A Geographical Study Of Population Distribution And Density In Paschimi Champaran District

Binod Kumar Yadav*

Abstract :-The present paper attempts to identify spatio-temporal variation in population distribution and density in Paschimi Champaran District of Bihar. In 1901, total population of the district was 784253 persons. The population of this district further increased to 19.68 Lakh in the year 1981 and in the last census of 2011 it has increased to 39.36 Lakh. Average density is 950 persons Sq.km. The district has a sex ratio of 906 females for every 1000 males and a literacy rate of 58.6 percent population distribution in uneven in the district.

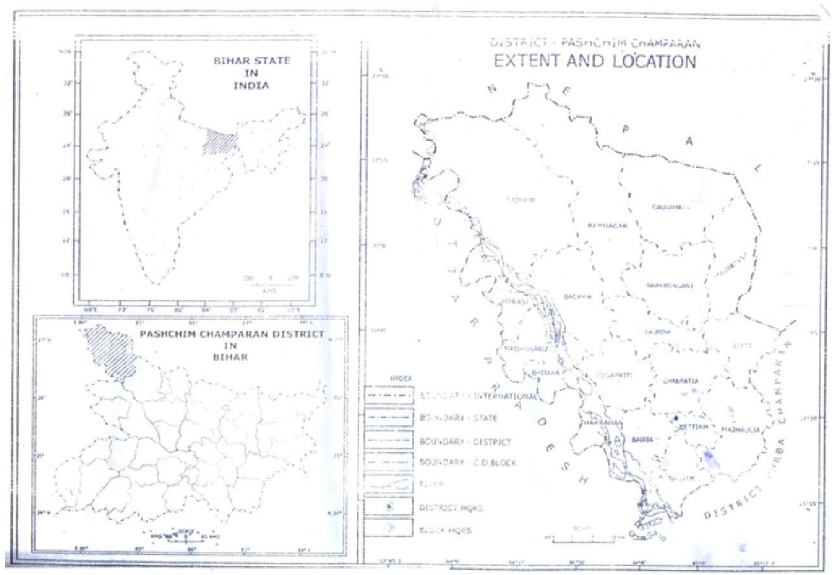
Keywords : Population, Spatio-temporal, variation growth, Distribution, Density, Decadal, Absolute, Decline.

INTRODUCTION:-The district of Paschimi Champaran is noted for homogeneity of land surface and agriculture resource based population and much less uneven distribution of population is supposed to be found in this district. But not all areas of the district have uniformity in the distribution of population and its associated characteristics because of some physical conditions like the high flood prone areas, chaurs, marshy land, diara land, smaller hilly areas and some socio-economic conditions like the development of roads, rail route, centres of religious importance etc. As such there are areas having comparatively more concentration of people than the areas having relatively less favourable conditions. Rivers of the district which cause less damaging flood and distribute fertile soil in the area have dense population like Gandak, Buri Gandak, Sikrahana, Narayani, Mashan, Balore, Dhongahi, Singahi etc.

Objectives :-The main objective of this study is to focus attention on population growth which is a very important attribute of population distribution.

***Ph.D., Dept. of Geography J. P. University, Chapra**

The Study Area- Geographically, Paschimi Champaran district is situated between 26^0 35' and 27^0 32' North latitudes and 83^0 50' and 84^0 85' East longitudes. This district encompasses an area of 5228 sq.kms. and comprises 39 lacs population according to 2011 census. As the district has its border with Nepal it has international importance. The area of study is traversed by many streams.



Database and Methodology :-The study is based on the district level secondary data from 1901 to 2011 obtained from census of Bihar, India reports/ Sources and Census C.D. of Paschimi Champaran.

The analytical method have been used in this study.

Distribution of Population-Distribution and density of population are two fundamental components of population geography. Distribution of population refers to the actual placing of people over the place while the term density manifests the relationship between man and land. Isard has given more stress to the time and space aspects of population. Distribution refers to the spatial aspects. It acts as master thread capable of weaving into conerent pattern of the subject. Spatial distribution of population varies according to geographical conditions. But it is also determined by socio-cultural factors. The physical condition includes the terrain, climate, sub-soil, water table, fertility of soil and mineral wealth. The area of fertile plain with sound agricultural background is dominated by composite

townscape crowded with human colonies while in the area of difficult terrian the people are found sparsely distributed with scattered settlements.

