

Classification and Ranking of Districts in Assam Based on Growth of Population

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Abstract: The population growth of Assam is very high which is even higher than the country's average growth. It is observed that there is an inter district disparities in the growth of population in Assam. Five districts of lower Assam, i.e. Dhuburi, Goalpara, Darrang, Barpeta, Bongaigaon two districts of Barak valley i.e. Karimganj, Hailakandi and two district of Middle Assam i.e. Nagaon and Marigaon, are showing very significant growth of population. Muslims dominated the above nine districts recording growth rate ranging from 20 per cent to 24 percent during the last decade against national average of 18 percent. On the other hand, the eastern Assam districts mostly in upper Assam registered around a nine percent population growth only. Muslims constituted 30.9 percent of the state's population in 2001 and it has risen to 34.2 percent a decade later. The population density is highest in the Nagaon district having 604 persons per sq.km. All the major religions in Assam except Muslims have literacy rates higher than the national average. The proportion of Muslim in Dhuburi district is the highest, 79.67 pp, which may be due to lowest literacy rate (58.34%) (Census 2011). It is noted that districts of Assam which are closed to Bangladesh border are showing significantly high population growth.

Keywords: Demographic structure, Fertility, Growth of population.

I. Introduction

Assam is situated in the North-Eastern region in India, with a geographical area of 78,438 sq. kms. The state has 27 districts including Kamrup (Rural and Metro) districts and four districts under the Bodoland Territorial Autonomous District (BTAD). The state Assam represents immense diversity. There is ethnic, linguistic, community and even religious differentiation within the region. There is a major issue of the demographic changes that have taken place, in particular in Assam.

According to 2001 census, Assam's population was 2.66 cores out of which 7, 72, 96,455 were Hindus and 82, 40,611 were recorded as Muslim population. Barpeta district had the highest Muslim Population. During 1991- 2001, the Muslim majority districts are Dhuburi, Goalpara, Barpeta, Karimganj and Hailakandi. There are at least 8 taluks of the above districts which recorded negative growth rate of Hindus. The Growth rate has been ranging from 20 per cent to 24 percent during the last decade 2001-2011. Muslims constituted 30.9 percent of the state's population in 2001 and it has risen to 34.2 percent a decade later, which is shown in the Fig.1. The density of population of the state has gone up to 398 as against India's density 382 [3].

II. Religion Wise Proportion of Population

The proportion of Hindu population to total population of India has declined by 0.7 percentage point (pp), the proportion of Sikh and Buddhist declined by 0.2 and 0.1 pp respectively. Based on Census Report in 2011, no significant change in the proportion of Christian and Jain has been observed. But the proportion of Muslim has significantly increased by 0.8 percentage point.

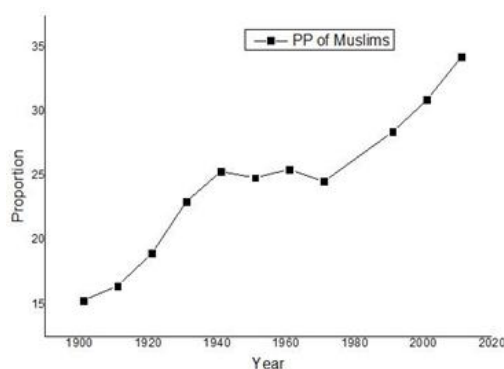


Fig.1: Percentage of Muslim in the total population in Assam 1901-2011.

From the Fig.1, percentage of Muslim population grew from 15% (in 1901) to 25% in 1951. Muslims constituted 30.9 % of the state’s population in 2001 and it has increased to 34.26% in 2011. What is happening to the religious demography of Assam will be cleared if we analysis the disaggregated data for the districts and Taluks only.

