CHAPTER - I

INTRODUCTION

The dynamic character of sciences, whether natural or social, is confirmed by their capacity to explore new frontiers, to transcend existing disciplinary boundaries and the ability to set newer paradigms with a view to ensuring a comprehensive understanding of nature and man. The ever-increasing tendency to replace the study of 'physical' by a new emphasis on the 'human' aspect, in the discipline of Geography represents the growth of such a quest for comprehensive understanding. The great paradigm-shift in the discipline—from a 'geocentric' to an 'anthropocentric' view of Geography—is reflective of the increasing emphasis on a greater understanding of the interconnectedness between spatial distribution pattern of earth's physical elements and human inhabitation and progress. The study of Population Geography which has effectively begun only with the presidential address to the Association of American Geographers in 1953 by G.T. Trewartha,\(^1\) assumes special significance in this context. The 'anthropocentric' approach that facilitates the emergence of Population Geography, also opens up a new horizon in the study of geography. It incorporates demographic studies into the realm of Geography, absorbs the perspective of demography and enriches population studies with the geographer's perspective.

THE FRAMEWORK OF DEMOGRAPHY

The term Demography, a derivative of Greek words demos (people) and graphy (to draw or to write), was first used by Acille Guillard in 1855, though Thomas R. Malthus designates John Grant, an Englishman, with the title 'father of demography'. Guillard in his *Elements de Statistique Humaine on Demographic Comparee* regarded demography as the mathematical knowledge of the general movements of population including its physical, social intellectual and moral conditions.
The scope and content of demography, however, has become, at present, a subject of contradictory interpretations. The first of them restricts the scope of demography to the study of the components, i.e. fertility, mortality and migration of population change. Hauser and Duncan, from this viewpoint, defines demography as 'the study of the size, territorial distribution and composition of population and changes therein. They, however, also includes the element of 'quality', i.e., sex, social, status, intelligence etc. along with fertility, mortality and migration, (in their discussion on the 'composition' of population.

The other school, to the contrary, defines the scope and subject-matter of demography from a broader perspective. It extends the domain of demography to the sphere of population studies which encompasses both demographic analysis and relationships between population changes and other variables viz. social, economical, political etc. A number of scholars like Spengler, Bouge and Barckley etc. uphold this broader or extended view of demography. From this viewpoint, demography is the statistical study of size, composition, spatial distribution of human population, and changes in these aspects and causes of such changes, through the operation of five processes of fertility, mortality, marriage, migration and social mobility. This perspective makes demography both an abstract science and an applied technology. It is this broader interpretation of demography that has been used in the scheme of present dissertation.

DEMOGRAPHY, GEOGRAPHY AND POPULATION GEOGRAPHY

The content of geography has also underwent a metamorphosis in recent times. The primary concern of Geography, earlier, was confined to
to the study of spatial contents of space, physical and biotic features of earth, routes, towns, settlements and the relationship between various points of earth's surface, with the increasing importance of human geography, cultural features are being analysed in relation to space. Geographers try to identify and establish a casual relationship between cultural features on the one hand and physical and biotic environment on the other, no longer they are confined to the 'landscape school of Geography' anymore. Some population geographers have attempted to co-relate ethnic distribution of population, migration, health, age-sex ratios to the environmental features in their studies on birth rates, death-rates and migration. Such efforts establish a large area of convergence between geography and the broader view of demography, and this should be perceived as a result of Population Geography which essentially is a mixed mode of thought. It combines the subject of demography with the perspective of Geography and establishes a symbiotic relations between the two.

The discipline of Population Geography has been described by G.T. Trewartha in 1953 as the study and 'understanding of regional differences in the earth's covering of peoples'. Generally speaking, Population Geography connotes the study of the process in which geographic character of places is formed by, and reacts upon a set of population phenomena that vary within it through space and time as they follow their own behavioural laws. Population Geography also focusses on the pattern of interaction between population and non-demographic phenomena over space and time.

