WORKING PAPER 384

A GEOGRAPHICAL ANALYSIS OF INDIANS IN BRADFORD:
SPATIAL DISTRIBUTION AND TEMPORAL TRENDS,
1971-1981

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CONTENTS

6. CONCLUSIONS

LIST OF TABLES AND FIGURES

ABSTRACT

Much of the research on immigrant groups implies that most of the groups are concentrated in one or a few of the urban pockets of cities. A similar opinion is observed for all the Asian ethnic groups where kinship is highly elaborated as a factor responsible for development of the concentrations. The present paper attempts to understand the spatial picture of the ditribution of the Indians in Bradford Metropolitan District in 1981. The spatial variation in the distribution during the intercensal period 1971-81 has also been studied to comprehend the temporal changes that the group experienced over the decade. Through a classification of the names of Indian electors by religion and origin region a picture of the intra-community variation within Bradford is builtup. In addition, in the absence of the adequate census information, the census data have been compared with information derived from the Register of Electors (described in Ram,1983) in order to understand the residential distibution of the Indian community more thoroughly.

1. INTRODUCTION

1.1 Preamble and aims

Although persons born in India living in Bradford M.D. are only 1.4 per cent of its total population according to the British Census of 1981, they are not distributed uniformally in all the wards. In the present paper, therefore, an attempt has been made to analyse the spatial distribution of the group in Bradford. The analysis is based on two different sets of information, the Table 4 of the Small Area Statistics of the 1981 Census (OPCS, 1982a)and a count from the Register of Electors (Ram, 1983). The patterns based on these two sources are explained in detail. The Census data have been analysed by sex while the Register data are analysed by religion and by origin region. To explore the possibility of re-distribution and in migration into the Bradford area the temporal trends from 1971 to 1981 have also been studied. The spatial variation of the group over time in Bradford is explained.

Both sets of information are compared at one point in time (1981) to measure their degree of comparability. Besides, it also helps understand the role of socio-cultural differences in the spatial context. How both types of information are useful to understand the group more thoroughly has also been dealt with in brief.

The paper also studies the spatial distribution of Other Asians. A comparison has been made using the Census and the Register information for Other Asians as well. The term "Other Asians" refers, in the main, to persons originating in Pakistan or Bangladesh.

Throughout the paper the analysis is based on ward level information. However, for wards in which Indians are highly concentrated micro-level analysis by Enumeration districts (EDs) has also been carried out. Thus it is intended in the study to unpeel the layers of the social and spatial structure of the Indian community in Bradford.

1.2 Structure

The paper is presented in four sections followed by conclusions and appendices. A general review of the literature is provided in the next section. Section 3 deals with the spatial analysis of the Census data while a similar analysis of the Register information is effected in Section 4. Comparison of the two and their contributions are given in Section 5.

2. REVIEW OF THE LITERATURE

2.1 Issues involved

Indians are settled almost in every town in Great Britain. Their number, like many other immigrant groups, and particularly the Other Asian immigrants, in each town largely depends on the availability of employment opportunities. Bradford has been one of the major textile manufacturing centres of the country and has therefore attracted a substantial number of immigrants during the last three decades. The present paper attempts to understand the spatial distribution of a major immigrant community in Bradford.

The following issues are addressed:

(a) What are the spatial patterns of their distribution? Are they clustered or uniformally distributed in the Bradford M.D.?

(b) Did the group experience any change over the time in terms of its spatial distribution?

In addition to these substantive issues other methodologically important issues are:

(c) What sources of data are available? What other sources of information can be used to achieve maximum understanding of the group?

(d) Which are the best possible ethnic and spatial levels of resolution for understanding the group more thoroughly? and

(e) What quantitative methods can be employed to explain different situations?

Although the analysis of the spatial patterns and the temporal trends is the prime aim of the paper, it is equally important to know who are in the focus? What are the possible sources of information? What type of data do these provide? And which methods we can employ to achieve the aims? Thus, the first two issues should be studied after the other three which determine the nature and type of analysis. Before we start investigating the answers it will be helpful to take stock of the literature with respect to the issues and the scope of the paper.

2.1.1 Ethnic level of resolution

There are very many immigrant groups in Britain. The Census identifies eight groups in Table 11 of the County Reports (OPCS 1982b) and fourteen groups in Table 10 of the County Reports (OPCS 1982b) and in Table 4 of the Small Area Statistics (OPCS 1982a). Table 1 shows that Indians,

West Indians and Pakistanis are the major immigrant groups in this country, but ethnic scale in most of the research works varies considerably. Winchester (1974), Doherty (1969), Lee (1972), Rose (1969), King (1977) and Birkin and Rees (1982) chose all immigrant groups, for their studies which were also further sub-divided into their sub-groups. Except for Doherty and Lee who sub-divided the immigrants only into Asians, Africans and so on, the others classified them by their countries of birth too.

The next level of social scale as used by Israel (1964) was coloured immigrant groups excluding white immigrants. Jones (1967) in his study of immigrant communities in the city of Birmingham also employed a similar classification, but unlike Israel he did not divide the coloured groups by their country of birth but classified the coloured immigrants into West Indian and Indian and Pakistani. Lomas (1973) and Lomas and Monck (1975) classified coloured immigrants into African, American (N.C.), Indian and Pakistani in their multi-spatial scale 1971 Census analyses. The Runnymede Trust (1980) followed a similar approach but their classification focussed on only NCWP groups, like Drew and Simpson (1981). The work of Woods (1975) was also on the coloured immigrants in Birmingham, but he analysed the persons born in India, Pakistan and Ceylon as an aggregated Asian group.

A small number of works focussed on the Asian immigrants. Levine and Nayar (1972), Cater and Jones (1979) and Kearsley and Srivastara (1974) analysed the Asians as a single social group, but Robinson (1979) analysed the group at further fine scales by their country of birth, by religion they belong to and the language (other than English) they speak at home. Smith (1982) also analysed the Asian community by the South Asian languages they speak in his methodological study.

It was only Desai (1963) who investigated Indians as a single national group and classified the community into regional sub-groups. Indian Sikhs (one of the religious groups) were distinguished by Singh (1980). In his methodological study on Indians in Bradford, Ram (1983) classified Indians by religion and origin region.

2.1.2 Spatial scale and data

The ward has been the most common spatial level of resolution in the contemporary studies. Winchester (1974), Rees and Birmkin (1983) and King (1977) carried out their studies at ward level while Jones (1967), Robinson (1979) and Lomas and Monck (1975) used enumeration districts (EDs) as the fine areal zones in their analysis. Kearsley and Srivastava (1974) and Ram (1983) analysed the social groups at the finer scale of the Polling districts. Cater and Jones' (1979) study of ethnic groups in Bradford, based on the Register

Table 1. Persons born ouside UK usually resident in Great Britain,
Census 1981.

Place of birth	Numbers
1. Irish Republic	607,428
2. Old Commonwealth	152,747
3. NC East Africa	197,197
4. NC Rest of Africa	70.055
5. NC Caribbean	295,179
6. NC Bangladesh	48,517
7. NC India	391,874
8. NC Sri Lanka	26,091
9. NC Far East	136,794
10. NC Remainder	159,468
New Commonwealth	1,325,175
11. Pakistan	188,198
12. Rest of the World	1,086,277
All persons born outside UK	3,359,825

Source: Computed from Table 1 OPCS 1983, Census 1981, Country of birth
report, CEN 81 CB, HMSO, London, p.2

Note: The definition of the country of birth group in terms of the
OPCS Table 1 classification are as follows:

Irish Republic= Irish Republic + Ireland (part not stated)

Old Commonwealth= Australia, Canada and New Zealand

NC East Africa= Kenya, Malawi, Tanzania, Uganda and Zambia

NC Far East= Hong Kong, Malaysia and Singapore.

information was an analysis by ward and grid squares while Doherty (1969), Lee (1972-73) and Davison (1963) analysed the immigrants in London at borough level. However, for more accurate assessment of the reality, Rees and Birkin (1983) realized the need of designing some smaller zones than wards but much larger than Census tracts or EDs, in the study of ethnic patterns. However, though Doherty's cartographic analysis was by EDs, he was not satisfied with such level of scale for the study of immigrants. For that he was in favour of a finer scale. He writes, 'concnetration of immigrants ... can only be defined in terms of streets - not districts'. A similar opinion was voiced by Winchester (1974 : 97).

Most of the research works are based on the Census data. Cater and Jones (1979), Kearsley and Srivastava (1974) and Smith (1982) are the only exceptions. They exploited the Register of Electors information to analyse the immigrant groups and their spatial distribution. Except for Cater and Jones (1979) they surveyed the community to explain the reasons responsible for the patterns. Robinson's (1979) and Israel's (1964) attempts were entirely based upon the information they gathered from their surveys.

Though the Census, the main source of information about the population in Britain, provides a varied and comprehensive source of information and is used in many researches, most of the researchers are not satisfied with the nature of information it provides, particularly for immigrants or ethnic groups. As has already been explained by Ram (1983), it does not give enough information to identify the real Indian community. Israel (1964) also suspected its utility and reliability and particularly for the coloured immigrant population. A similar view was put forward by the Select Committee on Race Relation and Immigration in their March 1978 report (Runnymede Trust and RSRG, 1980 : 123). Winchester (1974) also suspected the utility of the Census information due to its aggregateness, particularly for the Asian ethnic groups. Rees and Birkin (1983) while using Census data to analyse the residential patterns of ethnic groups suggested that the data should not be used in isolation. In their conclusion they emphasised the problems of the available Census statistics and highlighted the lack of the equivalent to County Table 11 (OPCS 1982b) at the ward scale. They suggested that special tabulations should be produced or that some estimates should be made based on the available Census data.

Kearsley and Srivastava (1974) also realised the problem of Census data for immigrants and thus used the Register information. Like Smith (1982) they felt that the Register under-enumerated the Asian population of electoral age but found it useful otherwise. However, Ram (1983) found a very low degree of under enumeration in the Indian community which was, according to Butcher

and Dodd (1983) not more than the average for the white persons. It was demonstrated by Ram (1983) that the Register information has several advantages over the Census information. Indian society can be further analysed by the religion, origin-region and the language they speak at home using the Register information. That is why the source of information in the present paper is not only the Census but the Register too.

2.1.3 Method used

Absolute numbers are the simplest method of describing spatial distribution. Relative numbers, proportions and percentages, location quotients (LQs) and various indices are other common methods used to identify and explain the spatial patterns or spatial distribution of population. Full definitions of these measures are given in Section 3.1. However, their choice varies with the size of the area, number of persons in zones and the nature of the study. For instance, Jones (1967) employed areal percentages to identify the clusters of coloured immigrants, but he used the numbers (represented by circles) to show the volume of immigrants in each cluster. Winchester (1974) employed LQs and Indices of Dissimilarities (IODs) too, on the immigrant groups in Coventry. Birkin and Rees (1982) also followed the similar approach in their study on W.Yorkshire's ethnic populations. Lomas and Monck (1975 : 53) used another measure, 'Coefficient of Localization', 'which measures the total deviation between the two distributions'. Drew and Simpson (1981) and King (1977) used data in various forms but commonly number, percentages and proportions for projecting the immigrant populations in Bradford and Leeds respectively.

Doherty (1969), Lee (1972) and Davison (1963) used different methods to analyse the spatial distribution in London. Doherty calculated only percentages while Davison used the index of concentration too, for the main national immigrant groups. But to explain distribution as well as changes in distribution over time Lee used LQs in various forms.

Working on electoral data Kearsley and Srivastava (1974) used only absolute numbers and explained that owing to the nature of the study they did not find it appropriate to use IODs or Indices of Segregation (IOS). Cater and Jones (1979) also employed numbers to identify the ethnic concentrations in the borough as well as the residential segregation in the highly ethnic concentration ward. But Robinson (1979) used percentages and LQs to analyse the social as well as spatial patterns of Asians in Blackburn.

Thus, there is no set of norms followed by various researchers in the spatial analyses. A variety of indices of measure of the distribution are used depending upon the nature of the analysis. A similar approach will be followed in the present paper (see Section 2.2).

2.1.4 Spatial distribution of Indian immigrants in British cities

Among the studies to identify and explain the intra-urban spatial distribution of immigrants in this country, the attempts are very few for the Indians. Johnston (1971 : 284), Cater and Jones (1979) and Robinson (1979) also voiced the same opinion. As explained in Section 2.1.1 a range of ethnic scales have been used by different authors. However, the aggregate groups studied do not always give a real picture.

The most common approach of majority of the researchers is that they describe the spatial distribution in British cities in comparison to the spatial distribution of Negro population in North America which is highly segregated spatially as well as socially. Commenting on the degree of segregation in the Negro population Morrill (1965) writes,

"not only are Negroes excluded from white areas, but whites are largely absent from Negro areas. Areas entirely, or exclusively White or Non-White are the rule, areas of mixture the exception".

London, being the biggest urban unit of this country has housed the maximum foreign in-migrants. However, like many other urban centres the distribution of immigrants is not uniform across all the boroughs. Davison (1963), Doherty (1969), Johnston (1971) and Lee (1972) observed that immigrants in London are concentrated in few boroughs situated in Central and North-Western London. Regarding nature of concentration they made it clear that concentration is not as great as that of Negroes in American cities. To elaborate the picture Davison writes,

"...even in Paddington, the most densely populated 'coloured' area in London, the number of coloured people is considerably less than one in ten of the total population of the borough". (p.62).

Doherty found that, perhaps because of recent migration of coloured immigrants they have settled in the central areas of the city, but hostility of the host society is equally responsible for the development of these clusters (segregation or Ghetto type settlement patterns). Commenting on the future picture of the patterns (in Britain) he emphasised that if the host society did not overcome its hostility to immigrants the possibility of Ghettoisation on the North American scale cannot be ignored and will increase year by year. Although Doherty and Lee mentioned that concentration is less among Asians, neither analysed Indians explicitly.

Birmingham is the second major urban centre next to London for
housing the immigrants (Jones, 1967).   Jones, dealing separately with
coloured (West Indian and Indian and Pakistani) and Irish immigrants
in Birmingham found that they are concentrated in the intermediate zone
of the three into which that city was divided.   Comparing the degree of
segregation in the foloured immigrants in Birmingham with that of the
American situation, he states that the situation is not comparable at
present nor is it likely to be in the near future:
       "All the clusters of coloured immigrants are areas of mixture surrounded
by white population".
He identifies four Asian clusters in Birmingham one in the north, one in the
south, another in the east and the fourth in the south-east of the town centre.
The northern one is the Asian dominant cluster but their numbers are not very
high.   The remaining clusters are located out of the middle zone where the
numbers in Asian population clusters are comparable with those with the
West Indian clusters.   East and south-eatern clusters are areas of high
density while in the southern one density of the coloured immigrants is
comparatively low.   Desai (1963) also observed the non-uniform spatial
distribution of coloured immigrants.   He writes,
       "... there is no uniform spread of coloured immigrants ... but a
tendency for the various groups of immigrants to gravitate to specific areas".
To support this fact he cited the exitence of separate Pakistani, Bengali,
Sikh and Gujarati areas in Birmingham.

       Robinson (1979) observed the concentration of Asians in the inner-ring in
.Blackburn but he found no relationship of poorest houses with that of the
Asian dominance areas.   He writes,
       "... inner-ring housing is not, however, the poorest in the town".
To compare the degrees of concentration he writes,
       "The situation in Blackburn closely follows that in other larger cities."
However, in Blackburn within the inner ring two wards form one of the major
immigrant core area occupying only a small area of each.   Similar few zones
with many Asians were observed in Glasgow by Kearsley and Srivastava (1974) and
in Bradford by Cater and Jones (1979).   In Bradford, as analysed by Cater and
Jones in 1977, the concentration was very high at grid square or at street level
in Manningham ward.   Except a small area in East Manningham where the conditions
are on the lines of the American situation the spatial patterns in Bradford are
in no way comparable to the Negro patterns in America.

2.1.5 Temporal variation in the distribution patterns

The study of spatial distribution over time is of much value to understand the spatial patterns as well as other characteristics of a group in an area. Emphasizing the importance of such an attempt and particularly for the minority or immigrant groups, Lee (1972) writes,

"Studies of changing residential patterns of minority groups reveal a clear distinction between populations which remain highly segregated, and those in which there is a progressive residential dispersal and a breakdown of the ethnic concentration" (p.145).

In his study on London he found that the patterns of concentration for the Asian immigrants remained remarkably stable during 1961-71. The only increase in Asian settlement over the decade was recorded in boroughs to the north-east of the central city area. He concluded that neither was there any decline in the social segregation nor any dispersal for all immigrant groups. However, the nineteen sixties were too early to find any spatial dispersal, particular among Asians, because their immigration is more recent and their desire to move to the outer, other or the middle class area from their central city locations is heightened by their length of stay (Doherty, 1969).

In a similar study, in Glasgow, Kearsley and Srivastava observed diffusion as well as spatial adjustment during 1951-66 among Asian immigrants. The diffusion was radial in the Asian settlement to the north of the river Clyde while it varies from sectoral to radial to the south of the river. Spatial adjustment was also recorded in both Asian settlement areas.

Cater and Jones (1979) in their temporal analysis of Manningham ward (1956-76) in Bradford observed that high immigration of Asians into this ward during the sixties and seventies developed the Asian cluster. They write,

"Eastern Manningham has been a traditional venue for new arrivals of the city".

Rees and Birkin (1983) using IGDs for the two points in time compared the ethnic patterns in 1971 and 1981 in Leeds, Bradford and London. They recorded a considerable residential change and diffusion in Indian born ethnics from 1971 to 1981 in Leeds and Bradford, while the level of residential dissimilarity increased in London over the time for the group. Thus, the Asians and particularly Indians are not static in the urban environment and they move over the time. However, the degree of movement varies from place to place and at one place from family to family.

2.2 The relationship of the literature to the present study

The review in the preceding pages leads to the following main observations:

(a) In most of the research work Indians have been viewed as a sub-group of the Asian immigrant population. Only a few authors have attempted to analyse Indians exclusively.

(b) Wards and enumeration districts have been used commonly and have been considered the appropriate spatial scales for intra-urban ethnic studies.

(c) Census data are not an accurate source of information for the study of ethnic groups. Thus it should not only be handled with care but also be supplemented by other available sources of information such as the Register of Electors and surveys.

(d) There are no fixed norms or patterns followed by the researchers in using the statistical methods. However, absolute numbers, percentages, LQs and IODs are the common statistics used.

(e) Like other immigran t groups, the majority of Indians are living in the inner city zones or middle zones of the urban settlement in British cities. However, the situation of their spatial distribution patterns is in no way comparable to that of the American situation.

(f) Although most of the Asians and particularly the Indians have undergone spatial changes over time but limited literature on Indians did not help to generalise the trends.

With reference to the first observation, combining the Indians with other Asian immigrants implies that the characteristics of all the Asian immigrants are the same. This is not true. Indians are different from Parkistanis in many ways. For instance, Urdu is the national language and Islam the native religion in Pakistan while Hindi is the national or the majority spoken language in India. Similarly India is a multi-religious country having a majority of Hindus. Further, Pakistanis are comparatively more rigid in terms of their religious and social norms than the Indians. Besides, there is very significant diversity in the characteristics among the persons from Pakistan and Bangladesh, each having a majority of the Muslim community (and were two parts of a single nation until 1971). Thus, each ethnic group, governed by its own native characteristics carries different population characteristics. Although it is difficult to support at this stage by the literature, Pakistanis are comparatively more clustered in inner urban wards and more segregated than the other communities from the Indian sub-continent. Thus, because of these substantial differences, Indians are being studied exclusively in the present paper. Since population characteristics vary remarkably by religion and region within India too, they

are further analysed by their religion and origin region which will help understand their social as well as spatial structure.