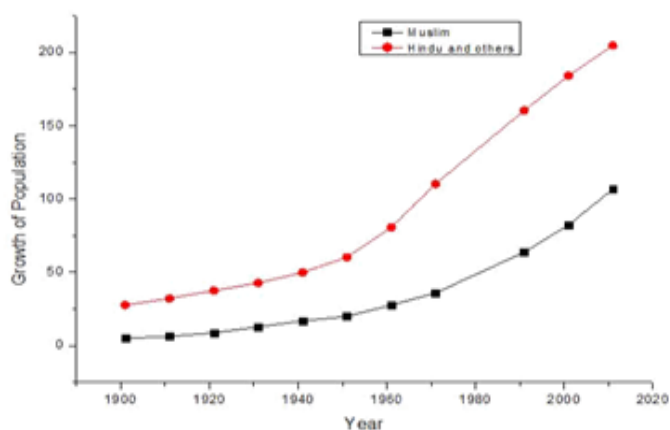


Fig.2: Growth of Population of Muslim and Hindu and Others in Assam.

If one checks the census figures since 1951 onward, it will be clear that the growth rate among the Muslims in Assam is consistently higher than that of the Hindus. Islam is the fastest growing religion particularly in Assam. The Muslim growth rate is alarmingly higher than the national average. However, the Muslim growth rate has come down to 24.6% which was 32.88% just 20 years back. It is distinctly clear from the census data that there is always a huge gap between the growth rates of Hindus and Muslims, the two major religious group of Assam.

III. Demographic Indicators

Demographic characteristics of a country provide an overview of its population size, composition of territorial distribution, changes there in and the components of changes such as nativity, mortality and social mobility. Assam may be the worst example of drastic religious demographic change leading to extreme tension in the society. But the problem is not confined to Assam alone. Population statistics include indicators that measure the population size, sex ratio, density and dependency ratio while vital statistics include indicators such as birth rate, death rate, and natural growth rate, life expectancy at birth, mortality and fertility rates. The crude birth rate (CBR) and total fertility rate (TFR) play very important roles in demography. These indicators for the country as well as states will help in identifying [6] areas that need policy and programmed interventions, setting near and far-term goals, and deciding priorities, besides understanding them in an integrated structure.

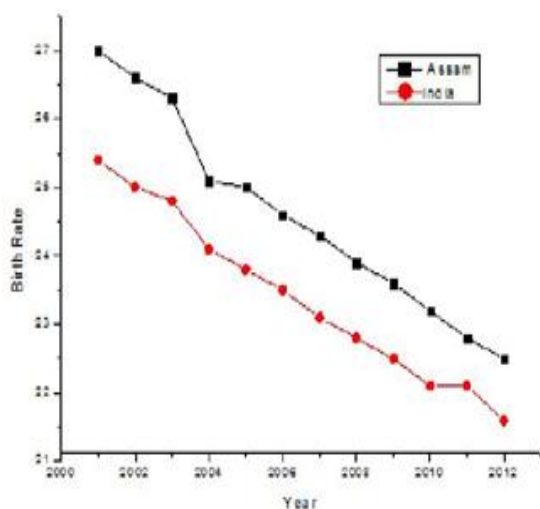


Fig.3: Birth rate of Assam and India.

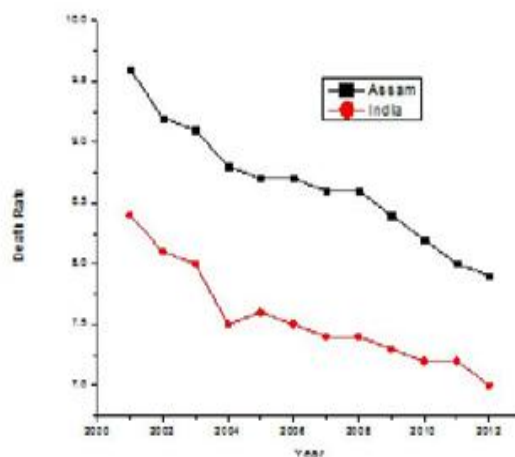


Fig.4: Death rate of Assam and India.

