Sample Registration of Births & Deaths in Kerala (Rural) 1993
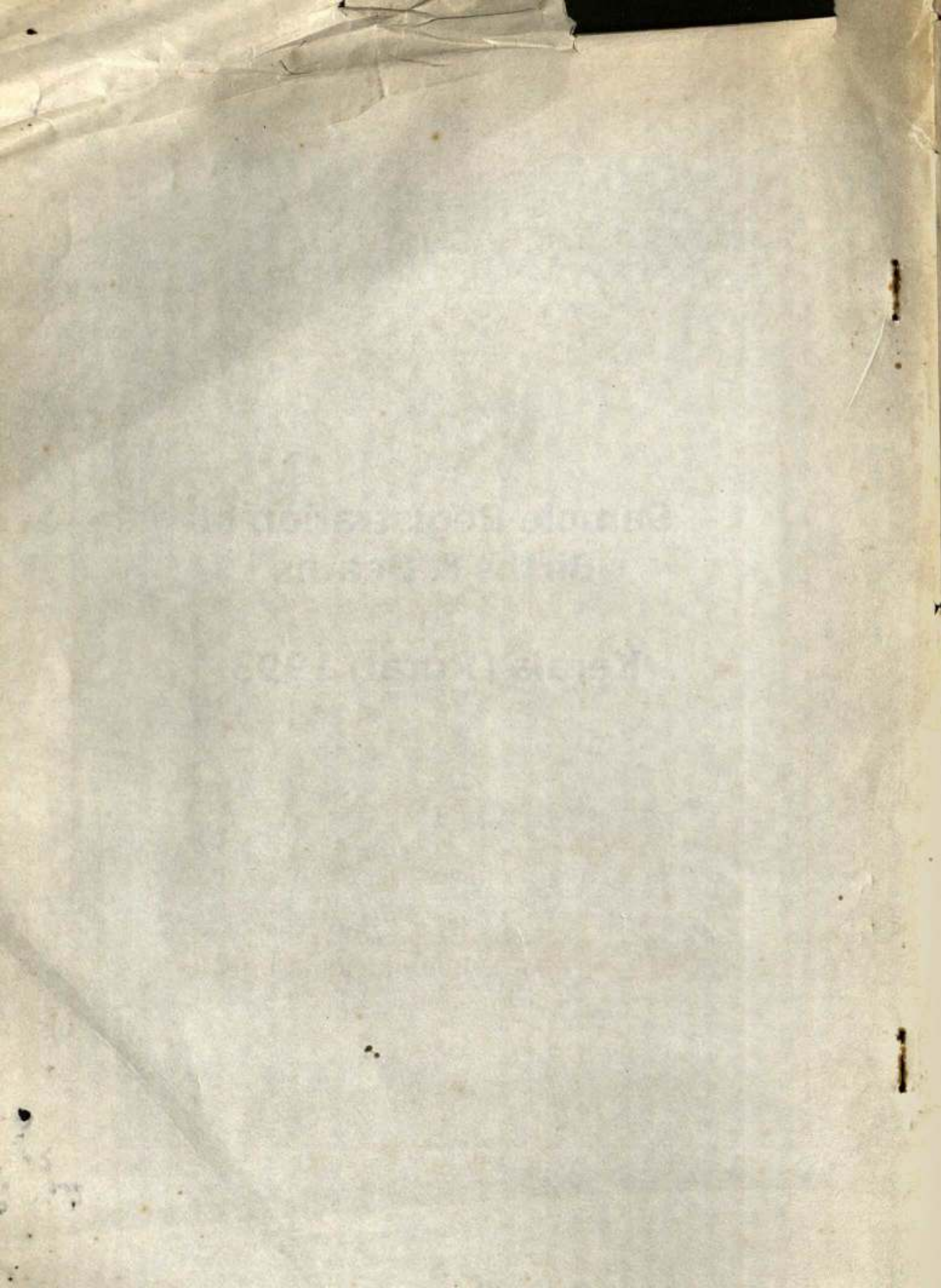
Government of Kerala

Sample Registration of Births & Deaths in Kerala (Rural) 1993

Department of Economics and Statistics
Thiruvananthapuram
1998

Government of Kerala

Sample Registration of
Births & Deaths
in
Kerala (Rural) 1993

Preface

The Sample Registration System was introduced in all the states of India under the directions of the Registrar General of India with a view to obtain quick and reliable estimates of vital rates in the country regularly.

This report presents the results of the study in rural areas of Kerala State for the year 1993. The estimates of vital rates viz. Crude birth rate, death rate, infant mortality rate, etc. and the details on population, marriages, sex ratio, children ever born and surviving obtained through the study are included in this report.

This report was prepared by the Sample Registration Unit of the Directorate of Economics & Statistics.

U. Thomas Sleeba
Director of Economics &
Statistics

Thiruvananthapuram,
12—3—1999.

Contents

Contents

Appendix

List of Tables

Sample Registration of Births and Deaths in Kerala (Rural) 1993

Chapter 1

Introduction

The Sample Registration System is a dual recording system and it provides reliable vital rates at the National and State level separately for urban and rural areas. The insufficiencies in Civil Registration system have made the Sample Registration System as a unique technique for obtaining reliable vital rates. The Department of Economics & Statistics and the Census Department are the implementary agencies of the study in the rural and urban sectors respectively of the state as per the directions from the Registrar General of India. This report presents the findings of the operation of the sample Registration system in the 150 samples selected in the rural sector for the year 1993.

The Sample Registration System was introduced in the State during the year 1964-65 as a pilot project in 20 rural and 5 urban sample units. The full fledged scheme was introduced on a regular basis by extending the survey in 150 rural samples in the state on 1st July 1965. The Director of Census Operations was in charge of the work in the urban areas since 1970. These sample units were retained up to the year 1982. After that 75 samples were replaced in the year 1982 and the remaining 75 units by the year 1983. The stratified sample random method was used for the selection of rural sample units the stratum being the census village which were classified into 4 types according to population of 1981 Census such as below 500, 500-999, 1000-1999 and 2000 and above in the two regions of the State namely northern religion consisting of northern districts beyond Thrissur and southern regions consisting of the remaining districts from Thiruvananthapuram to Thrissur. The allocation of the samples in different state was in proportion to the population of each stratum to the total population. The number and population of the samples selected for the study and the total number and population of Census villages in each stratum are given in table 35 appended to the report.

1.2 Staff engaged in the survey

The registration of all births and deaths occurred in each sample unit was carried out by 150 part-time enumerators appointed for the purpose and the details were reported to this office for each month. The half-yearly surveys in these 150 units were conducted by 17 Statistical Assistants/ Computers deputed for this purpose from the Census Directorate. The Additional District Officers of this department in the districts supervised the fieldwork and conducted re-verification of the unmatched and partially matched events. At the State headquarters one Regional Officer, one Research Assistant, two Compilers and a Computer from Census depart
ment attended the Sample Registration work.

1.3 Field Work

In the beginning a base line survey was conducted in all the 150 sample units to identify and find the resident population. The births and deaths occurring in these units for the resident population were registered by the part time enumerators on a regular basis through informants and house visits and reported details to the District Office every month. The compilers/Statistical Assistants conducted the half-yearly surveys in order to updating the population and collecting the details of events occurred in each sample. These two sets of data collected independently by the enumerators and the supervisors were matched at the district headquarters and identified the unmatched and partially matched events. The additional District Officers in the Districts conducted the re-verification of these unmatched and partially matched events and then finalised the results and forwarded to the State headquarters. These results were subjected to further scrutiny in the State headquarters and one copy each of the schedules for birth, death, population and details of marriages were forwarded to the Registrar General of India for computation of vital rates.

1.4 Overlapping Survey

The supervisions while conducting the half yearly surveys, collected the details of births and deaths occurred during the previous half year also in order to find out the missed events which the enumerator as well as the supervisor had failed to report. Thorough this 104 births and 22 deaths were detected as the events for the extended reference period.

1.5 Intensive enquiry

No events could be recorded through the intensive enquiry during the year under report.

<div align="center">

Chapter 2

Estimated population in Rural areas of Kerala

</div>

2.1 Population and its growth

The rural population of Kerala was estimated as 2,33,38,160 on 1-7-1993 and 2,33,82,475 on 1-1-1994 recording on increase of 0.19% during the second half of 1993. In the year 1992, the population of 2nd half decreased by 0.11% over that of the 1st half. The region wise analysis showed that northern region showed an increase of 63% where as the southern region showed a decrease of 0.14% in the second half of 1993. The corresponding variation in the previous year was 0.4% increase in the northern region and 0.5% decrease in the southern region. The mid year population decreased by 0.1% than the previous year. In 1992 also a decreasing trend is noticed. (0.03% decrease over 1991)

2.2 Sex ratio and percentage distribution of Population by Age group

The sex ratio and percentage distribution of population for different age group for the year 1981, 1992 and 1993 are presented in Table 5. The sex ratio increased from 1067 in 1992 to 1074 in 1993. The northern region had a higher sex ratio (1079) then the southern region (1070). About 29.8 percent of the population was below the age of 14 and 3.3 percent was above 70 years. The corresponding percentages for 1992 were 29.6 and 3.3

2.3. Religion wise Population (Mid year)

The religion wise classification of the population showed that 57.1 percent was Hindus 21.7 percent was Muslims and 21.2 was Christians. The three major religion wise classification of population is furnished in table 6. The corresponding percentages for 1992 were 57.2, 21.6 and 21.2.

