

Vol 3 Issue 4 Oct 2013

Impact Factor : 1.2018 (GISI)

ISSN No :2231-5063

Monthly Multidisciplinary  
Research Journal

*Golden Research  
Thoughts*

Chief Editor  
Dr.Tukaram Narayan Shinde

Publisher  
Mrs.Laxmi Ashok Yakkaldevi

Associate Editor  
Dr.Rajani Dalvi

Honorary  
Mr.Ashok Yakkaldevi

**IMPACT FACTOR : 0.2105**

**Welcome to ISRJ**

**RNI MAHMUL/2011/38595**

**ISSN No.2230-7850**

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial Board readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

### ***International Advisory Board***

Flávio de São Pedro Filho Federal University of Rondonia, Brazil	Mohammad Hailat Dept. of Mathematical Sciences, University of South Carolina Aiken, Aiken SC 29801	Hasan Baktir English Language and Literature Department, Kayseri
Kamani Perera Regional Centre For Strategic Studies, Sri Lanka	Abdullah Sabbagh Engineering Studies, Sydney	Ghayoor Abbas Chotana Department of Chemistry, Lahore University of Management Sciences [ PK ]
Janaki Sinnasamy Librarian, University of Malaya [ Malaysia ]	Catalina Neculai University of Coventry, UK	Anna Maria Constantinovici AL. I. Cuza University, Romania
Romona Mihaila Spiru Haret University, Romania	Ecaterina Patrascu Spiru Haret University, Bucharest	Horia Patrascu Spiru Haret University, Bucharest, Romania
Delia Serbescu Spiru Haret University, Bucharest, Romania	Loredana Bosca Spiru Haret University, Romania	Ilie Pintea, Spiru Haret University, Romania
Anurag Misra DBS College, Kanpur	Fabricio Moraes de Almeida Federal University of Rondonia, Brazil	Xiaohua Yang PhD, USA
Titus Pop	George - Calin SERITAN Postdoctoral Researcher	Nawab Ali Khan College of Business Administration

### ***Editorial Board***

Pratap Vyamktrao Naikwade ASP College Devrukh,Ratnagiri,MS India	Iresh Swami Ex - VC. Solapur University, Solapur	Rajendra Shendge Director, B.C.U.D. Solapur University, Solapur
R. R. Patil Head Geology Department Solapur University, Solapur	N.S. Dhaygude Ex. Prin. Dayanand College, Solapur	R. R. Yaliker Director Managment Institute, Solapur
Rama Bhosale Prin. and Jt. Director Higher Education, Panvel	Narendra Kadu Jt. Director Higher Education, Pune	Umesh Rajderkar Head Humanities & Social Science YCMOU, Nashik
Salve R. N. Department of Sociology, Shivaji University, Kolhapur	K. M. Bhandarkar Praful Patel College of Education, Gondia	S. R. Pandya Head Education Dept. Mumbai University, Mumbai
Govind P. Shinde Bharati Vidyapeeth School of Distance Education Center, Navi Mumbai	Sonal Singh Vikram University, Ujjain	Alka Darshan Shrivastava Shaskiya Snatkottar Mahavidyalaya, Dhar
Chakane Sanjay Dnyaneshwar Arts, Science & Commerce College, Indapur, Pune	G. P. Patankar S. D. M. Degree College, Honavar, Karnataka	Rahul Shriram Sudke Devi Ahilya Vishwavidyalaya, Indore
Awadhesh Kumar Shirotriya Secretary, Play India Play (Trust),Meerut	Maj. S. Bakhtiar Choudhary Director,Hyderabad AP India.	S.KANNAN Ph.D , Annamalai University,TN
	S.Parvathi Devi Ph.D.-University of Allahabad	Satish Kumar Kalhotra
	Sonal Singh	

**Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India  
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.net**



