CHAPTER II
AREA OF THE STUDY, DATA BASE AND METHODOLOGY

The area of the study for the present research work is Uttar Pradesh in general and Gorakhpur district in particular. The state of Uttar Pradesh is privileged with certain distinctive characteristics amongst other states of the Indian union. Geographically, it is well placed, physically quite sound, historically greatly glorified, culturally profoundly rich, socially very significant and politically utmost significant (Jha 2007:1). Administratively, the whole state has been divided into 17 divisions, which have further been divided into 70 districts (Census of India, 2001). The villages have been further organized into 813 development blocks.

2.1 Rationale behind the Selection of the Study Area

Each and every research work starts from selection of the study area as it is of utmost significance. There must be some reasons for choosing the particular study area and it should be based upon certain criteria. The criteria for selection of the study area are given below:

2.1.1. Selection of the State

The process of choosing the study area initiates with the review of the literature available on a particular theme. Many of the available literatures (Khan 1988 and Kumar 2006)) envisage that Uttar Pradesh is such a land which experiences high outmigration rate. In spite of the fact that a large proportion of rural population outmigrate from the rural areas as semi skilled and unskilled labourers in search of employment, the economic development of the state has remained very low and stagnant (Table 2.2).

Looking at the regional pattern of migration in India, we find that Uttar Pradesh along with few other states of India like Bihar, Assam, Orissa, and Kerala show a very high rate (2.0 percent) of net outmigration. Data highlights of the D1, D2 and D3 (migration tables) tables of 2001 census show that Uttar Pradesh (2.6 million) and Bihar (1.7 million) were the two states with largest number of net outmigrants (See Appendix
2.2). There has been 60% increase in net out-migration in Uttar Pradesh between 1991 and 2001.

Table: 2.1
Net Migration Rate: Major Outmigrating States (2001)
(Net Migration Rate ≥ 0.5 Percent)

<table>
<thead>
<tr>
<th>States/Union Territories</th>
<th>Percentage Net Outmigration To Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTTAR PRADESH</td>
<td>2.0</td>
</tr>
<tr>
<td>BIHAR</td>
<td>2.7</td>
</tr>
<tr>
<td>MANIPUR</td>
<td>1.4</td>
</tr>
<tr>
<td>NAGALAND</td>
<td>1.4</td>
</tr>
<tr>
<td>ASSAM</td>
<td>0.7</td>
</tr>
<tr>
<td>ORISSA</td>
<td>0.7</td>
</tr>
<tr>
<td>TAMILNADU</td>
<td>0.7</td>
</tr>
<tr>
<td>KERALA</td>
<td>0.6</td>
</tr>
<tr>
<td>CHATTISGARH</td>
<td>0.6</td>
</tr>
<tr>
<td>RAJASTHAN</td>
<td>0.6</td>
</tr>
<tr>
<td>JHARKHAND</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Source: Data Highlights, Table D1, D2 and D3, Census of India, 2001

The state has made substantial progress since the First Five Year Plan but continues to be among the most economically and socially backward states of the country, though, the state has tremendous potential and diversity which needs to be tapped. The state has sufficient natural resources, largest skilled, unskilled manpower, largest food grain produce, numerous places for tourism development, sufficient prospects of dairy development and growth of agro based industries (Annual plan 2003). Apart from this, Uttar Pradesh also has 79.22 percent of its total population living in rural areas. So, Uttar Pradesh becomes a strong case for this study.

2.1.2. Selection of the Region

Socio-economic regional disparities are very marked in Uttar Pradesh. The state is divided into four economic regions, namely, Eastern, Western, Central and Bundelkhand. The Western region is the most developed followed by the Central region. Eastern region is the least developed region and many literatures and studies have already suggested that this very part is the most important region of rural outmigration in the state (Singh 2001). Eastern Uttar Pradesh has been selected for the case study as it showed the lower position in most of the parameters except a few like population growth rate, population density etc. which does not indicate a very positive sign of development as ultimately it will lead towards heavy population pressure (Table 2.2). This excessive increase in the population exerts pressure on the limited resources which eventually lead towards exodus of the people from the rural areas. The regional
disparity in different parts of Uttar Pradesh can be studied with the help of Table 2.2 which is given below:

Table 2.2
Regional Disparities in Uttar Pradesh

<table>
<thead>
<tr>
<th>S. No.</th>
<th>VARIABLES</th>
<th>Eastern</th>
<th>Western</th>
<th>Central</th>
<th>Bundelkhand</th>
<th>Uttar Pradesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P.C. N.S.D.P. 1999-2000 at current prices in rupees</td>
<td>6,995</td>
<td>12,385</td>
<td>9,637</td>
<td>9,267</td>
<td>9,765</td>
</tr>
<tr>
<td>2</td>
<td>Population Density per sq. km. 2001</td>
<td>765</td>
<td>765</td>
<td>658</td>
<td>280</td>
<td>689</td>
</tr>
<tr>
<td>3</td>
<td>Population growth 1991-2001(%)</td>
<td>26.35</td>
<td>26.05</td>
<td>24.73</td>
<td>22.32</td>
<td>25.80</td>
</tr>
<tr>
<td>4</td>
<td>% Population urban in 2001</td>
<td>11.78</td>
<td>28.25</td>
<td>25.11</td>
<td>22.46</td>
<td>20.78</td>
</tr>
<tr>
<td>5</td>
<td>% share in state’s population 2001</td>
<td>40.11</td>
<td>36.76</td>
<td>18.17</td>
<td>4.96</td>
<td>100.00</td>
</tr>
<tr>
<td>6</td>
<td>% villages with population less than 200 in 1991</td>
<td>14.79</td>
<td>8.95</td>
<td>5.48</td>
<td>9.98</td>
<td>11.07</td>
</tr>
<tr>
<td>7</td>
<td>Literacy Percentage Total 2001</td>
<td>55.22</td>
<td>58.44</td>
<td>59.04</td>
<td>60.32</td>
<td>57.36</td>
</tr>
<tr>
<td>8</td>
<td>Female Literacy % in 2001</td>
<td>39.54</td>
<td>44.64</td>
<td>47.12</td>
<td>44.18</td>
<td>42.98</td>
</tr>
<tr>
<td>9</td>
<td>Hospitals/ dispensaries/PHCs per lakh population (2000-01)</td>
<td>2.87</td>
<td>2.76</td>
<td>2.84</td>
<td>4.20</td>
<td>2.88</td>
</tr>
<tr>
<td>10</td>
<td>MCH/Sub centre per lakh population in 2000-01</td>
<td>12.29</td>
<td>10.58</td>
<td>11.40</td>
<td>16.30</td>
<td>11.72</td>
</tr>
<tr>
<td>11</td>
<td>Jr. Basic schools per lakh population in 2001-02</td>
<td>48</td>
<td>53</td>
<td>57</td>
<td>72</td>
<td>53</td>
</tr>
<tr>
<td>12</td>
<td>Length of roads per lakh population (Km) in 2001-02</td>
<td>56.55</td>
<td>59.72</td>
<td>58.86</td>
<td>100.26</td>
<td>60.30</td>
</tr>
<tr>
<td>13</td>
<td>Length of roads per 1000 Sq. km. area (Km)</td>
<td>440.31</td>
<td>455.41</td>
<td>387.66</td>
<td>279.97</td>
<td>415.63</td>
</tr>
<tr>
<td>14</td>
<td>% Villages electrified in 2001-02</td>
<td>77.90</td>
<td>88.81</td>
<td>72.55</td>
<td>69.94</td>
<td>79.27</td>
</tr>
<tr>
<td>15</td>
<td>% holdings less than one hectare in 1995-96</td>
<td>83.00</td>
<td>68.80</td>
<td>76.55</td>
<td>70.30</td>
<td>75.40</td>
</tr>
</tbody>
</table>


