

## DEMOGRAPHICS OF AGEING IN KERALA

**Dr.SindhuPratap**

Assistant Professor of Economics, SreeNarayana College for Women,Kollam.

### Abstract

Population ageing is the most significant result of the process known as demographic transition. Reduction of fertility leads to a decline in the proportion of the young in the population. Reduction of mortality means a longer lifespan for individuals. Population ageing involves a shift from a high mortality/ high fertility to a low mortality / low fertility and consequently an increased proportion of older people in the total population. India is undergoing through such a demographic transitional phase. The evolving population dynamics in India arising out of the joint effect of declining fertility and increasing longevity and consequent shifting of the population age structure cannot be ignored. Among the states, Kerala is unique as it is demographically ahead of the rest of the country and is in the final stages of demographic transition.

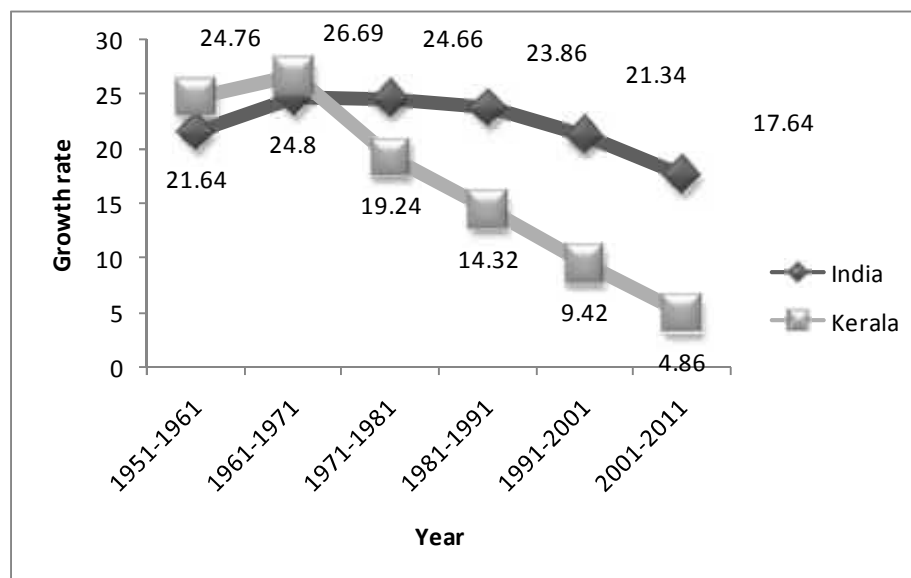
### Introduction

It is quite interesting to note the demographic trends in Kerala, the southern state of India, as it is quite different from those of the country as a whole. The state has an outstanding record in low birth rates and high life expectancy. It is also famed for having a sex ratio in favour of females. The speed of aging in Kerala depends on the fall in mortality rates, especially among the older age groups. Along with this, a steady decline in birth rate has justified the age structural transition in Kerala. Thus the state has an exceptional age structural transition; from the first stage of demographic transition at the beginning of the last century, to the last stage of demographic transition, at the beginning of the present century.

### Demographic Trends and Patterns

Up to 1971, Kerala's growth rate of population was above the national growth rate and thereafter it showed a declining trend and during the half century since 1951, Kerala's population increased only by 135% as against the all India growth rate of 184%. (Figure 1).

**Figure1.Decadal growth rate of population in India and Kerala, 1961-2011.**



Source: Growing Old in Kerala.KSPB, 2009

The sex ratio in Kerala kept on increasing, while that at the all India level was on a course of steady deterioration. The density of population in Kerala has increased from 349 per square km in 1951 to 819 in 2001, whereas at the national level it increased only from 117 persons per square km in 1951 to 324 persons per square km in 2001 (Table 1).



**Table 1 Sex Ratio and Density of Population in Kerala & India, 1951- 2011**

Year	Sex Ratio (Females per 1000 males)		Density of population (Per squarekilometre)	
	Kerala	India	Kerala	India
1951	1028	946	349	117
1961	1022	941	435	142
1971	1016	930	549	177
1981	1032	934	655	216
1991	1036	927	749	267
2001	1058	933	819	324
2011	1084	940	859	382

Source: Census of India (1951 – 2011)

It is also to be noted that mortality & fertility rates have declined to very low levels in Kerala comparable even to rates prevailing in advanced countries. Kerala's Infant mortality rate is one of lowest in the world and its life expectancy at birth is at par with those of developed countries. Thus the demographic scenario of Kerala is quite ahead of India and deserves special mention. Kerala may have a developing country economy, but it certainly has developed country's demography. (K.C. Zachariah)

#### Demographic Profile of Elderly Size and Growth

According to the 1961 census, the number of elderly persons in Kerala of 60 years and above was only 1 million, the number increased to 2.6 million, in 1991 (a 160 percent increase) and to 3.3 million in 2001.(Table 2). Their number is expected to increase to 5.7 million by 2021 and to 8.9 million by 2051 indicating an increase of 166 percent over 2001.According to projections, growth rate among elderly would be the highest during 2011-21, 32.8 percent and would drop to a low of 7.5 percent during 2041-51.