The second observation will be followed partly and in phases. In the present paper wards (see Appendix 1) will be used as the spatial level of resolution to meet one of its aims. However, enumeration districts will be used later on to obtain a finer view of the spatial dissimilarity or the degree of concentration, in the wards having higher proportions of Indians or in the study area as a whole.

In the present paper the third observation will be followed strictly and information from both, the Census and the Register of Electors will be used to identify the spatial distribution of the Indian community in Bradford M.D. or to define the 'Indian Ethnic Bradford' with respect to 1981 for the further comprehensive analysis of the community.

With respect to the third observation made above we take an eclectic view. The range of the statistical methods to be used will vary from absolute numbers to LQs through percentages according to their appropriateness in different situations. Indices of dissimilarity (IOD) are not used because the focus of interest is on the detailed spatial patterns and changes in these patterns, rather than on an overall summary.

In the light of the last two observations and as the prime aim of the paper the present attempt will assess and analyse the spatial distribution of Indians in Bradford. To have a wider perspective of the situation the paper has been focussed on to two points in time, 1971 and 1981. The aim will be to discover whether the community has undergone the process of residential dispersal or clustering into the inner areas of Bradford during 1971-1981.

3.   ANALYSIS OF THE CENSUS INFORMATION

3.1 Spatial analysis of the Census 1981

   3.1.1 Spatial Distribution

   According to 1981 Census, out of 449,741 persons living in private
households in Bradford M.D., 12,428 (or 2.7%) were living in the households
having an Indian born head.   Among those persons 6,379 were born in India
which is only 1.4% of the total population and 21.0% of the New Commonwealth
and Pakistan (NCWP) born population of Bradford.   In relation to the national
figures the Indian born population of the district is 1.6% of the similar
population of this country.   However, Indian born people constitute only
0.7% of the total population of Britain.

   This section employs data from the Small Area Statistics (SAS) Census
1981, by ward.   In the absence of the information equivalent to Table 11
(OPCS, 1982b) in the county report at the small scale level the analysis is,
therefore, focussed on to the country of birth table (SAS Table 4).   However,
where need be SAS Table 37 will also be referred to.

   Figure 1 gives a spatial picture of the persons born in India living in
each ward.   University ward has the highest (1554) and the Worth Valley ward
has the lowest (6) number of persons of the group.   Bradford Moor is another
ward where the group population is very high (1175).   Elsewhere the number
varies from 17 to 608 (see Table 2).   However, their numbers are comparatively
quite high in the wards near or surrounding the town centre of Bradford.

   Because of the wide disparity in the group numbers in each ward (Table 2),
it is difficult to assess a comparable picture of the group population in
Bradford.   So the group proportion, in each ward, is calculated in percentages
as:

   $$100 \cdot P^i_e / P_e^*$$

where P^i_e is the group (e) population in zone i (ward) and P_e^* is the total
population of the group in all zones (Bradford).   These percentages are mapped
in Figure 2 which shows that there are only eleven wards where group population
is more than 1 per cent.   University ward accommodates about 25% of the group
population while the percentage in Bradford Moor is 18.4.   Within this group
each of the Little Horton, Bowling, Great Horton and Toller wards share more
than 5% of the group population while the percentage varies from 1 to 5 in Heaton,
Undercliffe, Bolton, Odsal and Shipley West.   In the rest of the nineteen wards
it is less than 1.   About three-fourths of the group population lives in six
wards, each having more than 5% of the group population.

- 13 -

Spatial Distribution of Indians by Sex.
Bradford M.D. Census 1981
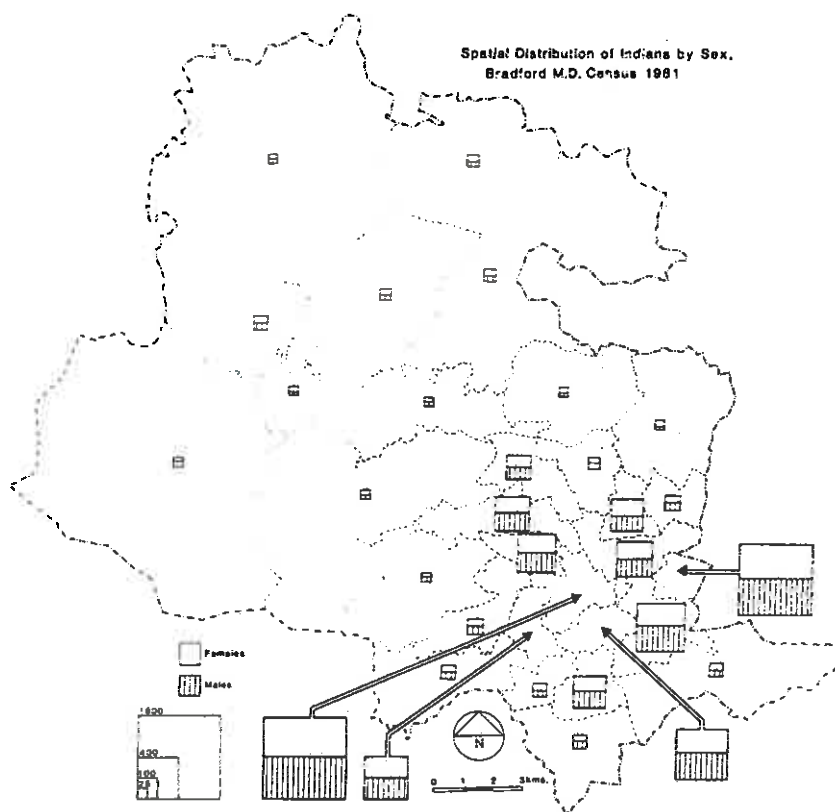
Table 2. Persons born in India living in Bradford M.D. 1971-81.

Wards	Numbers		As % of group population		As % of ward population		L.Q.	
	1971	1981	1971	1981	1971	1981	1971	1981
1. Baildon	18	22	0.29	0.34	0.13	0.15	0.10	0.11
2. Bingley	8	18	0.13	0.28	0.06	0.14	0.05	0.10
3. Bingley Rural	25	21	0.41	0.33	0.18	0.14	0.13	0.10
4. Bolton	22	241	0.36	3.78	0.17	1.86	0.13	1.33
5. Bowling	685	521	11.16	8.17	3.50	2.87	2.60	2.04
6. Bradford Moor	992	1175	16.17	18.42	6.18	7.13	4.60	5.07
7. Clayton	8	59	0.13	0.92	0.05	0.41	0.04	0.29
8. Craven	1	19	0.02	0.30	0.02	0.15	0.01	0.10
9. Eccleshill	25	51	0.41	0.80	0.16	0.33	0.12	0.24
10. Great Horton	48	422	0.78	6.62	0.34	2.84	0.26	2.02
11. Heaton.	215	276	3.50	4.33	1.38	1.68	1.03	1.20
12. Idel	17	22	0.28	0.34	0.13	0.17	0.09	0.12
13. Ilkley	15	29	0.24	0.45	0.12	0.22	0.09	0.16
14. Keighley North	28	29	0.46	0.45	0.20	0.19	0.15	0.14
15. Keighley South	15	17	0.24	0.27	0.11	0.13	0.08	0.09
16. Keighley West	20	40	0.33	0.63	0.13	0.25	0.10	0.18
17. Little Horton	761	608	12.40	9.53	3.80	3.34	2.82	2.38
18. Odsal	108	241	1.76	3.78	0.62	1.45	0.46	1.03
19. Queensbury	10	45	0.16	0.71	0.06	0.29	0.05	0.20
20. Rombalds	20	33	0.33	0.52	0.14	0.23	0.11	0.16
21. Shipley East	23	32	0.37	0.50	0.15	0.21	0.11	0.15
22. Shipley West	94	137	1.53	2.15	0.61	0.88	0.45	0.63
23. Thornton	15	21	0.24	0.33	0.13	0.15	0.10	0.10
24. Toller	415	350	6.76	5.49	2.44	2.20	1.82	1.57
25. Tong	24	44	0.39	0.69	0.14	0.27	0.10	0.19
26. Undercliffe	368	258	6.00	4.04	2.06	1.71	1.53	1.22
27. University	2114	1554	34.45	24.36	7.71	8.11	5.73	5.78
28. Wibsey	16	46	0.26	0.72	0.10	0.32	0.08	0.23
29. Worth Valley	14	6	0.23	0.09	0.12	0.05	0.09	0.03
30. Wyke	12	42	0.20	0.66	0.07	0.26	0.05	0.18
BRADFORD	6136	6379	100.00	100.00	1.35	1.40	1.00	1.00

Source: Computed from SAS Table 4 Census 1971 and 1981.

Thus Figure 1 and Figure 2 give a spatial picture of the sizeable community of the first Indian generation, which is found in about two-thirds of the wards of the pre-1974 Bradford County Borough. They are comparatively few in the wards added to Bradford after reorganization in 1974. It is only Shipley West ward among the new ones which has a sizeable number (137) of persons born in India.

If the numbers of the group population in each ward are arranged in rank order and the first seventeen highest rank value wards (each having the number (> 40) are plotted on the map they represent a compact region in the south-east of Bradford M.D. (Figure 3). The region includes all the wards of the old Bradford County Borough, except Idle and Thornton, together with Shipley West and parts of Queensbury, of the new wards added to it to make it the Metropolitan District (Appendix 2). This south-east area can be termed as Indian (Census) Bradford and any finer analysis of the group will be confined to this region only.

The spatial distribution pattern of the group can roughly be divided into two concentric belts surrounding University ward. The rank number increases with the distance from the University ward. In other words, wards having common boundary with the University ward, except Clayton, have rank values 3 to 8 in the inner belt while wards in the next belt have rank values from 9 to 17. However, to assess the more real picture, the group distribution will further be analysed at the micro scale, elsewhere.

So far the Indian born population has been discussed in isolation. However, the concentration of the Indian born in relation to the whole population is clearly of interest which can be assessed by measuring their proportion in zones with respect to the total zonal populations and the Location Quotients for each zone. Zonal proportion of the group is defined as

$$\%^i_e = 100 \ (P^i_e \ / \ P^i_*)$$

where P^i_* is the total population of the zone. Location Quotients (LQs) are computed as:

$$LQ^i_e = (P^i_e/P^*_e) \ / \ (P^i_*/P^*_*)$$

where P^*_* is the total population of all zones (Birkin and Rees 1982 : 47). It measures the degree to which a group is concentrated in a ward with respect to the whole population. If the value of a LQ for a ward is greater than one it indicates that the group is more concentrated there than is the whole population.

Figure 2.   Percentage of the group population in zones,
             Bradford M.D. Census 1981
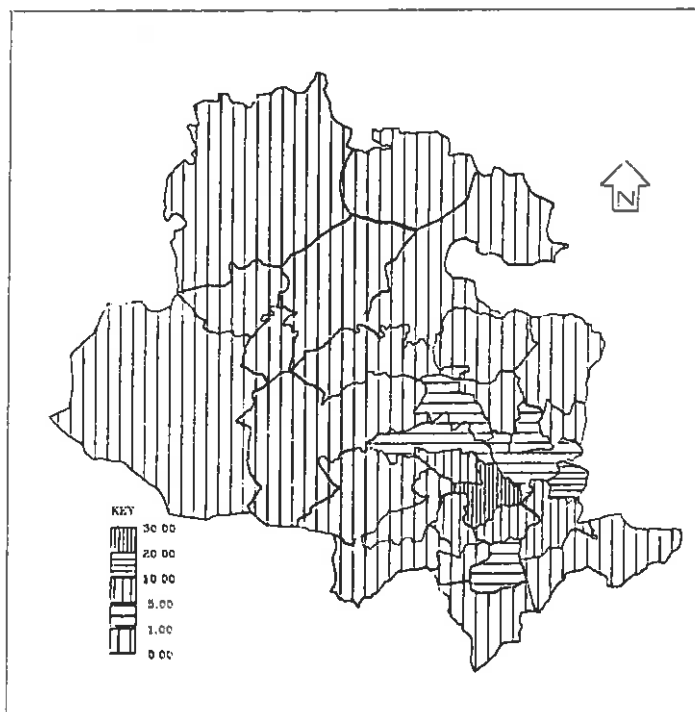
Figure 3.   Indian (Census) Bradford 1981

Rank No.	Ward	Persons
1	University	1554
2	Bradford Moor	1176
3	Little Horton	608
4	Bowling	521
5	Great Horton	422
6	Toller	350
7	Heaton	276
8	Undercliffe	268
9	Bolton	241
10	Odsal	241
11	Shipley West	137
12	Clayton	59
13	Eccleshill	51
14	Wibsey	48
15	Queensbury	45
16	Tong	44
17	Wyke	42
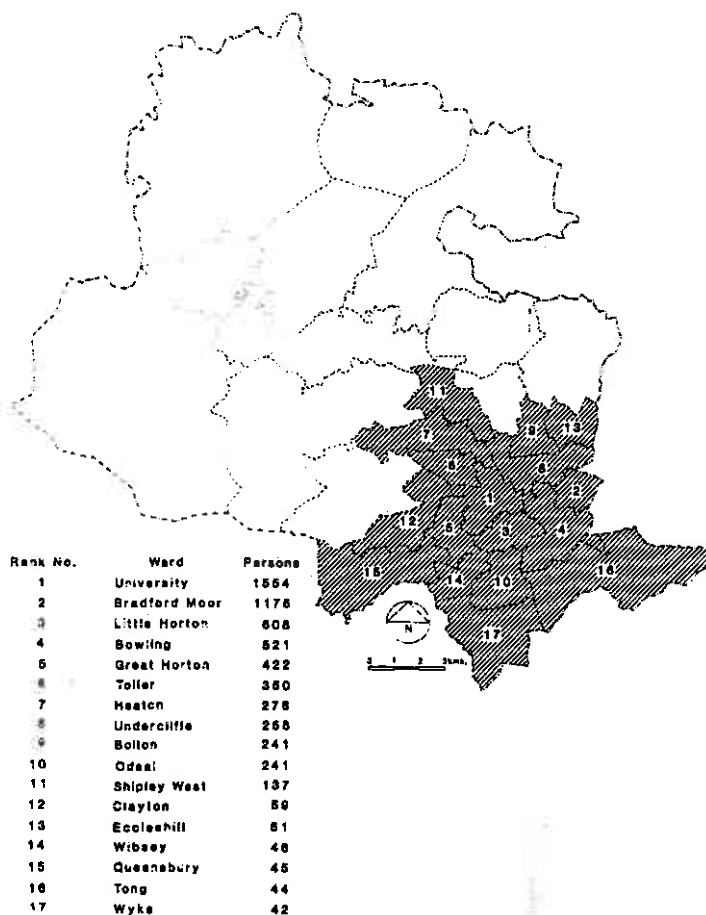
Zonal proportions of the group in the wards are plotted in Figure 4 which indicates that proportion is high in two wards. It is 8.1% and 7.1% respectively in University and Bradford Moor wards. It varies from 1% to 5% in Odsal, Heaton, Bolton, Undercliffe, Toller, Great Horton, Bowling and Little Horton. Elsewhere in the district it is less than 1%. Within this group it is 0.9% in Shipley West while it is less than 0.5% in the other wards. Thus, the proportion of the group to the zonal population is less than 1% in the twenty wards while it is more than 1 in the rest of the 10 wards. Further, it is more than 5% only in the two wards which have higher proportions of the group population in the district.

LQs are mapped in Figure 5 which shows that the group is more concentrated in the wards where the group population is more than 1% of the total for the district (see Figure 2). Within these wards University and Bradford Moor are the most highly concentrated wards where the LQ value is above 5. On the whole the high concentration wards can be classified into two groups. Southern wards have higher concentration than the northern wards.

The use of full range of the statistics, that is numbers, ranks, group percentages, zonal percentages and LQs in the different maps (Figures 1 to 5) indicate that by and large they show the same spatial picture. Therefore, each of the methods is equally useful in explaining the spatial patterns of distribution of the group in Bradford M.D.

As explained above more than 42% of the group population in the district lives only in two wards: Bradford Moor and University. For understanding the spatial patterns of the distribution within these wards the group population is further analysed by EDs (see Appendix 4). Owing to availability and computation of the data with limited details the analysis is confined only to the percentage of the group to the zonal population.

Figure 6 shows the spatial distribution of the group as percent of the zonal population by EDs. In Bradford Moor the proportion is very low in the northern EDs as compared to the Central ones. The proportion is very high (8% to 16%) in the 12 central EDs. Out of these, 3 lie in the upper half of the ward and 9 in the lower, distributed into two continuous groups. The eastern one has 5 and the western 4. A comparison of Table 5 shows that zonal proportion is high where group proportion is high, in almost all the EDs. However, the group proportion of the zonal population does not exceed 16.8% in any of the EDs which means that no ED has Indian born population more than one-sixth of the total population. On the other hand absence of the zero

Figure 5. Location Quotients of persons born in India by ward,
Bradford M.D. 1981
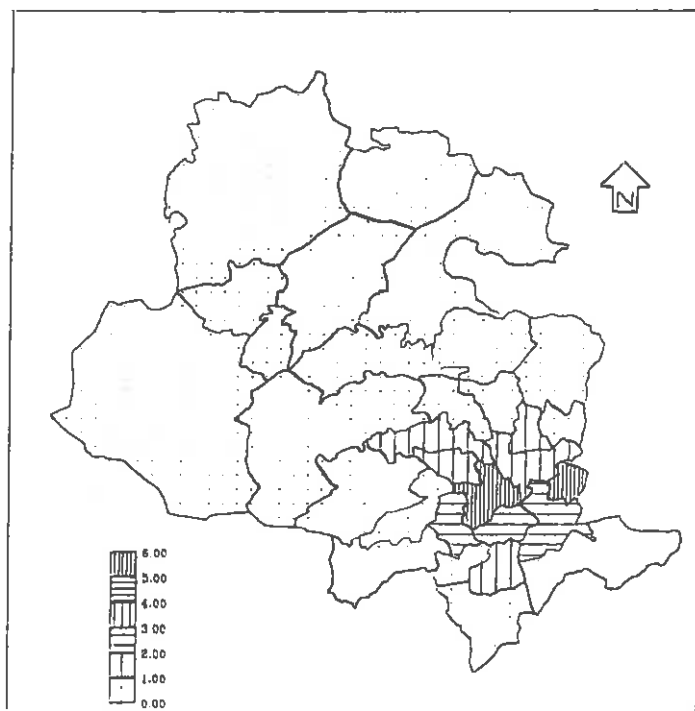
Figure 6. Persons born in India as percent of the zonal population by EDs, Bradford Moor and University wards 1981

Zonal Percentage
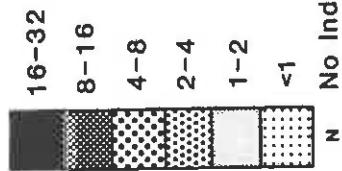
University ward

Bradford Moor ward

16–32
8–16
4–8
2–4
1–2
<1
No Indian
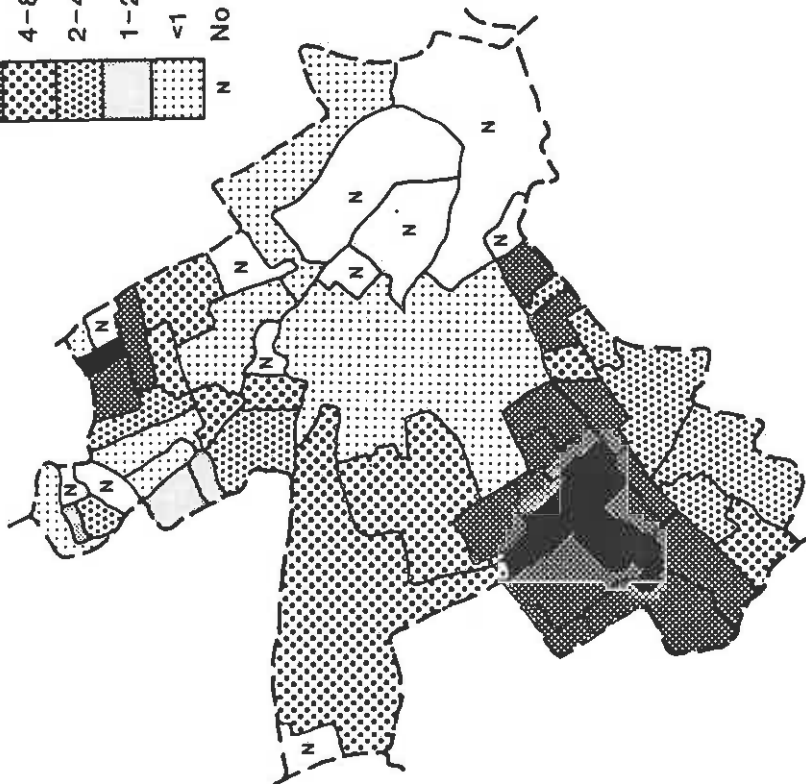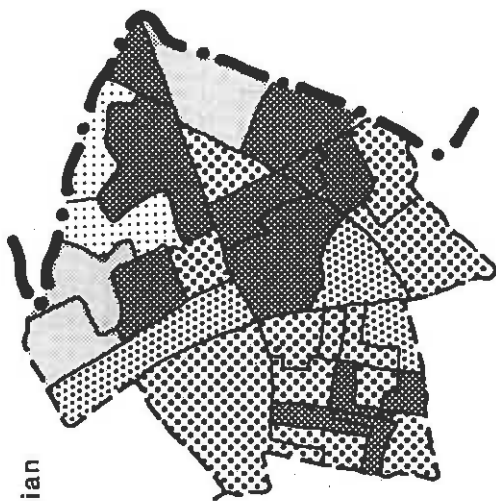
value indicates that group population is living in all the EDs.   Thus, it becomes clear that the distribution is more near the 'uniform' than the 'clustering' in the ward.