2.1.3. Selection of the District

The study area of the present research work is Uttar Pradesh and particularly the Gorakhpur district. Gorakhpur district lies in the eastern part of the Uttar Pradesh, which has a significant history of outmigration (Khan 1981: 2). Main objective of the present study is to analyze the phenomena of outmigration in relation to the socio-economic and demographic development of an area. Eastern Uttar Pradesh consists of 27 districts from which the Gorakhpur district was selected for the case study as it was found that among the major districts of all the revenue division of Uttar Pradesh, Gorakhpur exhibits a very high rate of net outmigration rate. Census of India, unfortunately, does not provide a comprehensive account of data at district level on outmigration. However, data provided by table D-11 is somehow gives data for outmigration at district level within the state boundary. It has been found that a large component of outmigration from rural areas consist of inter-state migration also. To
have comprehensive net migration data one can use indirect method (Census Survival Ratio Method) of measurement which has been given in the Manual VI (Methods of Measuring Internal Migration) of the United Nations. A full detail of the method is given later in the section of methodology. Using population data for 1991 and 2001 for major districts (total 16 districts taking one district each from each revenue division) of each Revenue Division of Uttar Pradesh as given by Census of India, the net inter-censusal net migration rate was estimated which is given below:

**Table 2.3**

Net Rural Male Migration Rate Calculated (Census Survival Ratio Method) for the Major Districts of Each Revenue Division of Uttar Pradesh (1991-2001)

<table>
<thead>
<tr>
<th>DIVISIONS</th>
<th>MAJOR DISTRICTS</th>
<th>NET MIGRATION RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAHARANPUR</td>
<td>SAHARANPUR</td>
<td>4.62</td>
</tr>
<tr>
<td>MORADABAD</td>
<td>MORADABAD</td>
<td>-1.42</td>
</tr>
<tr>
<td>MEERUT</td>
<td>MEERUT</td>
<td>-1.58</td>
</tr>
<tr>
<td>AGRA</td>
<td>AGRA</td>
<td>-1.55</td>
</tr>
<tr>
<td>BAREILLY</td>
<td>BAREILLY</td>
<td>-1.65</td>
</tr>
<tr>
<td>LUCKNOW</td>
<td>LUCKNOW</td>
<td>5.02</td>
</tr>
<tr>
<td>KANPUR</td>
<td>KANPUR</td>
<td>7.09</td>
</tr>
<tr>
<td>JHANSI</td>
<td>JHANSI</td>
<td>1.29</td>
</tr>
<tr>
<td>CHITRAKOOT</td>
<td>BANDA</td>
<td>-1.84</td>
</tr>
<tr>
<td>ALLAHABAD</td>
<td>ALLAHABAD</td>
<td>0.53</td>
</tr>
<tr>
<td>FAIZABAD</td>
<td>FAIZABAD</td>
<td>1.09</td>
</tr>
<tr>
<td>DEVIPATAN</td>
<td>GONDA</td>
<td>0.99</td>
</tr>
<tr>
<td>BASTI</td>
<td>BASTI</td>
<td>2.91</td>
</tr>
<tr>
<td>GORAKHPUR</td>
<td>GORAKHPUR</td>
<td>-1.87</td>
</tr>
<tr>
<td>AZAMGARH</td>
<td>AZAMGARH</td>
<td>-0.82</td>
</tr>
<tr>
<td>VINDHYACHAL AND VARANASI</td>
<td>VARANASI</td>
<td>1.85</td>
</tr>
</tbody>
</table>

*Source: Calculated from the Table C-6, Census of India, 1991 and 2001.*

(-value signifies net outmigration while + value denote net in-migration)

Although there are 70 districts (as per Census 2001) in Uttar Pradesh but only 16 major districts (taking one from each revenue division) have been considered for the calculation of inter-censusal net male migration rate because there has been found big changes in the district boundaries of the state between the census years of 1991 and 2001. And therefore, there has been a problem of intermingling of the boundaries among the districts between 1991 and 2001 census period, so, it was a very difficult task to calculate the inter-censusal male outmigration rate for each and every district separately. From the table 2.3, it is quite clear that Gorakhpur is one of the most important net rural male outmigration districts in Uttar Pradesh.
2.2. Physical, Socio-Economic and Demographic Profile of Uttar Pradesh

Uttar Pradesh, one of the border states of the Indian Union, is located in the Indo-Gangetic plains. Its northern boundary forms the international boundary with Nepal. To the north, lies the Siwalik Hills of Uttarakhand state along with the Nepal border. The area of the state is 7.3 percent of the country's area and is the fifth largest state in the country by area. The total area of the state is 2,40,928 sq.km. In terms of population, Uttar Pradesh continues to be the largest state in the country with a share of 16.2 percent (Census 2001) in the country's population. As regards the physical border of the Uttar Pradesh, its western and south western borders touch Haryana, Delhi and Rajasthan states. Madhya Pradesh situated to its south while Bihar is on its eastern border.

2.2.1 Physical Division

The whole of Uttar Pradesh can be divided into three major physical divisions: 1. The Gangetic Plain, 2. The Sub-Himalayan Zone and 3. The Peninsular Region. The Gangetic plain covers nearly two third of Uttar Pradesh and has been built by the Ganga and its tributaries. It comprises an alluvial tract of Pleistocene and recent deposits of clay and sand. The height of the entire plain area outside the Bhabhar and Terai belts generally ranges between 80 meters and 250 meters. The plain is watered by the Yamuna, the Ganga and its northern tributaries, the Ram Ganga, the Gomti and the Ghaghara. The whole region is densely populated and immensely vital for the economy of the state.

The sub-Himalayan zone is the zone of Terai Bhabhar and the foothills of Siwaliks. Geographically, the Siwaliks of the outer Himalayas, immediately below and between the Bias and the upper reaches of Ganga consist of fresh water deposits of middle Miocene to lower Pleistocene age. The northern strip of the Gangetic plain, which runs from Saharanpur in the west to Deoria in the east, is called the Bhabhar and Terai and has distinct features of its own. The tract is 34 kilometers wide in the west but get narrow eastward. The Bhabhar is piedmont plain in which coarse pebbles are intermixed with finer and extremely previous detritus where the smaller Himalayan rivers and streams vanish underground till they emerge again to create a marshy tract called the Terai. The Terai is a swampy zone and extend southward from the margin of
Bhabhar. The Terai is a creation of the sub-soil and heavy rainfall. The width of Terai belt has considerably diminished on account of the State Government’s land acquisition programme in recent years. The districts which fall under the Terai belt are Pilibhit, Kheri, Gonda, Basti, Siddharthnagar, Gorakhpur, Maharajganj and Deoria.