## GROWTH OF POPULATOIN IN SOUTH MAHARASHTRA (INDIA): A GEOGRAPHICAL ANALYSIS (1981-2011)

Arjun Gena Ohal And K. C. Ramotra

Associate Professor Department of Geography, Mahila Mahavidyalya Karad, Dist Satara (Maharashtra)  
Professor and Head Department of Geography, Shivaji University, Kolhapur (Maharashtra)

**Abstract:** In this paper, it is intended to determine the current scenario of population growth in South Maharashtra based on the 1981-2011 at district and 1981-2001 at tahsil level census data. The attempt is also made to assess the change of the growth rate of the total population. Choropleth map and simple bar graph have been used to represent the spatial variations of the phenomena. It is found that the growth rate of population in South Maharashtra was much lower than not only of the average growth rate for the state of Maharashtra but also country as a whole. The comparative analysis of the growth of population of the study area with Maharashtra and India indicated that the total population of Maharashtra and India has to increase at a very high rate. Since independence while the population of the study area indicated that the total population has been constantly decreasing 1981-1991, 1991-2001 and 2001-2011 respectively. The highest growth rate of population was found in Solapur and minimum was in Ratnagiri district. At tahsil level Hatkanangale tahsil of Kolhapur and Pandharpur tahsil of Solapur district have been identified with highest growth rate and Malwan and Vengurla tahsils of Ratnagiri (Sindhudurg) district are identified with lowest growth rate of population in 1981-1991 and 1991-2001 respectively.

**Key words:** Geographical Analysis, population growth, Choropleth map.

### INTRODUCTION:

The study of growth and spatial distribution is an important aspect to comprehend the trends of growth and their relative concentration of district as well as tahsil levels to identify the areas with very high or very low growth rate in relation to various socio-economic indices. If the growth rate of population in a region is very high in relation to its existing resources, which is essential for maintaining the required minimum standard of population. How a well balanced growth of population should take place in maintaining their good standard of living and the depressed regions' out migrations to be stopped or minimized by providing the best solutions in order to bring the balanced developed through the augmentation of human capabilities therein.

In the present study it is intended to study the trends and patterns of growth of population in South Maharashtra which is comprised of five districts viz. and Kolhapur, Sangli, Satara, Solapur and Ratnagiri, during 1981-91, 1991-01 and 2001-11.

Growth of population is the change in the number of people living in a particular area between two given points of time. The next change between two points of time is expressed in percentage and is described as the growth of population.

The process of growth of any section of the population in an area or region varies with time and space. It brings change in its overall composition and structure.

Population change is the result of the interaction of three processes: births, deaths and migration. These are the dynamic components of population change. Growth of population in any area has to be seen in relation to various socio-economic and physical features.

### THE STUDY AREA

South Maharashtra is one of the largest and most populated areas in Maharashtra located in the South Western parts of the state. The study area comprises Kolhapur, Sangli, Satara, Solapur and Ratnagiri (including Sindhudurg) districts. Administratively the study area is divided into 5 districts and 57 tahsils. The study area has an area of 55057 sq.km. and population of 1,53,30,825 as per the 2001 census. The study area lies between 15°37' to 18°32', North Latitude and 73°05' to 75°15' East longitude (Fig.1).

The Study area lies on the western limit of the Deccan table land. From the point of view of the peninsular drainage, the most of the study area belongs to the drainage system of the Krishna River. The area undertaken for the present study is selected to look into the growth of population in 1981-91, 1991-2001 and 2001-2011 decades respectively. Most of the studies pertaining to the growth of population are conducted at the state and national levels but hardly the attempt of this kind has been made.

### DATABASE AND METHODOLOGY

For the present study an attempt is made to analyze

census data in terms of decadal growth rate over a period of time since 1981-2011 for the study area of South Maharashtra and her districts and tahsils. The data has been obtained from secondary sources for the period of 30 years from 1981 to 2011 at district level. For the year 2011 the provisional census data has been analyzed at district level.

divided into three groups at district level and five groups at tahsils level for the purpose of spatial analysis to look into the ground reality. Maps and simple bar graph have been prepared for identifying the districts as well as tahsils with high growth rate.

