

Chapter – III

Elderly Population of Assam

In studying population aging, the absolute number of population and the growth rate is significant because it has impact on aging of population. In this section a brief description of the pattern and growth of population in Assam is provided. The trend of growth of elderly population according to place of residence, age, gender, marital status and dependency are also explained in this chapter.

3.1 Growth of Population of Assam from 1901 to 2011:

Assam is the one of the most important states of Northeast India. It is located south of the eastern Himalayas, comprises the Brahmaputra Valley and the Barak Valley along with the Karbi Anglong and Dima Hasao districts with an area of 30,285 square miles (78440 km). Assam, along with Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Sikkim and Meghalaya, is one of the seven sister states. Geographically Assam and these states are connected to the rest of India via a 22 km strip of land in West Bengal called the Siliguri corridor. Assam shares an international border with Bhutan and Bangladesh and its culture, people and climate are similar to those of South-East Asia comprising the elements in India's Look East Policy.

According to 2001 census, total population of Assam was 26.66 million with 4.91 million households. Higher population concentration was recorded in the districts of Kamrup, Nagaon, Sonitpur, Barpeta, Dhubri, Darrang and Cachar. Population of Assam was estimated at 28.67 million in 2006 and at 30.57 million

in 2011 and is expected to reach 34.18 million by 2021 and 35.6 million by 2026.

As per 2011 census, total population of Assam is 31,169,272. The total population of the state has increased from 26,638,407 to 31,169,272 in the last ten years with a growth rate of 16.93%. Of the 32 districts, eight districts registered rise in the decadal population growth rate. Religious minority dominated districts like Dhubri, Goalpara, Barpeta, Morigaon, Nagaon and Hailakandi recorded growth rates ranging from 20 percent to 24 percent during the last decade. Eastern Assam districts including Sivasagar and Jorhat registered around 9 percent population growth. These districts do not share any international border.

Table 3.1
Population Trend in Assam and India

Year	Population (in lakh)		Percentage Decadal Variation		Density (per sq. km)	
	Assam	India	Assam	India	Assam	India
1901	3.3	2384	-	-	42	77
1911	38	2521	17.0	5.8	49	82
1921	46	2513	20.5	0.3	59	81
1931	56	2789	19.9	11.0	71	90
1941	67	3186	20.4	14.2	85	103
1951	80	3611	19.9	13.3	102	117
1961	108	4392	35.0	21.5	138	142
1971	146	5481	35.0	24.8	186	177
1981	180	6833	23.4	24.7	230	230
1991	224	8463	24.2	23.9	286	267
2001	266	10270	18.9	21.5	340	325
2011	312	12102	16.9	17.6	397	382

Source: Census of India

*The 1981 census could not be held in Assam. Total population for 1981 has been worked out by interpolation.

Table 3.1 reveals that the growth of population in Assam has risen since the mid-decades of the 20th century. Population grew from 3.29 million in 1901 to 6.70 million in 1941. It increased to 14.63 million in 1971 and 22.41 million in 1991. The growth in the western and southern districts was higher primarily due to the influx of people from East Pakistan, now Bangladesh. Population has increased from 22.4 million in 1991 to 26.6 million in 2001 and further it increased to 31.1 million in 2011. The decadal growth rate of population of Assam works out to 16.9 percent during the decade 2001-2011 as against 17.64 percent for the country as a whole. In most of the decades during the last century the growth rate of population in Assam has been well above the national growth rate. This difference has been witnessed perhaps due to continuous migration from the neighbouring states and countries. The density of the population of Assam has gone up to 397 in 2011 which was 340 in 2001 census. In 2011 the density of population of India was 382. The trend of high density of population in the state than national density of population continues since 1971.

3.2 Elderly population of Assam- A trend analysis:

It is evident from Table 3.2 that the absolute number of elderly population has been increasing. The proportion of elderly persons to total population of Assam shows an increasing trend. In 1961 only 4.7 percent of total population was elderly persons of age 60 and above. With the change in time this figure increased to 6.7 percent in 2011.