Chapter 3

Measures of Fertility

3.1 Fertility Indicators

The most common measures of fertility are the crude birth rate. Age specific fertility rate, general fertility rate, total fertility rate, gross reproduction rate and net reproduction rate are also indicators of fertility. Estimates of these rates are presented in this chapter.

The number of live births per 1000 population (mid year) is defined as the crude birth rate. The births to the usual residents were only taken into account for the calculation of vital rates. The crude birth rate of Kerala was estimated as 17.51 which was less than that of the previous year by 0.05 percent. The birth rates of northern region (19.95) are higher than that of the southern region (15.68). The extent was the same in the previous year also, the rates were 19.51 and 16.12 respectively. ,The birth rate among rural population of Kerala and India for the years 1981 to 1993 are given below in Table A1. The birth rate showed a decreasing trend continuously.

Table A1 – Crude birth rate of Kerala (Rural) and India (Rural) for the year 1981 to 1993

Year	Kerala (Rural)			India (Rural)
	Northern region	Southern region	Total	
1981	28.0	21.5	24.7	35.5
1982	27.9	21.3	24.3	35.5
1983	29.3	19.5	23.5	35.3
1984	28.5	20.3	23.7	35.3
1985	27.2	20.4	23.2	34.3
1986	27.0	19.4	22.6	34.2
1987	24.6	19.2	21.,5	33.7
1988	23.2	17.6	19.9	33.1
1989	22.7	18.4	20.2	32.2
1990	22.0	17.9	19.6	31.7
1991	20.6	16.7	18.4	30.9
1992	19.5	16.1	17.6	30.9
1993	20.0	15.7	17.5	30.3

3.2. Birth rates of neighbouring states

Table A2 as given below gives the estimated birth rates for rural area and the combined estimate for rural and urban areas of Kerala and its neighbouring states and all India for the year 1993.

Table A 2 – Birth rates of neighbouring states and all India for 1993

Sl.No.	State	Rural	Rural and urban combined
1	Andhra Pradesh	24.3	24.1
2	Karnataka	26.7	25.5
3	Tamil nadu	19.3	19.2
4	Kerala	17.5	17.3
5	All India	30.3	28.5

Source: Registrar General of India

Kerala gave the lowest birth rate when compared to the neighboring states and the highest rate was recorded in Karnataka State. The birth rate in all the State and India showed a decreasing trend than the previous year.

3.3 Birth rates by religion

The birth rates among the three major religions in the State viz. Hindu, Muslim and Christian in the rural areas of the State for the year 1993 separately estimated for northern and southern regions are given in table 18 appended.

Unlike in the previous year the birth rate among Muslims decreased by 2.2% in the reporting year and that of Hindus and Christians increased by 0.07% and 1.9% respectively. The birth rate among Muslims which forms 21.7% of total population was the highest (23.5) followed by Christians (16.7) and Hindus (15.6). The corresponding rates for 1992 were 25.7, 14.8 and 15.5. The region wise analysis showed that the lowest birth rate was recorded among Muslims (15.2) in the southern region and the highest birth rate was recorded among the Muslims of northern region (27). The religion wise and region wise estimated population, birth and death rates are furnished in table 19.

3.4 Distribution of Sample Villages under different rates

The classification of sample villages according to birthrate for the years 1991, 1992 and 1993 is furnished in table 16 appended. The birth rate for the state (17.5) found place in the group of villages which have birth rate lies between 16 and 20 as in the previous years 17 villages of southern region and 4 villages of northern region have birth rate below 12 and 6 villages in the northern region have birth rate above28. All the units in the southern region have birth rate below 28. The birth rate among northern samples ranged from 7 to 34 and that of southern samples ranged from 7 to 25.

3.5 Age specific Fertility rate

Age specific fertility rate can be defined as the number of live birth in an year to 1000 women of a specific age group. Age specific fertility rates for the year 1993 are given in table 9 appended separately for the two regions with a view of comparison the age specific fertility rates for the last 10 years are furnished in table A3

Table A3 — Age Specific Fertility Rate in Kerala (rural) for the year 1984 to 1993

Age group	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	2	3	4	5	6	7	8	9	10	11
15-19	34.5	33.7	36.7	31.3	28.1	26.8	26.4	25.2	22.4	21.3
20-24	179.2	177.0	166.1	171.6	153.1	156.3	151.9	141.6	145.9	137.1
25-29	168.0	155.4	147.1	140.0	128.2	134.9	134.2	125.2	114.5	116.5
30-34	74.6	73.0	67.5	55.1	57.2	54.1	50.1	47.5	43.3	52.6
35-39	35.8	29.6	27.4	24.4	24.1	19.9	14.7	15.1	12.2	14.0
40-44	14.1	14.2	11.2	7.2	6.3	6.6	5.8	4.7	2.7	3.4
45-49	4.0	1.8	2.9	2.1	3.0	1.9	1.0	0.5	0.6	0.6

3.6 Age Specific Marital Fertility Rate

Age specific marital fertility rate can be defined as the number of live births in an year to 1000 married women of specific age group. Table 9 appended given the age specific marital fertility rate for the year 1993. The highest marital rate (256.7) was recorded in the age group of 20-24 as in the previous year (274.9)

3.7 Number of surviving children and children ever born in different age group.

The religion wise distribution of currently married women according to number of surviving children is given in Table 10 appended. It was observed that 6.4 percent of the mothers belongs to the age group 15-19 and 92.6 percent of them had one children surviving in the previous year the corresponding percentages were 7 and 93. Majority of the mothers (436%) were on the age group 20-24. Out of the total mother 4.5% have at least seven children alive. Table No.11 and 12 gives the distribution of mothers according to number of children ever born and the age of last child. The religion wise analysis of the mothers showed that 51 percent of them were Hindus 29% Muslims and 20% Christians. The corresponding percentages for the previous years were 51, 32 and 17.

3.8 General Fertility Rate (GFR)

The number of live births in an year to 1000 women in the reproductive age group 15-49 is defined as the GFR. The General fertility rate for the two regions separately for the year 1992 and 1993 is furnished below.

Region	1992	1993
Northern region	70.0	70.4
Southern region	55.6	54.5
State	61.6	61.2

General Fertility Rate for the year 1983 to 1993 are given below.

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
GFR	87.1	87.5	84.4	81.0	77.4	71.5	72.2	69.8	64.8	61.6	61.2

3.9 Total Fertility Rate (TFR)

Total fertility rate denotes the average number of children that would be born to a woman during her life time, if she passes through the child bearing years conforming the age specific fertility rates of the year. The total fertility rate for the two regions and for the state for 1992 and 1993 is given below.

Region	1992	1993
Northern region	1.96	1.97
Southern region	1.52	1.53
State	1.71	1.73

The total fertility rate of Kerala (rural) gives a decreasing trend for the period from 1983 to 1993. The rates are shown below.

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
TFR	2.6	2.6	2.4	2.3	2.2	2.0	2.0	1.9	1.8	1.7	1.7

3.10 Gross Reproduction Rate (GRR)

Gross reproduction rate is defined as the average number of Female children that would be born to a woman during her life time, if she was to pass through her child bearing years conforming to the age specific fertility rate of the year. The gross reproduction rate of Kerala (rural) for the years 1983 to 1992 are furnished below.

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
GRR	1.2	1.3	1.2	1.1	1.1	1.0	0.95	0.92	0.92	0.82	0.83

3.11 Net Reproduction Rate (NRR)

Net reproduction rate is the average number of Female children that would be born to a woman during her life time conforming to the age group by corresponding proportion of survivors as per life table for female (Lx/lx) and then repeating the process as in the gross production rate. Net reproduction rate for the years 1983 to 1993 are shown below.

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
NRR	1.15	1.26	1.20	1.09	1.05	1.00	0.95	0.91	0.91	0.81	0.83

3.12 Still Birth Rate (SBR)

Still birth rate is defined as the number of still births to 1000 births (both live birth and still birth). The still birth rate was estimated as 7.7 for 1993 where as the rate was 10.3 in the previous year. Still birth rate was less than the previous year by 2.6. The northern and southern regions recorded 6 and 9 as SBR in 1993.

3.13 Order of birth by age of mother

Table 15 appended gives the distribution of births by age of mother and order of birth of child in percentages. It was noticed that 81.1% of the births was of 1st or 2nd order. The 3rd order births forms

12.7%. The corresponding percentages for 1992 were 81 and 12.4. Only 0.3% births came under 7th order or above, where as in the previous year the corresponding percentage was 1.

