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## “GEOGRAPHICAL ANALYSIS OF SEX AND AGE-WISE DEATH RATES IN THE STATE OF MAHARASHTRA”

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### Abstract:

*Sex and age composition is an important aspect of population studies. Sex composition directly influences the sex ratio, fertility rates, birth rates, marital status and other important aspects of population. The sex ratio of population varies in from region to region. The large male population causes the decline the marriage age of girls, and other serious problems like prostitution, venereal diseases are also found in such society.*

### KEYWORDS:

Geographical , analysis , composition , society.

### INTRODUCTION

If the female part of population is large it reduces labor force and increases unmarried maternity rate. These are not the characteristics of a healthy society. In healthy society the sex ratio is equal. But this ideal situation appears rarely in the world.

The present study analyzes the sex- wise and age-wise death rates in Maharashtra from 1971 to 2011.

### STUDY REGION :

The researcher considered total population of Maharashtra state. The Maharashtra is a economically and socially developed state in India. The total geographical area of this state is 307713 sq.km. The geographical location of this state is 15.8° N to 21.1° N latitude, and 72.6° E to 80.9° E longitude. According to census 2011, total population is 112372972. Out of this population 58361397 (51.93%) male and 54011575 (48.07%) female population. Literacy rate of this state is 82.91 % which is above national average. Density of population is 365 persons / sq. km. Being a native the researcher aware of various basic aspects like physiography, climate, culture and so on. Hence justifies the population conditions of the study region.

### OBJECTIVES OF THE STUDY:

Following objectives are considered for this study,

- 1: Study the sex ratio in Maharashtra.
- 2: Study the sex and age wise death rates in Maharashtra.
- 3: Study the factors affecting the sex ratio in Maharashtra.

### HYPOTHESIS:

Title:“GEOGRAPHICAL ANALYSIS OF SEX AND AGE-WISE DEATH RATES IN THE STATE OF MAHARASHTRA” Source: Indian Streams Research Journal [2230-7850]H.Y.KARANDE Yr:2012 Vol:2 Iss:11

To achieve these objectives the following hypothesis are stated.

- 1: The sex ratio of Maharashtra is in decreasing trend.
- 2: Literacy and urbanization affected the sex ratio in Maharashtra.
- 3: Several social traditions causes for lower sex ratio.

#### **DATABASE:**

The census data is used for present study. This study is based on secondary data published by census department of government of India.

#### **METHODOLOGY:**

The collected data is analyzed by various statistical methods. The sex- wise and age-wise death rates are calculated by Gibb's equation, the deviation technique is used to mark the variations in death rates, the correlation technique is used for showing relationship among age-wise and sex-wise death rates with literacy, urbanization, as well as sex ratios.

#### **PRESENTATION METHOD:**

Various cartographic techniques are used for presentation of data and results of analysis. Especially, graphical method and pie charts are used for presentation of the data as well.

#### **RESULTS:**

The sex combination is very important aspect of population studies. Several issues concerning population are affected by sex combination, like social well being, marital status, fertility rates, work force, death rates, and so on. Therefore this study is essential in the field of demography. In a developing country like India, women have secondary status, they do not get proper nutrition, proper health care. So their death rates are higher in specific age groups. This causes for lower sex ratio. According to census 2011, child sex ratio is 883, birth rate also lower in female child. The survey report shows that this state is on second position in neo natal female deaths in India. This is very shameful picture for a developed state like Maharashtra.

In the study region, female literacy rate is lower as compared to male. The total literacy rate is 82.91%. Female literacy rate is 75.48%, while male literacy rate is 89.8%. This state is on top rank according to urbanization, which is 45.23% . All these factors affected the age and sex-wise death rates in the state.

##### **i: Age below 1 year:**

The table 2 shows the death rates in the age below I year. It's proved that, the female child has higher inborn resistance power compared to male child. The situation is also same in study region. The table 1 shows that during 1971 to 2011, the infant mortality rates are in decreasing order. It decreases from 123.9 per lakh to 21.5 per lakh population. The deviation of this death rates is 42.3. It is remarkably observed that, female death rates are lower than male children, and death rates in this age group are lower in rural areas as compared to urban areas.

