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**A Comparative Study of Population Characteristics of Tembhu Lift  
Irrigation Project Command area of Sangli District: Year 2001 & 2011**

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**Abstract:**

*Population estimates typically capture a snapshot in time for precise area-specific analysis; however, understanding changes in population characteristics over time is essential for effective planning and addressing regional population challenges through economic development. In this study, we examined the dynamic nature of population characteristics and assessed population shifts over time within the Tembhu Lift Irrigation Project Command area of Sangli District, Maharashtra State, utilizing census data from 2000 and 2011, adjusted for changes in geographic boundaries. We quantified differences in census data by employing addition, substitution, multiplication, division, and percentage change methods for each population characteristic. Between 2000 and 2011, fluctuations in population size resulted in a V-shaped pattern of population change, exacerbating disparities in demographics and socio-economic status. This study underscores the importance of accounting for significant demographic changes in research endeavors.*

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**Keywords:** *Population Characteristics, Literacy Rate, Growth Rate, Density, Sex Ratio, Population Size, Population Density, Population Growth Rate.*

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**Introduction:**

Demography, the study of population dynamics, provides insights into the total number of individuals or organisms within a given area. Understanding population characteristics such as Literacy Rate, Growth Rate, Density, and Sex Ratio aids scientists and governments in decision-making processes. Population density serves as a relative measure of an organism's response to local conditions, reflecting abundance

or scarcity based on habitat suitability. Population growth denotes the increase in population size over time and space, while the Sex Ratio indicates the ratio of males to females within a population. This study aims to elucidate the drivers of population fluctuations, analyze current demographic trends, and assess the dynamics of population characteristics such as literacy rate and sex ratio. Additionally, it examines potential challenges posed by the geographical context.

**Objectives:**

- To assess the population characteristics of Tembhu Lift Irrigation Project Command area of Sangli District.
- To compare the growth rate of population of Tembhu Lift Irrigation Project Command area of Sangli District from year 2001 to 2011.
- To analyse the population density, sex ratio and literacy rate of Tembhu Lift Irrigation Project Command area of Sangli District from year 2001 to 2011.

**Study Area:**

District of Sangli is one of the southern districts of Maharashtra lying between 73° 42' East longitude to 74° 40' East longitude and 16° 45' North latitude to 17° 33' North latitude. The total geographical area of this district is 8572 sq. kms. According to the 2011 Census, the population of the district is 2820575 persons. Sangli district includes 10 taluka and bordered by Solapur district in north –

east, Kolhapur in south-west, Bijapur in east-south and Satara on north-west. The district falls partly in Krishna basin and partly in Bhima basin. It extends from the eastern slope of Sahyadri range in the east-westerly direction for about 205 km. in the length and north-south breadth is 96 km. The district is divided into three subdivisions. There are 735 villages and seven urban locations in the district. Headquarter of the district is Sangli City.

Command area of Tembhu Lift Irrigation Project includes five tahsils of Sangli district, out of total ten tahsils. Command area has two sub divisions as Miraj and Vita with 5 tahsils Tasgaon Kavathe Mahankal Kadegaon Khanapur, Atpadi and with total 287 villages. On 28<sup>th</sup> March 2002 the taluka of Kadegaon is formed from the Palus and Khanapur tahsils.

There are 204 villages in Command Area of Tembhu Lift Irrigation Project that includes 39 villages of Kadegaon tehsil, 55 villages of Khanapur tehsil, 47 villages of Atpadi tehsil, 34 villages of Tasgaon tehsil and 29 villages of Kavathe Mahankal tehsil.

