3304	1328
Lancaster	3470	4633	<i>Sub-divisions</i>		
Mid Lancashire	3544	4272	Central	3665	1190
North East Lancashire	3770	4306	Southern	2746	714
East Midlands	4613	3277	Western	2076	748
<i>Sub-divisions</i>			North Gloucestershire	3872	2152
Notts/Derby Coalfield and High Derbyshire	4495	3653	Bristol-Severnside	3594	1714
Nottingham/Derby	4488	3387	North Wiltshire	4054	1749
Leicester	4549	3050	Wales	2944	2340
Eastern Lowlands	5045	3402	<i>Sub-divisions</i>		
Northampton	4805	2682	Industrial South Wales		
			- Central and Eastern Valleys	3096	1985
			- West South Wales	2655	1978
			- Coastal Belt	3185	1831
			North East Wales	3291	3595
			North West Wales		
			- North Coast	2919	3798
			- Remainder	2632	3588
			Central Wales	3093	2747
			South West Wales	2274	2284

Appendix Table 4(b) - continued

Area	Grid reference of centre of population*		Area	Grid reference of centre of population*	
	Easting	Northing		Easting	Northing
Monmouthshire	3275(3286)	1973(1975)	Radnorshire	3131(3147)	2630(2625)
County Borough Newport CB	3317(3352)	1885(1886)	<i>Urban Districts</i> Knighton UD Llandrindod Wells UD Presteigne UD	3285(3297) 3059(3060) 3311(3316)	2721(2706) 2612(2613) 2641(2645)
<i>MBs and UDs</i> Abercarn UD Abergavenny MB Abertillery UD Bedwas and Machen UD Bedwellty UD Blaenavon UD Caerleon UD Chepstow UD Cwmbran UD Ebbw Vale UD Monmouth MB Mynyddislwyn UD Nantyglo and Blaina UD Pontypool UD Rhydney UD Risca UD Tredegar UD Usk UD	3211(3207) 3297(3294) 3216(3221) 3181(3179) 3161(3156) 3253(3253) 3332(3337) 3533(3530) 3286(3280) 3168(3163) 3508(3509) 3179(3176) 3198(3198) 3280(3279) 3118(3118) 3238(3237) 3140(3138) 3378(3380)	1970(1968) 2147(2151) 2030(2032) 1898(1888) 1993(2000) 2089(2090) 1912(1911) 1929(1931) 1951(1946) 2096(2093) 2127(2129) 1954(1956) 2090(2090) 2013(2008) 2073(2068) 1908(1911) 2092(2096) 2009(2009)	<i>Rural Districts</i> Colwyn RD Knighton RD New Radnor RD Paincastle RD Rhayader RD	3062(3098) 3189(3214) 3215(3222) 3170(2433) 3005(3039)	2552(2546) 2719(2711) 2582(2587) 3155(2450) 2665(2649)
<i>Rural Districts</i> Abergavenny RD Chepstow RD Magor and St Mellons RD Monmouth RD Pontypool RD	3311(3343) 3477(3482) 3306(3349) 3458(3481) 3318(3348)	2146(2166) 1903(1942) 1873(1851) 2093(2112) 1974(1990)	Montgomeryshire	3099(3099)	3013(3017)
<i>MBs and UDs</i> Llanfyllin MB Llanidloes MB Machynlleth UD Montgomery MB Newton and Llanllwchaiarn UD Welshpool MB	3131(3125) 2954(2953) 2748(3743) 3225(3213) 3107(3113) 3227(3083)	3194(3184) 2844(2842) 3008(3004) 2964(2959) 2914(2917) 3083(3075)	<i>Rural Districts</i> Forden RD Llanfyllin RD Machynlleth RD Newtown and Llanidloes RD	3231(3221) 3148(3160) 2835(2834) 3038(3024)	3006(3013) 3158(3157) 3021(3020) 2911(2938)
Pembrokeshire	1988(1993)	2136(2144)	<i>MBs and UDs</i> Fishguard and Goodwick UD Haverfordwest MB Milford Haven UD Narberth UD Neyland UD Pembroke MB Tenby MB	1952(1958) 1948(1950) 1902(1912) 2109(2108) 1962(1961) 1973(1983) 2128(2130)	2374(2369) 2155(2154) 2061(2061) 2146(2144) 2053(2054) 2024(2015) 2007(2006)
<i>Rural Districts</i> Cemaes RD Haverfordwest RD Narberth RD Pembroke RD	2148(2159) 1912(1938) 2115(2083) 2034(3014)	2389(2372) 2190(2225) 2121(2156) 2006(2003)			

* The figure in brackets is the unweighted centre of population. Section 2.3 describes how this figure differs from the others shown in this report. These bracketed figures are those shown on the Census Small Area Statistics data sets.