##### **ii: Age between 1 to 5 years:**

The table 2 shows the death rates in the age group of 1 to 5 years, in this age group death rates decrease from 85.3 to 4.5 per lakh population. These rates decrease in rural as well as urban areas but, female mortality rates are always higher to male. The social traditions and wrong approach towards female child causes higher female deaths. The people of the study region do not take proper care of the health of female child. The deviation of death rates is 33.1, this deviation is higher in female as compared with males.

##### **iii: Age group 5 to 15 years:**

The table 2 shows the age wise death rates in the age group 5 to 15 in the study region. In this age group the death rates decrease from 53.3 in year 1971 to 7.6 per lakh in the year 2011. In this age group, female death rate is higher than male. Urban death rate of this age group is also higher than rural region. The

deviation of this death rate is 18.5.

**iv: Age between 15 to 35 years:**

The table 2 shows the age-wise death rates of this age group in the study region. This age group is working age group, in this age group, death rates are decreasing trend. The death rate decreases from 76.2 in the year 1971 to 45.4 in year 2011. This rate is continuously higher in female population as compared to male population. This age group is reproductive age group, so the causes regarding maternity are responsible for higher death rates. In the urban areas, male death rate is higher than females, but in rural areas this situation is exactly opposite. In rural areas, female death rate is higher than male. The medical facilities are developed in urban areas but in rural areas the facilities are very poor.

The deviation of death rates in this age group is 14.3, and that is nearly same in male and female population, but the deviation is different in rural and urban regions. In rural areas, female deviation is higher while in urban areas male deviation is higher.

**v: Age between 35 to 65 years:**

The table 2 shows the age wise death rates of this age group in the study region. This age group is working population age group. In this age group the death rates are continuously increasing in trend. In the year 1971 the death rate was 139.7 which increases up to 169.6 in year 2001, the death rate decreases up to 158.6 in the year 2011. In this age group male death rate is always higher than female. In this age group most of male population engaged in various economic activities at various work places, so the male population suffer by pollution, accidents, tensions, and so on.

The deviation of death rates in this age group is 21.1. which is higher in male population as compared to female.

**vi: Age above 65 years:**

The table 2 shows the sex and age-wise death rates of this age group in the study region. In this age group, most of deaths are natural deaths. Death rates in this age group varied from year to year. In the year the death rate was 282.4 which decreases up to 244.7 in year 2001, but that increases up to 325.3 in the year 2011. The male death rates are higher than female.

The deviation of death rates is 34.5. which similar in male and female population.

The correlation between various social factors and death rates :

The table 3 shows the correlation between literacy, urbanization, sex ratio and age specific death rates. The correlation between these factors appear varied in each age group.

**i: Literacy and various age groups:**

The correlation between I.M.R. and literacy is highly negative (-0.95). This shows that as literacy increases, the people get aware of child health and take better care of child health. The correlation between age group 1 to 5 and 5 to 15 is also highly negative. Which is respectively -0.93 and -0.89. This also shows that literate people take care of their children. This situation is same in rural and urban region of study area.

The correlation between age group 15 to 35 and literacy is negative, but it is highly negative in urban areas and slight negative in rural areas. It shows that in urban areas death decreases rapidly as increases literacy, but in rural areas death rates decreases comparatively slow. But the death rates in age group above 65 are not affected by literacy. The correlation between them is slight positive. The deaths in this age group are mostly natural, so the literacy does not affect this age group.

**ii: urbanization and various age groups:**

The correlation between urbanization and death rates of various age groups is varied in several groups. It is highly negative in children age groups. As urbanization increases the child deaths decrease. The improvement in the medical facilities causes decline in the death rates. In the age group 15 to 35 the correlation is highly negative in female population while it is slight negative in male population. This shows medical facilities of urban areas reduces M.M.R. also. The correlation between urbanization and death rates of age 35 to 65 and above 65 years is slight positive.

**iii: Sex ratio and various age groups:**

There is no correlation between sex ratio and child age groups. The sex ratio and child death decreases simultaneously. There is no sex wise or rural – urban variation in correlation values. This correlation is slight negative in 15 to 35 and 35 to 65 years and slight positive in old age group.