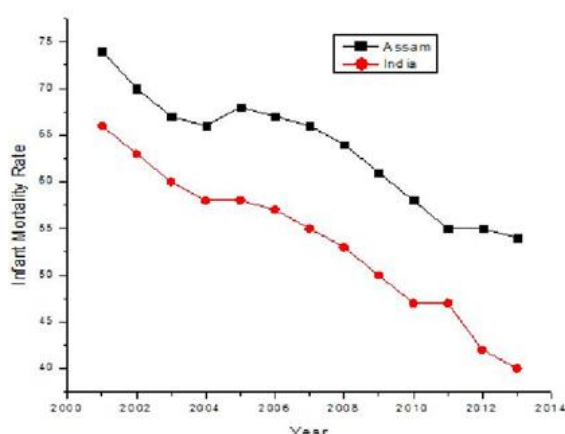


Fig.5: Infant Mortality Rate of Assam and India

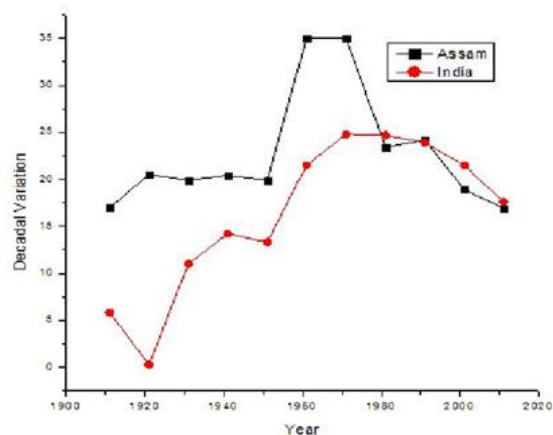


Fig.6: Decadal Variation of Assam and India

The figures (3,4,5 & 6) shows the birth rate, death rate, infant mortality rate, decadal variation of Assam and India. The demography as a whole in the world are concerned with understanding the fertility behavior and the term fertility is related to the population projection. The population projection has become one of the most important problems in the world. Fertility is influenced by many factors [5] like age of mothers at her first birth, sex-ratio of birth, education of mother, education of father, spacing between two births, status of the mother in the society, economic condition of the mother as well as the family and so on. It is amply clear that there is a strong correlation between differentials in Hindu and Muslim female literacy level and differentials in total fertility rate. Female education [6] could be an important influencing variable in fertility transition among the Muslims.

There are already indications that several districts of Assam have shown a very low rate of growth, while Muslim dominant districts like Dhuburi, Goalpara, Barpeta, Nagaon and Marigaon in lower Assam, and also Hailakandi in Cachar, have grown at a much higher rate than the average of the state. The process of demographic change and of the marginalization of Hindus in Assam has not yet abated. According to population census 2001, religion wise percentage distribution of population, reveals that out of total population in the state 30.92 percent were Muslims, Hindu and others 64.89 percentage. In the census report of 2011, the highest growth rate of population in Dhuburi district has been observed, which is 24.44. It is very clear from the census data that the growth rate of Muslims are declining since 1981, whereas the percentage of Muslim to the total population are growing linearly upwards showing a dangerous signal for the future. It may be due to sharply declining the growth rate of Hindus.

Assam, being a Hindu majority state, fears that it will become Muslim-dominated due to the influences of illegal migrants. In 1961 the growth rate of Hindu and Muslim was 20.76 and 32.49 respectively with the proportion of Muslim to the total population was 13 percent. According to 2011 Census Report, it becomes 16.76 and 24.60 respectively. The growth rate of Muslim in 2011 is nearly 38 percent above the national average. According Census Report 2011, percentage of Muslim records is 34.22 of the total population of Assam. Now Muslims become commanding majority in nine districts of Assam, i.e. Dhuburi (79.67%), Barpeta (70.74%), Goalpara (57.52%), Hailakandi (60.31%), Karimgang (56.36%), Bongaigaon (50.22%), Nagaon (55.36%), Darrang(64.34%) and Marigaon (52.56%). There are a few Taluks of these districts which recorded negative growth rate of Hindu. Taluks Kalgaicha (-48.79), South Salmara (-23.14), Baghbor (-21.85) and Dotoma (-15.84) had been observed with negative growth of Hindus during 1901- 2001. The reduction in numbers could only possible if large numbers of indigenous families from these Taluks were forced to move out. Hindus from many other Taluks may have been compelled to flee from their homes, hence many Taluks were on the way to becoming exclusively Muslim dominated. The decreasing Hindu population may become a serious threat for its identity. The above mentioned nine districts are giving a red signal for the existence Hindu in Assam. The decadal growth rates of Muslims and Hindus and others along with the proportion of Muslims in percent for the nine districts of Assam have been presented in Fig. III. The growth Muslims in the Western and Southern districts was high primarily due to the influx of people from Bangladesh.