The population in Pashcimi Champaran district is unevenly distributed. Hilly tracts of the south have sparse population while the plains in the north are very crowded. The areas of high population concentration is easily discernible from moderately or sparsely populated areas. In depositional plain the distribution of population acquire even pattern in the rural areas and clustered around the urban centres. But in the Southern part due to the dominance of hilly land with thin soil cover the settlements are found clinging to the river banks and water sites, which furnishes the example of scattered settlement patterns. The population in the Southern part of the district tends to be concentrated along the margins of the upland. Villages have several setellite tolas inhabited by low social groups. They are found engaged in the fields of land owners as agricultural labourers.

But the dot maps fails to identify the micro level variations of population concentration. Location coefficient or the index of concentrational (Timms, 1970 quoted by Mahto, 1974) seems to be a better tool in identifying the areas of low and high population concentration. Location coefficient may be obtained with the help of following formulae:-

L. C. = Pi/Ai

Here L. C. = Location coefficient

Pi = Percentage of the total population contained in an area sub-unit.

Ai= Percentage of the total contained in the same areal sub-unit.

The concept of coefficient distribution is more meaningful and useful than simple dot maps. If the percentage of total population of an areal unit is equal to the percentage of total area claimed by the unit concerned the location coefficient would be one. If the location coefficient is more than one, there would be high population concentration while the location coefficient below one would represent low population concentration. According to population concentration, the district may be divided into two parts – (1) the areas of low population concentration (2) the area of high population concentration Table 3(a) and 3 (b).

TABLE – 3 (a)
DISTRIBUTION OF POPULATION, 2001

Sl. No.	Block	Area in Km^2	Percentage of the total area of the district	Population	Percentage of the total population of the district	Location co-efficient
1.	Sidhaw	570.93	12.84	236969	7.78	0.60
2.	Ramnagar	354.98	7.98	193187	6.34	0.79
3.	Gaunaha	311.53	7.09	157703	5.18	0.73
4.	Mainatanr	234.46	5.27	144383	4.74	0.89
5.	Narkatiaganj	344.89	7.76	292240	9.60	1.23
6.	Lauriya	203.54	4.57	179883	5.91	1.29
7.	Bagaha	396.07	8.91	314874	10.34	1.16
8.	Piprasi	160.22	3.60	31466	1.03	0.28
9.	Madhubani	140.55	3.16	65580	2.15	0.68
10.	Bhitaha	140.87	3.16	52152	1.71	0.54
11.	Thakrahan	143.96	3.23	43880	1.44	0.44
12.	Jogapatti	218.94	4.92	185114	6.08	1.23
13.	Chanpatia	257.86	5.80	226532	7.44	1.28
14.	Sikta	195.80	4.40	144794	4.75	1.07
15.	Majhaulia	286.15	6.43	254167	8.35	1.29
16.	Bettiah	61.64	1.38	184912	6.07	4.39
17.	Bairia	233.49	5.25	159692	5.24	0.99
18.	Nautan	188.50	4.24	175938	5.78	1.36
	total	4444.38	100.00	3043466	100.00	

TABLE – 3 (b)
DISTRIBUTION OF POPULATION, 2011

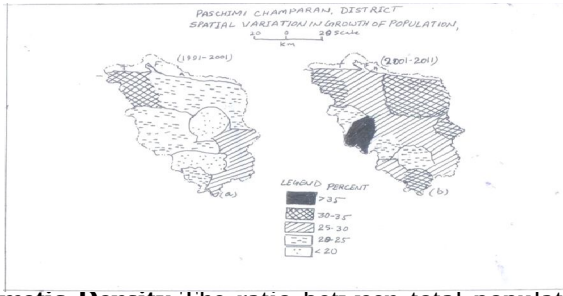
Sl. No.	Block	Area in Km^2	Percentage of the total area of the district	Population	Percentage of the total population of the district	Location co-efficient
1.	Sidhaw	570.93	12.84	309874	7.87	0.61
2.	Ramnagar	354.98	7.98	249102	6.33	0.79
3.	Gaunaha	311.53	7.09	208169	5.29	0.74
4.	Mainatanr	234.46	5.27	190744	4.84	0.91
5.	Narkatiaganj	344.89	7.76	377842	9.60	1.23
6.	Lauriya	203.54	4.57	230162	5.84	1.27
7.	Bagaha	396.07	8.91	398000	10.11	1.13
8.	Piprasi	160.22	3.60	38592	0.98	0.27
9.	Madhubani	140.55	3.16	89608	2.27	0.71
10.	Bhitaha	140.87	3.16	66203	1.68	0.53
11.	Thakrahan	143.96	3.23	52766	1.34	0.41
12.	Jogapatti	218.94	4.92	243516	6.18	1.25
13.	Chanpatia	257.86	5.80	297748	7.56	1.30
14.	Sikta	195.80	4.40	189496	4.81	1.09
15.	Majhaulia	286.15	6.43	329347	8.36	1.30
16.	Bettiah	61.64	1.38	224200	5.69	4.12
17.	Bairia	233.49	5.25	206098	5.23	1.08
18.	Nautan	188.50	4.24	233575	5.93	1.39
	total	4444.38	100.00	3935042	100.00	