The southernmost part of Uttar Pradesh is the peninsular shield composed of geologically the most ancient rocks of diversified origins. The eastern part of this region comprises of the Vindhya Mountains while the western portion consists of rocky highland plateau with the Vindhya Mountains to its south. The height of the plateau is generally not more than 300 meters above sea level. The plateau is mostly composed of Bundelkhand granite and gneiss. The whole region consists of the Bundelkhand region, the Meja and Karchanna Tehsils of Allahabad district, some parts of Mirzapur district and Varanasi district. Rainfall is scantly in the region.

2.2.2. Climate

Uttar Pradesh has a tropical monsoon type climate with an average temperature varying from a minimum of 3-4°C in January to 43-44°C in May-June. In the sub-Himalayan zone the climate is somewhat humid. Down below in the Gangetic Plain, usually the temperature in January touches 3-4°C while it shoots up to 43°C in May-June. Generally, the Agra and Jhansi have the highest temperature and Bareilly the lowest.

The state gets major part of the rain (more than 80 percent) between mid June and mid-September mainly from the Bay of Bengal Monsoon and a small portion due to North West cyclones. The average rainfall for the whole state is around 100 cm except for a few districts like Jalaun, Hamirpur, Jhansi, and Banda districts which experience comparatively less rainfall. In the plains, Gorakhpur district with about 56 rainy days gets maximum average rainfall of about 185 cm, while Mathura with 32 rainy days the minimum average rainfall of 55 cm. The climate conditions of the state are also reflected by the three different seasons of the year-winter (from October to February), summer (from March to mid-June) and rainy (from mid-June to September).

2.2.3 Drainage System

The Ganga and Yamuna are the two major rivers of Uttar Pradesh. Both the rivers originate in Uttarakhand state from Gangotri and Yamunotri glaciers. While rivers and rivulets such as Dhauli, Pindar, Alaknanda, Mandakini, etc. join the Ganga
on its right bank, the tributaries such as Ramganga, Gomti, Ghaghara, along with Kali, Sarda, Rapti, Gandak etc. on the left bank. Most of the left bank tributaries have their origin in Himalayas or beyond, while the left bank tributaries originate in the Vindhyan and Satpura ranges. The rivers in the state originating in Himalayas are full of waters round the year while the Vindhyan Rivers often dry up in the summers.

2.2.4 Soil:

Soils of the Sub-Himalayan zone are pebbly and porous, varying from clay loam to sandy loam. The clay loam is rich in organic matter and its surface is dark grey. Soil of the Gangetic plain, mostly of alluvial type, consists of old alluvial soil (Bangar) and new alluvial soil (Khadar). The Bangar forms the higher ground while the Khadar forms the flood plains adjacent to the rivers.

Soils in the Terai area of the western region are mostly dark grey in colour, varying from loam to sandy loam. These soils are shallow and generally acidic, containing stones and gravels in large proportions. Soils in the entire central region is mostly sandy loam except the north-eastern part (Kheri and Sitapur district), it is loam or sandy loam and is slightly acidic.

In the eastern region, the soils are of mainly three types viz. Bhat, Banjar and Dhuh. Bhat soil is low lying and sandy loam in character and possesses high lime content. Dhuh soil is found near river banks and is subject to inundation. The soils popularly known as Usar and Reh is generally found in dry parts of the region. The soils of southern hills and plateau are mixed and red black. The black soils, generally, known as Mar and Kabar are calcareous and possess a high degree of fertility. The red soils are found on plateau tops and upper slopes.

2.2.5. Agriculture

The economy of Uttar Pradesh is predominantly agrarian and performance of agriculture and allied activities such as horticulture, animal husbandry, dairying and fisheries are critical in determining the growth rate of the State. Primary sector (inclusive of mining) contributed 36.8% to the State's income in 2003-04 and provided employment to 66% of total workers. However, the share of this sector in State income has been progressively reducing (Kumar 2005:1). About 90% farmers in the State are small and marginal farmers. The outreach of credit institutions, whether commercial
banks or cooperative institutions is very low. The major crops of the state are Paddy, Wheat, Sugarcane, Arhar, Maize, Mustard and Gram.

According to livestock census, the total livestock population is the state was 44.27 million in 1951 which indicated an increasing trend over the years. At the 1998 census the total livestock population was 112.77 million. Uttar Pradesh is the largest milk producing state in the country, which accounts for 16 percent of the total milk production of the country.

2.2.6. Demography

Uttar Pradesh is the most populated state of India accounting for 16.17% of the country’s total population. The population of the state has nearly tripled from 63.2 million in 1951 to 166.1 million in 2001 which is higher than the estimated population of Pakistan (157 million) (Census of India 2001, Provisional Totals). Among the 70 districts of the state, Allahabad has recorded highest population of 4,941,510 persons followed by Kanpur Nagar (4,137,489), Azamgarh (3,950,808), Jaunpur (3,911,305) and Gorakhpur (3,784,720).

The Decadal Growth rate during 1991-2001 has increased to 25.8 compared to 25.6 during 1981-1901 and from 16.4 during 1951-61. The population growth continues to be very high and nullifies the development efforts and inputs.

The Population Density of the state at 2001 census is 689 as against 548 persons per Sq. km. at the 1991 Census. Highest population density (1,995) has been observed in Varanasi district, followed by Ghaziabad (1,682), Lucknow (1,456), Sant Ravidas Nagar Bhadohi (1,409) and Kanpur Nagar (1,366). The lowest density (194) is observed in Lalitpur district, which continued to be most sparsely populated district in the state.

Scheduled Caste constitutes 21.24 percent of the total population in the state compared to the All India average of 16.48%. Scheduled Tribes account for a very miniscule proportion (0.21 percent) of the state population.

Urbanization is low in Uttar Pradesh as a whole. Close to 80 percent population of Uttar Pradesh resides in rural areas. The sex ratio (number of females per thousand males) is an important indicator of the status of women and of gender discrimination. Sex ratio (number of females per thousand males) has shown an improvement from a low of 876 to 898 during 1991-2001. Males have out-numbered females in all the districts barring Deoria (1,003), Jaunpur (1,021) and Azamgarh (1,026). Azamgarh district has recorded highest sex ratio (1,026) followed by Jaunpur (1,021) and Deoria
(1,003), whereas the lowest sex ratio (838) has been observed in Shahjahanpur preceded by Mathura and Budaun (both 841), Gautam Budhha Nagar (842) and Hardoi (843).