A more systematic definition of the field has been offered by Zelinsky a U.S. Geographer who defines Population Geography as 'the science that deals with the ways in which the geographic character of places is formed by, and in turn reacts upon, a set of population phenomena that vary within
it through both space and time as they follow their own behavioural laws, interacting one with another and with numerous non-demographic phenomena. Zelinsky identifies three types of concerns\(^3\) - the simple description of the location of population numbers and characteristics (where), the explanation of the spatial configurations of these numbers and characteristics (why?), and the geographic analysis of population phenomena (the interrelations among areal differences in population with those in all or certain other elements within the geographic study area).

Madame Beaujeu-Garnier, considered the problem of the population geographer as one of describing the demographic facts in their present environmental context, studying also causes, their original characteristics and possible consequences.

A British population geographer, Clarke has the similar view and according to him population geography deals with how spatial variations in the distribution, composition, migrations and growth of populations are related to spatial variations in the nature of places.

Population Geography, from Ackerman's viewpoint, extends to almost all spheres of the phenomena of population. It includes different population processes, various attributes and classification of population, spatial distribution variations in processes and distribution, changes in components and distribution pattern as well as covariant relations of cultural features with each other and with physical environment.

The study of Population Geography, therefore, attempts at a combination of both 'Geo' and 'Demos' in this sense, it is a mixed mode of thought that establishes a symbiotic relations between geography and demography.
creating large areas of convergence between the two. The content of Population Geography includes the study of areal differentiation of population, different population attributes in their distributional aspect, interlink between population and natural resources, population environment relationship etc. which constitute the subject-matter of demography as well. Further, Population Geography also concentrates on spatial dimension in the distribution, density, structure and composition, mobility, migration, growth and other demographic processes and facts. It investigates the pattern and order in the spatial distribution of demographic elements in relation to the environmental context. Even, ethnic and occupational distribution also receive attention. Discourses on the impact of geographic environment both physical and cultural, on demographic phenomena comprise another area of population Geography. Thus the demographic framework has become an imperative due to this convergence of Population Geography and demography. This convergence, in its turn, is the result of the quest for a comprehensive understanding of the twin phenomena of population and earth in their entirety. It is this comprehensive perspective which the present exercise adheres to.

PROBLEM

Unevenness rather than evenness is the keynote in the distribution of population. Irregular distribution of population is likewise, a more natural phenomena than a regular phenomena, in any part of the earth's surface. There is marked regional disparities in population distribution in West Bengal. The region on either sides of the river Hooghly are usually densely populated, where as those at the foothills of the Himalayas and along the eastern fringe of the Chhotanagpur plateau are sparsely populated.
To find out a rationale for this uneven distribution over the earth one has to analyse the major determinants of the size and distribution of population. The factors that effect the spatial aspects of population are as complex and varied as are the pattern of distribution. Three main classes of factors which affect collectively, may be recognised as - (i) Physical, (ii) Economical and (iii) Cultural.

Regional disparities in population distribution in the state are reflected by the variations of physical, economical and cultural processes like topography, industrialisation and urbanisation acting together. Any change in this set of processes involves a change in the pattern of population distribution. Favourable environment and better economic opportunities generally give rise to greater population clusters and therefore, higher population densities.

The gap in economic development between different regions of the state as it existed at the turn of the present century has narrowed to an appreciable extent especially after Independence. In other words, the lessening of regional disparities in economic development within the state has presumably lessened the regional disparities in population distribution.

Economic progress since the Independence of India in August 1947, the great exodus of minority groups from East Pakistan (Bangladesh) for the partition of West Bengal together with other social factors have set the region towards the path of population explosion. The welfare of West Bengal is greatly threatened by the outrageous size of population with its unabated growth trend. The past few decades recording phenomenal growth of
population, and there is a marked regional variation in population growth, therefore, social planners have to pay due attention to the population policy in this region for future welfare of all concerned.

Other population components like sex-ratio, age composition, manpower occupational structure, literacy level, religious and linguistic composition and marital status etc. involve deeper understanding of the population dynamics of the region.