The area of Low Population Concentration-The area of low population concentration covers 8 blocks. They form two broad belts and 2 isolated patches in the district. The western belt includes shidhaw, Madhubani and Thakrahan blocks while the eastern one covers Gaunaha, Ramnagar and Mainatanr blocks. Piprasi block in the north-west and Bhitaha block in the north-east form two separate pathces of low population concentration. The low population concentration in these blocks is generally associated with difficult terrain, thick forest, thin soil cover, unfertile soil, less ground water, poor communication etc. The location coefficient varies between 0.27 in Piprasi block and 0.91 in Mainatanr block.

The Area of High Population Concentration-Blocks having more than one location coefficient are included in the area of high population concentration. In the district 10 out of 18 blocks represent high population concentration. These blocks form a compact belt in the central part of the district. The maximum location coefficient is found in Bettiah block and the minimum in Bairia block. Narkatiaganj, Lauriya, Bagaha, Jogapatti, Chanpatia, Sikta, Majhaulia and Nautan blocks have moderate to high population concentration. Level surface, fertile soil, high ground water table and better accessibility are the major advantages for high population concentration in these blocks.

The above-mentioned comments on the location co-efficient of distribution of population 2001 may be once again examined on the light of the population of 2001. Table 5.3 (b) also indicates almost the same pattern of population distribution in 2011 with minor variations in the values of the location co-efficient, the Spatial patterns of population distribution are almost the same as in 2001.

Density of Population-The term density of population refers to the ratio between population and land. It is expressed in terms of the number of persons per unit area of land. It actually reflects the pressure of population on land. Hence, It provides a tool to analyse the distribution of population. Density of population expresses the way in which man has taken advantage of the land he occupies (Trewartha, 1957). The density of population in the district is closely related to its physical conditions thereafter it has been modified by socio-economic and cultural factors. The density of population has been given various expressions by modifying the numerator and denominator. These are the arithmetic density, physiological density, nutritional density etc.



The Arithmetic Density-The ratio between total population and the total area is referred to as the arithmetic density. It is expressed in terms of persons per unit total area. Thus in the calculation of arithmetic density the numerator is total population and the denominator the total area. In true sense the density of population is the most significant index of habitability of an area.

Density of population is a dynamic phenomena. It varies in time and space. The temporal variations in the density of population in the district is shown in table 4.5. In 1901 the density of population in the district was 151 persons per Km^2 which rose to 205 persons per Km^2 in 1951. The increase was slow but steady during the first half of the 20^{th} century but after 1951 the density curve registered sharp increase. The density of population in the district rose from 254 persons per Km^2 in 1961 to 304 in 1971, 377 in 1981, 447 in 1991, 582 in 2001 and 753 in 2011.

TABLE – 1.4

Temporal Variation In The Density Of Population In Paschimi Champaran District

Census Year	Density of Population Per km^2
1901	151
1911	155
1921	157
1931	174
1941	193
1951	205
1961	254
1971	304
1981	377
1991	447
2001	582
2011	753

Source : District Gazetter and District Census Hand Book, Pachimi Champaran.

The spatial distribution of population density in the district is equally noticeable. There is wide variation in the population density from one block to other. Exceptionally high density is found in Bettiah (District headquater) block (3638 persons per Km^2) Large town generally swells the density of population in an area (Bhattacharya, 1978). One step down was in the density scale 800-1300 density class covers 10 blocks. These blocks lie in the plain portion of the district forming three belts (Fig. 5.4). The largest belt lies in the Southern Part and includes six blocks i.e. Nautan, Bairia, Majhaulia, Sikta, Chanpatia and Jogapatti. The fertile plain land, better facilities of transport and communication, intensive cultivation and proximity from Bettiah block are responsible for high population density in these blocks. Shidhwa and Piprasi in the western part while Gaunaha and Mainatanr blocks in the eastern part of the district (Table 5.5).