**Table 2 Demographic Profile of the Elderly in Kerala, 2001**

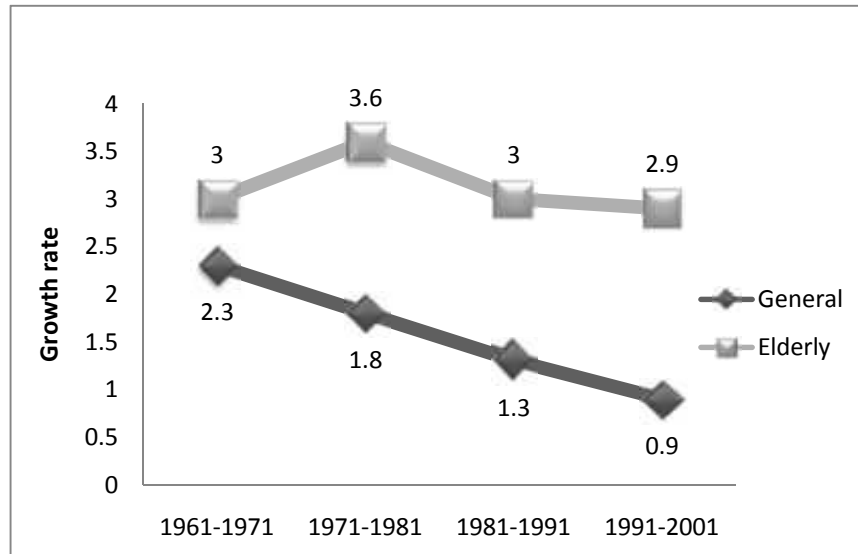
Year	Number of Aged (Millions)			Percentage			Exp growth rate (Percent)		
	60+	70+	80+	60+	70+	80+	60+	70+	80+
1961	0.99	0.36	0.09	5.1	1.9	0.4	-	-	-
1971	1.33	0.50	0.13	6.2	2.3	0.6	3.0	3.7	4.7
1981	1.91	0.71	0.19	7.5	2.8	0.7	3.6	4.4	4.9
1991	2.57	1.00	0.29	8.9	3.4	1.0	3.0	4.1	5.6
2001	3.33	1.40	0.39	10.5	4.4	1.2	2.9	5.2	4.5

Source: Growing Old in Kerala,2009

Similarly, the old-old population (above 70 years) was just 1 million in 1991. Projections indicate that the old- old would reach 2.5 million in 2021 and 7.2 million in 2061. During 1961-1991, the growth rate among the old-old hovered at around 3 percent; it is expected to register a growth rate of around 4% in the coming decades. The oldest old (aged 80 year and above) in Kerala was a mere .29 million in 1991, and their number is expected to increase to .80 million in 2021 and further to 2.7 million by 2061. The notable point is that the 80+ population in Kerala increased by 0.1 million every Census year from 1981.The growth rates among the oldest old have been higher than that of the young old and old old in Kerala over the past 40 years; the growth rate is expected to slow down in the coming decades.

The exponential growth rate of Kerala's elderly population and general population for the period 1961-2001, as shown in Figure 2 reveals that the aged population has outgrown the general population since 1961 at a much faster rate. It is remarkable that the growth rate of the elderly was double during 1971- 1981 period when compared to the growth rate of general population.

**Figure 2 Exponential Growth rate of Total Population and 60+ Population in Kerala,1961-2001**

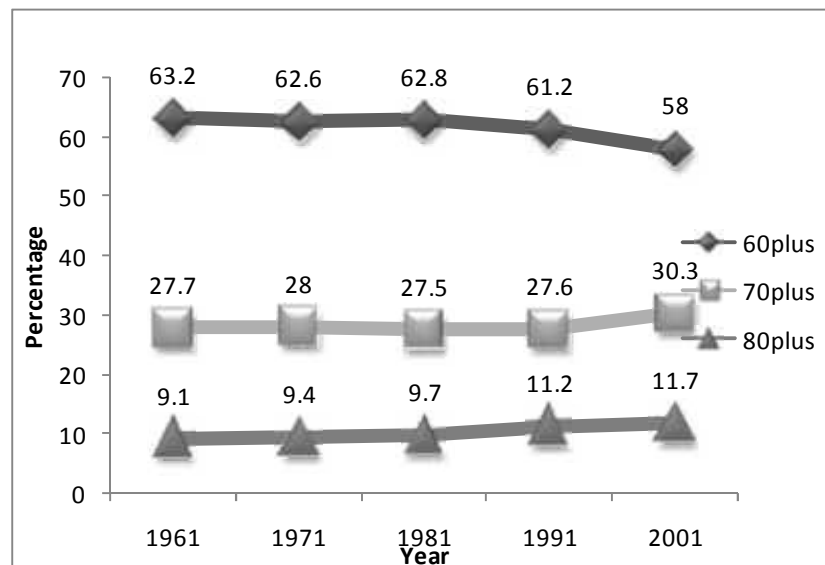


Source: Growing Old in Kerala,2009

### Age Composition

The percentage share of young old (60+), old old (70+) and oldest old (80+) in the total elderly population of Kerala and India is illustrated in the Figure 3 below. Whereas the percentage share of young old has shown a declining trend for both Kerala and India, the share of 70+ and 80+ has shown an increasing trend throughout the period 1961-2001. In India there was a minor decline in the proportion of oldest old during the 2001 period.