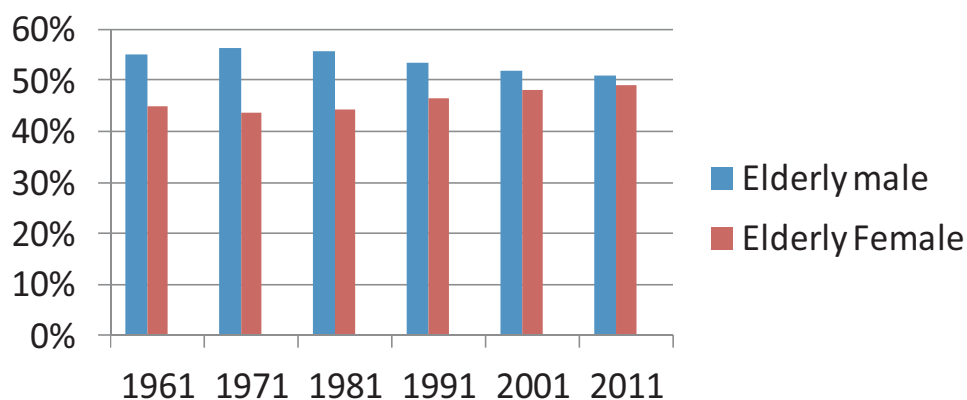
Table : 3.2 Elderly Population of Assam (1961 – 2011)

Year	Elderly Male	Elderly Female	Total Elderly	Total Population	Average Annual Rate
1961	280034(55%)	229120(45%)	509154 (4.7)	10,837,329	3.5
1971	397987 (56.4%)	307663(43.6%)	705650 (4.8)	14,625,152	2.3
1981	542002 (55.7%)	431071(44.3%)	973073 (5.4)	18,041,248	2.4
1991	625897 (53.4%)	568563(46.6%)	1194460 (5.3)	22,414,322	1.9
2001	800585 (52%)	759781(48%)	1560366 (5.8)	26,655,528	0.17
2011	1054817 (51%)	1023727(49%)	2078544 (6.7)	31,205,576	

Source : Census of Reports (1961-2011)

Note: The figures in the parentheses denote proportion of elderly person to the total population.

Figure : 1



It is also evident from the table 3.2 that the numbers of female has increased from 45 percent in 1961 to 49 percent of total senior citizens in 2011. It implies that there is an increasing trend of the proportion of female elderly than male elderly to the total population (Figure 1).

Generally it has been found that increase in the growth rate of elderly population is accompanied by a decline in the growth rate of general population (Rajan et. al 1999). In Assam also average annual growth rate of elderly population have recorded an increase over the years from 1961 to 2011 accompanied by a decline in the annual average growth rate of total population.

Table: 3.3 Annual Average Growth Rate of Population in Assam (Percentage)

Year	Total Population	Elderly Population	Elderly male	Elderly Female
1961-71	3.5	3.8	4.21	3.42
1971-81	2.3	3.7	3.61	4.01
1981-91	2.4	2.27	1.54	3.18
1991-2001	1.9	3.06	2.79	3.36
2001-2011	0.17	3.32	3.17	3.47

Source : Census of India, 1961-2011.

However, the annual average growth rate of total population has remained above the annual average growth rate of elderly population for 1981-91 (Table-3.3). It shows an overall increase in the number and proportion of elderly persons in Assam from 1961 to 2011.

3.3 Ageing in Different population categories in Assam :

It is important to look into the pattern of growth of elderly population in urban and rural areas in Assam. Diversities exist in the pattern of ageing when we consider the number of elderly population according to different place of residence, age and gender. When the elderly population is disaggregated with

respect to the place of residence, age and gender, some important aspects of the pattern of population ageing in the state becomes apparent (Saha. P. 2006).

Table 3.3 shows that the number of elderly persons (60 and above) in rural area is much higher than the number of elderly persons in urban areas according to the census reports. From the table it is clear that the proportion of elderly persons in rural area has increased gradually. In 1991 the proportion of elderly living in rural area was 85 percent and it has increased to 93 percent in 2011. From 1991 to 2011, it has been noticed that sex ratio of elderly person has increased. It implies that the proportion of elderly female has increased in rural areas. But in urban areas, the ratio has declined except in 2011 that it rose to 959. The gradual increase in the sex ratio in rural areas indicates that the life conditions for females in rural areas have improved so as to result in increasing presence of women in the older age group.