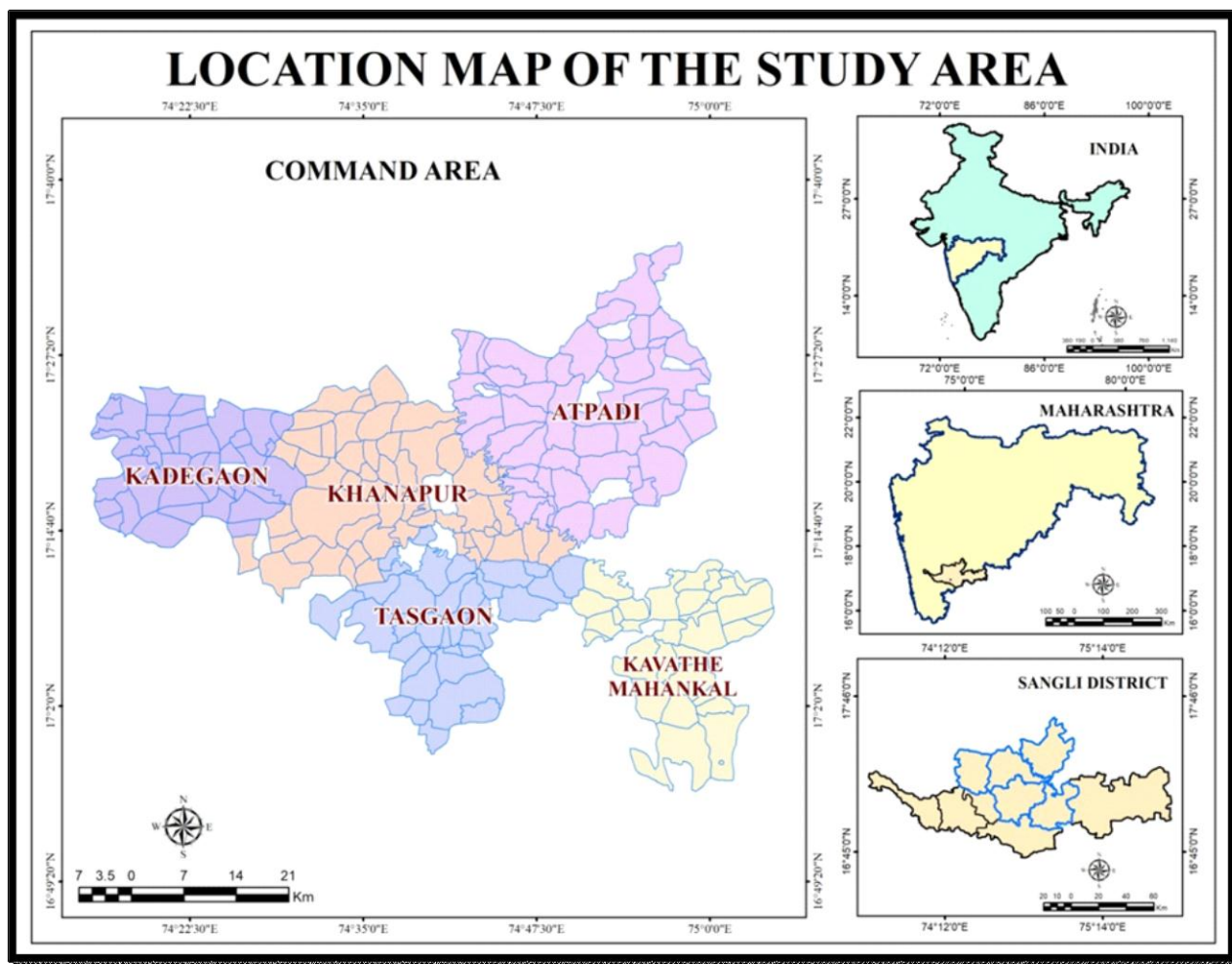


Fig.1 Location Map

**Database and methodology:**

Secondary Data obtained from census of 2001 & 2011. Some discussions made with native people in Command Area of Tembhu Lift Irrigation Project in Sangli District. Shifting population census characteristics have been observed at different geographic levels ranging from various aspects in this study. The study evaluated whether population characteristics remained static, and if not, assessed the degree of changes for some commonly used census variables across census data in command area of Tembhu Lift Irrigation Project in Sangli district between 2001 & 2011.

We used different formulas for each population characteristics as following-

1) To calculate **Population Growth Rate**.

$$PGR = \frac{P_2 - P_1}{P_1} \times 100$$

Whereas,  $P_1 =$  initial population size  
i.e. Year 2001.

$P_2 =$  final population size  
i.e. Year 2011.

2) To calculate **Population Density**.

$$P. D. = \frac{\text{No. of People}}{\text{Total Land Area}}$$

3) To calculate **Sex Ratio**.

$$\text{Sex Ratio} = \frac{\text{No. of Females}}{\text{No. of Males}} \times 1000$$