Appendix Table 4(c) Arithmetic mean centres of population, 1971

England and Wales; new standard regions; new counties and districts (post-April 1974 boundaries)					
Area	Grid reference of centre of population		Area	Grid reference of centre of population	
	Easting	Northing		Easting	Northing
England	4528	2836	Merseyside	3379	3935
<i>Regions</i> Northern Region Yorkshire and Humberside North West Region East Midlands Region West Midlands Region East Anglia South Eastern Region South Western Region	4164 4465 3631 4627 4011 5891 5245 3361	5453 4240 4017 3313 2935 2839 1726 1299	<i>Districts</i> Knowsley Liverpool St Helens Sefton Wirral	3434 3385 3522 3340 3297	3931 3911 3954 4041 3876
Wales	2944	2340	South Yorkshire	4422	3951
Greater London	5307	1802	<i>Districts</i> Barnsley Doncaster Rotherham Sheffield	4366 4581 4453 4354	4058 4043 3925 3975
<i>City of London and London Boroughs</i> City of London LB Barking LB Barnet LB Bexley LB Brent LB Bromley LB Camden LB Croydon LB Ealing LB Enfield LB Greenwich LB Hackney LB Hammersmith LB Haringey LB Harrow LB Havering LB Hillingdon LB Hounslow LB Islington LB Kensington and Chelsea RB Kingston upon Thames RB Lambeth LB Lewisham LB Merton LB Newham LB Redbridge LB Richmond upon Thames LB Southwark LB Sutton LB Tower Hamlets LB Waltham Forest LB Wandsworth LB Westminster, City of LB	5324 5478 5245 5482 5209 5415 5279 5332 5160 5330 5426 5340 5237 5314 5150 5530 5086 5142 5311 5256 5194 5307 5374 5258 5411 5437 5170 5335 5265 5360 5379 5264 5273	1813 1852 1915 1754 1854 1678 1842 1651 1812 1952 1767 1854 1785 1895 1893 1882 1838 1758 1850 1795 1676 1746 1741 1693 1836 1888 1736 1770 1646 1818 1895 1739 1810	Tyne and Wear <i>Districts</i> Gateshead Newcastle upon Tyne North Tyneside South Tyneside Sunderland	4299 4237 4234 4318 4355 4366	5628 5608 5660 5696 5642 5554
<i>Metropolitan Counties</i> Greater Manchester	3815	4000	West Midlands <i>Districts</i> Birmingham Coventry Dudley Sandwell Solihull Walsall Wolverhampton	4068 4081 4335 3925 3997 4156 4014 3919	2886 2866 2800 2876 2905 2827 2999 2989
<i>Districts</i> Bolton Bury Manchester Oldham Rochdale Salford Stockport Tameside Trafford Wigan	3709 3801 3851 3927 3884 3780 3899 3941 3778 3608	4088 4087 3955 4049 4110 3999 3890 3974 3921 4033	West Yorkshire <i>Districts</i> Bradford Calderdale Kirklees Leeds Wakefield	4232 4135 4072 4178 4296 4389	4289 4354 4247 4186 4349 4200
			<i>Non-Metropolitan Counties</i> Avon	3596	1716
			<i>Districts</i> Bath Bristol Kingswood Northavon Wansdyke Woodspring	3741 3592 3655 3655 3670 3408	1646 1735 1743 1825 1614 1657
			Bedfordshire <i>Districts</i> Bedford Luton Mid Bedfordshire South Bedfordshire	5062 5046 5078 5115 5000	2337 2506 2229 2399 2235

Definitions of the new standard regions, in terms of the new counties and districts, will be found in Re-organisation of Local Government Areas - Correlation of new and old areas (Reference 3).

