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Assessment Of Spatial Distribution Of Population In Pali District

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Abstract

Population distribution displays the spatial pattern of residential population in an area, while Density is a concentration of population per unit of an area. As distribution of population shows actual locational spread of population and population density expresses the ratio between number of people and land surface area. So in this paper Pali district has been selected as the study area for assessing the impacts of population distribution and population density at administrative macro and micro level units. Pali District's population distribution according to Census 2011, manifests uneven spatial and rural-urban population. This paper aimed to assess the impact of spatio-temporal pattern of population density on land use change. The conclusion of this study can facilitate planners to make appropriate area specific eco-tourism and extention of irrigation command plans for employment generation.

Keywords : Population Distribution, Population density, irrigation, employment generation.

Introduction

Population Distribution and Population Density have precise and distinct connotations, although sometimes they are used interchangeably. While distribution refers to the actual pattern of spacing of units of individuals over the earth's surface, density, on the other hand, is an expression of the ratio between number of people and land surface area (Hassan ,2020).

The difference between population distribution and population density distribution owes to a different set of factors.The distribution of population is more locational while the density is more proportional the former refer to the special pattern in which the population funds location such as linear, discovered nucleated, agglomerated, etc and the letter is concerned with the ratio between the size of population and the area (Chandna, 2001)

Apart from physical factors, numerous social, demographic, economic, political and historical factors affect population distribution. These factors operate not in isolation but in combination with each other. One cannot, therefore, isolate the influence of any one factor on population distribution. Further, the interplay between these determinants is generally very complex. The primary task of a population geographer, therefore, is to explain the irregularities in population distribution in terms of the influences of all these factors as an integral part of a dynamic process
(Clarke, 1972).

Study Area

Pali District's latitudinal and longitudinal extension from south to north direction is 24°45'N to 26°29'N and from east to west direction is 72°47'E to 74°18'E respectively, comprising a total area of 12387 sq. km. which is shown in Map1. The district is bounded by Jodhpur in north, Jalor in south-west, Sirohi in south and Udaipur in south east. It also touches the boundary of Ajmer, Nagaur, Rajsamand and Siwana tehsil of Barmer district. The district is almost Snail like in shape and resembles an irregular triangle with undulated plains (District Census Report 2011).

Objective

The main objective of this study is to analyse the spatial dynamics of the population in Pali district. The trend of population distribution in all nine Tehsils is analyzed on the basis of rural-urban and population category. Also to analyse rural-urban population density distribution to assess the population growth rate.

Methodology

To fulfill the objectives, the entire district's villages and towns data is categorised into subdivisions data which has been tabulated with the calculation of its percentage share. The village boundaries are vectorized by SOI toposheet and secondary data from Primary Census Abstract-2011 has been used to create choropleth maps by GIS software of QGIS 3.34 Prizren.