Life expectancy at birth has improved in the last two decades. Female life expectancy at birth in Uttar Pradesh has improved from 48.5 during 1981-85 to 64.09 during the period 2000-06. The corresponding rise in expectation of life at birth amongst males is from 51.4 years to 57.7 years. Birth and Death rates are higher than the national average. Birth rate has come down from 41.0 per 1,000 population in 1976 to a still very high rate 32.1 (33.1 for rural areas and 26.7 for urban areas) in 2001-02. Death rate has come down from 20.5 per thousand population in 1976 to 10.2 (11.0 for rural areas and 7.7 for urban areas) in 2000. Infant Mortality Rate (IMR) per thousand live child births has come down from 130 per 1,000 live births in 1981-82 to 84 in 2001-02, 87 for rural areas and 64 for urban areas.

2.3. Physical, Socio-Economic and Demographic Profile of Gorakhpur District

The Gorakhpur district is one of the major and important districts lying in the eastern part of Uttar Pradesh. This is the region which has been a source of one of the cheapest labour for industry for almost whole of north India (Khan 1981). The details of the profile can be studied under the following headings:

2.3.1. Location

Gorakhpur district, situated in the heart of the Middle Ganga Plain, is one of the important districts lying in the eastern Uttar Pradesh. It is situated between 26°42'N to 26°47' N latitudes and 82°20' E to 83°25' E longitudes. It covers an area of 3321 square kilometer. It is bounded by Maharajganj district in the north, Ambedkarnagar, Azamgarh and Mau Districts in the south, Kushinagar and Deoria districts in the east and Santkabirnagar District in the west. River Ghaghra forms its southern boundary with Azamgarh and Mau districts. River Rapti flows from the south western boundary of Gorakhpur city. The Gorakhpur district receives an annual average rainfall of 1221 mm. The temperature rises up to 45°C in summers while it declines to a low of 5.7°C in winters.
2.3.2. Drainage System:

The district, in spite of its apparent uniformity of aspect, it is divided topographically into several distinct tract namely, the low valley of the Ghaghra in the south, extending from that river to its tributary, the Kuwana; the central upland, between the latter river and the Rapti and the low and ill-drained paddy belt between the Rapti and others.

Map 2.1
Gorakhpur District: Location Map

The district has two main river systems namely, the Ghaghra and Rapti, both of which ultimately form a part of the great Gangetic system. The other streams of the district are the Kuwana, its tributaries are, the Rawai, The Manwar and the Katnehia, and the Ami is a tributary of Rapti. River Ghaghra is formed by the combined waters of Kauriyala, Girwa, Chauka and other streams, which have their origin in the mountains of Kumaun and Nepal. The Ghaghra forms the southern boundary of the district, from its entry opposite the sacred town of Ayodhya, where for a short distance it is usually
known as the Saryu, as far as Belghat. The river flows continually shifting canal within a broad sandy bed. During the rains it carries as immense volume of water, but in dry weather it shrinks to small dimensions. The river has a constant tendency to change its course during the floods, and in this manner large tracts of land from time to time are transferred either to the northern or southern banks, rendering the total area of the district subject to incessant variation. These changes have occasionally been accompanied by the formation of large islands and deep stream rule prevails, and the constant shifting of the jurisdiction of such lands from one district to another results in considerable inconvenience.

Rapti River rises in the foot hills of Nepal to the north of Behraich and after course of about 130 km. from that district traverses to the northern portion of the Gonda and first touches Sant Kabir Nagar in the north-west. The tributaries and affluents of the Rapti are very numerous, especially those on the left bank. Those on the south represent merely old bends of the river and as such are of little importance, save as local drainage channels. The chief of these is the Ami. The Ami is a stream which commences at a short distance from Rapti in Rasulpur and issues from a large tract of paddy land.

The Ghaghra receives directly hardly any of the drainage of the district, as exception the immediate neighborhood of its banks, all the surplus water is intercepted by its affiance. Occasionally the river overflows its banks and submerges the adjoining lowlands, with the result the water is actually transferred from the river to the Manwar or Kuwana. The latter, in its lower reaches near Bhanpur, is joined with the Ghaghra by cross channel and from that point onwards it acts as an arm of the Ghaghra.

2.3.3. Soil

The district is underlain by Quaternary alluvium comprising and of various grades, gravel, kankar and clay. The alluvium can be classified into two groups, the older alluvium and the newer alluvium. Older alluvium is of middle Pleistocene age and generally occupies high ground which is not affected by floods during the rainy season. The Newer alluvium covers the lower height and is mainly conferred to the flood plains along the river channels and belongs to the upper Pleistocene to the recent age.

2.3.4. Demography

Demographically, Gorakhpur district is one of the important districts to study. The total population of Gorakhpur district is 37,69456 (2001) and ranks fifth among
all the districts of Uttar Pradesh. It constitutes 2.28 percent of the whole population of Uttar Pradesh. Of the total population, 80.41 percent population stays in the rural areas.

Fig. 2.1

Decadal Growth Rate of Population in Gorakhpur District (1901-2001)

Gorakhpur has a very high population density (1134 persons per sq. km.) which is very high in comparison to national population density which is 324 persons per sq. km and state average of 659 persons per sq. km. The decadal growth rate of the district was high (22.9 percent) when compared to the national average (21.34 percent) but seems low when compared with that of the decadal population growth rate of the Uttar Pradesh (25.84 percent).

Fig. 2.2

Population Pyramid of Gorakhpur District (Total Population) – 2001
The sex ratio of the Gorakhpur district (959 females per thousand males) is very high when compared to the national average (933 females per thousand males) and state average (898 females per thousand males). The rural sex ratio is very high (977 females per thousand males) in Gorakhpur district.

The literacy in Gorakhpur district is not very high. Its total literacy rate is 58.5 percent. The male-female differential of literacy rate is also very high. On one hand male literacy rate is as high as 73.6 percent which is very close to the national average of male literacy (75.85 percent), on the other hand the female literacy is as low as 42.9 percent which is less than the female literacy rate of Rajasthan (44.34 percent) which has the highest male-female differential of literacy among all the states of India. The average family size in Gorakhpur district is 6.8 persons per family in rural areas and 6.7 persons per family in urban areas.

2.3.5. Agriculture

Main cereal produced is rice, wheat, jawar, bajra, barley and maize. Among the Rabi crops wheat is cultivated in about 39.55% of the area under food grains, followed by barley. The major crop of kharif is paddy, which is cultivated about 42.6% of the area under the food grains. Pulses like pea, moong, urd and others occupy rest of the area. Groundnut is also an important crop grown. Livestock plays a better role along with agriculture. There is a total of about 1893 thousand animals of different varieties. Among birds, chicken makes a major part of it. Besides dairy animals and birds, pigs are the next profitable animals. For better care of animals, veterinary hospitals, animal development centres, artificial insemination sub-centres, and sheep development centres are functioning. Apart from it, Poultry units and cooperative dairies are also working in the district.