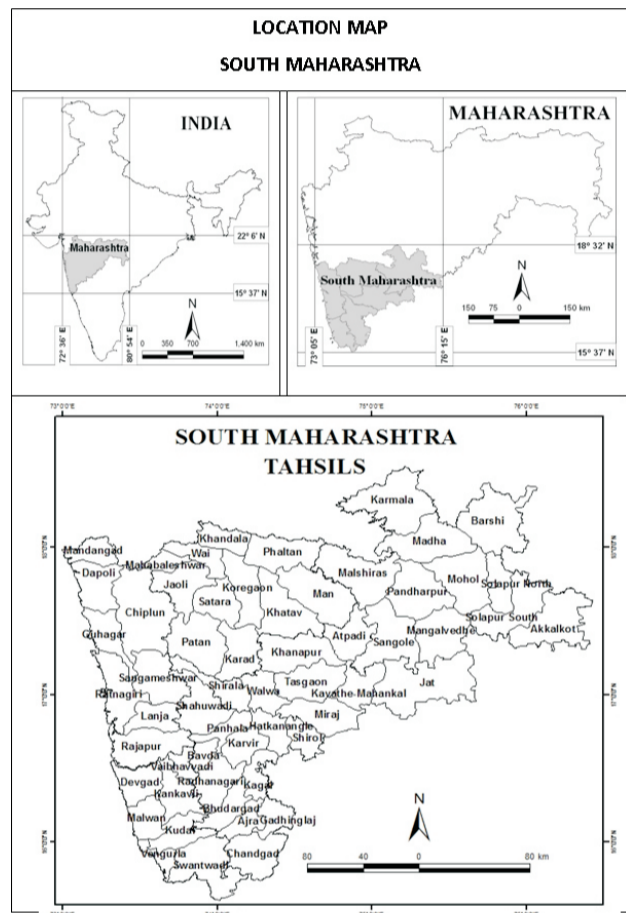


Fig. 1

Hence for the purpose of analysis of data for the period from 1981 to 2001 at tahsil level has been collected to find out the levels and trends of population growth in South Maharashtra.

For the percentage change in the population during the said period, crude growth rate has been computed by employing the following statistical technique:

$$\text{Crude Growth Rate: } r = \frac{(P_2 - P_1)}{P_1} \times 100$$

Where,

r = is the growth of population in terms of percentage  
 P2 = is the population in the latest decade  
 P1 = is the population in the last decade

On the basis of growth of population, the study is

### POPULATION GROWTH TRENDS

As can be seen in Table -1, there are frequent fluctuations in the growth rate of population in South Maharashtra during 1981-91 to 2001-2011, where the growth rate was 19.46 per cent during the decade 1981-1991, declined by 3.82 points in the next decade and reached to 15.64 percent in 1991-2001 and again come down to 9.50 percent in 2001-2011. However, there was a consistent decrease in growth rate since 1981-91. This is the lowest rate of growth the study area has recorded after independence census.

Since 1971 there is a continuous decline in the growth rate. At state level it was 25.36 per cent in 1981-1991 which went on decreasing in subsequent census and reached to 22.73 per cent during 1991-2001 and decreased by 6.74 percentage points and has reached to 15.99 per cent during 2001-2011. This is the lowest rate of growth the state has recorded after 1941 census. At national level it was having 23.50 per cent 1981-1991 and 21.54 per cent in 1991-2001 and per cent in 2001-2011. At the district and tahsil level it is observed that there were wide variations.

### GROWTH RATE AT DISTRICT LEVEL

It is observed that there were wide variations. The highest rate of growth in 1981-1991 was found in Solapur district (24.84%) followed by Kolhapur (21.67%), Sangli (20.45%), Satara (20.24%) and minimum was in Ratnagiri (12.55%) district (Table 1).