Sex-ratio forms one of the most vital parameter in population studies. The knowledge of sex-ratio reveals the employment, consumption pattern, social needs and psychological characteristics of a community. In West Bengal sex-ratio is not balanced, but is in favour of male population. Important deviations from a balanced sex-ratio originate from various social (occupation and status of women) and demographic (migration and differential death and birth amongst the two sexes) factors. Though the spatial and temporal variations of sex ratio help us in analysing a regional landscape. It is needless to say that to use the sex-ratio alone without additional information of age structure, it is very difficult to explain fully the social and economical condition of any community. The age structure of West Bengal's population has a characteristic flat base and slender top. This type of the age pyramid suggests a stable population with both age specific and intrinsic birth rate. Besides this stability, the other demographic implication of this age structure is an assured future growth of population. Moreover, this large number of infantile population is a great economic burden for West Bengal.
It is not enough simply to explain how and why these population characteristics are so. Their reciprocal action upon other geographic phenomena (i.e. resources) must also be explored to achieve a complete geographic analysis.

The practice of uniform norms has been characteristics of our population planning in all sectors. The time has come to broke this syndrome by dividing the state into number of Population Resource Regions or Demographic zones, so as to tailor population policy to the specific requirements of each of the zones.

Hence the present study is an enquiry into the spatial variation of different population attributes and resources, where the ultimate goal would be the formulation of regions on the basis of population and resource for future planning and formulation of policy.

THE STUDY AREA

The State of West Bengal comprises the territorial unit for the purposes of present study. The study area belongs to the category of one of the smaller states of India, yet offers widest spatial disparity with regards to physical, economic and demographic conditions. The state shares its boundaries with a number of foreign countries, viz. Bhutan, Nepal and Bangladesh and with four Indian states. The area is situated between 21°38'N and 27°10'N latitudes and extends from 85°50'E to 89°50'E longitudes. The tract of land stretches from the foot of picturesque outer Himalayas in the north to the Bay of Bengal in the South, resulting unique geographical variations.
touches the frontiers of Sikkim and Bhutan in the North and bounded by Assam and Bangladesh in the East, Nepal and Bihar in the West and Orissa shares its South-West Borderline (Fig.1.1). The location of the state truly makes it the strategic 'heartland' of Eastern India. At present West Bengal comprises of 18 administrative districts and 342 Police Stations (Fig. 1.2) covering an area of 88752 sq.km.

As the centre of eastern India, the state is well connected with all the major regions and centres of the country with an elaborate communication network radiating out of the state. As the hinterland of a spectacular industrial conurbation- one of the heaviest concentrations in India - West Bengal commands an extensive agricultural and industrial milieu, extending beyond its frontiers and providing entrepot facilities to an even wider area.

The existence of an extensive industrial belt - the third largest in the country - in its southern part and relative affluence offers a constant lure to illegal migrants from foreign countries, across the border as well as from the poverty-striken Gangetic Bihar and Orissa. It has no less impact on the population of the State. More significant event of the recent past, from the viewpoint of demography, was partition of India that caused unprecedented immigration of refugees from erstwhile East Pakistan. The multifaceted ramifications of partition include loss of fertile agricultural tracts, loss of fisheries, population-food supply imbalances, disruption of communications between districts of northern and southern parts of the State, and abnormal inflation of population. In short, the partition has radically altered the size and composition of the population, and has created unsurmountable problems resulting population resource imbalances, restoration of which has become a policy imperative for the state. Partition coupled with a high
Location Map

India

West Bengal Study Area

Fig. 1.1
WEST BENGAL
ADMINISTRATIVE MAP

Fig. 12
rate of growth makes the present population figure of the State:
679,82,732 as per 1991 census. West Bengal now occupies only 2.77% of
India's surface area but supports 8.06% of India's total population.