3.14 Birth by type of medical attention received

The percentage distribution of births by type of medical attention received at the time of delivery for the years 1983 to 1993 are given below in table A4. It was observed that 97 percent of the mothers obtained medical attention at the time of delivery in some kind of medical institutions and about 99.9% of mothers obtained some or other kind of medical attention at the time of delivery.

Table A4 – Percentage distribution of births by type of medical attention received for the period from 1983 to 1993.

Year	Institutional	Trained professional	Untrained professional	Non professional	Not stated
1	2	3	4	5	6
1983	68.9	16.1	13.1	1.9	-
1984	73.3	9.2	13.6	3.7	0.2
1985	76.5	8.2	12.8	2.2	0.3
1986	80.2	6.3	9.7	3.7	0.1
1987	82.5	7.7	9.2	0.6	-
1988	83.1	6.8	7.9	2.0	0.2
1989	86.0	5.6	6.8	1.5	0.1
1990	89.1	3.6	5.6	1.4	0.3
1991	91.1	2.7	4.9	1.2	0.1
1992	94.5	1.8	3.2	0.4	0.1
1993	96.9	1.6	0.9	0.5	0.1

The number of people utilising the institutional facilities provided for maternal and child health is increasing every year. The distribution of number of births by various medical attention received is given in table 14 appended. The facilities in the medical institutions were utilised by 95.9% of the mothers of northern region which is lower than the users of southern region (98.1%). In the previous year the corresponding percentages were 91.7 and 97.2. The services of the trained personal were availed by 1.6%. If the people and those who availed the services of untrained personal was 0.8 percent. In the previous year the corresponding figures were 1.9 and 3.2. The tendency to approach the untrained personal for help at the time of delivery is seen decreased.

3.15 Sex-ratio at birth

The number of male children born to 100 female children is defined as the sex ratio at birth. The sex ratio at birth for the years 1983 to 1993 are given below.

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Sex ratio at birth	108.7	100.8	100.2	110.7	104.2	99.3	111.3	109.3	96.5	108.9	106.2

The region wise analysis showed that the northern region the said ratio was 111.3and in southern region 101-5 as against 108.2 and 109.5 respectively in the previous year.

3.16 Child Women Ratio (CWR)

Child women ratio is defined as the estimated number of children in the age group (0 – 4) years per 1000 women in the reproductive age group (15 – 49). In 1993 the CWR for Kerala (Rural) was 353.2. The child women ratio for the years 1983 to 1993 are given below for comparison.

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
CWR	400	390	377	378	383	376	368	368	352	346	353

3.17 Comparison of Vital rates under Sample Registration System and Civil Registration System

The statutory system of recording the Birth and Death in the State is the Civil Registration System. But a considerable number of births and deaths are left unregistered under this system. Since many of the medical institutions are situated in the urban area a good number of events of the resident population of rural areas may be registered in the urban area. As a result the comparison of vital rates obtained through Civil Registration System and Sample Registration System has some variation and usually the birth rate obtained thorough CRS was lower than that of Sample Registration System in the rural areas and a considerable increase in urban area.

Table A5 – Vital Rates under Civil Registration System and Sample Registration System in Kerala (Rural) for the years from 1983 to 1993

Year	Birth rate		Still birth rate	
	Civil registration	Sample Registration	Civil registration	Sample Registration
1	2	3	4	5
1983	14.3	23.5	3.9	13.5
1984	13.8	23.7	4.9	10.5
1985	14.7	23.2	3.9	13.3
1986	13.5	22.6	2.9	14.0
1987	13.2	21.5	2.9	11.1
1988	13.0	19.9	2.4	11.7
1989	12.6	20.2	3.4	10.6
1990	11.6	19.6	4.5	8.6
1991	10.8	18.4	3.7	6.2
1992	9.6	17.6	3.0	10.3
1993	9.4	17.5	3.0	7.6

3.18 Rate of marriage per 1000 population and percentage distribution according to age and sex

The rate of marriages and remarriages per 1000 population and percentage distribution of marriages according to age and sex are given in table 31 appended. About 48.9% women and 45.4% of men are got married in the age group 20-24 and 25-29 respectively. The highest rate of first marriage (61.3) in the case of females and that of males (55.7) were also in the age group 20-24 and 25-29 respectively. The corresponding rates in the previous year were 63.7 and 59.3. Out of the total marriages 1.5% marriage was re-marriages where as in 1992 the corresponding percentage was 1.8. The mean age of marriage in the case of men was 27.9 and for women the mean age of marriage was 22.7 in the previous years figures were 27.9 and 22.6.

Chapter 4

4.1 Crude Death Rate

The crude death rate is taken as the number of deaths per 1000 mid year population. The death of resident population considered for calculating the death rate as in the case of death rate. The crude death rate for Kerala (rural) was 6.1 as against 6.3 in the previous year. The death rate in the northern region was 5.3 and that of southern region was 6.6. The crude death rate for Kerala (rural) and all India rural for the year 1983 to 1992 are given in table B1 below.

Table B1 – Crude death rates in Kerala (Rural) and All India (Rural) for the years from 1983 to 1993

Year	Northern region	Southern region	Combined	All India
1	2	3	4	5
1983	7.2	6.2	6.6	13.1
1984	6.9	6.0	6.4	13.8
1985	6.8	6.4	6.6	13.0
1986	6.0	6.1	6.0	12.2
1987	6.1	6.1	6.1	12.0
1988	6.2	6.3	6.3	12.0
1989	6.0	6.1	6.1	11.1
1990	5.7	6.2	6.0	10.5
1991	5.8	6.5	6.2	10.6
1992	5.6	6.7	6.3	10.9
1993	5.3	6.6	6.1	10.5

4.2 Death rates of neighboring States

The death rates in rural area and rural and urban combined provisionally for the year 1993 by the Registrar General of India in respect of the neighboring States and All India are given below in Table B2.

Table B2 – Death Rates of neighbouring States and All India

State	Rural	Rural and urban combined
Andhra Pradesh	9.5	8.4
Karnataka	9.5	8.0
Tamil Nadu	9.2	8.0
Kerala	6.1	6.0
All India	10.5	9.2

Comparing the death rates of rural areas of the neighbouring states Andhra Pradesh and Karnataka recorded the highest death rate (9.5) and Kerala the lowest (6.1) for 1993.

4.3 Death rates among different religion groups

The death rates among the three major religions viz. Hindu, Muslim and Christian are given in table 18 appended. The region wise analysis showed that the highest and the lowest death rate were recorded among Christians; the highest (67) among Christians of southern region and the lowest among

the Christians of northern region. When the whole State is concerned the death rate was lowest among Muslims (4.9) and highest among Hindus (6.4). In the previous year there rates were 5.5 and 6.4 respectively.

4.4 Age specific death rate

Age Specific death rate is defined as the number of deaths in a specific age group among 1000 persons of that age group in an year. Table 21 appended to this report gives the age specific death rates for different age groups. The highest death rate (92.3) was observed in the age group 70 and above whereas the lowest rate (0.4) recorded in the age group 5 – 14. In the previous year also the highest death rate was recorded in the age group 70 and above (86.4). But the lowest death rate was observed in the age group 10 – 14 (0.6). While examining the death rate in the age group of 70 and above it was seen that the death rate of males (113.1) was higher than females (76.3). Similarly the death rate in northern regions (116.8) was higher than southern region. In the previous year also the trend was the same. The death rate among children below one year was 14.8 which was lower than the previous year (16.3).

4.5 Infant Mortality Rate

The infant mortality rate is defined as the estimated number of children below one year of age out of 1000 live births in an year. The estimated number of infant deaths and infant mortality rates in Kerala (rural) according to sex and region are given in table 25 appended. The infant mortality rates of Kerala (rural) for the year 1983 to 1993 are given below.

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
IMR	38.9	30.1	33.0	28.6	27.0	29.9	23.3	17.1	16.6	17.0	14.8

The infant mortality rate in northern and southern regions were 15.5 and 14.2 respectively in 1993 and the corresponding rates for 1992 were 18.3 and 15.8.

4.6 Neo natal mortality rate

Neo natal mortality rate is defined as the estimated number of deaths of infants below 28 days of age per 1000 live births in an year. Neo natal mortality rate was calculated as 12.0 as against 12.8 in the last year.

4.7 Peri-natal mortality rate

Peri-natal mortality rate is defined as the estimated number of deaths of infants below 7 days of age per 1000 live births in an year. The peri natal mortality rate was calculated as 11.8 in the year 1993. During 1992 the corresponding rate was 10.2. Table B3 below gives the peri-natal neo-natal and infant mortality rates according to sex and region.