In University ward the spatial distribution of the group in proportion to the total zonal population is different from the other ward under analysis. The proportion varies from very low in the centre and moderate to low in the north to moderate to very high in the south.   It is more than ward average (8.1%) in 20 EDs.   Five of the EDs have very high proportion which ranges from 16% to 27.1%.   It means that in each of the five EDs the group population is more than one-sixth of the total population.   However, 'percent of the group population distribution' has very close similarity to the 'percent of the zonal population distribution' in the ward (see Table 6).

From Figure 6 and Tables 5 and 6 it is observed that there are many EDs with a small number of Indians and that there are only a few EDs with a huge number of Indians, in University ward.   The distribution is more clustered than uniform in University ward and it is different from Bradford Moor. However, in both wards, the group is concentrated more in southern EDs than the northern ones.

3.1.2 Sex ratio

Before going into details about the structure of the group by sex it is necessary to weigh the importance of the aspect in the analysis of the group population.   If one goes into the history of the immigration the significant characteristic which emerges is that most of the earlier immigration was by men (see Tables 3 and 4).   It was after spending a few years in this country that they invited their wives (and other dependents) or their fiancees. Thus, the sex ratio was very high in favour of males in the past but now Figure 1 shows that the Indian community has nearly completed the process of family reconstitution in their immigration history.

The analysis of the community by sex also helps, though indirectly to distinguish the wards accommodating the persons born in India to British parents from the wards inhabited by the persons born in India to Indian parents.   In India in general and in the areas the immigrants come from, the sex ratio is in favour of males (India = 940) while for the UK as well as Irish born population it is (1050) in favour of females.   Though the changing and different family system in this country might or certainly have affected the sex ratio of the Indian born Indian population but the effect is not very significant.   It is still in favour of the males in the group.   Based on this concept it can be

Table 3. Population with one or both parents born in India by sex
and year of entry into UK, Great Britain 1971.
(in thousands)

Year	Males	Females	Total
1956	4.5	1.3	5.8
1961	11.4	5.7	17.1
1962	11.0	3.3	14.3
1963	11.8	4.4	16.2
1964	7.9	6.5	14.4
1965	10.1	10.4	20.5
1966	9.6	9.8	19.4
1970-71	6.1	8.3	14.4

Source: Derived from Table A.6, p.94, Lomas(1973).

Table 4. Varition in the Sex ratio of persons born outside UK living in Great Britain.

Place of birth	I N D I A			Pakistan and Bangladesh	NCWP
Place of residence	GB	WY	BF	BF	BF
1961	823	600	366 (C.B)	24 (C.B)	214
1966	793	610*	n.a.	n.a.	391
1971	848	735*	764	388	596
1976	n.a.	n.a.	n.a.	n.a.	709
1981	969	906	919	699	868

Note: C.B= County borough   GB= Great Britain
WY= West Yorkshire   BF= Bradford M.D.
n.a.= Figures not available

Source: NCWP figures are derived from Table 1, Bradford's Black Population, 1982, Policy Unit, City Hall, Bradford.

* figures are computed from Table 3.6,p.80, Lomas(1973).

Rest of the ratios are calculated from the OPCS census reports 1961, 1966,1971 and 1981.

Table 5. Persons born in India living in Bradford Moor ward by E.D. 1981.

	Persons	born in India	
EDs	Numbers	as % of the group	as % of the zone
1	11	0.94	2.00
2	8	0.68	1.14
3	10	0.85	1.61
4	29	2.47	4.78
5	71	6.04	11.08
6	3	0.25	0.62
7	38	3.23	9.29
8	2	0.17	0.50
9	90	7.66	16.79
10	46	3.91	7.97
11	48	4.08	7.42
12	68	5.79	8.45
13	43	3.66	7.19
14	27	2.30	4.54
15	69	5.87	13.02
16	43	3.66	8.58
17	35	2.98	7.13
18	8	0.68	1.96
19	37	3.15	8.43
20	37	3.15	7.71
21	12	1.02	3.60
22	80	6.81	14.26
23	54	4.60	12.33
24	48	4.08	9.94
25	23	1.96	5.18
26	34	2.89	7.31
27	14	1.19	3.77
28	35	2.98	6.49
29	34	2.89	9.09
30	68	5.79	11.54
31	17	1.45	6.11
32	33	2.81	5.64
Bradford Moor	1175	100.00	7.13

Table 6 Persons born in India living in University ward by E.D. 1981.

EDs	Persons	As % of the group	As % of the zone	EDs	Persons	As % of the group	As % of the zone
1	4	0.26	0.87	32	76	4.89	12.06
2	2	0.13	1.01	33	115	7.40	15.44
3	0	-	-	34	131	8.43	24.12
4	24	1.55	4.30	35	47	3.03	12.41
5	0	-	-	36	44	2.83	9.69
6	1	0.06	0.45	37	81	5.22	17.05
7	10	0.64	1.63	38	162	10.43	27.14
8	5	0.32	0.93	39	84	5.41	14.71
9	20	1.28	4.23	40	28	1.80	9.72
10	50	3.22	10.02	41	61	3.93	12.73
11	29	1.87	16.38	42	99	6.37	20.71
12	1	0.06	0.93	43	54	3.48	12.38
13	0	-	-	44	63	4.06	12.43
14	3	0.19	1.06	45	41	2.64	11.52
16	14	0.90	10.37	46	47	3.03	8.48
17	7	0.45	2.35	47	25	1.61	6.70
18	8	0.52	3.19	48	9	0.58	2.74
19	19	1.22	6.76	49	14	0.90	4.53
20	9	0.58	2.17	50	45	2.90	15.68
21	3	0.19	0.82	51	9	0.58	6.87
22	10	0.64	2.32	52	14	0.90	8.14
23	0	-	-	53	0	-	-
24	0	-	-	54	30	1.93	5.92
25	0	-	-	55	15	0.97	5.10
26	10	0.64	3.17	56	13	0.84	3.07
27	1	0.06	0.45	57	0	-	-
28	0	-	-	58	0	-	-
29	0	-	-	59	0	-	-
30	1	0.06	0.88	60	0	-	-
31	15	0.97	2.71	61	0	-	-
				62	0	-	-
				University	1553	100.00	8.11

Note : ED 15 is not in the series.

hypothesized that wards having low sex ratio in favour of females have higher proportion of 'Indian born Indians'. However, the deviation from the mean can vary in the wards with few Indians.

The sex ratio is defined as number of females per 1000 males and is measured as:

$$(S.R.)^i = 1000.F^i(M^i)^{-1}$$

where F^i and M^i are respectively the numbers of females and males in zone i.

The spatial analysis of the statistics on the sex ratio shows that there is not much variation in the male-female ratio in the whole of the district. According to 1981 Census there are 3323 Indian born males and 3056 Indian born females in Bradford M.D. However, the ratio is in favour of females in Baildon, Bingley Rural, Bolton, Idle, Ilkley, Keighley North, Keighley South, Rombalds, Tong and Wibsey, all outer wards. In all these wards it is more than 1000 (see Table 7). It is balanced one (1000) in Bingley. In the remaining wards males outnumbered females but not by much.

Figure 7 shows the relationship of sex ratio with the persons born in India in the wards of Bradford M.D. It indicates that wards where persons born in India are more than 50 have sex ratio in favour of males, except Bolton in the inner wards of Bradford where it is in favour of females. However, the variability of the sex ratio increases as the numbers of Indians in a ward decrease.

Thus, within Bradford M.D. (as in Figure 1) the sizeable first generation population born in India lives in two-thirds of the wards of the old Bradford County Borough in the south-east area of the district. It is in the wards mostly rural containing commuter settlements added to Bradford after reorganization in 1974 that few Indian families are found. Within the south-east area of the district University and Bradford Moor are the only two wards where number as well as concentration of persons born in India is comparatively high. Elsewhere in Indian Bradford it varies from high in the southern wards to low in the northern wards. The group is very sparsely distributed in other wards except Keighley West in Bradford M.D. The sparse population of the group in rural wards where sex ratio is also in favour of females leads to the conclusion that both have some co-relation with each other. It can also be concluded in the present situation that most of the persons living in these wards are Raj Indian born rather than Indians born in India. This fact is also partly responsible for the exclusion of these wards from the Indian Bradford.

Table 7 Persons born in India by sex in Bradford M.D. 1971 and 1981.

		1971			1981		
No.	Ward	Male	Female	Sex ratio	Male	Female	Sex ratio
1	Baildon	11	7	636	9	13	1444
2	Bingley	6	2	333	9	9	1000
3	Bingley Rural	13	12	923	9	12	1333
4	Bolton	12	10	833	119	122	1025
5	Bowling	405	280	691	291	230	790
6	Bradford Moor	558	434	778	607	568	936
7	Clayton	3	5	1667	31	28	903
8	Craven	1	0	-	11	8	727
9	Eccleshill	11	14	1273	28	23	821
10	Great Horton	23	25	1087	215	207	963
11	Heaton	126	89	706	140	136	971
12	Idle	9	8	889	7	15	2143
13	Ilkley	5	10	2000	14	15	1071
14	Keighley North	23	5	217	14	15	1071
15	Keighley South	4	11	2750	7	10	1428
16	Keighley West	10	10	1000	22	18	818
17	Little Horton	426	335	786	327	281	859
18	Odsal	59	49	830	126	115	913
19	Queensbury	5	5	1000	25	20	800
20	Rombalds	10	10	1000	15	18	1200
21	Shipley East	9	14	1556	17	15	882
22	Shipley West	55	39	709	69	68	985
23	Thornton	8	7	875	13	8	615
24	Toller	230	185	804	182	168	923
25	Tong	10	14	1400	21	23	1095
26	Undercliffe	213	155	728	134	124	925
27	University	1209	905	749	812	742	892
28	Wibsey	8	8	1000	20	26	1300
29	Worth Valley	9	5	556	4	2	500
30	Wyke	8	4	500	25	17	680
	BRADFORD	3479	2657	764	3323	3056	919

Figure 7. Relationship of sex ratio and the number of persons born in India by ward, Bradford M.D. Census 1981

WARDS

1. Baildon
2. Bingley
3. Bingley Rural
4. Bolton
5. Bowling
6. Bradford Moor
7. Clayton
8. Craven
9. Eccleshill
10. Great Horton
11. Heaton
12. Idel
13. Ilkley
14. Keighley North
15. Keighley South
16. Keighley West
17. Little Horton
18. Odsal
19. Queensbury
20. Rombalds
21. Shipley East
22. Shipley West
23. Thornton
24. Toller
25. Tong
26. Undercliffe
27. University
28. Wibsey
29. Worth Valley
30. Wyke

INDIAN BRADFORD

Sex Ratio

Persons Born in India

3.2 Change in the spatial distribution 1971-81

3.2.1 Changing patterns of distribution

In contrast to the decrease in the total population of Bradford M.D. during 1971-81 there was an increase in the Indian population of 4%. Extension of the family unification process of the 1960s into the early seventies and continuation of immigration for marriages in the group are the main reasons for the difference.

The average increase for the whole district does not mean that population of the group increased in all zones or wards during the period.   Figure 8 gives the spatial picture of the 1971-81 change in the group population over the district.   University, Bowling, Little Horton, Undercliffe, Toller, Worth Valley and Bingley Rural wards experienced a decline in their population while elsewhere an increase in the group population was recorded during the decade.   Among the losing wards maximum loss was recorded in University (560) and the minimum in Bingley Rural (4).   In the other group Great Horton gained maximum number (374) corresponding to the minimum in Keighley North (1). Within the Indian Bradford all except University, Little Horton, Bowling, Undercliffe and Toller wards have shown a positive change.

An examination of Table 8 shows that the decline in percentage of the group population in Bowling, Little Horton, Toller and Undercliffe was in-between 1 and 3 while it was 10 (highest) in University ward.   In contrast, the gain was 2 to 4% in Bolton, Bradford Moor and Odsal.   It was highest (5.8%) in Great Horton.   Elsewhere the change in percentages was insignificant.

The change in percentage of persons born in India in relation to the rest of population in Bradford is given in Figure 9.   It is observed from the figure that the change in both the groups is not in proportion to each other. Toller, Little Horton, Bowling, Undercliffe and University wards recorded a decline in the Indian as well as in the Non-Indian population, but the decline was more for the Indian population than for the rest of population.   University ward recorded highest out-migration in both groups during the decade.   Thus, the figure shows that all the five wards are the areas of out-migration not only for the Indians but also for the population of all groups.   However, on the other hand, another 12 wards recorded an increase in both the groups.   Craven and Thornton exhibited the highest percentage growth of the non-Indian population; the Indian populations of both wards grew very little.   Bradford Moor, Bolton and Great Horton showed changes in favour of Indian born population.   These are the main wards for in-migration of the Indian group.   In the rest of the

Figure 8.   Change in the population of the group in Bradford M.D. 1971-81
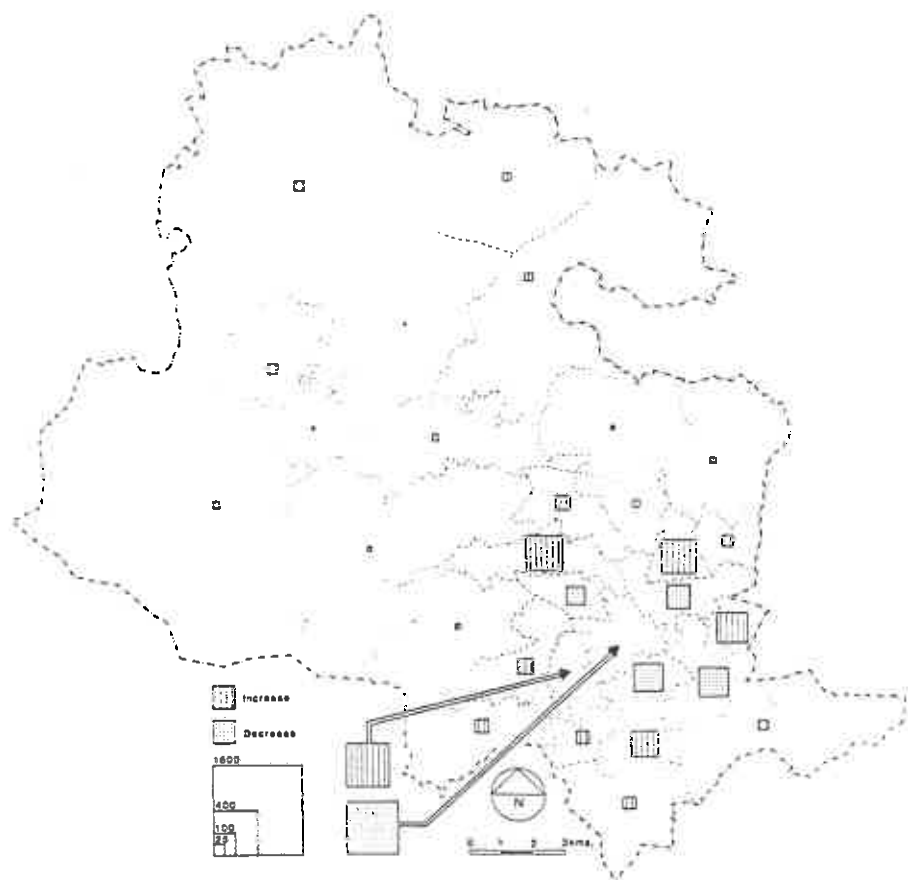
Table 8 Change in the distribution of persons born in India and rest of the population in Bradford M.D. by ward 1971-81.

| Ward | I N D I A N S | | | | | | | | Rest of Population | |
| | Numbers | | % of group | | % of zone | | L.Q. | | % of group | |
	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve
1 Baildon	4		0.05		0.02		0.01		0.31	
2 Bingley	10		0.15		0.08		0.05		0.03	
3 Bingley Rural		4		0.08		0.04		0.03	0.15	
4 Bolton	219		3.42		1.69		1.20		0.02	
5 Bowling		164		2.99		0.91		0.56		0.26
6 Bradford Moor	183		2.25		0.95		0.47		0.07	
7 Clayton	51		0.79		0.36		0.25			0.04
8 Craven	18		0.28		0.13		0.09		1.65	
9 Eccleshill	26		0.39		0.17		0.12			0.06
10 Great Horton	374		5.84		2.50		1.76		0.22	
11 Heaton	61		0.83		0.30		0.17		0.19	
12 Idle	5		0.06		0.04		0.03			0.08
13 Ilkley	14		0.21		0.10		0.07		0.25	
14 Keighley North	1			0.01		0.01		0.01	0.17	
15 Keighley South	2		0.03		0.02		0.01			0.13
16 Keighley West	20		0.30		0.12		0.08		0.20	
17 Little Horton		153		2.87		0.46		0.44		0.35
18 Odsal	133		2.02		0.83		0.57			0.16
19 Queensbury	35		0.55		0.23		0.15			0.11
20 Rombalds	13		0.19		0.09		0.05		0.18	
21 Shipley East	9		0.13		0.06		0.04			0.10
22 Shipley West	43		0.80		0.27		0.18		0.06	
23 Thornton	6		0.09		0.02		0.00		0.62	
24 Toller		65		1.27		0.24		0.25		0.21
25 Tong	20		0.30		0.13		0.09			0.22
26 Undercliffe		110		1.96		0.35		0.31		0.57
27 University		560		10.09	0.40			0.04		1.70
28 Wibsey	30		0.46		0.22		0.15			0.22
29 Worth Valley		8		0.14		0.07		0.06	0.25	
30 Wyke	30		0.46		0.19		0.13			0.05
BRADFORD	243		–		0.05		–		–	

Figure 9. Change in the Indian population in relation to the change in rest of population in Bradford M.D. 1971-81

WARDS

1. Baildon
2. Bingley
3. Bingley Rural
4. Bolton
5. Bowling
6. Bradford Moor
7. Clayton
8. Craven
9. Eccleshill
10. Great Horton
11. Heaton
12. Idel
13. Ilkley
14. Keighley North
15. Keighley South
16. Keighley West
17. Little Horton
18. Odsal
19. Queensbury
20. Rombalds
21. Shipley East
22. Shipley West
23. Thornton
24. Toller
25. Tong
26. Undercliffe
27. University
28. Wibsey
29. North Valley
30. Wyke

seven wards the increase was very small but it was comparable in both the groups. Bingley Rural, Worth Valley and Keighley North recorded a small decrease in the Indian born population against the increase in the rest of population while the situation was of opposite nature in the remaining 10 wards of the Bradford M.D.