2.3.6. Industries

There are many sugar factories in the district and it is a good exporter of sugar. A big fertilizer unit named Gorakhpur fertilizer is running in the district and producing a good quality of chemical fertilizer, which has an impact on agricultural development. Besides it, there is an Industrial Estate also with 14 working sheds, and 39 plants giving production. Small-scale industries also play vital role in the economy of a district and Handloom is one of the main among them.
2.3.6. Economic Activities

Gorakhpur has a phenomenal rural landscape. Gorakhpur district has 7 Tehsils and 19 C.D. Blocks and 3319 villages. About 70% of its population is engaged in agricultural activities. The percentage of main workers to total population is also very low. Only 18.4 percent of the whole population of the district is main worker. In rural areas this proportion is lesser and main workers constitute only 17.9 percent of the whole rural population of the district. Of the total main workers of the district, 37.2 percent were cultivators, 16.9 percent were agricultural labourers and 4.2 percent were engaged in household industries.

2.3.7. Land Use

Of the total gross area of the district, 1.7 percent is forested, which is very low. The total sown area is 75.3 percent of the gross area of the district. Of the total sown area of the district, only 5.8 percent area is utilized for the production of commercial crops like sugarcane production. Net irrigated area constitutes 81.7 percent of the net sown area of the district. The proportion of electrified villages is 84.5 percent of all the villages of Gorakhpur district.

Various studies have demonstrated that Gorakhpur has been an important outmigration and labour supply centre to bigger cities in the past. Although, Gorakhpur has been an important rural outmigration districts among the districts of eastern Uttar Pradesh but it lacks attention by the demographers and social scientists.

2.4. Concept of Migration and Different Terms Used in Migration Studies

Before going into the details of nature and sources of data used in this study, it seems imperative to know the concepts and different terminologies used in migration studies.

The movement of population in space is a multifarious phenomenon in which the distance of moves may vary from a few yards to many miles, and in which the duration of stay at destination may vary from a few hours to many years. A considerable part of this movement is incidental to carrying on the activities of daily life- commuting to and from the place of work, shopping, visiting, travel for business and pleasure, to name only a few. These types of mobility are of interest in their own right, and statistics
concerning them are useful for many analytical purposes. They are, however, to be distinguished from the type of mobility that involved a sustained or permanent sojourn in the place of destination. It is this latter type of mobility that is envisaged by the concept, migration. The essential character of migration is thus it involves a change in place of abode, or place of “usual” residence - a taking-up of life in a new or different place (United Nations’ Manual VI).

A worldwide phenomenon called ‘migration’ is defined as the relatively permanent movement of persons over a significant distance. *The United Nations* defines migration as a removal for one year or more as ‘permanent’ and thus a migration, while a stay for a shorter period is classified as visit. Migration is a term which encompasses a wide range of patterns. From the geographical point of view it may involve the movement of people from one locality to another within the country or from one country to another.

A migration is then operationally defined as a change of residence from one civil division to another, and the volume of migration is to a considerable degree a function of the size of areas chosen for compilation. *The United Nations* defines migration as-“*A move from one migration defining area to another (or a move of some specified minimum distance) that was made during a given migration interval and that involved a change of residence* (United Nations Manual VI).

According to the *Census of India*, if a person was born at a place other than the place of enumeration, the movement of the person will be called as migration. Thus, a person who had migrated elsewhere for all practical purposes and happened to be at the place of birth during the period of enumeration, will be treated as a non-migrant at the Census (Census of India 1991).

A migrant is a person who has changed his usual place of residence from one migration defining area to another (or who moved some specified minimum distance) at least during the migration interval. Persons who moved during the interval and died before its end should strictly speaking, be counted as migrants and their moves should be counted as migration. Every move is an outmigration with respect to the area of origin and an in-migration with respect to the area of arrival (Census of India 1991). An *in-migrant* is thus a person who enters a migration defining area by crossing its boundary from some point outside the area, but within the same country. He is to be distinguished from an ‘immigrant’ who is an international migrant entering the area from a place outside the country. An *out-migrant* is a person who departs from a
migration defining area by crossing its boundary to a point outside it, but within the same country. He is to be distinguished from an ‘emigrant’ who is an international migrant, departing to another country by crossing an international boundary.

For migration, the area (or place) from which a move is made is the area of origin. For migrants, the area of origin may be either (a) the area of residence at the beginning of the migration interval, or (b) the area of residence from which the last move was made. The particular way in which the area of origin is defined will depend upon the nature of information available to the analyst (United Nations).

For migration, the area in which a move terminates is the area of destination. For migrants, the area of destination is the area of residence at the end of migration interval. Among the questions which have a direct bearing on migration, that on place of birth is perhaps the most widely used. The question is among those given first priority in United Nations’ rounds of censuses. The place of birth may be recorded as the village, town or district in which the person was born, or perhaps a larger unit such as state, province or governorate (United Nations). In India, the data on Place of Birth is provided on State as well as District level.

One of the limitations of data on the place of birth is that, for persons who have migrated more than once, the place of birth gives no indications of residence at that time of last move. In order to get information on direct moves it is necessary to ask for place of last residence rather than for birth place (United Nations).

Migration can be of three types on the basis of distance: (a) Short Distance (b) Medium Distance, and (c) Long Distance. In Census of India, it is represented as: (a) Intra district Migration (b) Inter- district Migration (c) Intra-state Migration (d) Inter-state Migration, and (e) International Migration.

Migration stream is a group of migrants having a common origin and destination in a given migration period. Although strictly speaking a stream represents the movement between two geographic areas, by analogy, it may also be used to describe the movement between two types of residence areas, such as from non-metropolitan to metropolitan areas, where neither the origin nor the destination represents the contiguous territory (Shryock 1973). The movement in the opposite direction to a stream is called its counter stream. On the basis of streams of migration it can be divided into four major parts in concern to India:

I. Rural – Urban Migration
II. Urban – Urban migration
III. Rural – Rural Migration

IV. Rural to Urban Migration

Migration can also be classified on the basis of occupational selectivity, age selectivity, gender selectivity, educational selectivity and on many other factors.

Nature of Data:

According to IUSSP Multilingual Demographic Dictionary, migration is a form of spatial mobility, which involves change in the usual place of residence and implies movement across an administrative boundary. The change in the usual place of residence can take place either permanent or semi permanent or temporary basis. However, there is no standard source of data either internal or international (United Nations: International Migration Report 2002). A recent survey shows that census that census is the largest source of information at the cross-country level (Bell 2003).

Migration can be measured in number of ways with two most common forms of data being events and transitions. The former are normally associated with population registers, which record individual moves while the latter generally derived from censuses compare place of residence at two points in time. Population registers count the migrations, while the census counts the migrants (Boden et al. 2005).

Migrants are not required to be registered in India either at the place of origin or at the place of destination, while in China, migrants are required to register themselves with the local authority (Zhu 2003: 485-502). In lack of registration of migrants, Census and National Sample Survey (NSS) are the two main sources of migration data in India.

In India population census has remained the basic source of information on internal migration. It however, covers only limited aspects of demographic and socio-economic factors of human life and provides only indirect estimates of migrants. Because of the problem of constant changes in the boundaries of the states of India, the available data are not comparable. This may be the main reason for the lack of sufficient historical studies on internal migration.