Table : 3.4 –Number of Elderly Persons in Urban and Rural areas of Assam.

No. of Elderly	1991		2001		2011	
	Rural	Urban	Rural	Urban	Rural	Urban
Male	538104	91376	710065	107737	990093	69965
Female	477187	87793	674784	96763	951265	67220
Total	1015291	179169	1384840	204500	1941359	137185
	(85)	(15)	(88.7)	(11.3)	(93)	(7)
Sex Ratio	886	960	950	898	960	959

Source : Census of India, Age-data,1991-2011

Note: Figures in the parentheses indicate percentages

3.4 Annual average growth rate of elderly population of Assam.

**Table 3.5 : Annual average growth rate of elderly population of Assam
(in %)**

Growth Rates	1991-2001		2001-2011	
	Rural	Urban	Rural	Urban
Male	3.19	1.79	3.9	3.5
Female	0.04	1.02	4.09	3.05
Total	3.63	6.7	4.01	3.29

Source : Census of India, Social and Cultural Tables, 1991-2011, Assam, Age data – 1991 -2011.

Table 3.5 shows that the annual average growth rate of elderly persons in rural area is higher for the decade 2001-2011, than for the decade 1991-2001. However, the urban area records negative growth for the decade 2001-11 as compared to the decade 1991-2001 in terms of both male and female elderly person.

3.5 Age composition of the Elderly Population of Assam:

One of the important aspects of population aging is the structural change in the amount of elderly persons of a country. To study the aging of population, there are three categories of aging. They are termed as ‘young-old’ (60-69 years of age), Old-old (70-79 years) and very Old (80 years and above). In a country, when the number of elderly population fall in the category of ‘young-old’ is higher, than it implies a longer proportion of elderly expected to be in reasonably good physical and mental health, free of serious disability and capable of leading

an active life. On the other hand if there is a large proportion of elderly in the category of ‘Very-old’ then it implies that a larger proportion of population require attention from the society and government policy makers relating to health care, social support systems, retirement and pensions etc.

Table 3.6 Age composition of the Elderly Population of Assam.

Years	Young Old	Old-Old	Very Old	Total Elderly persons
1981	559032(57.4)	248579(25.5)	114060(11.7)	973073
1991	732169(61.2)	314650(26.3)	147641(12.3)	1194460
2001	959167(61.4)	431560(27.6)	169639(10.87)	1560366
2011	1279340(61.5)	569629(27.4)	229575(11.04)	2078544
Growth Rate	3.33	3.19	3.5	3.3

Source: Census of India, Age-data, 1981-2011.

Note: Figures in the parentheses denote percentages.

+ Refers to annual average growth rate during 2001-11.

Table 3.6 It reveals that elderly persons in the young-old category is highest in all the decades from 1981 to 2011. It is seen that almost in all the categories the proportion of elderly persons has increased. However, if we consider the annual average growth rate of the last decade i.e., 2001-2011, the ‘very old’ age category shows higher growth rate.

3.6 Number of Female Elderly Population in Assam:

Table 3.6 reveals that the proportion of elderly women in total elderly women has increased steadily over time and indicates a graying of female population in

the state. This conforms to the global experience that the female share increases over time and is termed as ‘feminization of the elderly’ (Dhar Chakraborty, 2004). Elderly sex ratio also shows an increasing trend. This has an implication in the economy that females have higher life expectancy at birth and lower mortality (Rajan, et. al 1999).

Table 3.7: No. of Female Elderly Population in Assam

Year	Proportion of Elderly Female	Proportion of Elderly Male	Total Elderly Population	Elderly Sex Ratio*
1961	45	55	509154	818
1971	43.6	56.4	705650	773
1981	44.3	55.7	973073	795
1991	46.6	53.44	1194460	908
2001	48.0	52	1560366	949
2011	49.0	51	2078544	970

Source : Census Report.

*Elderly Female per thousand elderly male.

