SPATIO - TEMPORAL ANALYSIS OF URBAN ELDERLY POPULATION IN KARNATAKA

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ABSTRACT

Population ageing is the fundamental issue in 21st century, because the entire world is transforming towards ageing world. According to 2011 Indian census there are nearly 104 million elderly persons in India with 53 million females and 51 million males. As regards rural and urban areas more than 73 million or 71% of elderly population resides in rural areas while 31 million or 29% of Urban areas. Percentage share of elderly persons in the population of India is ever increasing since 1981. From 6.5 % in 1981 to has increased 8.6% in 2011. In India compare with female elderly increase trend of Males was marginally lower at 8.2 % in 2011 while in Females it was 9.0%. Percentage share of elderly persons in the population of Karnataka is ever increasing since 1981 from 6.63 % to 9.48% in 2011. According to 2011 census the total number of Elderly Population of Karnataka was 5.79 million with 3.89 million Rural and 1.89 million in Urban elderly population. The present paper focusses on the Spatio - Temporalanalysis of Urban Elderly Population in Karnataka. For this purpose, it considered the last four decades (1981-2011) elderly population data and Karnataka state has been divided into four administrative division then used simple statistical techniques like percent the result found that the highest percent of elderly population concentrated in urban Karnataka. In 2011 the State has shifted from Premature stage to Mature stage in respect of ageing.

Keywords: Urban, elderly, Infancy, mature, administrative division

INTRODUCTION:

A major emerging demographic issue of the 21st century is the ageing of population as an inevitable consequence of the

demographic transition experienced by most countries. Across the world declining fertility and increased longevity have jointly resulted in higher numbers and proportions of elderly persons 60 years and above including India, Karnataka is not an exception for this. However, Karnataka has witnessed tremendous differences in the Spatio-temporal distribution of elderly population.

Elderly population consists of ages nearing or surpassing the average life span of human beings. The boundary of old age cannot be defined exactly because it does not have the same meaning in all societies. People can be considered old because of certain changes in their activities or social roles. The ageing process is of course a biological reality which has its own dynamic, largely beyond human control. However, it is also subject to the construction by which each society makes sense of Old age (WHO 2002). The government of India adopted "National Policy on older Persons" in January 1999. The policy defines "Senior citizen" or "Elderly" as a person who is of age 60 years or above (Elderly in India 2016).

In India the population ageing is increasing slowly during the last two decades that is between 1981 to 2011. However, it is likely to increase more rapidly in the coming decades. The number of Indians over the age 60 has high accounting for 8.6% of the country's total population. The rate of increase of elderly population in India during 2001 to 2011 was 35.5% by increasing from 7.6 crore in 2001 to 10.3 crore in 2011. The share of Karnataka's elderly population has increased from 41.1 lakhs in 2001 to 58.3 lakhs in 2011. According to 2011 census the total elderly population of Karnataka was 9.48% with 10.40% in rural and 8.02% Urban elderly population.

Definition of Urban Population:-The following criteria were adopted for treating a place as urban in the 1981 census: All statutory towns, that is all places with a municipal corporation, municipal board, cantonment board or notified town area .

All other places which satisfy the following criteria:

(i) A minimum population of 5,000.

(ii) 75% of the male working population engaged in non-agricultural and allied activity.

(iii) A density of population of at least 400 per sq. km. (or 1,000 per sq. mile). A town with a population of one hundred thousand and above was treated as a city.

Geographers are more inclined toward a

definition **of 'Urban'** that recognizes not a mode of behavior, but place of occupancy. The geographers are more concerned with his locational setting that with this life style. Urban ageing is an emerging domain that deals with the population of older people living in cities. The ageing of society is a positive yet challenging phenomenon, as population aging and urbanization are the culmination of successful human development. (Joost Van Hoof [et all] 2018).

Importance and Consequence of Elderly Population:

Human resource is considered as an asset for a country. It plays an important role in economic development and growth. The Global demographic trend however tell us that, with the passage of time the countries have experienced ageing of population. The proportion of older persons in the population of a country has increased. Due to economic well-being, better health care system, good medicines, etc. there is substantial reduction in mortality in the society. Reduced mortality has led to reduction in fertility too. These factors together have resulted in increasing number of elderly persons in the population. This Phenomenon called population ageing is a dynamic demographic trend all over the world. The growth in Elderly Population is due to the longevity of life achieved because of economic wellbeing, better medicines and medical facilities and reduction in fertility rates. The proportion of the population aged 60 years or more has been increasing consistently over the last century, particularly after 1951. In 1901 the proportion of the population aged 60 or over of India was about 5 percent, which marginally increased to 5.4 percent in 1951, and by 2011 this share was found to have risen to about 8.6 percent.