OVERVIEW OF LITERATURE

From the late 19th century a keen interest in population pheno-
mena had been shown by many geographers of the ecological school,
both determinists and possibilists, from Ratzel and Hettner to Vidal
de la Blache and Soree. But it is during the second half of the 20th
century that Population Geography has emerged and expanded. It was
variously examined and structured in a number of basic texts during
the period 1951-70 (Clarke, 1965, Zelinsky, 1966, Beaujeu Garnier,
Demko, Rosi and Schnell, 1970), since when the field has diffused internationaly and diversified thematically.

The work of Indians Chandna and Sidhu (1980) covers the spatial
pattern of population and relationship between population and resource
whereas British authors Woods (1979) and Jones (1981) have given emphasis
on fertility, mortality and population growth, along with a consideration
of population policies in Jones work and of models and population fore-
casting in the text of Woods. Recent works reflect the immense variety
of people, culture and countries as well as of approaches, attitudes
and policies to population phenomena.

James in 1954 has rightly stated that 'the irregularity of
the distribution of mankind over the earth and the differences from
place to place in the racial and societal character of the population are facts which underlie all studies in Social Science, including, those of Human Geography.

Even Vidal de la Blache in his 'Principles of Human Geography' clearly recognises population as forming a primary element of the extensive field. The entire emphasis is on distribution of numbers and associated density patterns though he has made no attempt on other geographical aspects of population. Where as Jean Bruhnes in his Volume, 'Human Geography' restricts the content of that field to the visible evidences of man's occupation and use of physical environment. The essential facts of Human Geography are the marks left by men upon the earth surface. Though he has given emphasis upon the unequal distributional pattern of people but has not dealt with their qualities. It was just after first world war, a research group directed by Isaiah Bowman, studied areal differentiation of Central European populations, though the main objective was to study the cultural differentiation (1921). In the same period Sten de Geer (1922) undertook a classic study of the distribution of population in Sweden, in which a very helpful technique for urban rural cartographic comparison was used for the first time. Aurouseau (1921, 1923) in France was examining the problems of describing the population distributions during the 1921.

Since the time of Jefferson and Aurouseau there has been a succession of geographical studies which analyse census and other statistical data to show areal differentiation. Some have sought refinements of method, giving more realistic presentation of distribution pattern (Wright, 1936, 1937). Perhaps most numerous have been straight forward interpretation of national or regional enumerations, which attempt to
provide a description of the most recently known static pattern (e.g. Fawcett, 1932, James 1938, Stevens 1946, Cumberland, 1953.)

A remarkable illuminating and extensive, work of Stanley Dodge in 1946 on the relation of population dynamics extending two and half centuries covering entire United States is really worth mentioning because others have considered limited period (Willatts and Newson, 1953,) or limited areas (Kollmorgen and Jenks, 1951-52).

May (1952) was the pioneer who had done, extensive studies of disease distribution, an example of collaborative efforts between geographers and other disciplines.

Besides Geographic studies describing ethnic distribution, (Calef and Nelson, 1956) health conditions, and age sex ratios (Franklin, 1958) also have been undertaken.

But after Trewartha's presidential address to American Association of Geographer in 1953, the subject has gained its popularity.

After 1954, with the work of Trewartha and Zelinskiy, has started giving more meaningful description of the population distribution and with the extension of distributional knowledge into the areas of under development economics, poorly developed government structure etc.

Distributional studies of other specific demographic attributes, such as migrations and their distributional consequences has attracted
a large number of geographers. Proudfoot's (1956) study of European refugee movement during and after the Second World War is worth mentioning work. Besides, Geographers have treated migration in terms of its mechanism and its correlation with environmental features.

Besides Ackerman's (1959) Population Resource regions, Zelinsky's (1971, 79) hypothesis of mobility transaction, Woods'(1979) models and theories in population studies, are some of the recent work of geographers.

Prior to independence sociological and regional aspects of population were studied, the main focus of population studies was on the question whether India was over populated or not. The subjects mainly studied were population and food supply and optimum population.

After independence, a number of important developments in the field of demography formed around 1951. A systematic and scholarly study by Kingsley Davis, 'The Population of India and Pakistan in 1951', stimulated interest among the scholars.