Table B3 – Peri-natal, Neo natal and Infant mortality rate 1993

Region	Mortality rate								
	Peri natal			Neo natal			Infant Mortality rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Northern	17.9	7.2	12.8	18.7	7.2	13.3	19.5	10.9	15.4
Southern	13.3	8.4	10.9	18.3	8.4	10.9	15.8	12.6	14.2
State	15.6	7.8	11.8	16.0	15.0	12.0	17.7	11.8	14.8

4.8 Distribution of samples according to death rate of each sample

Distribution of samples according to death rate for 1993 and for the previous two years is given in table 24 appended. In the current year 101 sample units recorded death rate below 7 where as in the previous year the number was 98. The highest death rate (13.9) and the lowest death rate (2.4) were recorded in 2 sample units of the southern region. In the previous year the highest death rate (14.1) was recorded in a sample unit of northern region.

4.9 Medical attention received before death

The percentage distribution of deaths according to type of medical attention received for the year 1983 to 1993 is given in table B4 given below.

Table B4 – Percentage distribution of deaths according to type of medical attention received for the year 1983 to 1993

Year	Institutional	Qualified medical practitioner	Unqualified medical practitioner	None
1	2	3	4	5
1983	46	26	13	15
1984	46	24	8	22
1985	49	23	11	17
1986	49	27	6	18
1987	47	28	7	18
1988	42	32	7	19
1989	43	31	6	20
1990	47	36	7	10
1991	45	35	5	15
1992	54	29	4	13
1993	58	21	4	17

It was observed that about 83% of people got some kind of medical attention before death in 1993. In the previous year the corresponding percentage was 87.

4.10 Comparison of rural mortality rate under civil registration system and sample registration system for the years from 1983 to 1993.

Table B5 given below showed that the death rate and infant mortality rate under Civil Registration are lower than the rates arrived thorough Sample Registration System, as in the past. This phenomine may be due to the fact that a considerable number of births and deaths of the resident population of rural area are registered in the urban area where they seek better medical attention.

Table B5 – Comparison of rural mortality rate under Civil Registration System and Sample Registration System for the years from 1983 to 1993.

Year	Death rate		Infant mortality rate	
	Civil Registration	Sample Registration	Civil Registration	Sample Registration
1	2	3	4	5
1983	3.6	6.6	11.3	38.9
1984	3.6	6.4	9.1	30.1
1985	4.0	6.6	9.1	33.0
1986	3.9	6.0	8.0	28.6
1987	4.0	6.1	8.2	27.0
1988	4.1	6.3	7.3	29.9
1989	4.2	6.1	8.2	23.3
1990	4.1	6.0	8.1	17.1
1991	4.3	6.2	7.5	16.6
1992	4.5	6.3	5.2	17.0
1993	4.3	6.1	5.8	14.8

4.11 Expectation of life based on age specific death rates for the last three years.

Expectation of life based in different age group is calculated in the life tables – 32, 33, 34 appended to this report. The life tables are prepared sex wise and population wise separately, based on the age specific death rates for the years 1991, 1992 and 1993. The expectation of life at birth for males, females and for both sex together were calculated as 68.3, 75.2 and 71.6 where as in the previous year there figures were 67.9, 74.8 and 71.2. The expectations of life of females are always higher than that of the males. The table B6 given below gives the expectation of life calculated for the last 11 years.

Table B6 – Expectation of life based on age specific death rates for the years 1983 to 1993.

Age specific death rates for the year			Males	Females	Males and Females together
1			3	4	5
1981	1982	1983	66.0	71.8	68.8
1982	1983	1984	66.5	73.4	69.7
1983	1984	1985	65.7	72.5	68.9
1984	1985	1986	66.9	72.8	69.7
1985	1986	1987	67.1	73.1	70.1
1986	1987	1988	67.0	73.5	70.2
1987	1988	1989	67.6	73.9	70.6
1988	1989	1990	67.9	74.7	71.1
1989	1990	1991	68.1	74.7	71.3
1990	1991	1992	67.9	74.8	71.2
1991	1992	1993	68.3	75.2	71.6

Method adopted for calculation of life tables

$$mx = \frac{\text{Total age specific death rates for the last three years}}{3 \times 1000}$$

$$qo = \frac{D1 + D2}{B1 - B2}$$

Where D1 is the number of deaths of children born during 1992 and died in 1993. D2 is that of the children born and died in 1993. B1 and B2 denote the total number of births occurred during 1992 and 1993 respectively.

$$qx = \frac{2 \times (Cx \times mx)}{2 + (Cx \times mx)}$$ Where C is the class interval

Let lo be 1,00,000
$$lx = lo - do$$
$$d_x = lx \times q_x$$

Let d70 = 1_{70}
$$L_o = f \times l_o = (l-f)\, l_1$$ Where $f = \dfrac{D1}{D1 + D2}$

$$Lx = \frac{lx + lx + lxc}{2}$$

$$L70 = d\,70/m70$$

Let L 70 be T70
$$T(70-1) = T_{70} + L(70-1)$$

Expectation of life $Ex = \dfrac{Tx}{lx}$

Appendix Tables

Table 1 – Mid year estimated Population, Vital events and Vital rates 1993

Stratum	Estimated Population and Vital events					Estimated vital rates			
	Population	Births	Deaths	Still births	Infant deaths	Birth rate	Death rate	Still birth rate	Infant death rate
1	2	3	4	5	6	7	8	9	10
I A	34166	806	101	-	-	23.58	2.85	-	-
B	199325	3788	1337	-	-	19.00	6.71	-	-
C	932595	19597	5238	97	194	21.01	5.62	4.93	9.9
D	8849260	175651	46784	1106	2892	19.85	5.29	6.26	16.46
Northern Region	10015346	199842	53460	1203	3086	19.95	5.34	5.98	15.44
II A	111480	1582	122	-	-	14.19	1.09	-	-
B	335601	6800	2380	-	170	20.26	7.09	-	25.00
C	1441980	22800	10762	182	274	15.81	7.46	7.92	12.02
D	11433753	177655	74444	1743	2528	15.54	6.51	9.72	14.23
Southern Region	13322814	208837	87708	1925	2972	1568	6.58	9.13	14.23
State	23338160	408679	141168	3128	6058	17.51	6.05	7.60	14.82

Table 2 – Sample Population and Estimated Population for each Stratum

Stratum	Observed Population in Samples in each stratum		Estimated population for each stratum	
	As on 1-7-93	As on 1-1-94	As on 1-7-93	As on 1-1-94
1	2	3	4	5
I A	678	679	34166	34216
B	1789	1828	199325	203670
C	9613	9696	932595	940647
D	104034	104635	8849260	8900382
Northern Region	116114	116838	10015346	10078915
II A	916	923	111480	112332
B	1974	19766	335601	335941
C	15811	15734	1441980	1434958
D	131164	131010	11433753	11420329
Southern Region	149865	149643	13322814	13303560
State	265979	266481	23338160	23382475

Table 3 – Stratum wise Population according to Sex

Stratum		Observed Population			Estimated population		
1		Male	Female	Total	Male	Female	Total
		2	3	4	5	6	7
I	A	324	354	678	16327	17839	34166
	B	868	921	1789	96710	102615	199325
	C	4562	5051	9613	442578	490017	932595
	D	50105	53929	104034	4261993	4587267	8849260
Northern Region		55859	60255	116114	4817608	5197738	10015346
II	A	456	460	916	55497	55983	111480
	B	952	1022	1974	161850	173751	335601
	C	7642	8169	15811	696959	745021	1441980
	D	63328	67836	131164	5520392	5913361	11433753
Southern Region		72378	77487	149865	6434698	6888116	13322814
State		128237	137742	265979	11252306	12085854	23338160

Table 4 — Mid year sample population and estimated population according to age and sex

Age group	Observed population			Estimated Population		
	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7
0 – 1	2398	2283	4681	210349	200073	410422
1 – 4	11353	10883	22236	993276	953977	1947253
5 – 9	13052	13222	26274	1144302	1157228	2301530
10 – 14	13287	12766	26053	1164722	1120853	2285575
15 – 19	13670	13773	27443	1197194	1205099	2402293
20 – 24	12641	15254	27895	1107942	1337055	2444997
25 – 29	11453	13375	24828	1005611	1172634	2178245
30 – 34	9741	10692	20433	854660	938462	1793122
35 – 30	8437	9087	17524	739851	796596	1536447
40 – 44	6949	7604	14553	611949	668110	1280059
45 – 49	5964	6335	12299	524595	556304	1080899
50 – 54	4905	5282	10187	430637	464712	895349
55 – 59	4385	5023	9408	385901	441395	827296
60 – 64	3474	3972	7446	306257	350280	656537
65 – 69	2728	3284	6012	240259	288685	528944
70 +	3800	4907	8707	334801	434391	769192
All	128237	137742	265979	11252306	12085854	23338160

Table 5 – Sex ratio and percentage distribution of population by age group – 1981, 1992 & 1993