**SUGGESTIONS:**

The above results show the remarkable findings about death rates in the study region. The following suggestion can be given for planning purpose-

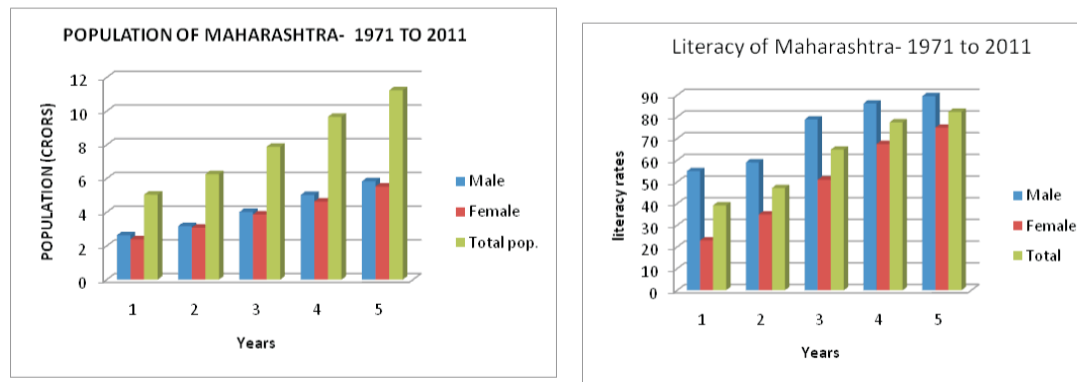
- i: According to census report the sex ratio of Maharashtra decreases up to 2001, that increases in 2011, but child sex ratio decreases continuously. This is not a good sign of healthy society. In year 2011, sex ratio increases because decrease in M.M.R. and increases life span of females. So there is a need to aware the people about importance of girl child in society. One survey report marks that the Maharashtra state is on second position in women feticides.
- ii: Female death rates are higher in the age group 1 to 35. At beginning improper nourishment of female child causes higher death rates and in age group 15 to 35 maternal causes are responsible for higher death rates. So there is need to make people aware and improve health care facilities at grass root of the society.
- iii: Overcrowding of urban regions and polluted environment causes higher death rates. There in need to control the migration and pollution level of the urban centers.
- iv: Literacy affects the child death rates. So there is a need to increase literacy ratio, specially in rural areas of study region.

Government of Maharashtra and central ministry of Human Resource Development provides various facilities and schemes for people. There is a need to implement these schemes and provide these facilities at the very grass root level in order to achieve progress.

**Population composition in Maharashtra state**

Year	Population			Rural			Urban			sex ratio	Literacy		
	Male	Female	Total pop.	Rural male	Rural femal	Rural total	urban male	urban female	urban total		Male	Female	Total
1971	2.64	2.4	5.05	1.78	1.69	3.47	0.86	0.72	1.58	930	55	23	39.2
1981	3.18	3.08	6.26	2.05	2.02	4.07	1.18	1.01	2.19	937	59	35	47.2
1991	4.02	3.87	7.89	2.44	2.4	4.84	1.73	1.33	3.05	935	78.8	51	64.9
2001	5.03	4.64	9.67	2.82	2.75	5.57	2.21	1.79	4.1	922	86.2	67.5	77.5
2011	5.84	5.53	11.24	3.1	3.02	6.12	2.77	2.35	5.12	940	89.6	75	82.3

Table-1



**Figure-1**

Age and sex wise death rates in Maharashtra

Year	Age below 1 year									Age 15 to 35 years									
	Rural			Urban			Total			Rural			Urban			Total			
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1971	106.2	96.3	101.4	173.6	172.8	173.3	128.2	119.7	123.9	1971	50.1	59.9	54.9	128.7	116.2	123.1	75.7	77.1	76.2
1981	58.8	49.8	54.3	119.1	112.8	116.3	82.1	69.7	76.1	1981	40.1	41.4	40.7	102.9	94.8	99.2	64.1	58.2	61.2
1991	23.3	20.8	22.1	69.1	69.9	69.7	43.9	36.9	40.5	1991	40.3	34.6	37.5	154.4	92.2	127.8	90.9	53.2	72.4
2001	14.4	13.1	13.7	52.1	47.8	48.9	30.9	26.2	28.7	2001	48.2	30.1	39.3	100.4	90.7	93.7	71.1	52.9	62.4
2011	10.7	9.8	10.2	36.7	32.7	34.9	23.1	19.2	21.5	2011	34.7	21.8	28.3	70.5	60.2	65.8	51.8	37.5	45.4
S.D.	40.3	36.2	38.3	56.1	56.6	56.4	43.5	41.3	42.3	S.D.	6.4	14.3	9.5	31.7	20.1	24.9	14.4	14.2	14.3