In close comparison of Figures 8 and 9 with Figure 10 shows that, except for Bradford Moor, where an increase was recorded in the group population, all other highly concentrated wards experienced a loss proportionate to their group population in 1971. Great Horton, Bolton, Heaton and Odsal are the new wards which the group population occupied during the decade. The shift into these wards and Bradford Moor was due to the migration of the population or households already established in inner wards to wards further out. Comparatively better and spacious (new semi-detached) houses seems to be one of the reasons of the shift (see Appendix 5).

Table 9 gives a composite picture of the change in the group population from 1971 to 1981. In the earlier point in time 20 wards were sharing only about 5% of the group population and 92.2% population was distributed only in 8 wards. In comparison, in 1981 the number of 20 such wards came down to 12 and the number of wards sheltering 90% population went up to 11. The numbers of wards each having the group population more than one thousand have increased to two, meaning thereby that now there are two wards having very high number of group population and high Location Quotients (> 5). Together they house 42.78% of the group population. But the percentage section in Table 9 and Table 2 respectively make it very clear that the University ward, having more than 20% of the group population, has experienced a decline in its population while the second (Bradford Moor) ward, having high number as well as high LQ, has recorded an increase in the group population over the decade.

Percentage figures in Table 9 shows that two wards, each having group population less than 1%, gained the group population to get into the 1->10% group while two wards, each with >10-<20% group population, experienced a loss in the group population during 1971-81. This has raised the number of wards in the 1->10% group population from 5 to 9 during the last decade.

The proportion of the group to the ward population figures indicate that number of wards having the proportion <1 decreased from 23 in 1971 to 20 in 1981. However, the number of wards and the group percentage remained the same in >5-<10% ward percentage group. Thus the number of wards with ward percentages >1-<5 increased from 5 to 8 over the decade. It also indicates that nearly half

Table 9 Variation in the distribution and concentration cf the group population in the whole of Bradford M.D. 1971-81.

		1971		1981	
		% of the group pop.	Number of wards	% of the group pop.	Number of wards
NUM-BERS	Less than 40	5.49	20	4.20	12
	40 to 99.9	2.31	2	5.13	7
	100 to 999.9	57.75	7	47.89	9
	1000 and over	34.45	1	42.78	2
	Total	100.00	30	100.00	30
GROUP PERCE-NTAGE	Less than 1	6.27	21	9.33	19
	1 to 9.9	19.55	5	47.89	9
	10 to 19.9	39.73	3	18.42	1
	20 and over	34.45	1	24.36	1
	Total	100.00	30	100.00	30
WARD PERCE-NTAGE	Less than 1	9.56	23	11.48	20
	1 to 4.9	39.82	5	45.74	8
	5 to 9.9	50.62	2	42.78	2
	10 and over	-	-	-	-
	Total	100.00	30	100.00	30
L.Q.	Less than 1	9.56	24	11.48	20
	1 to 1.9	16.26	3	21.42	5
	2 to 4.9	39.73	2	24.32	3
	5 and over	34.45	1	42.78	2
	Total	100.00	30	100.00	30

of the group population lives in wards where group population is less than
5% of the ward population.   This proportion is 5 to 10% (the highest) in only
two wards.

In 1971 the group concentration was high in 6 wards comprising 90% of the
group population while corresponding figures for 1981 are 10 and 88%
respectively.   It indicates that less population is distributed in more wards
in 1981 as compared to 1971 which is the result of the shift in the distribution
of the Indian born population from the high concentration inner wards to the
outer wards.   Thus, (from Figures 1, 10 and 8) it is clear that degree of
concentration of the persons born in India has decreased in the inner wards and
the population has occupied the further outer wards during 1971-81 which
indicates that the distribution trend in the group population has been
spreading out in the last decade.

3.2.2 Change by sex

Almost in the whole of the district in 1971 the sex ratio in the group was
high, in favour of males.   In the urban wards of the district a very small
variation in the ratio was recorded (Figure 11) while in rural wards the
variation was very high.   In Craven ward the only person living there was male
while it was minimum in Keighley South in favour of males.   Such a ratio was
also very high in Bingley and Keighley North and very low in Clayton and Ilkley.
An examination of Figure 11 shows that the proportion of males in the group
population in the most densely inhabited wards ranges between 50% to 60%.

A decline in the proportion of males has been recorded over the last ten
years.   The other important change observed was that extremities have been
reduced if not disappeared totally.   Now the maximum male proportion is 67% and
the minimum is 32%.   In 20 wards the proportion of females has been increased.
Fifteen wards have nearly balanced sex ratio while such wards were only 5 in 1971.
The 'average male proportion belt' has shifted down to 45 from 55% during the
decade.   Nearly all the wards in Indian Bradford have recorded a decline in the
males' proportion of the group during the last ten years.   Thus, it leads to the
conclusion that since out-migration is very low or nearly negligible in Indian
born Indians living in Bradford, the immigration has been in favour of the females.
This fact can be verified by Bradford Area Health Authority's Table 2.   The
majority of the female immigrants from India during the last decade are in the age
group 15-30 which indicates that they were either wives or would-be wives of
already established immigrants.

Figure 10.   Indians by sex in Bradford M.D. 1971
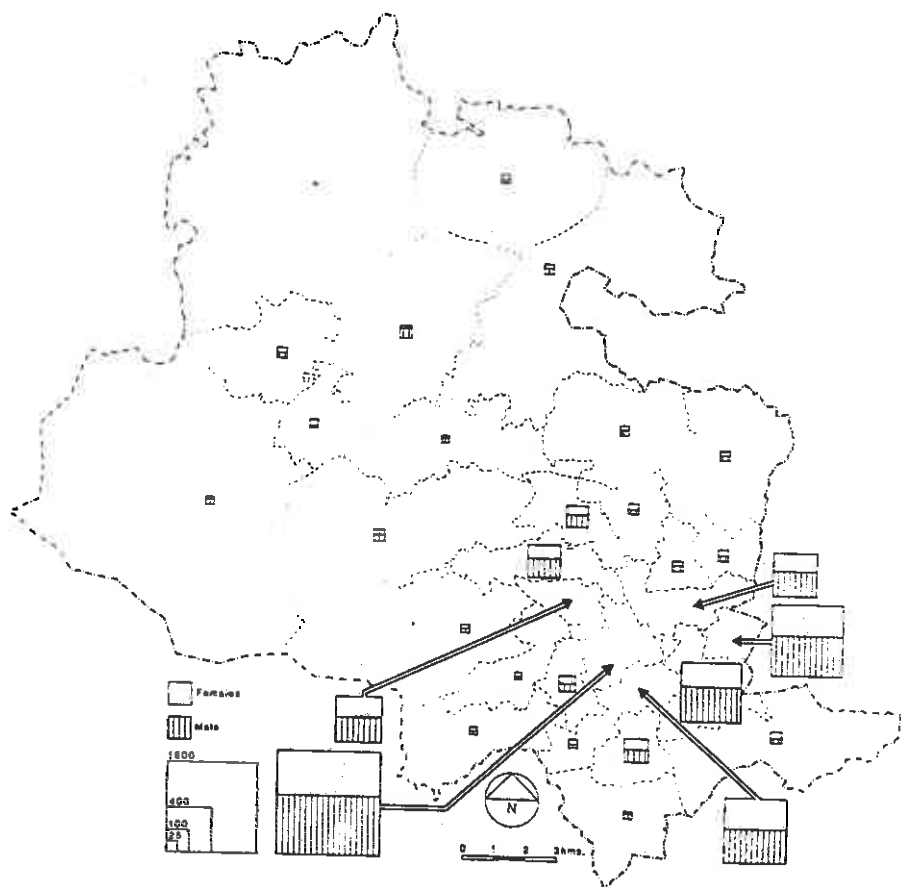
Figure 11.   Variation in the proportion of males to the group population 1971-81
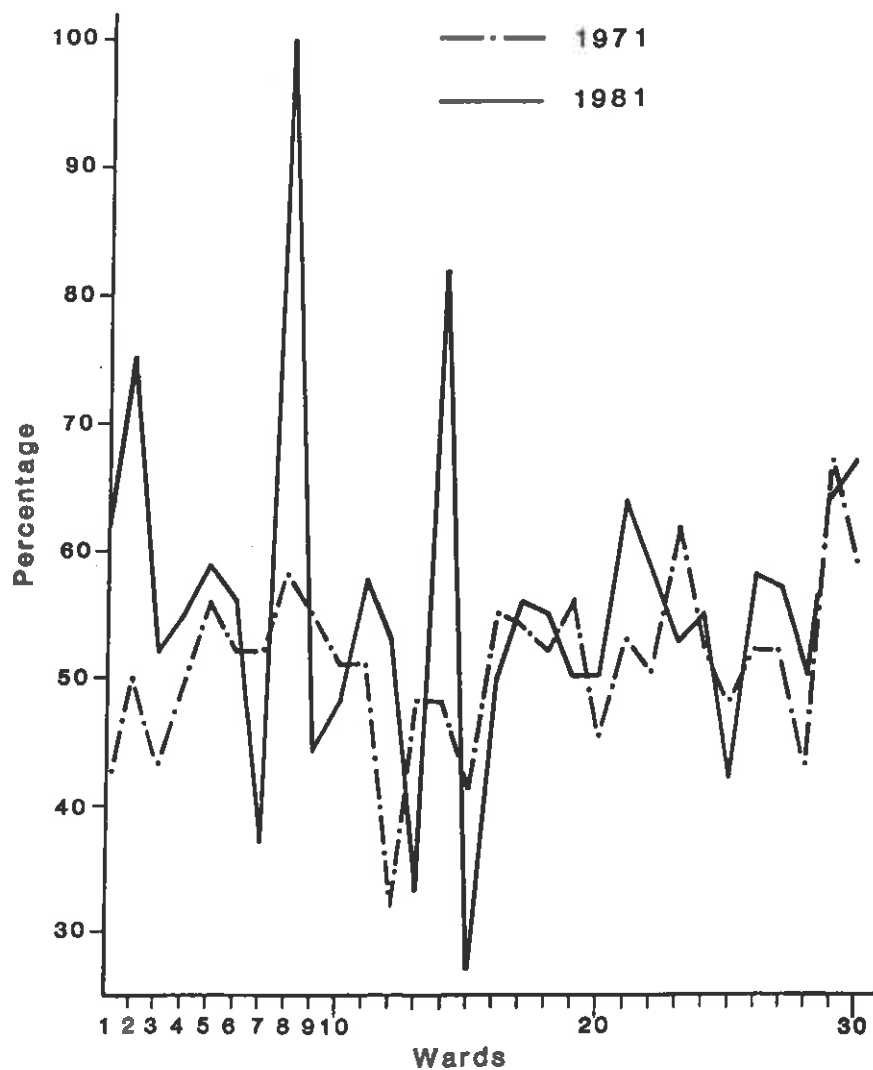
4. ANALYSIS OF THE REGISTER INFORMATION

4.1 Spatial analysis of the Register 1981

The Register information computed by Ram (1983) from the Register of Electors, Bradford M.D. 1981 is analysed under five different sections. Each section is based on the different nature of the data in Ram's tables.

4.1.1 Spatial distribution of Indians

Spatial distribution of Indian electors is mapped in Figure 12 which shows that Bingley Rural and Ilkley are the only two wards where no Indian elector was recorded in 1981. Their numbers were very small, that is two each, in Baildon and Keighley North and one in Worth Valley wards. In contrast University and Bradford Moor wards have recorded the highest number of Indian electors (1792 and 1254 respectively). Besides they were more than 100 each in Bolton, Bowling, Great Horton, Heaton, Little Horton, Odsal and Toller wards. Elsewhere they were less than 100. However, most of the Indian electors are living in wards which form a contiguous block in the south-east of the Metropolitan District. If we follow the same method as used in Section 3.1.1 to define the Indian (Census) Bradford and fix the lower limit as > 25, the contiguous block will then have 17 wards in it. This block can be named as Indian (Register) Bradford (see Figure 13). The wards in it, accordingly have the seventeen highest rank values for the Indian electors.

Their proportion in different wards is given in Figure 14 which shows that the percentage of the group in each of the University and Bradford Moor wards is more than 20%, while both jointly are sheltering about half of the electors in Bradford M.D. In Great Horton, Little Horton and Bowling it ranges from 5% to 10%. In Odsal, Toller, Heaton, Shipley West, Bolton and Undercliffe the group percentage varies from 1% to 5%. Elsewhere it is less than 1. The 11 wards near or around the University ward having group proportion more than 1% accommodate 94.6% of the group population.

A comparison of Figure 14 with Figure 15, which shows the spatial distribution of the group in proportion to the total zonal population in Bradford M.D. makes the picture clear that nowhere in the Bradford the group proportion was more than 5% of the total zonal electors except University, Bradford Moor and Little Horton wards where the proportions are 12.8%, 11.2% and 5.2% respectively. Their zonal proportion varies from 1% to 5% in Odsal, Bowling, Great Horton, Bolton and Undercliffe. Elsewhere it is less than 1%.

Spatial Distribution of Indians by Religion 1981
Bradford M.D.

Ni: No Indians

Figure 13.　Indian (Register) Bradford 1981

Rank No.	Ward	Indian Electors
1	University	1792
2	Bradford Moor	1254
3	Little Horton	811
4	Great Horton	549
5	Bowling	465
6	Toller	297
7	Bolton	236
8	Undercliffe	232
9	Odsal	166
10	Heaton	163
11	Shipley West	93
12	Tong	49
13	Clayton	46
14	Wibsey	44
15	Wyke	35
16	Eccleshill	34
17	Queensbury	27

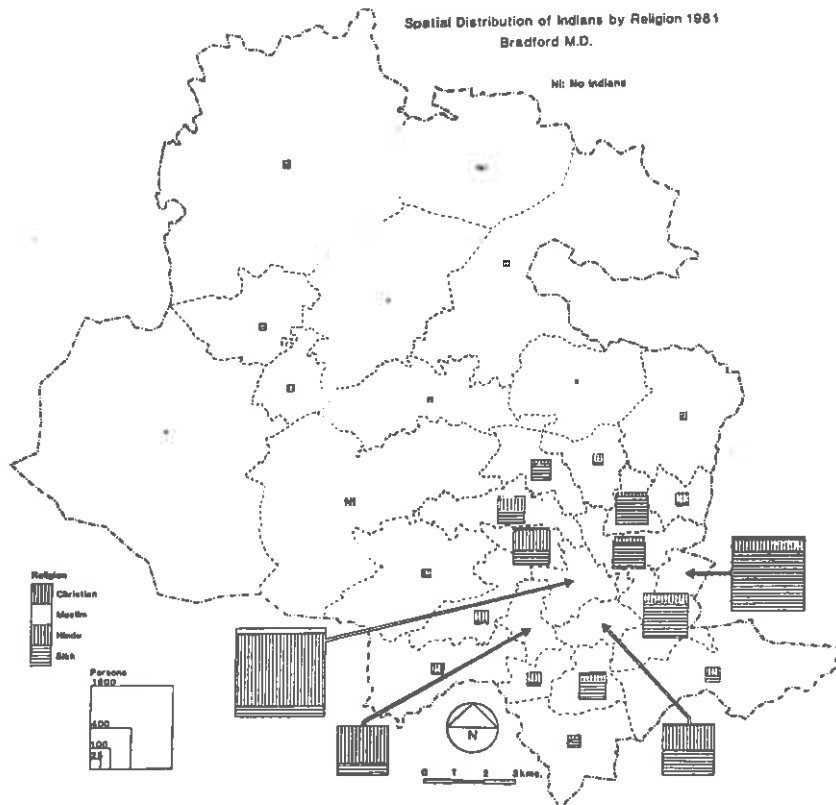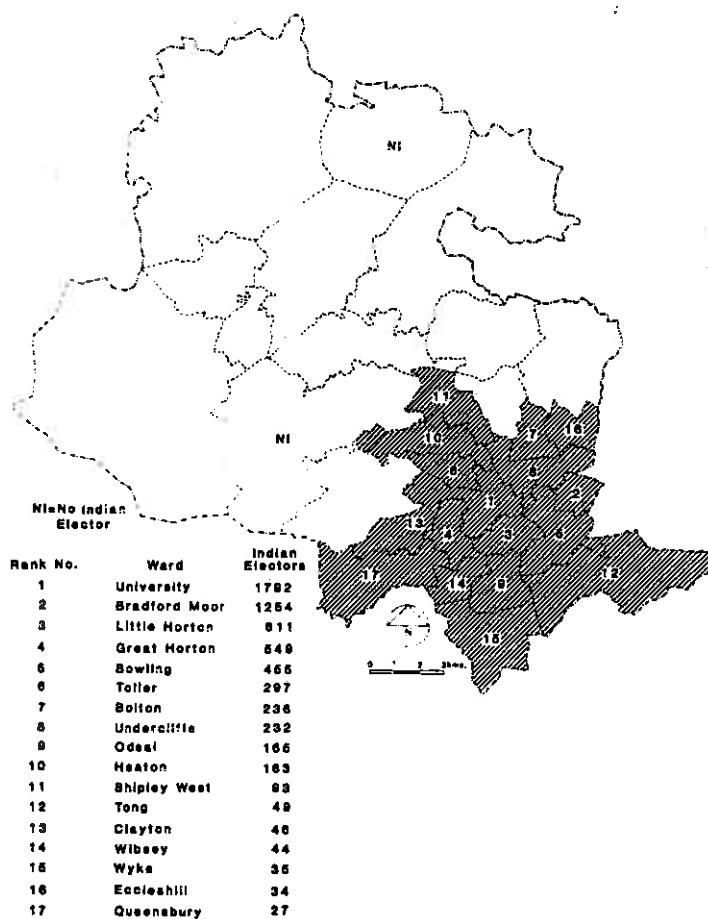NI=No Indian Elector

Figure 14.   Proportion of the group population by ward,
            the Register 1981, Bradford M.D.