State wise date on elderly population divulge that Kerala has maximum proportion of elderly people in its population (12.6 percent) followed by Goa (11.2 percent) and Tamilnadu (10.4 percent) as per population census 2011. This may be due to the lifestyle and better medical facilities in respective states. The least proportion is in Dadra and Nagar Haveli (40 percent) followed by Arunachal Pradesh (4.6 percent) and Daman and Diu and Meghalaya both (4.7 percent). Percentage share of elderly persons in the population of Karnataka is 7.7 percent. (2011 census).

Elderly population is now considered to be one of the most important social phenomena in India. One of the consequences of fertility decline is reflected

in population ageing. Here it is conventional to identify the elderly with those aged 60 years or more because of their relationship with social security and retirement. It is around these ages that working capacity begins to be affected by biological, physical and mental stability. The elderly persons in the society face a number of problems due to absence of assured and sufficient income to support themselves for their healthcare and other social securities. Loss of a social role and recognition, and non-availability of opportunities for creative and affective use of free time are also becoming a matter of great concern for elderly persons. The trend clearly reveals that aging will emerge as major social challenge in the future, and vast resources will be required towards the support, service, care and treatment of the elderly persons ageing of population is affected due to downward trends in fertility and mortality. Low birth rates coupled with long life expectancies push the population to an aging humanity. It is observed that percentage of aged 60 or more is rapidly swelling and even the percentage of persons above age 80 is going up over the years. Simultaneously, the ratio of people of "Working age" (15-59 Years) to those of elderly population is shrinking and even within the working age group average age is

also increasing. For developing countries like India, the ageing population may pose mounting pressures on various socio-economic fronts including pension outlays, health care expenditures, fiscal discipline, savings levels etc.
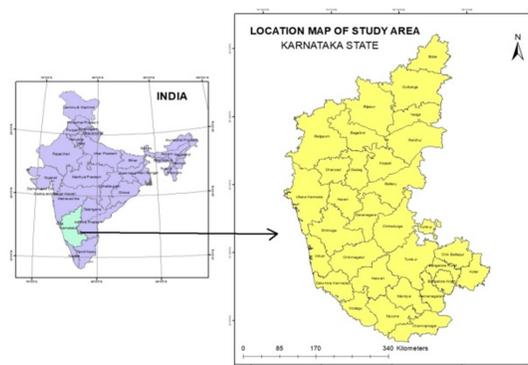
Study Area: Karnataka State

Karnataka is located in the western part of the Deccan Plateau. Larger part of the state belongs to the three segments of larger Deccan plateau. In addition to Mysuru Plateau, the state also consists part of Maharashtra Plateau in the north. The state has both land and water frontiers. It is surrounded by Maharashtra in the North Telangana, Andra Pradesh in the east, Tamilnadu in the South and Southeast Kerala in the southwest and Goa in the Northwest. It is flanked by the Arabian sea in the west. Thus, Karnataka is a typical 'littoral state'.

The State extends from $11^{o}31^{'}$ to $18^{o}45^{'}$ North latitudes. It has a maximum latitudinal extent of $7^{o}14^{'}$, to $31^{o}45^{'}$. From Auradtaluk of Bidar district in the north, the state extends up to Moyar River in the South. Longitudinally the state extends from $74^{o}12^{'}$ to $78^{o}40^{'}$ east. Thus, the state has a longitudinal extent of $4^{o}28'$. The total geographical area of the state is about 191791 Sq. Km. Karnataka is about 5.844

percent of the total geographical area of the country. The State, according to 2011 census, accounts for 5.05% (Percent) of the total population the state ranks Eighth in the country.