Table-1

Sr. No.	District	Growth of population (Crude ) 1981-2011					
		1981-1991		1991-2001		2001-2011	
		Growth Rate	Difference	Growth Rate	Difference	Growth Rate	Difference
1	2	3	4	5	6	7	8
1	Kolhapur	21.67	-1.06	17.85	-3.82	9.96	-7.89
2	Sangli	20.45	1.54	16.93	-3.52	9.18	-7.75
3	Satara	20.24	2.22	14.59	-5.65	6.94	-7.65
4	Solapur	24.84	8.96	19.14	-5.70	12.10	-7.04
5	Ratnagiri	12.55	3.39	07.97	-4.58	-2.83	-10.80
*	South Maharashtra	19.46	3.01	15.64	-3.82	9.50	-6.14
*	Maharashtra	25.36	0.82	22.57	-2.79	15.99	-6.58
*	India	23.50		21.54	-1.96		

bSource: Census of India 1981, 1991, 2011

In 1991 – 2001 census, decade the growth rates varies between 7 and 20 per cent. All the five districts of south Maharashtra are categorized into three groups according to the levels of their growth rates. Solapur district has again recorded a highest of 19.14 per cent and Ratnagiri was lowest of 7.97 per cent. Kolhapur (17.85%) recorded the second position and then Sangli (16.93%) and satara

registered 14.59 per cent growth rates of population.

In 2001-2011 Solapur recorded the highest (12.10 %) growth rate followed by Kolhapur (9.96%), Sangli (9.18%), Satara (6.94%) and Ratnagiri (-2.83%) district has recorded a negative growth rate (Fig.3).

The period 1981-2011 shows many ups and downs in the growth rates in all the five districts of the study area of South Maharashtra. Solapur has recorded a highest and Ratnagiri district registered the lowest growth rates of population and then Kolhapur, Sangli and Satara registered next position in all the census decades of 1981-91, 1991-2001 and 2001-2011 respectively.

Spatio-temporal variations in population growth are much larger at the district levels as compared to the state of population, spatial as well as temporal are far from even distribution. The district level pattern explicitly shows that the growth in the agriculture, industrial and urbanized areas is relatively high.

**TRENDS IN GROWTH RATES AT DISTRICT LEVEL**

As already explained for the study area of South Maharashtra all the five districts have seen highly fluctuating trends in growth rates mainly during the period 1971-81 to 2001-2011 ( Table-1). The figures show that since 1981 census, the trends in growth showing a steady increase until 1991. After 1991 there is a consistent decrease in growth rates except during the period 1981-91 Whereas Kolhapur has shown decrease -1.06 per cent its in growth rate. Solapur district recorded the highest (8.96%) difference in growth rates followed by Ratnagiri (3.39%), Satara (2.22%), Sangli (1.54%) and Kolhapur registered the lowest difference (1.06%) during 1971-1981 and 1981-1991 growth rates. In terms of difference in its growth rate of 1991-2001, the population growth of 1981-91 and 1991-2001 should be considered. In 1991-2001 the difference in growth rates, Solapur (5.70%) and Sangli (5.65%) districts recorded the first and second position where the decrease of growth of population is high. All the districts have seen highly fluctuating trends in growth rates during the period 1991-2001 to 2001-2011(Fig.4).

The provisional population of 2011 has shown in the negative growth rates in Ratnagiri district (-10.80 %) and Solapur district registered the negative (-7.04 %) growth of population.

**GROWTH OF POPULATION AT TAHSIL LEVEL, 1981-2001**

At tahsil level, population growth shows that higher growth rates are visible in the almost Krishna, Panchaganga and Bhima basins from Satara, Sangli and Kolhapur districts in the central and extending up to central and South Western part of Solapur district. High population growths are observed in these regions. Table-2 gives details of tahsil wise growth of population. The tahsil level

