Growth of population depends mainly on three components of population viz. mortality, fertility and migration. Fertility and mortality, these two factors are biological, whereas migration is solely dependent on the wishes of the people. Population of any region passes through well defined stages in terms of their levels of fertility and mortality. These are:

a) the high stationary stage characterised by high birth rates and high death rates,

b) the early expanding stage with high birth rates and high but declining death rates,

c) the late expanding stage with falling death rates but more rapidly falling birth rates,

d) the low stationary stage with low birth rates balanced by equally low death rates, and

e) the declining stage with low mortality, low fertility and death exceeding births.

The first stage of demographic transition in India continued till about 1920 when birth and death rates were high (49/1000 population). The stage was marked by purely agrarian low economy with hardly any significant industrialisation. Famine of 1896 and 1897 in Bombay Presidency
famine of 1907 in Uttar Pradesh, widely spread malaria and plague in Bengal, Punjab and Uttar Pradesh in 1891-1901, influenza epidemic in 1911-20, were some of the causes of high death rate.

The second phase of demographic transition in India started with the beginning of 1920's and has spread well upto 1971, whereas in West Bengal, due to early industrialisation the second stage has spread only upto 1961. This is the period when industrialisation flourished, famines, drought and epidemics had been gradually brought under control, the average death rate began to decline under the impact of better organisation and improved medical knowledge and care, but the fertility rates remained insensitive to mortality declines mainly because of cultural rigidity.

West Bengal seems to have entered the third stage of demographic transition in 1961, whereas India as a whole with 42/1000 birth rate and with 20/1000 death rate entered in 1971. After 1961, in West Bengal, death rate continued to decline at a constant rate whereas birth rate started declining at slower rate during 1961-71 and at slightly faster rate during 1971-81, marking the 'late expanding stage'. The economic development during this period was not upto the expectation, as the dependency on agriculture in terms of total employment declined slightly.

If there would be faster decline in birth rate than death rate in near future, West Bengal will be at the point of entering in the fourth stage of demographic transition by 2020 A.D. if not earlier along with India.
No bought, the family planning has started in India since 1951 but conceptually our programme is unsound. The young generation should be urged to avoid early marriage and to follow family welfare measures strictly. This will enable West Bengal to enter the fourth stage even earlier.

The death and birth rates in different districts of West Bengal are not the same and they are in different stages of economy. Therefore, it is essential to analyse mortality and fertility rate of different districts in detail.

MORTALITY

The study of mortality aims (i) to analyse the temporal and spatial pattern of death rate in West Bengal (ii) to analyse the distributional pattern of infant mortality rate in different districts of the State (iii) to study the differentials of death rate - i.e. male-female (sex differential and rural-urban (residence).

TEMPORAL VARIATION OF DEATH RATE

The decline in death rate since 1920 has accelerated West Bengal's population. In 1956, the death rate was 20.5/1000 and has now reduced to 8.6/1000 in the year 1989. This fall of death rate is the result of provision of better diet, pure drinking water, improved health facilities, better sanitation and availability of medicine to control the diseases. With these facilities government is trying to increase the life expectancy at birth to 64 years by 2001 A.D. whereas at present (1981-86) life expectancy is 56 years. But much of the decline in death rate has taken
place without any significant improvement in the standard of living. But West Bengal always stands in a better position compared to other states in India, as birth and death rates of West Bengal have been always recorded less than that of India.

SPATIAL DISTRIBUTION PATTERN OF DEATH RATE

The death rate is the most simple and the most commonly used measure of mortality. It is a ratio of the total registered deaths of a specific year to the total mid-year population, multiplied by 1000.

In West Bengal death rate per thousand population ranges from 2.8 to 8.5 with the State average of 5.6, the lowest death rate (2.8) is recorded in Barddhaman whereas the highest death rate (8.5) is found in Koch Bihar district. (Fig. 4.1).