Results & Discussion

Population Distribution

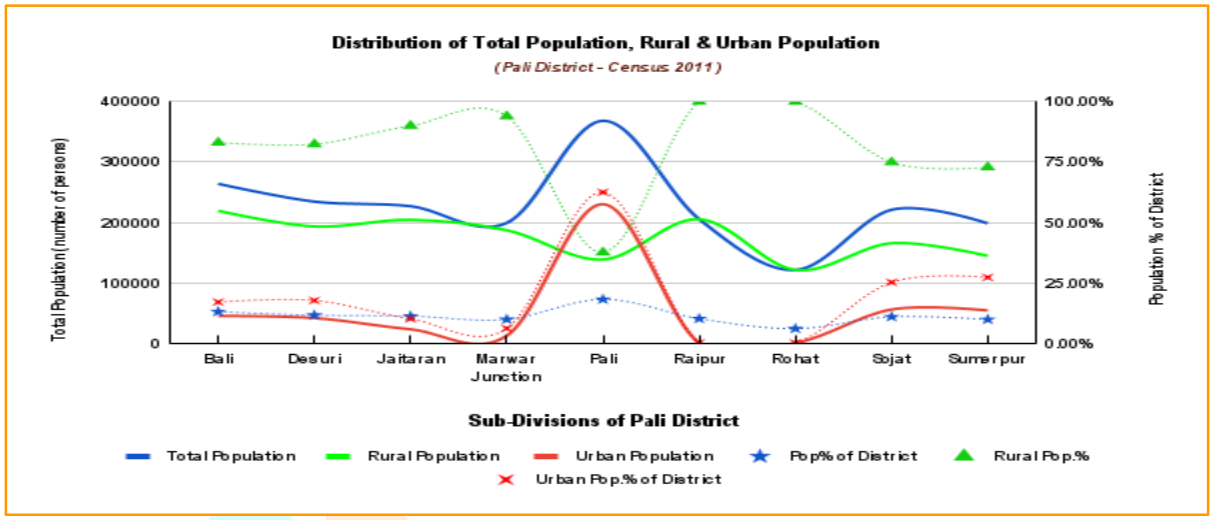
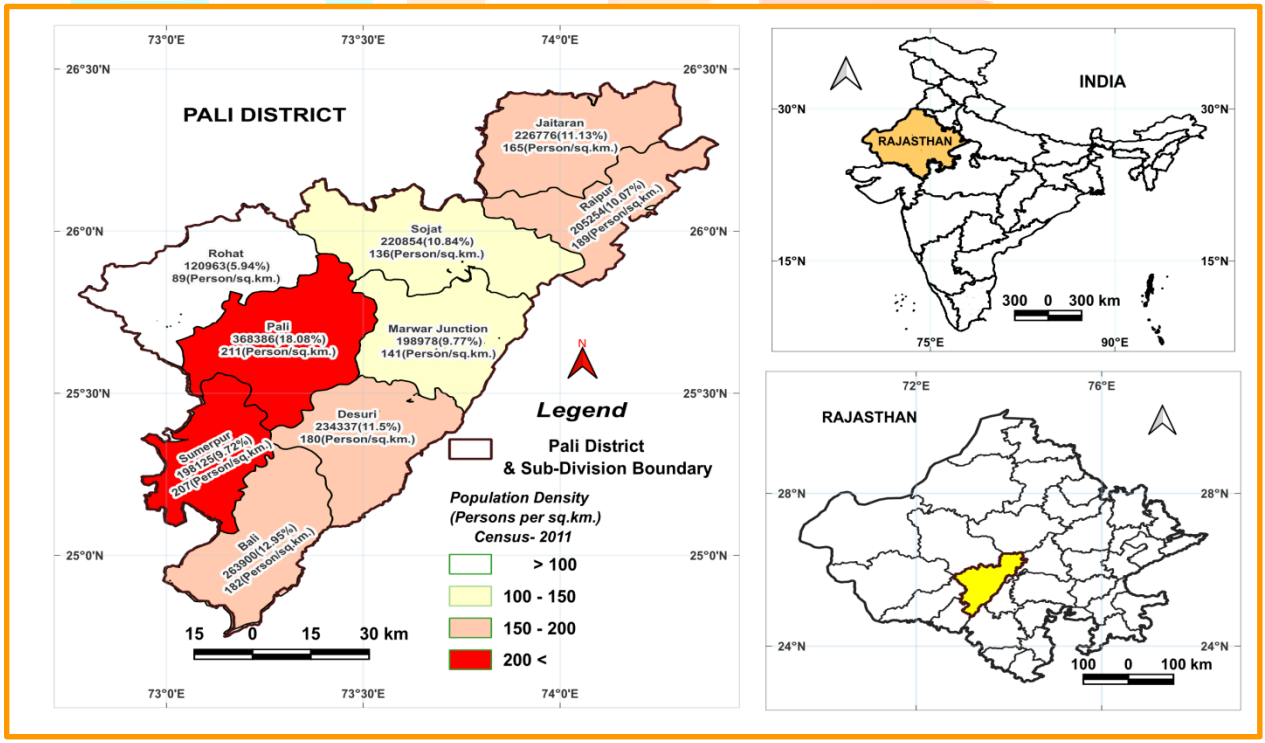


Fig. 1- Distribution of Population In Pali District



Map 1 - Location of Pali District and Sub-Division wise Distribution of Population Dynamics