**Figure 3 Percentage shares of elderly in Kerala, 1961-2001**



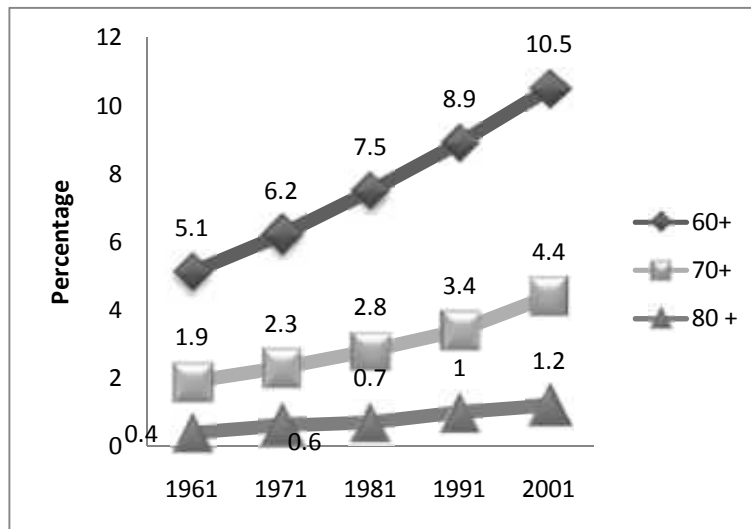
Source: Growing Old In Kerala, KSPB,2009

### Growth of the Elderly and Speed of Population Aging

The tempo of aging is more rapid in the state. It took 20 years (1961-1981) for the population (60+) to increase from 5 to 8%. The same increase from 8% to 11% occurred in the next 20 years (1981 – 2001). As per the population projection, there would be an increase from 11 to 14% by 2016, and to 25.6 percent by 2051.

The percentage of 60+ in the elderly population increased from 5.1% in 1961 to 10.5% in 2001, whereas that of the old – old increased from 1.9% to 4.4% during the same period. The share of the oldest old increased from 0.4% in 1961 to 1.2% in 2001. In the period 1961-1971, the growth rate of 60+ increased from 3 to 3.6% and thereafter since 1991, it has shown a declining trend. The growth rate of 70+ peaked in 1981, dipped in 1991 and increased to 5.2% in 2001. The 80+ growth rate peaked in the year 1991 and then dropped to 4.5% in 2001. (Figure 4)

**Fig. 4 Percentage of the Elderly 60+, 70+ and 80+ in Kerala, 1961-2001.**

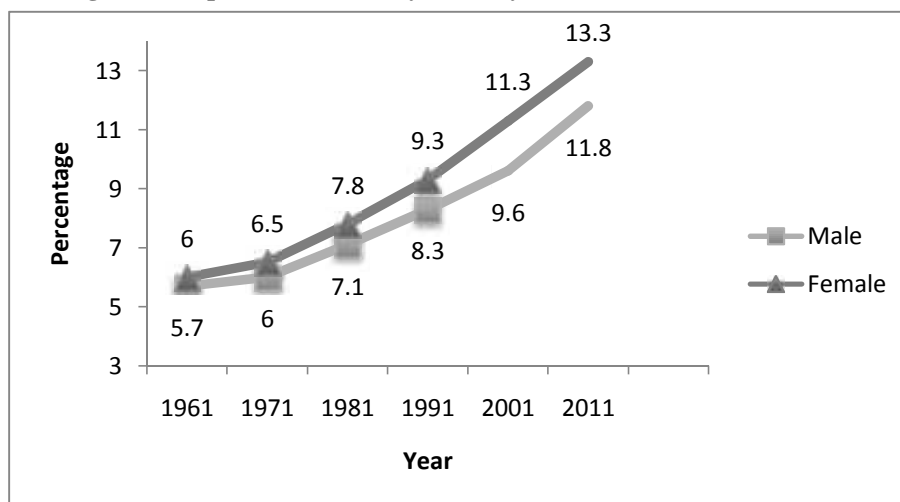


Source : Growing Old in Kerala, KSPB, 2009

### Feminization of Ageing

Both male and female proportion of aged has shown an increase from 1961-2001. But the proportion of female elderly is higher than the proportion of male elderly throughout the period (Figure 5). Thus aging in Kerala is becoming disproportionately female.