For the sake of administration, the state is divided into 30 districts (census 2011). Initially at the time of reorganization the state consisted only 19 districts. Later more number of districts were created from time to time for an effective administration as well as to get services to the people effectively Bengaluru Urban district was formed in 1986 increasing the number of districts to 20. Further, in 1997-998 a major district reorganization was creating seven more new districts. Dakshina Kannada was divided to form Udupi district. Chamarajanagar was separated from Mysuru

district. Similarly, Koppal district was formed bifurcating Raichur district. Bagalkote was formed dividing Vijayapura district, Gadagand Haveri were separated from Dharawada. Davanagere district was created from Chitradurga and Shivamogga. Thus, the total number of districts in the state was increased to 27. In 2007, two more new districts namely Ramanagara and Chikkaballapura were formed during this period. Ramanagara district was formed dividing the Bengaluru rural district. Similarly, Chikkaballapur district was formed dividing Kolar district. The government has recently formed Yadgir district dividing Kalburgi district. Thus, the total number of districts in the state was increased to 30. The number of districts 1981 in 19 and it is increased 30 in 2011.

Map 1: Location of the study area

The state is divided into four administrative divisions each one headed by a divisional commissioner. The four divisions of the state are:

1. Bengaluru Division:- It consists of Bengaluru Urban and rural, Ramanagar, Kolar, Chikkaballapur, Tumakuru, Shivamogga, Chitradurga, Davanagere

district. Bengaluru is the administrative headquarters. It consists of 25.91 percent of the total area of the state with a population share of 36.80 and there are 52 taluks in the divisions.

2. Mysuru Division: - It consists of Chamarajanagar, Chikkamagalur, Dakshina Kannada, Udupi, Hassan Kodagu, Mandya and Mysuru districts. This division consists of 22.67 percent of area and 20.5 percent of population of the state. There are 44 taluks in the divisions.

3. Belagavi Divisions:- It consists of north western part of the state . It includes Belagavi, Vijayapura, Bagalkore, Dharawada, Gadag, Haveri and UttaraKnnnada districts. This division has 28.42 percent of the total area of the state but has only 24.20 percent of the population. The are 48 taluks in the division.

4. Kalburgi Dvision :- It has only six districts namely Kalburgi, Yadagir, Raichur, Ballari , Bidar and Koppal. Yadagir was created in 2009. The division has 23 percent

of the total area of the state but accounts for only 18.46 percent of the total population of the state. There are only 31 taluks in the division. Thus it is the Kalburgi division which has lesser share of population compared to its geographical area. These Regional divisions were abolished in 2003 as part of administrative reforms but established once again as regions headed by regional commissioner

METHODOLOGY:

The present study is based on the secondary information collected from different source like the reports and tables of Karnataka on age, Census of India, Office of the District Statistical Officer and Additional Registrar of Births and Deaths, Mysore, and other sources related to elderly population. To understand the process of Urban Elderly Population with the help of ageing indicator using simple statistical techniques and the percentage, ratio and growth the ageing indicators are worked out. They are as follows.

The following formula has been framed to derive the percent of Urban Elderly Population.

$$\text{Percent of Urban Elderly Population} = \frac{\text{Total Urban Elderly Population in a Particular Period}}{\text{Total General Urban Population in a Particular Period}} \times 100$$

The Spatial pattern of Elderly Population in Karnataka is shown with the help of tables and Arc GIS map are used for Spatio-Temporal analysis of Urban Elderly

Population.

Objectives:

➢ To examine the Temporal Trend of Urban Elderly in Karnataka.

> To analyze the Spatial Patterns of Urban Elderly Population in Karnataka.

Table No.1: Percent of Aged Population in different Administrative division of Karnataka, 1981-2011