NI=No Indian
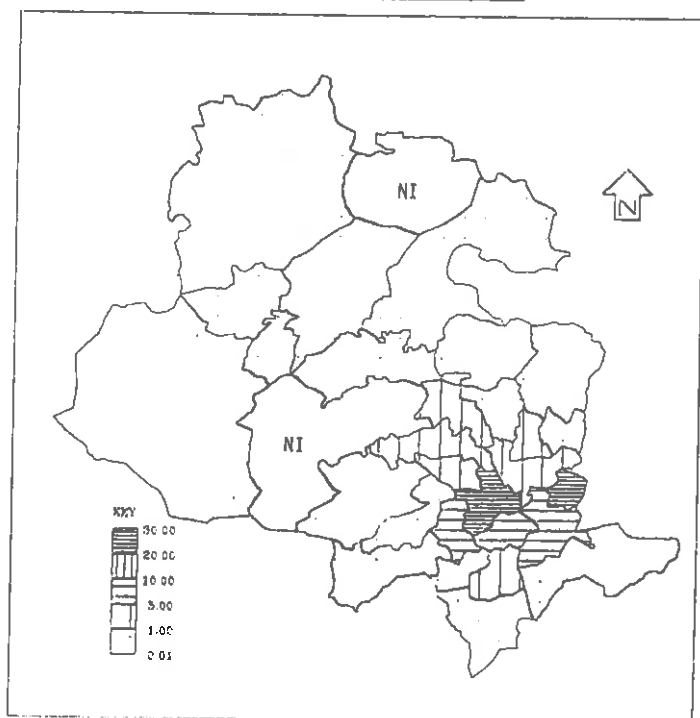
Figure 15. Group population as percent of zonal population, Bradford M.D. 1981

NI=No Indian
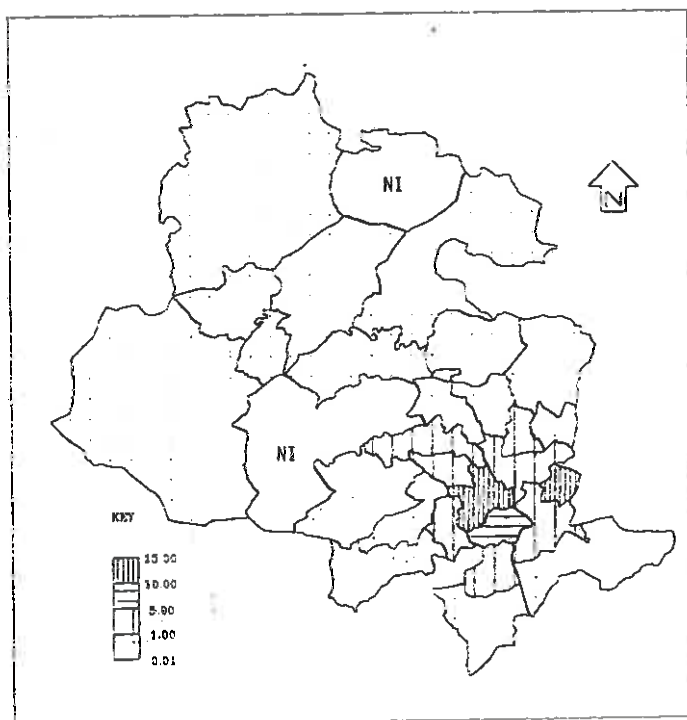
The spatial variation in the degree of concentration of the group, however, is not much different from the distribution of the group population in the district. It is only in seven central wards where group concentration is more than the whole population. Elsewhere the group is under-represented (Figure 16). Within over-represented wards the value of LQs are highest in University and Bradford Moor wards (4 to 8). It is 2-4 in Little Horton and Great Horton and in the remaining 3 wards that it is less than one.

Thus, the concentration of the Indian electors is high in University and Bradford Moor wards where group proportion is very high. However, low zonal proportions indicate that the group is not clustered in the wards and each share only one-eighth of the total zonal population. The group proportion is moderate in the other central wards of the Old Bradford Borough where values of zonal proportions and LQs are also not much different. Elsewhere the number as well as proportion of the group population is very low (< 1) which resulted in low zonal proportions and LQs.

4.1.2 Indians by religion

India is a country with a very large and culturally varied population. A small part of this cultural variation is reflected in the Indian community in Bradford. As Ram (1983) explained, it is possible to distinguish and to count Indian electors of different religions from the Register of Electors. The religious groups from that paper has been used to analyse the community in Bradford by religion. Figure 12 shows the distribution of the Indians across Bradford wards by the religion they belong to. The classified religious groups in Bradford M.D. are Hindus (50.6%), Sikhs (46.9%), Muslims (2.3%) and Christians (0.2%). The Christians (15) are living in only two wards, Bradford Moor (12) and Odsal (3) but Muslims (142) are unevenly distributed into 7 wards. Their maximum number (103) in University and minimum (2) each in Toller and Shipley East. However, except Shipley East all other wards representing the Muslim electors are parts of the old Bradford Borough or Indian Bradford.

The distribution patterns of the Sikhs and the Hindus are not similar. Although they are found in all the wards in which Indians locate, Sikhs are concentrated in the eastern wards of the Indian Bradford in Bradford Moor, Bowling, Undercliffe and Bolton. Hindus are concentrated, by way of contrast, in the Central and Western wards of the Old Bradford, particular in University and Great Horton wards. Peripheral to these two foci of the principal religious communities are wards, containing mixture of the two groups, of Little Horton, Odsal, Toller, Heaton and Shipley West. Shipley-Wakefield road seems to be the dividing line between the two religious concentrations.

- 45 -

Figure 17. Persons as percent of the group population by religion, 1981

SIKHS

NI

NS

NS

NS

NI

16.00
8.00
4.00
1.00
0.01

NI=No Indian
NS=No Sikhs
NH=No Hindus

HINDUS

NI

NH   NH

NI

16.00
8.00
4.00
1.00
0.01
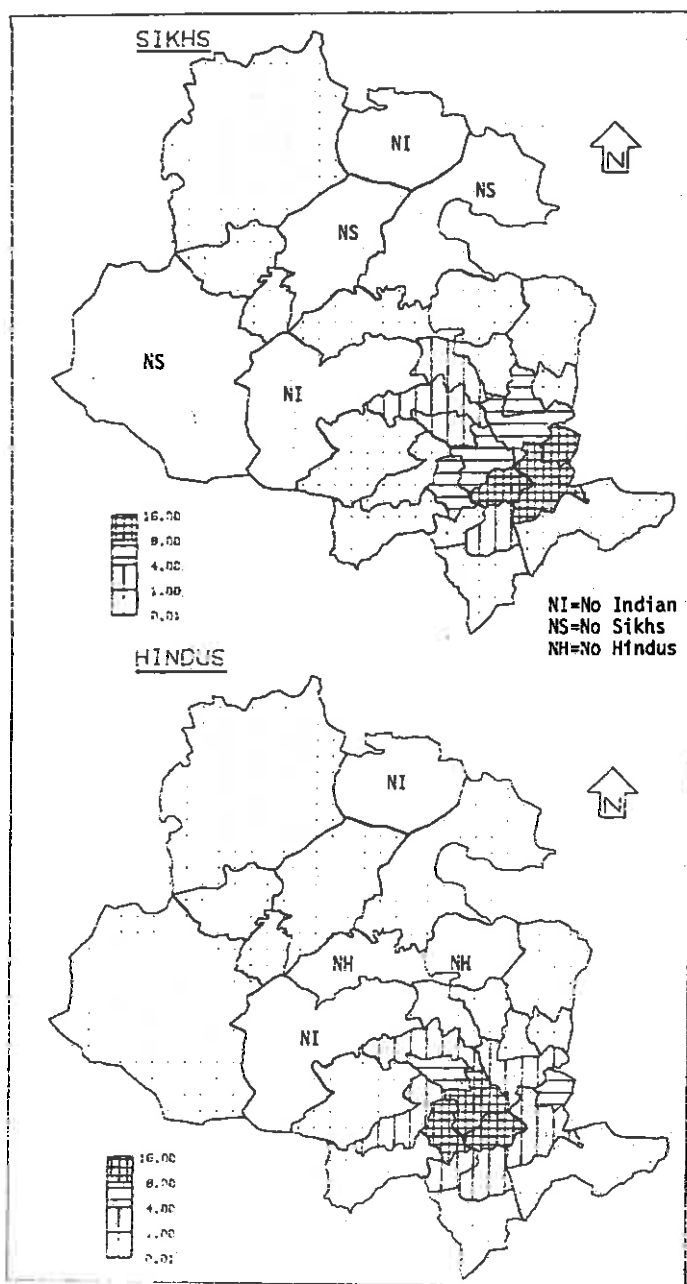
Figure.18.   Persons as percent of the zonal group population by religion, 1981

SIKHS

NI

NS

NS

NS

NI

100.00
76.00
50.00
26.00
0.01

NI=No Indian
NS=No Sikhs
NH=No Hindus

HINDUS

NI

NH   NH

NI

100.00
75.00
50.00
45.00
0.01
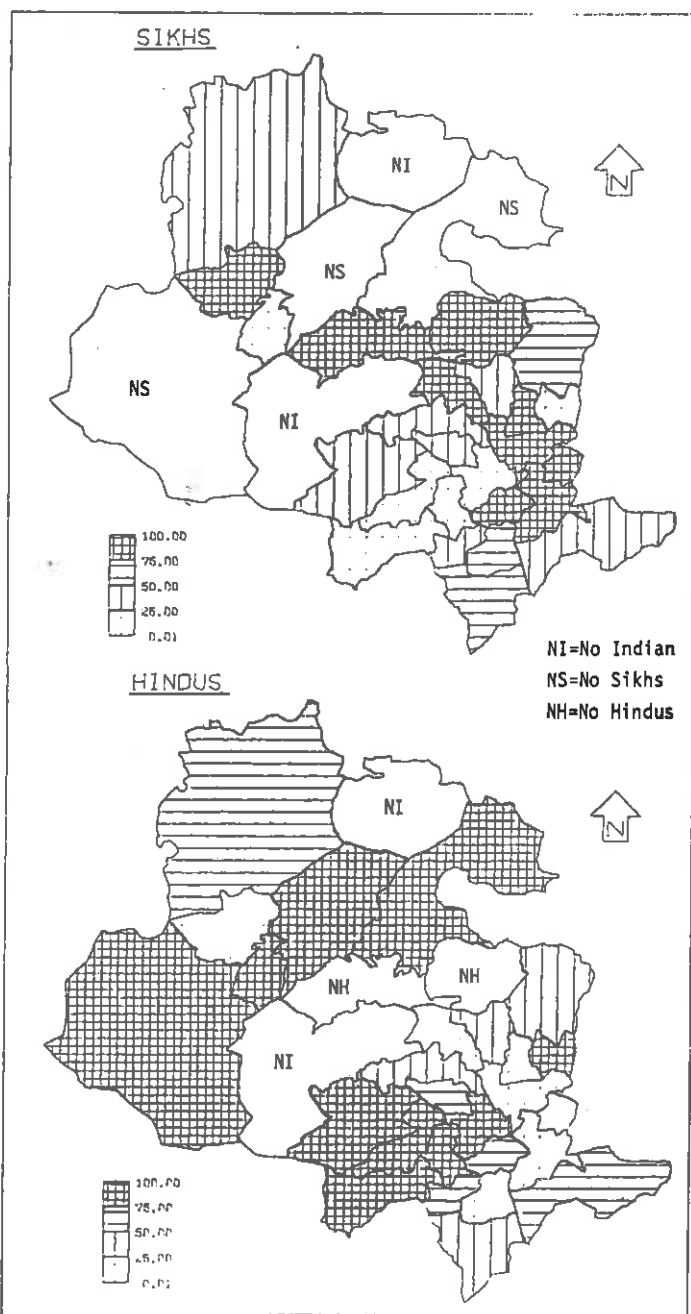
Spatial Distribution of Indians by Origin Region 1981
Bradford M.D.

Nf: No Indians
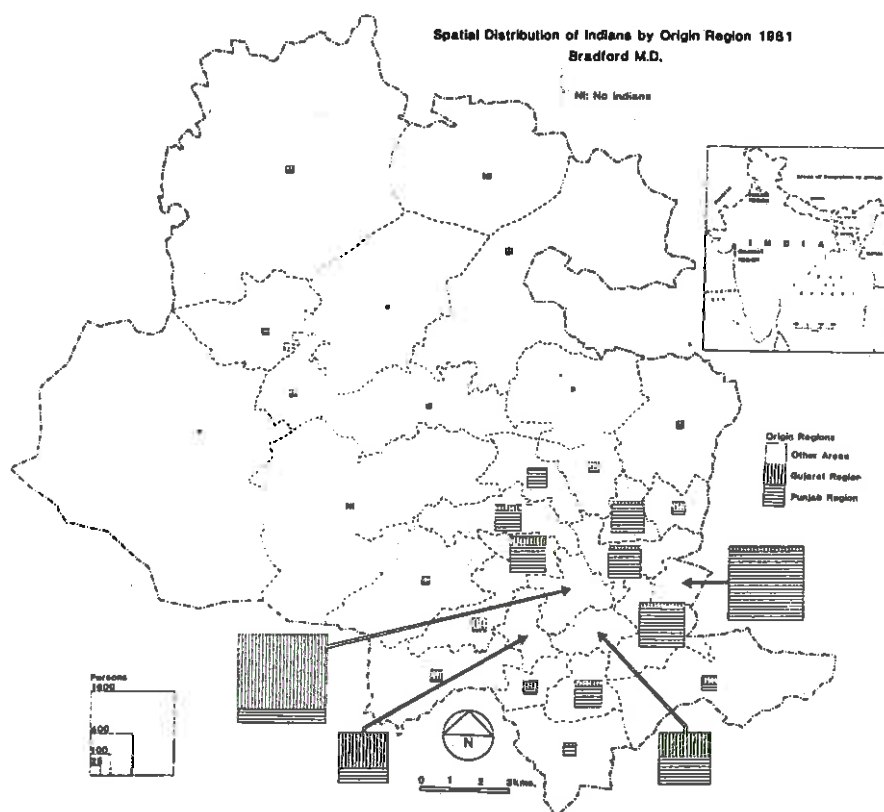
Figure 20.   Persons from the Punjab region as percent of
the group population 1981
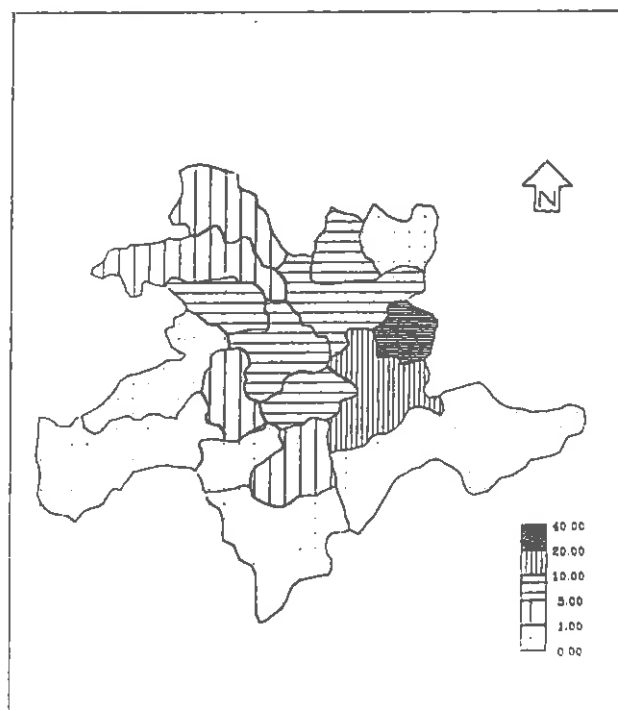
Figure 21.   Persons from the Gujarat region as percent of the group
            population 1981
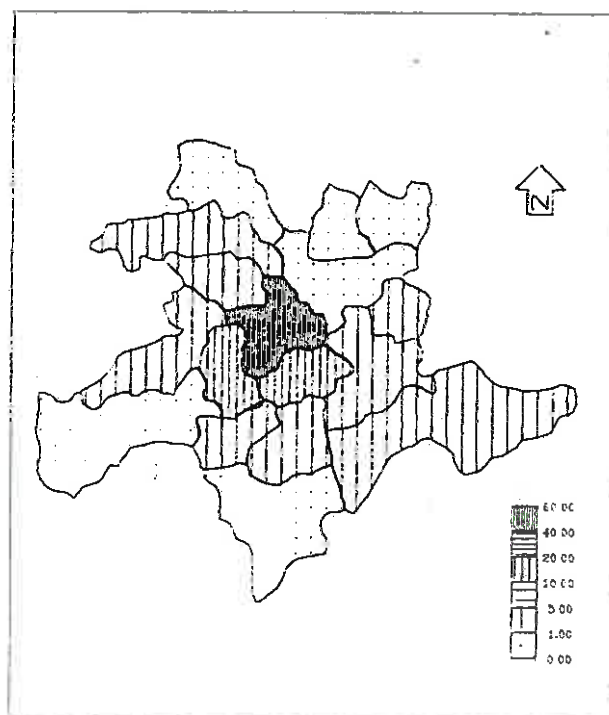
are the Sikh dominant wards (Figures 17 and 20) because they constitute
a main proportion of the Punjab region group, all Gujarati dominant wards
are the Hindu dominant wards (Figures 19 and 21).   Besides, Sikh dominant
wards are in the central-eastern part and the proportion goes on decreasing
in the north-west direction while the Hindu dominant wards are located in
the central part of the Old Bradford Borough surrounded by the wards with
the decreasing proportions.   The decrease was very sharp in the north-east
and south-west direction while it is gradual in the other two directions.

4.1.4 Indians and Other Asians

It is not possible on the basis of the names' analysis in the Register
to distinguish a Pakistani Muslim from a Bangladeshi Muslim although they
have been distinguished from the Indian Muslims by Ram (1983) and named as
'Other Asians'.   His counts of the Other Asians are used to show their spatial
distribution in Bradford.   We know from the Census that the number of Indian
born residents of Bradford M.D. is only one-third of the number born in Pakistan
and Bangladesh.   However, Other Asians are slightly less than three times the
Indians.   Under-registration (because of legal problems) and late family
re-unification are the possible reasons.   In their spatial context, irrespective
of the volume, the distribution of Other Asians is not dissimilar from that of
Indians at the ward scale with two exceptions.   First, and the major one, is
that the wards of Keighley house moderate number of Other Asians but very few
Indians and the second is that in Shipley East, Bolton, Eccleshill, Tong, Wibsy,
Queensbury and Clayton, Other Asians are low, less than the Indians too.   Thus
the Other Asians are more concentrated than the Indians, and particularly in
the inner wards of Old Bradford Borough (Figure 22).   If we exclude the Keighley
wards from the district, the 'Other Asian Bradford' is smaller in spatial extent
than the 'Indian Bradford'.   The distribution of Indians in the peripheral
urban wards as compared to the Other Asians indicates their tendency to go to
live in the wards away from the clusters.   A comparison of Figure 22, Figure 10
and Figure 26 confirms this fact.

4.1.5 Ethnic composition of electors in Bradford 1981

If the whole electoral population of the district is classed into three
categories (see Table 3, Ram 1983) and plotted along the three sides of a
triangle (as in Figure 23) we can identify different ethnic clusters in the area.
There are four main and explicit clusters, each having different characteristics,
separated from one another by three discontinuities in the patterns.