Age group	1981		1992		1993	
	Sex ratio	Percentage population	Sex ratio	Percentage Population	Sex ratio	Percentage population
1	2	3	4	5	6	7
0 – 4	978	10.8	968	9.88	959	10.10
5 – 9	975	11.5	998	9.80	1011	9.86
10 – 14	984	12.8	974	9.95	962	9.79
0 – 14	979	35.4	980	29.63	977	29.76
15 – 19	1092	11.7	1015	10.25	1007	10.29
20 – 24	1094	10.1	1195	10.61	1207	10.48
25 – 29	1086	8.1	1156	9.37	1166	9.33
30 – 34	1008	6.0	1039	7.92	1098	7.68
35 – 30	1089	5.5	1066	6.58	1077	6.58
40 – 44	1022	4.4	1075	5.41	1077	5.49
45 – 49	1035	4.6	1084	4.49	1092	5.49
50 – 54	996	4.4	1087	3.87	1060	4.63
55 – 59	992	2.9	1135	3.52	1079	3.84
60 – 64	1039	2.7	1146	2.81	1144	3.55
65 – 69	1123	2.1	1169	2.27	1144	2.81
70 +	1159	2.8	1258	3.28	1202	2.27
All	1020	100.00	1067	100.00	1297	3.30
					1074	100.00

Table 6 – Religion wise sample population and estimated population for each stratum

Stratum	Observed Population				Estimated population			
	Hindu	Christian	Muslim	Total	Hindu	Christian	Muslim	Total
1	2	3	4	5	6	7	8	9
I A	372	125	181	678	18746	6299	9121	34166
B	1312	460	17	1789	146179	51252	1894	199325
C	4739	4590	284	9613	459749	445294	27552	932595
D	59581	35967	8486	104034	5068033	3059397	721830	8849260
Northern Region	66004	41142	8968	116114	5692707	3562242	760397	10015346
II A	143	13	760	916	17404	1582	92494	111480
B	1117	-	857	1974	189902	-	145699	335601
C	8276	1150	6385	15811	754780	104881	582319	1441980
D	76554	15946	38664	131164	6673322	1390035	3370396	11433753
Southern Region	86090	17109	46666	149865	7635408	1496498	4190908	13322814
State	152094	58251	55634	265979	13328115	4058740	4951305	23338160

Table 7 – Stratum wise Live births observed in samples and estimates according to Sex in 1993

Stratum	Observed Population			Estimated population		
	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7
I A	10	6	16	405	302	809
B	16	18	34	1783	2005	3788
C	112	90	202	10866	8731	19597
D	1083	982	2065	92121	83530	175651
Northern Region	1219	1098	2317	105274	94568	199842
II A	7	6	13	852	730	1582
B	18	22	40	3060	3740	6800
C	127	123	250	11582	11218	22800
D	1029	1009	2038	89699	87956	177655
Southern Region	1181	1160	2341	105193	103644	208837
State	2400	2258	4658	210467	198212	408679

Table 8 – Estimated number of total Women and Live births in different age groups

1	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
	2	3	4	5	6	7	8	9

A. Estimated No. of total women

1	2	3	4	5	6	7	8	9
I. Northern region	575706	581916	481070	382114	320741	268759	228512	2838818
II. Southern region	629393	755139	691564	556348	475855	399351	327792	3835442
State	1205099	1337055	1172634	938462	796596	668110	556304	6674260

B. Estimated No. of Married women

1	2	3	4	5	6	7	8	9
I. Northern region	102411	354634	396116	320775	272472	217487	171761	1835656
II. Southern region	33274	359390	546557	486356	424538	339973	263228	2453316
State	135685	714024	942673	807131	697010	557460	434989	4288972

C. Estimated No. of Live Births

1	2	3	4	5	6	7	8	9
I. Northern region	19890	96229	56293	19640	5881	1739	170	199842
II. Southern region	5777	87026	80360	29702	5267	531	174	208837
State (All Births)	25667	183255	136653	49342	11148	2270	344	408679
State (Female Births)	13963	90465	66452	20821	5883	457	172	198213

Table 9 – Age specific fertility rate, age specific marital fertility rate, GFR, TFR and GRR

	Age group of women						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1	2	3	4	5	6	7	8
A. Age specific fertility rate							
I. Northern region	34.55	165.37	117.02	51.40	18.34	6.47	0.74
II. Southern region	9.18	115.25	116.20	53.39	11.07	1.33	0.53
State (All births)	21.30	137.06	116.54	52.58	13.99	3.40	0.62
State (Female Births)	11.59	67.66	56.67	22.19	7.39	0.99	0.31
A. Age specific Marital fertility rate							
I. Northern region	194.22	271.35	142.11	61.23	21.58	8.0	0.99
II. Southern region	173.62	242.15	147.03	61.07	12.41	1.56	0.66
State (All births)	189.17	256.65	144.96	61.13	15.99	4.07	0.79

	Northern Region	Southern Region	State
GFR	70.40	54.45	61.23
TFR	1.97	1.53	1.73
GRR			0.83

Table 10 – Distribution of currently married women observed according to age, religion and number of surviving children 1993

Age group	Religion	No. of surviving children							Total
		1	2	3	4	5	6	7 & above	
1	2	3	4	5	6	7	8	9	10
15-19	Hindu	101	5	-	-	-	-	-	106
	Muslim	159	15	1	-	-	-	-	175
	Christian	16	1	1	-	-	-	-	17
20-24	Hindu	730	337	59	2	-	-	-	1129
	Muslim	262	218	67	12	1	1	-	560
	Christian	227	98	19	-	1	-	-	344
25-29	Hindu	290	387	105	13	1	-	-	796
	Muslim	60	119	90	46	18	4	1	338
	Christian	177	188	48	3	-	-	-	416
30-34	Hindu	59	150	46	20	3	1	-	279
	Muslim	12	145	45	20	3	1	-	226
	Christian	19	70	12	3	4	-	-	108
35-39	Hindu	22	20	5	3	3	2	1	56
	Muslim	5	3	7	7	13	9	11	55
	Christian	4	6	5	5	-	-	1	21
40-44	Hindu	1	5	-	1	1	0	1	9
	Muslim	1	0	2	3	2	1	1	15
	Christian	1	0	2	1	-	-	-	4
45-49	Hindu	-	-	-	1	-	-	-	1
	Muslim	-	-	1	1	-	-	-	2
	Christian	-	-	-	1	-	-	-	1
Total		2146	1769	512	142	49	19	21	4658

Sample Registration of Births & Deaths in Kerala (Rural) 1993

Table 11 – Distribution of currently married women observed in samples according to age and children ever born 1993

Age group	Number of children ever born						7 & above	Total
	1	2	3	4	5	6		
1	2	3	4	5	6	7	8	9
15-19	276	21	1	-	-	-	-	298
20-24	1208	664	145	14	3	0	0	2033
25-29	523	698	243	62	19	4	1	1550
30-34	128	272	87	68	29	16	13	613
35-39	30	29	18	15	16	11	13	132
40-44	3	8	3	4	3	1	6	28
45-49	0	0	1	3	0	0	0	4
Total	2168	1692	498	166	68	33	33	4658

Table 12 – Distribution of currently married women observed in samples according to age of mother and age of the last child 1993

Age group	Age of last child (in months)									
	0.14	15-29	30-44	45-59	60-74	75-89	90-104	105-119	120-134	Total
I	2	3	4	5	6	7	8	9	10	11
15-19	262	23	9	2	1	-	1	-	-	298
20-24	1204	452	218	103	43	8	4	0	1	2033
25-29	593	346	207	209	119	47	13	4	12	1550
30-34	146	140	123	70	74	28	11	9	12	613
35-39	28	20	21	16	16	17	6	5	3	132
40-44	4	5	4	3	3	3	3	1	2	28
45-49	0	0	0	0	1	0	1	1	1	4
Total	2237	986	582	403	257	103	39	20	31	4658

Table 13 – Live births observed in samples classified by month of occurrence

Stratum	January	February	March	April	May	June	July	August	September	October	November	December	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
I A	1	2	3	-	-	2	-	3	1	3	1	-	16
B	2	2	1	2	1	6	2	3	6	4	1	4	34
C	15	25	16	22	18	16	14	16	13	16	19	12	202
D	206	175	210	179	193	150	153	175	150	160	146	168	2065
Northern Region	224	204	230	203	212	174	169	197	170	183	167	184	2317
II A	1	2	1	-	-	3	-	3	2	1	-	-	13
B	7	4	6	3	2	2	1	2	2	6	2	3	40
C	20	18	27	22	29	20	22	22	17	20	13	20	250
D	206	151	166	164	179	121	161	189	157	175	180	189	2038
Southern Region	234	175	200	189	210	146	184	216	178	202	195	212	2341
State	458	379	430	392	422	320	353	413	348	385	362	396	4658

Note: Number of live births reported from samples

Table 14 – Live births observed in samples by type of medical attention at delivery

Stratum	Type of medical attention					Total
	Institutional	Trained professional	Untrained professional	Non professional	Not stated	
	2	3	4	5	6	7
I A	16	-	-	-	-	16
B	32	2	-	-	-	34
C	200	1	1	-	-	202
D	1973	33	31	21	7	2065
Northern Region	2221	36	32	21	7	2317
II A	13	-	-	-	-	13
B	38	-	-	2	-	40
C	250	-	-	-	-	250
D	1994	38	6	-	-	2038
Southern Region	2295	38	6	2	-	2341
State	4516	74	38	23	7	4658