On the basis of available death rates, the districts of West Bengal may be categorised as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Death rate/1000</th>
<th>Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Low mortality</td>
<td>&lt; 3.5</td>
<td>Barddhaman, Haora, Darjiling</td>
</tr>
<tr>
<td>2) Moderate mortality</td>
<td>3.5 - 5.5</td>
<td>Hugli, Puruliya, Maldah, Jalpaiguri, Nadia</td>
</tr>
<tr>
<td>3) High mortality</td>
<td>5.5 - 7.5</td>
<td>West Dinajpur, Murshidabad, Birbhum, Medinipur, Twenty-four Parganas, Bankura</td>
</tr>
<tr>
<td>4) Very High Mortality</td>
<td>&gt; 7.5</td>
<td>Calcutta, Koch Bihar</td>
</tr>
</tbody>
</table>

Computed by author
INFANT MORTALITY RATE

The infant mortality rate is generally computed as a ratio of infant deaths registered in a year to the total number of live births registered in the same year. The mortality during the first year of life is invariably high for both sexes, for all the districts, irrespective of whether the overall levels of mortality are high or low. Male infant mortality rate varies between 18 and 98/1000 live births with Calcutta having the maximum rate (97.2) and Hugli the minimum (18.6) and the average for the state works out to be 52.9 per 1000 live births. Whereas female infant mortality ranges from 20 to 95, with Calcutta having the maximum (94.5) and Hugli the minimum (20.9) the average for the state works out to be 49.0. Accordingly, the districts of West Bengal may be grouped as follows:

Table -4.2

<table>
<thead>
<tr>
<th>Type</th>
<th>Infant Mortality Rate / 1000</th>
<th>Categories of Districts based on Male Mortality</th>
<th>Categories of Districts based on Female Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Low</td>
<td>&lt; 40</td>
<td>Barddhaman, Birbhum, Haora, Hugli, Murshidabad, West Dinajpur, Jalpaiguri, Darjiling, Koch Bihar</td>
<td>Barddhaman, Birbhum, Medinipur, Hugli, Nadia, Murshidabad, West Dinajpur, Jalpaiguri, Darjiling, Koch Bihar</td>
</tr>
<tr>
<td>2. Moderate</td>
<td>40 - 60</td>
<td>Bankura, Medinipur, Twentyfour Parganas, Nadia</td>
<td>Bankura, Haora, Malda</td>
</tr>
<tr>
<td>3. High</td>
<td>60 - 80</td>
<td>Maldah</td>
<td>Twentyfour Parganas</td>
</tr>
<tr>
<td>4. Very High</td>
<td>&gt; 80</td>
<td>Calcutta, Puruliya</td>
<td>Calcutta, Puruliya</td>
</tr>
</tbody>
</table>

Computed by author
The districts with low or high mean marriage ages are positively associated with high infant mortality. Whereas the weight of the baby at birth is also an important factor affecting infant mortality rate which is indirectly associated with per capita income of the people. The environmental factors such as crowding and congestion, insanitary surrounding, lack of proper sunshine and fresh air etc. are positively associated with infant mortality rate. Besides, infant mortality are due to various epidemics caused by communicable diseases, both of the digestive system such as diarrhoea and enteritis, and of the respiratory system, such as bronchitis and pneumonia, as well as by faulty feeding patterns and poor hygiene.

MORTALITY DIFFERENTIALS

Important variations in the levels of mortality are evident for different sub-groups of the population even in the same region. For instance, the rural and urban areas of the same region have widely different death rates. In addition to mortality differentials by geographical residence, differentials due to other demographic factors, such as sex, may also be observed within the boundaries of a particular state.