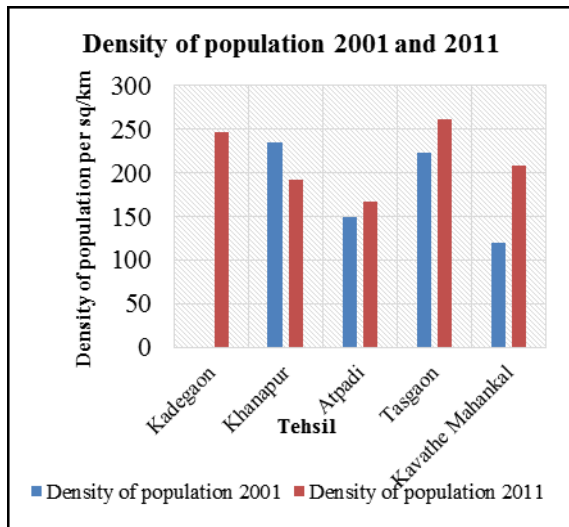
4) To calculate accurate **Literacy Rate**.

$$\text{Literacy Rate} = \frac{\text{literate Population (Age 7 \& above)}}{\text{total population (Age 7 \& above)}} \times 100$$

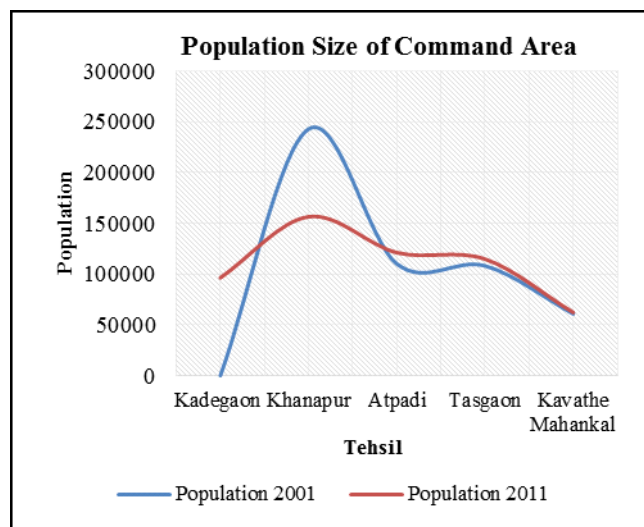
**Table No. 1: Population Size and Density in Command Area of Tembhu Lift Irrigationa Project in Sangli District: Year 2001 and 2011**

Tehsil	Population 2001	Population 2011	Density of population 2001	Density of population 2011
Kadegaon (N.T)	0	96304	0	247
Khanapur	242961	156527	235	192
Atpadi	110072	121137	150	167
Tasgaon	108178	114760	223	262
Kavathe Mahankal	60751	62171	120	208

Source: District Census Handbook of Sangli District, 2001 and 2011  
(N.T) = New tehsil created after census 2001



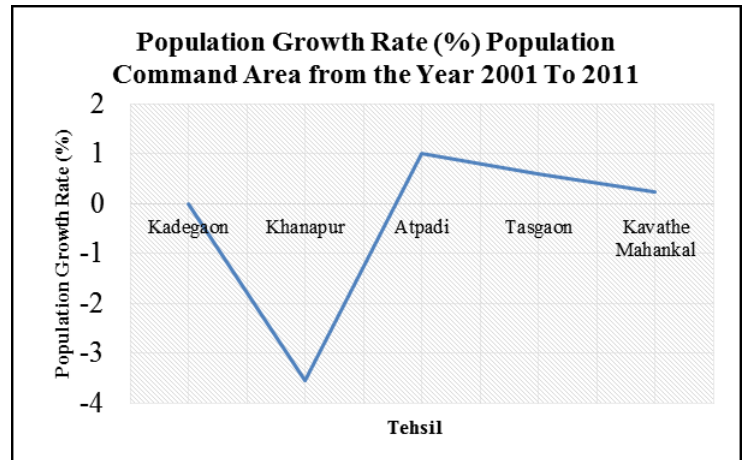
Graph No.1



Graph No. 2

**Table No. 2: Population Growth Rate (%) in Command Area of Tembhu Lift Irrigation Project in Sangli District from the Year 2001 to 2011**

Tehsil	Population Growth Rate (%)
Kadegaon (N.T)	0
Khanapur	-3.55
Atpadi	1
Tasgaon	0.6
Kavathe Mahankal	0.23