Based on Statistical data available in Census Report, it is observed that the demography, i.e. the population structure of Assam is changing very fast. In this report we are searching the parameters which are responsible for the change of population composition of Assam in terms of two major religions (i.e. Hindu and Muslim). Due to creation of four new districts the following table shows the ranking of Hindu and Muslim based on 2011 census data.

Table1: Ranking of the districts based on percentage growth rate of two major religious groups of population in Assam:

Districts	Growth rate of population in the year 2011		Ranking of Districts based on growth rate	
	Hindu	Muslim	Hindu	Muslim
Dhuburi	19.92	79.67	27	1
Kokrajhar	59.63	28.44	17	13
Bongaigaon	48.61	50.22	19	9
Chirang	66.5	22.66	14	14
Goalpara	34.5	57.52	25	5
Barpeta	29.1	70.74	26	2
Baksa	82.4	14.29	8	17
Nalbari	63.7	35.96	15	12
Kamrup	57.82	39.66	18	10
Kamrup(Metro)	84.88	12.05	7	19
Darrang	35.25	64.34	24	3
Udalguri	73.63	12.66	12	18
Sonitpur	73.94	18.22	11	16
Nagaon	43.39	55.36	21	7
Morigaon	47.19	52.56	20	8
Karbi Anglong	80.09	2.12	9	25
Cachar	59.82	37.71	16	11
Golaghat	85.99	8.46	6	20
Jorhat	92.3	5.01	2	22
Sibsagar	87.5	8.3	5	21
Dibrugarh	90.35	4.86	3	23
Tinsukia	88.96	3.64	4	24
Lakhimpur	76.48	18.57	10	15
Dhemaji	95.47	1.96	1	27
Dima-Hasao	67.08	2.04	13	26
Karimgang	42.48	56.36	22	6
Hailakandi	38.1	60.31	23	4

It is clearly observed from the Table 1, that the proportion of Muslim population is rising where as Hindu population is losing their share in all the districts of Assam. In the year 1971, the percentage of Hindu populations for the districts like Dhuburi,Kokrajhar,Dhemaji are 34.8,76.2,98.9 and for the year 2011 it is downward trend i.e.19.92,59.63,95.87. But for Muslim community, it increases continuously. Also, it can be noted that the proportion of Muslims in Dhuburi district is the highest i.e.in 1st rank whereas Dhemaji district is the lowest. There is an observation that district wise percentage for Hindu community is the highest in Dhemaji while it is lowest in Dhuburi district.

IV. Materials and Methods

Eight variables have been considered for the analysis of decadal growth rate of population. The Logistic model has been fitted to decadal growth rate and population growth of Hindus and Muslims respectively. The model is

$$Y = \frac{K}{1 + \exp[-(A + Bt)]} \quad (1)$$

The parameters of the Logistic model A, B and K has been estimated for all the four variables. The fitting of the model along with corresponding computed χ^2 values are presented in Table 2. The model gives a good fit with χ^2 values 0.5602, 0.1551, 0.0378 and 0.0212 respectively.