Year	Age 1 to 5 years									Age 35 to 65 years									
	Rural			Urban			Total			Rural			Urban			Total			
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1971	74.6	87.4	80.8	86.1	106	95.1	78.3	93.4	85.3	1971	126.3	89.7	109	269.9	134.8	208.4	173	103.6	140
1981	35.4	43.6	39.5	43.1	52.4	47.4	38.8	45.8	42.2	1981	106.7	66.1	86.5	224.8	110.3	172	152	79.5	116
1991	14.3	16.7	15.5	23.4	31.8	27.1	18.8	21.3	20.1	1991	150.6	82.8	117	282.2	148.2	224.7	213	102.3	159
2001	6.5	7.2	6.9	10.9	13.6	11.8	8.5	9.5	8.9	2001	174.8	80.7	129	302.8	144.5	226.3	231	103.6	170
2011	3.2	3.6	3.4	5.4	6.3	5.8	4.3	4.6	4.5	2011	162.7	75.1	120	273.5	125.4	205.5	216	94.3	159
S.D.	29.5	4.8	32.1	32.6	39.9	36.1	30.2	36.3	33.1	S.D.	27.6	8.9	15.9	28.6	15.3	21.9	32.9	10.3	21.1

Year	Age 5 to 15 years									Age above 65 years									
	Rural			Urban			Total			Rural			Urban			Total			
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1971	48.4	52.4	50.4	61.7	57.6	59.8	52.7	54.2	53.3	1971	292.1	255.2	274	326.9	269.4	300.7	303	260.5	282
1981	22.1	22.3	22.2	27.8	26.1	27.1	24.6	23.2	23.9	1981	275.8	224.5	250	279.6	217.4	250.9	282	218.5	251
1991	13.1	12.8	12.9	17.6	21.3	19.3	15.6	15.3	15.4	1991	275.9	232.1	254	230.1	239.4	234.9	267	226.3	247
2001	8.4	7.9	8.2	13.1	13.9	13.1	10.5	10.1	10.3	2001	261.6	219.5	241	254.7	258.2	250.1	259	229.7	245
2011	6.1	5.8	5.9	9.5	9.5	9.5	7.7	7.2	7.6	2011	337.1	284.1	310	348.7	336.3	343.1	344	297.5	325
S.D.	17.2	19.1	18.1	21.1	18.9	20.2	18.2	19.1	18.5	S.D.	29.2	26.3	27.6	49.3	44.9	45.1	34.4	32.7	34.5