Figure 22. Spatial distribution of Other Asians, Bradford M.D. 1981

Figure 22. Spatial distribution of Other Asians, Bradford M.D. 1981
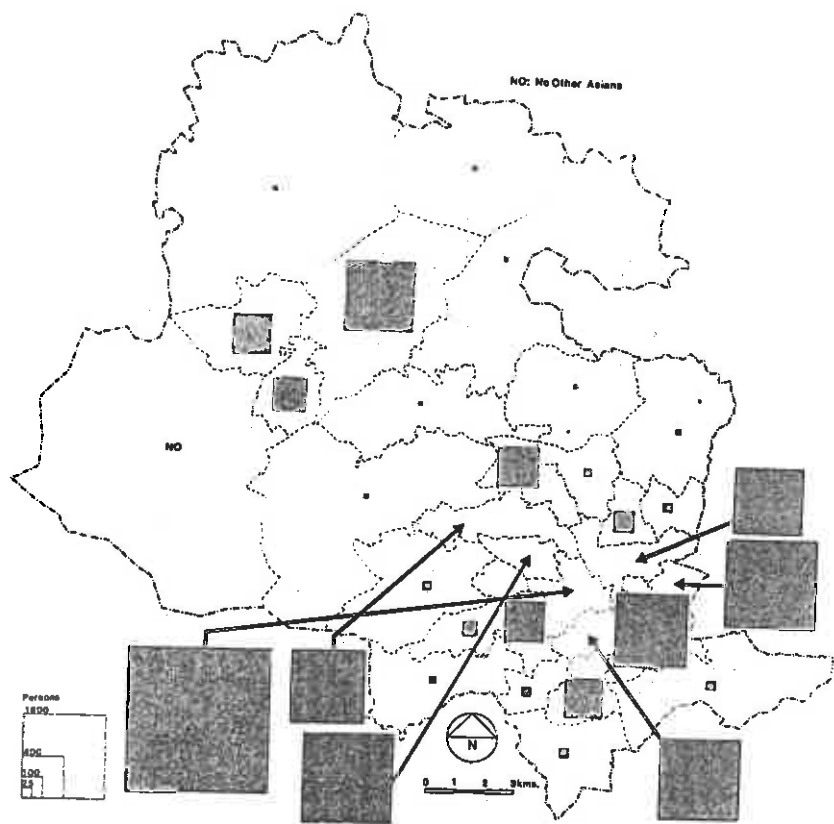
Figure 23. Ethnic composition of clusters in Bradford M.D. 1981
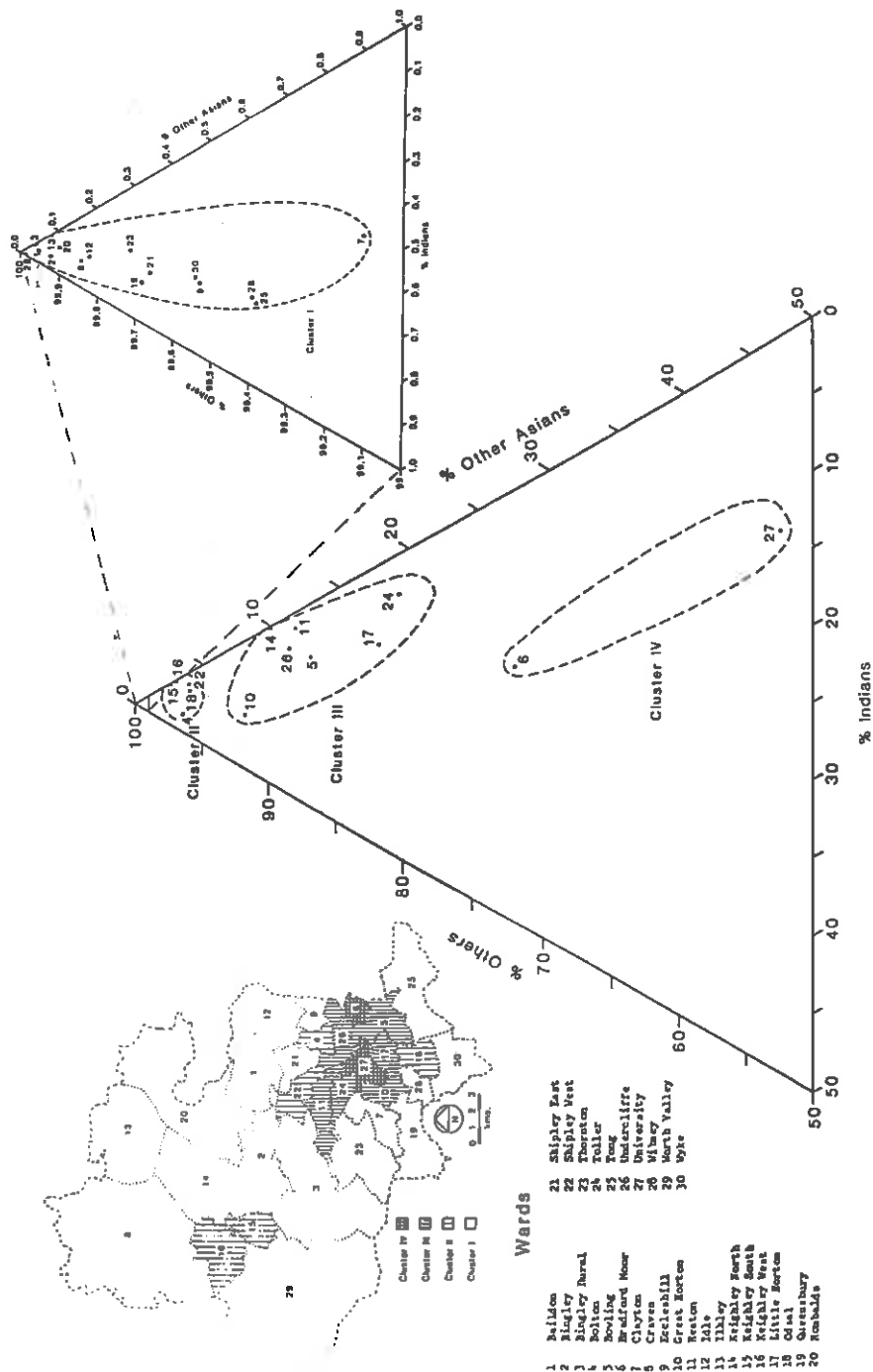
Before further analysis of the clusters it is necessary to make it clear that three wards located on the sides of the triangle are excluded from the analysis. Bingley Rural and Ilkley wards, where no Indian elector is recorded are located on the right side and Worth Valley ward, having no Other Asian is located on the left side of the triangle. However, all the three wards have very low (not > 0.1%) proportion of the respective Asian group in each of the total ward electors.

CLUSTER I : The cluster of wards having the highest proportion (> 99%) of the 'Others' group comprises 12 wards of the district where proportion of Indians as well as of Other Asians is not more than 0.5% (see inset Figure 23). However, if we exclude Clayton, the proportion of Other Asians in the cluster remains 0.25%. All the wards in this cluster are the peripheral or the rural wards but the distance of the wards in the cluster from the apex has inverse relationship with the actual distance of most of the wards from the town centre. It also indicates that Asians have (some) relationship with the town centre and their distribution is inversely proportionate to the distance from the town centre. Thus, Asians are few in the wards which are far from the town (which is also confirmed by Figures 1 and 3).

CLUSTER II : There are only five wards in this cluster where Other Asians are 1% to 3.5% and Indians are less than 2.5 %. However the proportion of 'Others' ranges from 96% to 97.5%. Wards at serial numbers 15 and 16 are parts of Keighley area while at 4, 18 and 22 are the suburban wards of urban Bradford. These are the areas of immigrants who settled there as a result of the process of readjustment. The 'distance from the apex' and the 'inverse distance relationship' also holds good for these wards.

CLUSTER III : Although the cluster has high range of proportions for Others (80% to 92%) as well as Other Asians (3% to 14%), the range is comparatively small for the proportion of Indians (< 5%). It consists of seven wards of the urban Bradford. The group proportion of Other Asians is high in Toller where 'Others' are comparatively low while conditions in Great Horton are opposite to Toller. However, with respect to the proportion of Indians, Toller and Undercliffe, the two northern wards, have nearly the same percentages as compared to the higher percentages in the two southern Horton wards. Thus, within this cluster Little Horton and Bowling are the wards with high Asian concentration.

CLUSTER IV : This is the high Asian Ethnic concentration area of Bradford with nearly 12% Indians, 30% Other Asians and 60% Others. Two wards, University and Bradford Moor, which are far from each other on the figure as well as on the

ground, make the cluster, Bradford Moor having less than 20% of Other Asians and more than 70% of 'Others' is situated far from the town centre while the University, being considered as central ward of the urban district, has high proportions of the Others (52.5%) as well as Other Asians (35%). University ward, which is far from the apex as compared to other wards, has comparable proportions of 'Others' as well as 'Asians'.

In most of the 'Other Asian' cluster wards Indians are in very small proportion (less than 5%), meaning thereby that they are in a minority among them. A close agreement of Figure 23 with Figure 2 indicates that wards which are far from the right hand side of the triangle are near the town centre and make a peripheral belt or ring encircling the University ward. The percentages of the group population and the zonal population are 1 to 10 and 1.5 in the ring respectively.

4.1.6 Indian Bradford

Indian (Census) Bradford has been defined in Section 3.1.1 while Indian (Register) Bradford is explained in Section 4.1.1. Because of the identical shape the area can thus be named as Indian Bradford (see Appendix 3). Indian Bradford thus has seventeen wards, which surround the main urban centre form a contiguous block in the south-east of the Bradford M.D. It includes all the wards, except Idle, Thornton and parts of Queensbury and Shipley of 1971 Bradford Borough (Appendix 2) and Shipley West and parts of Queensbury of 1981 Bradford M.D. It represents more than 95% of the population born in India while the percentage of the group in the Register is more than 98% of the total numbers in Bradford M.D. 1981 (Table 10).

If we compare the map of Indian Bradford with Figure 24 which shows the built up area or urban area around the city centre we can see that the wards as well as the block as a whole have high proportions of the built up areas in relation to the total respective areas. Besides, it shows how strongly the the spatial distribution has its co-relation with the urban areas and an inverse relation with the distance of wards from the centre.

Identification of Indian Bradford is useful from the point of view of further analysis of the group. In addition it also helps to save time in going through the Registers of Electors for other wards for 1971 which not only have few Indians but also are not available at one place. Thus, further analysis and particularly the growth in the Register information will be confined only to Indian Bradford in the following section.

Table 10 Indians in 'Indian Bradford' 1981.

		Numbers	Percent of the whole of Bradford M.D.
1	Persons born in India	6070	95.2
2	Indians in the Register	6082	98.4
	Sikhs	2855	98.6
	Hindus	3072	98.3
	Muslims	140	98.6
	Christians	15	100.0

THE BUILT UP AREAS OF BRADFORD IN RELATION TO
1981 WARD BOUNDARIES

4.2 Changing patterns of distribution

4.2.1 Problem of comparison of the Register data

In contrast to the Census data it is not easy to compare the Register information for 1971 with that of 1981. Extending the Borough boundary to make it the Metropolitan district in 1974 created the main problem. During the reorganisation a few urban as well as rural politico-administration units of West Riding have been merged. The Register information for those is not available at one place for 1971. Thus, the spatial distribution of the group is compared for two points in time only for the Indian Bradford (Appendix 3) and 'Bradford' in this section is being used to mean 'Indian Bradford'.

Figure 25 (and Table 11) gives the spatial picture of the 1971-81 change in the group population in Bradford. Great Horton and Bradford Moor wards recorded a growth in the group population, more than 500 in each. The growth comes to be 40.1% in Bradford Moor and 96.0% in Great Horton of the group population in each ward in 1981 (Table 12). Although this change did not affect much, the proportion of group population, ward population and the LQs over the decade in Bradford Moor, the change was very significant in Great Horton where the values were 8.5, 3.6 and 14.4 respectively. Similar characteristics were found in Bolton where 97% of the group population in 1981 was new which raised the value of LQ 19.5 times its value in 1971. Thus it indicates that there was very high absolute as well as relative increase in the group population in these wards during 1971-81. This was mostly due to their immigration into these wards.

The minimum increase was recorded in Bowling ward (only 8) which is the main area of out-migration for the decade. In this ward proportion of the group population decreased by 4.3%. University and Little Horton are two other wards where in spite of an absolute increase of 364 and 117 respectively, the proportions of the group population declined by 8.2% and 3.0% respectively. Similarly decline in the group percentages were recorded against the increase in their numbers during 1971-81 in Toller and Undercliffe, but Clayton, Queensbury, Wibsey and Wyke are the new wards for the group where the group population was completely absent in 1971.

Thus the growth was very high in Bolton and Great Horton. It was comparable with Bradford's average growth rate for the group in Bradford Moor and Heaton. It was low in University and very low in Bowling. Out-migration from these wards is the main reason for low growth while Bolton, Great Horton, Bradford Moor and Heaton are on the receiving end of the out-migrants.

Figure 25.   Spatial variation of the group population, Indian Bradford 1971-81
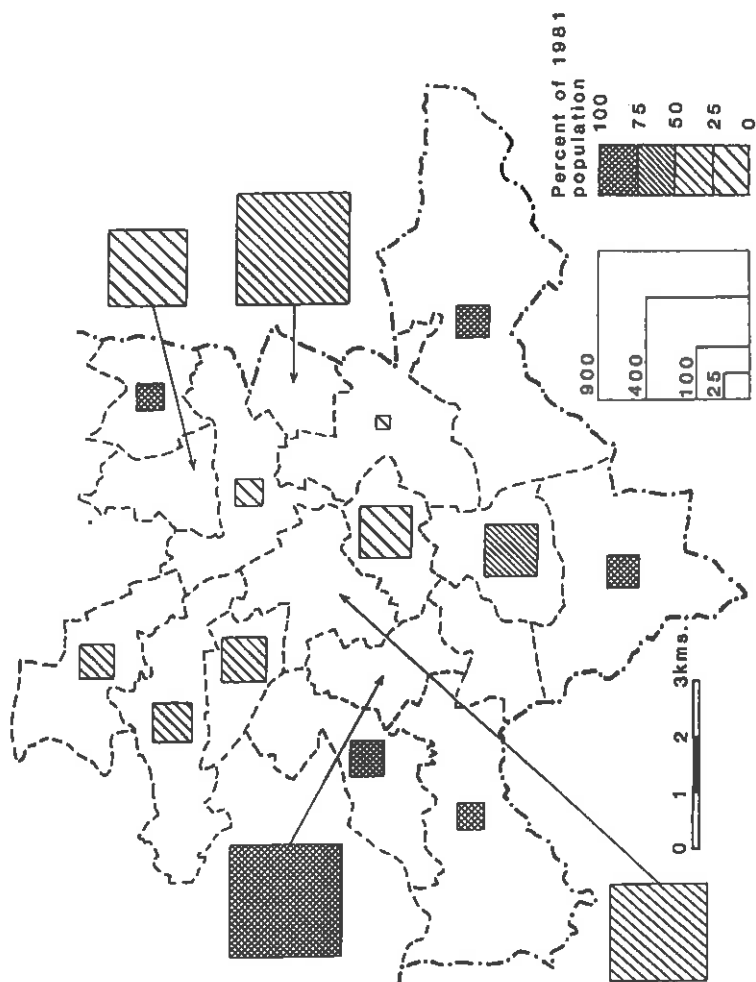
Table 11 Change in the Indian electors in Indian Bradford 1971-81.

Sr. No.	No.	Name	Indian Electors 1971	Indian Electors 1981	% of group population 1971	% of group population 1981	% of ward population 1971	% of ward population 1981	L.Q. 1971	L.Q. 1981
1	4	Bolton	7	236	0.18	3.88	0.08	2.41	0.04	0.78
2	5	Bowling	447	455	11.79	7.48	3.31	3.43	1.72	1.12
3	6	Bradford Moor	751	1254	19.81	20.62	6.70	11.20	3.47	3.65
4	7	Clayton	-	46	-	0.76	-	0.42	-	0.14
5	9	Eccleshill	2	34	0.05	0.56	0.02	0.31	0.01	0.10
6	10	Great Horton	22	549	0.58	9.03	0.21	4.85	0.11	1.58
7	11	Heaton	101	163	2.66	2.68	0.93	1.37	0.48	0.45
8	17	Little Horton ·	494	611	13.03	10.05	3.38	5.23	1.75	1.70
9	18	Odsal	64	165	1.69	2.71	0.51	1.30	0.27	0.42
10	19	Queensbury	-	27	-	0.44	-	0.23	-	0.08
11	22	Shipley West	54	93	1.42	1.53	0.49	0.77	0.25	0.25
12	24	Toller	219	297	5.78	4.88	1.86	2.60	0.97	0.85
13	25	Tong	4	49	0.11	0.81	0.04	0.43	0.02	0.14
14	26	Undercliffe	198	232	5.22	3.81	1.72	2.09	0.89	0.68
15	27	University	1428	1792	37.67	29.46	9.30	12.86	4.82	4.19
16	28	Wibsey	-	44	-	0.72	-	0.41	-	0.13
17	30	Wyke	-	35	-	0.58	-	0.29	-	0.09
		Total	3791	6082	100.0	100.0	1.93	3.07	1.00	1.00

Source: Computed from the Register counts 1971 and 1981.

Table 12 Indices of change in the group population in Indian Bradford
       1971-81.

No.	Ward (1981)	(1981-1971)	100.(1981)X (1981-1971)	% Of group population (1981-1971)	% Of ward population (1981-1971)	L.Q. (1981-1971)
1	Bolton	229	97.03	3.70	2.33	19.50
2	Bowling	8	1.76	-4.31	0.12	0.65
3	Bradford Moor	503	40.11	0.81	4.50	1.05
4	Clayton	46	100.00	0.76	0.42	NC
5	Eccleshill	32	94.12	0.51	0.29	10.00
6	Great Horton	527	95.99	8.45	3.64	14.36
7	Heaton	62	38.04	0.02	0.44	0.94
8	Little Horton	117	19.15	-2.98	1.85	0.97
9	Odsal	101	61.21	1.02	0.79	1.56
10	Queensbury	27	100.00	0.44	0.23	NC
11	Shipley West	39	41.94	0.11	0.28	1.00
12	Toller	78	26.26	-0.90	0.74	0.88
13	Tong	45	91.84	0.70	0.39	8.50
14	Undercliffe	34	14.66	-1.41	0.37	0.76
15	University	364	20.31	-8.21	3.56	0.87
16	Wibsey	44	100.00	0.72	0.41	NC
17	Wyke	35	100.00	0.58	0.29	NC
	Total	2291	37.67	-	1.14	-

NC=Not computable.

4.2.2 Change in patterns of distribution by religion

The group population increased by 2291 during the decade in Bradford. The growth was recorded as 1012 in the Sikhs, 1210 in the Hindus, 59 in the Muslims and 10 in the Christians to their 1971 population. Since the first two religious groups constitute the major part of the group population as well as change, the spatial change in their distribution needs to be described in detail.

A maximum growth in the Sikhs was recorded in Bradford Moor (387) which has 35.1% of the 1981 Sikh population in Bradford. Bolton emerged as another Sikh ward where their number increased from 5 to 209. However, the increase was not very high in other wards. In contrast, in University and Bowling wards their numbers decreased by 45 and 29 respectively. Thus Figure 26 shows that Sikhs increased in number in Bradford Moor, Bolton, Great Horton and Odsal, while their number decreased in University and Bowling wards. The increase was low to moderate elsewhere. Their number decreased in the two central wards while the other central wards recorded a moderate increase in Sikh population. The increase was high in the next outer wards.

Thus, it leads to the conclusion that they moved from the inner wards to the outer wards of the urban Bradford which indicates that Sikhs experienced a spatial diffusion in their distribution during the process of readjustment after 1971.

In spite of out-migration of the Sikhs from the central wards, University, Little Horton, Great Horton and Odsal wards still have recorded a fair number of Sikhs in 1981 (Table 13). The housing sample survey (see Appendix 5) indicates that the majority of the non-mover Sikhs in these wards are living in good, new and spacious semi or detached houses which seems to be one of the main decision making factors for the movers during the decade. The majority of the group population in Bolton in such houses verifies the assumption.

The spatial variation in the distribution of Hindus is different from the Sikhs. Their numbers increased by 415 and 356 in Great Horton and University wards, during 1971-81 period where the total Hindus are 13.6% and 48.3% respectively. In Bradford Moor the Hindus increased by 86 while elsewhere in Bradford the growth was equal or less than 50. However, nowhere in Bradford, except Shipley West (-3) was a decline in the Hindu group recorded (Table 11). Thus it can be concluded that there is not a high degree of similarity between the Hindus and the Sikhs in terms of their spatial variation over the time.