RURAL URBAN DIFFERENTIALS

The urban areas in West Bengal display lower mortality rates in comparison to the rural areas. While the urban areas had a crude death rate of 6.8 per thousand, the corresponding figure for rural areas was 9.3 per thousand people. Though the environment in the rural areas is certainly better than that in urban areas, yet since health service are mainly concentrated more in urban areas, therefore, death rate in urban areas is lower than the rural areas.
MALE-FEMALE DIFFERENTIALS

The male-female differentials of mortality level is 0.6 per 1000 population in West Bengal. Mortality rate is generally higher for the male population compared with the female mortality rate except in Calcutta district. The death rates for male and female population of West Bengal are 5.9 and 5.3 per 1000 population respectively.

On the basis of male-female mortality differentials the districts of West Bengal may be categorised as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Mortality differentials</th>
<th>Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Very High</td>
<td>&gt; 1.00</td>
<td>Koch Bihar, Maldah, Bankura, Hugli, Puruliya, Nadia, West Dinajpur, Birbhum.</td>
</tr>
<tr>
<td>2. Moderate</td>
<td>0.5 - 1.0</td>
<td>Jalpaiguri, Barddhaman, Medinipur, Haora, Twentyfour Parganas, Murshidabad</td>
</tr>
<tr>
<td>3. Low</td>
<td>0.0 - 0.5</td>
<td>Darjiling</td>
</tr>
<tr>
<td>4. Negative</td>
<td>&lt; 0.0</td>
<td>Calcutta</td>
</tr>
</tbody>
</table>

These observations of mortality level of West Bengal reveal that (i) West Bengal's mortality rates that soared very high at the beginning of the present century have now reached fairly low level, (ii) district level variations in mortality are less pronounced than that in fertility (iii) urban areas portray lower mortality than the rural areas (iv) performance in controlling the mortality has been better than that in checking the fertility, (v) infant mortality rate is still very high in West Bengal.
The growth of the population of any region depends entirely on human fertility. Thus, in population dynamics, fertility is a positive force, through which the population expands, countering the force of attrition caused by mortality. Within the biological limits of human fertility, several social, cultural, psychological as well as economic and political factors are found to operate and these are responsible for determining the levels and differentials of fertility.

West Bengal displays a birth rate of 26.9/1000 persons in 1989 which is far less than the national average of 30.5/1000 persons. The urban areas have comparatively low crude fertility rate (18.0/1000 persons) than rural areas (30.4/1000 persons) because urban women are more educated and have higher status (Fig.4.1).

Regional disparity in fertility rate reveals that fertility rate is lower than the state average in Calcutta, Haora, Barddhaman, Medinipur, Jalpaiguri, Darjiling and Maldah whereas in all the other districts it is higher than the state average. It is observed that the industrially developed districts have low birth rate on the other hand the districts with sizeable proportion of Christian population, agriculturally backward areas with low proportion of literates and urban population have high birth rate.

It has been observed that pattern of fertility vary considerably in different districts. It also vary considerably in various sub-groups
based on residence. For instances, the rural and urban areas of the same region have widely different birth rates. The study of differential fertility is also important from the point of view of implementation of family planning.

The urban rural differentials of birth rate is 12.4/100\% population in West Bengal. The highest urban rural differentials of fertility (24.3) is found in Nadia whereas the lowest urban rural differentials of fertility (0.4) is found in West Dinajpur. Calcutta district is totally urban in character.

On the basis of rural-urban differential in fertility rate, the groupings may be done as follows:

<table>
<thead>
<tr>
<th>Groups</th>
<th>Fertility differential</th>
<th>Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) High</td>
<td>&gt; 20.00</td>
<td>Nadia, Hugli, Twentyfour Parganas, Bankura, Darjiling,</td>
</tr>
<tr>
<td>2) Moderate</td>
<td>10.00 - 20.00</td>
<td>Medinipur, Koch Bihar, Haora, Birbhum, Jalpaiguri, Purulia, Murshidabad</td>
</tr>
<tr>
<td>3) Low</td>
<td>&lt; 10.00</td>
<td>Maldah, West Dinajpur, Barddhaman</td>
</tr>
</tbody>
</table>