**Figure 5 Proportions of Elderly (60+) by Gender in Kerala, 1961-2001**

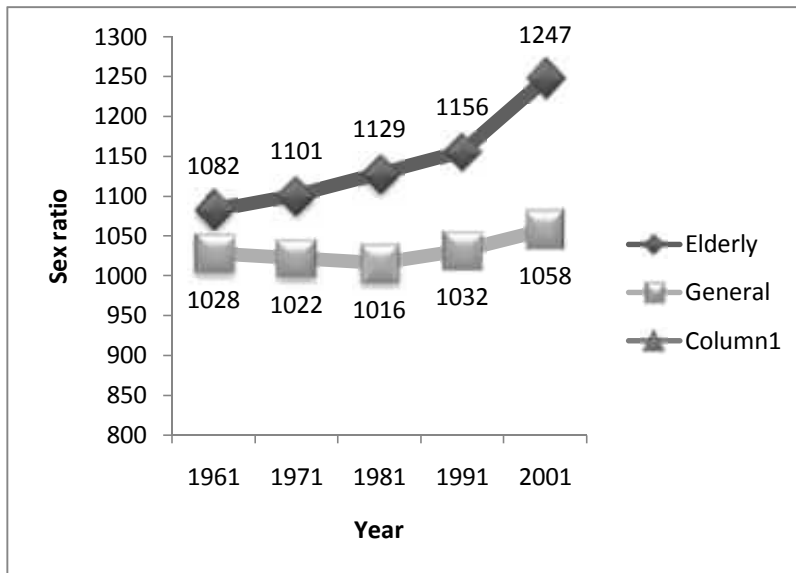


Source: Growing Old in Kerala, KSPB, 2009

### Sex Ratio of the Elderly

Recent figures indicate that the sex ratio of the elderly in Kerala is much higher than that general population, mainly due to the high life expectancy of women. The result is the feminization of the elderly (Figure 6). Already sex ratio in Kerala is the highest in India. This ratio will further increase among the elderly because of the high longevity of life for women. Sex ratio among 60+, 70+ and 80+ shows an increasing trend form 1961-2001. The highest sex ratio is observed in the 80+ group. This shows that women survive more than men in the old ages which points out to the gender dimension of ageing such as widowhood and vulnerability among the aged women. The proportion among females among elderly would increase as years pass by. The proportion which was 55.4% in 2001 would increase to 57.7 %in 2051.The increase during 2001-2051 would be 176 percent among females and 152 percent among males.

**Figure 6 Trends in Sex Ratio among Elderly and General Population since 1961**

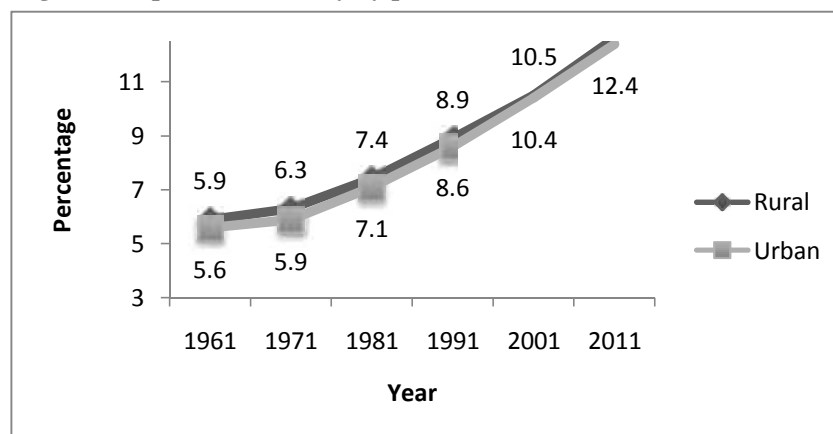


Source: Growing Old in Kerala, KSPB, 2009

### Place of Residence

The proportion of the aged is more in the rural areas than in the urban areas(Figure 7). There is only a slight difference in the proportion of the male and female elderly in the rural and urban areas. In rural areas, the difference between the proportion of aged males and females was only 1.6 percent in 2001, whereas the difference in urban areas was 2.1 percent .This indicates a greater proportion of elderly females in urban areas.