V. Results and Discussion

Table 2: Fitting of Logistic model along with the estimated parameters is given:

Year	Decadal growth rate				The total population			
	Hindu		Muslim		Hindi		Muslim	
	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected
1961	20.76		32.49		80.71		27.66	
1981	24.07	21.66	30.78	31.63	134.00	134.03	49.30	48.79
1991	22.71	20.91	32.88	31.07	160.41	160.00	63.73	64.38
2001	19.92	19.42	29.52	29.24	184.15	184.02	82.41	83.62
2011	17.40	17.40	25.58	25.58	204.90	204.71	106.79	106.51
A =	-5.1081		-7.4785		0.7791		2.5064	
B =	0.1601		0.2530		-0.0791		-0.0658	
K =	22.3043		31.8498		266.4650		358.5770	
$\chi^2 =$	0.5602		0.1551		0.0378		0.0212	

Based on Logistic model (equation 1) using the estimated parameters A, B and K, the predicted decadal growth rate of Hindus and Muslims will be 12.84 and 15.04 respectively in 2021. Similarly, the population of Hindu and Muslim will be 221.48 lakh and 132.66 lakh respectively. Hence the proportion of Muslims to the total population will be 37.46 pc in 2021.

The multiple regression equation

$$Y = 77.772 + 5.342(0.16)X_1 - 0.046(0.0021)X_2 - 30.574(9.18)X_3 + 2.404(0.31)X_4 + 0.064(0.0081)X_5 + 0.137(0.0112)X_6 - 0.127(0.000053)X_7 + 0.070(0.0028)X_8$$

Where,

- Y: Decadal Growth rate of population
- X₁: CBR of Hindu
- X₂: CBR of Muslim
- X₃: TFR of Hindu
- X₄: TFR of Muslim
- X₅: Below legal age at marriage (boys)
- X₆: Below legal age at marriage (girls)
- X₇: Sex ratio
- X₈: Female literacy rate

The t-values corresponding to the regression coefficients are given in brackets. It is worthwhile to note

that TFR of Hindu's decreases significantly and that of Muslim is found to be increased.

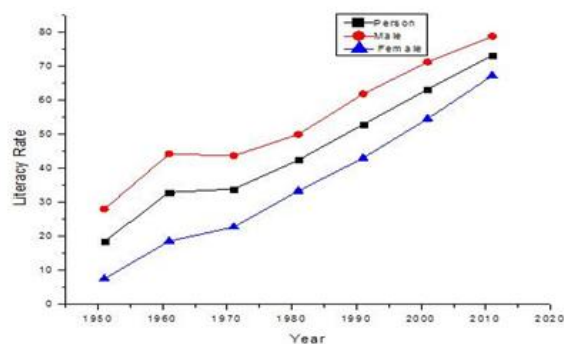


Fig.7: Literacy Rate of Assam from 1951-2011.

All the major religions in Assam except Muslim have literacy rates higher than the nation average. It is more alarming is that the literacy rate among the Muslim women is very low. As per the 2001 census, the female literacy rate among the Muslims was a mere 50.1%, far below than the national average. It is a common knowledge that the population growth rate is always higher among the illiterate people. The figure-V shows the literacy growth rate of Assam since 1951 to 2011. It is believed that the female literacy rate plays a key role in the growth of population. Female education can be expected to reduce family size for a number of reasons. According to ranking of districts based on data 2001, the Jorhat district has the highest literacy rate i.e. rank is 1 and the district Dhuburi has lowest literacy rate i.e. rank is 23. From this analysis it can be cleared that when female literacy rate is high, the religion wise growth of population percentage is low.

Table 3: Ranking of the districts based on CBR of two major Religious groups of Assam, 2001

Districts	CBR in 2001		Ranking of districts based on Religion	
	Hindu	Muslims	Hindu	Muslim
Dhuburi	21.5	39.8	17	4.5
Kokrajhar	26.0	39.8	4.5	4.5
Bongaigaon	22.7	41.1	12	2
Goalpara	22.5	39.2	14.5	8
Borpeta	20.2	39.0	22	10
Nalbari	20.7	32.8	21	15
Kamrup	19.4	31.9	23	16
Darrang	22.6	41.6	13	1
Sonitpur	23.7	38.9	10	11
Lakhimpur	24.5	39.6	6	6
Dhemaji	28.0	39.1	2	9
Marigaon	24.2	40.4	7	3
Nagaon	21.3	39.4	18	7
Golaghat	23.8	26.3	9	19
Jorhat	20.9	20.0	20	23
Sibsagar	22.5	19.1	14.5	21.5
Dibrugarh	23.0	20.4	11	20
Tinsukia	26.0	19.1	4.5	21.5
KarbiAnglong	30.3	36.9	1	12
N.C.Hills	27.5	31.3	3	17
Karimganj	21.0	35.6	19	13
Hailakandi	24.0	35.4	8	14
Cachar	21.9	31.0	16	18

It has been observed that the CBR for Muslim is 37.2 while for Hindu it is 22.9 in Assam. In this respect we can support the argument of S Irudaya Rajan [9] that is the high growth rate among Muslim is due to their high fertility rates.