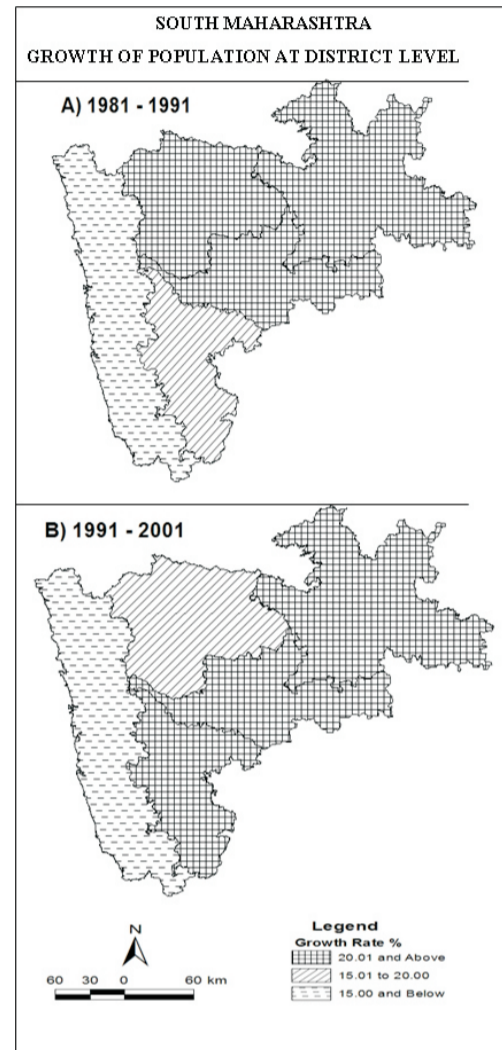


Fig. 2

**South Maharashtra  
Growth of Population at District Level,  
2011**

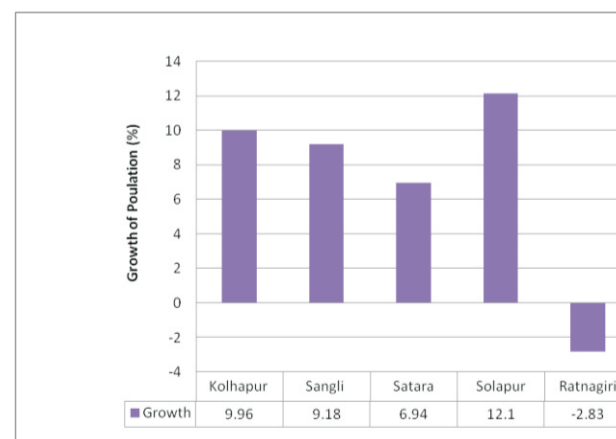


Fig. 3

pattern explicitly shows the growth in the industrial urbanized and agricultural developed areas is relatively high in 1981-1991 due to in migration from the surrounding depressed areas.

The range of growth varied from a maximum of 34.77 per cent in Hatkanangle tahsil of Kolhapur district to a minimum of -1.15 per cent in Malwan tahsil of Ratnagiri district. This tahsil has reached high level of demographic transition and can be easily compared with the advanced countries of Europe and America. In 1991-2001 Pandharpur tahsil of Solapur district has the highest percentage decadal growth (26.90%) while Vengurla tahsil of Ratnagiri district has recorded the lowest (0.81%) growth rate of population.