Table 15 – Percentage distribution of births by age of mother and order of births of child

Age group	Order of births										Total
	1	2	3	4	5	6	7	8	9	10	
1	2	3	4	5	6	7	8	9	10	11	12
15-19	89.93	9.06	1.01	-	-	-	-	-	-	-	100.00
20-24	53.76	37.29	8.26	0.54	0.15	-	-	-	-	-	100.00
25-29	37.10	39.23	15.81	5.94	1.55	0.31	0.06	-	-	-	100.00
30-34	29.53	32.46	24.31	7.83	3.43	1.63	0.81	-	-	-	100.00
35-39	12.12	37.12	12.12	7.58	15.90	7.58	7.58	-	-	-	100.00
40-44	10.71	10.71	39.29	25.00	3.57	7.15	3.57	-	-	-	100.00
45-49	-	-	-	100.00	-	-	-	-	-	-	100.00
All ages	45.87	35.29	12.71	3.65	1.52	0.60	0.36	-	-	-	100.00

Table 16 – Distribution of samples according to birth rate of each sample

Sl. No.	Birth rate	Northern region		Southern region		State					
						1993		1992		1991	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
2	2	3	4	5	6	7	8	9	10	11	12
1	Less than 12	4	6.6	17	19.1	21	14.00	15	10.0	11	7.4
2	12 and less than 16	12	19.7	34	38.2	46	30.67	57	38.0	43	28.8
3	16 and less than 20	16	26.2	27	30.4	43	28.67	36	24.0	47	31.4
4	20 and less than 24	18	29.5	10.	11.2	28	18.67	29	19.3	29	19.4
5	24 and less than 28	5	8.2	1	1.1	6	4.00	10	6.7	9	6.0
6	28 and less than 32	4	6.6	-	-	4	2.67	2	1.3	5	3.0
7	32 and less than 36	2	3.2	-	-	2	1.32	1	0.7	6	4.0
8	36 and less than 40	-	-	-	-	-	-	-	-	-	-
9	40 and less than 44	-	-	-	-	-	-	-	-	-	-
10	44 and above	-	-	-	-	-	-	-	-	-	-
	Total	61	100.0	89	100.0	150	100.00	150	100.0	150	100.0

Table 17 – Still Births observed in samples and estimated according to sex and still birth rates

Stratum	Still births observed			Still births estimated			Total estimated no. of live births and still births	Still birth rate
	Male	Female	Total	Male	Female	Total		
1	2	3	4	5	6	7	8	9
I A	-	-	-	-	-	-	806	-
B	-	-	-	-	-	-	3788	-
C	1	-	1	97	-	97	19694	4.93
D	13	-	13	1106	-	1106	176757	6.26
Northern Region	14	-	14	1203	-	1203	201045	5.98
II A	-	-	-	-	-	-	1582	-
B	-	-	-	-	-	-	6800	-
C	-	2	2	-	182	182	22982	7.92
D	-	20	20	-	1743	1743	179398	9.72
Southern Region	-	22	22	-	1925	1925	210762	9.13
State	14	22	36	1203	1925	3128	411807	7.60

Sample Registration of Births & Deaths in Kerala (Rural) 1993

Table 18 – Religion wise Birth and Death rates

Stratum	Birth rate			Death rate		
	Northern region	Southern region	State	Northern region	Southern region	State
1	2	3	4	5	6	7
Hindu	15.77	15.45	15.59	6.10	6.67	6.48
Muslim	27.02	15.19	23.52	4.50	5.79	4.88
Christian	19.26	16.25	16.71	3.58	6.71	6.23
Total	19.95	15.68	17.51	5.34	6.58	6.05

Department of Economics & Statistics, Kerala

Sample Registration of Births & Deaths in Kerala (Rural) 1993

Table 19 – Religion wise Birth and Death Estimated 1993

1		Hindu	Muslim	Christian	Total
		2	3	4	5
I. Estimated Population	Northern Region	5692707	3562242	760397	10015346
	Southern Region	7635408	1496498	4190908	13322814
	State	13328115	5058740	4951305	23338160
II. Estimated Births	Northern Region	89749	96249	14644	199842
	Southern Region	118004	22733	68100	208837
	State	207753	118982	82744	408679
III. Estimated Deaths	Northern Region	34702	16036	2722	53460
	Southern Region	50940	8662	28106	87708
	State	85643	24697	30828	141168
IV. Birth Rate	Northern Region	15.77	27.02	19.26	19.95
	Southern Region	15.45	15.19	16.25	15.68
	State	15.59	23.52	16.71	17.51
V. Death Rate	Northern Region	6.10	4.50	3.58	5.34
	Southern Region	6.67	5.79	6.71	6.58
	State	6.43	4.88	6.23	6.05

Table 20 – Stratum wise death observed in samples and estimated according to Sex 1993

Stratum	Death observed in samples			Estimated number of deaths		
	Male	Female	Total	Male	Female	Total
2	3	4	5	6	7
I A	2	2	2	-	6	101
B	-	2	12	669	668	1337
C	6	6	54	2813	2425	5238
D	29	25	550	27985	18799	46784
Northern Region	329	221	618	31467	21993	53460
	364	254	1	-	122	122
II A	-	1	14	850	1530	2380
B	5	9	118	6202	4560	10762
C	68	50	854	43411	31033	74444
D	498	356	987	50463	37245	87708
Southern Region	571	416	1605	81930	59238	141168
State	935	670				

Sample Registration of Births & Deaths in Kerala (Rural) 1993

Table 20 (a) – Distribution of death observed in samples according to age and sex

Age group	Northern region			Southern region			State		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10
Below 1	24	12	36	19	14	33	43	26	69
1 – 4	3	5	8	7	4	11	10	9	19
5 – 9	1	5	6	2	2	4	3	7	10
10 – 14	-	4	4	3	3	6	3	7	10
15 – 19	4	2	6	6	3	9	10	5	15
20 – 24	5	5	10	2	6	8	7	11	18
25 – 29	5	3	8	8	11	19	13	14	27
30 – 34	9	3	12	10	4	14	19	7	26
35 – 39	4	-	4	12	8	20	16	8	24
40 – 44	10	4	14	13	14	27	23	18	41
45 – 49	14	7	21	21	7	28	35	14	49
50 – 54	13	12	25	27	15	42	40	14	49
55 – 59	32	11	43	49	23	72	81	27	67
60 – 64	36	25	61	60	29	89	81	34	115
65 – 69	35	25	60	70	30	100	96	54	150
70 & above	169	131	300	262	243	505	105	55	160
All	364	254	618	571	416	987	431	374	805
							935	670	1605

Department of Economics & Statistics, Kerala

Table 20 (b) – Distribution of estimated deaths according to age and sex

Age group	Northern region			Southern region			State		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10
Below 1	2053	1033	3086	1665	1307	2972	3718	2340	6058
1 – 4	255	425	680	617	439	1056	872	864	1736
5 – 9	97	437	534	174	87	261	271	524	795
10 – 14	-	340	340	262	262	524	262	602	864
15 – 19	340	170	510	523	262	785	863	432	1295
20 – 24	452	452	904	178	523	701	630	975	1605
25 – 29	451	255	706	697	959	1656	1148	1214	2362
30 – 34	766	255	1021	879	349	1228	1645	604	2249
35 – 39	340	-	340	1054	701	1755	1394	701	2095
40 – 44	851	340	1191	1133	1229	2362	1984	1569	3553
45 – 49	1191	607	1798	1917	618	2535	3108	1225	4333
50 – 54	1195	1086	2281	2374	1394	3768	3569	2480	6049
55 – 59	2770	948	3718	4284	2017	6301	7054	2965	10019
60 – 64	3098	2186	5284	5259	2627	7886	8357	4813	13170
65 – 69	2989	2165	5154	6218	2639	8857	9207	4804	14011
70 & above	14619	11294	25913	23229	21832	45061	37848	33126	70974
All	31467	21993	53460	50463	37245	87708	81930	59238	141168

Table 21 – Age specific death rates based on estimated values

Age group	Northern region	Southern region	Total	State	
				Male	Female
1	2	3	4	5	6
Below 1	15.65	13.93	14.76	17.68	11.70
1 – 4	0.71	1.07	0.89	0.88	0.91
5 – 9	0.48	0.22	0.35	0.24	0.45
10 – 14	0.31	0.44	0.38	0.23	0.54
15 – 19	0.45	0.62	0.54	0.72	0.36
20 – 24	0.85	0.51	0.66	0.57	0.73
25 – 29	0.78	1.30	1.08	1.14	1.04
30 – 34	1.41	1.15	1.25	1.92	0.64
35 – 39	0.57	1.88	1.36	1.88	0.88
40 – 44	2.35	3.06	2.78	3.24	2.35
45 – 49	4.23	3.87	4.01	5.92	2.20
50 – 54	6.52	6.91	6.76	8.29	5.34
55 – 59	12.08	12.13	12.11	18.28	6.72
60 – 64	22.91	18.52	20.06	27.29	13.74
65 – 69	29.09	25.18	26.49	38.32	16.64
70 & above	116.82	82.32	92.27	113.05	76.26
All	5.34	6.58	6.05	7.28	4.90