Appendix Table 4(c) - continued

Area	Grid reference of centre of population		Area	Grid reference of centre of population	
	Easting	Northing		Easting	Northing
Berkshire	4789	1737	Derby	4350	3527
<i>Districts</i>			<i>Districts</i>		
Bracknell	4866	1674	Amber Valley	4393	3491
Newbury	4526	1698	Bolsover	4487	3676
Reading	4707	1730	Chesterfield	4389	3724
Slough	4974	1805	Derby	4356	3353
Windsor and Maidenhead	4916	1779	Erewash	4463	3373
Wokingham	4778	1705	High Peak	4042	3844
Buckinghamshire	4879	2052	North East Derbyshire	4393	3708
<i>Districts</i>			South Derbyshire	4301	3231
Aylesbury Vale	4802	2173	West Derbyshire	4234	3600
Beaconsfield	4977	1852	Devon	2739	799
Chiltern	4960	1978	<i>Districts</i>		
Milton Keynes	4856	2386	East Devon	3102	903
Wycombe	4858	1933	Exeter	2932	924
Cambridgeshire	5357	2765	North Devon	2573	1353
<i>Districts</i>			Plymouth	2483	566
Cambridge	5460	2584	South Hams	2729	526
East Cambridgeshire	5565	2743	Teignbridge	2873	750
Fenland	5409	3011	Tiverton	2935	1091
Huntingdon	5234	2731	Torbay	2903	622
Peterborough	5181	3005	Torrington	2439	1193
South Cambridgeshire	5431	2554	West Devon	2532	822
Cheshire	3620	3742	Dorset	3945	941
<i>Districts</i>			<i>Districts</i>		
Chester	3419	3660	Bournemouth	4097	933
Congleton	3795	3617	Christchurch	4173	936
Crewe and Nantwich	3685	3542	North Dorset	3838	1141
Ellesmere Port	3370	3762	Poole	4030	926
Halton	3511	3845	Purbeck	3940	862
Macclesfield	3871	3776	West Dorset	3587	970
Vale Royal	3622	3716	Weymouth and Portland	3676	781
Warrington	3617	3891	Wimborne	4052	1021
Cleveland	4510	5217	Durham	4265	5363
<i>Districts</i>			<i>Districts</i>		
Hartlepool	4500	5318	Chester-le-Street	4266	5511
Langbaugh	4601	5203	Darlington	4290	5150
Middlesborough	4501	5182	Derwentside	4152	5514
Stockton-on-Tees	4441	5201	Durham	4277	5420
Cornwall	1884	503	Easington	4415	5431
<i>Districts</i>			Sedgefield	4283	5297
Caradon	2333	607	Teesdale	4084	5213
Carrick	1803	411	Wear Valley	4169	5323
Kerrier	1681	353	East Sussex	5501	1090
North Cornwall	2118	814	<i>Districts</i>		
Penwith	1489	332	Brighton	5324	1057
Restormel	1967	561	Eastbourne	5608	1003
Isles of Scilly	904	115	Hastings	5811	1105
Cumbria	3277	5155	Hove	5277	1057
<i>Districts</i>			Lewes	5429	1061
Allerdale	3097	5338	Rother	5771	1147
Barrow-in-Furness	3205	4704	Wealden	5550	1194
Carlisle	3414	5563	Essex	5755	2019
Copeland	3025	5099	<i>Districts</i>		
Eden	3572	5270	Basildon	5708	1907
South Lakeland	3432	4878	Braintree	5789	2245
			Brentwood	5605	1950
			Castle Point	5790	1863
			Chelmsford	5716	2056
			Colchester	5986	2238

Definitions of the new standard regions, in terms of the new counties and districts, will be found in Re-organisation of Local Government Areas - Correlation of new and old areas (Reference 3).