Table 4: The ranking of the districts based on Crude Birth Rate and Decadal growth rate of Assam

Districts	Crude Birth Rate (2011)	Decadal Growth Rate (2011)	Ranking of Districts	
			CBR	Decadal Growth Rate
Dhuburi	31.8	24.44	1	1
Kokrajhar	23.4	5.21	15.5	27
Bongaigaon	26.2	21.44	10	7
Chirang	23.4	19.58	15.5	10
Goalpara	27.6	22.74	8	3
Barpeta	27.8	21.4	6.5	8
Baksa	19.8	11.74	21	21
Nalbari	18.9	18.95	23	12
Kamrup	20.7	11.26	20	22
Kamrup(Metro)	15.6	18.34	27	15
Darrang	27.8	11.17	6.5	23
Udalguri	21.2	19.51	18	11
Sonitpur	22.5	15.55	17	15
Nagaon	26.4	22.09	9	4
Morigaon	28.3	23.39	3	2
Karbi Anglong	31.4	11.88	2	20
Cachar	23.6	13.53	14	18
Golaghat	19.2	9.21	22	26
Jorhat	16.7	9.37	26	25
Sibsagar	18.5	9.44	24	24
Dibrugarh	18.2	11.92	25	19
Tinsukia	21	20.3	19	17
Lakhimpur	23.9	17.06	12	14
Dhemaji	24.1	19.97	11	9
Dima-Hasao	23.8	18.69	13	13
Karimganj	28.2	21.90	4	5
Hailakandi	27.9	21.45	5	6

From the above Table 4, it is clearly seen that the Crude Birth Rate and Decadal Growth Rate is highest in the district Dhuburi which is a Muslim dominated district. Again, the Crude Birth Rate and Decadal Growth Rate is lowest in the district Kamrup(Metro) and Kokrajhar district. According to census report 2011 it was seen that the literacy rate by sex is highest in Kamrup (Metro). So, we may say that there is a close relationship between literacy and birth rate.

Table 5: Ranking of the districts based on TFR of Hindu and Muslim 2011

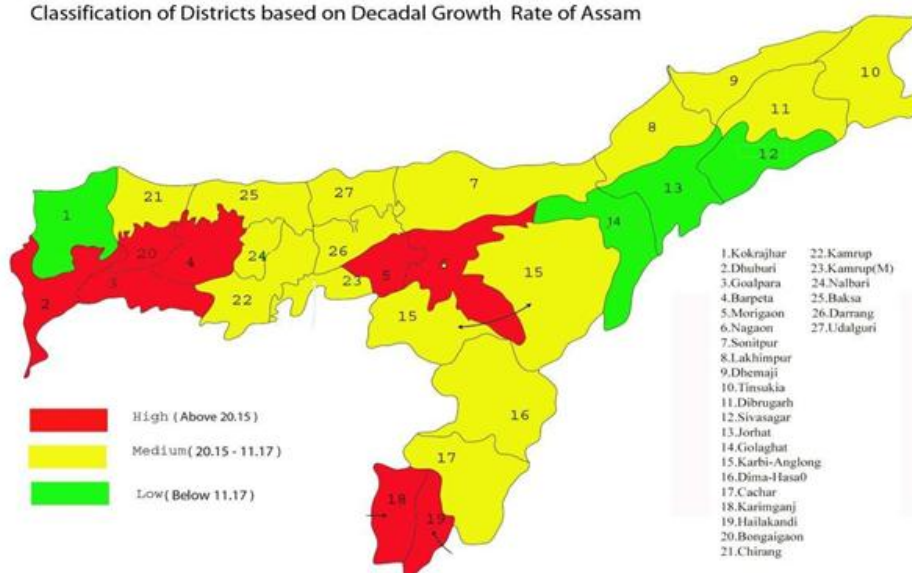
Districts	TFR in 2011		Ranking of Districts based on Religion	
	Hindu	Muslim	Hindu	Muslim
Dhuburi	1.6	3.5	20.5	3
Kokrajhar	1.8	2.9	11	13.5
Bongaigaon	1.2	3.7	27	1
Chirang	1.8	3.3	11	7
Goalpara	1.7	3.5	16.5	3
Barpeta	1.4	3.2	24	8.5
Baksa	1.7	2.7	16.5	18