**Figure7 Proportion of elderly by place of Residence in Kerala, 1961-2001**



Source: Growing Old in Kerala, KSPB, 2009

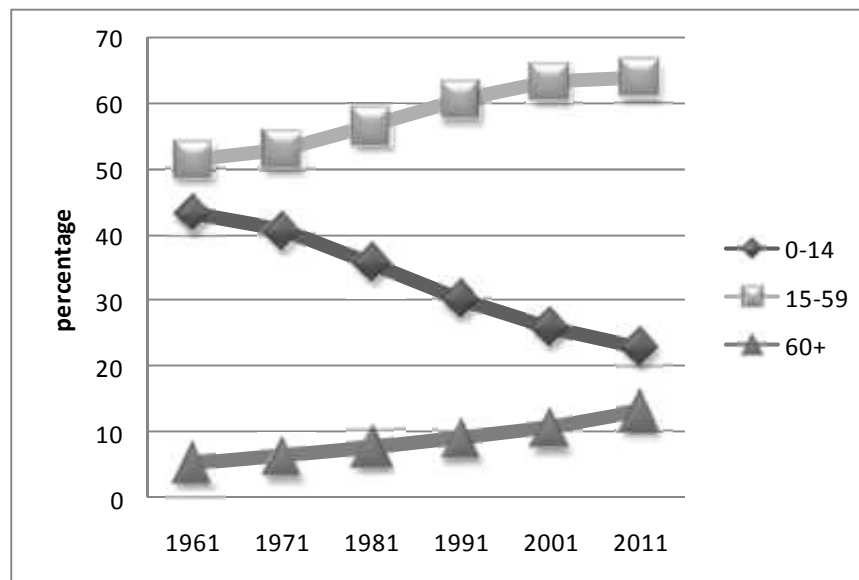
### The Age Structural Transition

The age structure of the population is classified according to the life cycle stages and its behavior in the general economy as 0-14 (young), 15-59 (working age population) and 60+ (old age). Studies have shown that age structure of the variables have substantial effects on per capita GDP growth rate (Lindh and Malmberg 1999; Anderson, 2001; Navaneetham (2004)).

The age structure of Kerala, determines the change in the composition of population of children, young adults and older adults. India's younger population started to decrease with the increase of adults of working age group and older persons from 1971 onwards. The same could be observed for Kerala also during this period (Figure 8).

During the 1961- 2001 period, there was a large decrease in the share of 0-14 when compared to the total population and the share of both working age (15-59) and elderly population (60+) showed an increase. Thus as the population of Kerala aged, the proportion of the young population decreased.

**Figure 8 Percentage of Population by Broad age groups in Kerala**



Source: Growing Old in Kerala, KSPB, 2009

Table 3 shows that over the next 50 years, there would be negative growth rate among children and positive growth rate among the elderly.

**Table 3 Demographic Scenario for Kerala: Past and future**

Year	Total Population	Growth Rate (%)	Children <15 years	Growth rate (%)	Elderly 60+	Growth Rate (%)
1961	16904	-	7205	-	986	-
1971	21347	2.33	8595	1.76	1328	2.98
1981	25451	1.76	8901	0.35	1910	3.63
1991	29074	1.33	8617	-0.32	2573	2.98
2001	31838	0.91	7429	-1.48	3442	2.91
2011	43201	0.74	7230	-0.27	4642	2.99
2021	35633	0.41	6624	-0.88	6624	3.56
2031	35965	0.09	5785	-1.35	9169	3.25
2041	35319	-0.18	5419	-0.65	11080	1.89
2051	33449	-0.54	4921	-0.96	11732	0.57

Source: Kerala Development Report, Planning Commission, Govt. of India, 2005



### Factors Contributing To Population Ageing

In Kerala, longevity has increased significantly in the last few decades mainly due to the socio- economic and health care development. Major factor that contribute to ageing include

1. Decrease in fertility and mortality
2. Decline in the Infant Mortality Rates
3. Decline in Total Fertility Rates
4. Increases in Life Expectancy

### Trends in Fertility and Morality Rates

The most important factors that contribute to change the population age structure are fertility and mortality. The process of population aging is determined primarily by trends in fertility rate and secondarily by mortality rates. Any population with a long history of high fertility has a young age structure. The average age of the population starts to rise when fertility rates decline. The impact of mortality decline is more uneven, depending on whether the decline in mortality operates mainly at younger or at older ages. If the mortality decline is in favour of infants and children, it will make the population younger. When mortality rates at young ages are already low, further decline has tended to affect mainly the adult and older ages, and will contribute to population aging. However changes in mortality may assume a greater significance for population aging later in the demographic transition. Heavy outmigration can also be a factor that contributes to Kerala having a relatively higher proportion of elderly among Indian States.

Median age increases because of fertility transition, which reduces the number of children (Table 4). The fast hike in the median age in the close of the last century give us signs of an alarming rate of aging. Median age is much higher than the national figures of 21.7 and 22.3 in the 1991 and 2001 census.

**Table 4 Trends in Median Age in Kerala and India**

Year	1961	1971	1981	1991	2001
<b>Kerala</b>	19.3	19.5	21.6	24.6	27.5
<b>India</b>	20.5	19.6	20.4	21.7	22.3

Source: Census of India

The trends in Crude Birth Rate (CBR), Crude Death Rate (CDR), Infant Mortality Rate (IMR) and Total Fertility rates (TFR) for Kerala and the nation as a whole (Table 5). It can be seen from the table that Kerala has exceptionally low fertility and mortality rates which can be compared even to rates prevailing in advanced countries. The success achieved in controlling infant mortality is one of the factors responsible for the rapid increase in the expectation of life at birth. The TFR plunged after 1970's to reach an unmatched level of 1.7 in 2009.