Sl. No	Districts	Urban Elderly Population				Total Elderly Population				Rural Elderly Population			
		1981	1991	2001	2011	1981	1991	2001	2011	1981	1991	2001	2011
I	**Bangalore Division**												
1	Bangalore	5.32	5.6	6.20	7.51	6.16	5.75	6.29	7.51	7.70	3.12	7.01	7.55
2	Bangalore Rural*		5.88	6.20	7.29		8.12	8.91	10.21		4.10	9.66	11.30
3	Chithradurga	5.23	5.33	6.33	7.81	6.80	7.05	8.32	10.11	7.28	7.68	8.75	10.69
4	Chikballapur***				7.61				10.56				11.41
5	Davanagere**			5.83	7.77			7.26	9.25			7.88	9.97
6	Kolar	5.76	5.89	6.42	7.62	7.54	7.72	8.47	10.08	8.06	8.27	9.14	11.20
7	Ramanagara***				7.28				12.26				13.89
8	Shimoga	4.75	5.16	6.44	8.74	5.77	6.39	7.22	9.44	4.53	6.83	7.64	9.82
9	Tumkur	5.62	5.47	6.59	8.23	7.32	8.16	9.09	11.89	7.54	8.70	9.70	12.94
		5.34	**5.56**	**6.29**	**7.76**	**6.72**	**7.20**	**7.94**	**10.15**	**7.02**	**6.45**	**8.54**	**10.97**
II	**Belgaum Division**												
10	Belgaum	6.1	6.42	7.29	9.31	6.63	7.29	7.99	10.13	6.79	7.56	8.22	10.40
11	Bijapur (Vijayapura	6.35	6.08	6.78	7.70	6.60	6.77	7.96	9.11	6.68	7.56	8.29	9.53
12	Bhagalkote**			6.87	8.42			7.29	8.94			7.46	9.17
13	Dharwad	5.92	6.1	7.00	8.88	6.25	6.73	7.32	9.41	6.43	7.06	7.72	10.10
14	Gadag**			7.22	8.90			7.65	9.49			7.89	9.82
15	Haveri**			6.07	7.55			7.02	8.83			7.27	9.20
16	Uttarkannada	5.54	6.29	7.47	9.81	6.41	7.25	7.95	10.13	6.70	7.55	8.14	10.27
		5.98	**6.22**	**6.96**	**8.65**	**6.47**	**7.01**	**7.60**	**9.43**	**6.65**	**7.43**	**7.85**	**9.78**
III	**Gulbarga Division**												
17	Bellary	5.71	5.27	6.10	7.01	6.14	5.92	6.40	7.43	7.36	6.19	6.56	7.67
18	Bidar	6.44	5.37	5.66	6.92	7.74	7.64	7.89	10.20	8.02	8.19	8.56	11.29
19	Gulbarga	5.9	5.39	5.80	6.92	6.72	6.6	7.00	8.37	6.96	6.98	7.45	9.07
20	Yadagiri***				6.98				7.86				8.07
21	Raichur	5.46	5.11	5.35	6.38	5.92	6.02	5.88	7.23	6.02	6.26	6.05	7.52
22	Koppal**			5.59	6.98			6.27	8.20			6.41	8.45
		5.88	**5.29**	**5.70**	**6.87**	**6.63**	**6.55**	**6.69**	**8.22**	**7.09**	**6.91**	**7.01**	**8.68**
IV	**Mysuru Division**												
23	Chikkamagalur	5.42	5.49	6.3	8.31	5.95	6.86	7.92	10.74	6.06	7.14	8.31	11.39
24	Dakshina Kannada	6.48	7.24	8.04	9.67	7.11	7.75	8.27	9.91	7.31	7.95	8.42	10.13
25	Udupi**			9.86	12.80			10.61	13.15			10.78	13.28
26	Hassan	5.46	5.61	6.32	8.30	6.44	7.33	8.67	11.81	6.61	7.69	9.18	12.76
27	Kodagu	5.09	5.48	8.20	8.76	6.01	6.91	7.66	10.42	6.17	7.18	7.89	10.70
28	Mandya	5.86	6.19	6.62	8.33	7.37	8.09	9.14	11.87	7.64	8.46	9.62	11.44
29	Mysore	6.43	6.49	7.32	8.94	7.09	7.33	8.08	10.08	7.34	7.69	8.54	12.60
30	Chamarajanagara**			7.20	8.98			8.81	11.54			9.11	12.07
		5.79	**6.08**	**7.48**	**9.26**	**6.66**	**7.38**	**8.65**	**11.19**	**6.86**	**7.68**	**8.98**	**11.80**
	Karnataka	**5.70**	**5.83**	**6.53**	**8.02**	**6.63**	**6.99**	**7.69**	**9.48**	**6.99**	**7.50**	**8.28**	**10.40**

Source : Compiled by the author, Census of India from 1981-2011.
Note :Number of districts in Karnataka state has increased from 19 in 1981 to 30 in 2011.
***New districts formed after 1981 census; **New districts formed after 1991 census: *** New districts formed after 2001 census.**

DISCUSSION:

Spatio-Temporal Analysis of Urban Elderly Population: Elderly Population is a result of long life of human beings. It refers to the demographic characteristics of group of people and individuals. The proportion of elderly population to total population is one of the indicators to consider whether the country population is 'Young', 'Mature' and 'Old'. If the population has 10 or more percent of 60 years and above population is known as 'Old' and those with below with below with 5 percent as 'Young' and between 10-5 percent as 'Mature stage'. (Dr. Saritha K. 2015)