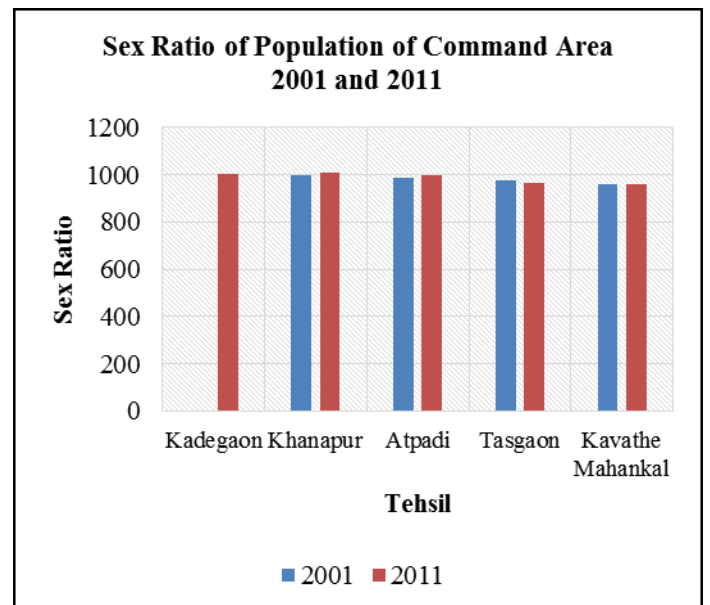
Graph No. 3

Source: District Census Handbook of Sangli District, 2001 and 2011

(N.T) = New tehsil created after census 2001

**Table No. 3: Sex Ratio of Population in Command Area of Tembhu Lift Irrigation Project in Sangli district: Year 2001 and 2011**

Tehsil	2001	2011
Kadegaon (N.T)	0	1006
Khanapur	999	1012
Atpadi	989	997
Tasgaon	976	965
Kavathe Mahankal	959	958



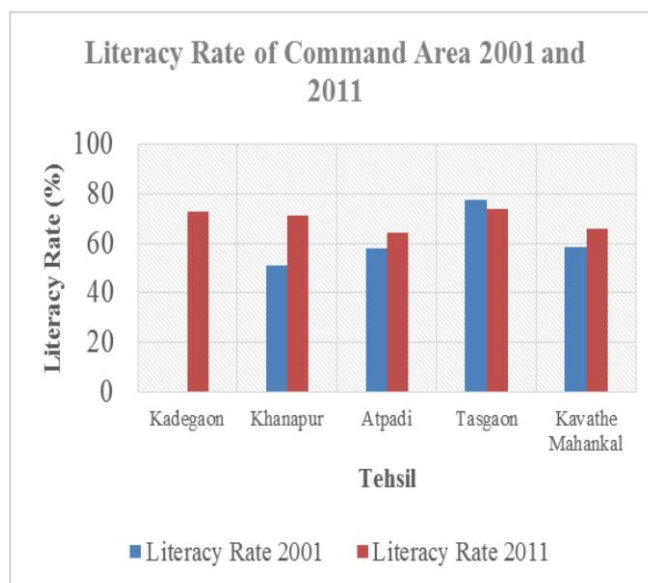
Graph No. 4

Source: District Census Handbook of Sangli District, 2001 and 2011

(N.T) = New tehsil created after census 2001

**Table No. 4: Literacy Rate (%) of Population in Command Area of Tembhu Lift Irrigation Project in Sangli District: Year 2001 and 2011**

Tehsil	Literacy Rate 2001	Literacy Rate 2011
Kadegaon (N.T)	0	72.63
Khanapur	51.35	71.09
Atpadi	58.14	64.49
Tasgaon	77.44	73.61
Kvathe Mahankal	58.37	65.67



Graph No. 5

Source: District Census Handbook of Sangli District, 2001 and 2011

(N.T) = New tehsil created after census 2001

### Results:

The article notes that according to 2011 census 550869 persons live on the land of Command area. Khanapur tehsil have low growth rate of population because on 28<sup>th</sup> March 2002, Kahanapur tehsil was bifurcated to from Kadegaon tehsil. During this investigation we

understand that, tehsils like Khanapur, Kadegaon are forerunner in literacy rate as well as topper in sex ratio. From this research we found that, 1 new tehsil were created during 2011 census. The present study mainly focused on population characteristics, so following results extracted.

Tehsil of low population density	Atpadi, Khanapur
Tehsil of high growth rate	Atpadi
Tehsil of low growth rate	Khanapur
Tehsil of high sex ratio	Khanapur, Kadegaon
Tehsil of low sex ratio	Tasgaon, Kvathe Mahankal
Tehsil of high literacy rate	Tasgaon, Kadegaon
Tehsil of low literacy rate	Atpadi, Kvathe Mahankal

**Conclusions / Suggestions:**

In essence, our research demonstrates that the majority of population traits examined in this study were not constant, with significant fluctuations observed. To accurately assess secular trends in population features like growth rate, density, sex ratio, and literacy rate, researchers must consider the geographical context and account for the dynamic nature of these characteristics.

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