Census provides data on migrants based on place of birth and place of last residence. If the place of birth or place of last residence is different is different from the place of enumeration, a person is defined as migrant. On the other hand, if the place of birth and place of enumeration is the same, the person is a non-migrant. Migrants defined on the basis of Place of Birth and Place of Last Residence, are called the lifetime migrants because the time of their move is not known (Visaria 1980: 1-14).
has also been observed that migrants from rural areas retain their attachment to their native place. They continue to maintain links with their families and villages through regular visits and sending remittances (Singh et al. 1980: 28-34). However, the lifetime migration based on census definition does not provide information on the number of moves made by a migrant (Bhagat 2005).

Census of India provides information on place of birth for each person way back from 1881 census. The name of district was mentioned if the person was born in the district other than the district of enumeration. Similarly, the name of the province was recorded if the person was born in the province other than province of enumeration. Until 1951 census, district was the lowest administrative unit of defining the place of birth. Based on this information it was possible to identify inter-district and inter-state migration, but was not possible to identify intra-district information. However, since 1961 census it was possible to measure intra-district migration as village or town was considered the unit of defining the place of birth. It became possible for the first time to study the rural-urban origin of migrants defined in relation to place of birth and four streams of migration namely (a) rural to rural, (b) rural to urban, (c) urban to rural, and (d) urban to urban. The duration of residence was also registered in Census of 1961 (Census of India 1961). Place of Last residence was added in 1971 census and the reason of migration related to place of last residence was also asked since 1981. It is observed that the two criteria POB and POLR give a difference in the number of total migrants. POLR criterion gives higher estimates of internal migrants than POB. It is likely that POB criterion may not be able to capture those migrants who have migrated any time before the census but has returned at the time of enumeration, whereas POLR is able to count them as migrants. The difference between the two estimates could be treated as extent of return migrants (Census of India 1961).

In recent years, a long distance commuting is possible without migrating to place of work. Increased commutation is likely to reduce migration from the nearby areas (Bhagat 2005). In 2001 Census, a question on travel to the place of work was incorporated along with of mode of transport used to reach the place of work. However, commutation and migration are two different forms of spatial mobility as commutation does not require change of residence.

In contrast to the census, the National Sample Survey Organization, a wing of Ministry of Statistics and Programme Implementation, Government of India has been carrying out all India household surveys once in every five years in order to know the
employment and unemployment situation in the country. This survey includes a question on migration. The latest and the sixth such survey was conducted in July 1999-June 2000 provided information on internal migration in the country. As it is a sample survey, the data have obvious limitations and are not helpful in understanding the district level pattern in the internal migration within each state.

However, it is interesting to note the differences in defining migrants between the Census and NSS. The concept of Usual Place of Last Residence is adopted by NSS to define migrants. A usual place of residence is defined as a place (village/town) where the person had stayed continuously for a period of six months or more.

According to NSS, a migrant is defined if he or she had stayed continuously for at least six months or more in a place (village/town) other than village/town where he or she was enumerated. The village/town where the person had stayed continuously for at least six months or more prior to moving to the place of enumeration was referred to as the last usual place of residence of that migrated person (National Sample survey Organisation 2001). By this definition births occurred in hospital will not be counted as migrants as baby is unlikely to stay six months and more in the hospital.

2.5. Data Base

The data have been taken from the following sources:

2.5.1. Secondary Sources

The present study uses both the secondary sources of data as well primary sources. The macro level analysis is based on secondary data and for analyzing the micro level problems, the primary data has been generated. Following sources have been used as a source of secondary data of the study:

- Census of India (Migration Tables, specially Table D-1, D-3, D-11 and D-16 of Census of India have been used specifically for the year 2001 to show the patterns and characteristics of outmigration from different states. Table D-2 (Migrants by Place of Birth) has also been used.
- Statistical Abstract of Uttar Pradesh
- District Census Handbook
- Town and Village Directory
2.5.2. Limitations of Secondary Sources of Data

The Census of India gives data for internal migration up to the district level but in the case of outmigration we cannot go beyond the state level for micro studies because census provides data on internal migration to the districts from different states. Therefore, outmigration studies are limited up to the state level. We need data at district level for further studies up to district and village level. Therefore, primary field survey becomes inevitable for the present study.

2.5.3. Primary Sources

Field Survey was conducted to get data on number of outmigrants, characteristics of outmigration and patterns of outmigration from Gorakhpur district. Besides this field survey have also been done to evaluate the level of rural-development in the particular village. This survey will be aimed to evaluate the push and pull factors in the village. The micro level study consists of two different types of enquiries, the first related to the level and pattern of rural outmigration from the districts and the second is related to socio-economic and demographic profile of the households. Two schedules of questionnaires, therefore, have been developed and are given in Appendix 5.

1. Household Schedule: Information regarding individuals and households will be taken to know the socio-economic conditions of the household as well as of the individuals in the particular house. The following data have been generated with the help of household schedule:
   i. Primary and Secondary occupation of the head of the household
   ii. Age, sex, marital status, educational qualification, primary and secondary occupation, and migratory status of each individual of the households.
   iii. Immovable property of the households in yes and no.
   iv. Movable property (Cattle, agricultural tools, electronic articles, mode of conveyance) of the households in yes and no,
   v. Housing structure of the household
   vi. Amenities (Electricity, water availability, kitchen facility, bathroom facility, and Toilet facility) in the households in yes and no.
   vii. Occupation of agricultural area in hectares by the households
   viii. Annual production of the crops (in quintal) in the households
   ix. Income (annual) of the households from different sources
x. Number of returned migrants in a household
xi. The reason of no migration from the household

2. **Migrant Schedule:** Information related to migrants in the households will be taken in this schedule. The schedule will contain information containing particulars of migrants, their age, sex, marital status, education, their place of destination. This will also incorporate information like the present employment status of migrants, remittances, occupation, their reason of migration etc. Following variables have been extracted from this schedule:

i. Age at the time of migration
ii. Age (at present) of the migrants
iii. Sex of the migrants
iv. Educational attainment of the migrants (both at present as well as at the time of migration)
v. The number of children of the migrant (if Married)
vi. Duration of Migration
vii. Place of destination
viii. Types of employment at the destination
ix. Monthly salary (Income) at the destination
x. Amount of remittances sent to home
xi. Occupation before leaving home
xii. Reason of outmigration
xiii. Source of information regarding employment at the destination

2.6. **Selected Indicators of Rural Development for the Study**

Following indicators have been selected to see the pattern of regional development in different districts of Uttar Pradesh in general and different CD Block of Gorakhpur districts in particular:

i. Agricultural Density
ii. Rural Literacy
iii. Average size of farms (in hectares)
iv. Percentage of net area sown to total area
v. Fertilizers used per hectare (kg)
vi. Primary agriculture loan cooperative societies per lakh population
vii. Percentage of electrified villages in total inhabited villages
viii. Number of Primary schools per lakh population
ix. Number of allopathic hospitals, dispensaries and Public Health Centres per lakh population
x. Number of telephones per lakh population