In the present study the mature stage has been classified into two sub categories They are 'Premature' with 5 to 7.4 % and above 7.5 and below 10 % is known as 'Mature' stage. Therefore, has the Elderly Population of Karnataka is marching from 'Premature' to 'Mature' and 'Mature' to 'Near to Old Stage' during this period 1981 to 2011 with 6.63% to 9.48% of growth respectively (Table No.1). Karnataka state has been divided into four administrative division

In 1981 Shimoga district lies in Infancy Stage with 4.75% of elderly population. All other districts were in Premature Stage. (More than 5%). (Map no.2). In the next decade (1991) Shimoga district has shifted to Premature Stage. During this period all the 20 districts are found in this stage only.(Map no.2).

In the next decade (2001) the State in found in Premature Stage. Udupi, Kodagu, and Dakshina Kannada districts have moved to Mature Stage from Premature Stage. Udupi district is almost nearer to Old Stage. All other districts still continue in Premature Stage.

In 2011 the State has shifted from Premature stage to Mature stage. During this period Udupi is the only district found in Old Stage in the entire State. Whereas Uttara Kannada and Dakshina Kannada districts are nearer to Old Stage. Eight districts in the state are still in Premature Stage (table and Map1 & 2). Remaining 21 districts in the State are found in Mature Stage. It is found that the number of districts lies in Mature Stage have significantly increased in the next decade that is from 3 district to 21 districts.