This is a universal phenomenon, experienced worldwide which is likely to continue in future also. Presence of higher number of women in the older age group means that a large number of them will be widows probably with little economic resources to fall back upon (Saha, P. 2006).

3.7 Marital Status of elderly persons:

The marital status of the elderly persons has significance in the context of care and support in the old age because those who are married seem to have better position in all economic and social aspects than those who are single. Though the relationship between the well-being of the elderly and their marital status can not be spelt out precisely, any change in the marital status of the elderly deserves careful examination (Rajan, 2006)

Table 3.8 Marital Status of Elderly Population in Assam, 2011

Proportion	Male	Female	Total
Married	68.6	31.3	64.2
Widowed	42.3	57.6	34.9
Never married	55.7	55.7	2.9

Source : Census Report : Social and Cultural Table, RGCCI.

Marital status of elderly persons in Assam according to census data are provided in Table 3.8. It reveals that about 68 percentage of elderly males are married while only 31 percent of elderly females are married. In comparison to elderly males, higher proportion of elderly females are widows. This gender disparity in widowhood arises because of longer life expectancy of women as compared to men. It may also arise due to the general tendency for an women to marry men older than themselves and men are more likely to remarry and are able to maintain married status for a longer part of their life (Rajan, Saha, 2006).

3.8 Measuring Population Ageing and Dependency ratio's in Assam:

The shift in age structure associated with population ageing has a profound impact on the economy and society (Gulati & Rajan 1991; Visaria 2001; UN 2002b). The number of retirees is likely to grow along with the increased burden of pension and social security for the aged. However, the changing age structure is not only a source of concern but also opens up new opportunities. The recent fertility decline is associated with declining child dependency, whereas the past high fertility increases the size of the working-age population. As a result, the old age dependency increases slowly, but the overall dependency declines. This

provides a demographic opportunity for economic growth in employment is made available to the working-age population (Bloom et al. 2003). India has already entered the phase of demographic opportunity and shall continue to remain there until 2020 (Bhat 2001).

There are various measures of population ageing each of which emphasizes a particular aspect of population aging. The most widely used indicator of aging is the 'median age' which divides the population into two equal size groups, one of which is younger and the other of which is older than the median. It is calculated as follows:

$$\text{Median} = \frac{L_1 + (N/2 - F) \times C}{f_m}$$

Where L_1 is the lower boundary of the median class, N is the total population, F is the cumulative frequency immediately preceding to the median class, f_m is the frequency in the median class and C is the class interval.

If the median of population be below 20, then it is described as 'young', population with median 30 or over is described as 'old' and those with median 20 to 29 is regarded as intermediate age. When median age is higher, it indicates aging of population.

The median age of Assam has risen from 18.07 in 1961 to 22.7 in 2011. (Table 3.6) It means that Assam is in the 'intermediate' age' category which will lead to gradual aging of population.

Since population aging refers to changes in the entire age distribution, any single indicator might appear insufficient to measure it. Therefore, perhaps the most

adequate approach to study population aging is to explore the age distribution through a set of percentiles, or graphically by analyzing the 'population pyramids' (Gavrilov, L.A. and Heuveline, Patrick, 2003). Population pyramids describe both age and sex distributions of population. Youthful population are represented with a broad base of young children and a narrow apex of older people, while older population are characterized by more uniform numbers of people in the age categories.

3.8.1 Age Pyramid for Assam' 2011:

The age pyramid of Assam based on 2011 census by residence and sex shows that in rural area the maximum number of population (both male and female) are in the age group of 5 to 19 years of age .It is seen from the figure 'A' that number of elderly persons in the age group of above 80 years is more than the age category of 75 to 79 years.

Figure 'B' shows the urban scenario of population structure. It is evident that proportion of younger age group is much less than other age cohort reflecting a decline in the birth rate of population in the urban areas. Proportion of elderly persons also shows an increasing trend.