2.7. Methodology:

To test the hypotheses set up for the study, following methods and techniques will be applied:

2.7.1. Indirect Measurement of Net migration:

The United Nations has prescribed an indirect method for measuring net migration in case there is no authentic data available on it. The method is known Census Survival Ratio Method. It can be Forward Survival Ratio Method as well as Backward Survival Ratio Method. The logic starts with taking data of a population in two successive censuses and comparing the projected population of the initial census with the final census. In a forward survival ratio method, if the projected population is more than the final population, it indicates the shortage due to migration. Similarly, if the projected population is short of the projected population of the next census, excess count in the final census is considered to be due to net in-migration. In census survival ratio method the final year population is survived and compared with population in the initial year.

\[ P^n_{x} = \text{Population aged } x+ \text{ in initial census} \]
\[ P^n_{x+n} = \text{Population aged } x+n \text{ in next census after } n \text{ years} \]
\[ nS_x = \text{Survival ratio of the population aged } x \text{ to } x+n \text{ in } n \text{ years} \]
\[ M_{1(x)} = \text{Net Migration by forward census survival ratio method} \]
\[ M_{2(x)} = \text{Net Migration by backward census survival ratio method} \]

\[ M_{1(x)} = P^n_{x+n} - nS_x \cdot P^n_x \]
\[ M_{2(x)} = \frac{P^n_{x+n}}{nS_x} - P^n_x \]

\[ \frac{M_{1(x)}}{nS_x} = M_{2(x)} \]

The Census Survival Ratio Method cannot give estimates of net migration for persons born during the inter-censal interval. This gap may be filled by various
methods. If the birth registration is considered to be complete and number of births are available by areal units, these can be used ratios and for computing estimates of net migration.

If reliable birth statistics are not available, the following approximate method which uses area specific child-woman ratios, derived from the second census, may be applied. If the ratios of children 0-4 to women aged 15-44 and of children aged 5-9 to women aged 20-49 are denoted by CWR_0 and CWR_5 respectively, then estimates of net migration for the age groups 0-4 (denoted by \( \text{Net}_{0}^{sM_{0,l}} \)) and 5-9 (denoted by \( \text{Net}_{5}^{sM_{5,l}} \)) are given by:

\[
\text{Net}_{0}^{sM_{0,l}} = \frac{1}{4} \text{CWR}_0 \cdot \text{Net}_{30}^{M_{15,l}}(0)
\]

\[
\text{Net}_{5}^{sM_{5,l}} = \frac{3}{4} \text{CWR}_5 \cdot \text{Net}_{30}^{M_{20,l}}(0)
\]

Where \( \text{Net}_{30}^{M_{15,l}}(0) \) and \( \text{Net}_{30}^{M_{20,l}}(0) \) are the area estimates of net migration for females aged 15-44 and 20-49 respectively. If we assume that the flow of migration was even and fertility ratios constant, then one fourth of the younger and three fourth of the older children would have been born before their mothers migrated (United Nations Manual VI).

2.7.2. Study of the Magnitude, Characteristics and Patterns of Rural Outmigration

Descriptive analysis has been done. Simple percentage of out-migrants and net migration to total population has been calculated to show the magnitude and characteristics of out-migrants in the area. Besides this ray diagram, bar diagram, population pyramids have been drawn for pictorial depiction of the characteristics of rural out-migrants.

2.7.3. Analysis of the Level of Rural Development in the Region

On the basis of the indicators selected a composite index (First Principle component) has been prepared to analyze the level of rural development of CD Blocks of Gorakhpur district.

The method for computing the composite index for the overall rural development is the first component as used by Dasgupta and Pal. The composite index obtained by this method is characterized as having the maximum sum of squares of correlation with the selected variables. Because of this property it may be considered as the best representative of all the selected variables. The first component is a linear combination (weighted sum) of the standard scores of the given variables. The weights
used in this case are the elements of the Eigen vector corresponding to the highest eigen value of the correlation matrix $R$ of the selected variables. The Eigen vector used here is also normalized to the highest Eigen value used. The efficiency with which the first component reflects the combined picture of the given $n$ variables is measured by the ratio of the highest eigen value of $R$ to $n$ (Mahmood 1998).

### 2.7.4. Evaluation of the Impact of Rural Development on Rural Outmigration in the Region:

Stepwise regression, correlation matrix and chi square test have been computed to evaluate the impact of indicators of rural development on rural outmigration in the area.

**Correlation and Regression Analysis:** Two types of analysis have been carried out for verification of the hypothesis and evaluating the role of different types of variables. These analyses are *Zero Order Correlation Matrix* and *Stepwise Regression*. They are mutually complimentary and perhaps inseparable. First of all, it has been used to test the hypotheses as an independent exercise. This has been done by using zero order correlation matrixes with the help of Pearson’s correlation coefficient.

A test has been applied to test the statistical significance of correlation coefficient:

$$ t = r \sqrt{\frac{n-2}{1-r^2}} $$

Where $r =$ Pearson’s coefficient of correlation

And $n =$ Number of observations

Secondly, in order to ascertain the relative importance of the variables, the technique of step wise regression will be employed. Step wise regression is a procedure of selecting one regression equation from several possible combinations of inadequate variables. Even though a set of variables will be selected because they are theoretically relevant, a smaller set of these variables may provide a satisfactory model of the process under examination.

$$ Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \ldots \ldots + \beta_k X_{ik} + E_i $$
where $\beta_0$ is called the "intercept" and $\beta_1$, $\beta_2$, $\beta_3$, and so on, are called the "regression coefficients" of $x_1$, $x_2$, $x_3$ respectively. The intercept is the value of $Y$ when the value of all risk factors is zero (Mahmood 1998).

Correlation and stepwise regression analysis have been used in the chapter IV of this thesis where a causal relationship has been worked out between dependent variable (Intra-district as well as inter-district rural male outmigration rate) and independent variables (explanatory variables of rural development).

2.7.5. Analysis of the Determinants and Consequences of Rural Outmigration

Logistic Regression and Chi Square Test are used to evaluate the consequences of rural outmigration on the families of rural out-migrants.

**Logistic Regression:** It is a method of multivariate analysis of the multiple regression model designed to deal with the situation when we have only the measurement of presence or absence, occurrence or non-occurrence of some factors. In such a dichotomous independent variable ordinary regression equation may give the estimated value of the independent variable beyond 0 and 1, which will not be correct. Any value between 0 and 1 may be taken as the probability. To avoid a situation the dependent variable is converted into logistic function given below:

$$P = \frac{1}{1 + e^{-z}}$$

Where $z = b_0 + b_1 x_1 + b_2 x_2 + \ldots + b_k x_k$, to make it simpler we may transfer $P$, the proportion into odd which will give,

$$\frac{P}{1-P} = e^z$$

By taking logarithm of both the sides,

$$\log \left(\frac{P}{1-P}\right) = Z$$

The quantity $\left(\frac{P}{1-P}\right)$ is called as the odds and the logarithm of it is known as logit of $P$. We can take both $\left(\frac{P}{1-P}\right)$ (odds) or logarithm of $\left(\frac{P}{1-P}\right)$ (logit $P$) as dependent variable and $Z$ as the function of $X$ ($b_0 + b_1 x_1 + b_2 x_2 + \ldots + b_k x_k$). In the first case, it will be a multiplicative model and in the second case it gives an additive model. Main function of the logit regression analysis is $z$ given by
\[ Z = b_0 + b_1 x_1 + b_2 x_2 + \ldots b_k x_k \]

Where \( z \) is the predictor variable and \( e \) in the base of natural logarithm is equal to 2.71828.