Nalbari	1.4	2.3	24	20
Kamrup	1.4	2.9	24	13.5
Kamrup(Metro)	1.3	1.6	26	24.5
Darrang	1.6	3.4	20.5	5.5
Udalguri	1.8	3.1	11	10.5
Sonitpur	1.8	3.1	11	10.5
Nagaon	1.6	3.2	20.5	8.5
Morigaon	1.9	3.4	6	5.5
Karbi Anglong	2.2	2.8	1	16
Cachar	1.8	2.6	11	19
Golaghat	1.7	2.1	16.5	22
Jorhat	1.6	1.5	20.5	26.5
Sibsagar	1.8	1.5	11	26.5
Dibrugarh	1.7	1.6	16.5	24.5
Tinsukia	1.8	1.7	11	23
Lakhimpur	1.9	3	6	12
Dhemaji	2	2.2	4	21
Dima-Hasao	2.1	2.8	2.5	16
Karimganj	1.9	3.5	6	3
Hailakandi	2.1	2.8	2.5	16

It is to be noted from the Table 5 that average TFR of Muslims is 5.1, which is above 5.5 particularly in Darrang and Bongaigaon districts, whereas average TFR of Hindu is 2.8 only. The crude birth rate and total fertility rates for Hindu community are the highest in Karbi Anglong district and which is found to be lowest in Kamrup district.

Fig.8: Classification of Districts based on Decadal Growth Rate of Assam.

Classification of Districts based on Decadal Growth Rate of Assam



It is observed from the above Figure and Table 4 that the growth rate Muslim in the districts of lower Assam, particularly Dhuburi, Barpeta, Marigaon, Karimganj, Hailakandi, Bongaigaon and Nagaon seems to be quite high. The high growth rate of Muslim is also observed in undivided Cachar district. Hindu population has significantly declined in Dhuburi, Darrang, Morigaon, Nagoan and Cachar respectfully. Higher crude birth rate Muslim community in the districts lower Assam has also been observed, which may be the significant parameter for the growth of population.

V. Conclusion

Assam may be the worst example of drastic religious demographic change leading to extreme tensions in the society. Abnormal increase of Muslim’s population observed to be a serious issue and it deserves to be examined for a remedy. One of the main reasons behind the abnormal growth of the Muslim population in

Assam is due to the influx of nationals from neighboring Bangladesh. The other regions may be due to illiteracy, below the legal age at marriage, higher birth rate and alarmingly higher fertility rate, religious conversion and aggressive behavior of a particular community. It is also observed that Hindus are declining particularly in Assam very significantly, showing a dangerous signal for the future. Demographic imbalance of Assam has not only challenged its identity, but has also posed a threat to its existence.

VI. Critical Concerns

- Decline of the Indigenous People and Growing Tensions in Assam. There has been a sharp decline in the share of Hindus in the total population of Assam.
- The CBR and TFR of Muslims are significantly higher than the Hindus.
- The rate of growth of Muslims and the national average has remained high gap and unchanged.
- There has been a significant rise in the share of Muslims in the population of Assam in conformity with a continuing and worrisome long-term trend.
- The growth of share of Muslims in the total population has been observed to be much higher than the national average, indicative of the development of several predominantly Muslim pockets.
- The early marriage i.e. below legal age at marriage of the Muslim women and the lack of family planning among them are the signs of their social, economic and educational backwardness.

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