**Table-2**  
**South Maharashtra: Growth of Population at Tahsil Level, 1981 - 2001**

Sr No	Tahsil	District	Crude Growth Rate of Population	
			1981-1991	1991-2001
1	2	3	4	5
			Total	Total
1	Karvir	Kolhapur	21.87	22.81
2	Panhala	Kolhapur	21.11	15.23
3	Hatkanangle	Kolhapur	34.77	23.13
4	Shirol	Kolhapur	25.10	16.58
5	Kagal	Kolhapur	16.42	16.50
6	Gadhinglaj	Kolhapur	13.07	9.44
7	Chandgad	Kolhapur	18.38	13.17
8	Ajra	Kolhapur	12.62	14.10
9	Bhudargad	Kolhapur	18.03	13.61
10	Radhanagari	Kolhapur	12.01	11.28
11	Gagan-Bavda	Kolhapur	7.55	17.08
12	Shahuwadi	Kolhapur	14.50	11.53
13	Miraj	Sangali	25.34	19.13
14	Tasgaon	Sangali	13.01	26.51
15	Khanapur	Sangali	16.54	1.66
16	Atpadi	Sangali	32.78	12.29
17	Jat	Sangali	24.62	17.99
18	Kavathe-Mahankal	Sangali	21.20	22.64
19	Walwa	Sangali	20.56	17.66
20	Shirala	Sangali	13.11	7.12
21	Satara	Satara	26.05	22.50
22	Wai	Satara	16.98	13.01
23	Khandala	Satara	22.44	18.51
1	2	3	4	5
24	Koregaon	Satara	18.05	12.50
25	Phaltan	Satara	22.07	14.69

31	Mahabaleshwar	Satara	22.04	22.54
32	North-Solapur	Solapur	27.41	22.49
33	Barsi	Solapur	9.18	12.80
34	Akkalkot	Solapur	21.98	10.33
35	South-Solapur	Solapur	23.92	12.62
36	Mohol	Solapur	27.91	24.46
37	Mangalvedhe	Solapur	26.93	15.02
38	Pandharpur	Solapur	33.52	26.90
39	Sangole	Solapur	26.46	18.17
40	Malshiras	Solapur	24.10	20.63
41	Karmala	Solapur	17.43	19.90
42	Madha	Solapur	20.54	16.96
43	Ratnagiri	Ratnagiri	19.14	20.13
44	Guhagar	Ratnagiri	12.28	16.48
45	Dapoli	Ratnagiri	11.84	7.89
46	Mandangad	Ratnagiri	9.92	3.51
47	Khed	Ratnagiri	9.57	6.91
48	Chiplun	Ratnagiri	16.10	13.02
49	Sangameshwar	Ratnagiri	7.78	4.01
50	Lanja	Ratnagiri	10.20	6.54
51	Rajapur	Ratnagiri	2.91	6.13
1	2	3	4	5
52	Kankavali	Ratnagiri	7.18	6.13
53	Kudal	Ratnagiri	10.44	6.59
54	Sawantwadi	Ratnagiri	11.18	6.87
55	Vengurla	Ratnagiri	2.48	0.81
56	Malwan	Ratnagiri	-1.15	0.15
57	Devgad	Ratnagiri	9.10	4.80
*	<b>South Maharashtra</b>		<b>19.46</b>	<b>15.64</b>
*	<b>Maharashtra</b>		<b>25.36</b>	<b>22.57</b>
*	<b>India</b>		<b>22.50</b>	<b>21.54</b>

Source: District Census Handbook, 1981, 1991 and 2001.

The spatial variations in the population growth are shown in Fig. 3.14. A glance at this map shows that most of the tahsils of Ratnagiri and Kolhapur districts have very low growth rates. In high growth category many of tahsils of Solapur district are included. The medium growth rates (15 - 30%) are found in some tahsils of Sangli, Satara and some part of Kolhapur districts.

There are as many as 11 tahsils viz. Pandharpur (33.52%), North-Solapur (27.41%), Mohol (27.91%), Mangalvedhe (26.93%), Sangole (26.46%) in the eastern part and Satara (26.05%), Man (27.04%), Miraj (25.34%), Atpadi (32.78%) Hatkanangle (34.77 %) and Shirol (25.10%) in the central part of the study area in 1981-91 and 2 tahsils of Pandharpur (26.90%) and Tasgaon (26.51%) were in 1991-2001. The growth rate was very high more than 25 per cent. There are 11 tahsils in 1981-1991 and 18 tahsils in 1991-2001 in which the growth of population was very low (below 10 %) (Fig. 4).