Appendix Table 4(c) - continued

Area	Grid reference of centre of population		Area	Grid reference of centre of population	
	Easting	Northing		Easting	Northing
Essex continued			Humburside	5073	4254
<i>Districts</i>			<i>Districts</i>		
Epping Forest	5446	1992	Beverley	5023	4328
Harlow	5454	2093	Boothferry	4763	4207
Maldon	5890	2052	Cleethorpes	5269	4087
Rochford	5843	1915	Glanford	4973	4124
Southend-on-Sea	5871	1866	Grimsby	5264	4084
Tendring	6173	2214	Holderness	5231	4334
Thurrock	5633	1804	Kingston upon Hull	5093	4305
Uttlesford	5561	2283	North Wolds	5045	4600
Gloucestershire	3870	2151	Scunthorpe	4891	4098
<i>Districts</i>			Isle of Wight	4530	884
Cheltenham	3943	2220	<i>Districts</i>		
Cotswold	4080	2113	Medina	4543	901
Forest of Dean	3641	2121	South Wight	4491	836
Gloucester	3841	2172	Kent	5878	1582
Stroud	3811	2032	<i>Districts</i>		
Tewkesbury	3919	2247	Ashford	5985	1411
Hampshire	4562	1198	Canterbury	6151	1618
<i>Districts</i>			Dartford	5552	1733
Basingstoke	4598	1565	Dover	6318	1481
Eastleigh	4463	1166	Gillingham	5792	1669
Fareham	4560	1060	Gravesend	5651	1718
Gosport	4593	1010	Maidstone	5772	1534
Hart	4801	1557	Medway	5750	1677
Havant	4707	1072	Sevenoaks	5521	1589
New Forest	4305	1042	Shepway	6175	1348
East Hampshire	4749	1300	Swale	5938	1659
Portsmouth	4653	1017	Thanet	6360	1680
Rushmoor	4866	1533	Tonbridge and Malling	5644	1537
Southampton	4427	1134	Tunbridge Wells	5628	1396
Test Valley	4347	1360	Lancashire	3572	4328
Winchester	4517	1255	<i>Districts</i>		
Hereford and Worcester	3806	2573	Blackburn	3685	4264
<i>Districts</i>			Blackpool	3318	4362
Bromsgrove	3983	2741	Burnley	3834	4329
Hereford	3508	2397	Chorley	3573	4177
Leominster	3462	2595	Fylde	3368	4300
Malvern Hills	3766	2476	Hyndburn	3747	4292
Redditch	4041	2663	Lancaster	3470	4633
South Herefordshire	3516	2328	Pendle	3872	4400
Worcester	3851	2554	Preston	3539	4311
Wychavon	3969	2512	Ribble Valley	3704	4386
Wyre Forest	3820	2755	Rossendale	3830	4221
Hertfordshire	5197	2098	South Ribble	3537	4252
<i>Districts</i>			West Lancashire	3448	4094
Broxbourne	5360	2046	Wyre	3359	4440
Dacorum	5038	2077	Leicestershire	4576	3058
East Hertfordshire	5388	2175	<i>Districts</i>		
Hertsmere	5191	1981	Blaby	4543	2996
North Hertfordshire	5223	2310	Hinckley and Bosworth	4440	2985
St Albans	5151	2086	Charnwood	4561	3153
Stevenage	5251	2242	Harborough	4659	2914
Three Rivers	5081	1959	Leicester	4593	3041
Watford	5107	1978	Melton	4752	3212
Welwyn Hatfield	5241	2101	North West Leicestershire	4406	3162
			Oadby and Wigston	4610	2996
			Rutland	4898	3075

Definitions of the new standard regions, in terms of the new counties and districts, will be found in Re-organisation of Local Government Areas - Correlation of new and old areas (Reference 3).

Appendix Table 4(c) - continued

Area	Grid reference of centre of population		Area	Grid reference of centre of population	
	Easting	Northing		Easting	Northing
Lincolnshire	5128	3564	Oxfordshire	4505	2059
<i>Districts</i>			<i>Districts</i>		
Boston	5326	3434	Cherwell	4492	2297
East Lindsey	5388	3743	Oxford	4530	2061
Lincoln	4970	3709	Vale of White Horse	4440	1954
North Kesteven	5014	3587	South Oxfordshire	4630	1920
South Holland	5301	3231	West Oxfordshire	4348	2133
South Kesteven	4986	3263			
West Lindsey	4958	3872	Salop	3571	3113
Norfolk	6115	3114	<i>Districts</i>		
<i>Districts</i>			Bridgnorth	3732	2972
Breckland	5936	3009	North Shropshire	3559	3327
Broadland	6244	3137	Oswestry	3300	3298
Great Yarmouth	6513	3075	Shrewsbury	3487	3118
Norwich	6222	3088	South Shropshire	3469	2822
North Norfolk	6169	3334	The Wrekin	3686	3113
South Norfolk	6201	2976			
West Norfolk	5645	3176	Somerset	3388	1317
Northamptonshire	4805	2682	<i>Districts</i>		
<i>Districts</i>			Mendip	3622	1446
Corby	4878	2889	Sedgemoor	3324	1418
Daventry	4634	2663	Taunton Deane	3207	1245
East Northamptonshire	4978	2750	West Somerset	3010	1416
Kettering	4862	2790	Yeovil	3501	1183
Northampton	4756	2618			
South Northamptonshire	4671	2475	Staffordshire	3966	3314
Wellingborough	4888	2670	<i>Districts</i>		
Northumberland	4172	5876	Cannock Chase	4007	3129
<i>District</i>			East Staffordshire	4207	3257
Alnwick	4184	6086	Lichfield	4103	3091
Berwick-upon-Tweed	4019	6430	Newcastle-under-Lyme	3832	3480
Blyth Valley	4298	5787	South Staffordshire	3907	3023
Castle Morpeth	4193	5837	Stafford	3911	3266
Tynedale	3948	5653	Staffordshire Moorlands	3966	3515
Wansbeck	4276	5857	Stoke-on-Trent	3891	3468
North Yorkshire	4514	4671	Tamworth	4215	3034
<i>Districts</i>			Suffolk	6133	2589
Craven	3921	4557	<i>Districts</i>		
Hambleton	4430	4895	Babergh	5991	2414
Harrogate	4320	4589	Forest Heath	5696	2733
Richmondshire	4157	4984	Ipswich	6165	2445
Ryedale	4697	4675	Mid Suffolk	6084	2623
Scarborough	4992	4926	St Edmundsbury	5811	2602
Selby	4579	4364	Suffolk Coastal	6311	2500
York	4595	4516	Waveney	6496	2901
Nottinghamshire	4579	3500	Surrey	5097	1571
<i>Districts</i>			<i>Districts</i>		
Ashfield	4502	3550	Elmbridge	5124	1650
Bassetlaw	4647	3822	Epsom and Ewell	5210	1624
Broxtowe	4501	3398	Guildford	4990	1511
Gedling	4600	3443	Mole Valley	5168	1522
Mansfield	4545	3625	Reigate and Banstead	5264	1522
Newark	4717	3574	Runnymede	5028	1668
Nottingham	4556	3408	Spelthorne	5071	1707
Rushcliffe	4615	3351	Surrey Heath	4902	1602
			Tandridge	5357	1521
			Waverley	4929	1421
			Woking	5009	1588