Table 22 – Death observed in samples classified by month of occurance

Stratum	January	February	March	April	May	June	July	August	September	October	November	December	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
I A	-	-	-	-	-	-	-	-	-	1	-	1	2
B	1	2	-	1	1	3	-	-	-	2	2	-	12
C	12	1	7	1	4	1	9	3	8	-	5	3	54
D	57	43	54	39	49	28	36	63	40	49	50	42	550
Northern Region	70	46	61	41	54	32	45	66	48	52	57	46	618
II A	-	-	-	-	-	-	-	-	1	-	-	-	1
B	1	-	1	-	3	3	2	3	-	-	-	1	14
C	9	11	10	9	6	7	13	12	7	7	14	13	118
D	75	70	85	52	58	85	80	75	69	52	82	71	854
Southern Region	85	81	96	61	67	95	95	90	77	59	96	85	987
State	155	127	157	102	121	127	140	156	125	111	153	131	1605

Sample Registration of Births & Deaths in Kerala (Rural) 1993

Table 23 – Death classified by type of Medical attention

Stratum	Institutional	Type of Medical attention		No treatment	Total
		Qualified medical practitioner	Unqualified medical practitioner		
1	2	3	4	5	6
I A	2	-	-	-	2
B	8	-	-	-	2
C	34	11	-	4	12
D	259	138	6	3	54
Northern Region	303	149	27	126	550
II A	-	-	33	133	618
B	9	2	-	1	1
C	83	22	3	-	14
D	532	174	-	13	118
Southern Region	624	198	22	126	854
State	927	347	25	140	987
			58	273	1605

Department of Economics & Statistics, Kerala

Table 24 – Distribution of samples according to death rate of each sample

Sl No.	Birth rate	Northern region		Southern region		State 1993		State 1992		State 1991	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
	2	3	4	5	6	7	8	9	10	11	12
1	Less than 1	-	-	2	2.25	2	1.33	-	-	2	13.00
2	1 and less than 3	7	11.48	3	3.37	10	6.67	8	5.33	10	6.70
3	3 and less than 5	25	40.98	15	16.85	40	26.67	38	25.33	36	24.00
4	5 and less than 7	14	22.95	35	39.33	49	32.67	52	34.67	48	32.00
5	7 and less than 9	9	14.75	24	26.97	33	22.00	35	23.33	36	24.00
6	9 and less than 11	6	9.84	5	5.62	11	7.33	13	8.67	16	10.60
7	11 and less than 13	-	-	3	3.37	3	2.00	3	2.00	1	0.70
8	13 and less than 15	-	-	2	2.24	2	1.33	1	0.67	1	0.70
10	15 and above	-	-	-	-	-	-	-	-	-	-
	Total	61	100.00	89	100.00	150	100.00	150	100.00	150	100.00

Table 25 – Infant death observed and estimated according to sex and infant mortality rate

Stratum	Infant death observed			Infant death estimated			Estimated live births			Infant mortality rate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
	2	3	4	5	6	7	8	9	10	11	12	13
I A	-	-	-	-	-	-	504	302	806	-	-	-
B	-	-	-	-	-	-	1783	2005	3788	-	-	-
C	1	1	2	97	97	194	10866	8731	19597	8.93	11.11	9.90
D	23	11	34	1956	936	2892	92121	83530	175651	21.23	11.21	16.46
Northern Region	24	12	36	2053	1033	3086	105274	94568	199842	19.50	10.92	15.44
II A	-	-	-	-	-	-	852	730	1582	-	-	-
B	-	1	1	-	170	170	3060	3740	6800	-	45.45	25.00
C	2	1	3	183	91	274	11582	11218	22800	15.80	8.11	12.02
D	17	12	29	1482	1046	2528	89699	87956	177655	16.52	11.89	14.23
Southern Region	19	14	33	1665	1307	2972	105193	103644	208837	15.83	12.61	14.23
State	43	26	69	3718	2340	6058	210467	198212	408679	17.67	11.81	14.82

Table 26 – Number of infant deaths observed in samples of children born during the current year and previous year

Stratum	Born in 1992									Born in 1993								
	Less than 7 days			Less than 28 days			Less than one year			Less than 7 days			Less than 28 days			Less than one year		
	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
I A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	1	-	1	1	-	1	2	1	3
D	-	-	-	-	-	-	1	-	1	21	8	29	22	8	30	22	11	33
Northern Region	-	-	-	-	-	-	1	-	1	22	8	30	23	8	31	24	12	36
II A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1
C	-	-	-	-	-	-	-	-	-	2	1	3	2	1	3	2	1	3
D	-	-	-	-	-	-	-	3	3	14	7	21	14	7	21	17	12	29
Southern Region	-	-	-	-	-	-	-	3	3	16	9	25	16	9	25	19	14	33
State	-	-	-	-	-	-	1	3	4	38	17	55	39	17	56	43	26	69

Table 27 – Estimated number of infant deaths for the year 1993 of children born during the current year and previous year

Stratum	Born in 1992									Born in 1993								
	Less than 7 days			Less than 28 days			Less than one year			Less than 7 days			Less than 28 days			Less than one year		
	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
I A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	97	-	97	97	-	97	97	97	194
D	-	-	-	-	-	-	85	-	85	1786	680	2466	1871	680	2551	1871	936	2807
Northern Region	-	-	-	-	-	-	85	-	85	1883	680	2563	1968	680	2648	1968	1033	3001
II A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	170	170	-	170	170	-	170	170
C	-	-	-	-	-	-	-	-	-	182	91	273	182	91	273	182	91	273
D	-	-	-	-	-	-	-	261	261	1220	610	1830	1220	610	1830	1483	785	2268
Southern Region	-	-	-	-	-	-	-	261	261	1402	871	2273	1402	871	2273	1665	1046	2711
State	-	-	-	-	-	-	85	261	346	3285	1551	4836	3370	1551	4921	3633	2079	5712

Table 28 – Estimated number of Perinatal, Neonatal Post neonatal infant death according to sex

Stratum	Estimated number of infant deaths								
	Less than 7 days			Less than 28 days			Less than one year		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10
I	1883	680	2563	1968	680	2648	2053	1033	3086
II	1402	871	2273	1402	871	2273	1665	1307	2972
Total	3285	1551	4836	3370	1551	4921	3718	2340	6058

Table 29 – Birth and death detected through overlapping survey and intensive enquiry classified according to place and type of births and deaths

Stratum	Birth					Death				
	Total	Place		Kind		Total	Place		Kind	
		In	Out	Live births	Still births		In	Out	Infant deaths	Other deaths
1	2	3	4	5	6	7	8	9	10	11
I A	-	-	-	-	-	-	-	-	-	-
B	2	-	2	2	=	1	-	1	-	1
C	3	-	3	3	-	2	2	-	-	2
D	35	-	35	35	-	12	2	10	1	11
Northern Region	40	-	40	40	-	15	4	11	1	14
II A	-	-	-	-	-	-	-	-	-	-
B	1	-	1	1	-	-	-	-	-	-
C	7	1	6	7	-	-	-	-	-	-
D	56	1	55	56	-	7	5	2	1	6
Southern Region	64	2	62	64	-	7	5	2	1	6
State	104	2	102	104	-	22	9	13	2	20

Table 30 – Distribution of Births and Deaths recorded by Enumerator and Supervisor, detected through overlapping survey and intensive enquiry

Items		Births			Deaths		
		Northern region	Southern region	State	Northern region	Southern region	State
1		2	3	4	5	6	7
Common to enumerator and supervisor		1259	1120	2379	515	813	1328
Registered by Enumerator	No.	1896	1905	3801	523	825	1348
	%	83.3	83.7	87.3	86.7	84.2	85.2
Listed by Supervisor.	No	2165	2188	4353	581	917	1498
	%	95.1	96.1	95.6	96.7	93.6	94.6
Total netted by Enumerator and Supervisor		2277	2277	4554	603	980	1583
Detected by others		-	-	-	-	-	-
Overlapping survey		40	64	104	15	7	22
Intensive enquiry		-	-	-	-	-	-
Total		2317	2341	4658	618	987	1605

Table 31 – Distribution of rate of marriage per thousand population and percentage distribution of marriage according to age and sex