Density class 600-1000 occupies four blocks i.e. Ramnagar, Sidhaw, Bagaha and. Lauriya, Narkatiaganj and Madhubani forms a compact and continuous belt in the west central part of the district while Gaunaha in the north east and Nautan in the South forms two isolated pockets. The low density in these blocks owes to the presence of hills and unfertile land with relatively thin cover of soil which makes the cultivation less intensive.

The hilly and forested tract of the South covering Thakrahan, Piprasi and Bhitaha blocks have very low population density ranging between 241 persons per km^2 in Piprasi and 367 persons per km^2 in Takrahan blocks. Thick forest, thin and unfertile soil, rugged terrain, less accessibility and less intensive cultivation are the major constraints for population concentration in these blocks. People live only in isolated pockets where fertile soil is available. Availability of ground and surface water in the region also attracts population concentration. The agricultural lands are occupied by few large land owners. Majority of population works on the form as agricultural labourer or collects lac., tendu leaves, Sabai grasses for making ropes and other minor forest products grazing animals and rearing goats are the important occupation these forested areas.

Table – 1.5
DECADAL VARIATION IN DENSITY OF POPULATION 2001-2011

Sl. No.	Blocks	Density of Population (Person per $Km^{2)}$		Decadal Variation
		2001	2011	
1.	Sidhaw	415	543	+128
2.	Ramnagar	545	702	+157
3.	Gaunaha	507	669	+162
4.	Mainatanr	616	814	+198
5.	Narkatiaganj	848	1096	+248
6.	Lauriya	884	1131	+247
7.	Bagaha	795	1005	+210
8.	Piprasi	197	241	+44
9.	Madhubani	467	638	+171
10.	Bhitaha	371	470	+99
11.	Thakrahan	305	367	+62
12.	Jogapatti	846	1113	+267
13.	Chanpatia	879	1155	+276
14.	Sikta	740	968	+228
15.	Majhaulia	889	1151	+262
16.	Bettiah	2999	3638	+639
17.	Bairia	684	883	+199
18.	Nautan	934	1240	+306

Table 5.6 shows the decadal variation in the density of population between 2001 and 2011. It is evident that the density of population has increased in all. The average population density of the district has moved up from 700 to 1000 during the decade. Bettiah block has maintained its dominance in both the census years due to the presence of Bettiah, Piprasi block, on the other hand, has maintained its lowest position due to vast expance of unfertile hilly tract and very low ground water table.

In general the increase has been more pronounced in Urban blocks than their rural counterparts. 10 out of 18 blocks of the district have moved at least one step forward in the density class. TABLE 4.7 shows the number of blocks in each density class in 2001 and 2011. In 2001 the maximum number of blocks was in the density class 600-900. But this position was taken over 750-1100 density class in 2011 on block level.

TABLE – 1.6
Number of Blocks In Density Classes

Sl. No.	Density Class Persons Per Km^2	Number of Blocks 2001	Blocks changes 2011
1.	< - 300	1	1
2.	300-600	6	3
3.	600-900	9	5
4.	900-1200	1	7
5.	1200 - <	1	2
	Total	18	18

Conclusion :

In this paper we see about how population is rapidly increasing, population distribution. In upcoming year population distribution will increase rapidly. Otherwise in future large population block will face a many problem related to place, economy etc. due to population. We see in figures how population density is increase mostly in the district. Population distribution is uneven in the district because of some factors like climate, soils, altitudes and latitude. If pressure of man on land is decreased by developing agricultural related activities, accelerating the production of cash crops, fruits, herbal plants and other crops it will accelerate much more earning and the people will have better socio-economic progress.

REFERENCES

1. Ashford, L.S.; 2001 : New Population Policies, Advancing Woman's Health and Right in Population Bulletin.
2. Akinbode, A; 2002 : Introductory Environmental Resource Management, Ibadan, Daybis Limited.
3. Chandna, R. C. (2016) : Geography of Population, Kalyani Publishers, New Delhi, P.P.-237-249.
4. Sinha, V. N. P., Nazim, M. and Ahmad P. Firoz (2016) : Bihar – Land, People and Economy, Rajesh Publications, New Delhi, P.P. 273-316.

5. Yadav, A. S. (2017) : Development of horticulture and its Environmental conquences in Malihabad, District Lucknow, An unpublished thesis submitted to the Kumam University, Nainital.
6. Census, 2001, 2011 and Sankhiki Patrika of Patna, 2013-14.

****