**Table 5 SRS Estimates of fertility and Mortality Rates in Kerala and India 1971-2011**

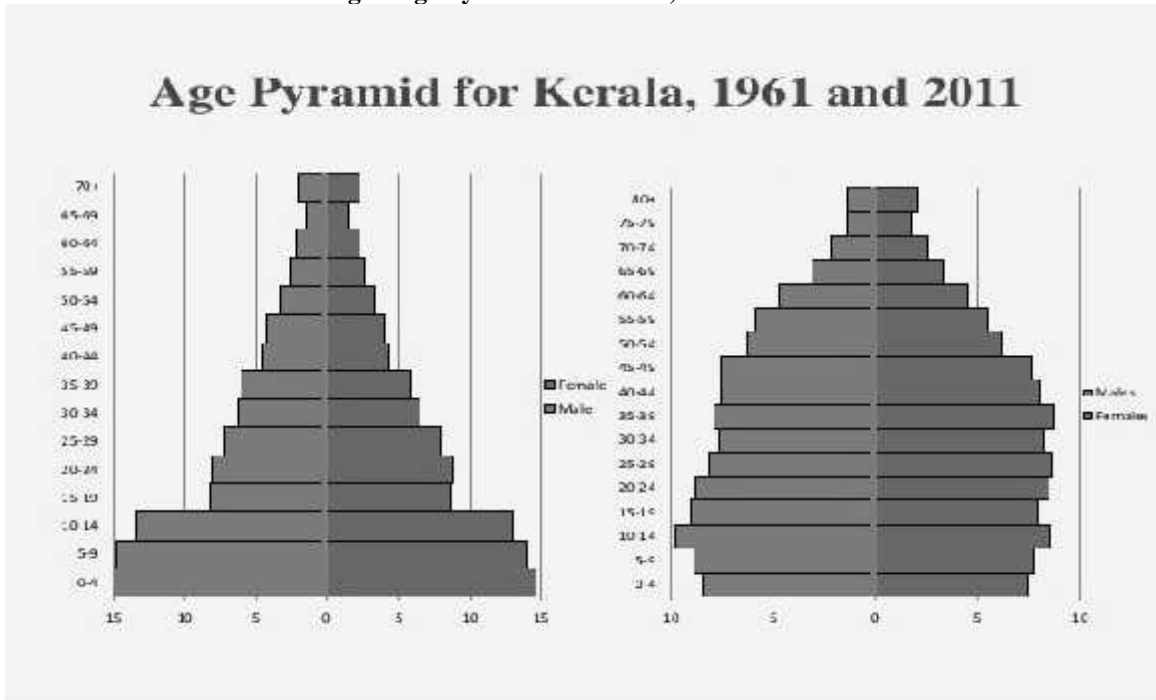
Year	CBR		CDR		IMR		TFR	
	Kerala	India	Kerala	India	Kerala	India	Kerala	India
1971	31.1	36.9	9.0	14.9	58	129	4.1	6.5
1981	25.6	33.9	6.6	12.5	37	110.04	2.8	5.2
1991	18.3	29.3	6.0	9.8	16	80.0	1.8	4.5
2001	17.3	25.4	6.6	8.4	11	66	1.8	3.6
2009	14.6	22.8	6.6	7.4	12	53	1.7	2.6
2010	14.8	22.1	7.0	7.2	13	47	2.5	2.3

Source: SRS Estimates, 1971 – 2010

### Age Pyramids of Kerala

The impact of fertility decline can be better appreciated by looking at the age pyramid for the periods 1961 and 2011 (Figure 9). The transition of the age structure from a pyramid cal shape with a broad base to a cylindrical shape during 1961-2010, clearly portrays the exact scenario of changing age structure of the population. The age pyramid depicts the exact scenario of the age structural transition.

Fig 9. Age Pyramids of Kerala, 1961 and 2011



Source: Kerala Development Report, Planning Commission, Govt. of India, 2005

### Life Expectancy

The expectation of life at birth has been consistently higher for women in Kerala than men and the gap has also been widening. Person aged 60 is expected to live about 20 years. Females live longer than men in extreme old age and have an improvement in the life expectancy. Along with the health facilities, the nutritional status of the people in Kerala, might also have had an impact on the increase of old age expectation of life for both sources (Table 6).

The life expectation at the age of 60 for Keralites is higher than that of India. Also elderly females have more life expectancy than elderly males. The projections regarding average expectation of life of the elderly males and females also follows the same trend. Though the life expectancy among elderly females at both 60+ and 80+ ages continues to be higher than males, the gap is expected to decrease from 3.6 years during 2001-2005 to 2.9 years during 2021-2025. The feminization of ageing draws attention to the gender dimension i.e. widow hood among the aged population.

Table 6 Trends in life Expectancy at the Age of 60 for Kerala and India, 1970-2005

Year	e <sup>60</sup>					
	Total		Kerala		India	
	Kerala	India	Male	Female	Male	Female
1970-75	15.8	13.8	15.2	16.4	13.4	14.3
76-80	17.1	15.0	16.2	18.0	14.1	15.9





81-85	18.2	15.4	16.6	19.8	14.6	16.4
86-90	17.2	15.4	15.8	18.5	14.7	16.1
91-95	19.0	16.2	18.2	19.6	15.3	17.1
96-00	19.6	16.9	18.6	20.5	15.8	17.8
2001-2005	19.7	17.7	18.8	20.6	16.4	18.7

Source : Sample Registration system (SRS) office of the Registrar General, India.