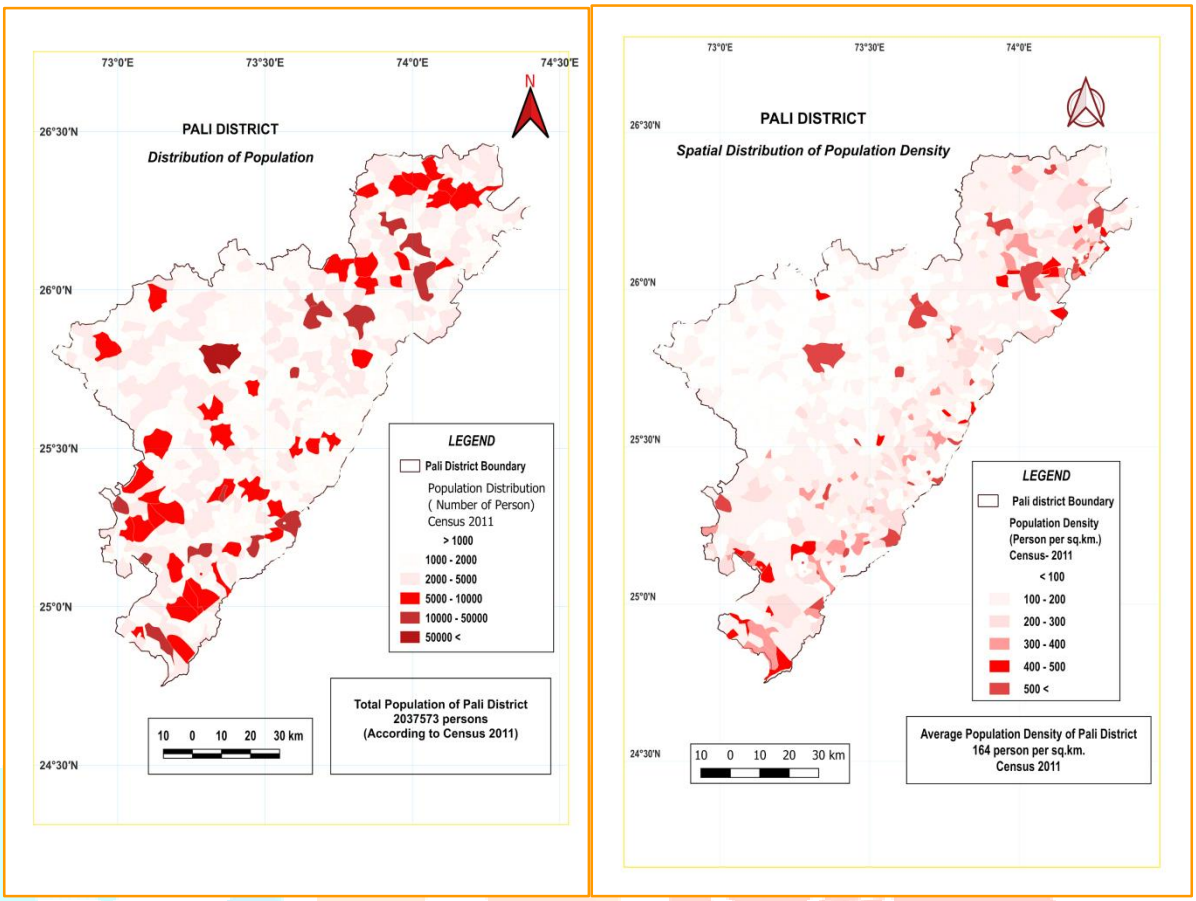
Figure 1 shows the Sub-Division wise population distribution in Pali district which is also depicted in Map1 & Map2. According to Census 2011 Pali subdivision has the highest population (368386 persons) which is 18.08% of the District comprising 14.2% of the district's area, whereas Rohat (11% of district's area) with 120963 population (5.9% of district) has lowest the Sub-Division population. The uneven distribution of population is due to historical, economic , availability of arable land and water resource factors. South & south-eastern Godwar Region, in Bali, Sumerper & south Desuri tehsils has more population as six towns (out eleven towns of whole district) lies here, has also more numbers of ancient settlements accomplished with favourable economic and agriculture infrastructure. Subdivisions of Bali, Sumerpur, and Desuri respectively have 10, 7 & 6 villages comprising more than 5000 population. The northern subdivisions of Jaitaran(8 villages) and Raipur (5 villages) have a population of more than 5000, also has high 59.5%(Net Area Sown), 20.7%(Total Irrigated Area) and 43.9%(NAS) ,19.8%(TIA) respectively contributing for higher population.

The eastern part of district due to low rainfall and increased surface salinity caused by (Rediya, Gujiya & Jojri streams) left hand tributaries of Luni river in Rohat & north-east Sojat tehsils has lower population. Rohat(two villages) devoid of any town and Sojat(three villages) have more than 5000 population.