Definitions of the new standard regions, in terms of the new counties and districts, will be found in *Re-organisation of Local Government Areas - Correlation of new and old areas* (Reference 3).

Appendix Table 4(c) - continued

Area	Grid reference of centre of population		Area	Grid reference of centre of population	
	Easting	Northing		Easting	Northing
Warwickshire	4328	2752	Mid Glamorgan	3017	1929
<i>Districts</i>			<i>Districts</i>		
North Warwickshire	4261	2957	Cynon Valley	3019	2005
Nuneaton	4355	2896	Merthyr Tydfil	3061	2048
Rugby	4486	2751	Ogwr	2881	1841
Stratford-on-Avon	4227	2558	Rhondda	2989	1944
Warwick	4303	2670	Rhymney Valley	3145	1947
			Taff-Ely	3058	1870
West Sussex	5126	1152	Powys	3067	2656
<i>Districts</i>			<i>Districts</i>		
Adur	5208	1053	Brecknock	2999	2260
Arun	4989	1018	Montgomery	3099	3013
Chichester	4864	1102	Radnor	3131	2630
Crawley	5270	1366			
Horsham	5156	1248	South Glamorgan	3157	1762
Mid Sussex	5332	1263	<i>Districts</i>		
Worthing	5134	1037	Cardiff	3175	1784
Wiltshire	4054	1643	Vale of Glamorgan	3108	1701
<i>Districts</i>			West Glamorgan	2686	1959
Kennet	4127	1600	<i>Districts</i>		
North Wiltshire	3953	1773	Afan	2777	1914
Salisbury	4117	1328	Lliw Valley	2658	2027
Thamesdown	4160	1856	Neath	2770	1991
West Wiltshire	3867	1556	Swansea	2636	1942
Clwyd	3191	3637			
<i>Districts</i>					
Alyn and Deeside	3306	3654			
Colwyn	2895	3765			
Delyn	3209	3714			
Glyndwr	3140	3521			
Rhuddlan	3033	3803			
Wrexham Maelor	3327	3497			
Dyfed	2343	2217			
<i>Districts</i>					
Carmarthen	2391	2216			
Ceredigion	2502	2647			
Dinefwr	2654	2190			
Llanelli	2507	2027			
Preseli	1950	2191			
South Pembrokeshire	2048	2048			
Gwent	3281	1976			
<i>Districts</i>					
Blaenau Gwent	3182	2082			
Islwyn	3199	1954			
Monmouth	3418	2036			
Newport	3317	1885			
Torfaen	3284	1989			
Gwynedd	2563	3626			
<i>Districts</i>					
Aberconwy	2776	3759			
Arfon	2544	3650			
Dwyfor	2396	3374			
Meirionnydd	2691	3260			
Ynys Mon	2403	3794			

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Population Trends

The quarterly journal of the Office of Population Censuses and Surveys

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Mapping the 1971 Census by computer	2
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