Spatio - Temporal trend of Urban elderly population distribution
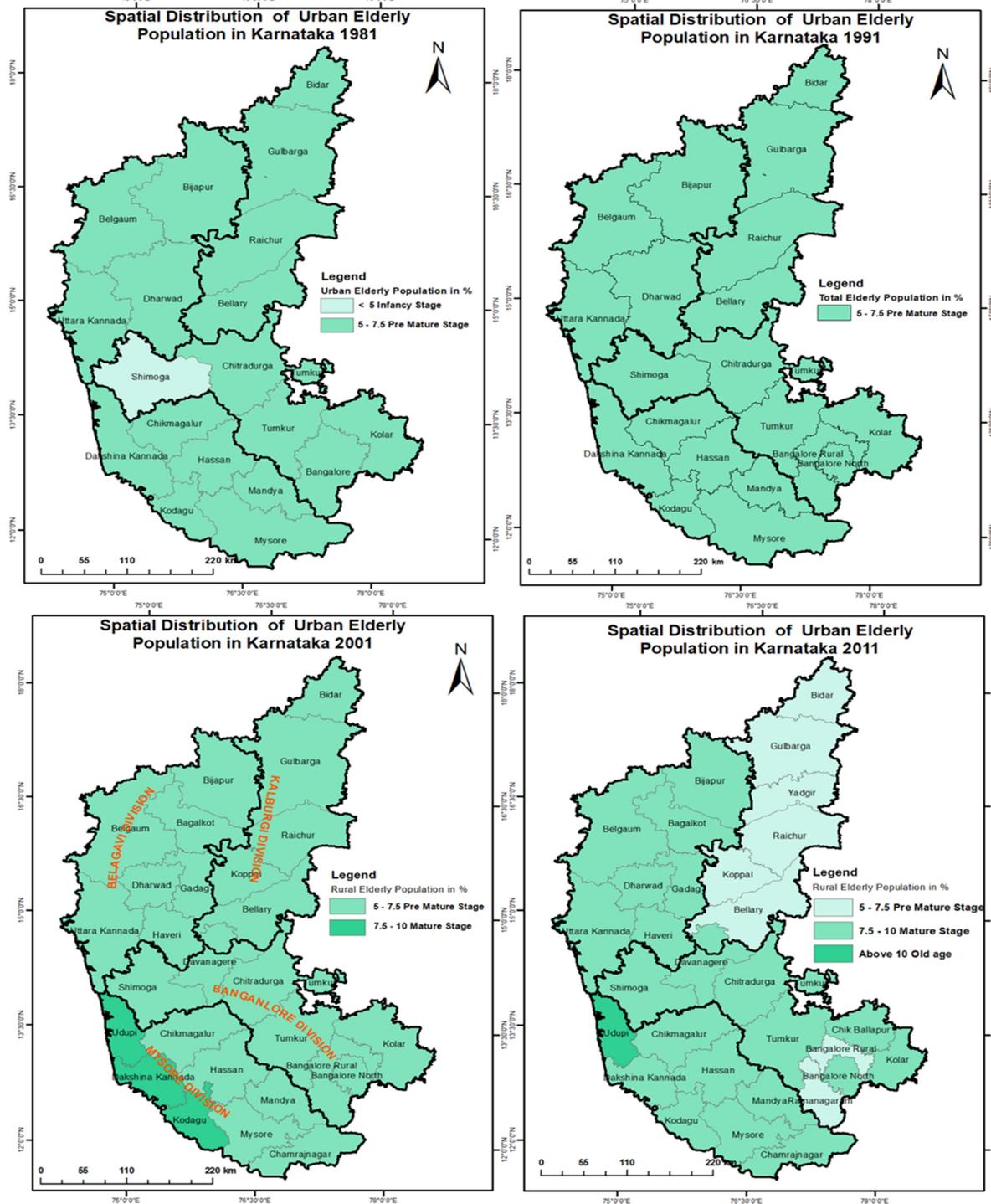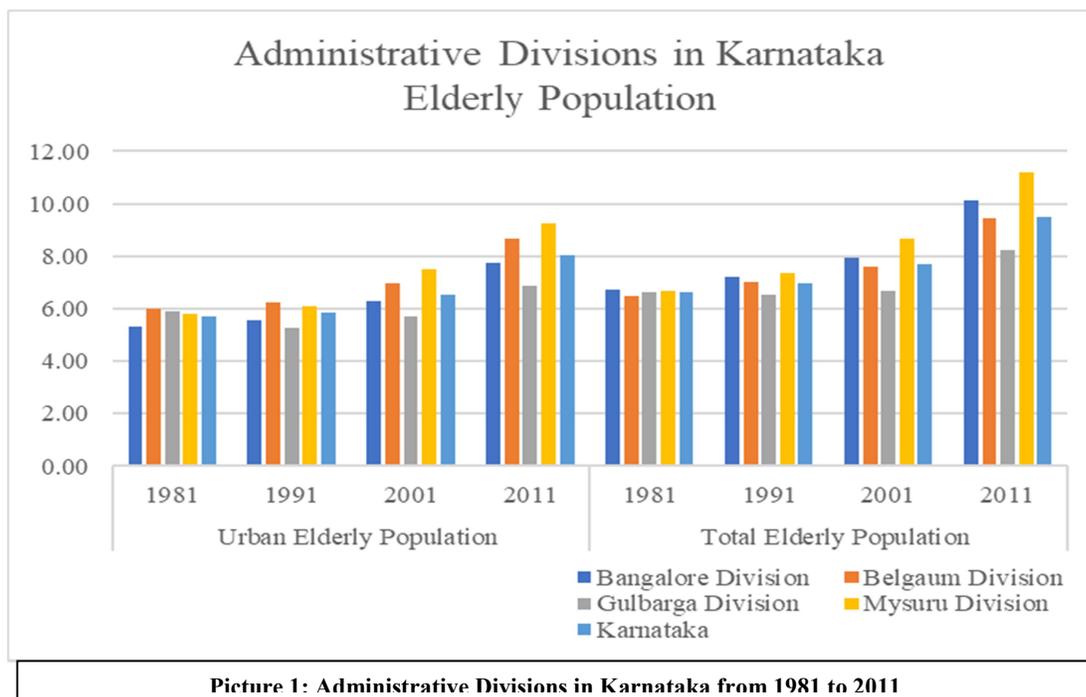## Karnataka - 1981 - 2011

Table No 2: Spatio -Temporal trend of Elderly Population in different Administrative divisions 1981-2011

Sl. No.	Administrative Divisions	Urban Elderly Population				Total Elderly population			
		1981	1991	2001	2011	1981	1991	2001	2011
1.	Bangalore Division	5.34	5.56	6.29	7.76	6.72	7.20	7.94	10.15
2.	Belgaum Division	5.98	6.22	6.96	8.65	6.47	7.01	7.60	9.43
3.	Gulbarga Division	5.88	5.29	5.70	6.87	6.63	6.55	6.69	8.22
4.	Mysuru Division	5.79	6.08	7.48	9.26	6.66	7.38	8.65	11.19
	KARNATAKA	5.7	5.83	6.53	8.02	6.63	6.99	7.69	9.48

Source: Compiled by the author, Census of India from 1981-2011.