As population is growing at an alarming rate in India. Therefore, the general trend of growth of population in different parts of India has been analysed by many demographers such as S.L. Kayastha in 1968 has analysed the growth of population of Uttar Pradesh, M.K. Premi and R.P. Tyagi (1971) have taken India as a whole as their study area. S.N. Agarwala in 1967 made an attempt to analyse causes and consequences of population growth and further in 1972 he has analysed India's population problems and suggested some remedial measures. India's population problem which is an outcome of urbanisation and migration has been dealt in detail by C.B. Mamoria
in his book India's Population Problem. Problems and Policies of India's Population has also attracted S. Chandrasekhar (1967). The main problem of India's population is not only its quantity but also quality of population. Aspects of quality and control of India's population has been analysed by A. Mitra in 1978.


The population of India is growing at an alarming rate and therefore many demographers are really very much concerned with the population projection of total, rural and urban population for short and long term planning. The work of M.K. Premi and R.P. Tyagi is worth mentioning.

As growth of population depends on three variables fertility, mortality and migration. Sharma has worked on the relationship between fertility and mortality by using U.N. Model life tables. Fertility and family planning performances in India and search of a new strategy for family planning in India is the burning problem in India and has been dealt in detail by Ashish Bose and others.

The third component of population growth is migration the basic aim of the study of migration is to evolve policies for influencing population
distribution so as to ease local population pressure, reduce social and environmental effects of mal-distribution, encourage cultural diffusion and eliminate regional disparities. This type of work was done by Gosal (1961).

As International migration in India is insignificant, most of the work on migration deals with internal migration. A. Bose has made an similar attempt by using 1961 data. Others who have worked on rural urban migration are P. Dayal (1959), Agarwala, S.N. (1968), Shah, C.H. and Patel, B.V. (1979) and Sharma, A. (1979), pattern of internal migration in West Bengal have been studied by Betal H.R. and Mukherjee, J. (1984).

Sex ratio, marital status and family structure are some of the important aspect of population studies.

The typical sex-ratio of India and its implications has attracted large number of demographers. Desai, P.P. (1961) has studied the incidence of sex-disproportion in different segments of population in India during 1901-61.

India is a subcontinent with large variation in social, economic and cultural conditions. The state boundaries are mainly on linguistic basis, rendering them culturally homogeneous. This common culture has given them an impetus for social and economic development, but capabilities vary. Efforts are now being made to demarcate regions, which need not conform to state boundaries, by the socio-economic agricultural and economic development. They may be more meaningful for studying population changes and their characteristics. Large number of studies have been made in this directions, some are mentioned below.
A.K. Dutta and S. Devgun have identified the regions of religious concentration using factor analytical techniques. A.B. Mukherjee (1971) has identified the scheduled castes population and highlighted their poor economic condition whereas B.K. Roy Burman in the same year has defined the regions on the basis of different degree of concentration of scheduled tribes of India by using the method of centrality Index.

Population theories and Economic Analysis has been analysed by B.N. Ghosh in 1977, whereas in 1985 in his book Fundamentals of Population Geography he has presented almost all the aspects of Population Geography. Besides, A. Bhattacharya in 1978, A.A. Bhende and Tara Kanitkar in 1982 and R.C. Chandana in 1986 dealt with almost all the aspects of population in Indian context.

The recent work of A. Bose (1991) has covered the demographic diversity in India and its relevance in social and economic planning and policy implications. In his another work he has also dealt with the role of census in planning and policy making which is one of the major source of secondary data for Population Geographers.

**OBJECTIVES**

The basic purpose of the study is to examine the various aspects of the population of West Bengal, its distribution, growth, composition and inter-links with the resources of the region. Any comprehensive analysis of population of a specific region must take cognizance of such multi-dimensionality
of the subject of population which constantly interacts with its socio-economic and cultural milieu. With the perspective, the study proposes to examine the distribution and composition of West Bengal's population, the quality of it and the dynamics of population environment interaction. The major objectives of the exercise, more specifically, are-

1) to analyse the distribution pattern of the population of West Bengal, to identify schematically the population density regions, and to examine whether there exists any spatial pattern of distribution. It also tries to identify the reasons behind such distribution.