Figure 26. Population change in the group by religion and origin
region, the Indian Bradford 1971-81

BY RELIGION

Sikhs   Hindus

900
400
100
25
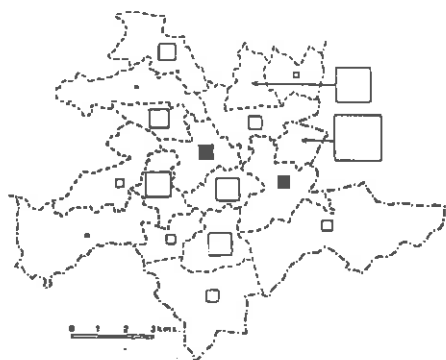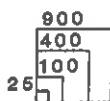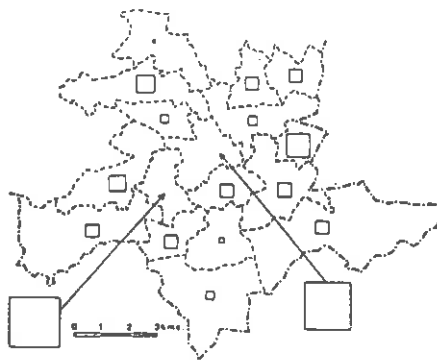
☐ Increase
■ Decrease

BY ORIGIN REGION

The Punjab Region   The Gujarat Region

TABLE 13.   INDIAN ELECTORS BY THEIR RELIGION AND ORIGIN REGION IN INDIAN BRADFORD 1971-1981

SERIAL NO.	WARDS (as 1981)	SIKH		HINDU								MUSLIM		CHRISTIAN		PUNJAB		GUJARAT		OTHER AREA		TOTAL	
				P.R.		G.R.		O.A.		Total													
		1971	1981	'71	'81	'71	'81	'71	'81	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981
1	Bolton	5	209	-	14	-	13	-	-	-	27	2	-	-	-	5	223	2	13	-	-	7	236
2	Bowling	391	362	36	59	17	32	3	2	56	93	-	-	-	-	427	421	17	32	3	2	447	455
3	Bradford Moor	616	1003	109	188	24	17	2	3	135	231	-	8	-	12	725	1191	24	49	2	14	751	1245
4	Clayton	-	11	-	2	-	29	-	4	-	35	-	-	-	-	-	13	-	29	-	4	-	46
5	Eccleshill	2	7	-	6	-	21	-	-	-	27	-	-	-	-	2	13	-	29	-	4	2	46
6	Great Horton	20	132	-	17	2	400	-	-	2	417	-	-	-	-	20	149	2	400	-	-	22	549
7	Heaton	79	81	6	41	7	23	4	6	17	70	5	12	-	-	85	122	12	35	4	6	101	163
8	Little Horton	207	290	42	26	225	288	9	-	276	314	10	7	1	-	249	316	235	295	10	-	494	611
9	Odsal	25	115	35	13	-	26	-	-	35	39	-	8	4	3	60	128	-	34	4	3	64	165
10	Queensbury	-	2	-	-	-	25	-	-	-	25	-	-	-	-	-	2	-	25	-	-	-	27
11	Shipley West	33	75	14	11	3	4	4	3	21	18	-	-	-	-	47	86	3	4	4	3	54	93
12	Toller	50	115	94	105	73	72	2	3	169	180	-	2	-	-	144	220	73	74	2	3	219	297
13	Tong	4	20	-	-	29	29	-	-	-	29	-	-	-	-	4	20	-	29	-	-	4	49
14	Undercliffe	161	193	19	16	4	23	-	-	23	39	-	-	-	-	180	209	18	23	-	-	198	232
15	University	250	205	54	60	1068	1422	6	2	1128	1484	50	103	-	-	304	265	1118	1525	6	2	1428	1792
16	Wibsey	-	12	1	1	-	29	-	2	-	32	-	-	-	-	-	13	-	29	-	2	-	44
17	Wyke	-	23	3	3	9	9	2	-	-	12	14	-	-	-	-	26	-	9	-	-	-	35
	TOTAL	1843	2855	409	562	1423	2486	30	24	1862	3072	81	140	5	15	2252	3417	1504	2626	35	39	3791	6082

The moderate distribution areas are similar while high concentration areas are contrasting. High Sikh population wards are on the north-east of the city centre while high Hindu population wards are to the south-west of the city centre. The Hindu-Sikh dispersion in the opposite direction partly owes to their cultural dissimilarities. However, it also indicates that Indians, after living very closely in the initial economic establishment decades, have started separating spatially from each other by religion. The Sikhs have covered more distance than the Hindus, on the way of separation as well as dispersion.

4.2.3 Change in patterns of distribution by origin region

If we analyse the change in the group by origin region we can see from Table 14 that change was high in both the groups during 1971-81. It was 1165 in the Punjab group and 1122 in the Gujarat group. However, the growth in the Punjab region was more than the growth in the Sikhs and in the other group less than the Hindus. This is because of the definition of the origin region groups (Ram 1983). Though the third origin region group - other areas - has also experienced an increase in its number, it is very small (4). Thus the analysis here is confined only to the first two groups.

Bradford Moor recorded a highest increase in the Punjab region group (466) followed by Bolton (218) and Great Horton (129). In University and Bowling the group numbers decreased by 39 and 6 respectively. Elsewhere group population increased from low to moderate (< 80) over the decade. In the Gujarat region group the maximum growth was recorded in University ward (407) while it is 398 in Great Horton. Elsewhere it varies from 60 in Little Horton to 1 in Toller. However, nowhere in Bradford did the Gujarat region group record a decline in their numbers. Thus, it has been observed that the persons from the Punjab region have recorded a high growth in Bradford Moor and Bolton while the growth was moderate in Little Horton, Odsal and Toller. A decline was recorded in University and Bowling wards over the decade. In contrast, the Gujarat group recorded growth all over Bradford which varies from moderate in Little Horton to high in Great Horton and University wards. Thus it not only indicates the origin regional diversity in the spatial distribution and variation in distribution but also makes it very clear that persons from the Punjab region are more spatially distributed in the peripheral wards than the Gujarati group. Besides, the Gujarat region group is more concentrated in the south western part of inner Bradford while the other group has migrated to the eastern and the northern Bradford. A fair number of the group persons have moved to south-eastern part of inner Bradford over the last ten years. However, University,

Table 14 Change in the Indian electors by their religion and origin region 1971-81.

| WARDS | BY RELIGION | | | | | | | BY ORIGIN REGION | | | TOTAL |
	SIKH	H PB	I N GT	D OA	U TOT	MUS	CHR	PUNJAB REGION	GUJARAT REGION	OTHER AREAS	ALL INDIAN
1 Bolton	204	14	13	–	27	-2	–	218	11	–	229
2 Bowling	-29	23	15	-1	37	–	–	-6	15	-1	8
3 Bradford Moor	387	79	17	–	96	8	12	466	25	12	503
4 Clayton	11	2	29	4	35	–	–	13	29	4	46
5 Eccleshill	5	6	21	–	27	–	–	11	21	–	32
6 Great Horton	112	17	398	–	415	–	–	129	398	–	527
7 Heaton	2	35	16	2	53	7	–	37	23	2	62
8 Little Horton	83	-16	63	-9	38	-3	-1	67	60	-10	117
9 Odsal	90	-22	26	–	4	8	-1	68	34	-1	101
10 Queensbury	2	–	25	–	25	–	–	2	25	–	27
11 Shipley West	42	-3	1	-1	-3	–	–	39	1	-1	39
12 Toller	65	11	-1	1	11	2	–	76	1	1	78
13 Tong	16	–	29	–	29	–	–	16	29	–	45
14 Undercliffe	32	-3	19	–	16	-14	–	29	5	–	34
15 University	-45	6	354	-4	356	53	–	-39	407	-4	364
16 Wibsey	12	1	29	2	32	–	–	13	29	2	44
17 Wyke	23	3	9	–	12	–	–	26	9	–	35
Bradford	1012	153	1063	-6	1210	59	10	1165	1122	4	2291

Note: PB = Punjab region   GT = Gujarat region
      OA = Other areas   TOT = Total

Bowling and Little Horton have been the main wards of their out-migration.

A cross classification of Table 14 as well as Sections 4.2.3 and 4.2.2
show that Bradford Moor recorded a gain in the Punjabi group which is more
than the Sikhs (by 79). By definition they are Punjabi Hindus which is
confirmed by Table 14. Like other groups Punjabi Hindus also migrated from
Little Horton, Odsal and other central wards and settled in the outer eastern
and northern wards. In addition to Bradford Moor, Heaton, Toller and Bolton
are other wards where their number increased substantially in 1971-81 period.
Bolton is the new ward for Punjabi Hindus as well as Sikhs who settled there
only after 1971. New, spacious and semi-detached houses are one of the main
attractions for the new entrants. In the Muslims, on the other hand, a high
growth (53) was recorded in University ward and a decline (14) in Undercliffe
ward. The growth in the Muslims in the University and other southern wards
shows that they are concentrating in the Gujarati concentration wards which
are the out-migration wards for the Punjabi group. Thus it not only verifies
Ram's origin region definitions (Ram 1983) but also indicates that on the whole
the spatial distribution has a very close correlation with the regional
classification which is stronger than the religious one. This is justified
because the spatial change in the distribution of Punjabi Hindus resembles
more closely that of the Punjabi Sikhs than that of the Gujarati Hindus. The
two main reasons for these strong regional ties are that the two Punjabi groups
understand each other's cultural background and that most of them speak a
common native language. The same is true for the Gujarati Hindus and the
Muslims.

5. RELATIONSHIP OF THE CENSUS AND THE REGISTER DATA

5.1 Problems of the comparison

As will be explained in the beginning of Section 5.2 the definitions used in the Census and the Register are different. In addition, they are recorded at points in time which are different by little more than 7 months in 1981. Thus, their comparison is not free from problems. Some of the problems are described below.

5.1.1 Problems of the comparison at one point in time

As pointed out above Census information is recorded at 5/6 March 1981 while qualifying date for the Register information was 10 October 1981. Thus figures are not comparable even if we assume that all adults in the Register are equal to all born in India in the Census. The second problem is that the assumption is also not correct. All born in India are not adults and all Indian adults are not born in India. There are Raj Indian born as well as Indians born in India in and after 1965. This 'after 1965 born' group is included in the Census but is not covered by the Register. On the other hand Indians born out of India and mostly in E.African countries are included in the Register but not in the Census. However, they are counted under a separate head 'persons born in E.African countries' but they are not all of Indian origin. To decide to include them in the comparison is another problem. If, as in Section 5.2 they are included they add much more than the actual numbers, but if they are excluded the comparison lacks something on the Census side. Besides, Raj Indian born group included in the Census by definition, which is fair in numbers but not recorded in the Register as Indians, is another problem. Thus, the two sets of the information are not identical for the precise comparison.

If we explore the possibility of such comparison for 1971 the differences are wide. Persons born in India are greater in number than the adult Indians (or electors). Comparatively, the number of Indian electors in the Register were not numerous in 1971 because the majority of the young Indians who arrived here during the mid or late sixties were not eligible to qualify as electors on age grounds. In addition, substantial under-registration is another reason for their low number in the 1971 Register.

The comparison will not be possible in 1991 (or at further points in time). By 1991 large numbers of Indians born in this country to parents born in India will have become electors, while the numbers recorded as born in India (such at in SAS Table 4) will probably have decreased due to a surplus of deaths

over net in-migrants over the decade. Therefore in 1991 or at any further
point in time the counts of Indians on the Register of Electors is likely
to exceed by a fair margin the numbers recorded in the Census as born in
India (if a table such as SAS Table 4 is produced again). Thus, it is just
a matter of coincidence in the history of Indian immigrants in this country
that the Census and the Register information are comparable in 1981.

5.2 Comparison of the Register data and the Census data

The Census records persons born in India in Table 4 (SAS 1981) and
electors are the persons having 16 years and 8 months of their age on the
qualifying date (Appendix 1, Ram 1983). Through the history of immigration
into this country it seems that on the whole average numbers in both the
groups should be nearly the same because most of the family re-unification
process had completed by 1970 and the majority of the Indian born active
migrants left the home country in the early 1960s. Thus, it can be agreed
upon that most of the immigrants are born before 1965, the youngest birth
year for an elector to qualify in 1981.

Now the question arises: were all the 1981 electors born in India?
The answer is most probably no. There are some eligible electors in 1981
who belong to the Indian community but not actually born in India. On the
other hand all the Indians born in the Census are not Indians. There are some
Raj Indians born in the counts. Thus there is a little addition to both
the groups (see Figure 30) and therefore on the average both are comparable,
theoretically. However, practically the number of 'Raj Indian born' is more
than the persons born before 1965 in the rest of the world (World minus India),
because the earlier have the decreasing tendency (maximum to minimum in higher
age group) and the latter have the increasting tendency (minimum or zero to
maximum in the younger age group) depending upon their histories respectively
in India and out of India. Therefore, theoretically Census counts should be
more than the Register counts. This fact is confirmed by Figures 27, 28 and
29. Thus their comparability can be measured by the linear regression equation:

$$y = a + bx$$

where a is the value of intercept along y-axis of the line having slope b
(Klecka, Nie and Hull : 1975 : 84).

If we exclude the persons born in East Africa from the Census count the
slope comes to be 0.9. The scattergram (Figure 27) indicates that the Register
numbers are higher than the Census one. In contrast if we add the persons born
in E.Africa into the Census counts the slope of the line showing the relationship

Figure 27. Scattergram for Indians in the Register vs persons born in
India, Bradford M.D. 1981

WARDS

1. Baildon	16. Keighley West
2. Bingley	17. Little Horton
3. Bingley Rural	18. Odsal
4. Bolton	19. Queensbury
5. Bowling	20. Rombalds
6. Bradford Moor	21. Shipley East
7. Clayton	22. Shipley West
8. Craven	23. Thornton
9. Eccleshill	24. Toller
10. Great Horton	25. Tong
11. Heaton	26. Undercliffe
12. Idel	27. University
13. Ilkley	28. Wibsey
14. Keighley North	29. Worth Valley
15. Keighley South	30. Wyke

Figure 28. Scattergram for Indians in the Register vs persons born in India and E.Africa, Bradford M.D. 1981

WARDS

1. Baildon
2. Bingley
3. Bingley Rural
4. Bolton
5. Bowling
6. Bradford Moor
7. Clayton
8. Craven
9. Eccleshill
10. Great Horton
11. Heaton
12. Idel
13. Ilkley
14. Keighley North
15. Keighley South
16. Keighley West
17. Little Horton
18. Odsal
19. Queensbury
20. Rombalds
21. Shipley East
22. Shipley West
23. Thornton
24. Toller
25. Tong
26. Undercliffe
27. University
28. Wibsey
29. Worth Valley
30. Wyke

Figure 29. Scattergram for Other Asians, Bradford M.D. 1981

Figure 29. Scattergram for Other Asians, Bradford M.D. 1981

('00)

54

WARDS

1. Baildon
2. Bingley
3. Bingley Rural
4. Bolton
5. Bowling
6. Bradford Moor
7. Clayton
8. Craven
9. Eccleshill
10. Great Horton
11. Heaton
12. Idel
13. Ilkley
14. Keighley North
15. Keighley South

16. Keighley West
17. Little Horton
18. Odsal
19. Queensbury
20. Rombalds
21. Shipley East
22. Shipley West
23. Thornton
24. Toller
25. Tong
26. Undercliffe
27. University
28. Wibsey
29. Worth Valley
30. Wyke

Line of Regression

Equality Line

Census

inset

Register

- 74 -

Figure 30. Constituent groups of the Indian community in Great Britain, 1981

Born in India(Census)

Indians born in
East Africa,
<16 years and
8 months

W
H
I
T
E

"Raj
born"

Born in India,
Indian names
and electors
>16 years and
8 months

Indian community
in Great Britain

Indians born
in U.K.,
<16 years and
8 months

Indian electors (Register)

Born in India, Indian names <16 years and 8 months

Born outside India, Indian names >16 years and 8 months
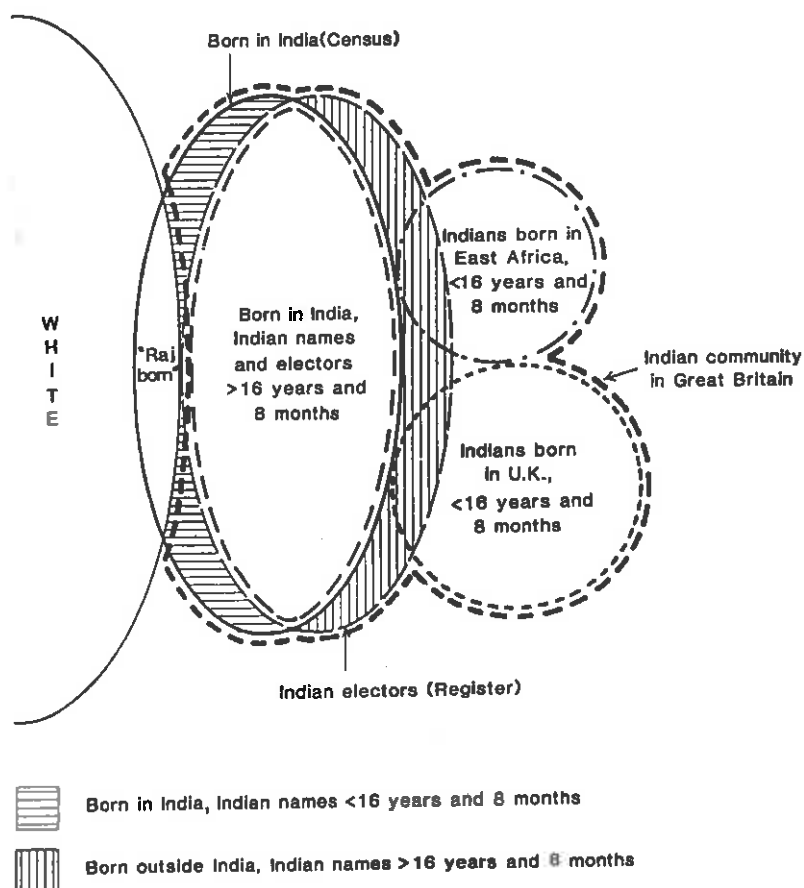
between the Census and the Register information becomes 1.1. It means, and Figure 28 shows, that Census numbers are higher than the Register numbers. If we take the average (slope) of both the inclusion and exclusion cases, it comes to be 1.0 which means that both the counts on an average are comparable for 1981. Thus the average and ideal situation would include all E.African born persons in the Census counts minus the 'Raj Indian born' which nearly equals the Register counts where they are respectively included and excluded automatically.

If we draw scattergram for Other Asians the slope comes to be 1.1 (Figure 29). However, the situation is different from the case of Indians. Though it needs a careful analysis before arriving at any solid conclusion, but under-registration in the Register and late (recent) start of their family re-unification process are possible reasons to raise the slope value which otherwise expected to be low because of none or few Raj Pakistan born, due to historical reasons.

A comparison of Figure 27 with Figure 28 shows that positions of Bolton, Great Horton, Bradford Moor and University wards have changed considerably by including the persons born in E.Africa into the Census counts for the comparison. It means that majority of the E.African group lives in these wards which also have high group population. This fact becomes clear also from Table 15 which explains the spatial variation of the proportion of the Census data (including E.African born) to the Register data over the Bradford M.D. wards. Though it is difficult to verify, it seems to be true, that most of Indian born non-Indians live in the first fifteen wards where the ratio is more than the average (1.3) for Bradford. Bingley and Ilkley are other wards where all the Indian-born seem to be Raj Indian born or white Indians. Similar conclusions were arrived at by Rees and Birkin (1983 : 7) in their study of ethnic groups in Bradford. The ratio is less than the average in the remaining 13 wards which is associated with the higher proportion of Indians among the E.African born and the majority of E.African born group living in wards having higher proportion of Indians. Thus, Bradford Moor, University and Great Horton are the wards where ratio is the lowest.

In the case of Other Asians the average ratio is 1.1 less than the Indians. Very small number of no Raj born Pakistani or Bangladeshi lowered the number of Census counts for Other Asians. In contrast some non-Pakistani-Bangladeshi Muslim names in the Register has increased the number in the denominator. Bolton, Wyke, Wibsey, Shipley East and Craven are the wards where the Register counts are more than the Census counts. Except Worth Valley, where no Other Asian was recorded, elsewhere the Census counts are more than the Register numbers.