### Dependency Ratios

Gerontologists are more concerned with the personal support systems and social convoys of the elderly, since the support systems have important implications for their social, psychological and economic wellbeing. The need for national measures of protection of the social and economic dependency of older person has partly been highlighted by demographers through the use of various measures of age dependency. The following familial and societal dependency ratios are presented for Kerala for the period from 1961 to 2061 (Table 7)

**Table 7 Dependency Ratios, Ageing Index and Familial Dependency Ratios for Kerala, 1961-2061**

Year	Dependency Ratio			Index of Ageing	Familial Dependency Ratio		
	Young	Old	Total		0-14/60+	60-74/40-44	80+/60-64
1961	82.7	11.3	94.0	13.7	731	105	23
1971	75.2	11.6	86.9	15.5	647	107	26
1981	61.5	13.2	74.7	21.6	466	134	27
1991	49.9	14.4	64.3	28.9	370	136	33
2001	41.1	16.5	57.6	40.1	250	130	38
2011	32.8	18.4	51.2	56.1	178	123	42
2021	26.6	24.0	50.6	90.4	111	148	44
2031	22.8	33.3	56.1	146.2	68	194	45
2041	20.3	46.3	66.6	228.2	44	255	55
2051	18.1	61.9	80.0	342.7	29	332	78
2061	16.0	76.1	92.0	476.1	21	377	109

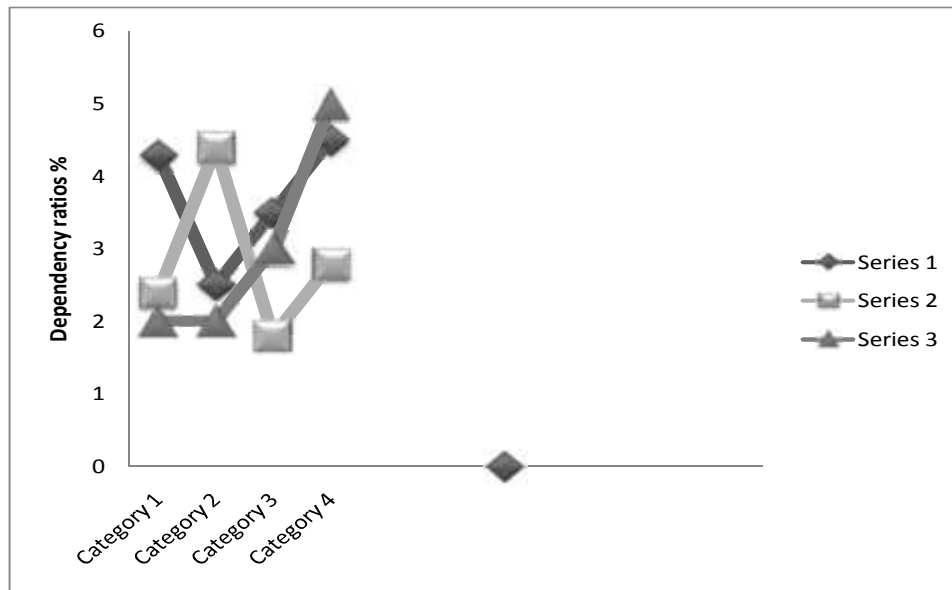
Source: Kerala Development Report, 2005

The twin complementary dependency ratios of young dependency and old age dependency seem to have been moving together with the former registering a constant decline and the latter a modest increase, in Kerala during 1961-2001. The trends in the Young Dependency Ratio registered a decline from 82.7 in 1961 to 41.1 in 2001 while the Old Age Dependency

ratio improved from 11.3 in 1961 to 16.5 in 2001. The decline of YDR ratio during 1961-2001 periods is about 41.6 and the increase of ODR ratio is about 5.2 points. Thus 100 persons in the working age group took care on the average 17 old person in 2001. The decline in fertility reduced the overall dependency burden from 94 in 1961 and 57.6 in 2001. Though the old age dependency is on an increase, the overall dependency has shown a decline of 36 points during the period 1961-2001.

The projected age dependency ratio for the period 2001-2021 is also shown in the table. The young dependency ratio is expected to decline from 41 in 2001 to 26.6 in 2021 and 16 in 2061. The old age dependency ratio is expected to increase from 17 in 2001 to 76.1 in 2061. The implication of these ratios for the future is that instead of six working age person now, there would be only two working persons in 2061 on the average, to take care of at least one aged person. Moreover, the probability of this aged person being a women, who is a widow, unskilled, little educated and non-working, non-recipient of any social security benefit and unhealthy without health insurance is also high. (Figure 10)