Table -2

Age and Sex wise death rates in Maharashtra

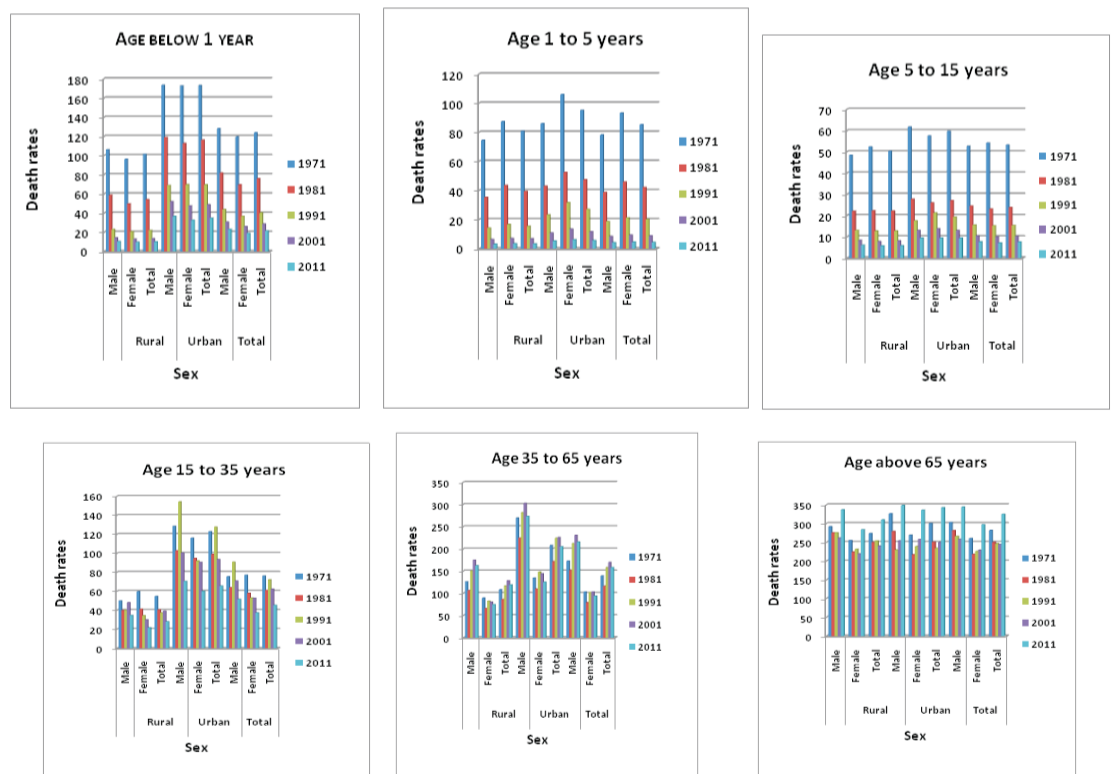


Figure-2

**Correlation between age specific death rates and various social aspects**

Age below 1 year

Criteria	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Literacy	-0.93	-0.92	-0.93	-0.96	-0.97	-0.97	-0.95	-0.94	-0.95
Urbanization	-0.94	-0.92	-0.92	-0.96	-0.97	-0.96	-0.95	-0.94	-0.94
Sex ratio	-0.07	-0.08	-0.07	-0.08	-0.08	-0.07	-0.06	-0.09	-0.09

Age 1 to 5 year

Criteria	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Literacy	-0.91	-0.93	-0.93	-0.92	-0.94	-0.93	-0.92	-0.93	-0.93
Urbanization	-0.92	-0.93	-0.93	-0.94	-0.94	-0.94	-0.93	-0.93	-0.93
Sex ratio	-0.09	-0.07	-0.08	-0.09	-0.09	-0.09	-0.08	-0.08	-0.09

Age 5 to 15 year

Criteria	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Literacy	-0.88	-0.89	-0.89	-0.86	-0.91	-0.88	-0.88	-0.86	-0.89
Urbanization	-0.91	-0.89	-0.91	-0.89	-0.91	-0.91	-0.91	-0.89	-0.91
Sex ratio	-0.12	-0.12	-0.12	-0.15	-0.16	-0.14	-0.13	-0.14	-0.13

Age 15 to 35 years

Criteria	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Literacy	-0.42	-0.95	-0.84	-0.38	-0.86	-0.66	-0.21	-0.91	-0.68
Urbanization	-0.55	-0.96	-0.91	-0.58	-0.91	-0.75	-0.43	-0.93	-0.78
Sex ratio	-0.85	-0.21	-0.44	-0.18	-0.47	-0.26	-0.33	-0.38	-0.42

Age 35 to 65 years

Criteria	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Literacy	0.91	-0.21	0.73	0.66	0.23	0.49	0.91	0.15	0.78
Urbanization	0.81	-0.25	0.64	0.48	0.17	0.36	0.79	0.08	0.69
Sex ratio	-0.37	-0.49	-0.47	-0.61	-0.57	-0.54	-0.34	-0.58	-0.41

Age above 65 years

Criteria	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Literacy	0.26	0.23	0.25	-0.11	0.57	0.19	0.11	0.35	0.25
Urbanization	0.38	0.28	0.33	0.03	0.59	0.27	0.24	0.39	0.34
Sex ratio	0.66	0.58	0.61	0.37	0.25	0.39	0.62	0.37	0.52

Table – 3



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