Picture 1: Administrative Divisions in Karnataka from 1981 to 2011

Ageing in different Administrative Regions of Karnataka 1981-2011

Karnataka state has been divided into four administrative divisions. They are Bangalore division, Mysore division, Belgaum division, Gulbarga division. This paper is concentrated on the process ageing of Urban elderly population in Karnataka. Hence for analysis is the administrative division are taken into consideration. These division on the basis of Urban elderly population. Firstly according to Urban elderly population in 1981 in Bangalore division it was about 5.34% and by the time of 2011 Urban elderly population was 7.76%. It means Bangalore division has been shifted from premature stage to Matute stage in the same way. Belgaum division during 1981 was

about 5.98% and by the time of 2011 it was 8.65%. Belgaum division also shifted form premature stage to mature stage, more than it is near to the old stage. In Gulbarga division during 1981 it was 5.88%, and by the time of 2011 it was 6.87%. Gulbarga division is in premature stage. Lastly Mysore division in 1981 it was 5.79% by the time of 2011 it was 9.26%. Mysore division shifted from premature stage to mature state, more than that it is very near to he old stage.

(Table no.2) The reason behind the increase of elderly population is changing due to fertility decline and improvement in the life expectancy and also the medical facilities are better in that division. The growth in urban elderly population is due to the longevity of life achieved because of economic wellbeing, better medicines and medical facilities and reduction in fertility rates.

Table No. 3.

Sl.No.	Division	Percent of Changes in Administrative Divisions in Karnataka											
		Urban Elderly Population						Total Elderly Population					
		1981	1991	% of Change	2001	2011	% of Change	1981	1991	% of Change	2001	2011	% of Change
1	Bangalore Division	5.34	5.56	0.22	6.29	7.76	1.48	6.72	7.20	0.48	7.94	10.15	2.21
2	Belgaum Division	5.98	6.22	0.25	6.96	8.65	1.70	6.47	7.01	0.54	7.60	9.43	1.84
3	Gulbarga Division	5.88	5.29	-0.59	5.70	6.87	1.17	6.63	6.55	-0.08	6.69	8.22	1.53
4	Mysuru Division	5.79	6.08	0.29	7.48	9.26	1.78	6.66	7.38	0.72	8.65	11.19	2.54
	Karnataka	5.7	5.83	0.13	6.53	8.02	1.49	6.63	6.99	0.36	7.69	9.48	1.79

Source : Compiled by the author, Census of India from 1981-2011.

Limitation :-

The Present study focusing for period of four decades from 1981 to 2011census of India. During this period the number of districts in Karnataka state has increased from 19 to 30 in 2011.

Finding and Conclusion :-

According to population census 2011 there are nearly 104 million Elderly Persons (aged 60 years or above) In India. 53 million females and 51 million males. Both the share and size of Elderly Population is increasing over time. Form 5.6% in 1961

the proportion has increased to 8.6% in 2011. As regards Rural and Urban areas, 71% of Elderly Population resides in Rural areas while 29% of Elderly Population are in Urban areas. The trend is same in Rural as well as in the Urban area. In rural areas while the proportion of elderly persons has increased from 5.8 Percent to 8.8 percent in urban areas it has increased from 5.7 percent to 8.1 percent during 1961 to 2011. It is observed that the difference of percentage share of elderly population in whole population in Rural and Urban areas in

narrowing. The state is divided into four Regional divisions. The Bangalore division, Gulburga division, Belagum division, Mysore division. This paper concentrated on the Urban elderly population found in Karnataka. Hence it mainly taken into consideration the administrative division. These division on the basis of Urban elderly population. Firstly according to Urban elderly population in 1981 in Bangalore division it was about 5.34% and by the time of 2011 Urban elderly population was 7.76% . Accordingly the Elderly Population of Karnataka is marching from 'Premature' to 'Mature' and 'Mature' to 'Very Near to Old Stage' during this period 1981 to 2011. According the Urban Elderly Population of Karnataka is moving from Premature Stage to Very Near to Old Stage during 1981 and 2011 with 5.70 to 8.02% . Elderly Population is a result of long life of human beings. It refers to the demographic characteristics of group of people and individuals . The proportion of elderly population to total population is one of the indicators to consider. All these characteristics help us to analyze the Urban elderly population in Karnataka .

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