This expression is substituted in the formula for logistic function in the above equation.

\[ P = \frac{1}{1 + e^{-(b_0 + b_1 x_1 + b_2 x_2 + \ldots b_k x_k)}} \]

In this analysis, both logistic regression coefficients and odd ratios are used.

Odd ratio is the ratio of the probability of the event occurring to the probability of event not occurring.

Odd = Probability of the event occurring / Probability of the event not occurring denotes as,

\[ \log \frac{P}{1-P} = b_0 + b_1 x_1 + b_2 x_2 + \ldots + b_k x_k + e \]

Where \( P_i \) = Probability of the event occurring

\( B_0 \) = Constant term representing the value of \( \log \left( \frac{P_i}{1-P_i} \right) \) with the base line value of cell values \( x_1 \) to \( x_k \) in the model.

\( x_1 \) to \( x_k \) = independent variables associated with the process of outmigration

\( b_1 \) to \( b_k \) = unknown regression coefficient associated with the independent \( x_1 \) to \( x_k \).

\( E \) = Error term representing unobserved variables that influences dependent variables.

The coefficient is estimated using the method of maximum likelihood. The predictor variables should be numeric on a scale. If a predictor variable is in a categorized variable as such and not the reference category, in such cases, the ratio term \( \exp (b_k) \) for a particular category \( k \) is the odd ratio i.e. the ratio of odds for the category \( k \) is the odds for reference category (Retherford and Choe 1993: 119-150).

**Chi-Square Test:** The chi-square test has been applied here to measure the effects of outmigration on out-migrating households. This test is one of the simplest and most widely used non parametric tests in statistical techniques. This method is used to test the correspondence between certain observed and estimated frequencies. In generalized notation, its formula is:
Where 'O' refers to the observed frequencies and 'E' refers to the expected frequencies

2.8. Sample Design

The reason for choosing the field area for conducting the research has already been explained above in the study area. To arrive from the macro level area of study to the micro level, certain analysis has been carried out. At the macro level, the outmigration rate of all states and union territories have been calculated among which outmigration rate of Uttar Pradesh (2.0 percent) has been very high in comparison to other states of India except Bihar (2.7 percent). Therefore, Uttar Pradesh becomes a strong case for this study.

Fig. 2.3
SAMPLE DESIGN FOR THE STUDY

UTTAR PRADESH

GORAKHPUR DISTRICT

C.D. BLOCKS

HIGH RURAL DEVELOPMENT

BHATHAT

GOLA

AGRICULTURAL DEVELOPMENT

INFRASTRUCTURAL DEVELOPMENT

SOCIO-ECONOMIC DEVELOPMENT

LOW RURAL DEVELOPMENT

JANGALKORIA

PIPRAICH

2 VILLAGES FROM EACH C.D.BLOCK (TOTAL 8 VILLAGES) HAVE BEEN SELECTED ON THE BASIS OF AREAL RANDOM SAMPLING

HOUSEHOLDS (ON THE BASIS OF SIMPLE RANDOM SAMPLING)

At the meso level, Gorakhpur district has been selected for the study because it is a net outmigration district which we have already seen on the basis of survival ratio method of calculation of net migration. Besides this, Gorakhpur lies in the eastern part
of Uttar Pradesh which has a phenomenal rural landscape, and this region has been a
great supply source of cheap labour to other parts of the country in the past as
acknowledged by many studies and literatures.

Many agriculture labourers have migrated to the more agriculturally developed
states of Punjab and Haryana; besides this, many unskilled labourers have also migrated
to the industrial regions of Kolkata in the past and Mumbai recently as unskilled
industrial labourers. Gorakhpur district has 7 Tehsils and 20 C.D. Blocks and more than
3500 villages. So, it is not easy to study all the villages. Therefore, composite index
have been prepared for all 20 blocks on the basis of rural development indicators to
select the blocks for the study (Appendix 2.1).

Map 2.2

The composite index has been calculated for rural development indicators. Two
Blocks each with highest and lowest composite index of rural development have been
selected. So, a total of 4 blocks have been selected. The selected blocks are Gola,
Bhatat (Blocks with highest values of composite index of rural development), Pipraich
and Jangal Kodiya (Blocks with lowest values of composite index of rural development)
(See Appendix 2.1). Two Blocks each with highest and lowest composite index of rural
development have been selected, so that impact of rural development on rural
outmigration can be tested easily and with accuracy. At the micro level, the selection of
villages is very important. Areal Random sampling has been used to select the 12 villages for the study.

Areal Random Sampling has been done on the basis of location of villages from the nearest urban centre viz. within 5 kilometers, and more than 10 kilometers. There has been given an equal representation for each community development block in the study by taking 50 sample households from each village during the field survey. So, a total of 400 households have been studied in eight villages by taking 200 sample households each from high rural development block and low rural development blocks.

<table>
<thead>
<tr>
<th>Distance from the Nearest Urban Centre</th>
<th>Name of the Selected Villages to be Studied</th>
<th>Level of Rural Development</th>
<th>No. Of Households in the Village</th>
<th>Name of the Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 Km</td>
<td>Busdila Rausar</td>
<td>Low</td>
<td>384</td>
<td>Pipraich</td>
</tr>
<tr>
<td></td>
<td>Banchara</td>
<td>High</td>
<td>209</td>
<td>Bhathat</td>
</tr>
<tr>
<td></td>
<td>Bevari</td>
<td>High</td>
<td>447</td>
<td>Gola</td>
</tr>
<tr>
<td></td>
<td>Chakra</td>
<td>Low</td>
<td>99</td>
<td>Jangal Koriya</td>
</tr>
<tr>
<td>More than 10 Km</td>
<td>Mahrazi</td>
<td>Low</td>
<td>355</td>
<td>Pipraich</td>
</tr>
<tr>
<td></td>
<td>Ghora Deur</td>
<td>High</td>
<td>279</td>
<td>Bhathat</td>
</tr>
<tr>
<td></td>
<td>Banvarpar</td>
<td>High</td>
<td>119</td>
<td>Gola</td>
</tr>
<tr>
<td></td>
<td>Sherpur Chamrah</td>
<td>Low</td>
<td>360</td>
<td>Jangal Koriya</td>
</tr>
</tbody>
</table>

The households in the villages have been selected on the basis of simple random sampling, so that there would be an equal chance of selection of all the households. Besides this Gorakhpur district is also a homogenous as far as relief and other physical characteristic are concerned. Therefore, simple random sampling method will be most suitable for the selection of households which has been studied.

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