**Figure 10 Changes in the Dependency Ratio, 1961- 2061**



Source: Navaneetham, 2005, HDR Background Paper

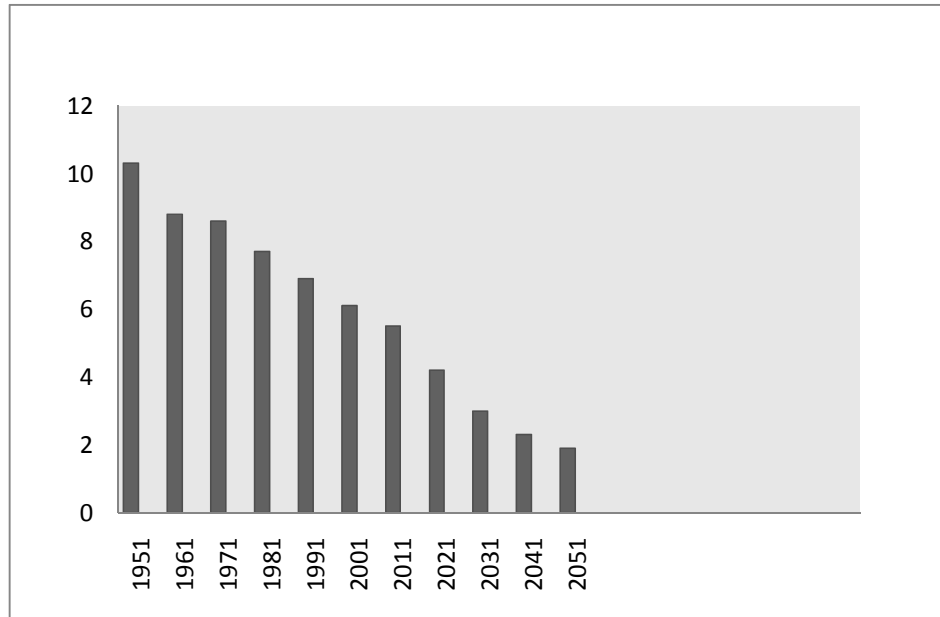
The index of Aging shows a rapid increase in the aging process in Kerala. During the period 1981-1991, there was an increase of aging index by 7 points, whereas during the period 1991-2001, the increase was by 11 points, thereby indicating that the ageing process in Kerala has been accelerating. The projections indicate that the ageing index for the year 2041 would be 228, five times higher than its 2001 value of 40. In short, in Kerala, the rate of increase among the elderly would be much higher in the decades to come. In 2061, there is likely to be on the average, 476 elderly persons per 100 children in Kerala.

Within the familial dependency ratio, the index of children (0-14/60+) has showed a declining trend since 1961, while both the index of parents to children (60-70/40-44) and the index of oldest old and young old (80+/60-64) has showed an increase. By the year 2061, there will be a huge hike in the index of oldest old to young old (80+/60-64) compared to the other familial dependency ratios.

**Potential Support Ratio (PSR)**

The Potential Support Ratio that is the number of population in the working ages per one elderly which was as high as 10.3 in 1951 and 6.1 in 2001 would decrease to 1.9 in 2051. In 1951, 10 persons in the working age supported one elderly. After 100 years, in 2051, there won't be even two people to take care of one elderly (Figure 11).

**Figure 11 Potential Support Ratio**



Source: Navaneetham, 2005, HDR Background Paper

### Conclusion

Kerala is currently passing through the final stage of demographic transition characterized by low fertility and mortality. The greatest demographic challenge would be in managing the ballooning number of elderly population who are progressively getting older. Rapid modernization, urbanization, and migration lead to the breakup of the traditional family system and has eroded the support base of the elderly. The elderly face a lot of challenges in their lives- financially, physically, mentally and socially. Thus proper development of policies and programs for their well-being especially in areas of health and subsistence deserve top priority in the development perspectives in the coming decades.

### References

1. Alam, Moneer (2006). Ageing in India: Socio- Economic and Health Dimensions. Academic Foundation, New Delhi.
2. Census of India 1961, 1971, 1981, 1991 and 2001. Registrar General and Census Commissioner of India, Government of India, New Delhi.
3. Census of India, (2001), Age Tables, Office of the Registrar General of India, New Delhi.
4. Government of India (2008). Kerala Development Report, Planning Commission, Academic Foundation, New Delhi.
5. Government of India (2011). Situation Analysis of the Elderly in India, Central Statistics Office, Ministry of Statistics and Programme Implementation.
6. Government of Kerala (2009). Growing Old in Kerala, UNDP Thematic Study Series 6, HDRC unit, Kerala State Planning Board, Thiruvananthapuram.
7. Irudaya Rajan, S., U.S. Mishra., and .Sarma, P. S. (1999). India's Elderly: Burden or Challenge? Sage Publications, New Delhi
8. Radha Devi. D., S. Santosh, A. Ashraf and T.K. Roy. (2000). Aged in a Changing Society: A Case Study of Kerala. International Institute for Population Sciences, Mumbai.
9. Rajan, Irudaya. S., Sarma, Sankara. P., and Mishra, U. S. (2003). Demography of Indian Aging, 2001-2051. In Phoebe. S. Liebig and Irudaya. S Rajan. An Ageing India: Perspectives, Prospects and Policies, The Haworth Press, Inc.



10. Subaiya, Lekha and Bansod, Dhananjay, W. (2011). Demographics of Population Ageing in India. Institute for Social and Economic Change, Bangalore, United Nations Population Fund, New Delhi, Institute of Economic Growth, Delhi.
11. Zachariah, K. C. (2008). A Century of Developments in Kerala Demography: 1951-2051, in B. A. Prakash and V. R. Prabhakaran Nair (Eds). Kerala's Development issues in the New Millennium, Serials Publications, New Delhi. pp 40-49.