There are 13 tahsils in 1981-91 and 9 tahsils in 1991-2001 in the category of high (20-25%) and 10 tahsils in 1981-1991 and 14 tahsils in 1991-2001 in the medium (15-20%) and 12 tahsils in 1981-1991 and 14 tahsils in 1991-

2001 where the growth rate was in the category of low (10-15%)

The comparative study of Figure 4 indicated that the growth of population was high or very high particularly in North eastern and south central parts the growth was low or very low in Ratnagiri district of Konkan region and western hilly parts of Kolhapur, Sangli and Satara districts are exhibiting low and very low growth. The medium growth is observed in tahsils of central parts of Kolhapur and Satara districts.

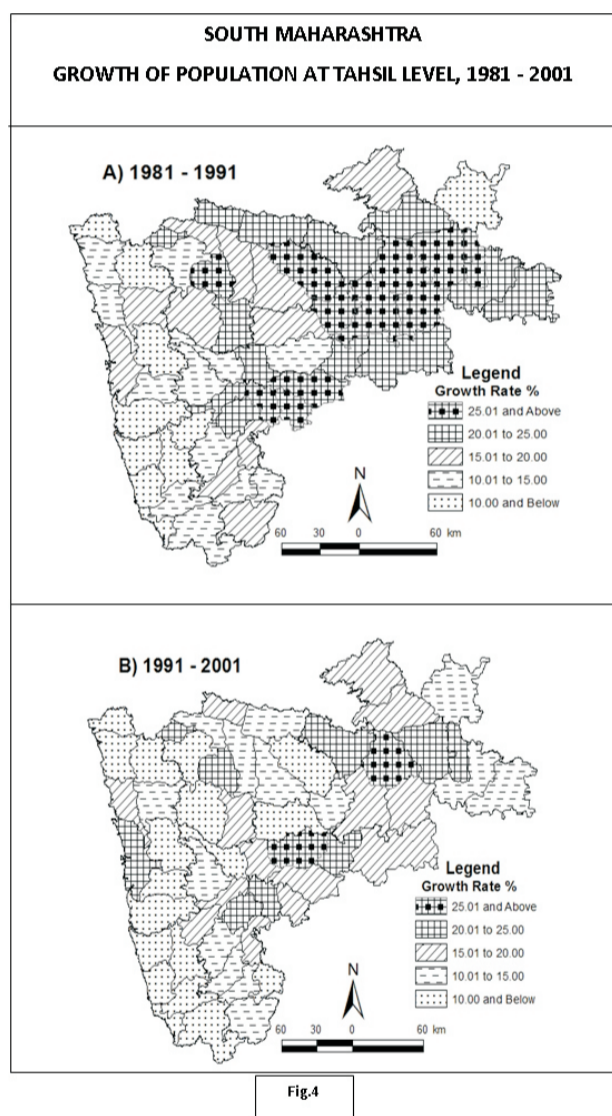


Fig.4

The overall growth pattern of population across the study area indicated that eastern Solapur district has attracted the large number of labourers for cotton picking and cotton textile industries.

Apart from this in tahsils in the eastern part of the study area the black cotton soils and adequate water supply by Ujjani Dam project irrigation have promoted sugar cane and Jowar cultivation. It needs cheap labour and has also

attributed to the growth of population? The commercial importance of Kolhapur and Sangli, Karad, Satara centres having its surrounding sugar cane producing areas was favourable factors for attracting labour from the eastern Solapur district and Marathwada region. Ratnagiri is a district of Konkan region not of much promising and is the source area of migration to the Mumbai metropolitan city, where there are ample opportunities for male migrants and therefore, the growth of population in tahsils of Ratnagiri district is lowest in the study area (Ramotra, 2008).

#### CONCLUSION

It is found that in 1971-1981 censuses, the trends in growth rates were more or less stable, showing a steady increase until 1971. After 1971, there is a consistent decrease in growth rates except during the period of 1981-91 when some districts have shown increase in growth rates. At state level, the growth rate increased from 24.54 per cent during 1971-81 to 25.36 per cent during 1981-1991. Though highly rural districts like Solapur and Ratnagiri have shown high fluctuations in growth rates, but such fluctuations are found in predominantly urban districts like Sangli, Kolhapur and Satara also.