Distribution of Population Density

Map1 shows Population Density in all nine sub-divisions of Pali district, which is also depicted on villages level in Map 3. The average population density of the district is 164 persons per sq.kms., but it varies from Pali Sub-Division (211 persons/sq.km.) being the highest while Rohat SD with 89 persons/sq.km. is the lowest in the district. At micro level villages & towns having favourable & restricted conditions of soil fertility, irrigation facilities, intensity of transport network, infrastructure development, cultural & economic basis of rural-urban settlement attributes for its much variation. Western Pali district's sub divisions of Sojat,Pali and Rohat exhibit low population density. Rivers like Leelri, Sukri, Magai, Bandi, Mithri and Jawai originating as left hand tributaries of Luni from Aravalli range transverse the district from east to west also coincides with the decreasing rainfall pattern, consequently cultivation is rainfed and soil is prone to salinity. Rohat SD has 89 persons/ sq.km. population density,the lowest among all subdivisions of the district. Although Sub-divisions of Pali (211 persons/sq.km.) has highest and Sojat(136) has moderately less population density, owing to sprawling urban agglomeration of Pali city (1447 persons/sq.km.), Sojat city (1996 persons/sq.km.) & Sojat Road (1384 persons/sq.km.). But in these rural population density is least in Pali Sub-Division(87 persons/sq.km.) and rural Sojat has 104 persons per sq.km.

Rural population density is higher in the eastern part of the district. Sub-division of Raipur has highest rural population density (189 persons/sq.km.), whereas Desuri(160), Bali(159) and Sumerpur(157) correspondingly has higher rural population density due to conducive agricultural infrastructure. As such, the sub-division of Sumerpur that lies in Jawai Dam command region has the highest total irrigated land area(25.5%). Other SDs like Jaitaran has 20.7% of Total Irrigated Land Area(TILA) and 59.5% Net Sown Area(NSA), Raipur has 19.8%TILA & 43.9% NSA. Jaitaran tehsil also has higher rural density (152 persons/sq.km.) which is reflected by its 20.7%TILA & 59.5%NSA.



Map 2 Spatial Distribution of Population & Population Density in Pali District

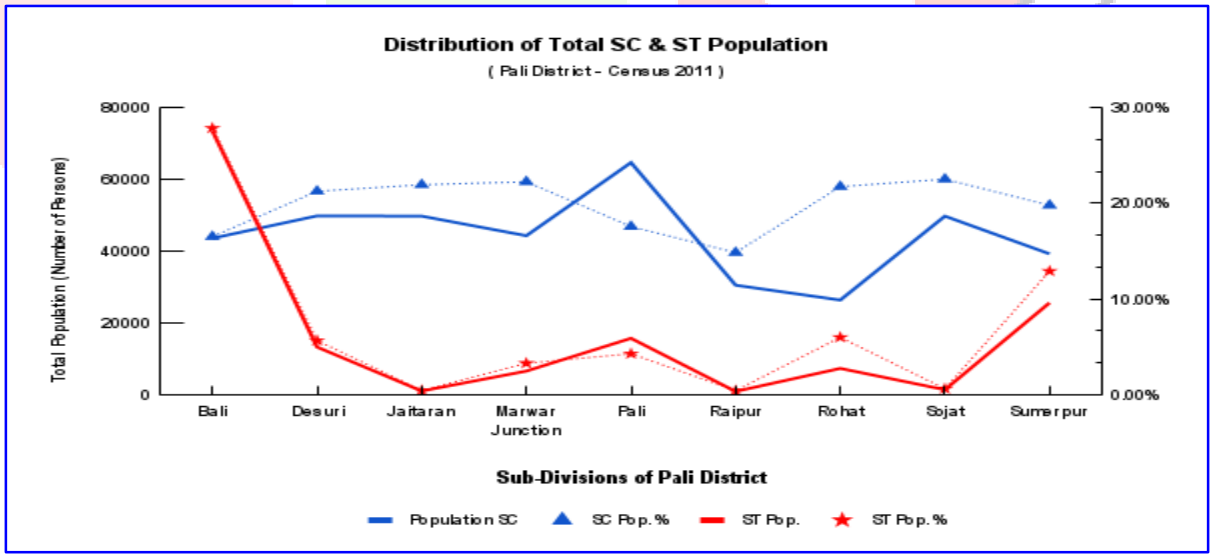
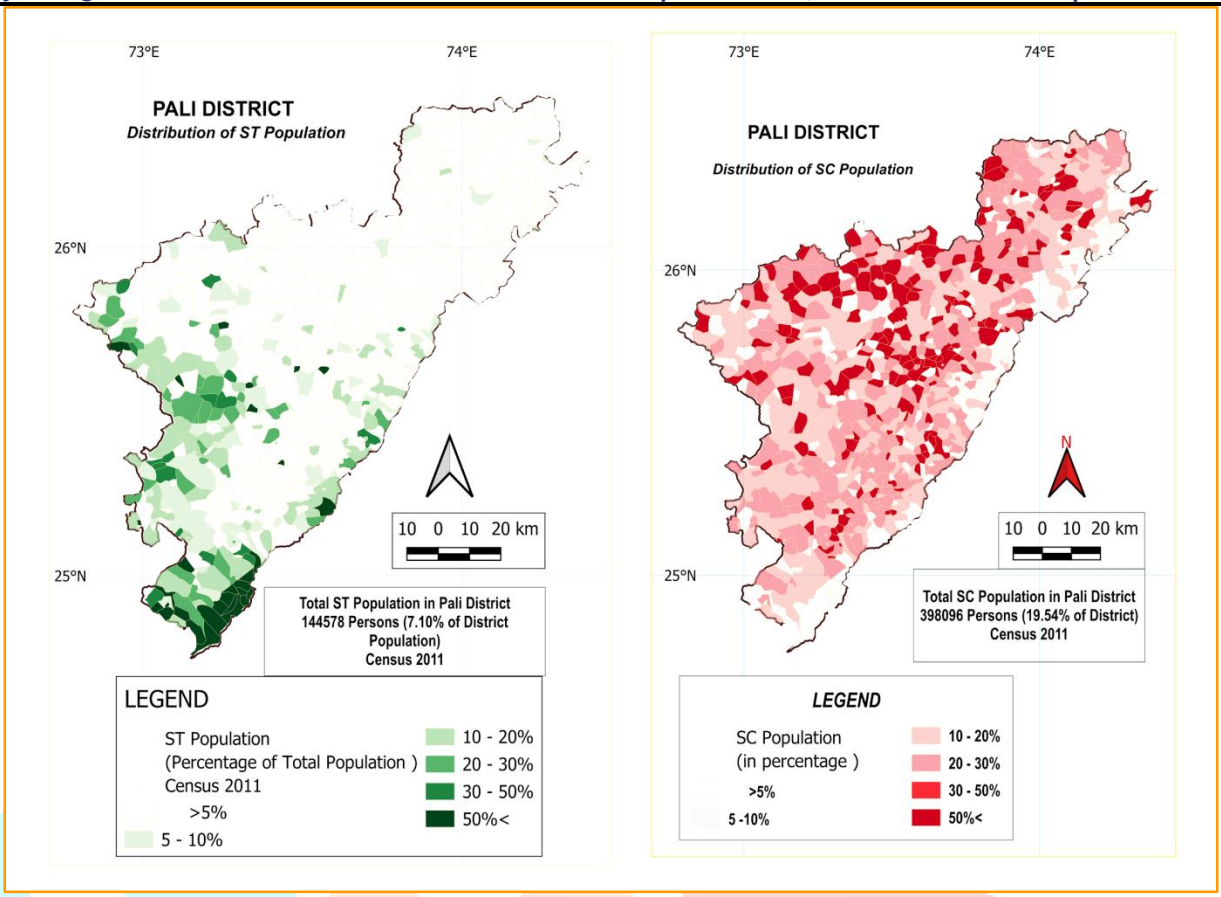