No	Ward	Ind. in Born Ind.	in E.Af	Cens (C) Totl	Ind. in Reg. (R)	(C/R)	Ward	OA in Born Pak.	in Ban.	Cens (C) Totl	OA in Reg. (R)	(C/R)
1	Keighley N	29	3	32	2	14.50	Baildon	15	1	16	4	4.00
2	Baildon	22	13	35	2	11.00	Bingley	3	3	6	3	2.00
3	Worth Vall	6	8	14	1	6.00	Bingley Ru	10	0	10	5	2.00
4	Rombalds	33	5	38	7	4.71	Tong	35	0	35	22	1.59
5	Keighley W	40	14	54	10	4.00	Eccleshill	28	0	28	18	1.55
6	Bingley	18	9	27	5	3.60	Idle	12	0	12	8	1.50
7	Idle	22	11	33	11	2.00	Keighley W	491	5	496	339	1.46
8	Craven	19	19	38	11	1.73	Keighley S	190	191	381	264	1.44
9	Keighley S	17	19	36	10	1.70	Queensbury	13	1	14	10	1.40
10	Heaton	276	89	365	163	1.69	Keighley N	1186	208	1394	1087	1.28
11	Queensbury	45	16	61	27	1.67	Ilkley	7	3	10	8	1.25
12	Eccleshill	51	19	70	34	1.50	Shipley W	447	10	457	370	1.24
13	Shipley W	137	33	170	93	1.47	Undercliff	808	391	1199	1023	1.17
14	Odsal	241	33	274	165	1.46	Bradford M	2049	67	2116	1817	1.16
15	Thornton	21	16	37	15	1.40	Toller	2150	34	2184	1905	1.15
16	Shipley E	32	12	44	25	1.28	Heaton	1423	9	1432	1259	1.14
17	Clayton	59	34	93	46	1.28	Little Hor	1557	139	1696	1495	1.13
18	Wyke	42	7	49	35	1.20	University	5111	138	5249	4820	1.09
19	Toller	350	84	434	297	1.18	Bowling	1238	95	1333	1245	1.07
20	Bowling	521	153	674	455	1.14	Thornton	17	0	17	16	1.06
21	Undercliff	258	42	300	232	1.11	Clayton	52	1	53	52	1.02
22	Wibsey	46	12	58	44	1.05	Rombalds	5	0	5	5	1.00
23	Bolton	241	40	281	236	1.02	Great Hort	374	3	377	382	0.99
24	Little hor	608	154	762	611	1.00	Odsal	330	0	330	335	0.99
25	Bradford M	1175	142	1317	1254	0.94	Wyke	17	0	17	21	0.81
26	Tong	44	7	51	49	0.90	Bolton	76	5	81	102	0.79
27	University	1554	513	2067	1792	0.87	Shipley E	9	0	9	14	0.64
28	Great Hort	422	196	618	549	0.77	Wibsey	13	1	14	22	0.64
29	Bingley Ru	21	12	33	0	–	Craven	0	2	2	6	0.33
30	Ilkley	29	18	47	0	–	Worth Vall	1	0	1	0	–
	BRADFORD	6379	1733	8112	6181	1.31	BRADFORD	17667	1307	18974	16657	1.14

Ind=Indian, OA=Other Asian, Pak=Pakistan, Ban=Bangladesh, E.Af=East Africa.

Ineligibility, legally or by age because of the late arrival of their families, is the only possible reason for the low Register counts in these wards. Besides, very few E.African Other Asians, owing to the historical reasons, in the Census, are counter-balanced by the under-representation in the Pakistani group. Thus, it does not affect the ratio.

5.3 Contribution of the two data sources

All the related Census tables provide different types of information. Table 4 (OPCS 1982a) provides the information by sex while an aggregate idea of the age structure can be gathered from Table 37 (OPCS 1982a). The information is further available down to the EDs in Table 4 but not in Table 37. However, using the two tables with Census Tables 10 and 11 a further estimation of the data for the group by age and sex can also be made.

The Register information on the other hand is available by individual, household and street. It can be used to identify the community excluding 'Raj Indian born' and including adults born outside India. The information can also be used to divide the community by sex at any desired scale. In addition, the biggest advantage of the Register information is that the community can be classified into religious as well as origin region groups by a careful analysis of the Register. Such classification is possible only from the Register information.

By using both sources of information we can obtain a better picture of the spatial distribution, socio-cultural composition and age-sex make up of the Indian community in Britain. This picture can help us understand more thoroughly the needs of and problems faced by the community.

A comparison of the two sets of information is also useful in many ways. For instance, the comparison can give us a clue regarding the Raj born Indians and their distribution in the wards (see Table 15). Similarly a rough estimate of the spatial distribution of persons born in E.Africa can also be made by comparing the Census and the Register information. The comparison for Other Asians leads us to identify the wards where Muslims from other than Pakistan-Bangladesh are living.

6. CONCLUSIONS

Review of the literature indicates that although the group has been
studied by a fair number of researchers under the umbrella of immigrants,
persons from (or born in) NCWP or Asians, Indians as individuals as well as
a whole group have remained untouched in spatial and temporal studies.
Among the cities where Indians are living, London and Birmingham have been in
the main foci of researchers.   The group in Bradford has remained out of the
focus for spatial as well as temporal studies.

Another important observation from the review was that Census data are
not an accurate, as well as adequate, source of information for the study of
ethnic groups.   It should, therefore, not only be handled with great care
but also be supplemented by other sources of information such as the Register
of electors. From the comparison, in the analysis of the Register information
and the Census data, it is observed that by their respective definitions, along
with some discounts of inclusion and exclusion, both are comparable in 1981.
In addition the analysis also indicates that both are complementary to each
other.

According to the 1981 Census, persons born in India make up only 1.4% of
the total population of Bradford M.D.   However, the distribution is neither a
clustered nor a scattered one.   A few wards contain many Indians and many
wards contain moderate numbers.   Within 'Indian Bradford' the highest numbers
of Indians are found in University and Bradford Moor wards, which accommodate
more than 42% of the group population living in Bradford M.D.   However, in
neither ward does the proportion of the population which is Indian exceed 9%.
The other wards each having a fair number of members of the group are Little
Horton, Great Horton, Bowling, Toller, Undercliffe and Bolton, encircling the
town centre.   Their numbers decrease away from the city centre and are at a
minimum in the rural and peripheral wards.   Compared with 1971, the 1981 map
shows a set of ward populations with relatively normal sex ratios.

The Register analysis shows that half of the group population in Bradford
M.D. in 1981 was the Hindus while another 47% were the Sikhs.   The Muslims and
the Christians together constitute the remaining three percent.   Although
Sikhs are found in all the wards of Indian Bradford, they are concentrated in
the eastern and the north-eastern wards of Bradford Moor, Bowling, Undercliffe
and Bolton.   Hindus are concentrated, by way of contrast, in central wards of Bradford
in University and Great Horton wards.   Within the Hindus, the Gujarati Hindus
are living in the southern wards while the Punjab Hindus are distributed in the
northern and other intermediate wards of Bradford.   However, peripheral to the

two foci of the principal religious communities are wards containing
mixtures of the two religious groups, Little Horton, Odsal, Toller and
Heaton.

If we look at the Census data, it shows that the group population
increased by 4% of its population in 1971 during 1971-81 in Bradford M.D.
However, corresponding to the 15% increase in females, male population decreased
by 4.5% of their respective numbers in 1971, indicating the female in-migration
and male out-migration or decline by deaths over the decade. Both the
possibilities are expected to be from the Raj Indian born group.

The Register data shows that the Sikh population increased by 54.6%
while the increase was 65% in Hindus during the decade of their respective
numbers in 1971. The corresponding increase in the Muslims and the Christians
was 59 and 10 respectively in Bradford M.D. By origin region the increase was
34% in the Punjab Region group and 74.6% in the Gujarat Region group. The main
reason for the high increase is that a fair number of Indians attained the
qualifying age for an elector in 1981. However, the immigration of Indians
from E.Africa and immigration of families of the earlier settled immigrants in
this country are the other reasons for the increase during the last decade.

A fair degree of local migration is observed in the group population
during the decade which was a part of the process of readjustment of the earlier
immigrants and a stage in the process of settlement after the immigration.
The group members moved from the central wards to the next outer or peripheral
wards. The analysis of the Register shows that local migration was more
important for the Sikhs than the Hindus. The Sikhs moved to the eastern and
the north-eastern wards while the Hindu migration was south and western-bound
and comparatively of less magnitude.

Thus, it can be concluded that group population did not increase by much
during the decade but the group remained busy in the local housing market in
order to find and obtain good and spacious accommodation. The migration was
more in the east and north-east direction from the central wards as well as in
the Sikhs. Therefore, the group has undergone the process of diffusion during
the decade. As a result, according to 1981 information, residential
distribution of the group has become a dispersed one which is not as different
from the rest of the population as it had been earlier in 1971.

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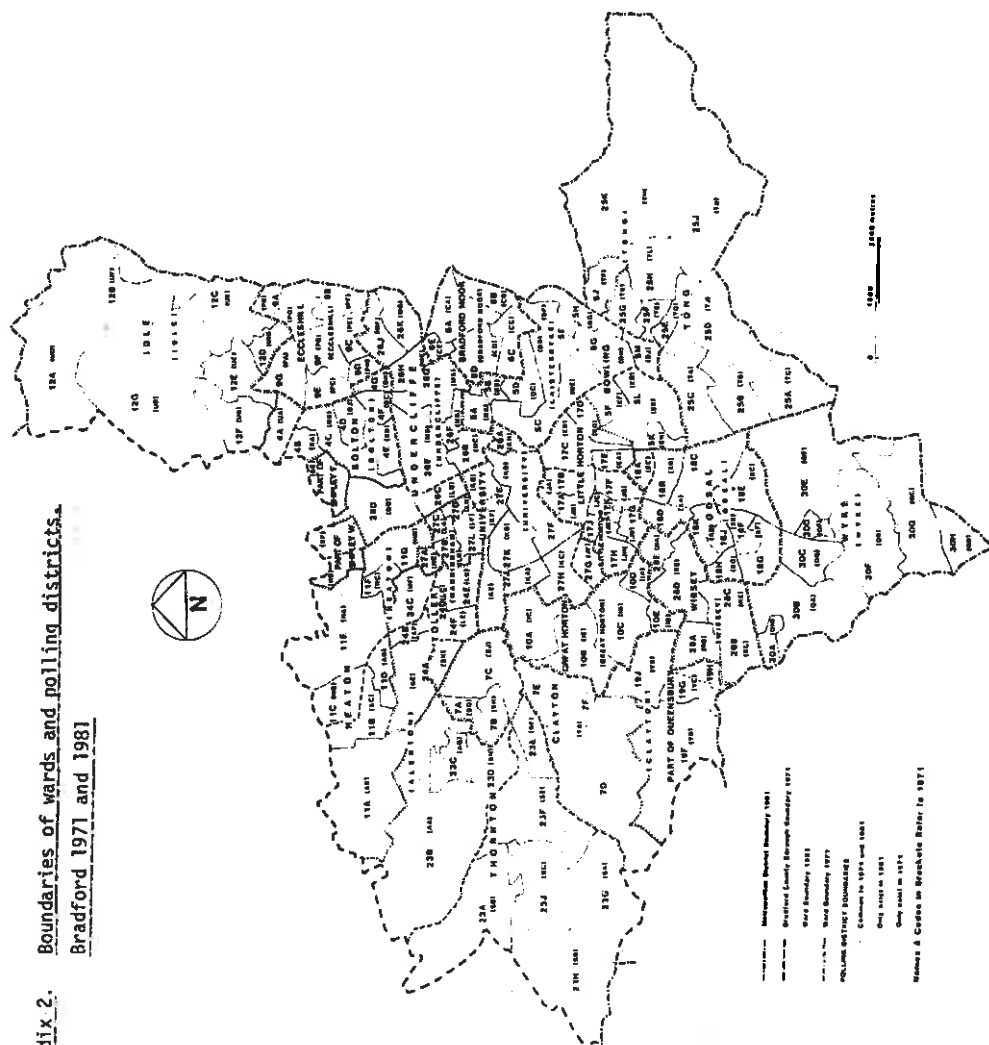HMSO = Her Majesty's Stationary Office

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Appendix 3.   Boundaries of wards
and polling districts
Indian Bradford 1971
and 1981

Appendix 4. University and Bradford Moor wards by E.Ds, 1981

BRADFORD MOOR WARD

UNIVERSITY WARD

INDIAN BRADFORD

Note: BD15 is missing from the series
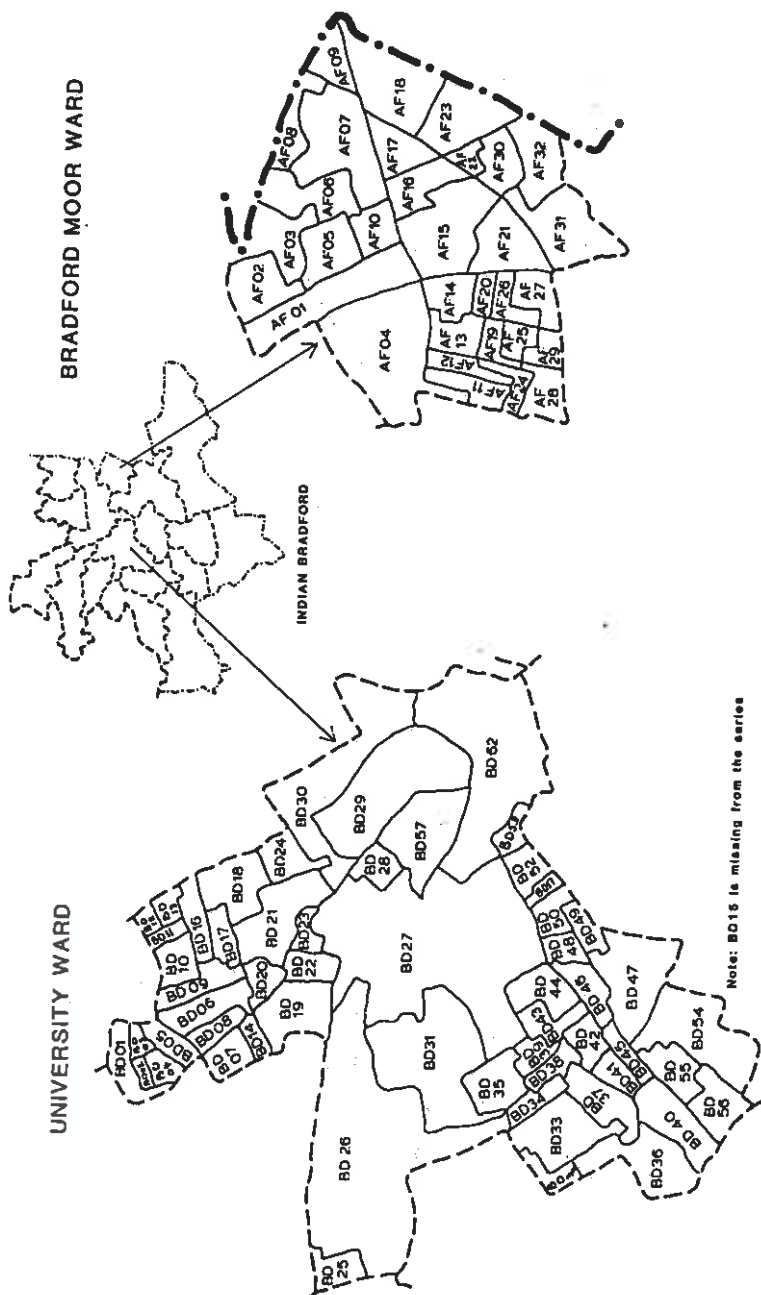
Aims of the survey

    While framing the hypothesis in general and analysing the spatial
distribution and trends of the persons born in India in Bradford, it was felt
that knowledge of the types of houses they live in was needed.   In addition,
to strengthen any statement made on the basis of one's personal knowledge or
understanding it is necessary that the statement should be supported by the
factual evidence.   In particular, in Bradford the change in the distribution
of the group during 1971-81 raised questions about why people move to the
outer wards and why some people are still living in the inner wards who might
have been expected to move from there along with the other group members.
For instance, most of the Sikhs migrated from the central and the southern
wards to Bradford Moor, Great Horton, Bolton and other outer wards while a fair
number of the Sikhs are still living in Odsal and Little Horton.   The space in
and type of the houses they need seem to be one of the few main reasons for the
move and the stay respectively.   Most of the Sikhs (as the author has come to
know during the survey) are living in better semi-detached and detached houses
in Odsal and Little Horton.   That is why they did not move from there, along
with other Sikhs or Indians.   The new semi-detached and detached houses in
Bolton (see Table 5A) provided the accommodation for many Indians in general
and the Sikhs in particular which justifies the hypothesis.   Thus, based on
the facts in the Table an overall observation can be made that the Indians
have been in the process of resettlement during the last decade leaving older
and smaller (back-to-back and through-terraced) houses and occupying newer
and bigger (respectively through-terraced and semi-detached) ones.   However,
there are a few households in the extreme types of houses (back-to-back and
detached) but the majority live in the two central (through-terraced and semi-
detached) types.   Although the pendulum is now inbetween through-terraced
and semi-detached houses its tendency to move with the time is towards the semi-
detached and detached houses in the future.

Sample size and the area

    Since the majority of the Indian population live in the inner wards or
in Indian Bradford, no formal set of rules have been followed to limit the
sample area.   The area has only been considered in terms of the number of persons

born in India in the wards.   The wards with 50 or more houses occupied by
the persons born in India are included in the sample and numbers of such
wards come to be 10 ($\frac{1}{3}$rd of the total wards in Bradford M.D. 1981).

Depending upon the importance of the aspect and the time consideration,
33% or more of the houses occupied by the group in each of the (ten) wards
were sampled.   The houses are classified into four broad types (see table).
The whole of the survey was carried out by the author by looking at the
house from outside.   Although most of the survey spreads over to the high
concentration streets, the streets/houses from each corner/part of the ward
where the Indians live were intentionally included in the survey.

Table 5A Types of houses Indians occupied in Bradford.

(Sample size 33% or more)

Ward	All houses occupied by Indians	Total houses in the sample	HOUSE TYPES							
			Back to back		Through-terraced		Semi-detached		Detached	
			No.	%	No.	%	No.	%	No.	%
1 Baildon	4	–								
2 Bingley	6	–								
3 Bingley Rural	–	–								
4 Bolton	94	54	0	–	0	–	51	94.4	3	5.6
5 Bowling	161	58	9	15.5	15	25.9	34	58.6	0	–
6 Bradford Moor	425	184	11	6.0	119	64.7	46	25.0	8	4.3
7 Clayton	16	–								
8 Craven	5	–								
9 Eccleshill	14	–								
10 Great Horton	206	88	0	–	81	92.0	7	8.0	0	–
11 Heaton	62	22	0	–	9	40.9	7	31.8	6	27.3
12 Idle	5	–								
13 Ilkley	0	–								
14 Keighley N	1	–								
15 Keighley S	4	–								
16 Keighley W	3	–								
17 Little Horton	218	78	5	6.4	58	74.4	15	19.2	0	–
18 Odsal	60	33	0	–	17	51.5	16	48.5	0	–
19 Queensbury	9	–								
20 Rombalds	4	–								
21 Shipley East	10	–								
22 Shipley West	26	–								
23 Thornton	7	–								
24 Toller	99	35	1	2.9	30	85.7	4	11.4	0	–
25 Tong	17	–								
26 Undercliffe	72	25	0	–	12	48.0	13	52.0	0	–
27 University	571	202	2	1.0	190	94.1	10	4.9	0	–
28 Wibsey	17	–								
29 Worth Valley	1	–								
30 Wyke	13	–								
BRADFORD	2130	779	28	3.6	531	68.2	203	26.0	17	2.2