Computed by author

Apart from these spatial inequalities in birth rates, there are significant vertical inequalities in the birth rates of various segments of society. In fact, there exists a significant vertical disparities in the fertility rates of various sections of the society such as Hindus and Muslims, Christians and non-Christians, the educated and the illiterates, the employed and the unemployed.
With regard to the role of religion in fertility behaviour, it may be said that in West Bengal different religious groups display varying fertility levels mainly because of the fact that various religious groups have wide differences in their socio-economic background. Religion-wise, level of fertility is high among Muslims followed by Hindus, Buddhists, Christians and Jains. Both in rural and urban areas fertility is the highest among Muslims, followed by Hindus and others.

Both in rural and urban areas fertility rate decreases with increase in level of education.

Like educational level, occupation has also an inverse relationship with level of fertility. In West Bengal, working women exhibit the lower fertility rate than non-working women. Working women are more educated and follow higher age at marriage, higher incidence of birth control measures, greater economic independence, much wider sphere of social interaction, which together increase women's participation in decision making process. Further women performing non-manual jobs have lower fertility than those performing manual jobs both in rural and urban areas.

The fertility rate in West Bengal is to be reduced at a faster rate though it is declining at a slower rate. The horizontal as well as vertical disparities in fertility emanate from the differences in socio-economic condition of the areas and population concerns, so there is urgent need to improve the socio-economic condition of the backward regions.
MIGRATION

Rapid growth of population in West Bengal specially urban population growth rate can not be explained only by natural increase. Migration plays an important role in this respect. The finding based on place of birth data collected in 1981 indicates that in West Bengal about 29.5% of population have migrated from their birth place. Very small percentage of migrants have migrated from other countries i.e. only 6.19%. Poor economic condition, religious feeling, educational opportunities have attracted them. People of Bangladesh accounts for 97.43% of international migrants. Besides this, large number of illegal migrants are uninterruptedly entering into Indian subcontinent and causing a serious problem in West Bengal. Other international migrants in West Bengal are 1.71% from Nepal, 0.25% from Burma, 0.12% from China and 0.09% from Bhutan.

4.04% of the total population have migrated from other states, 4.86% from other districts and 14.49% from other villages to urban centres of the same district. The percentage of mobile population in rural and urban areas in 1981 are 50.98% and 49.02% respectively, whereas proportion of male migrants (53.23%) is higher compared to female migrants (46.77%).
On the basis of the share of migrants the districts of West Bengal may be grouped as:

<table>
<thead>
<tr>
<th>Type</th>
<th>Proportion of Migrants</th>
<th>Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) High</td>
<td>&gt; 20.00</td>
<td>Calcutta, Nadia, Twentyfour Parganas, Koch Bihar</td>
</tr>
<tr>
<td>2) Moderate</td>
<td>15 - 20.00</td>
<td>Jalpaiguri, Darjiling, West Dinajpur, Hugli, Barddhaman</td>
</tr>
<tr>
<td>3) Low</td>
<td>10 - 15.00</td>
<td>Haora</td>
</tr>
<tr>
<td>4) Very Low</td>
<td>&lt; 10.00</td>
<td>Maldah, Murshidabad, Bankura, Birbhum, Puruliya, Medinipur</td>
</tr>
</tbody>
</table>

Computed by author

It has been observed that in all the bordering districts percentage of migrants is high because of continuous inflow of migrants from Bangladesh. Calcutta also attracts large number of population as it provides employment to large number of people.

In Koch Bihar about 82.1% of migrants are from Bangladesh, 8.11% from other states viz. Assam and Bihar and 9.44% belong to inter district migrant.

In Nadia about 23.32% of people are migrants and about 74.87% of them have migrated from Bangladesh, 4.39% from Bihar and the rest from within the district.