2) to examine the pattern of growth, regional and periodic variations of growth as well as fluctuations.

3) to construct a comprehensive presentation of the dynamics of population, its composition, both quantitative and qualitative, and

4) to assess the casual relationship between distributional pattern of population and resources, and to regionalise West Bengal on the basis of population resources regions with a view to facilitating effective population planning.

The attainment of these four-fold primary objectives, demands the incorporation of a number of sub-objective which may be catalogued as follows:

1) whether distribution of different types of population densities such as physiological, agricultural, rural and urban follows any spatial pattern and whether physical, cultural and economic factors are responsible for uneven distribution of population and to what extent.
2) whether any definite pattern of growth exists in West Bengal during 1901-91 and its implications.

3) whether there exists any spatial and temporal variation in fertility and mortality, if so what are the causes behind such distributional pattern.

4) is the typical migration pattern in West Bengal rational?

5) to analyse the distribution pattern and relative concentration of literates, scheduled castes, scheduled tribes, economically active population and occupational structure of economically active population.

6) to find out the causal analysis of distributional pattern of population and resource and to regionalise West Bengal into population resource regions or Demographic Zones.

7) finally, to find out remedial measures for the problematic regions and formulation of population policy for proper population planning.

HYPOTHESIS

Uneven distribution of population in West Bengal is the reflection of a number of physical, social and cultural factors. As the demands of rural and urban communities on the physical earth stand in great contrast, the former depending heavily on physical resource base and the later relying greatly on economic and cultural factors.
Population pressure in the state is growing rapidly due to both migration and natural increase and spatial distributional pattern and trend in fertility and mortality rate is directly associated with socio-economic factors.

Though the age and sex composition of population of West Bengal along various fronts bears many commonalities with country, the state has its own individuality and general trend of gain in sex - ratio is a significant item in West Bengal. Both child and old age dependency is very high.

Development of literacy in West Bengal is superficial. High growth rate of literacy is associated with the region of high literacy, where as low literacy regions are associated with low growth rate of literacy. Progress of education among weaker sections of the community has been too slow and gap between scheduled castes' literacy and total literacy is widening from decade to decade inspite of all the special measures adopted for the upliftment of this weaker section.

Secondary activities are concentrated in some parts of the State, where as in general the main occupation is agriculture.

The growth of population could not cope with the required resource.

Regionalisation of West Bengal into dynamic, prospective and problematic region is pre-requisite to solve the specific population problems of the individual region and highlights the prospects.
METHODOLOGY

With an ultimate objective of formulating population policies to solve the population problem after analysing the different parameters of population and dividing West Bengal into number of Population-Resource regions, the present study has been undertaken systematically. It is a two tier approach of analysis where the districts of West Bengal form the data base for major part of understanding, while the police stations of the State provide the data base for more detail analysis on the basis of selective parameters wherever the police station data is considered, a more detailed picture of the environmental situation could be apprehended. But it should be mentioned clearly that police station-wise data could not be collected for all the parameters chosen for analysis and in these cases district level study remained the only suitable alternative. Chapter-I serves as a guideline to the entire research work. Chapter-II deals with the distribution of population and its relation to physical, economic and cultural aspects.

As the aggregate volume of population reveals hardly any relationship between population and area, percent share of population and area of different districts has been calculated, to know whether the share of population is evenly distributed or not, Ginni's co-efficient of variation has been calculated for number of years, to know the number of people in proportion to the land, density of population has been computed. This does not express real pressure on the land, because both rural and urban lands have different capacities to support population, therefore rural density and urban density
of population have been computed on the basis of total rural land area and
total rural population and urban land area and urban population. As rural
area includes barren and unsuitable land for habitation, physiological density
i.e. ratio between population and cultivable land and further agricultural
density (agricultural population/cultivated area) have been computed. As
it is essential to find out the association between the population distribution
and physical, cultural and economical environment, therefore, Pearsonian
corelations, regression analysis and residual mapping after 't' test have
been employed between rural population and physical environment (relative
relief, drainage density, rainfall, temperature, soil, forest cover, cultivated
area) and urban population and economic (workers, per capita income, industrial
workers, road density, rail density, number of industries etc.) and cultural
factors (literates, scheduled tribes, etc.). As these attributes influencing
population distribution do not function in isolation, but always in combination,
therefore, a stepwise multivariate analysis- a method of computation of
multiple corelation co-efficient has been worked out.