The change in the spatial growth and distribution is no doubt due to the high natural growth an in-migration factors. The overall high growth of population was confined to Solapur, Kolhapur in southern part and Sangli in central part. In South Maharashtra, it is central-western part where Spatio-temporal variations in population growth rates are very high at the district level as compared to the state of population. The range of growth varied from a minimum of 12.55 and 7.97 per cent in Ratnagiri district to a maximum of 24.84 and 19.14 per cent in Solapur district in 1981-1991 respectively. High growth occurred mainly in Kolhapur and Sangli districts. The growth of population is mostly due to migration of workers is positively and strongly related to its urbanization and industrialization. At district and tahsil levels pattern explicitly shows that the growth in advanced agriculture areas, industrial and urbanized areas is relatively high.

The high growth rate was found in central eastern parts of Kolhapur, Central parts of Sangli and Satara districts in the study area. The average crude growth rate of population of South Maharashtra was 19.46 per cent between 1981 and 1991, and, it has declined to 15.64 per cent between 1991 and 2001. In 1981-91 at tahsil level, the growth rate of 24.84 per cent was comparatively high in Solapur district and 19.14% in 1991-01, while, the minimum growth rate of population was recorded in Ratnagiri (12.55%) in 1981-1991 and 7.97% in 1991-01. It is inferred that higher the urbanized and industrialized districts or tahsils, higher is the growth of population due to in-migration from the relatively backward areas and low growth in the depressed areas as people in large number out migration of the areas and going to the prosperous areas. It is also found that higher the literacy rate lower is growth rate. In urban areas the growth is high, is not that birth rate is high, in fact, people from outside like Ratnagiri which are economically a bit behind and unemployment is high and therefore migrate to the prosperous areas employment opportunities and educational

facilities are highly concentrated. It is therefore, in order to minimize this haphazard and unplanned migration, job opportunities need to be generated along with other necessary facilities through integrated regional development aided with state and central government in the depressed and backward areas.

#### **REFERENCES**

- I.Census of India (2001): Primary Census Abstract, Total Population. Table A-5, Series 1 (2004), Register General & Census commissioner, India, New Delhi, pp.7-23.
- II.Census of India (1991): Census Atlas, Part – XI series – 14, Maharashtra, Directorate of Census Operation, Maharashtra, 21-34.
- III.Census of India (1991): Maharashtra State District Profile, Registrar General & Census commissioner, India, pp.14-23.
- IV.Bhende, Asha and Kanitkar, Tara (2006): Principles of Population Studies, Himalaya Publishing House, Mumbai.
- V.Ramotra, K. C. (2008): Development Processes and the Scheduled Castes, Rawat Publications, Jaipur, pp.75-103.
- VI.Deshpande, C.D. (1971): Geography of Maharashtra, National Book Trust of India, New Delhi, pp.9-35.
- VII.Khullar, D. R. (2009): India: A Comparative Geography, Kalyani Publishers, Ludhiana.
- VIII.Chandana, R. C. (2009): Geography of Population, Concepts, Determinants and Patterns, Kelyani Publishers, Ludhiana, pp.230-278.
- IX.Dikshit, K. R. (1986): Maharashtra in Maps, Maharashtra State Board for Literature and Culture, Bombay, pp.12-44.



# Publish Research Article International Level Multidisciplinary Research Journal For All Subjects

Dear Sir/Mam,

We invite unpublished research paper.Summary of Research Project,Theses,Books and Books Review of publication,you will be pleased to know that our journals are

## Associated and Indexed,India

- \* International Scientific Journal Consortium Scientific
- \* OPEN J-GATE

## Associated and Indexed,USA

- EBSCO
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Databse
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database

Golden Research Thoughts  
258/34 Raviwar Peth Solapur-413005,Maharashtra  
Contact-9595359435  
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com  
Website : www.isrj.net