Figure 2 - Age Pyramid for Assam' 2011

Figure-2A

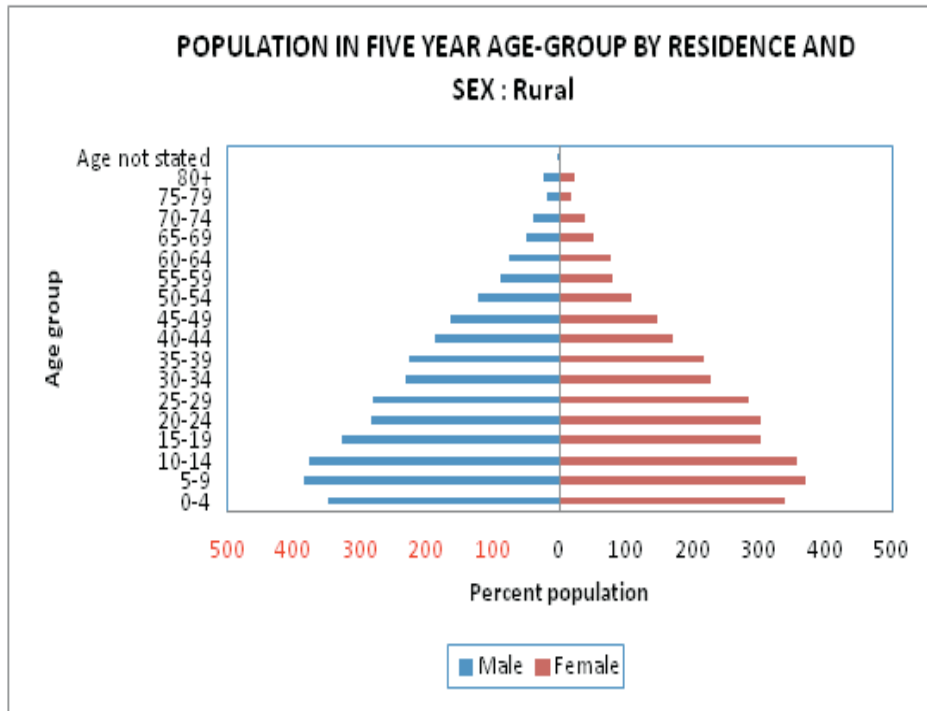
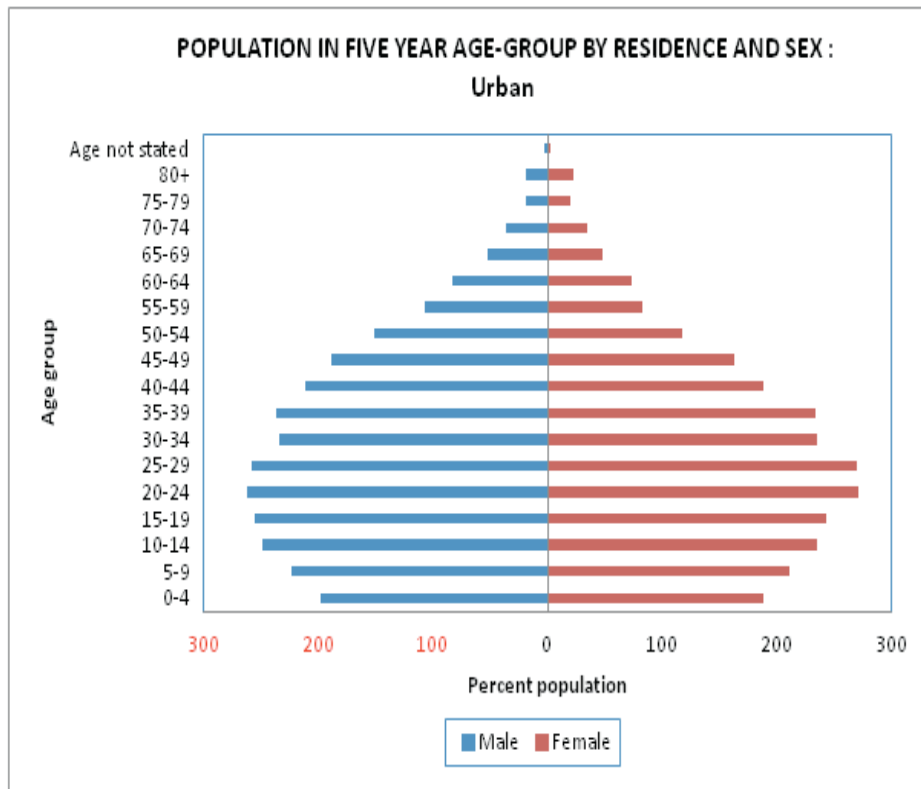