In all the other districts people from Bangladesh are setting in different proportions. The districts having common boundary with Bangladesh are major recipient districts whereas in Puruliya it is as low as
In these districts interdistrict migration is more than inter-state or international migration. In the industrial districts share of inter-state migration is high compared to interdistrict migration. For example, in Calcutta about 50.48% of the total migrants are from Bihar, Uttar Pradesh, Orissa, Rajasthan and Gujrat whereas in haora 41.61% of total migrants, in Hugli 28% and in Barddhaman 41.3% are from Bihar, Uttar Pradesh and Orissa. Twentyfour Parganas have attracted more migrants from Bangladesh (49.65%) than Bihar, Uttar Pradesh and Orissa (19.17%). In Medinipur migrants are mainly from Bihar and Orissa. These migrants usually work in mines and industries and work as rickshaw pullers and porters. Most of them are cheap labourers as they are illiterates. Puruliya which was once a part of Bihar attracts 49% of migrants from Bihar, Koch Bihar, Jalpaiguri and Darjiling districts attract people from Assam and Bihar. These districts act as a corridor to the north eastern states and also provide employment opportunity to these people in tea plantations.

Interdistrict migration is more numerous in industrially backward districts. The short distance migration i.e. interdistrict migration is predominated by female migration due to marriage contrary to interstate migration in industrially developed districts where long distance (state level) male migration is more predominant. In West Bengal, these industrial towns create employment opportunities for male population who usually migrate leaving behind their family in rural areas as the cost of living in these towns is very high. For example in Calcutta 75.68%, Haora 71.65%, Hugli 68.28%, Twentyfour Parganas 68.72% of migrants are male and born in other states at the time of enumeration.
Percentage of inter-district migration is 83.59% in Bankura, 65.53% in Birbhum, 53.64% in Medinipur. The main causes behind this high inter-district migration in these underdeveloped districts are low per capita income, marriage and seasonal unemployment in rural areas.

Some salient features which have come out from this analysis is that about 29.5% of total population are migrants, out of which 6.19% have born outside India majority of them in Bangladesh, i.e. 97.43% and the rest in Nepal, Pakistan, Burma, China, Bhutan. International migrants are dominant in Koch Bihar, Nadia, Maldah and West Dinajpur districts.

About 48.97% of the total migrants belong to intra district category, 16.45% belong to inter district and 13.64% belong to inter state migration. This proves the distance decay function of Revenstein for migrants.

Share of male migration (53.23%) is more than female migration (46.77%). Proportion of female migration decreases with increase in distance.

Long term migrants with duration of 10 years or more comprise 61.39%, whereas short term migrants with duration less than a year share 2.41% and the rest belong to medium term migrants.

Causes of male and female migration are different in nature. Females usually migrate when family moves (67.9%). In West Bengal
the proportions of female migrants are about 15.45% due to marriage, 1.67% for employment and only 0.60% for educational purposes. Whereas 27.58% of males migrate in search of employment, 3.21% for higher education and 30.91% move with family.

Two decades 1921-31 and 1951-61 are the turning points of migration studies in West Bengal. When out migration exceeds in migration in western districts of Birbhum, Bankura, Medinipur and central part of Murshidabad, whereas in eastern districts in migration exceeds out migration. Large number of refugees from then East Pakistan settled here. Since then this region is facing an acute problem of refugees infiltration from Bangladesh.

Migration is the result of socio-economic imbalances among areas. Primarily, people tend to move towards areas in which they believe they can improve their economic status, where the unemployed persons can obtain a job or where the employed persons may have a chance to earn a higher income. Secondly, they tend to move towards areas which offer certain amenities, such as a pleasant climate, recreational opportunities, or the variety of cultural advantages which are associated with many large population agglomeration. Correlation analysis between composite index of socio-economic development and percentage of migrants reveals that they are positively correlated. The areas which have higher percentage of workers engaged in manufacturing activity, higher per capita income, a greater proportion of workers and urban population tend to increase population growth due to net migration than those areas with less amount of these opportunities.