Age group	Rate of marriage per 1000 population						Percentage					
	First marriage		Remarriage		All marriage		First marriage		Remarriage		All marriage	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9	10	11	12	13
15 – 19	0.88	29.41	-	0.07	0.88	29.48	0.86	21.23	-	8.33	0.84	21.15
20 – 24	19.62	61.30	0.29	0.20	19.94	61.49	17.82	49.00	10.81	25.00	17.63	48.85
25 – 29	55.71	35.44	0.96	0.45	56.67	35.89	45.83	24.84	29.73	50.00	45.42	25.00
30 – 34	41.88	7.86	0.82	0.09	42.71	7.95	29.31	4.40	21.62	8.33	29.11	4.43
35 – 39	9.36	0.88	0.95	0.11	10.31	0.99	5.68	0.42	21.62	8.34	6.09	0.47
40 – 44	1.01	0.26	0.43	-	1.44	0.26	0.50	0.11	8.11	-	0.70	0.10
45 – 49	-	-	0.50	-	0.50	-	-	-	8.11	-	0.21	-
15 – 49	20.22	25.07	0.54	0.16	20.75	25.22	100.00	100.00	100.00	100.00	100.00	100.00

Table 32 – Life Tables of Males based on Age specific Death rates for the year 1991, 1992 and 1993 .

| Age group x to x+n | Age specific death rate | | | Mean age specific death rate (unit) nmx | Probably of person aged x dying before age x+n (gx) | No. of death (dx) | No. surviving to age x out of 100000 born alive (k) | Year of life lived between xdx+n (Lx) x & x+n(lx) | Year of life between x and above x (Tx) | Expectation of life in year (kx) | Beginning age x |
	1991	1992	1993								
1	2	3	4	5	6	7	8	9	10	11	12
Less than 1	20.74	21.11	17.68	0.01984	0.01766	1766	100000	98274	6829657	68.30	0
1 – 4	2.15	1.18	0.88	0.00140	0.00558	548	98234	391840	6731383	68.52	1
5 – 9	0.75	1.06	0.24	0.00068	0.00339	331	97686	487603	6339543	64.90	5
10 – 14	0.23	0.59	0.23	0.00035	0.00175	170	97355	486350	5851940	60.11	10
15 – 19	1.16	0.73	0.72	0.00087	0.00434	422	97185	484870	5365590	55.21	15
20 – 24	1.35	1.40	0.57	0.00110	0.00548	530	96763	482490	4880720	50.44	20
25 – 29	1.66	1.11	1.14	0.00130	0.00648	624	96233	479605	4398230	45.70	25
30 – 34	1.87	2.09	1.92	0.00196	0.00975	932	95609	475715	3918625	40.99	30
35 – 39	1.61	2.98	1.88	0.00216	0.01074	1017	94677	470843	3442910	36.36	35
40 – 44	3.60	4.41	3.24	0.00375	0.01858	1740	93660	463950	2972067	31.73	40
45 – 49	6.30	6.75	5.92	0.00632	0.03111	2860	91920	452450	2508117	27.29	45
50 – 54	11.57	12.79	8.29	0.01088	0.05296	4717	89060	433508	2055667	23.08	50
55 – 59	19.48	17.65	18.28	0.01847	0.08827	7445	84343	403103	1622159	19.23	55
60 – 64	21.75	21.36	27.29	0.02347	0.11085	8524	76898	363180	1219056	15.85	60
65 – 69	33.76	40.04	38.32	0.03737	0.17089	11684	68374	312660	855876	12.52	65
70 & above	100.52	99.52	113.05	0.10436	1.00000	56690	56690	543216	543216	9.58	70

Table 33 – Life Tables of Females based on Age specific Death rates for the year 1991, 1992 and 1993

Age group Age x to x+n	Age specific death rate			Mean age specific death rate (unit) nmx	Probability of person aged x dying before age x+n (gx)	No. of death (dx)	Number surviving to age x out of 100000 born alive (k) lx	Year of life lived between x and (x+n) (Lx)	Year of life between x and above x (Tx)	Expectation of life in year (Ex)	Beginning age x
	1991	1992	1993								
1	2	3	4	5	6	7	8	9	10	11	12
Less than 1	12.13	11.46	11.70	0.01176	0.01182	1182	100000	98950	7519572	75.20	0
1 – 4	1.03	0.76	0.91	0.00090	0.00359	355	98818	394562	7420622	75.09	1
5 – 9	0.31	0.76	0.45	0.00051	0.00255	251	98463	491688	7026060	71.36	5
10 – 14	0.45	0.68	0.54	0.00056	0.00280	275	98212	490373	6534372	66.53	10
15 – 19	0.78	0.86	0.36	0.00067	0.00334	327	97937	488868	6043999	61.71	15
20 – 24	0.88	1.23	0.73	0.00095	0.00474	463	97610	486893	5555131	56.91	20
25 – 29	1.08	0.93	1.04	0.00102	0.00509	494	97147	484500	5068238	52.17	25
30 – 34	1.76	1.10	0.64	0.00117	0.00583	563	96653	481858	4583738	47.43	30
35 – 39	2.25	1.01	0.88	0.00138	0.00688	661	96090	478798	4101880	42.69	35
40 – 44	1.88	8.36	2.35	0.00220	0.01094	1044	95429	474535	3623082	37.97	40
45 – 49	3.17	3.50	2.20	0.00296	0.01469	1387	94385	468458	3148547	33.36	45
50 – 54	5.08	5.89	5.34	0.00544	0.02684	2496	92998	458750	2680089	28.82	50
55 – 59	6.81	5.75	6.72	0.00643	0.03164	2863	90502	445353	2221339	24.55	55
60 – 64	12.54	11.90	13.74	0.01273	0.06169	5406	87639	424680	1775986	20.26	60
65 – 69	22.21	21.30	16.64	0.02005	0.09547	7851	82233	391538	1351306	16.43	65
70 & above	80.30	75.94	76.26	0.07750	1.00000	74382	74382	959768	959768	12.90	70

Sample Registration of Births & Deaths in Kerala (Rural) 1993

Table 34 – Life Tables of Persons based on Age specific Death rates for the year 1991, 1992 and 1993.

Age group Age x to x+n	Age specific death rate			Mean age specific death rate (unit) nmx	probability of person aged x dying before age x+n (gx)	No. of death (dx)	No. surviving to age x out of 100000 born alive (lx)	Year of life lived between x and x+n (Lx)	Year of life between x and above x (Tx)	Expectation of life in year (Ex)	Beginning age (x)
	1991	1992	1993								
1	2	3	4	5	6	7	8	9	10	11	12
Less than 1	16.55	16.30	14.76	0.01587	0.01482	1482	100000	98603	7156282	71.56	0
1 – 4	1.60	1.11	0.89	0.00120	0.00479	472	98518	393128	7057679	71.64	1
5 – 9	0.53	0.80	0.35	0.00056	0.00280	275	98046	489543	6664551	67.97	5
10 – 14	0.34	0.63	0.38	0.00045	0.00225	220	97771	488305	6175008	63.16	10
15 – 19	0.97	0.80	0.54	0.00077	0.00384	375	97551	486818	5686703	58.29	15
20 – 24	1.09	1.30	0.66	0.00102	0.00509	495	97176	484643	5199885	5351	20
25 – 29	1.35	1.01	1.08	0.00115	0.00573	554	96681	482020	4715242	48.77	25
30 – 34	1.81	1.65	1.25	0.00157	0.00782	752	96127	478755	4233222	44.04	30
35 – 39	1.94	1.96	1.36	0.00175	0.00871	831	95375	474798	3754467	39.37	35
40 – 44	2.71	3.35	2.78	0.00295	0.01464	1384	94544	469260	3279669	3469	40
45 – 49	4.70	5.06	4.01	0.00459	0.02269	2114	93160	460515	2810409	30.17	45
50 – 54	8.16	9.19	6.76	0.00804	0.03941	3588	91046	446260	2349894	25.81	50
55 – 59	12.73	11.32	12.11	0.01205	0.05849	5115	87458	424503	1903634	21.77	55
60 – 64	16.96	16.31	20.06	0.01778	0.08512	7009	82343	394193	1479131	17.96	60
65 – 69	27.46	29.94	26.49	0.02796	0.13067	9844	75334	352060	1084938	14.40	65
70 & above	89.43	86.38	92.27	0.08936	1.00000	65492	65490	732878	732878	11.19	70

Department of Economics & Statistics, Kerala

Table 35 – Number of units and population in the universe and the samples

Stratum	Universe		Samples		Percentage of sample population	Raising factor for stratum estimate population p/p
	No. of Census Villages	Population (1981) p	No. of units selected	Population (1981) p		
1	2	3	4	5	6	7
I A	73	33158	2	658	1.98	50.39210
B	217	171582	2	1540	0.90	111.41688
C	519	773395	6	7972	1.03	97.01392
D	1265	7421252	51	87246	1.17	85.06123
Northern Region	2074	8399387	61	97416	1.16	-
II A	260	87991	2	723	0.82	121.70263
B	415	325570	3	1915	0.59	170.01044
C	894	1353880	10	14845	1.09	91.20108
D	2134	10515577	74	120631	1.15	87.17143
Southern Region	3703	12283018	89	138114	1.12	-
State	5777	20682405	150	235530	1.14	-

698