Fig. 2 Distribution of SC & ST Population in Sub-Divisons of Pali District



Map 3 - Distribution of SC & ST Population in Pali District.

Conclusion

Pali District's population distribution according to Census 2011, manifests uneven spatial and rural-urban population due variation in relief, rainfall, natural resources, agricultural practices, irrigation, industrial, socio-economic, demographic and administrative factors. The eastern parts of Pali district bordering the Aravalli range, have higher values of population distribution than the western counterpart. Although these sub-divisions have higher forest and uncultivated areas from north to south Raipur(13.3%), Marwar Junction(10.1%), Desuri(12.9%), Bali(22%). But here other socio-economic factors are responsible for higher population density.

Generally population density refers to some sort of man-land ratio and generally associates with population pressure on land. Therefore land use land cover(LULC) results found correspondence to the variation in population density.

This paper aimed to assess the impact of spatio-temporal pattern of population density on land use change. Therefore conclusions can be drawn that area under non-cultivation, pasture, forest and net sown constantly decreases with the increase in the population density leading to urbanization.

The conclusion can facilitate planners to make appropriate urban master plan and formulate for employment generation plan related to eco-tourism activities in fringes of Tadgarh Roali wildlife sanctuaries & Kumbhalgarh WLS in sub-divisions of Raipur, Marwar Junction, Desuri and Bali bordering Aravalli range. Interlinking Sai river in Udaipur district with other south flowing streams would increase the prospects of Jawai Dam's irrigation command area in Sumerpur & Bali sub-divisions through the tunnel connectivity. Such a policy will certainly lead to a sustainable demographic development of Pali district.

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