Figure-2B



A related measure of population aging is the elderly dependency ratio (EDR); the number of individuals of retirement ages compared to the number of those of working ages. It is calculated as number of persons aged 60 years and above per hundred population in the 15-59 years age group.

The old age dependency ratio of Assam has shown a gradual increase. The aged dependency ratio has increased from 5.56 in 1971 to 10.05 in 2011 (Table-3.9).

The implication is that gradual increase in the elderly (aged) dependency ratio can be regarded as an indicator of higher consumption-production ratio that may affect the economy in the context of the existing 'pay as-you-go' social security system in which ongoing pension contribution from the labour force are used for current pension benefit. Generally it is assumed that elderly population is not economically productive and is dependent on working population of age group of 15 to 59 years. Therefore responsibility for earning for the elderly will fall either on working population or on the government (Channa and Talwar, 2000)

Total dependency ratio' is the number of population in the age group of 0 to 14 years and age of 60 years above taken together, per hundred persons in the working age group (15-59 yrs). The total dependency ratio has recorded a decline from 98.71 percent in 1971 to 69.8 percent in 2011. This indicates that the size of population belonging to the age group (0-15 years) is becoming smaller and smaller from 1971 onwards. This is also evident from the youth dependency ratio which shows a decreasing trend from 1971 to 2001, implying that the size of population belonging to youth group (0-18 years) has been declining steadily since 1971. The decline in the total dependency ratio from

1971 onwards indicates that the share of working age population in the total population has increased steadily.

Table 3.8 – Measures of Aging in Assam

Year	1971	1981	1991	2001	2011
Old age Dependency Ratio	5.56	5.56	5.629	6.274	10.05
Total Dependency Ratio	98.71	88.89	77.14	69.88	67.30
Youth Dependency ratio	93.14	83.31	71.51	63.61	64.021
Aging Index	8.77	9.73	11.36	14.19	15.013
Median Age	16.84	18.13	19.82	21.58	10.656

Source: Researcher's calculation based on census data.

For female population of Assam the age wise growth rate is comparatively less fluctuating than the males. However it was as high as 73.52 percent for the age group of 65-69 years in the decade 1991-2001, the oldest of the olds among the females are found to be more consistent with their growth in comparison to males in the state.

The interesting feature of age group wise growth rate of population of Assam is its fluctuating nature at a high level over the decades. These points towards the external factors, which are responsible for the excessive growth rate of population in Assam. The growth rate of population remained fluctuating for almost all the age groups of people in the state implying that the problem of population ageing may turn out to be of serious nature in future in a small state like Assam.

In order to find out the impact of population aging on the economy, the intensity or extent of aging should be determined. Thus, P-index is determined as

$$P(p) = \frac{1}{n(p)} \times \sum \frac{(y_i - 60)^2}{60^2}$$

Where,

$n(p)$ = Total population

$q(p)$ = Elderly population

$H(p)$ = Commonly used index measuring absolute aging.

Basu's Q index of aging = $H(p) \times I(p)$.

Table : 3.10 P-Index of Ageing

Years	H(P)	I(P)	Q(P)	P(P)
2001	0.0585	0.143	0.0083	0.0019
2011	0.0666	0.1322	0.0088	0.0305

Source : Researcher's calculations (Appendix-I)

In Assam there is an increase of 13.8 per cent in H(P) during 2001 to 2011. During the same period, Q(p) increased by 6.02 per cent while P(p) has increased by 14.86 percent. The modified P-index is more sensitive and records larger increase in the extent of population ageing as compared to the commonly used index of measuring absolute ageing H(P) . Thus an assessment of social, economic and health needs of the elderly population is necessary (Saha, 2006). These issues are analysed in chapter IV and V respectively.