Chapter-III deals with growth and redistribution of population. A number
of methods such as absolute population growth curves, typology of population
change and population 'lows' to know the nature of curve and period of
growth of population, co-efficient of variation and Gedde's variability Index
to explain the variability in the trend of growth, aggregate unified rate
of growth of population which helps to analyse the unified rate for the
whole period (1901-1991), population projection on the basis of exponential
growth curve. Instead of considering the period as a whole an attempt has
been made to know the growth rate for shorter time interval i.e. decadal
for that the decennial percentage growth and inter censal degree of population
change, Index number of population growth, have been employed to explain the different aspects of population growth. For analysing redistribution of population one of the simplest and indirect method i.e. growth of density of population, and a direct method have been employed. The degree, rate and variability of growth of population do not give the information about the absolute growth of population, therefore, the centres of gravity of population have been calculated for the period 1901-91. Lastly to study the trend of regional imbalances in population distribution, index of concentration has been computed for all the decades.

Chapter-IV deals with the three components of population change fertility, mortality and migration. Crude death rate, infant mortality rate, residential and sex differentials of mortality rate, temporal variation of mortality rate, temporal variation of birth rate, future projection of birth and death rate, and demographic transition theory have been employed to analyse fertility and mortality pattern of the State. Further district level and State level migrational study have been made to know the rationality of migration pattern.

Chapter-V deals with sex, the biological characteristics of the population viz. sex-ratio and age structure. For the assessment of general pattern of sex ratio, i.e. number of females per 1000 males has been computed, further sex ratio with reference to decennial age groups and economic status, identification of 'Sex Structure Association Regions' by plotting the rank difference correlation co-efficient of decennial age groups of the districts as variates and those of states as constant, and between rural and urban population of each districts, and finally temporal aspects of sex ratio have
been analysed. Besides, the analysis of age structure has been conducted with the help of following techniques viz. Dependency ratio, Age structure Index, based on co-efficient of age structure association and the age group similarity regions.

Chapter-VI deals with the Ethnic, religious and Economic composition and literacy. In this Chapter an attempt has been made to analyse the spatial distributional pattern of percentage of scheduled castes and tribes and nature and causes behind their relative concentrations. Percentage variation and diversification index techniques have been employed to analyse religious composition, work participation rate have been employed to analyse the occupational pattern and lastly to study the literacy, spatio-temporal pattern of literacy rate, sex and residential specific literacy rate, growth rate of literacy have been computed.

The next Chapter i.e. Chapter-VII embodies four different sections. In section A, detail analysis of existing resources viz. land, water, energy, transport, industry etc. have been incorporated and their potentiality have been computed on the basis of existing resource and the trend of growth rate of these resources. Section B deals with the projection of total rural and urban population, birth and death rate, age specific population on the basis of exponential curve. Section C deals with the relationship between population and resource, the Index of population pressure has been computed for all the districts on the basis of Gross State domestic product, constant assumed per capita income and area, Regression Analysis have been done to know the deviation between existing and expected foodgrain requirements for the different districts. Lastly in Section D, an attempt has been made
to regionalise West Bengal into number of population. Resource regions on the basis of linkages and factor analysis.

The last Chapter-VIII simply encompasses the concluding remarks of the work specifying population problems and formulation of policies.

Distribution pattern, trend and different attributes of population enables us to understand fully the interaction of site, people and resources, that give places their unique geographic personalities, the study of demographic profile of any region also reveals the problems and prospects of different population regions and help the social planners to suggest some remedial measures to combat this problem by utilising the potential resources.